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## 2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR202 - BIG HORN

HUNT AREAS: 79

PREPARED BY: LESLIE SCHREIBER

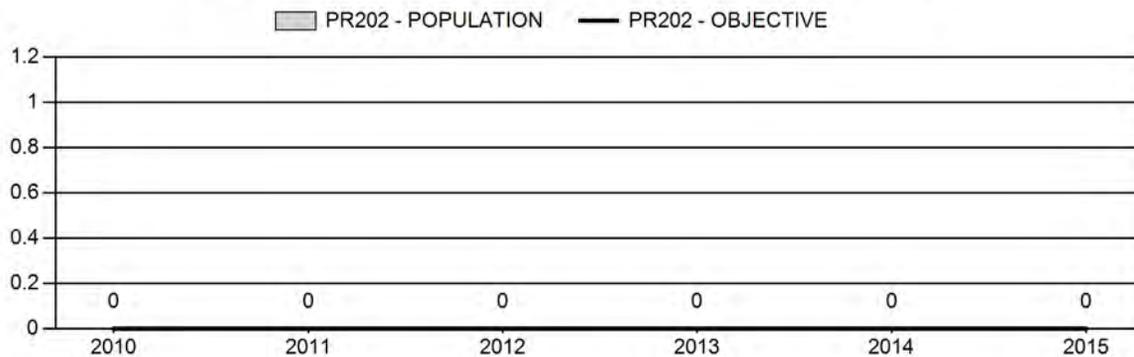
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	0	N/A	N/A
Harvest:	44	62	62
Hunters:	55	62	62
Hunter Success:	80%	100%	100 %
Active Licenses:	60	74	74
Active License Success:	73%	84%	84 %
Recreation Days:	243	473	470
Days Per Animal:	5.5	7.6	7.6
Males per 100 Females	54	84	
Juveniles per 100 Females	65	80	

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

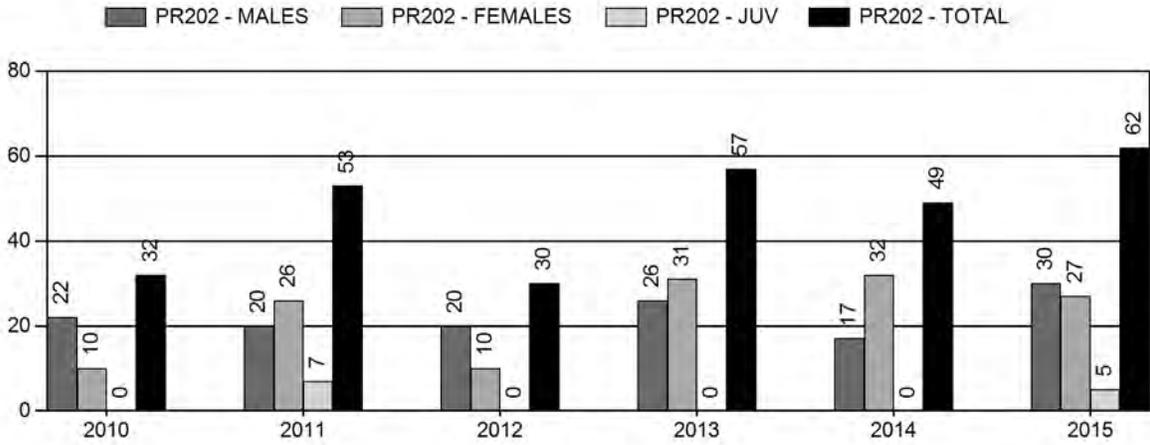
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	na%	na%
Males $\geq 1$ year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%

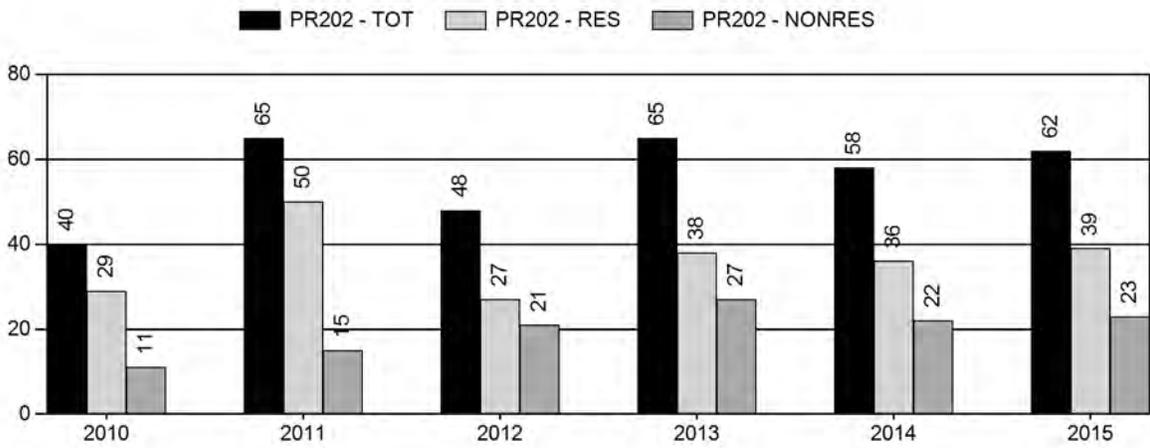
## Population Size - Postseason



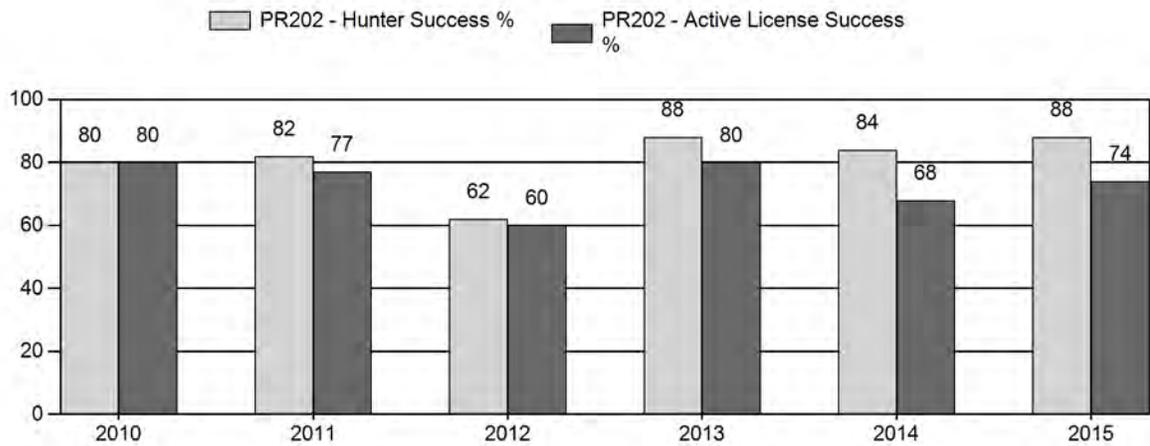
# Harvest



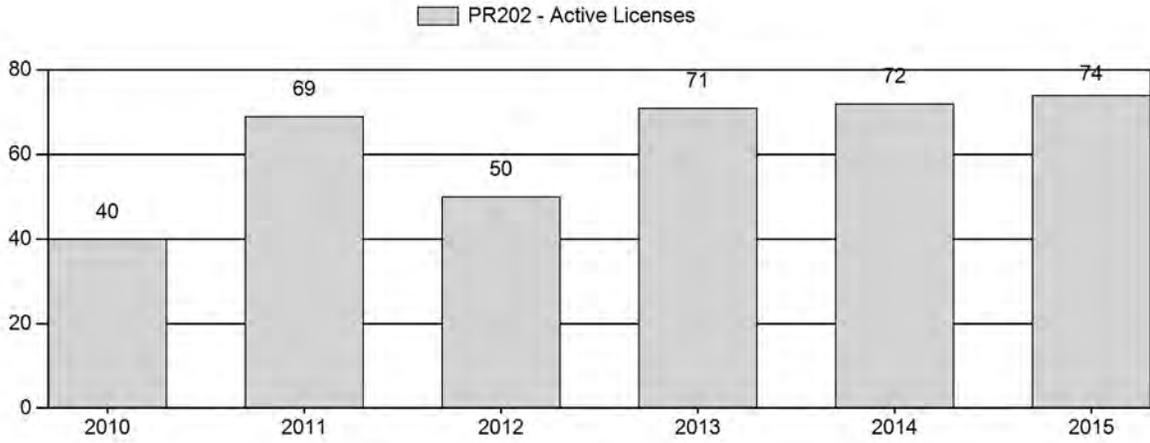
# Number of Hunters



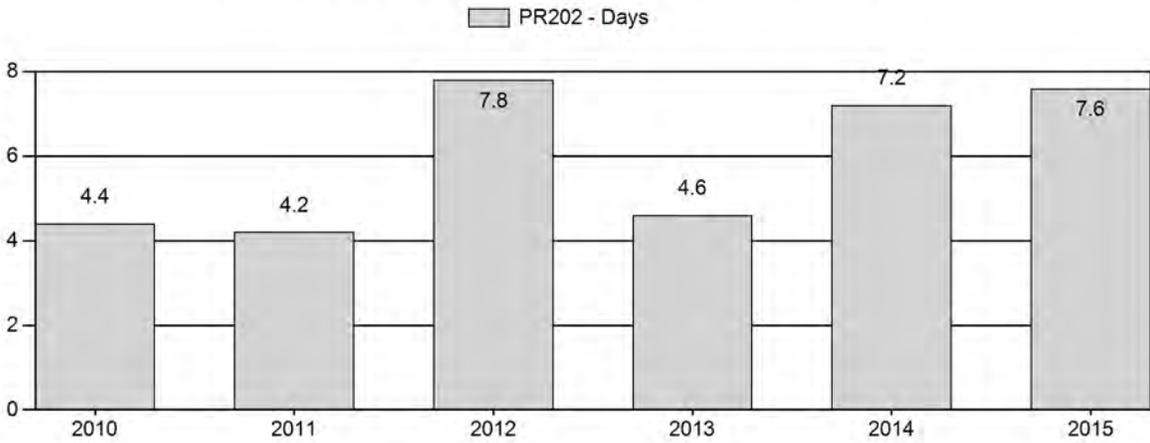
# Harvest Success



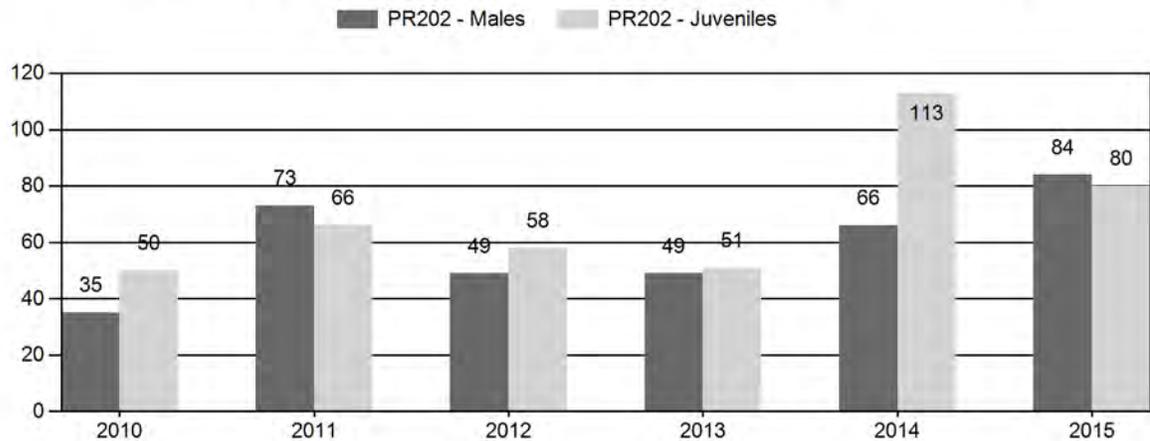
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



### 2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR202 - BIG HORN

Year	Pre Pop	MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj				Int			
2010	0	6	19	25	19%	72	54%	36	27%	133	0	8	26	35	± 0	50	± 0	37
2011	0	24	46	70	31%	96	42%	63	28%	229	268	25	48	73	± 0	66	± 0	38
2012	0	30	50	80	24%	162	48%	94	28%	336	0	19	31	49	± 0	58	± 0	39
2013	0	28	43	71	24%	145	50%	74	26%	290	248	19	30	49	± 0	51	± 0	34
2014	0	19	38	57	24%	87	36%	98	40%	242	0	22	44	66	± 0	113	± 0	68
2015	0	37	79	116	32%	138	38%	110	30%	364	320	27	57	84	± 0	80	± 0	43

**2016 HUNTING SEASONS  
BIG HORN PRONGHORN HERD (PR202)**

Hunt Area	Type	Season Dates			License	Limitations
		Opens	Closes			
79	1	Sep. 20	Sep. 30	15	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 south of US Hwy 14
79	9	Aug. 15	Sept. 30	30	Limited quota	Any antelope, archery only

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

Hunt Area	License Type	Quota changes from 2015
79	6	+25
<b>Herd Unit Total</b>	<b>6</b>	<b>+25</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** none

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** none

**2016 Proposed Postseason Population Estimate:** none

**2015 Hunter Satisfaction:** 78% Satisfied, 11% Neutral, 11% Dissatisfied

**Herd Unit Issues**

Management of this herd unit using a population objective was eliminated in 2001 due to insufficient sample sizes obtained during classification surveys. Without adequate samples, sex and age ratios were unreliable and inadequate for population modeling using spreadsheet models. There have been no line transect surveys conducted in this herd unit to obtain an independent population estimate due to the small population and limited flight budgets. No management goals (e.g., count objectives, satisfaction) were established for this herd due to lack of data. This herd will be reviewed in 2016 and management goals will be established.

**Weather**

Habitat quality is probably most affected by desert-like conditions (< 12" annual precipitation) and poor soils. Both of those factors have allowed cheatgrass to invade and dominate some sites. Drought is the most important factor influencing survival and productivity of this pronghorn herd. Drought conditions occurred in 2000-04 and 2012. Effects of drought on upland vegetation resulted in a shift of pronghorn to agricultural fields where landowners have a low

tolerance. Well-timed growing season precipitation resulting in increased forage occurred in 2014-15.

### **Habitat**

Dry conditions and poor soils across most of the herd unit resulted in marginal habitat for pronghorn. Saltbush and mixed shrub communities dominate the area. Sagebrush improves in quantity and quality with increased precipitation, higher elevation, and better soils on the east side of the herd unit; however, few pronghorn occur in the “best” habitat. Most pronghorn in the herd unit concentrate around irrigation canals and stock dams. Bentonite mining has been expanding toward and into the best remaining stands of sagebrush on the west side of the herd unit. The 2 shrub transects established in this herd unit, Renner and Alkali, were located outside of areas used extensively by pronghorn in order to monitor mule deer browsing.

### **Field Data**

The amount of effort (hours) to survey pronghorn in this herd unit has not been constant over the years, so trends in classification survey data should not be taken to represent trends in the overall population. This herd unit has been a low priority and classification data was not always collected. As noted, small sample sizes resulted in sex and age ratios that were not an accurate representation of the entire population. Regardless, the fawn:doe ratios obtained from the 2014 (113:100) and 2015 (80:100) classification surveys were some of the highest in the past 27 years. Total number of pronghorn classified in 2015 (364) was above average (2010-2014=246). The buck:doe ratio in 2015 (84:100) was abnormally high, and might be artificially inflated due to the presence of a particularly visible herd of bucks. Both buck ratios and fawn ratios were showing a slight downward trend since the mid-1990s until a large increase in both ratios in 2011 and now again in 2014-15. Although more data has been collected since 2006, sample sizes were still insufficient in some years to draw conclusions for the entire population.

### **Harvest Data**

Trends in hunting statistics do not suggest a clear trend in the population. From 1995-2015, recreation days and days per harvested animal have large fluctuations depending on if and how many doe/fawn licenses were issued. Considering only the archery licenses, hunter success has been increasing since 2005. Days per harvest have been trending downward, as has total recreation days, but to a lesser degree. Those statistics suggest that archery hunting for bucks has gotten easier and/or the population has been increasing. The majority (78%) of harvest survey respondents were satisfied with their hunt.

### **Population**

Preliminary attempts to construct a reliable population spreadsheet model have been marginally successful. Since 2006, more pronghorn have been observed during classification surveys (>200 animals in most years); thus, more accurate sex and age ratios were expected. However, modeling this herd unit as 1 distinct population may not be possible, because this herd unit was created from 2 old Hunt Areas (116, 79) that were managed the same for 10 years then combined in 2013. In these areas, classification data suggests differences in juvenile and adult survival, and minimal movement between them, suggesting that the model's assumptions are likely violated. Regardless, this population is probably increasing given other metrics, such as days per harvest and classification sample size.

## **Management Summary**

The Big Horn pronghorn herd is a small population (<400 animals), so only limited archery hunting has been historically offered, except with the arrival of doe/fawn (Type 6) licenses to address crop depredation. Landowners in this area requested pronghorn buck rifle hunts, and given trends suggesting an increasing population, 15 buck rifle licenses were offered starting in 2015. Stiff opposition to the buck rifle license was received from archery hunters that traditionally hunt the area. Moving the opening day for the Type 1 license to September 20<sup>th</sup> aligns this rifle season with adjacent Hunt Areas, and minimizes overlap between rifle and archery hunters. To address crop depredation, an additional 25 doe/fawn licenses restricted to the southern half of the Hunt Area will be offered in 2016. Although quantity and quality of data is lacking, it appears the Big Horn pronghorn herd is increasing, but the population remains low.



## 2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR203 - COPPER MOUNTAIN

HUNT AREAS: 76, 114-115

PREPARED BY: BART KROGER

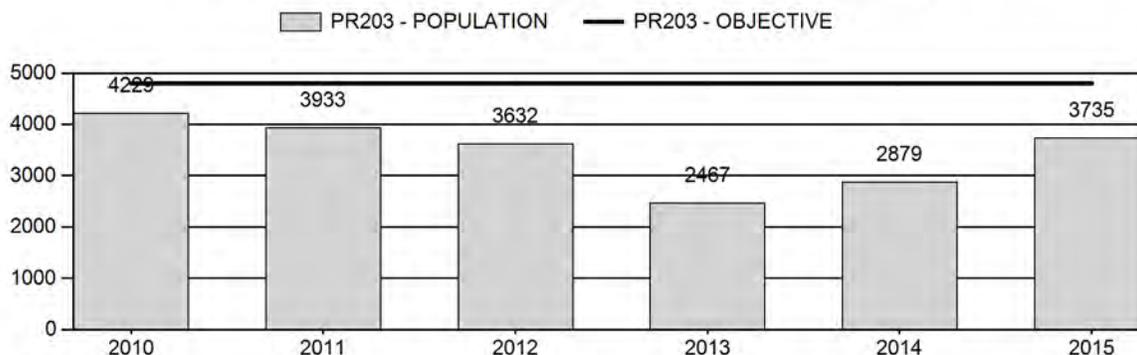
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	3,428	3,735	3,409
Harvest:	715	557	850
Hunters:	744	606	900
Hunter Success:	96%	92%	94 %
Active Licenses:	865	663	1,000
Active License Success:	83%	84%	85 %
Recreation Days:	2,963	2,438	3,000
Days Per Animal:	4.1	4.4	3.5
Males per 100 Females	46	47	
Juveniles per 100 Females	61	88	

Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-22.2%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/2/2016

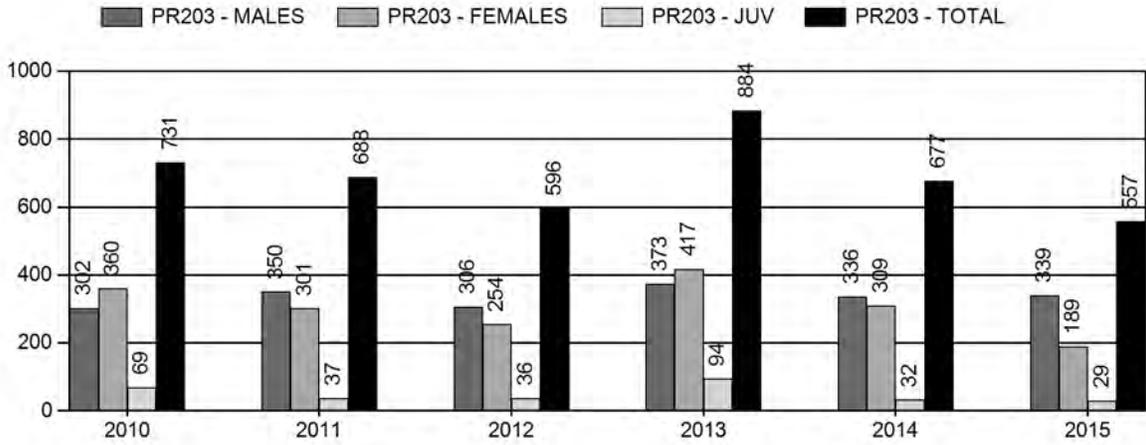
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	10%	20%
Males ≥ 1 year old:	39%	38%
Juveniles (< 1 year old):	2%	2%
Total:	13%	20%
Proposed change in post-season population:	+30%	-9%

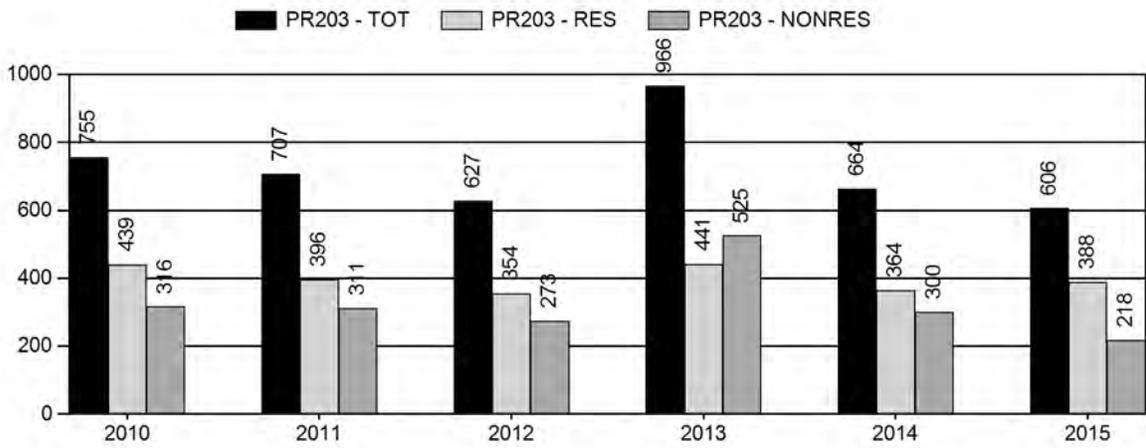
## Population Size - Postseason



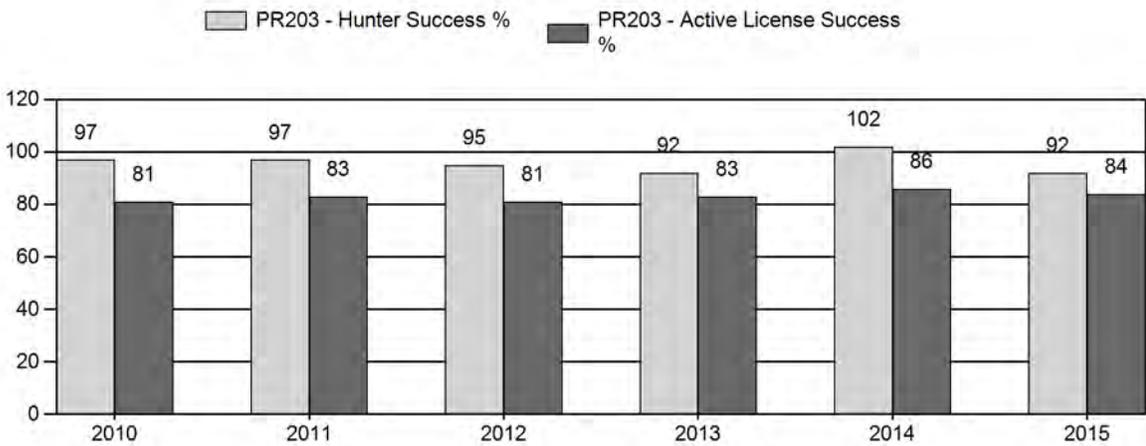
# Harvest



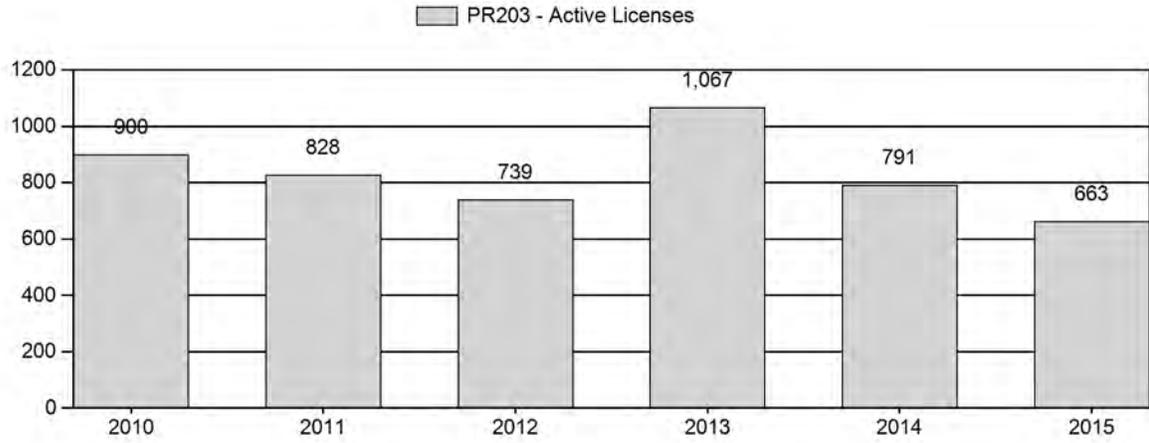
# Number of Hunters



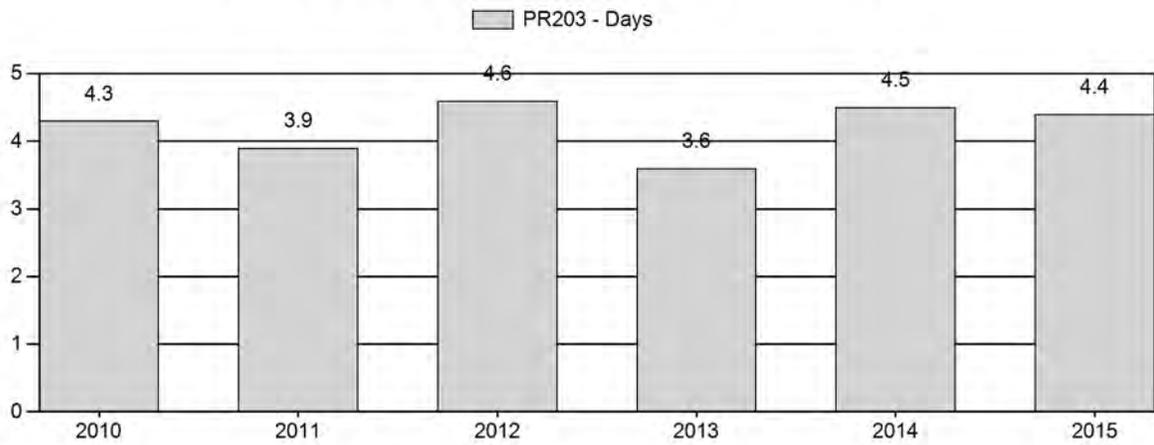
# Harvest Success



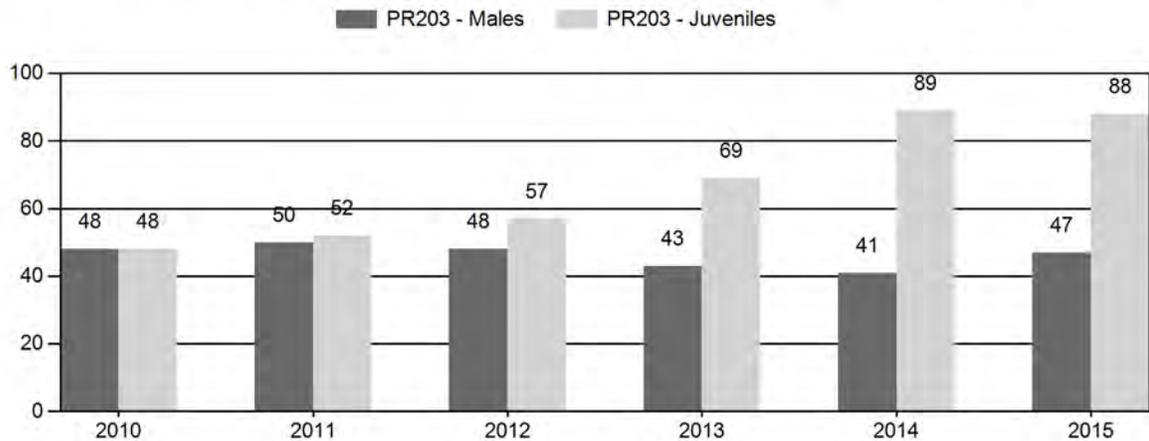
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR203 - 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
2010	5,433	0	0	358	24%	752	51%	362	25%	1,472	1,172	0	0	48	± 4	48	± 4	33
2011	4,690	0	0	467	25%	928	50%	478	26%	1,873	1,277	0	0	50	± 4	52	± 4	34
2012	4,287	0	326	326	23%	682	49%	391	28%	1,399	1,285	0	48	48	± 4	57	± 5	39
2013	2,645	0	0	263	20%	618	47%	429	33%	1,310	1,505	0	0	43	± 4	69	± 5	49
2014	3,624	0	0	218	18%	534	44%	474	39%	1,226	1,810	0	0	41	± 4	89	± 7	63
2015	4,348	0	0	335	20%	715	43%	628	37%	1,678	1,751	0	0	47	± 4	88	± 6	60

**2016 HUNTING SEASONS  
COPPER MOUNTAIN PRONGHORN HERD (PR203)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
76	1	Oct. 1	Oct. 31	175	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	150	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)
114	1	Oct. 1	Oct. 31	50	Limited quota	Any antelope
114	2	Aug. 15	Sep. 30	25	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 Nowood River or south and west of Cornell Gulch or Nowater Stock Trail (BLM 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 2015
76	1	+25
76	2	+25
76	6	+100
114	7	New Type +100
115	1	+50

115	6	+100
<b>Total</b>	<b>1&amp;2</b>	<b>+100</b>
	<b>6&amp;7</b>	<b>+300</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 4,800

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 3,700

**2016 Proposed Postseason Population Estimate:** 3,400

**2015 Hunter Satisfaction:** 87% satisfied, 7% neutral, 6% dissatisfied

**Herd Unit Issues**

The herd unit is about 70% public lands and 30% private lands. Much of the herd unit is supported by vast areas of cheatgrass. Higher densities of pronghorn occur in the southern portion of herd unit along the upper slopes of Copper Mountain and the upper Nowood area. Pronghorn utilizing the low elevation desert country are at low densities, and in some cases are struggling to maintain current numbers. In summer 2012, significant cropland damage issues occurred in the western portion of the herd unit, particularly hunt area 114. 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 revised in 2013.

**Weather**

The winters of 2010/11, 2012/13 and 2013/14 were severe enough in the Bighorn Basin to have caused significant mortality in this herd, thus keeping this population well below objective. It wasn't until above normal spring and early summer moisture in 2014 and 2015 that this herd started showing improving numbers. The 2015/16 winter has been mostly mild, with little snow cover and mild temperatures.

**Habitat**

Habitat conditions have declined in this herd unit since the onset of drought in the 1990's. 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. Much of the herd unit is supported by vast areas of cheatgrass, due to several severe fires in the 1996. 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. Until considerable moisture regimes return, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by drought.

**Field Data**

Both aerial and ground surveys are used in obtaining pre-season classification data for this pronghorn herd. Routine classification routes for each hunt area are maintained. The number of pronghorn classified declined by 40% from 2009 to 2014, but increased by 38% in 2015. However, buck ratios continue to remain mostly stable at about 45:100 on average, with fawn ratios averaging around 60:100, with 2013, 2014 and 2015 being three of the highest ratios recorded for this herd. With these improved fawn ratios, pronghorn numbers are increasing.

Three line-transect (LT) surveys have been conducted in the herd unit; the first in 2000 with an estimate of 4,600 pronghorn, the second in 2004 with an estimate of 4,000 pronghorn, and the last in 2007 with an estimate of 4,100 pronghorn. These LT estimates are consistent with field personnel perceptions, and track well with model trends and estimates.

### **Harvest Data**

Because of increasing pronghorn numbers in the late 2000's, along with increased damage issues, license quotas, hunter number and harvest increased dramatically from 2006 to 2010, but have dropped off since. In fact, between 2006 and 2010, harvest increased by over 130%. Between 2010 and 2012 harvests dropped by about 19% due to declining numbers and reduced damage concerns. Then in 2013, license quotas were drastically increased in area 114 due to damage issues, and thus harvest increased by 48%. Then in 2014 and 2015, harvest declined again because of reduced damage issues, and overall declines in the population. Overall, hunter success remains >90% with days/harvest at about 3-4 days.

### **Population**

The Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model best represents the long-term population estimate and recent trends for this herd. This model has the highest AIC value (n=154), but the best fit (n=28) of all models. The model track well with LT estimates, classification sample sizes and mostly reflects what field personnel perceptions are of this herds trend. This pronghorn population declined 50% between 2009 and 2014, but has now started showing an improving trend due to record high fawn ratios. Although the population is currently below objective by 21%, we are anticipating the population to continue to grow into 2016. The current model is a fair to good representation of this herd.

### **Management Summary**

The 2016 season will see an increase of 100 any antelope, and 300 doe/fawn licenses. With improved fawn ratios, and a noticeable increase in the overall population, along with the potential for damage issues to arise, these significant licenses quota increases are warranted. The projected 2016 harvest of about 850 pronghorn will mostly stabilize this population at about 3,400 pronghorn for post-season 2016.



## 2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR204 - FIFTEENMILE

HUNT AREAS: 77, 83, 110

PREPARED BY: BART KROGER

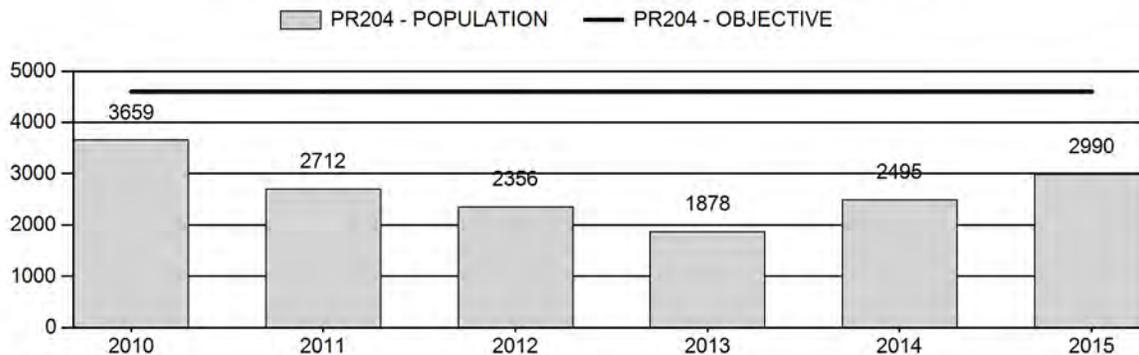
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	2,620	2,990	2,896
Harvest:	751	525	720
Hunters:	728	540	740
Hunter Success:	103%	97%	97 %
Active Licenses:	848	605	800
Active License Success:	89%	87%	90 %
Recreation Days:	2,402	2,275	2,500
Days Per Animal:	3.2	4.3	3.5
Males per 100 Females	38	30	
Juveniles per 100 Females	56	73	

Population Objective ( $\pm 20\%$ ) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-35%
Number of years population has been + or - objective in recent trend:	6
Model Date:	2/2/2016

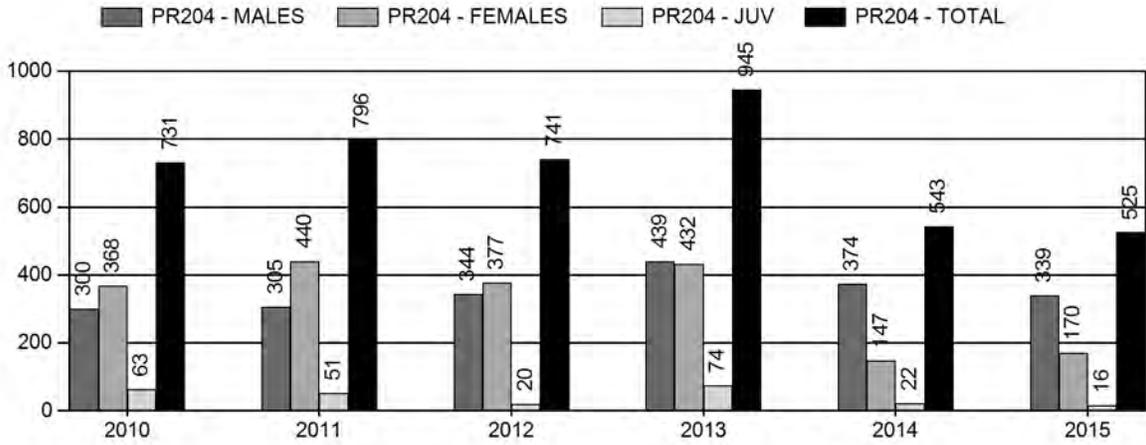
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	10%	16%
Males $\geq 1$ year old:	65%	68%
Juveniles (< 1 year old):	2%	3%
Total:	15%	19%
Proposed change in post-season population:	+15%	-2%

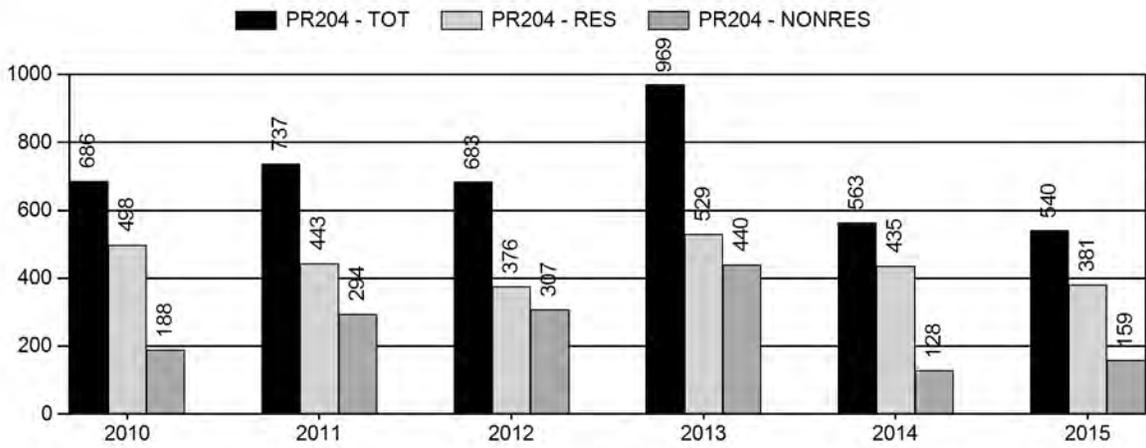
## Population Size - Postseason



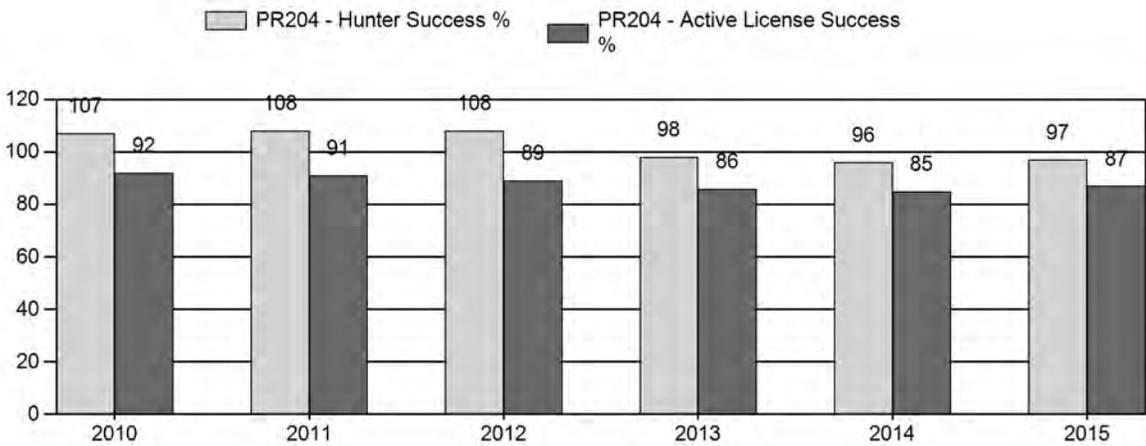
# Harvest



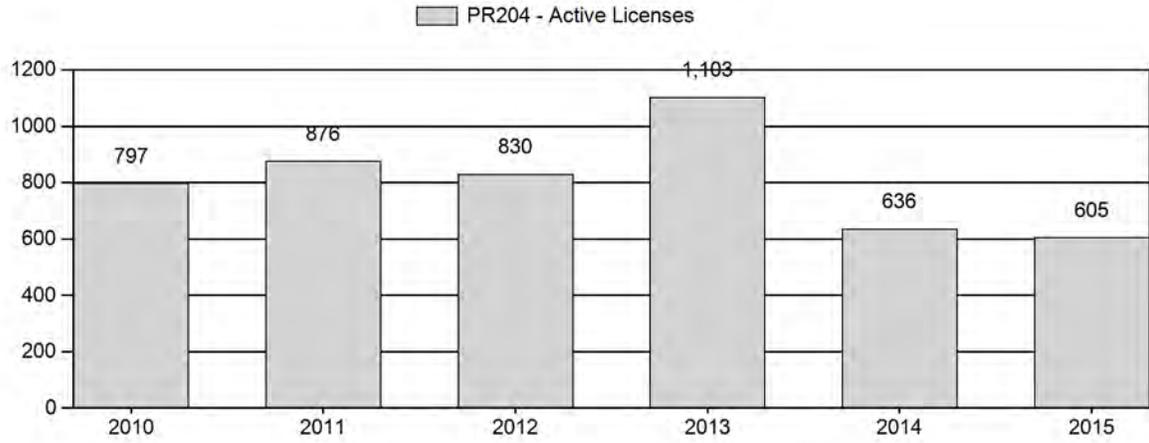
# Number of Hunters



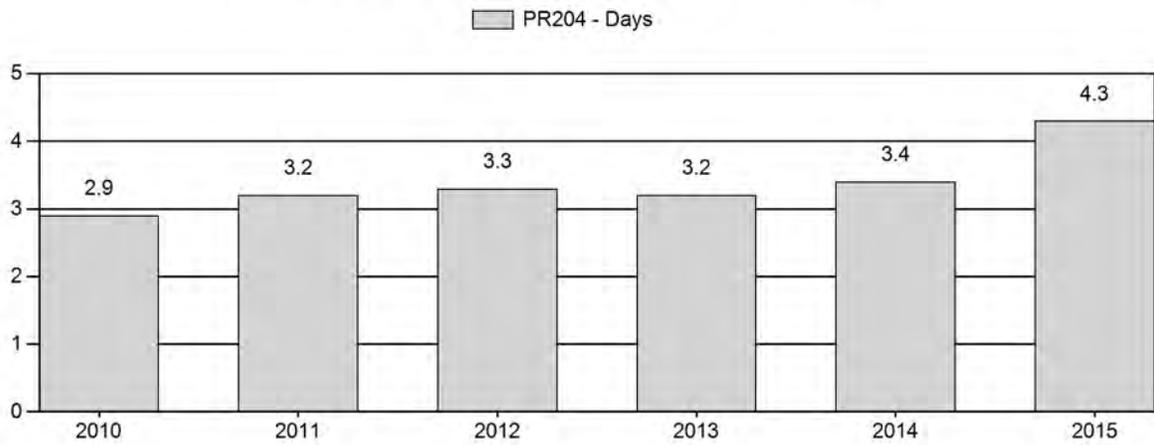
# Harvest Success



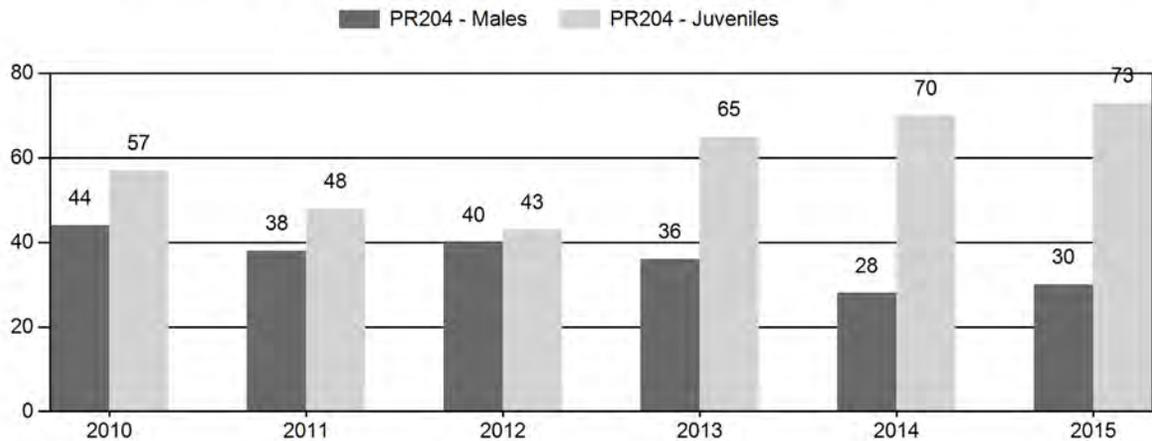
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR204 - FIFTEENMILE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	4,463	0	0	439	22%	1,008	50%	572	28%	2,019	1,411	0	0	44	± 3	57	± 4	40
2011	3,588	0	0	404	20%	1,060	54%	507	26%	1,971	1,147	0	0	38	± 2	48	± 3	35
2012	3,171	0	362	362	22%	900	55%	389	24%	1,651	971	0	40	40	± 3	43	± 3	31
2013	2,917	0	0	244	18%	672	50%	435	32%	1,351	1,456	0	0	36	± 3	65	± 5	47
2014	3,093	0	0	227	14%	817	51%	571	35%	1,615	1,515	0	0	28	± 2	70	± 4	55
2015	3,567	0	0	334	15%	1,122	49%	815	36%	2,271	1,368	0	0	30	± 2	73	± 3	56

**2016 HUNTING SEASONS  
FIFTEEN MILE PRONGHORN HERD (PR204)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
77	1	Sep. 20	Oct. 14	100	Limited quota	Any antelope
77	2	Aug. 15	Sep. 19	25	Limited quota	Any antelope valid on or within one-half (1/2) mile of irrigated land
77	6	Aug. 15	Nov. 15	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
83	1	Sep. 20	Nov. 7	300	Limited quota	Any antelope
83	6	Aug. 15	Nov. 15	75	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	200	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	75	Limited quota	Any antelope
110	6	Sep. 20	Oct. 14	25	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 2015
77	1	+25
77	6	+50
83	1	+50
83	6	+50
83	7	+100
<b>Total</b>	<b>1&amp;2</b>	<b>+75</b>
	<b>6&amp;7</b>	<b>+200</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 4,600

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 3000

**2016 Proposed Postseason Population Estimate:** 2900

**2015 Hunter Satisfaction:** 87% satisfied, 9% neutral, 4% dissatisfied

### **Herd Unit Issues**

The herd unit is about 75% public lands and 25% private lands, with the majority of pronghorn in the herd unit on or associated with private land. Damage concerns are usually an issue in this herd unit. Harvest is usually directed toward preventing damage even when the herd is well 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 revised in 2013.

### **Weather**

The winters of 2010/11, 2012/13 and 2013/14 were severe enough in the Bighorn Basin to have caused significant mortality in this herd, thus keeping this population well below objective. It wasn't until above normal spring and early summer moisture in 2014 and 2015 that this herd started showing improving numbers. The 2015/16 winter has been mostly mild, with little snow cover and mild temperatures.

### **Habitat**

Habitat conditions have declined in this herd unit since the onset of drought in the 1990's. Overall, long-term drought conditions have affected habitat conditions in this herd unit. Most sagebrush communities continue to lack vigor, reproduction, and leader growth. Until considerable moisture regimes return, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by drought. 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 pre-season classification flights are conducted annually during the month of August in Hunt Areas 77 and 83, while Hunt Area 110 classifications are conducted from the ground. Relative trends for fawn ratios have increased the past three years, with 2013 (65:100), 2014 (70:100) and 2015 (73:100) ratios being the highest on record. Conversely, buck ratios have declined the past few years, with a high of 45:100 in 2009 to 28:100 in 2014. Starting in 2008, classification sample sizes began to decline, with 2,100 classified in 2008, down to 1,350 in 2013. However, in 2014, 1,600 pronghorn were classified, and in 2015, 2,200 were classified. The number of pronghorn classified mirrors that of the population model trend in recent years.

Four line-transect (LT) surveys have been conducted in the herd unit since 1999. LT estimates of pronghorn over the past 14 years have been, 2,900 in 1999, 2,800 in 2002, 3,700 in 2006 and 4,600 in 2010. Model estimates are slightly higher than the 1999, 2002 and 2006 LT estimates, whereas the 2010 LT estimate is higher than the model estimate. However, all four LT standard errors (SE) fall within the range of the model estimates. In addition, population trends between the model and LT's are consistent with field personnel perceptions.

### **Harvest Data**

Because of increasing pronghorn numbers in the mid to late 2000's, along with increased damage issues, license quotas have increased dramatically since 2008. In fact, between 2008 and

2013, total harvest increased by over 300%. These harvest trends, along with model population estimates and trends are reflective of field personnel perceptions that pronghorn numbers have declined dramatically. Starting in 2013, license quotas were reduced, mainly because of reduced damage issues and low population levels. However, with recent improved fawn ratios and overall pronghorn survival, license quotas and harvest have and will continue to increase.

### **Population**

The Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model best represents the long-term population estimate and recent trends for this herd. This model has the highest AIC value (n=141) of all models, but tracks well with LT estimates, classification sample sizes, and mostly reflects what field personnel perceptions are of this herd. This pronghorn population declined by 59% between 2009 and 2013. Since 2013 the population has rebounded due to several years of record high fawn ratios along with reduced harvest levels. The model is a fair to good representation of this herd.

### **Management Summary**

Because of increasing pronghorn numbers in recent years, along with potential damage issues again becoming an issue, most license quotas in areas 77 and 83 will increase for 2016. Area 110 is not experiencing increases in pronghorn, plus the Pitchfork Ranch has expressed concern over low pronghorn numbers the past couple of years. The projected 2016 harvest of about 720 pronghorn will mostly stabilize this population at about 2,900 pronghorn.



## 2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR205 - CARTER MOUNTAIN

HUNT AREAS: 78, 81-82

PREPARED BY: LESLIE SCHREIBER

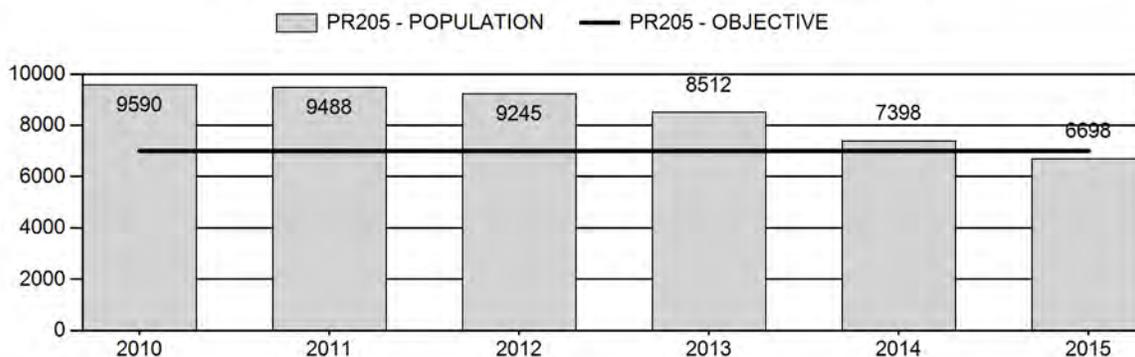
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	8,847	6,698	6,170
Harvest:	657	648	640
Hunters:	640	631	650
Hunter Success:	103%	103%	98%
Active Licenses:	757	726	745
Active License Success:	87%	89%	86%
Recreation Days:	2,533	2,195	2,300
Days Per Animal:	3.9	3.4	3.6
Males per 100 Females	51	47	
Juveniles per 100 Females	46	74	

Population Objective (± 20%) :	7000 (5600 - 8400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-4.3%
Number of years population has been + or - objective in recent trend:	4
Model Date:	02/23/2016

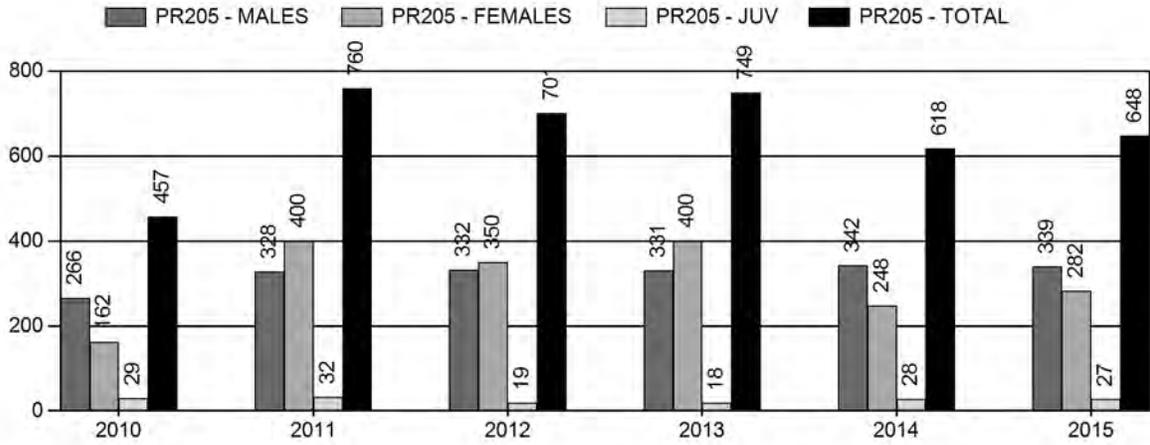
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	6%	7%
Males ≥ 1 year old:	17%	16%
Juveniles (< 1 year old):	1%	1%
Total:	23%	23%
Proposed change in post-season population:	-8%	-9%

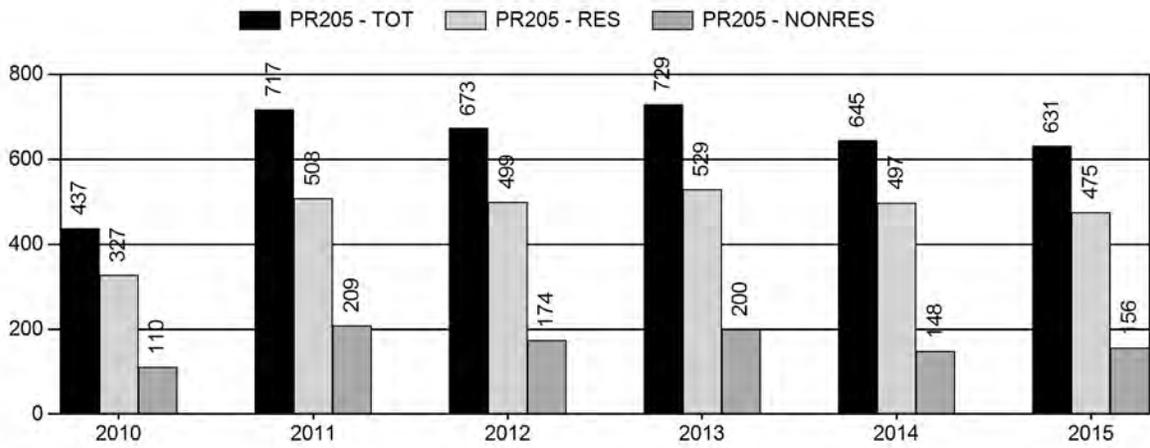
## Population Size - Postseason



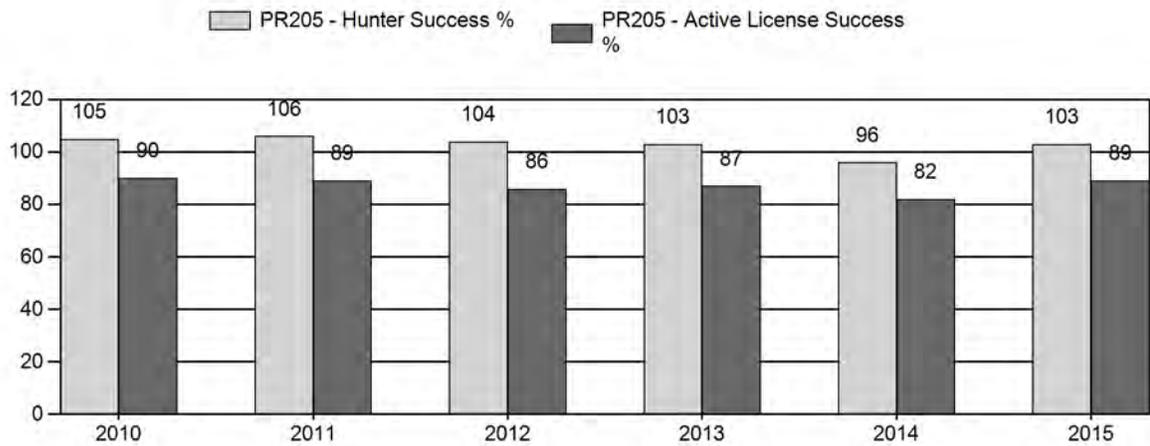
# Harvest



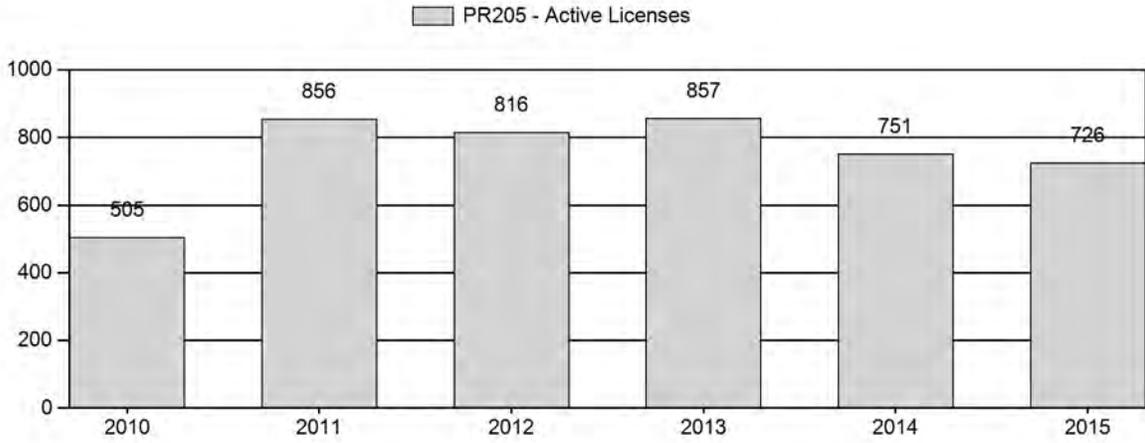
# Number of Hunters



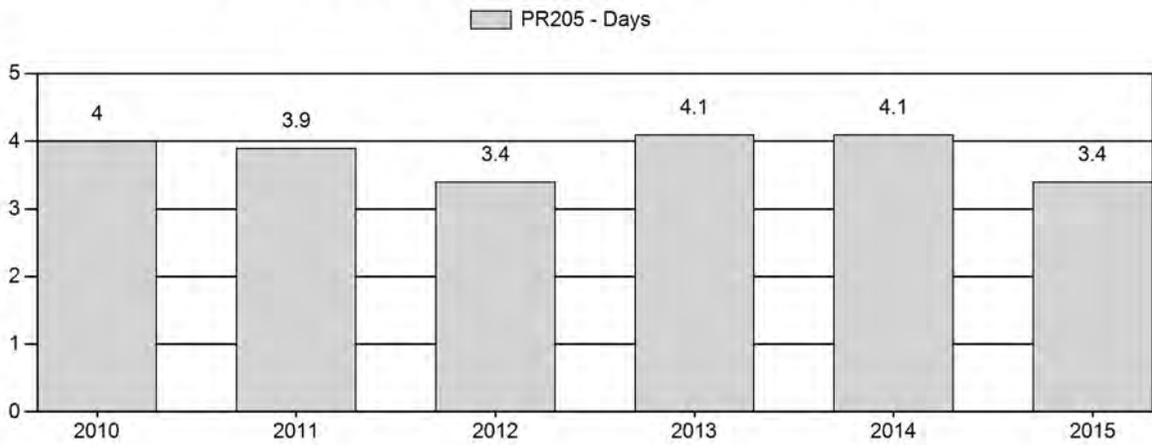
# Harvest Success



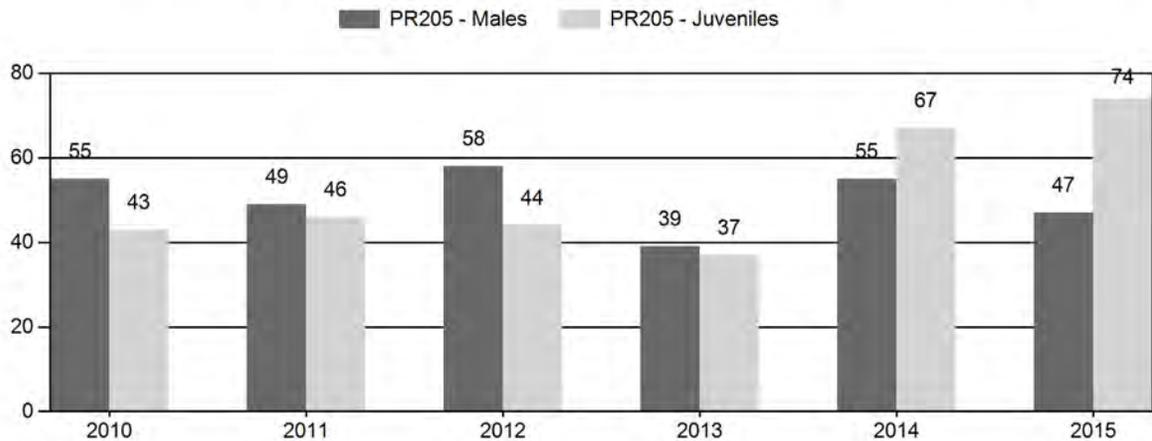
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



**2010 - 2015 Preseason Classification Summary**  
for Pronghorn Herd PR205 - CARTER MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj				Int			
2010	10,093	198	410	608	28%	1,098	50%	473	22%	2,179	1,344	18	37	55	± 4	43	± 3	28
2011	10,324	115	367	482	25%	992	51%	458	24%	1,932	1,980	12	37	49	± 4	46	± 4	31
2012	10,023	125	365	490	29%	844	50%	370	22%	1,704	1,557	15	43	58	± 5	44	± 4	28
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	8,366	141	264	405	21%	862	45%	638	33%	1,905	1,922	16	31	47	± 4	74	± 6	50

**2016 HUNTING SEASONS  
CARTER MOUNTAIN PRONGHORN HERD (PR205)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
78	1	Sep. 20	Oct. 31	125	Limited quota	Any antelope
78	6	Sep. 1	Nov. 30	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
81	1	Oct. 1	Nov. 15	125	Limited quota	Any antelope
81	6	Oct. 1	Nov. 15	75	Limited quota	Doe or fawn valid west of Wyoming Highway 120
82	1	Sep. 20	Oct. 14	175	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	100	Limited quota	Doe or fawn valid west of Wyoming Highway 120
82	8	Oct. 15	Nov. 30	50	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 2015
82	1	+25
82	7	+25
<b>Herd Unit</b>	<b>1</b>	<b>+25</b>
<b>Total</b>	<b>7</b>	<b>+25</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 7,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** ~6,700

**2016 Proposed Postseason Population Estimate:** ~6,200

**2015 Hunter Satisfaction:** 89% Satisfied, 8% Neutral, 3% Dissatisfied

**Herd Unit Issues**

The Carter Mountain pronghorn herd has been 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. Due to the large size of the herd unit, anthropogenic factors probably have an influence on herd survival and productivity. There is 1 major oil/gas field (Oregon Basin) and many wells scattered across the herd unit. US Highway 14-16-20 and Wyoming Highway 120 are major highways bisecting the herd unit which may affect migration routes. Urban expansion is a concern in Area 81 near Cody and the South Fork Highway. Grazing by cattle and feral horses may be affecting herbaceous vegetation which affects pronghorn forage in spring and summer.

## **Weather**

Drought is the most important factor influencing survival and productivity of this pronghorn herd. Drought conditions occurred in 2000-04 and 2012. Growing season precipitation in the northern half of the herd unit was above average in 2013-15 resulting in increased forage. Growing season precipitation in the southern half was average, but well-timed, also resulting in good forage.

## **Habitat**

Habitat quality is probably most affected by desert-like conditions, including poor soils and less than 12 inches of annual precipitation. Both of those factors have allowed cheatgrass to invade and dominate some sites. In some years, effects of drought on upland vegetation result in a shift of pronghorn to agricultural fields, especially along the Shoshone River in Hunt Area 78. Most landowners have a low tolerance for pronghorn.

The Dry Creek Basin sagebrush transect was established in this herd unit in 2004 (Appendix A). Historically, this transect has been of limited utility in gauging browsing levels, because production has been limited, even in non-drought years. Utilization of sagebrush along the transect has ranged from <5% to 44% (2005-2016). Snow depth probably determines how many pronghorn concentrate near this site.

## **Field Data**

Low fawn:doe ratios were observed during 2012, a drought year, and immediately after in 2013 (44:100 and 37:100, respectively). In 2015, 74 fawns:100 does were observed, the highest since 1980, indicating this pronghorn herd is rebounding from those drought years. This high fawn ratio is likely a product of 2 years worth of spring moisture and corresponding plant growth sustaining does in excellent condition.

The 2015 buck:doe ratio (47:100) was down from 2014 (55:100). Historically, the buck:doe ratio declined during drought years to a low of 26:100 in 2004. Buck ratios have been increasing since 2004, peaking at 61:100 in 2009 and ranging between 39:100 in 2013 and 58:100 in 2012. Total number of pronghorn classified in 2015 (~1,900) was near the 5-year average (~1,800). Standardized survey routes were established in 2001.

## **Harvest Data**

In 2010, the doe/fawn hunting license quota was increased in response to rising crop depredation. Days per harvest has remained relatively steady between 2010-15, averaging 3.8 days. Hunter success typically does not fluctuate greatly, but a decline was noted during drought. Prior to 2000, average success was 87% (range 80-90%); during drought (2000-05) success averaged 84% (range 78-90%); and following the extended drought, success increased back to 88% (range 87-90%). Hunting statistics reflect population levels, but this metric may also be influenced by number of licenses issued. Hunter satisfaction with this herd is high with 89% of respondents indicating a satisfactory hunt.

## **Population**

For the Carter Mountain pronghorn herd, the constant juvenile/constant adult (CJ,CA) survival model was selected. Not surprisingly, this simple model had the lowest AIC value (195) compared to the SCJ/SCA model (221) and the TSJ/CA model (229). The Spreadsheet User Guide (pg. 23) suggests the CJ, CA model should have tighter constraints than the other models because this model assumes juvenile and adult survival is the same every year, so estimates

should be near average. Accordingly, the lower constraint for juvenile survival was set to 0.5; higher than the recommended criteria of 0.4. The CJ,CA model estimated 6,700 pronghorn post-season 2015. The population was estimated to have peaked in 2009 at 7,800 pronghorn. Modeling this herd is challenging, because a portion of the population is migratory and a portion resides on agriculture fields nearly year-round. Nevertheless, this model performs *good*. The TSJ, CA model was also evaluated, but this model estimates a population of less than 4,000 pronghorn in the 1990's and early 2000's which did not seem reasonable to field personnel.

Line transect surveys in 2006, 2009, and 2012 used a single observer while similar surveys in 2000 and 2003 used 2 observers. Use of a single observer significantly changed the calculations performed on the line transect data, resulting in estimates around 10,000-12,000 pronghorn which were 2-3 times higher than previous estimates. Higher estimates due to the change in protocol were mirrored in other parts of the state. Field personnel feel there has never been 10,000 pronghorn in this herd unit. The line transect survey in 2012 estimated 6,900 ( $\pm 877$ ) pronghorn which matches field personnel's perceptions. Future surveys should be redesigned to fly transects across dense and sparse pronghorn densities rather than fly across sparse areas first then dense areas which was done in all past surveys.

### **Management Summary**

The spreadsheet model estimates this herd is within the range allowed by the objective. Pronghorn numbers are slowly coming back; therefore, a slight increase in the number of licenses is warranted. The upland habitat has recovered from drought and pronghorn have been able to distribute away from cropland. Doe/fawn license quotas and season dates were adjusted based on cropland damage.



## 2015 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR207 - BADGER BASIN

HUNT AREAS: 80

PREPARED BY: DOUG  
MCWHIRTER

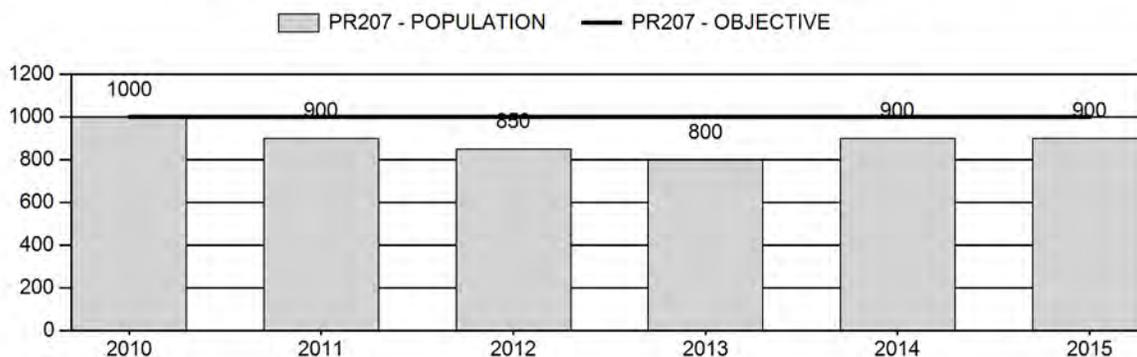
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	890	900	900
Harvest:	172	103	100
Hunters:	175	102	105
Hunter Success:	98%	101%	95 %
Active Licenses:	211	110	105
Active License Success:	82%	94%	95 %
Recreation Days:	977	321	325
Days Per Animal:	5.7	3.1	3.2
Males per 100 Females	45	82	
Juveniles per 100 Females	33	47	

Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10%
Number of years population has been + or - objective in recent trend:	5
Model Date:	None

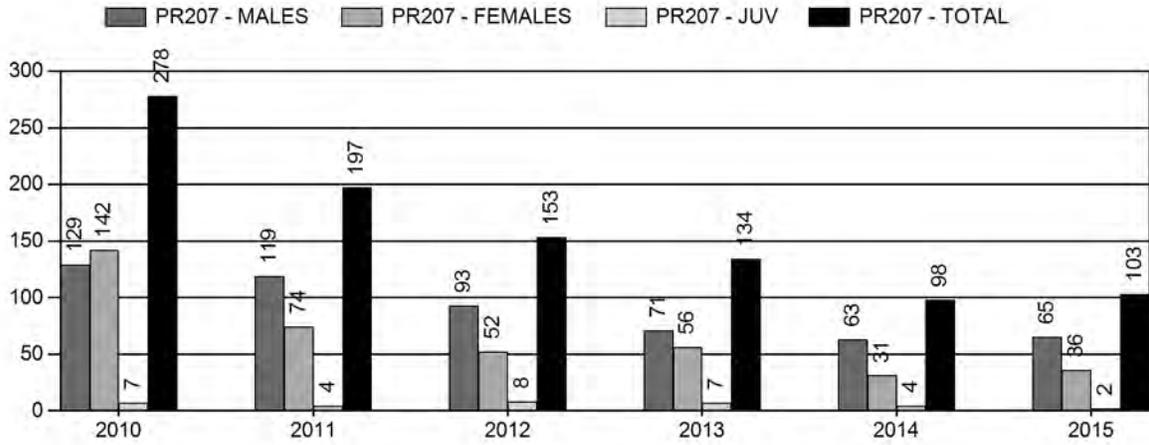
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8.0%	n/a%
Males ≥ 1 year old:	28.6%	n/a%
Juveniles (< 1 year old):	0.0%	n/a%
Total:	10.4%	n/a%
Proposed change in post-season population:	5.5%	n/a%

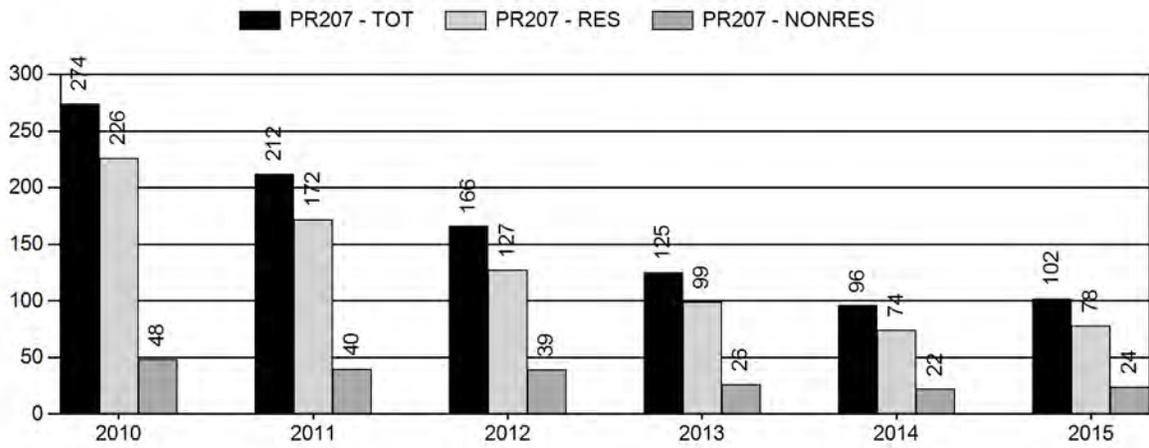
## Population Size - Postseason



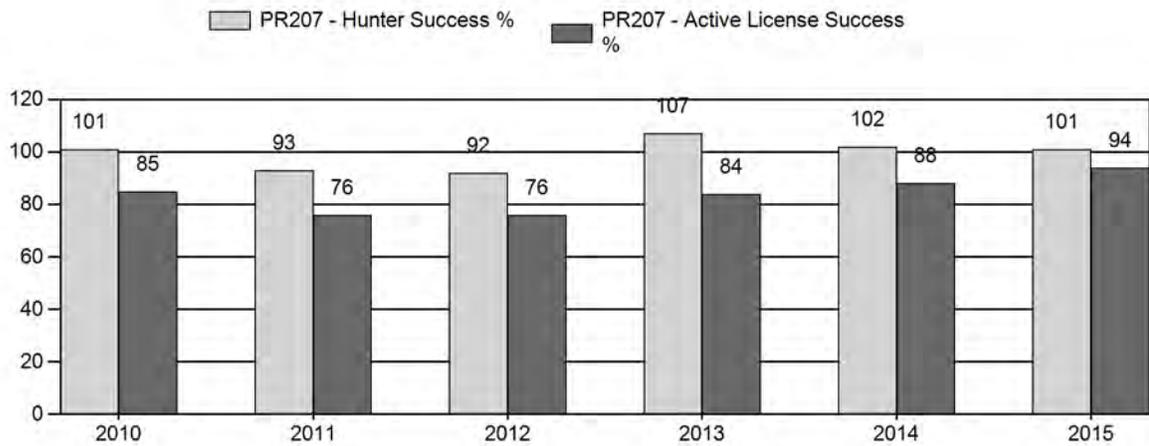
# Harvest



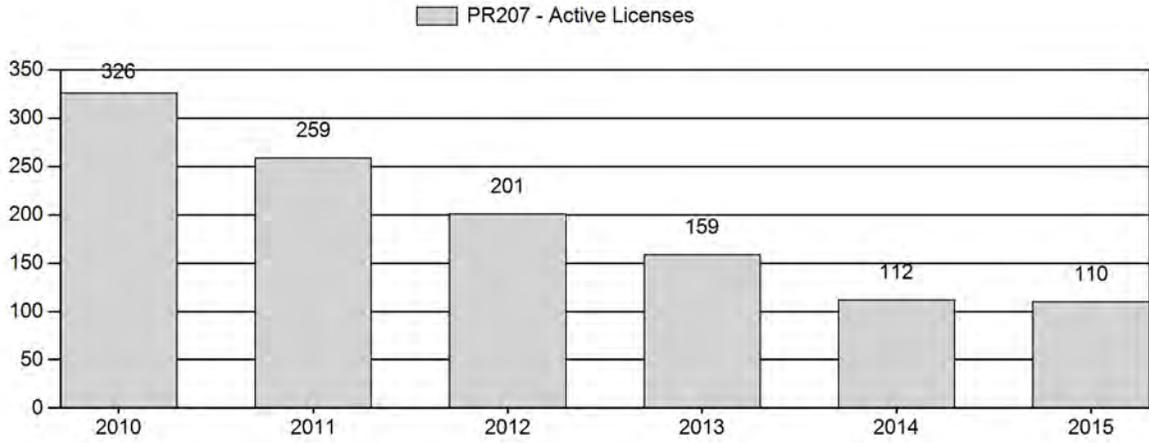
# Number of Hunters



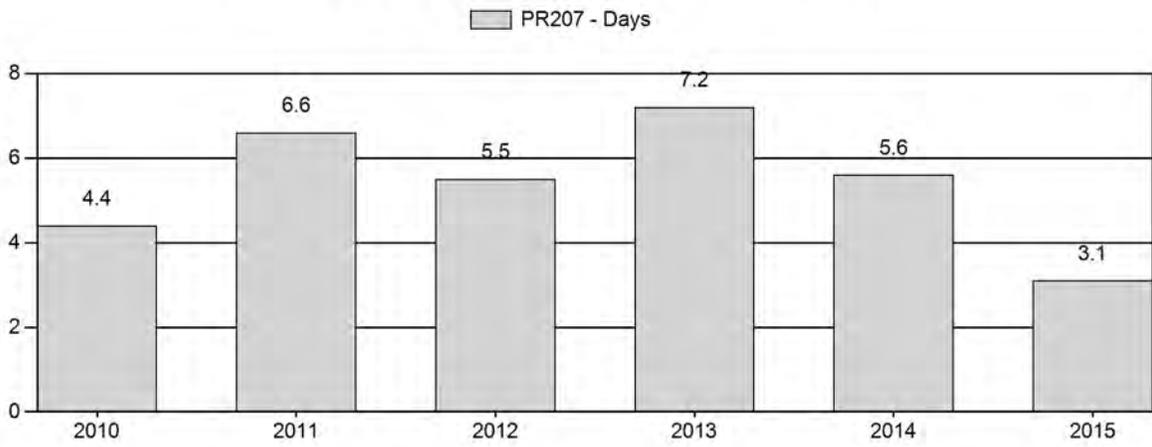
# Harvest Success



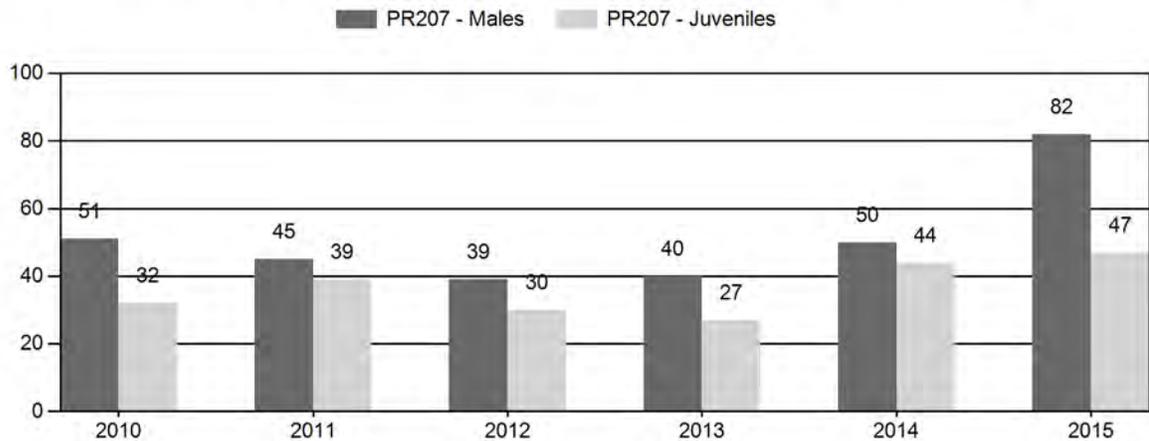
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2010 - 2015 Preseason Classification Summary

for Pronghorn Herd PR207 - BADGER BASIN

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
2010	1,313	58	157	215	28%	419	55%	132	17%	766	617	14	37	51	± 5	32	± 3	21
2011	1,118	15	92	107	25%	236	54%	92	21%	435	612	6	39	45	± 7	39	± 6	27
2012	1,032	37	73	110	23%	283	59%	85	18%	478	515	13	26	39	± 5	30	± 4	22
2013	944	36	79	115	24%	286	60%	76	16%	477	451	13	28	40	± 5	27	± 4	19
2014	988	27	73	100	26%	201	52%	88	23%	389	515	13	36	50	± 8	44	± 7	29
2015	1,000	42	69	111	36%	135	44%	63	20%	309	599	31	51	82	± 14	47	± 10	26

**2016 HUNTING SEASONS  
BADGER BASIN PRONGHORN HERD (PR207)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
80	1	Sep. 1	Sep. 30	75	Limited quota	Any antelope
80	6	Sep. 1	Oct. 31	50	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 2015
80	1 & 6	No Changes
<b>Total</b>	<b>1 &amp; 6</b>	<b>No Changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 1,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 900

**2016 Proposed Postseason Population Estimate:** 900

**Herd Unit Issues**

Much of the Badger Basin Herd Unit consists of extremely arid habitats, with low antelope densities that exhibit poor productivity. These areas are interspersed with irrigated lands that are characterized by higher levels of productivity. As a result, damage to irrigated lands is often a problem in this herd unit, especially in drought periods. However, winters are relatively mild and survival is presumably good in most years.

**Weather**

Conditions during the 2015-2016 winter were relatively mild, although snow cover and colder than normal temperatures persisted from mid-December through mid-January. Conditions moderated and above average temperatures returned during February and early March. Several bouts of snow and cold temperatures returned in late winter, but did not persist. Although annual precipitation was below average, growing season precipitation in 2015 was near to slightly above average.

**Habitat**

No habitat monitoring data is collected in this herd unit. Near normal growing season precipitation may explain the higher than average fawn recruitment in 2015.

**Field Data**

Preseason classifications in 2015 yielded a fawn ratio of 47 fawns:100 does, and a total buck ratio of 82 bucks:100 does. The poor productivity exhibited by this herd (especially in drought periods) is reflected in the fact that in the last 20 years, fawn:doe ratios have only exceeded 50:00 3 times (1996, 2005, 2007). The 20-year (1995-2014) average fawn:doe ratio is only 38.3 fawns:100 does. Adequate sample sizes are often not obtained in this herd unit, and as a result widely varying buck:doe ratios (both adult and yearling) are common.

**Harvest Data**

Permit levels (both doe/fawn and any antelope licenses) were reduced in 2011-2012 as the population declined. Continued high hunter success on all license type is probably a reflection of reduced permit levels and increased hunter access to key irrigated lands with high antelope densities.

**Population**

Conservative hunting seasons and good fawn production (for this herd) allowed this population to substantially exceed the objective by 2005. Measures were taken to increase harvest from 2007-2011, and the population declined. Recent poor fawn crops (31:100 in 2008, 26:100 in 2009, 32:100 in 2010, 39:100 in 2011, 30 in 2012, 27:100 in 2013), coupled with increased female harvest, reduced pronghorn numbers in this herd unit and addressed damage in agricultural areas.

The small size of this pronghorn herd, lack of adequate sample sizes in many years, and widely varying preseason classification data has made modeling attempts difficult, and none of the model scenarios depict a believable population size (1,500-2,600 pronghorn). As a result, a preseason trend count will be recommended as a management objective in the future. For the time being, no changes are proposed for the 2016 hunting season, which should maintain antelope numbers, or allow for a slight increase.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD207 - PAINTROCK

HUNT AREAS: 41, 46-47

PREPARED BY: LESLIE SCHREIBER

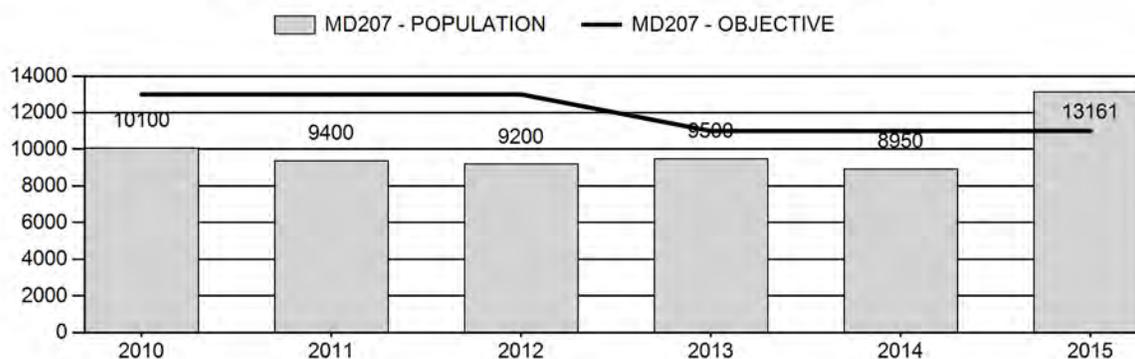
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	9,430	13,161	12,803
Harvest:	894	607	795
Hunters:	1,638	1,240	1,350
Hunter Success:	55%	49%	59%
Active Licenses:	1,730	1,286	1,300
Active License Success:	52%	47%	61%
Recreation Days:	7,235	5,895	6,500
Days Per Animal:	8.1	9.7	8.2
Males per 100 Females	27	31	
Juveniles per 100 Females	64	81	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	20%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/22/2016

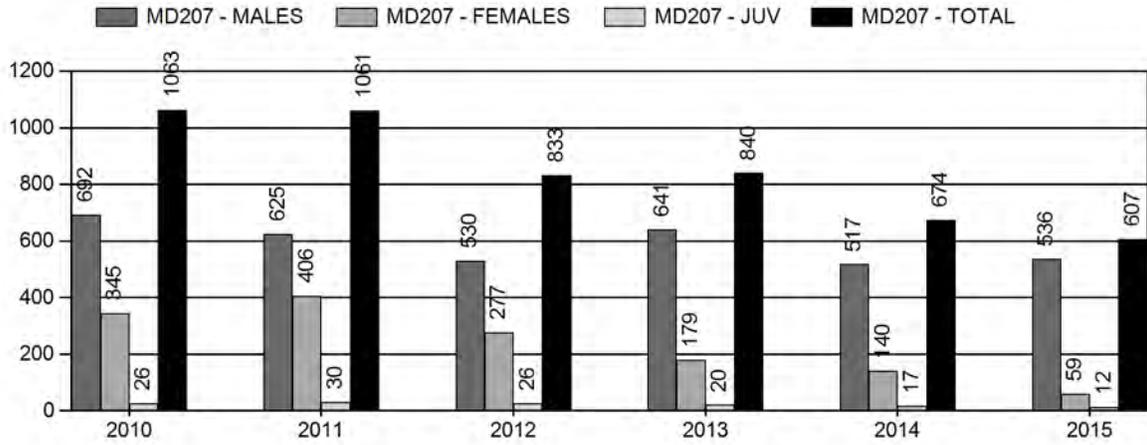
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	9%	15%
Males ≥ 1 year old:	26%	27%
Juveniles (< 1 year old):	2%	3%
Total:	11%	14%
Proposed change in post-season population:	+4%	-3%

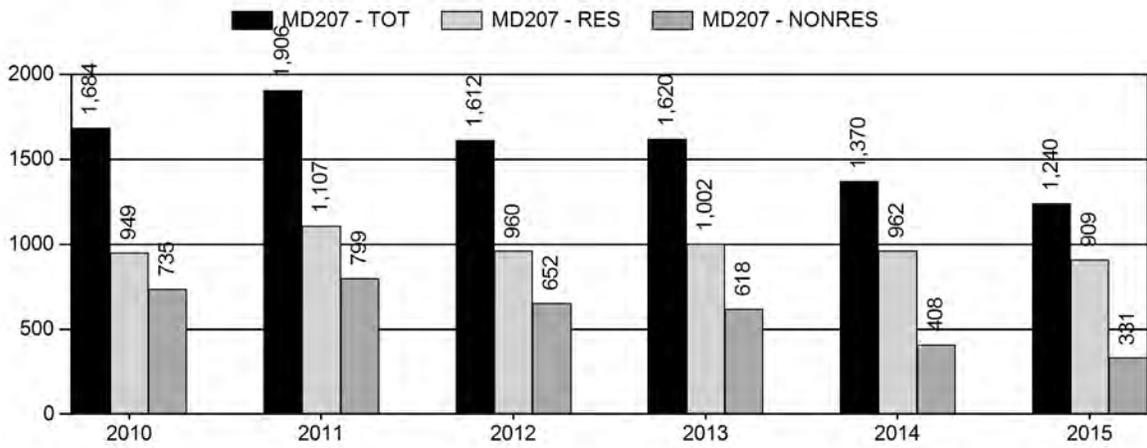
## Population Size - Postseason



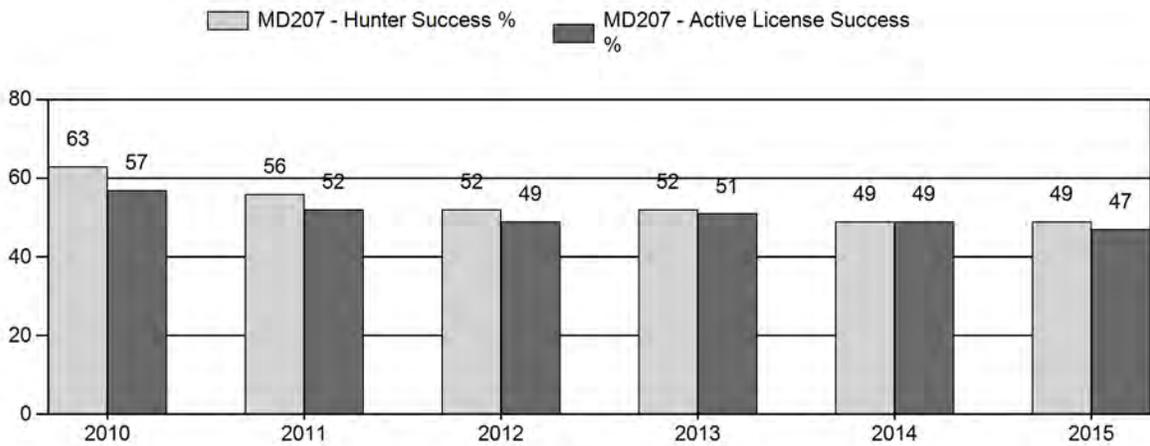
# Harvest



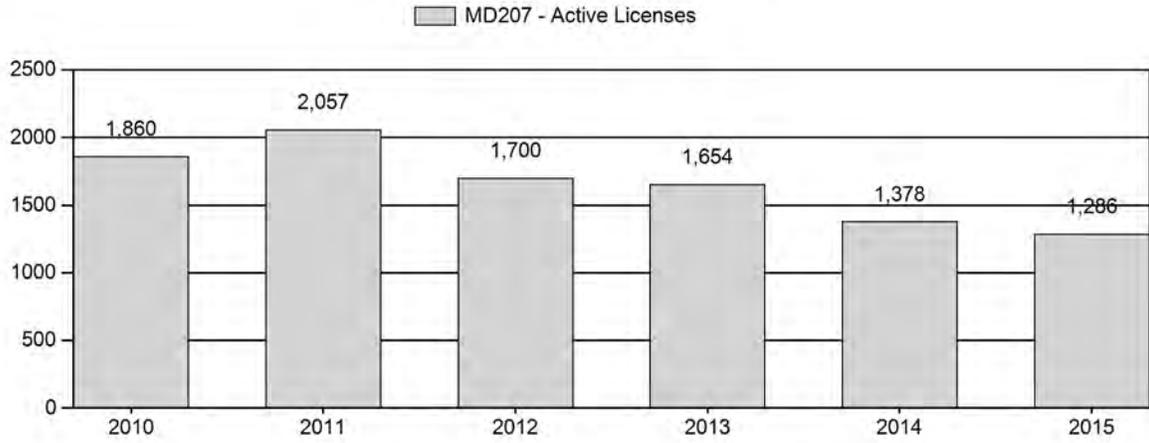
# Number of Hunters



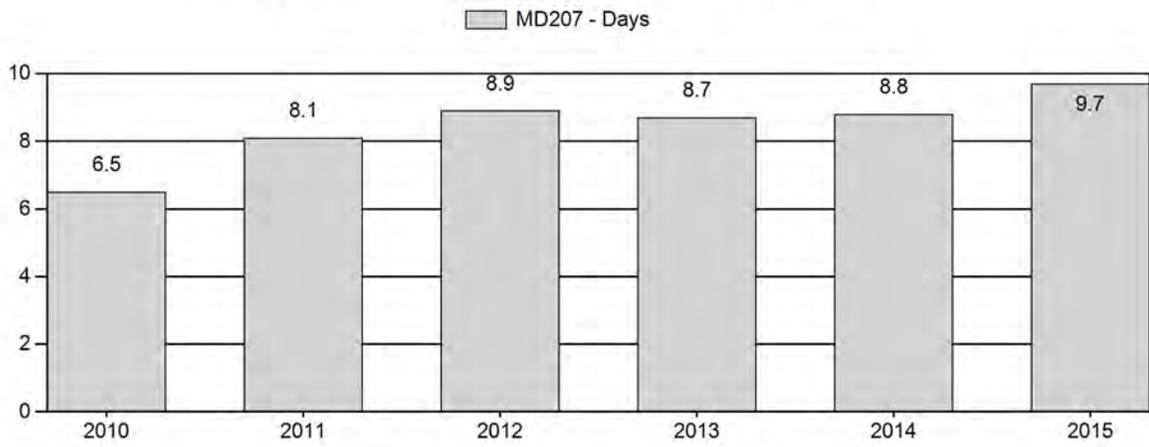
# Harvest Success



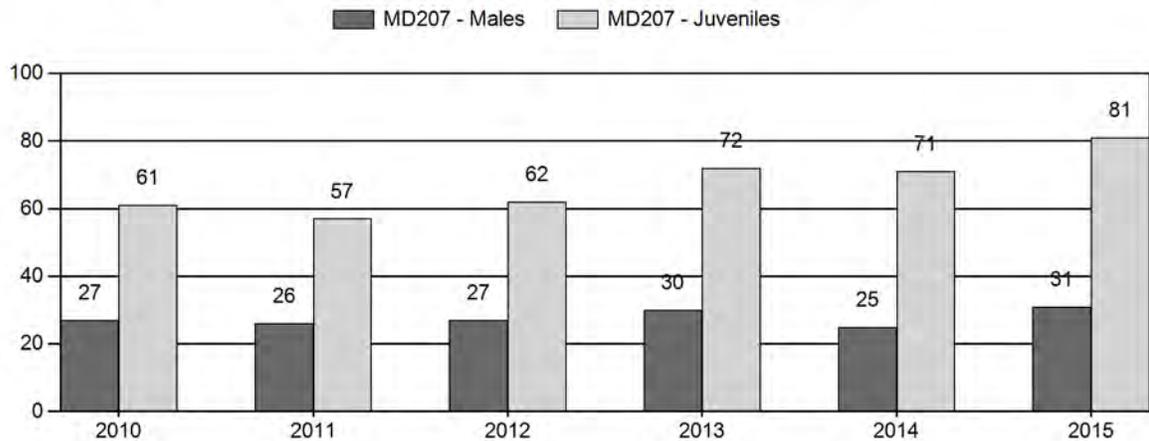
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2010 - 2015 Postseason Classification Summary**

for Mule Deer Herd MD207 - PAINTROCK

Year	Post Pop	MALES							FEMALES		JUVENILES		Males to 100 Females				Young to				
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Tot	Cls	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls							Cls	Obj							
2010	10,100	121	0	0	0	180	301	14%	1,121	53%	682	32%	2,104	1,058	11	16	27	± 2	61	± 3	48
2011	9,400	84	0	0	0	193	277	14%	1,078	55%	612	31%	1,967	1,209	8	18	26	± 2	57	± 3	45
2012	9,200	87	0	0	0	147	234	14%	877	53%	542	33%	1,653	1,060	10	17	27	± 2	62	± 4	49
2013	9,500	98	0	0	0	141	239	15%	789	49%	570	36%	1,598	904	12	18	30	± 3	72	± 5	55
2014	8,950	94	0	0	0	85	179	13%	704	51%	499	36%	1,382	1,167	13	12	25	± 3	71	± 5	57
2015	13,161	115	96	56	5	0	272	15%	864	47%	703	38%	1,839	1,724	13	18	31	± 3	81	± 5	62

**2016 HUNTING SEASONS  
PAINTROCK MULE DEER HERD (MD207)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
41		Oct. 15	Oct. 24		General	Antlered deer
41		Oct. 25	Oct. 31		General	Antlerless deer valid on or within one-half (1/2) mile of irrigated land
41	3	Nov. 1	Nov. 30	75	Limited quota	Any white-tailed deer
41	6	Oct. 15	Nov. 15	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
41	8	Nov. 1	Nov. 30	75	Limited quota	Doe or fawn white-tailed deer
46		Oct. 15	Oct. 24		General	Antlered deer
47		Oct. 15	Oct. 24		General	Antlered deer
47		Oct. 25	Oct. 31		General	Antlerless deer valid on or within one-half (1/2) mile of irrigated land
47, 51	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
47	6	Oct. 15	Nov. 15	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
47	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer

Region R Nonresident general license quota -- 750 licenses

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
41, 46, 47	Sep. 1	Sep. 30

Hunt Area	License Type	Quota change from 2015
41	3	+25
41	6	+75
41	8	+25
47	6	+50
<b>Herd Unit</b>	<b>3</b>	<b>+25</b>
<b>Total</b>	<b>6</b>	<b>+125</b>
	<b>8</b>	<b>+25</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 11,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** ~13,000

**2016 Proposed Postseason Population Estimate:** ~12,800

**2015 Hunter Satisfaction:** 62% Satisfied, 21% Neutral, 17% Dissatisfied

**Herd Unit Issues**

The population objective for the Paintrock mule deer herd was originally set at 13,000 deer in 1995 when the herd unit was created from two pre-existing herd units. After a public review process, the population objective was lowered to 11,000 deer in 2013, because the population

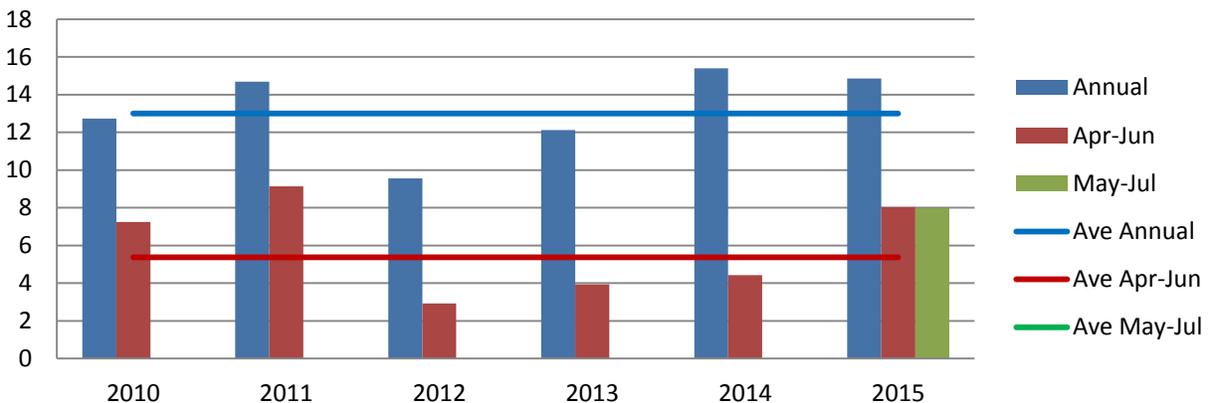
was on a downward trajectory and an objective of 13,000 deer was thought to be unattainable after years of drought.

Human activities are rarely severe enough in this herd unit to affect deer survival and productivity. Bentonite mining and oil/gas development occur on the west side of the herd unit where habitat is marginal. Farming has altered riparian habitat on private land and increased available forage, but landowner tolerance of deer on cropland is low. Antlerless deer hunting seasons are driven by landowner complaints. The majority of this herd unit resides on public land.

**Weather**

Climatic factors affect this deer herd more than human-caused factors. Drought is the most important factor influencing survival and productivity of this deer herd. Drought conditions occurred in 2000-04 and 2012. Annual precipitation from October 2014 through September 2015 was markedly higher than the 30-year average. Precipitation during the growing season (April – June 2015) was markedly higher and the growing season precipitation for high elevation SSF seasonal ranges (May – July 2015) was also markedly higher than the 30-year average. Growing season precipitation was below average the previous 3 years, although 2014 precipitation was well-timed resulting in increased forage for the year.

**MD207 Annual and Growing Season Precipitation with 30 Year Averages**



**Habitat**

Two permanent shrub transects were established in this herd unit. The northern transect, Alkali, was established in 2004, and the southern transect, Renner, in 2013. Data was collected on leader growth, hedging class, age class, and percent utilization. Utilization of sagebrush was low along the Alkali and Renner transects averaging 11% and 5%, respectively, indicating that forage quantity on winter range is not a limiting factor (Appendix B). Snow depth probably determines how many deer concentrate near these sites.

**Field Data**

Low fawn ratios were observed during the drought of 2000-04 averaging 54 fawns:100 does. In years with “normal” precipitation (2005-12), the average was 61 fawns:100 does. Over the past 20 years, total number of deer observed during classification surveys declined. In 1993 and 1994, 3,000 and 3,500 deer were surveyed, respectively. Classification totals dropped to 2,500

or below for the remainder of the 1990s. During the drought of 2000-04, around 2,000 deer were observed. Number of deer classified has rarely been over 2,000 deer since 2005 with the exception of 2007 when ~2,900 deer were classified. With historically low fawn ratios, it was expected this population was decreasing. This downward trend has reversed since 2013 likely due to excellent fawn production (>70 fawns:100 does). Farmland was surveyed from the ground and higher elevation winter ranges were surveyed from a helicopter. Flight budgets have not kept up with cost per hour, so less time has been allowed to locate deer causing survey effort to decrease.

Recreational management of this herd dictates the maintenance of 20-29 bucks:100 does. During the mid 1980s, buck ratios increased from 15:100 to around 30:100 through the early 1990s. A gradual decline in buck ratios occurred through the late 1990s to 16:100 in 2000, followed by an increase to 30:100 in the mid-2000s. Between 2009-14, the buck ratio has been stable at approximately 27:100. In 2015, the buck ratio sharply increased to 44:100. At the same time, the general license was changed from “any deer” to “antlered deer” in an effort to arrest the previously noted downward trend.

### **Harvest Data**

Buck harvest can depend on hunting season regulations, number of bucks available in the population, hunter numbers, snow depth and weather at higher elevations affecting migration, and access to public land from roads affected by snow depth. Hunting season structure in this herd unit has remained fairly constant over the past 20 years with the General season open Oct. 15 through Nov. 4. Depending on trends in sex and age ratios, some Hunt Areas changed between “any deer” and “antlered deer” over the years. When the buck ratio dropped to 16:100 in 2001, a 4-point antler restriction was enacted during the 2002 and 2003 hunting seasons. Buck harvest decreased significantly and hunter effort increased those 2 years.

Although this herd’s buck ratios have historically been within the range of recreational management, many of these bucks are young and/or small (<20” antler spread). A vocal contingent of hunters was dissatisfied with the lack of mature bucks. In the electronic comments received for the 2014 hunting season, 13 hunters criticized the lack of mature bucks and some advocated a point restriction. For the 2015 hunting season, this number increased to 17 hunters.

Nonresident hunters typically take 60% of all harvested bucks, but only make up 40% of all hunters. Many nonresidents harvest the first buck they see; thus, many small (<20” antler spread) deer are harvested. When Region R was created in 1996, the nonresident quota was 1,500 hunters. That level was adjusted to 1,000 hunters in 2004 due to declining buck ratios and again in 2014 to 750 hunters.

Doe/fawn licenses were issued in response to landowner concerns of too many deer in crops and may reflect fluctuations in population level. In the 1980s through early 1990s, 600-1,000 doe/fawn licenses were issued. Between 1995-99, 0-50 doe/fawn licenses were issued. Number of doe/fawn licenses increased to between 350-500 during 1997-2011, and 100-150 during 2012-15.

### **Population**

The time-specific juvenile, constant adult (TSJ,CA) survival model estimated this population was at objective (13,000 deer) through the late 1990s. Beginning with the extended drought in 2000-04, this population began decreasing, except for a spike in 2007. By 2012, the population

had reached a low of 9,000 deer. For 2015, the spreadsheet model estimated this herd at 13,000 deer which represents a 32% increase in 1 year and also 20% above the new objective of 11,000 deer. While the constant juvenile, constant adult survival model had the lowest AIC score (127), the TSJ, CA model was chosen, because the AIC score (144) is within the same order of magnitude and it biologically makes sense that fawn survival varies temporally. Survival constraints matched normal criteria. This model performs *fair* and the results are biologically defensible, but the model could benefit from a sample-based population estimate with standard errors.

### **Management Summary**

Several indices suggest the Paintrock mule deer population was in decline since the early 1990s, but that trend is in reverse since 2013. Seasons will result in an increased doe harvest by extending the general season for antlerless deer on irrigated land. This restriction controls deer causing crop damage, while allowing for the deer population to grow on public land and allowing nonresidents to harvest does. Buck ratios have recently remained stable; however, that may be more of a factor of less does in the population. Many hunters have urged more conservative buck seasons (4-points or better) to increase buck numbers to previous levels and to increase number of trophy (>25" antler width) bucks available. Placing a point restriction on the General license season and/or reducing the nonresident quota are usually only proposed if buck ratios indicate drastic declines. In this case, buck ratios have been stable for the past five years, and have markedly increased this past year.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD208 - SOUTHWEST BIGHORNS

HUNT AREAS: 35-37, 39-40, 164

PREPARED BY: BART KROGER

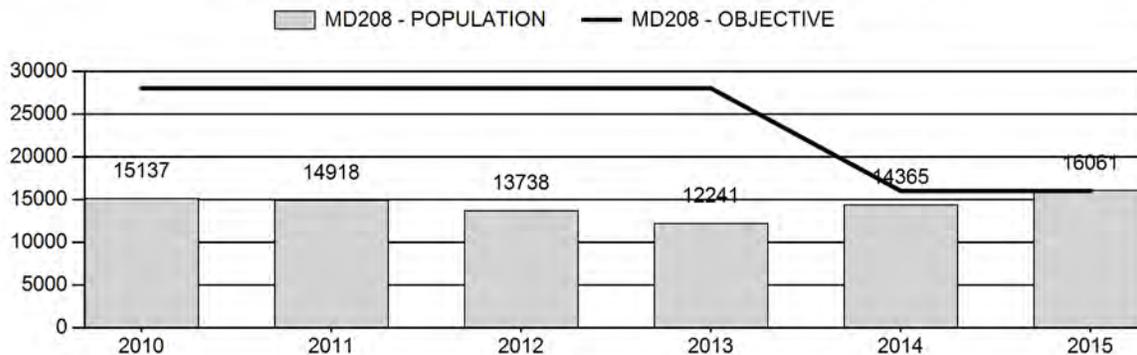
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	14,080	16,061	15,881
Harvest:	1,265	1,099	1,250
Hunters:	2,177	1,946	2,050
Hunter Success:	58%	56%	61%
Active Licenses:	2,341	1,960	2,100
Active License Success:	54%	56%	60%
Recreation Days:	9,882	7,872	8,500
Days Per Animal:	7.8	7.2	6.8
Males per 100 Females	30	35	
Juveniles per 100 Females	62	78	

Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/19/2016

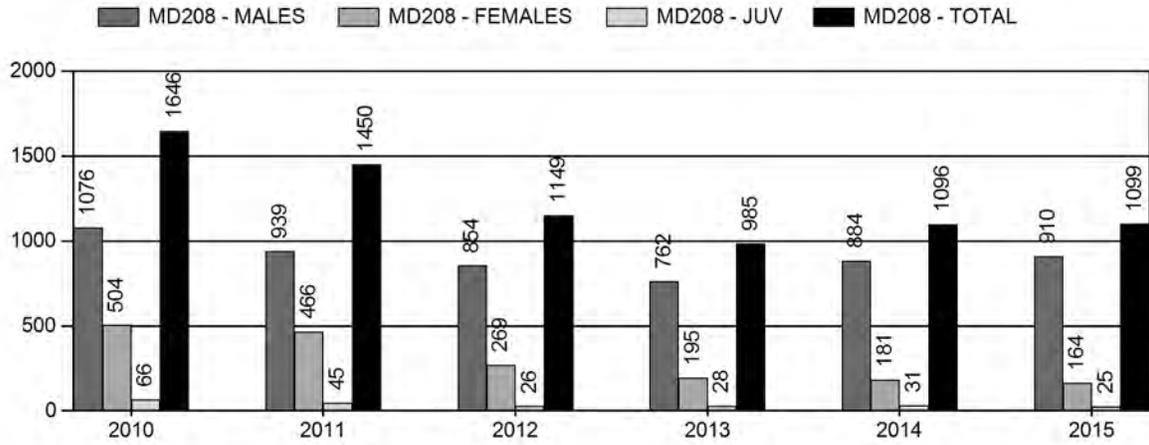
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2%	3%
Males ≥ 1 year old:	25%	25%
Juveniles (< 1 year old):	0.2%	0.2%
Total:	6%	6%
Proposed change in post-season population:	+12%	-1%

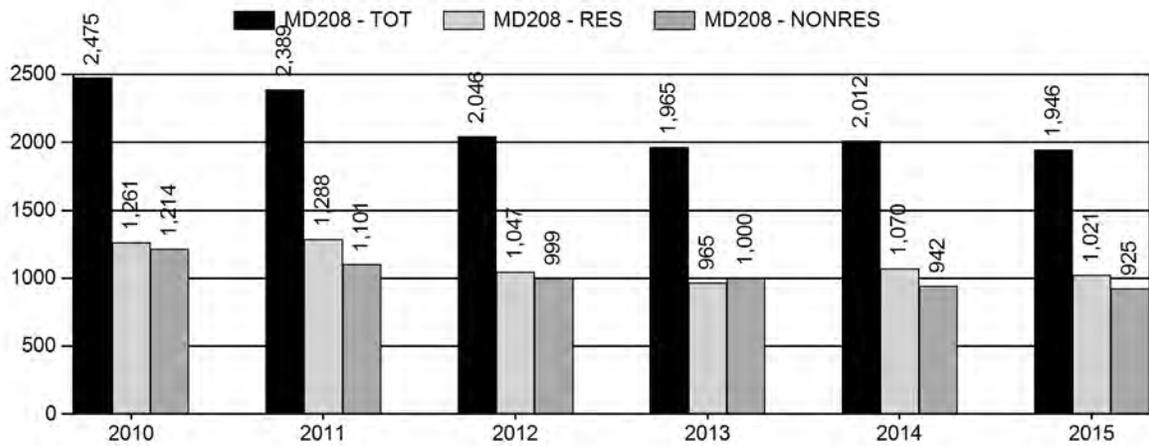
## Population Size - Postseason



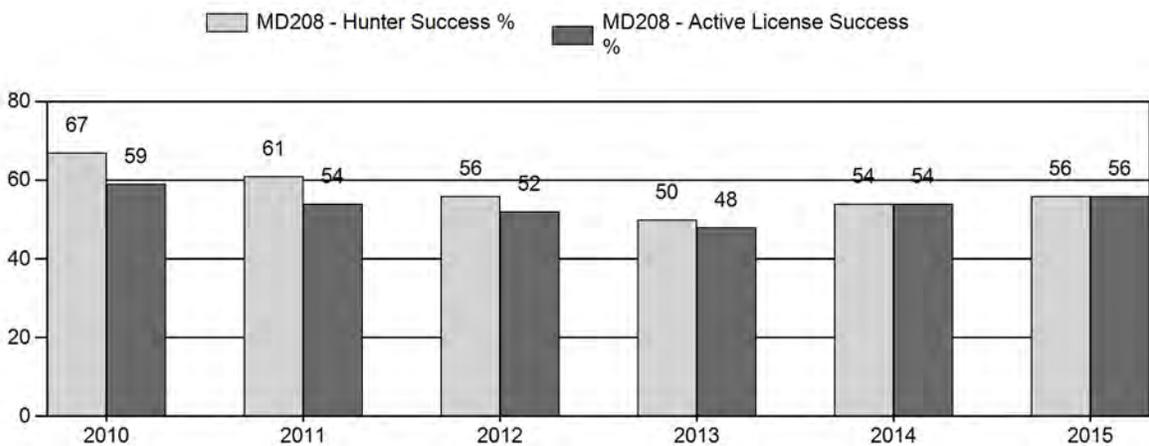
# Harvest



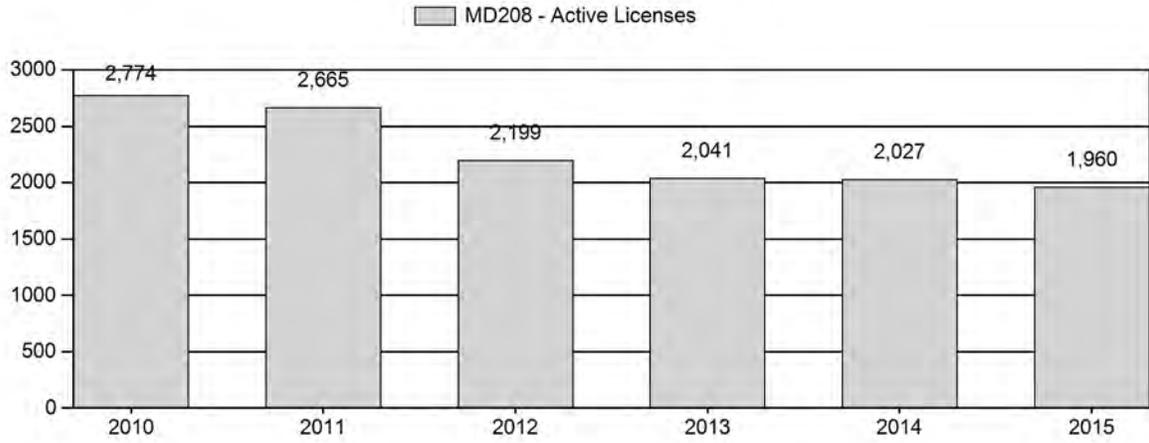
# Number of Hunters



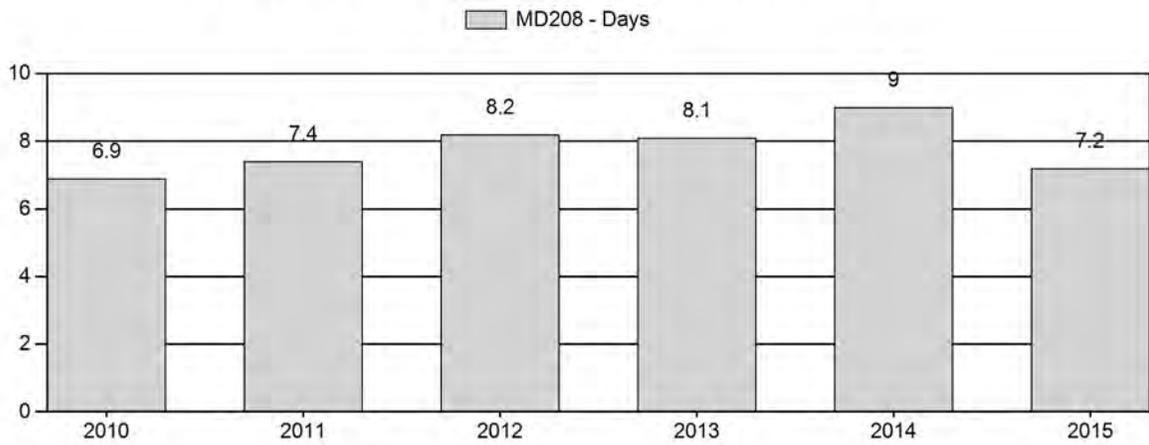
# Harvest Success



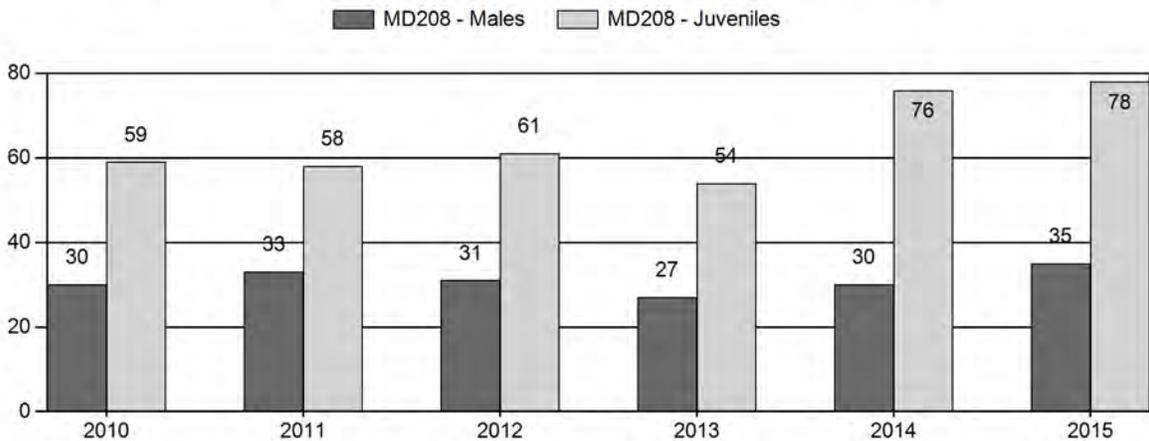
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD208 - SOUTHWEST BIGHORNS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	15,137	93	0	0	0	185	278	16%	930	53%	553	31%	1,761	1,111	10	20	30	± 2	59	± 4	46
2011	14,918	56	0	0	0	181	237	17%	721	52%	419	30%	1,377	1,094	8	25	33	± 3	58	± 4	44
2012	13,738	56	0	0	0	141	197	16%	633	52%	383	32%	1,213	1,152	9	22	31	± 3	61	± 5	46
2013	12,241	76	0	0	0	153	229	15%	858	55%	464	30%	1,551	918	9	18	27	± 2	54	± 4	43
2014	14,365	93	40	40	6	83	262	14%	882	49%	674	37%	1,818	1,584	11	19	30	± 3	76	± 5	59
2015	16,061	107	102	67	16	40	332	16%	961	47%	747	37%	2,040	814	11	23	35	± 3	78	± 5	58

**2016 HUNTING SEASONS  
SOUTHWEST BIGHORNS MULE DEER HERD (MD208)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
35		Oct. 15	Oct. 31		General	Any deer
36	1	Oct. 15	Oct. 31	375	Limited quota	Antlered mule deer or any white-tailed deer
36	8	Oct. 15	Oct. 31	25	Limited quota	Doe or fawn white-tailed deer
37	1	Oct. 1	Oct. 20	200	Limited quota	Antlered deer
37	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
37	6	Sep. 1	Nov. 15	100	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land within the Buffalo Creek drainage
39		Oct. 15	Oct. 25		General	Antlered deer
40		Oct. 15	Oct. 31		General	Antlered deer valid on national forest; any deer off national forest
40	6	Oct. 15	Oct. 31	100	Limited quota	Doe or fawn valid on private land
40	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
164		Oct. 1	Oct. 10		General	Any deer
164	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
164	6	Oct. 25	Nov. 15	75	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land

Region M Nonresident general license quota – 800 licenses

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
35, 36, 37, 39, 40, 164	Sep. 1	Sep. 30

Hunt Area	Type	Quota change from 2015
36	1	General to LQ
37	1	+50
37	3	+10
37	6	+75
40	6	+50
164	6	New Type, +75
Region M	Gen	-200
<b>HU Total</b>	<b>Gen</b>	<b>-200</b>
	<b>1</b>	<b>+50</b>
	<b>3</b>	<b>+10</b>
	<b>6</b>	<b>+200</b>

## **Management Evaluation**

**Current Postseason Population Management Objective:** 16,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 16,100

**2016 Proposed Postseason Population Estimate:** 15,900

**2015 Hunter Satisfaction:** 63% satisfied, 19% neutral, 17% dissatisfied

## **Herd Unit Issues**

The herd unit is about 70% public land and 30% private land. Deer densities are typically higher in the mid to upper elevations, while the lower elevation desert areas supporting fewer deer. Poor habitat conditions, long-term drought, and crop damage continue to be major management concerns for this herd. Chronic wasting disease and hemorrhagic disease are both common in this deer herd. Hunter access in the southern and eastern portion of this herd is very difficult because of restrictive private lands. The herd objective and management strategy was evaluated and approved in 2014.

## **Weather**

The winters of 2010/11, 2012/13 and 2013/14 were severe enough in the southern Bighorn Basin to have caused significant mortality in this herd, thus keeping this population well below objective. It wasn't until above normal spring and early summer moisture in 2014 and 2015 that this herd started showing improving numbers, mainly because of record high fawn production. The 2015/16 winter has been mostly mild, with little snow cover and mild temperatures.

## **Habitat**

Habitat conditions have declined in this herd unit since the onset of drought in the 1990's. Much of the herd unit is supported by vast areas of cheatgrass, due to large wildfires in 1996. Little to no regeneration of sagebrush and native herbaceous species has occurred since those fires. Two sagebrush transects were established in this herd unit in September 2004 (Appendix C). Overall, annual production (leader growth) for these transects has average around 2.0cm. Winter utilization remains low at about 10% for these transects.

## **Field Data**

Both aerial and ground surveys are used in obtaining post-season classification data for this deer herd. Adequate sample sizes are typically exceeded, mainly because routine classification routes for each hunt area are maintained. Post-season fawn have remained fairly consistent in this herd unit, averaging 60 fawns:100 does. However, in 2014 and 2015 fawn ratios jumped to 76 and 78:100. This has resulted in an overall increase in the deer population for the herd unit. This is also reflected in the post-season classification sample sizes, which have improved by 68% since 2012. Buck ratios average around 32:100.

## **Harvest Data**

Recent harvest statistics further support increasing deer numbers in this herd. Since 2012, overall buck harvest has increased by nearly 20%, while hunter effort has improved by 1.5 days. During this same period, harvest success has increased by 6%. These harvest trends are reflective of field personnel perceptions that deer numbers have increased slightly and hunting conditions have improved.

## **Population**

The Time-Specific Juvenile and Constant Adult Survival (TSJ, CA) spreadsheet model best represents the long-term population trend for this herd. Although the model has the highest AIC (n=132), it also has the best fit (n=3) of all three models. The model supports an adequate representation of recent trends in the population and best reflects the current perceptions of field personnel, harvest statistics and classification sample sizes. Overall, the model is considered a fair to good representation of the herd.

## **Management Summary**

Because of improving deer numbers and the fact this herd is at objective, we will be staying with mostly conservative seasons, but allowing doe/fawn harvest to increase in those areas where damage issues are a concern. The Lander Region is changing Hunt Area 36 to limited quota, due to hunter complaints regarding low deer numbers as well as poor hunting quality. A quota of 375 licenses in area 36 is based on the past three year average number of hunters. No changes to the general license seasons will be made. Hunt Area 37 will have an earlier opening date, to coincide with area 164. The Area 37 Type 1 quota will increase by 50 licenses due to its high buck ratio (>40:100). Because of overall improving deer numbers, areas 37, 40 and 164 will see increased license quotas for doe/fawn. Because area 36 is going limited quota, the Region M nonresident quota is being reduced by 200 to compensate for the likely displacement of nearly 200 nonresident and resident hunters into the remaining general areas in Region M. The 2015 herd unit buck ratio of 35:100 warrants additional buck harvest should occur in Region M, however this herd unit ratio is mostly inflated by the Area 37 ratio of 45:100, in which the Type 1 quota is being increased. The projected 2016 harvest is about 1250 deer, and a post-season 2016 estimate of around 15,900 deer.



## 2015 - JCR Evaluation Form

SPECIES: Mule Deer  
 HERD: MD209 - BASIN  
 HUNT AREAS: 125, 127

PERIOD: 6/1/2015 - 5/31/2016  
  
 PREPARED BY: BART KROGER

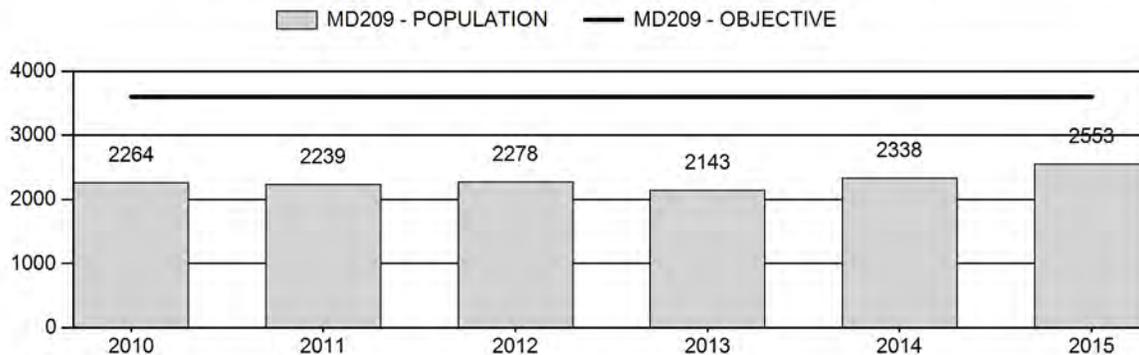
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	2,252	2,553	2,690
Harvest:	193	139	140
Hunters:	343	285	280
Hunter Success:	56%	49%	50 %
Active Licenses:	375	285	280
Active License Success:	51%	49%	50 %
Recreation Days:	1,552	1,052	1,000
Days Per Animal:	8.0	7.6	7.1
Males per 100 Females	33	36	
Juveniles per 100 Females	56	74	

Population Objective (± 20%) :	3600 (2880 - 4320)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-29.1%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/23/2016

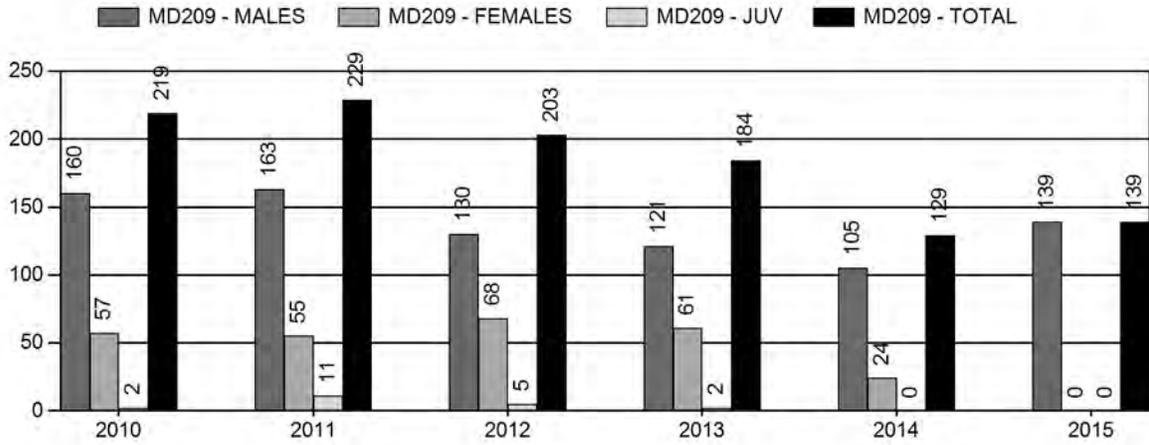
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	23%	24%
Juveniles (< 1 year old):	0%	0%
Total:	5%	5%
Proposed change in post-season population:	+3%	+2%

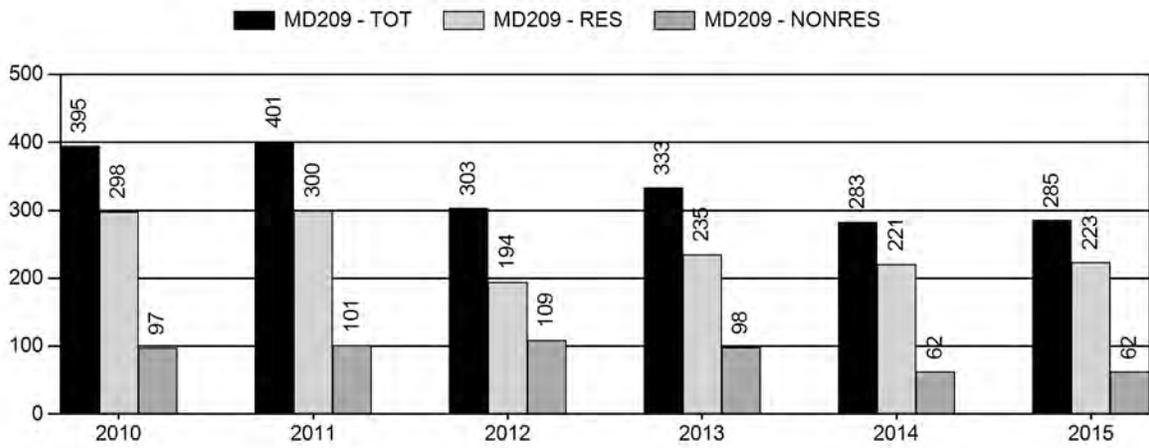
## Population Size - Postseason



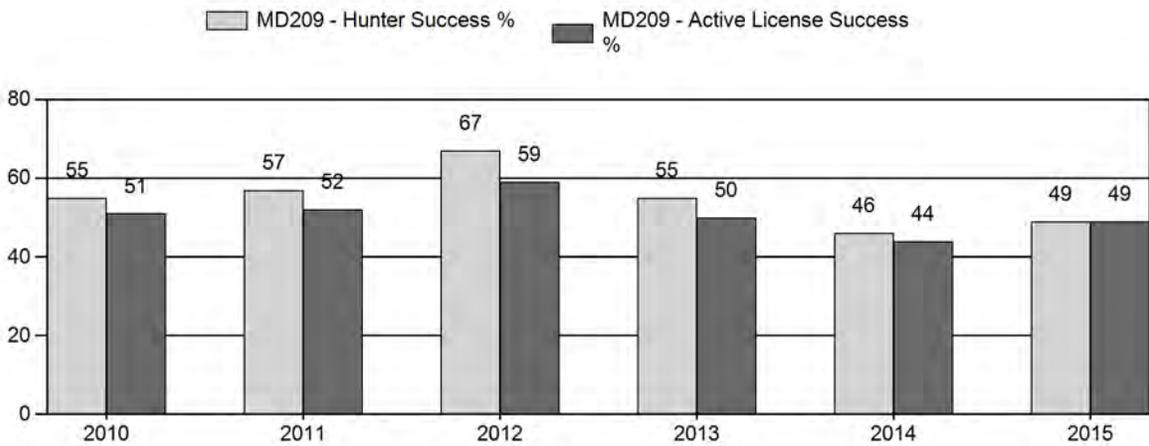
# Harvest



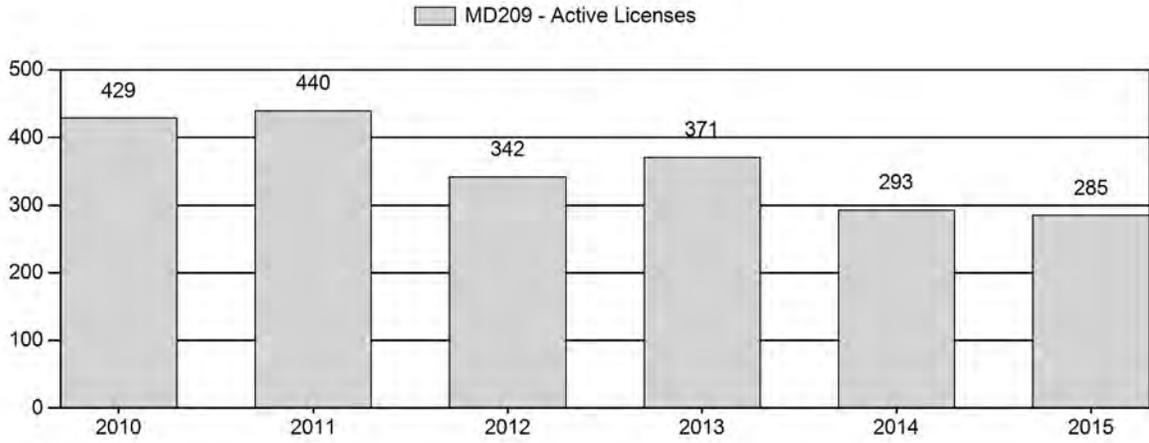
# Number of Hunters



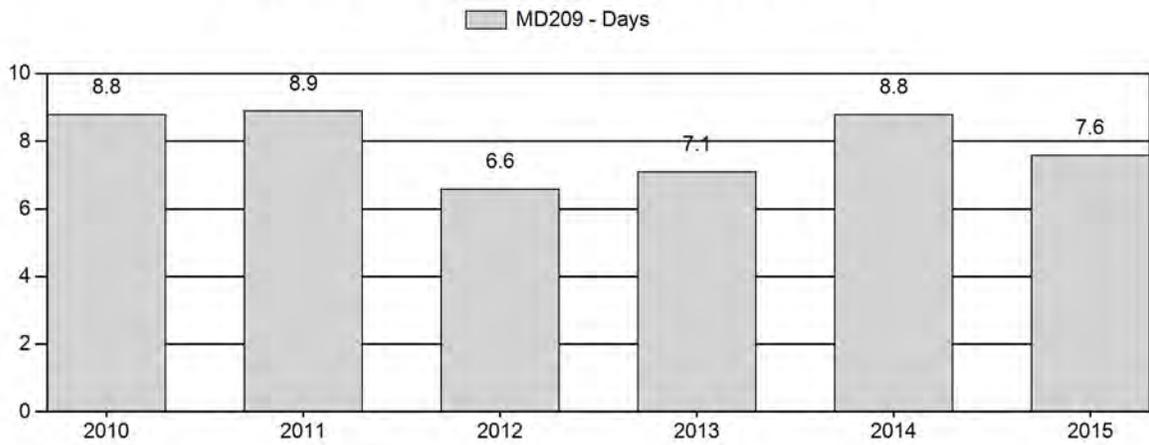
# Harvest Success



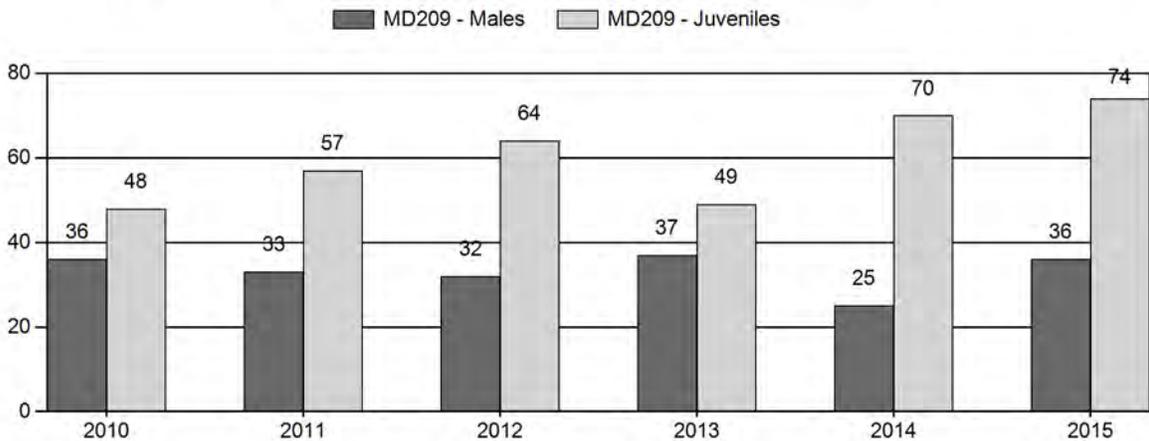
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD209 - BASIN

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls	2+ Cls 1	2+ Cls 2	2+ Cls 3	UnCls	Total	%	Total	%	Total			%	Yng	Adult	Total	Conf Int	100 Fem	Conf Int
2010	2,264	60	0	0	0	96	156	20%	435	54%	208	26%	799	635	14	22	36	± 3	48	± 4	35
2011	2,239	25	0	0	0	65	90	17%	274	53%	156	30%	520	811	9	24	33	± 4	57	± 6	43
2012	2,278	27	0	0	0	49	76	16%	236	51%	150	32%	462	878	11	21	32	± 5	64	± 8	48
2013	2,143	30	0	0	0	58	88	20%	236	54%	116	26%	440	669	13	25	37	± 5	49	± 6	36
2014	2,338	17	0	0	0	35	52	13%	210	51%	147	36%	409	998	8	17	25	± 4	70	± 9	56
2015	2,553	33	44	23	5	0	105	17%	295	48%	218	35%	618	1,118	11	24	36	± 5	74	± 7	54

**2016 HUNTING SEASONS  
BASIN MULE DEER HERD (MD209)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
125	1	Nov. 1	Nov. 15	100	Limited quota	Antlered deer
127		Oct. 15	Oct. 24		General	Antlered deer
127	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
125, 127	Sep. 1	Sep. 30

Hunt Area	Type	Quota change from 2015
127	3	+10
<b>HU Total</b>	<b>3</b>	<b>+10</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 3,600

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 2,600

**2016 Proposed Postseason Population Estimate:** 2,700

**2015 Hunter Satisfaction:** 63% satisfied, 19% neutral, 18% dissatisfied

**Herd Unit Issues**

Deer densities in this herd unit are higher on and around private irrigated lands, whereas the dry desert areas support fewer deer. Poor habitat conditions, long-term drought, and recent EHD outbreaks continue to be major management concerns for this herd. Much of the herd unit is arid desert shrubland, thus limiting the options for vegetation treatment because of the potential for cheatgrass invasion. Since 2006, five guzzlers have been installed to provide additional water sources for deer in this herd unit.

**Weather**

The winters of 2010/11, 2012/13 and 2013/14 were severe enough in the Bighorn Basin to have caused significant mortality in this herd, thus keeping this population well below objective. It wasn't until above normal spring and early summer moisture in 2014 and 2015 that this herd started showing improving numbers. The 2015/16 winter has been mostly mild, with little snow cover and mild temperatures.

**Habitat**

Most of this herd unit lies within a 5-9" precipitation zone, with limited opportunity to increase forage quality of native plant communities. Drought conditions have also affected available water in many stock reservoirs and perennial streams. One sagebrush transect (5-Mile Creek) was established in this herd unit in 2004 (Appendix A). Average sagebrush leader growth since 2008 has average 3cm, with utilization levels at about 17%. Overall, habitat conditions in this

herd unit are considered poor to fair at best because of past long-term drought. Until normal moisture regimes return, herd growth and survival will be limited by current habitat conditions.

### **Field Data**

Aerial classifications surveys are used in obtaining post-season buck and fawn ratio for this deer herd. Routine classification routes for each Hunt Area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified has declined dramatically in recent years. In 2009, 820 deer were classified, while in 2014 only 409 were classified; a decline of 50%. However, the 2015 classification resulted in 618 deer being classified. This recent increase is likely the result of record high fawn ratios in 2014 and 2015. The 2014 fawn ratio was 70:100, and the 2015 was 74:100. The buck ratio has averaged around 33:100 the past 6-years.

Spotlight surveys along Gooseberry Creek in area 125 have also been used to monitor relative trends in deer densities along Gooseberry Creek. Based on these surveys, the number of deer counted has declined by about 75% since the early 1990's, 50% since the late 1990's, and has stayed fairly stable through the 2000's, with roughly about 100 deer being observed annually in recent years. However, the 2015 survey resulted in about 150 deer being observed. These past declining trends along with the recent increase in numbers are reflective of field personnel perceptions.

### **Harvest Data**

Recent harvest statistics do support a declining deer population. Since 2009, overall buck harvest during the general season has declined by 50%, whereas hunter numbers have only dropped by 25%. Most hunters and landowners continue to report deer numbers are down. Based on the 2014 hunter satisfaction survey, only 50% of the hunters surveyed in this herd unit indicated they were either satisfied or very satisfied with their overall hunting experience, whereas in 2013, 70% were either satisfied or very satisfied. The buck harvest did improve in 2015 along with hunter success and hunter effort. Again, this is likely the result of recent improving deer numbers due to record high fawn ratios.

### **Population**

The Constant Juvenile & Adult Survival (CJ, CA) spreadsheet model was chosen to represent this herd based on its population trend. This model has the second lowest AIC value (n=90) of all the models, yet its trends reflect that of field personnel perceptions, along with most hunters and landowners. The model is considered to be a fair representative of herd trend and population estimate. Because of past declining trends, and that we are below objective by 28%, we will be staying with mostly conservative seasons.

### **Management Summary**

No change to the 2016 seasons will occur. Although deer numbers are increasing slightly, no damage issues have been raised. The projected 2016 harvest is roughly 140 buck deer, with a 2016 post-season population of 2,700 deer.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD210 - GREYBULL RIVER

HUNT AREAS: 124, 165

PREPARED BY: LESLIE SCHREIBER

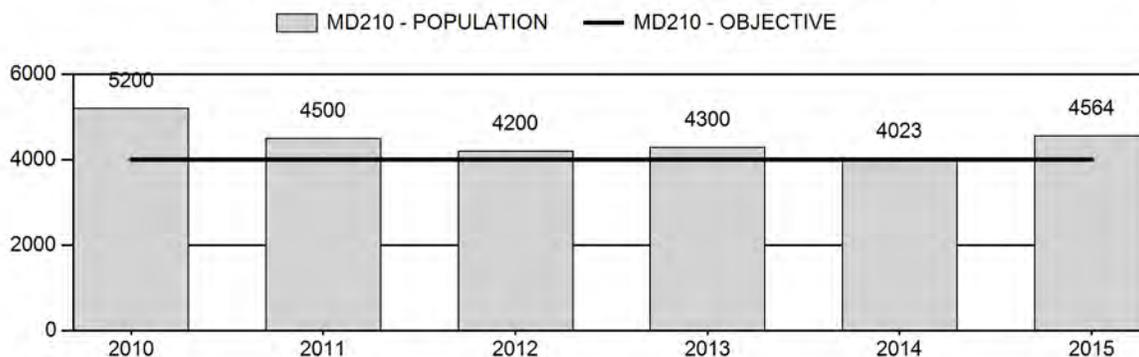
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	4,445	4,564	4,683
Harvest:	726	544	760
Hunters:	1,054	883	925
Hunter Success:	69%	62%	82 %
Active Licenses:	1,239	1,001	1,100
Active License Success:	59%	54%	69 %
Recreation Days:	4,506	3,235	3,750
Days Per Animal:	6.2	5.9	4.9
Males per 100 Females	35	44	
Juveniles per 100 Females	75	90	

Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	14%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/22/2015

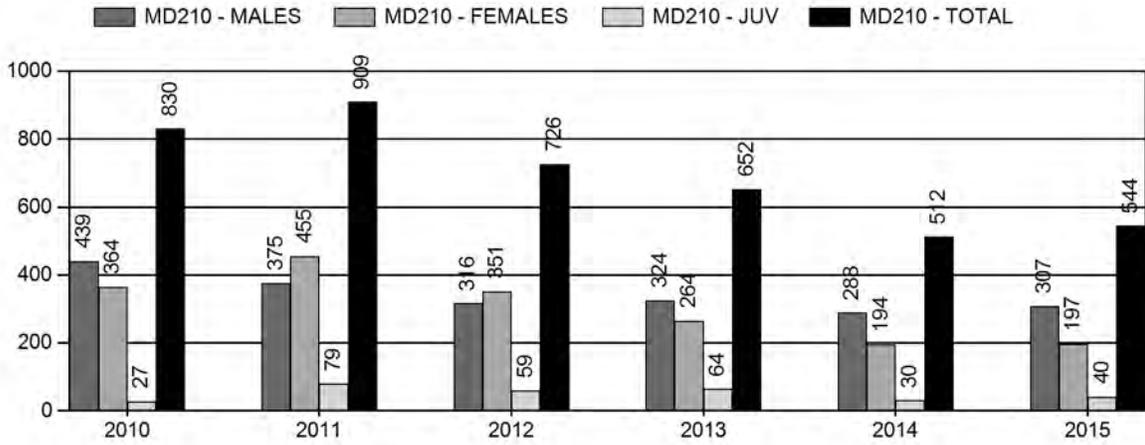
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	11%	15%
Males ≥ 1 year old:	35%	27%
Juveniles (< 1 year old):	2%	3%
Total:	13%	14%
Proposed change in post-season population:	-10%	3%

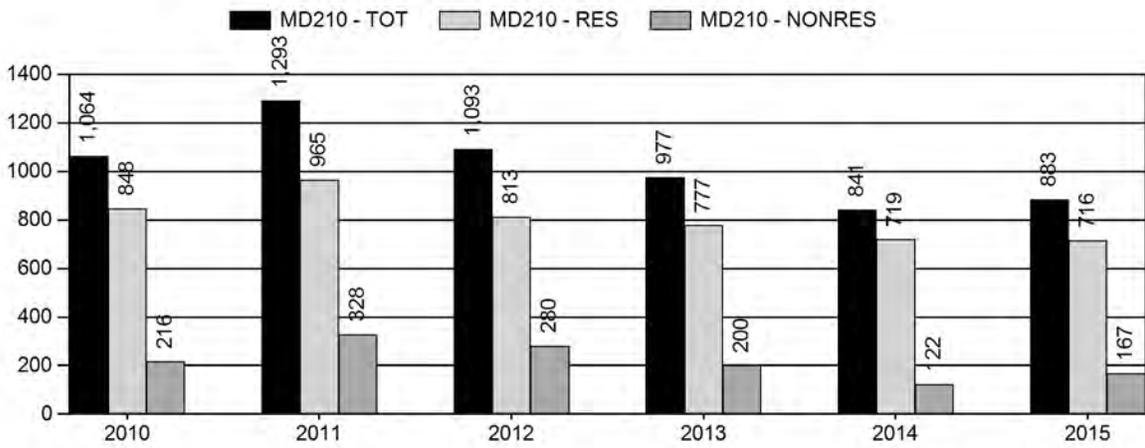
## Population Size - Postseason



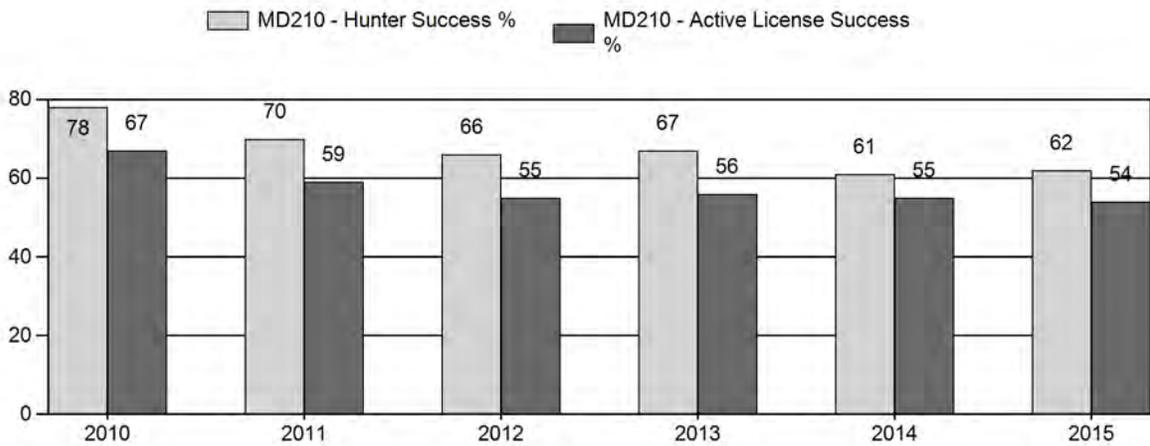
# Harvest



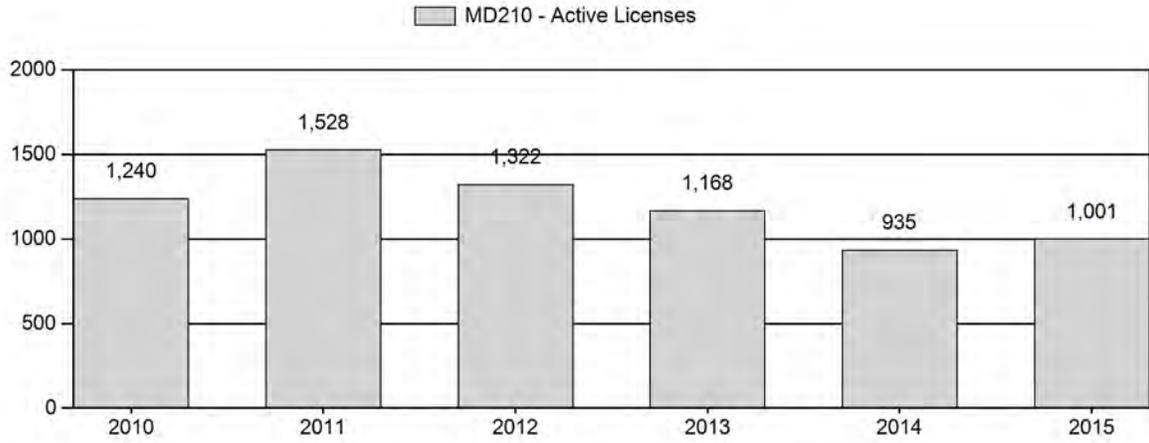
# Number of Hunters



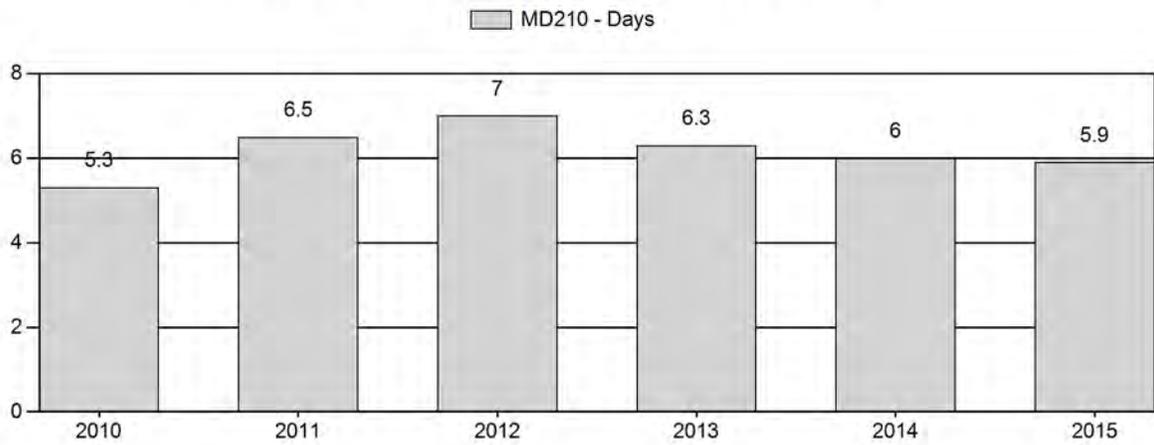
# Harvest Success



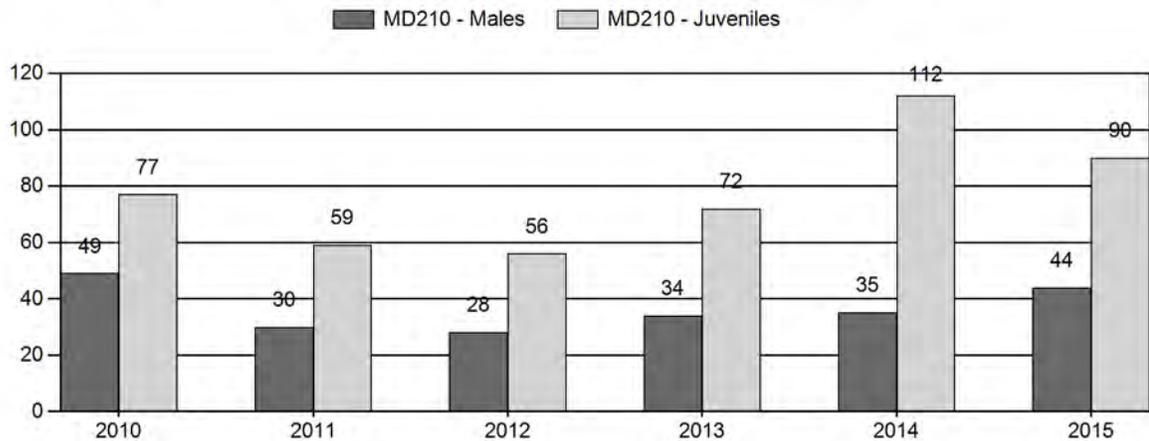
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2010 - 2015 Postseason Classification Summary**

for Mule Deer Herd MD210 - GREYBULL RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Males to 100 Females				Young to				
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Tot	Cls	Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls							Cls	Obj							
2010	5,200	87	0	0	0	139	226	22%	465	44%	357	34%	1,048	985	19	30	49	± 5	77	± 6	52
2011	4,500	47	0	0	0	113	160	16%	530	53%	315	31%	1,005	1,054	9	21	30	± 3	59	± 5	46
2012	4,200	65	0	0	0	94	159	15%	571	54%	320	30%	1,050	959	11	16	28	± 3	56	± 4	44
2013	4,300	47	0	0	0	95	142	17%	416	48%	301	35%	859	915	11	23	34	± 4	72	± 6	54
2014	4,023	69	0	0	0	114	183	14%	525	40%	590	45%	1,298	1,331	13	22	35	± 3	112	± 7	83
2015	4,564	68	71	50	4	6	199	19%	454	43%	410	39%	1,063	1,529	15	29	44	± 4	90	± 7	63

**2016 HUNTING SEASONS  
GREYBULL RIVER MULE DEER HERD (MD210)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
124		Nov. 1	Nov. 10		General	Any deer
124	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
124	6	Oct. 15	Nov. 30	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
124	7	Nov. 1	Nov. 30	100	Limited quota	Doe or fawn valid west of Wyoming Highway 30 and Big Horn County Road 8, on or within one-half (1/2) mile of irrigated land
124	8	Nov. 1	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
165	1	Oct. 15	Oct. 31	125	Limited quota	Any deer
165	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
165	6	Oct. 1	Oct. 31	100	Limited quota	Doe or fawn valid on private land
165	8	Nov. 1	Nov. 30	100	Limited quota	Doe or fawn white-tailed deer
<b>Archery:</b>						
124, 165		Sep. 1	Sep. 30			Refer to Section 2 of this Chapter

Region X nonresident general license quota -- 300

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
124, 165	Sep. 1	Sep. 30

Hunt Area	License Type	Quota Change from 2015
124	6	+100
<b>Herd Unit Total</b>	<b>6</b>	<b>+100</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 4,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** ~4,500

**2016 Proposed Postseason Population Estimate:** ~4,500

**2015 Hunter Satisfaction:** 60% Satisfied, 20% Neutral, 20% Dissatisfied

**Herd Unit Issues**

The population objective for the Greybull River mule deer herd was increased from 3,000 to 4,000 deer in 1994 after revisions to the POP-II model. The population objective remained

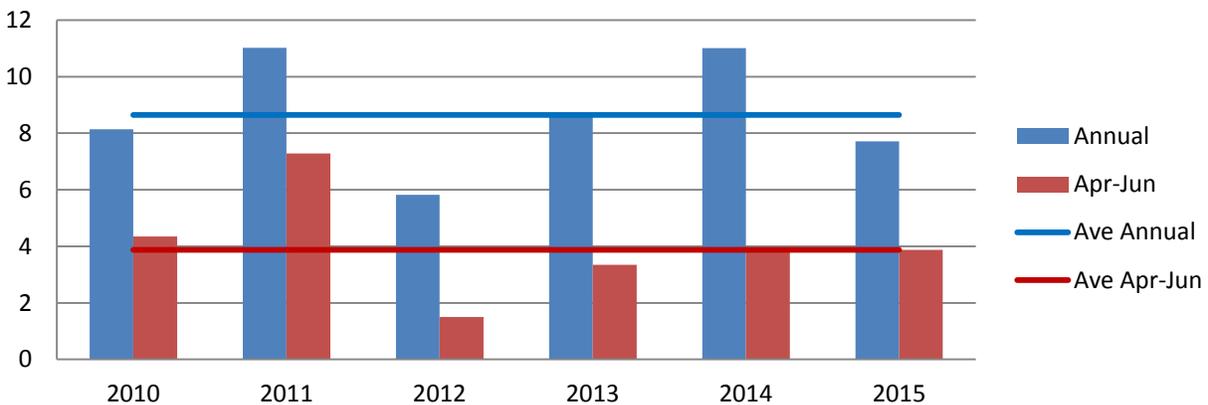
unchanged following reviews in 2002, 2007, and 2015. Greybull River deer are managed for recreational hunting.

Anthropogenic factors are probably having only a slight influence on survival and productivity of this herd. There are several oil/gas wells scattered across the herd unit and 1 major field, Oregon Basin. Urban expansion has not been a major concern in the area. Although agriculture has altered riparian areas, farming has increased the amount of forage for deer. Landowner tolerance of deer on cropland is low. The majority of the herd unit is composed of public land, but the bulk of the deer congregate on private agriculture fields.

**Weather**

Habitat quality is probably most affected by desert-like conditions (< 12” annual precipitation) and poor soils. Both factors have allowed cheatgrass to invade and dominate some sites. Drought conditions occurred in 2000-04 and 2012. Effects of drought on upland vegetation resulted in a shift of deer to agricultural fields. However, drought effects are currently subsiding. Well-timed growing season precipitation in 2013-15 resulted in increased forage.

**MD210 Annual and Growing Season Precipitation with 30 Year Averages**



**Habitat**

There is one sagebrush browse transect in this herd unit in Dry Creek Basin, but it was established in an area of low deer density to evaluate pronghorn winter range. Mortality of individual sagebrush plants and increased precipitation in 2005, 2007, 2009, 2011, and 2014 allowed for increased growth of herbaceous vegetation and new growth of sagebrush and other shrub species. The resulting decrease in density of older sagebrush and increase in overall plant diversity may have long-term benefits for deer habitat.

**Field Data**

Post-season classification surveys conducted from the ground were used to monitor this population. Hunting seasons last the entire month of November and classification surveys took place in December after the peak rut. By then, deer along the Greybull River do not come out of heavy cover until a few minutes before dark, so classification surveys were conducted throughout December. The likelihood of missing dominant bucks increases later in December.

Little effort has been put forth to survey areas away from agriculture fields due to low deer densities.

The number of deer classified steadily increased from 1993 to 2009, but has since decreased to about 1,000 deer annually. In 2014, this herd unit had the highest fawn ratio in 30 years with 112 fawns:100 does. This trend continued in 2015 with 90 fawns:100 does. The increase in productivity was likely due to increased vegetation growth. Neighboring mule deer herds also experienced record fawn ratios.

Buck numbers appear to have increased in this herd over the past 20 years; however, this may be a factor of less does in the population, rather than more bucks. From 1993-2005, buck ratios rarely exceeded 25 bucks:100 does (range=18-26). After drought conditions subsided, buck ratios increased and have not dropped below 25 bucks:100 does since. On average, there were 34 bucks:100 does observed (range=26-49) from 2006-2015.

### **Harvest Data**

Conservative hunting of bucks and high numbers of doe/fawn licenses could be maintaining high buck ratios. As the number of complaints from landowners increased, the number of doe/fawn licenses increased. As the number of licenses issued increased, harvest of does increased. Doe/fawn licenses used to decrease the number of deer depredating crops also had major impacts at the population level, since most deer are concentrated on private land. Number of doe/fawn licenses issued may also have affected number of deer classified. Thus, the increase in buck ratios observed after 2005 might be a reflection of fewer does in the population rather than an increase in number of bucks.

Buck harvest along the Greybull River is influenced more by hunter effort, weather, season dates, crop harvest (corn), and private land access rather than a reflection of population level. The general license harvest in Hunt Area 124 is large enough to mask trends in Hunt Area 165 which is limited quota. Historically, general license seasons for bucks in Hunt Area 124 have remained fairly constant, ranging from 7 to 10 days (1990-present) and opening Nov. 1. Hunt Area 165 became limited quota hunting in 1987 with 100-250 licenses typically issued. Type 1 buck seasons in Hunt Area 165 have opened Nov. 1 (1987-89), Oct. 1 (1990-2000), or Oct. 15 (2001-present).

Buck harvest declined dramatically from 485 to 214 between 1993-98; however, different contractors were used during that time to calculate harvest survey data. Following a large, unexpected increase in 1999, harvest of bucks has been somewhat stable ranging between 300-400 bucks. There was a slight decrease in buck harvest during drought, then a steady increase from 2007-2010. Buck harvest has decreased since 2010 to a low of 288 in 2014. During 1993-2004, the buck harvest was 1.5 times greater than the doe harvest. With increased doe/fawn licenses, the harvest of bucks and does converged, and doe harvest surpassed buck harvest in 4 out of the past 9 years (2007-2015).

Hunters complained about the lack of large-antlered bucks in this herd, but elevated harvest to address crop depredation limits the “trophy” potential of this herd. Most (90-100%) of the bucks being harvested are fairly small in antler width. Likewise, 60-80% of the bucks classified are also in the smaller size classes.

## **Population**

While the constant juvenile, constant adult (CJ, CA) survival model had the lowest AIC score (85), this model is probably too simple to adequately describe fluctuating juvenile survival rates. The time-specific juvenile, constant adult (TSJ, CA) model was chosen (AIC=166), because it biologically makes sense that fawn survival varies year-to-year. Furthermore, the AIC score is high for the TSJ, CA model, because it is being penalized for being complex. In this case, the complexity arises from each juvenile survival rate as a parameter. Survival constraints matched normal criteria. The TSJ, CA model shows a decline in the population after 2010 possibly due to high doe harvest, or a harsh 2010-11 winter with deep, crusted snow. The population estimate bottoms out at 2,800 deer in 2012. In 2013, the model estimates a slight increase to 3,000 then jumps to 4,000 deer in 2014 then 4,500 deer in 2015. The drastic increase estimated for 2014-15 is probably a result of the record fawn ratios observed. This model performs *fair* and the results are biologically defensible, but the model could benefit from a sample-based population estimate with standard errors.

## **Management Summary**

The spreadsheet model predicts that the 2016 post-season population estimate will be 14% above objective. Seasons will result in a medium increase in doe harvest this coming fall with 100 additional doe/fawn licenses issued. Some hunters have requested more time to harvest bucks, while other hunters want shorter seasons to allow bucks to mature into older age classes. If buck ratios remain high, a longer buck season may be possible. Many hunters want fewer does harvested to increase the population, but with crop-damage prone areas, this may not be feasible on a large scale. When nonresident Region X was split from Region F in 2015, the nonresident quota for Region X was set at 300 hunters. This quota will be evaluated over the coming years.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 122-123

PREPARED BY: LESLIE SCHREIBER

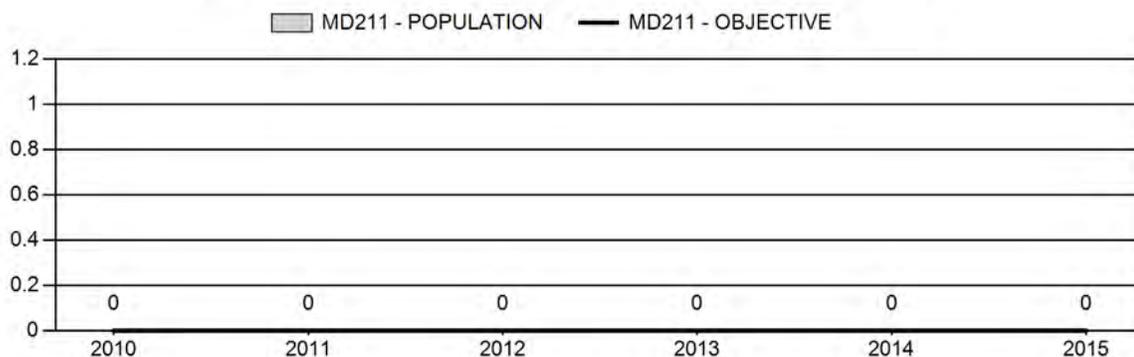
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	0	N/A	N/A
Harvest:	845	616	580
Hunters:	1,461	1,395	1,350
Hunter Success:	58%	44%	43 %
Active Licenses:	1,595	1,475	1,500
Active License Success:	53%	42%	39 %
Recreation Days:	6,293	5,729	6,000
Days Per Animal:	7.4	9.3	10.3
Males per 100 Females	30	39	
Juveniles per 100 Females	84	93	

Population Objective (± 20%) :	0 (0 - 0)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	02/22/2016

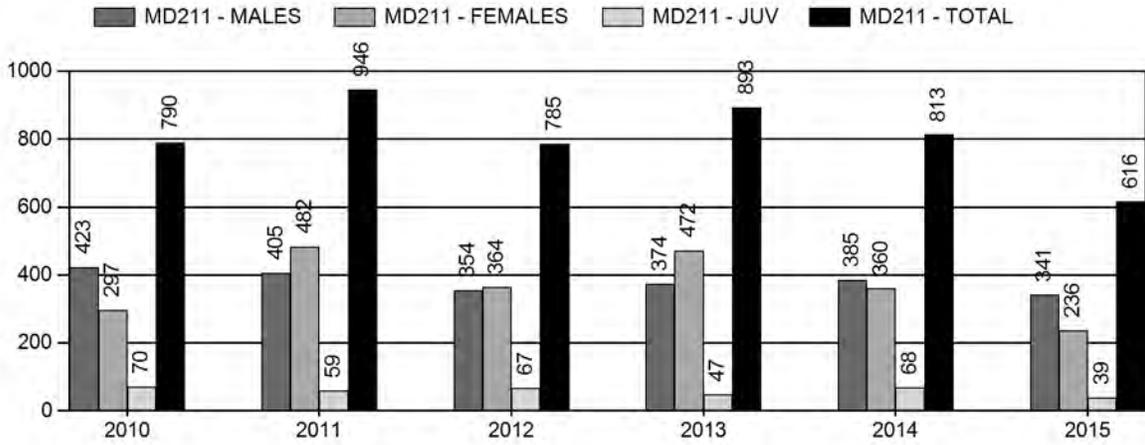
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%

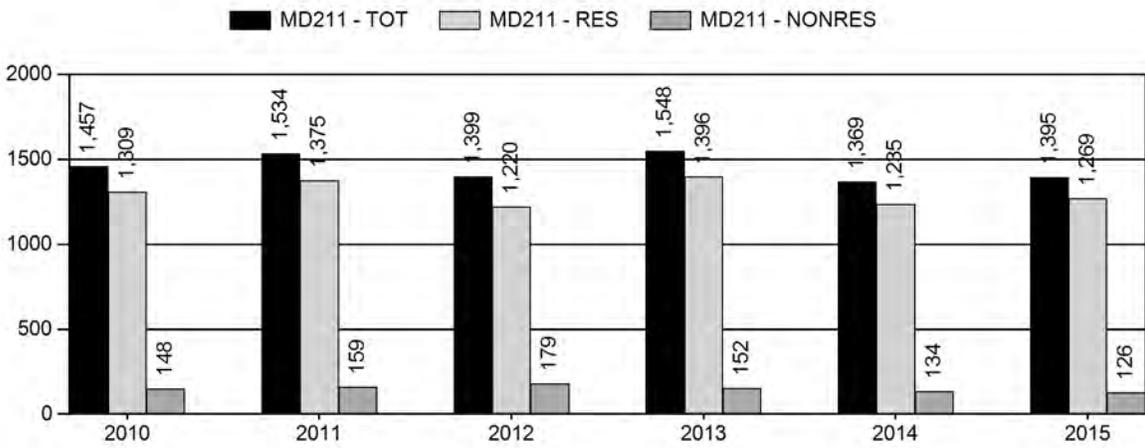
## Population Size - Postseason



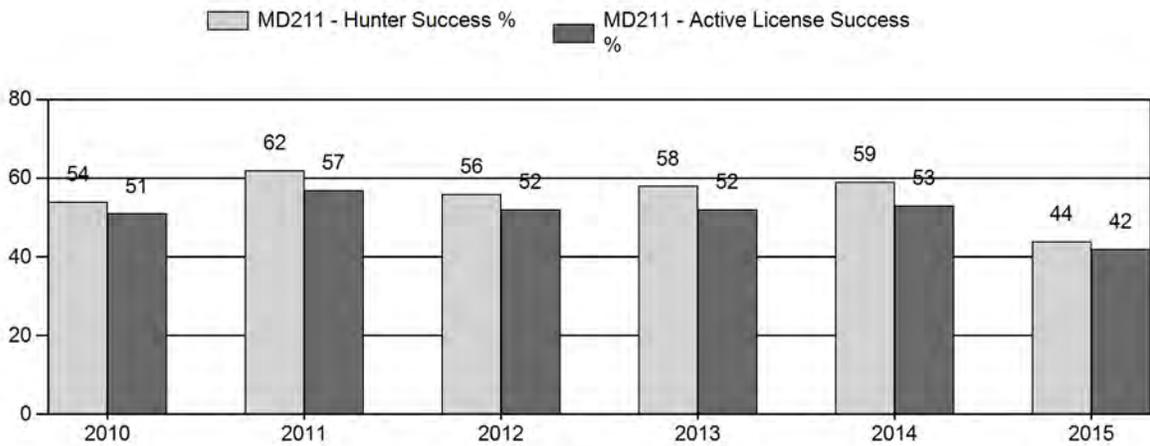
# Harvest



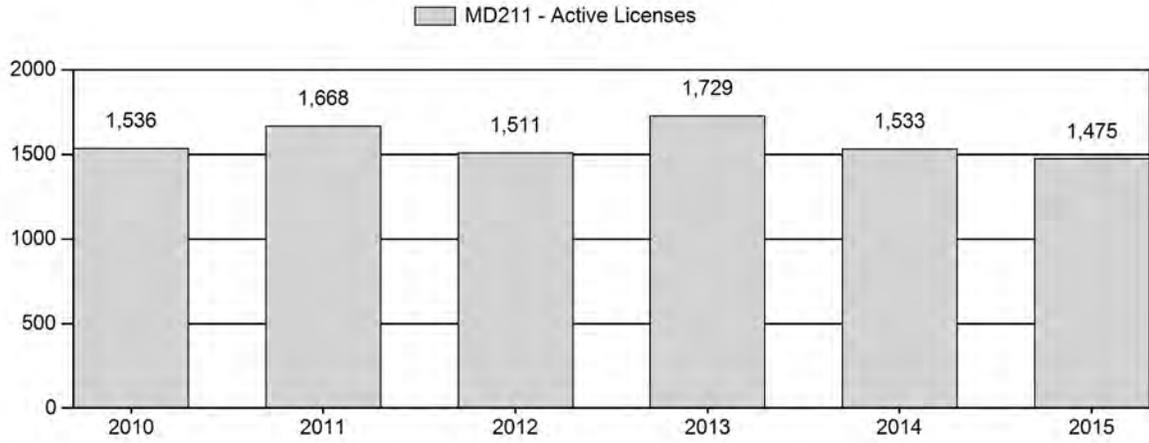
# Number of Hunters



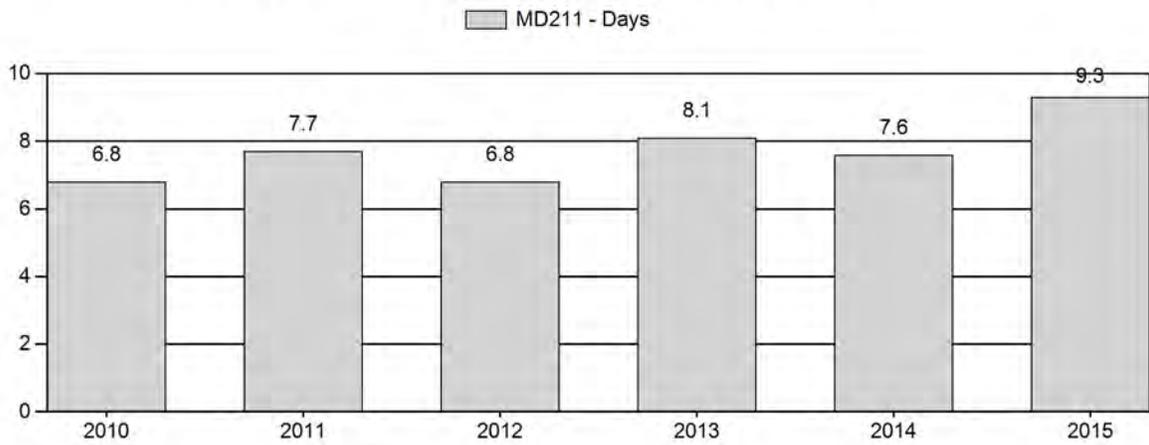
# Harvest Success



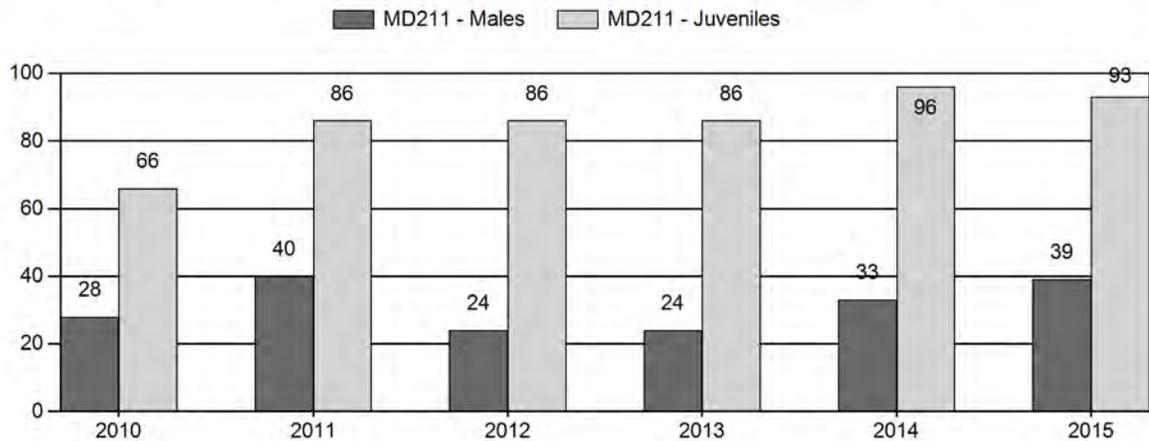
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2010 - 2015 Postseason Classification Summary**  
for Mule Deer Herd MD211 - SHOSHONE RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls		Males to 100 Females			Young to			
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Cls	Obj	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls												Int			
2010	0	30	0	0	0	33	63	15%	224	52%	147	34%	434	0	13	15	28	± 0	66	± 0	51
2011	0	37	0	0	0	31	68	18%	172	44%	148	38%	388	0	22	18	40	± 0	86	± 0	62
2012	0	34	0	0	0	37	71	12%	293	48%	251	41%	615	825	12	13	24	± 0	86	± 0	69
2013	0	18	0	0	0	14	32	12%	131	47%	113	41%	276	810	14	11	24	± 0	86	± 0	69
2014	0	46	0	0	0	42	88	14%	266	44%	255	42%	609	0	17	16	33	± 0	96	± 0	72
2015	0	44	51	14	0	7	116	17%	301	43%	280	40%	697	0	15	24	39	± 0	93	± 0	67

**2016 HUNTING SEASONS  
SHOSHONE RIVER MULE DEER HERD (MD211)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
122		Nov. 1	Nov. 10		General	Any deer
		Nov. 11	Nov. 30		General	Antlerless deer
	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
	6	Oct. 15	Nov. 30	150	Limited quota	Doe or fawn valid on or within one-half (½) mile of irrigated land within the Shoshone River drainage
123		Oct. 15	Oct. 31		General	Any deer
	6	Oct. 15	Nov. 30	25	Limited quota	Doe or fawn valid on private land south of the Shoshone River

Region X Non-resident general license quota – 300

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
122, 123	Sep. 1	Sep. 30

Hunt Area	License Type	Quota change from 2015
122	3	-25
123	6	-25
<b>Herd</b>	<b>3</b>	<b>-25</b>
<b>Unit</b>	<b>6</b>	<b>-25</b>
<b>Total</b>		

**Management Evaluation**

**Current Postseason Population Management Objective:** none

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** none

**2016 Proposed Postseason Population Estimate:** none

**2015 Hunter Satisfaction:** 54% Satisfied, 21% Neutral, 24% Dissatisfied

**Herd Unit Issues**

Management of the Shoshone River mule deer herd unit using a population objective was eliminated in 2001 due to insufficient classification sample sizes. Adequate sample size is a key assumption to all population models. No management goals (e.g., count objectives, buck ratios) were established for this herd due to lack of data. Management emphasis is to reduce crop depredation to a minimum and provide some recreational hunting. We will develop an objective during the public herd unit objective review process in 2016.

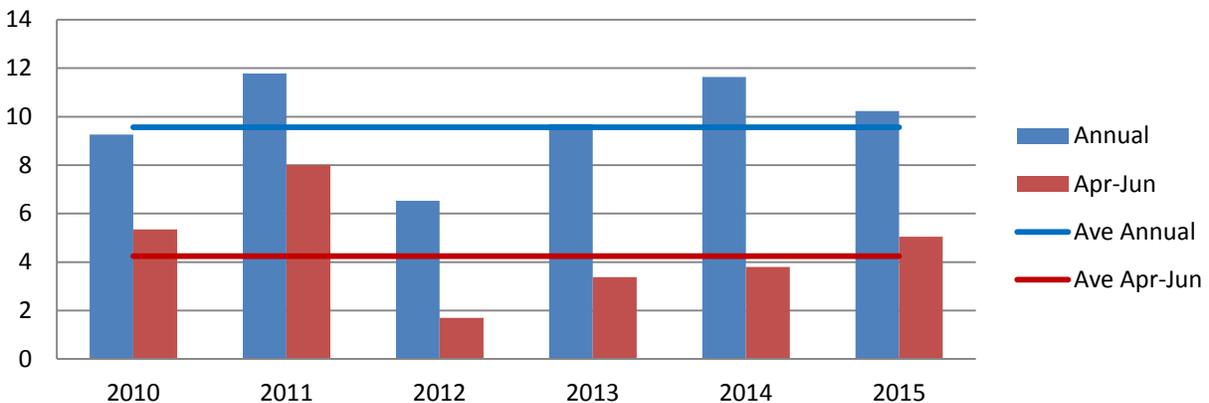
Anthropomorphic factors that may affect this deer population include housing development, agriculture, oil/gas development, and mining. There are few oil/gas wells scattered throughout the herd unit which probably have minimal impacts to deer or habitat. Bentonite mining has

typically been in poor quality habitat with few to no deer. Farming has altered riparian areas on private land and actually increased amount of available forage, but landowner tolerance of deer is low. Consequently, managing deer to decrease crop damage is a focus.

**Weather**

Climate, specifically drought, has historically affected upland vegetation and water availability on public lands causing deer to congregate on agricultural areas in search of better forage. Drought during 2000-04 resulted in mortality of some sagebrush and probably affected herbaceous vegetation. Precipitation during the 2015 growing season (April-June) was higher than the 30 year average, which allowed for increased forage production.

**MD211 Annual and Growing Season Precipitation with 30 Year Averages**



**Habitat**

Habitat quality is marginal due to low precipitation and poor soils in most non-agricultural portions of the herd unit. Cheatgrass has established itself on some upland sites. There are no sagebrush transects established in this herd unit to measure production and utilization.

**Field Data**

During periods of low deer numbers, classification surveys did not result in an adequate sample size to model this herd. Past attempts to survey the herd unit using a helicopter did not result in improved classification data, so the technique was discontinued. Since few (<400) deer were observed, this herd unit was a low priority among big game herds in the region. When hunting seasons for deer and pheasant extend into December, deer remain nocturnal during the regular post-season survey period resulting in low sample sizes. However, deer classification survey totals have increased in recent years. Caution is warranted when interpreting this metric, because annual classification effort varies. More than 400 deer were classified in 6 of the past 8 years. More than 600 deer were classified in 2012, 2014, and 2015 suggesting an increasing population.

Unsworth et al. (1999) suggested that a winter fawn ratio above 66 fawns:100 does would result in an increasing population. Over the past 5 years, fawn ratios ranged between 86-96 fawns:100 does (average=89:100), also suggesting an increasing population. From 1993-2004, buck ratios rarely exceeded 25 bucks:100 does (range=17-31). After drought conditions subsided, buck

ratios increased and have rarely dropped below 25 bucks:100 does since. On average, there were 30 bucks:100 does observed (range=21-39) from 2005-2015.

### **Harvest Data**

Discerning population trends from harvest statistics is difficult, because hunter numbers match the fluctuation in number of doe/fawn licenses issued. In 2015, hunters harvested less deer ( $n=616$ ) compared to 2014 ( $n=813$ ), consistent with active license numbers. Over the last 6 years, harvest success ranged from a low of 44% in 2015 to 62% in 2011 which mirrors active license numbers. Days per animal harvested increased in 2015 to 9.3 days/deer compared to 7.6 days/deer in 2014. Doe harvest will continue to address agricultural damage.

Buck harvest along the Shoshone River is influenced more by hunter effort, weather, season dates, crop harvest (corn), and private land access rather than a reflection of population level. Historically, general license seasons for bucks in Hunt Area 122 have remained fairly constant, ranging from 7 to 11 days (1991-present) and opening Nov. 1. The harvest in Hunt Area 122 is large enough to mask trends in the smaller Hunt Area 123 which encompasses Yellowtail Wildlife Habitat Management Area. General license seasons for bucks in Hunt Area 123 ranged from 10-23 days (1991-present) with opening dates of Oct. 15 or Nov. 1.

Buck harvest declined dramatically from 350 bucks to 100 bucks from 1993-98; however, different contractors were used during that time to calculate harvest survey data. Following a large, unexpected increase in 1999, harvest of bucks has been somewhat stable ranging between 300-400 bucks, with a sharp increase in 2008. Buck harvest has decreased since 2008 to a low of 340 in 2015. During 1993-2010, the buck harvest was greater than the doe harvest. With increased doe/fawn licenses, the harvest of bucks and does converged, and doe harvest surpassed buck harvest in 3 out of the past 5 years (2011-2015).

### **Population**

No population model has been used for the Shoshone deer herd since 2001. With all population models, poor input data equals poor output data. However, with more deer being classified and hunted in this herd unit than typical, the time-specific juvenile, constant adult (TSJ,CA) survival model shows promise. Consistent effort by personnel during classification surveys will be critical in establishing a working population model. This model will be investigated in 2016 during the public herd objective review process.

### **Management Summary**

Regardless of the population level, we will continue to address deer depredation on agricultural crops. With fewer doe/fawn licenses issued in 2016, hunting seasons will return management to maintenance mode. Elevated levels of crop damage seen in 2013-14 have subsided. Some hunters continue to ask for more conservative hunting seasons to increase the population and quality and quantity of bucks. However, this may not be feasible on a large scale with crop-damage prone areas. When nonresident Region X was split from Region F in 2015, the nonresident quota was set at 300 hunters for Region X. This quota will be evaluated over the coming years.

### **Literature Cited**

Unsworth, J.W., D.F. Pac, G. C. White, and R.M. Bartman. 1999. Mule deer survival in Colorado, Idaho, and Montana. *Journal of Wildlife Management* 36:315-326.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD212 - OWL CREEK/MEETEETSE

HUNT AREAS: 116-120

PREPARED BY: BART KROGER

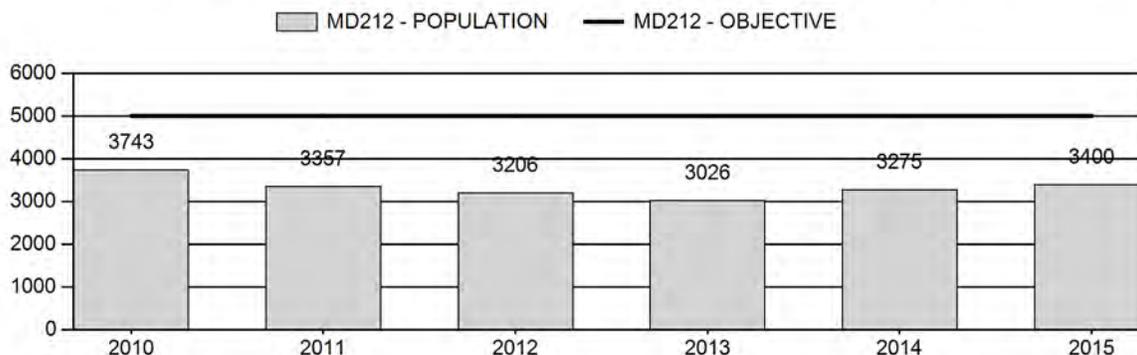
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	3,321	3,400	3,856
Harvest:	278	205	210
Hunters:	369	270	260
Hunter Success:	75%	76%	81 %
Active Licenses:	409	274	270
Active License Success:	68%	75%	78 %
Recreation Days:	1,644	1,259	1,200
Days Per Animal:	5.9	6.1	5.7
Males per 100 Females	40	35	
Juveniles per 100 Females	64	82	

Population Objective ( $\pm$ 20%) :	5000 (4000 - 6000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-32%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/23/2016

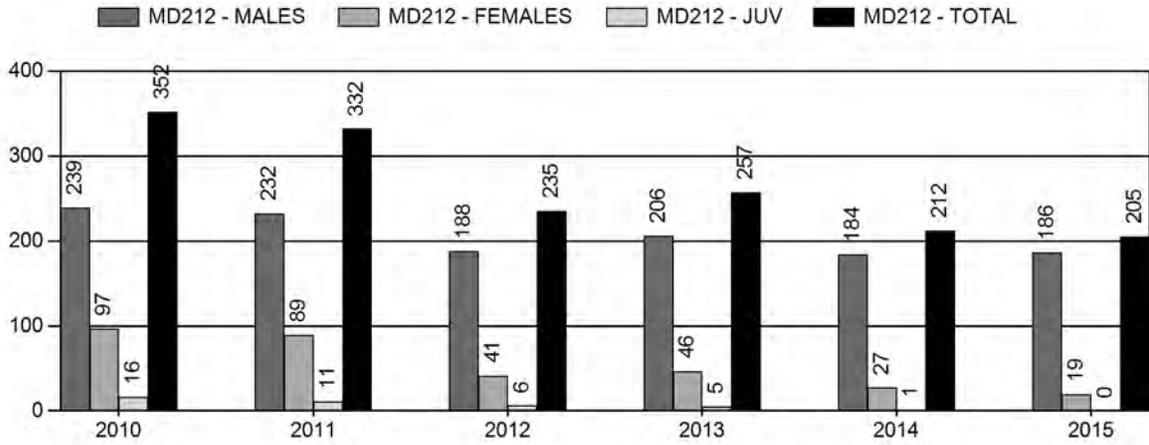
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	1%	1%
Males $\geq$ 1 year old:	24%	23%
Juveniles (< 1 year old):	0%	0%
Total:	6%	5%
Proposed change in post-season population:	+2%	+12%

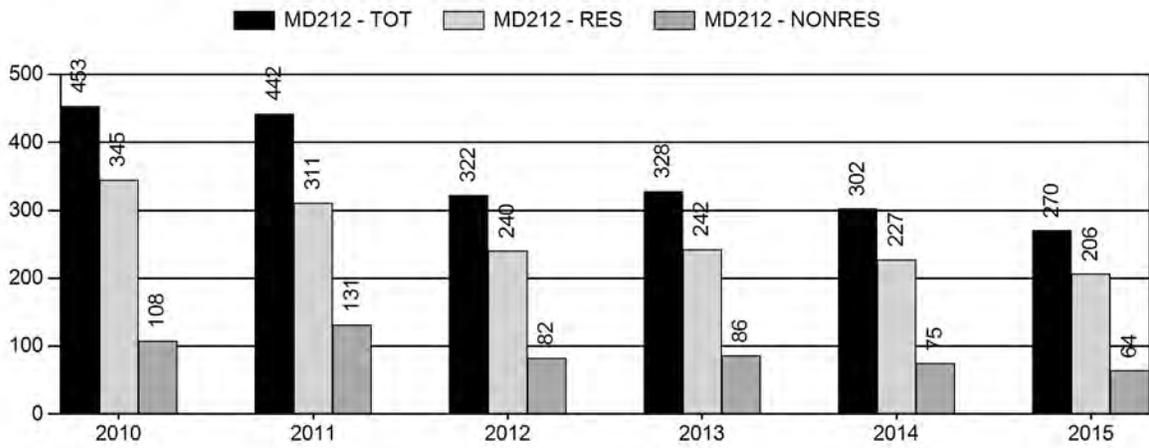
## Population Size - Postseason



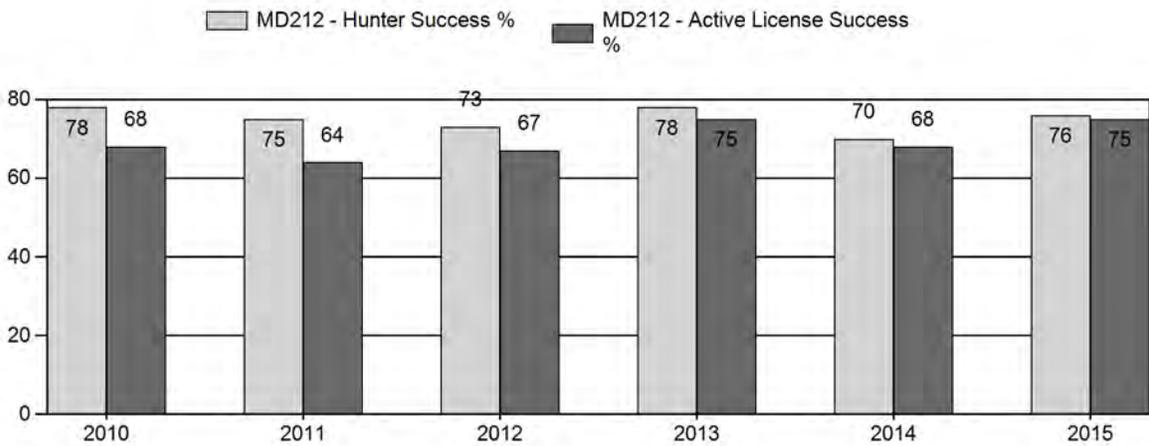
# Harvest



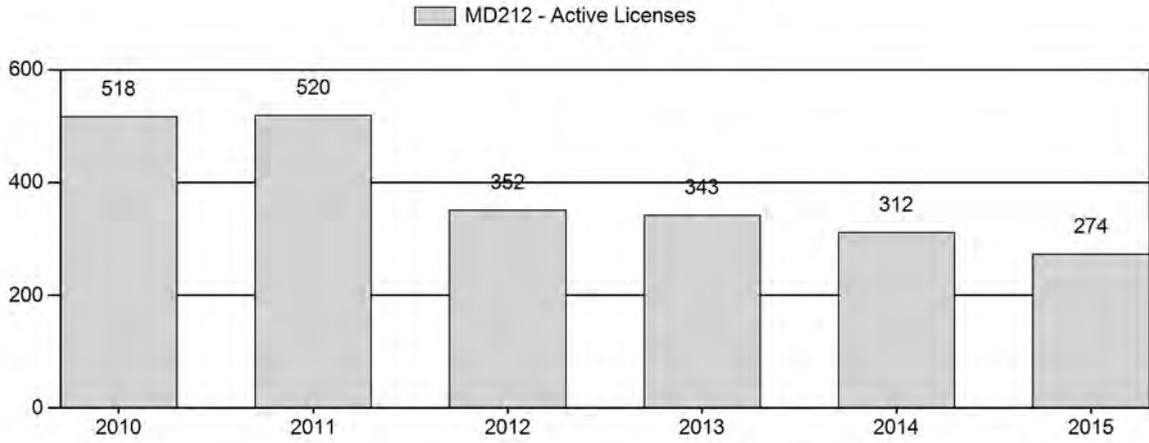
# Number of Hunters



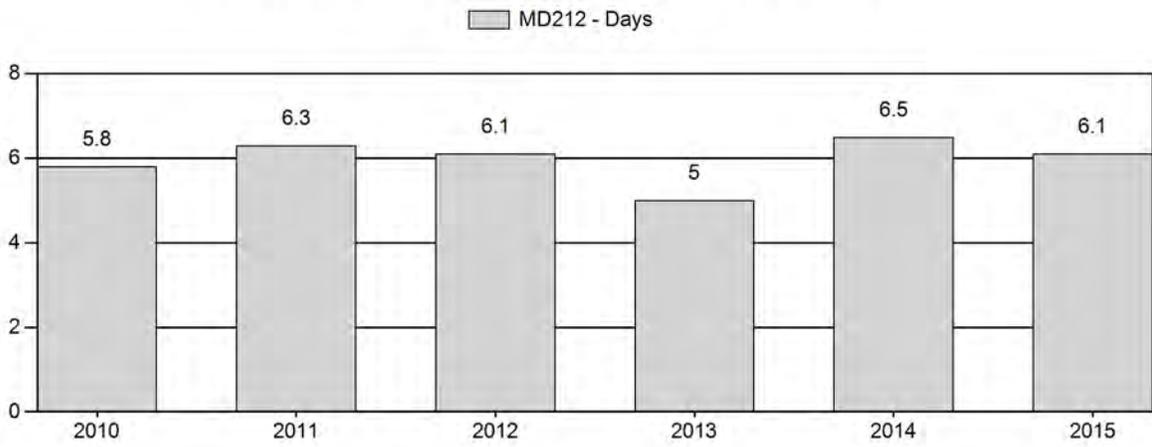
# Harvest Success



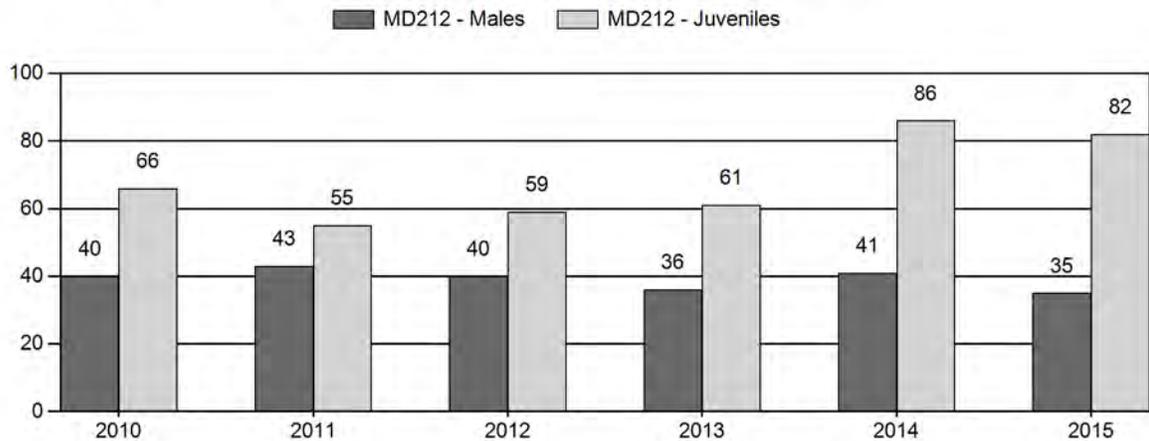
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD212 - OWL CREEK/MEETEETSE

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls	2+ Cls 1	2+ Cls 2	2+ Cls 3	UnCls	Total	%	Total	%	Total			%	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int
2010	3,743	78	0	0	0	134	212	19%	532	49%	352	32%	1,096	1,080	15	25	40	± 3	66	± 5	47
2011	3,357	56	0	0	0	175	231	22%	541	50%	300	28%	1,072	901	10	32	43	± 4	55	± 4	39
2012	3,206	34	0	0	0	130	164	20%	406	50%	241	30%	811	910	8	32	40	± 4	59	± 5	42
2013	3,026	37	0	0	0	113	150	18%	413	51%	250	31%	813	916	9	27	36	± 4	61	± 5	44
2014	3,275	27	0	0	0	81	108	18%	265	44%	228	38%	601	1,428	10	31	41	± 5	86	± 9	61
2015	3,400	89	70	51	15	0	225	16%	635	46%	518	38%	1,378	1,389	14	21	35	± 3	82	± 5	60

**2016 HUNTING SEASONS  
OWL CREEK/MEETEETSE MULE DEER HERD (MD212)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
116	1	Oct. 15	Oct. 31	75	Limited quota	Antlered mule deer or any white-tailed deer
116, 117, 118	3	Nov. 1	Nov. 30	100	Limited quota	Any white-tailed deer
116	7	Sep. 1	Oct. 14	100	Limited quota	Doe or fawn white-tailed deer valid on private land in the Wood River drainage
116, 117, 118	8	Oct. 15	Nov. 30	100	Limited quota	Doe or fawn white-tailed deer
117	1	Sep. 15	Oct. 15	50	Limited quota	Antlered mule deer or any white-tailed deer
118	1	Oct. 15	Oct. 31	25	Limited quota	Antlered deer
118	1	Nov. 1	Nov. 30			Any white-tailed deer
119	1	Nov. 1	Nov. 15	50	Limited quota	Antlered deer
119	2	Oct. 1	Oct. 15	50	Limited quota	Antlered deer
119, 120	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
119	6	Sep. 1	Oct. 15	50	Limited quota	Doe or fawn valid on irrigated land
120	1	Nov. 1	Nov. 15	50	Limited quota	Antlered deer
120	8	Sep. 1	Dec. 15	150	Limited quota	Doe or fawn white-tailed deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
116, 117, 118, 119, 120	Sep. 1	Sep. 30

Hunt Area	Type	Quota change from 2015
116, 117, 118	8	+25
119	1	-50
119	2	New Type +50
119	6	+25
120	8	+50
<b>HU Total</b>	<b>1</b>	<b>-50</b>
	<b>2</b>	<b>+50</b>
	<b>3</b>	<b>+10</b>
	<b>6</b>	<b>+25</b>
	<b>8</b>	<b>+150</b>

## **Management Evaluation**

**Current Postseason Population Management Objective: 5,000**

**Management Strategy: Special**

**2015 Postseason Population Estimate: 3,400**

**2016 Proposed Postseason Population Estimate: 3,900**

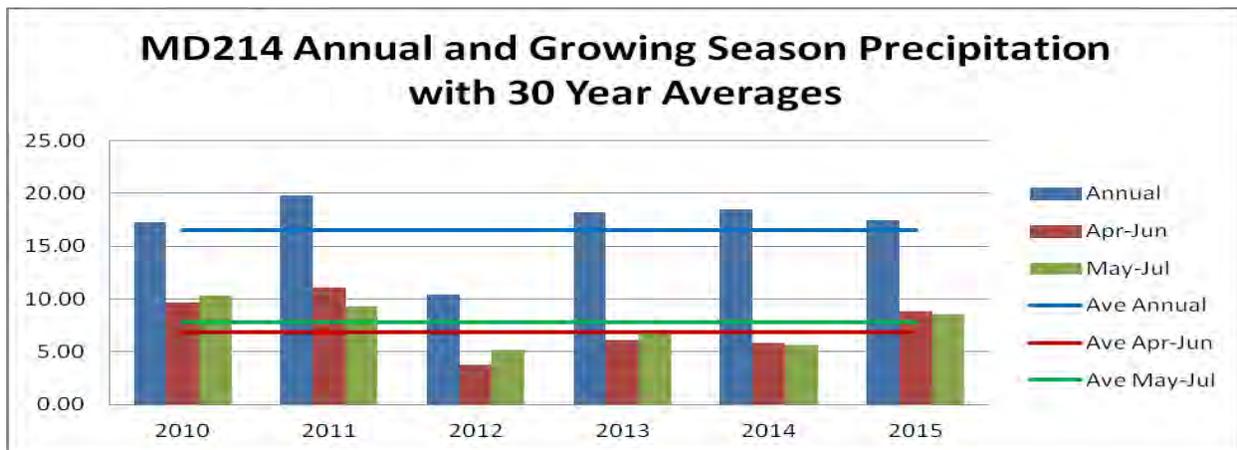
**2015 Hunter Satisfaction: 75% satisfied, 11%neutral, 14% dissatisfied**

## **Herd Unit Issues**

Currently, the management goals of this deer herd is to provide quality buck hunting, allow mule deer populations to increase on public lands, and to address potential damage issues on private lands. The post-season population objective was changed in 2014 from 8,000 to 5,000. This herd unit went through the Mule Deer Initiative public process in early 2014. Field personnel, landowners and most hunters agree this herd is below desired numbers. Poor habitat conditions, long-term drought, and increased harvest of deer on private lands due to potential damage have kept this population below objective.

## **Weather**

Annual precipitation from October 2014 thru September 2015 was markedly higher than the 30 year average. Precipitation during the growing season (April thru June 2015) was markedly higher and the growing season precipitation for high elevation SSF seasonal ranges (May - July 2015) was slightly higher than the 30 year average. Growing season precipitation was below average the previous three years. The 2015-2016 winter has been very mild with above normal temperatures and below normal snow. Data from the Sunshine 3 NE climate station (10 miles southwest of Meeteetse) showed the average December-January temperature was 2.41 degrees higher than normal and total inches of snowfall in December-January was 56% of normal.



## **Habitat**

Annual precipitation has been higher than average for the last three years, which may have contributed to the high fawn/doe ratio observed in the Owl Creek/Meeteetse herd unit the last two years. The Department initiated a 5-year rapid habitat assessment of the herd unit that will primarily focus on the condition of aspen communities and sagebrush and riparian communities being encroached by conifers. Several aspen stands were assessed during summer 2015 and a 120-acre treatment to remove conifers from aspen will be initiated in 2016.

Two permanent shrub transects occur in this herd unit. Data was collected on leader growth, hedging class, age class, and percent utilization. Utilization continues to be very low on sagebrush in this herd unit, indicating that forage quantity on winter range is not a limiting factor. These data can be found in Appendix B in the Cody Region JCRs.

### **Field Data**

Both aerial and ground classifications surveys are used in obtaining post-season buck and fawn ratio for this deer herd. Routine classification routes for each hunt area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified declined 1,407 in 2007 to 601 in and 2014. However, in 2015 the number classified increased to nearly 1,400. Two years of record high fawn production in 2014 and 2015 has helped increase deer numbers. Buck and fawn ratios have remained favorable in recent years, with a 6-year average of 37 bucks and 68 fawns per 100 does.

### **Harvest Data**

Recent harvest statistics indicate hunting has gotten a little more difficult in this herd unit. Hunter numbers and harvest have declined the past six years by about 40-45%, while harvest success has dropped by 25%. The drop in hunter numbers and harvest is mostly due to Type 6 and 7 licenses quotas being reduced because of declining deer numbers the past 10 years. Type 1 hunter success continues to remain favorable at around 50-75%.

### **Population**

The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd. This model supported an AIC value of 61, along with a very good fit (21) of the model vs. field male ratios. Population estimate seems reasonable, and reflect field personnel perceptions, harvest and classification sample sizes trends, which indicate a declining population since the early 2000's, with a slight increase in recent years. Because of this, the model is considered a good representation of the herd. Concerns over the declines in deer numbers are annually heard from hunters and landowners. In fact, the Pitchfork Ranch (HMA) has shut down mule deer hunting the past 7 years in Hunt Area 116 because of very low mule deer numbers, and the LU Ranch (Absaroka Front HMA) annually expresses concerns over declining deer numbers in Hunt Area 118.

All Hunt Areas (116-120) in the herd unit support limited quota hunting seasons. Type 1 license quotas are typically kept low to allow for higher buck ratios and quality. Overwhelming public support for this type of management is heard annually at public season meetings, and during the recent Mule Deer Initiative public meeting. Doe/fawn licenses have and will continue to be used for damage issues when warranted. Season structures have been designed, and will likely continue to be designed to help increase this deer population, particularly those deer utilizing native ranges.

### **Management Summary**

Overwhelming public support during the Mule Deer Initiative public meetings, were to reduce doe/fawn harvest and provide better quality buck hunting. Type 1 license quotas in Hunt Areas 116, 117, 119 and 120 appear adequate, with most of these Hunt Areas having license reductions in recent years. The only change is to add a Type 2, antlered deer season in area 119 for the first

two week of October with a quota of 50 licenses, while reducing the Type 1 quota by 50 licenses. This is a recommendation brought forward by the MDI participants and supported by WGFD personnel, as a way to improve buck quality by reducing the buck harvest during the rut. The Type 6 quota in area 119 will increase by 25 licenses to further address potential damage issues on irrigated hay fields. The projected 2016 harvest is roughly 210 deer, similar to 2015. Hopefully this deer herd will continue showing improving trends.

## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD215 - UPPER SHOSHONE

HUNT AREAS: 110-115

PREPARED BY: DOUG  
MCWHIRTER

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	8,563	8,500	8,700
Harvest:	939	910	835
Hunters:	1,734	1,666	1,600
Hunter Success:	54%	55%	52 %
Active Licenses:	1,846	1,686	1,650
Active License Success:	51%	54%	51 %
Recreation Days:	8,879	9,028	9,000
Days Per Animal:	9.5	9.9	10.8
Males per 100 Females	26	22	
Juveniles per 100 Females	63	60	

Population Objective (± 20%) : 12000 (9600 - 14400)

Management Strategy: Recreational

Percent population is above (+) or below (-) objective: -29.2%

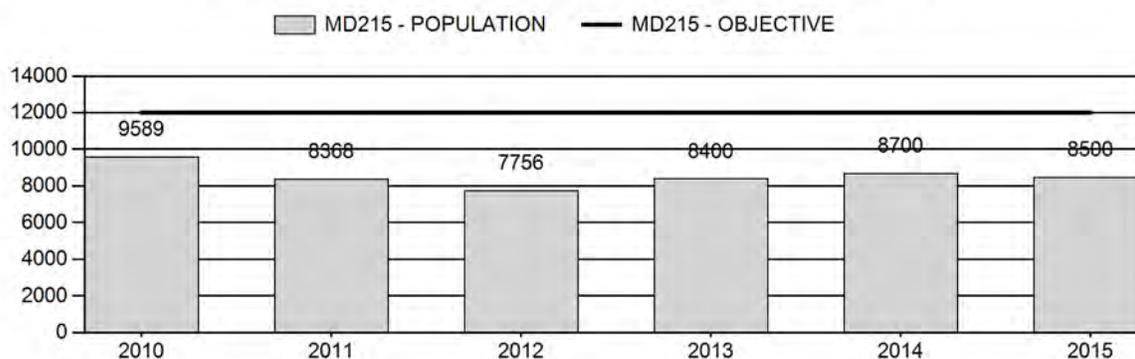
Number of years population has been + or - objective in recent trend: 8

Model Date: 2/19/2016

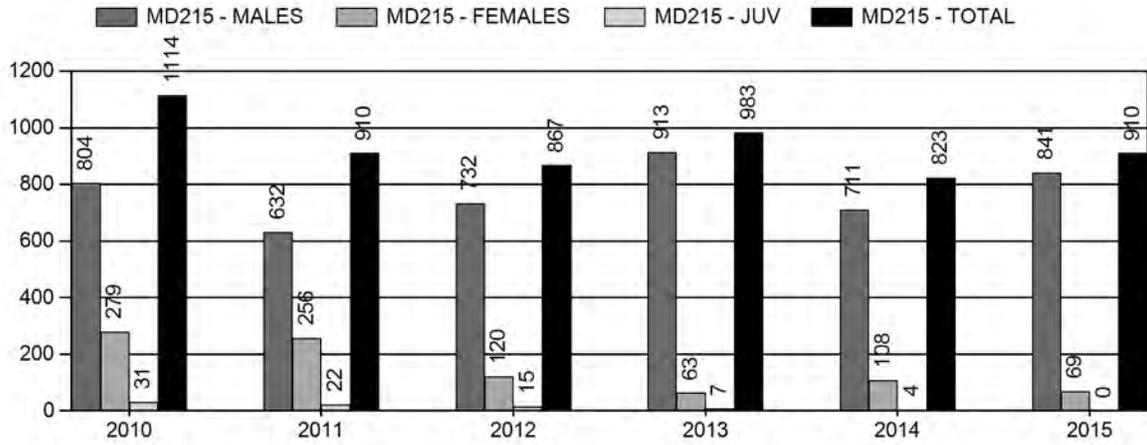
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.6%	1.7%
Males ≥ 1 year old:	47.6%	45.4%
Juveniles (< 1 year old):	0.0%	0.1%
Total:	9.5%	8.7%
Proposed change in post-season population:	-1.1%	+1.5%

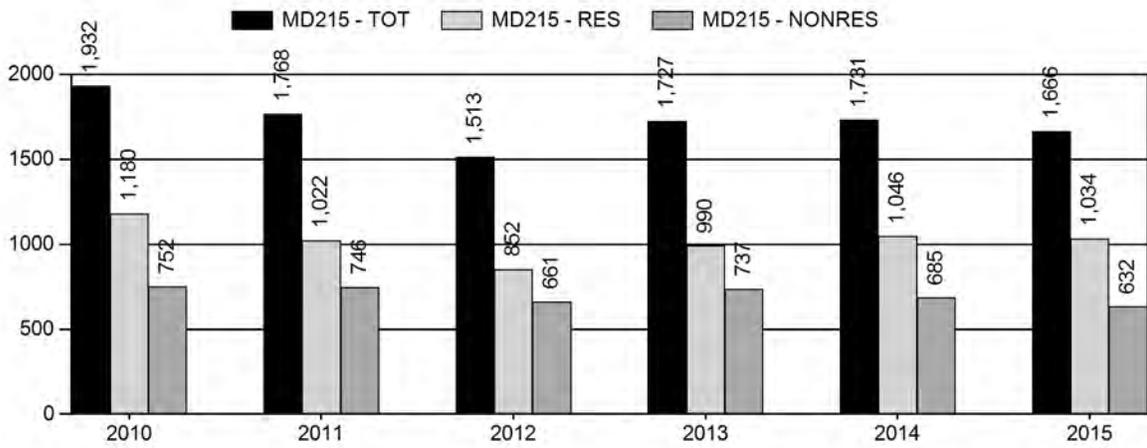
## Population Size - Postseason



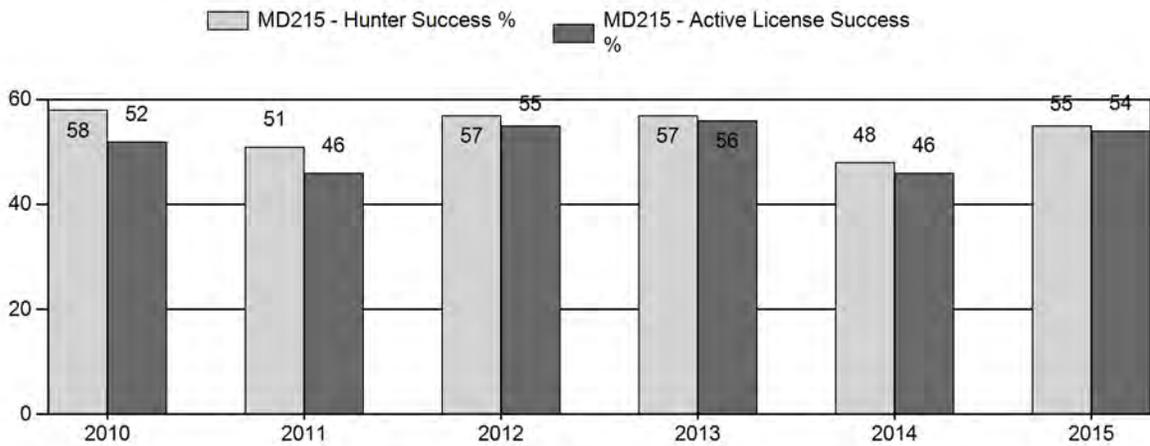
# Harvest



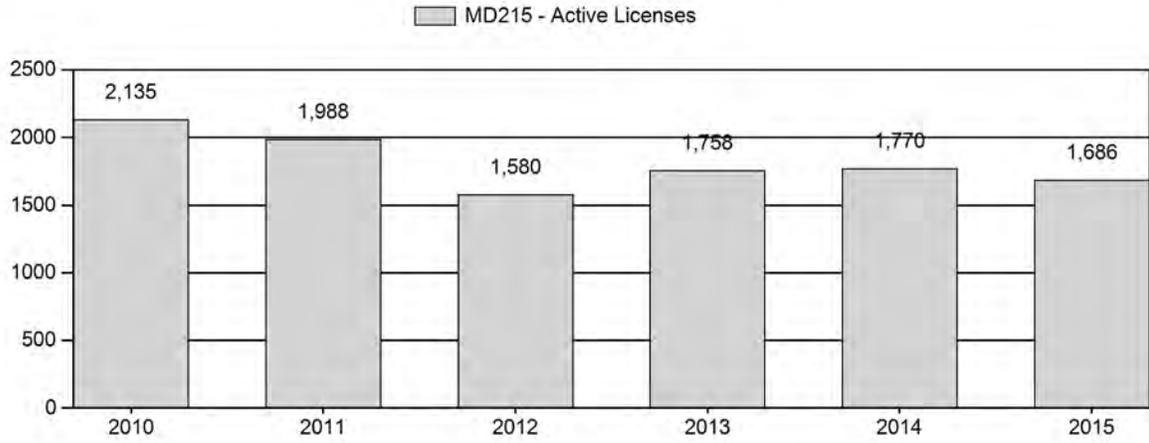
# Number of Hunters



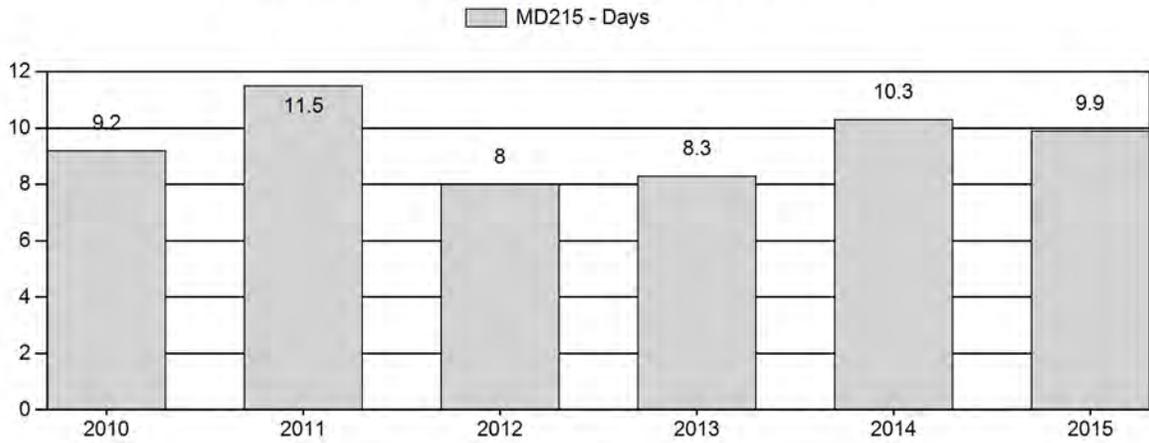
# Harvest Success



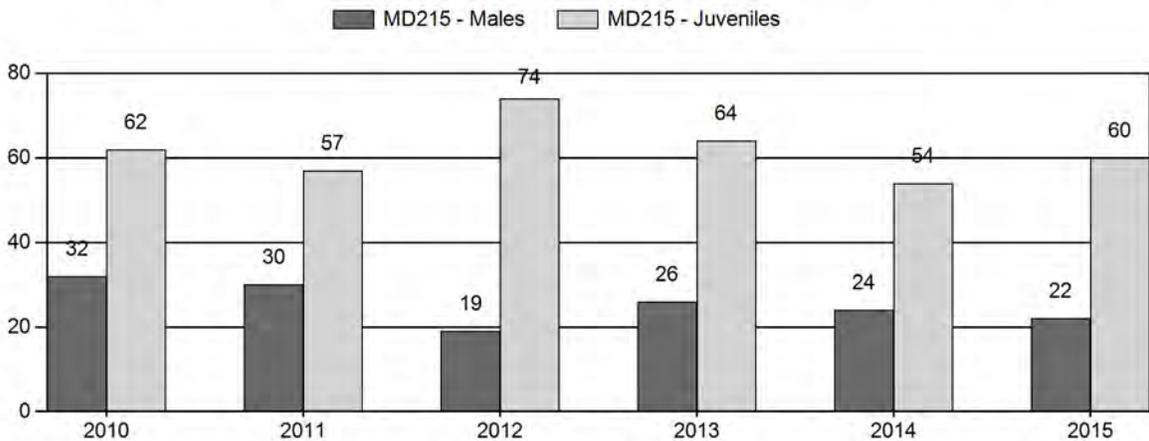
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD215 - UPPER SHOSHONE

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	9,589	176	0	0	0	188	364	16%	1,145	52%	707	32%	2,216	1,090	15	16	32	± 2	62	± 3	47
2011	8,368	118	0	0	0	205	323	16%	1,071	53%	613	31%	2,007	1,071	11	19	30	± 2	57	± 3	44
2012	7,756	79	0	0	0	139	218	10%	1,165	52%	863	38%	2,246	1,148	7	12	19	± 1	74	± 4	62
2013	8,400	127	0	0	0	117	244	14%	946	53%	607	34%	1,797	1,148	13	12	26	± 2	64	± 4	51
2014	8,700	98	101	20	4	0	223	13%	945	56%	512	30%	1,680	1,010	10	13	24	± 2	54	± 3	44
2015	8,500	76	143	43	1	0	263	12%	1,200	55%	722	33%	2,185	1,020	6	16	22	± 2	60	± 3	49

**2016 HUNTING SEASONS  
UPPER SHOSHONE MULE DEER HERD (MD215)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
110		Oct. 15	Nov. 10		General	Antlered mule deer or any white-tailed deer
110, 111	8	Oct. 15	Dec. 31	100	Limited quota	Doe or fawn white-tailed deer
111		Oct. 15	Nov. 10		General	Antlered mule deer or any white-tailed deer
111	6	Oct. 15	Nov. 10	25	Limited quota	Doe or fawn valid off national forest
112		Oct. 15	Nov. 10		General	Antlered mule deer or any white-tailed deer valid on national forest
112		Nov. 1	Nov. 10		General	Any deer valid off national forest
112	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
112, 113	6	Oct. 15	Nov. 10	25	Limited quota	Doe or fawn valid off national forest
112, 113	8	Oct. 15	Dec. 31	100	Limited quota	Doe or fawn white-tailed deer
113		Oct. 15	Nov. 10		General	Antlered mule deer or any white-tailed deer valid on national forest
113		Nov. 1	Nov. 10		General	Any deer valid off national forest
114		Oct. 15	Nov. 10		General	Antlered deer
115		Sep. 10	Oct. 22		General	Antlered deer

**Region F Nonresident general license quota- 950 licenses**

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
110, 111, 112, 114	Sep. 1	Sep. 30
115	Sep. 1	Sep. 9

Hunt Area	Type	Quota change from 2015
<b>Total</b>		<b>No Changes</b>
		<b>No Changes</b>

## **Management Evaluation**

**Current Postseason Population Management Objective:** 12,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** 8,600

**2016 Proposed Postseason Population Estimate:** 8,700

### **Herd Unit Issues**

The Upper Shoshone Herd Unit is dominated by migratory deer, although some non-migratory deer do exist in the North and South Fork Shoshone River valleys. These deer exhibit mediocre productivity, as evidenced by the 20-year (1995-2014) average fawn:doe ratio of 61.1 fawns:100 does (range 42:100 – 74:100). Buck harvest is dictated by the influence of weather upon the timing of fall migrations and whether or not they arrive on low elevation winter ranges prior to the standard closing date of November 10. This has created a situation where buck harvest and consequently buck:doe ratios vary widely. In response to this variation, periodic 4-point regulations are implemented for 2 years to protect primarily yearling bucks and assist in recovery of buck:doe ratios. This fluctuation is represented in postseason buck:doe ratios, which have averaged 26.2 bucks:100 does over the past 20 years (1995-2014), but have ranged from 14:100 to 35:100.

The migratory nature of this deer herd creates difficulties in managing for stable buck:doe ratios. Low densities of deer on the vast summer ranges of the Absaroka Mountains are reflected in the relatively low harvest of deer early in the season. For example, over the last 25 years buck harvest in Area 115 (which has a September 10 opening date) has averaged 31 bucks/year. This is also reflected in check station records, which show that 75% of deer harvested each year are taken during the November portion of the season. Intense hunting pressure along restricted migration corridors during this time, particularly on the North Fork of the Shoshone River, has become an increasingly difficult situation to manage.

### **Weather**

Conditions during the 2015-2016 winter were relatively mild, although snow cover and colder than normal temperatures persisted from mid-December through mid-January. Conditions moderated and above average temperatures returned during February and early March. Several bouts of snow and cold temperatures returned in late winter, but did not persist. Although annual precipitation was below average, growing season precipitation was near to slightly above average.

### **Habitat**

Two sagebrush transects are monitored in this herd unit; one in the North Fork of the Shoshone River and one in the South Fork of the Shoshone River. Based on basin-wide monitoring sites, sagebrush leader growth was above average in 2015. As a result of this and the relatively open winter conditions, sagebrush utilization levels during the 2015-2016 winter were generally lower.

### **Field Data**

Buck:doe ratios collected in 2015 were 22:100, declining largely as a result of the relatively poor fawn crop in 2014 (53 fawns:100 does), which caused the representation of yearling bucks in

2015 to decline. As the population will now be allowed to grow, the sheer abundance of bucks will increase substantially as well. Fawn ratios in 2015 were essentially average for this herd unit, at 60 fawns:100 does.

### **Harvest Data**

A total of 841 bucks were harvested in 2015, which represents a slight increase over that seen in 2014 (711 bucks), but near the 10-year average of 818 bucks. Antlerless deer harvest was reduced beginning in 2012, and since then antlerless deer harvested has been minimal.

There were 1,666 hunters in the Upper Shoshone herd unit in 2015 and hunter numbers have remained relatively consistent over the last 10 years (2006-2014 avg. 1,876 hunters), and have traditionally harbored a large proportion of non-resident hunters, averaging 43% over the 2006-2014 period (range 39% - 50%). In 2015, the percentage of non-resident hunters was 38%.

### **Population**

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be relatively accurate. The postseason population estimate for 2015 is 8,600 deer, or 28% below the population objective. More conservative antlerless seasons were implemented in 2012 to allow deer numbers to grow.

Since 2002, all adult bucks observed during postseason classification surveys are broken into antler width classes. In 2015, Class I bucks (those less than 20 inches) made up 76% of adult bucks observed on winter ranges in 2015. Class II bucks (those 20-25 inches) made up 23%, and Class III (those greater than 25 inches) made up 1%.

To more appropriately distribute hunting pressure between migratory deer east of Highway 120 and primarily farmground deer east of Highway 120, Nonresident Region X was created. This split was implemented in order to align management strategies for migratory deer (conservative seasons, allow for growth) and non-migratory farmground deer (minimize deer densities, reduce damage), and has been successful so far.

With the intent of letting the population grow as fast as possible, doe/fawn harvest will be restricted as much as possible in 2016, and will likely be for the foreseeable future. The 2016 seasons should result in post-season 2016 population of approximately 8,700 deer, slowly building toward the objective of 12,000.



## 2015 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD216 - CLARKS FORK

HUNT AREAS: 105-106, 109, 121

PREPARED BY: DOUG  
MCWHIRTER

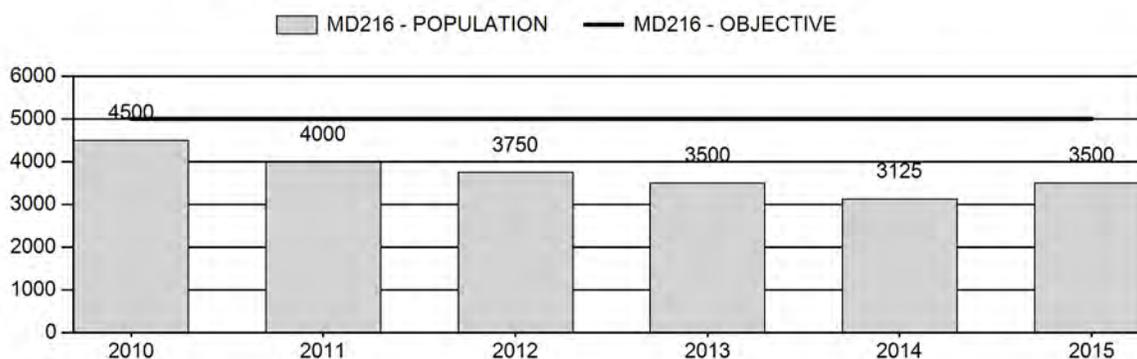
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	3,775	3,500	3,500
Harvest:	883	585	310
Hunters:	1,663	1,235	750
Hunter Success:	53%	47%	41 %
Active Licenses:	1,782	1,318	800
Active License Success:	50%	44%	39 %
Recreation Days:	8,148	6,061	3,500
Days Per Animal:	9.2	10.4	11.3
Males per 100 Females	28	29	
Juveniles per 100 Females	57	59	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-30%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/19/2016

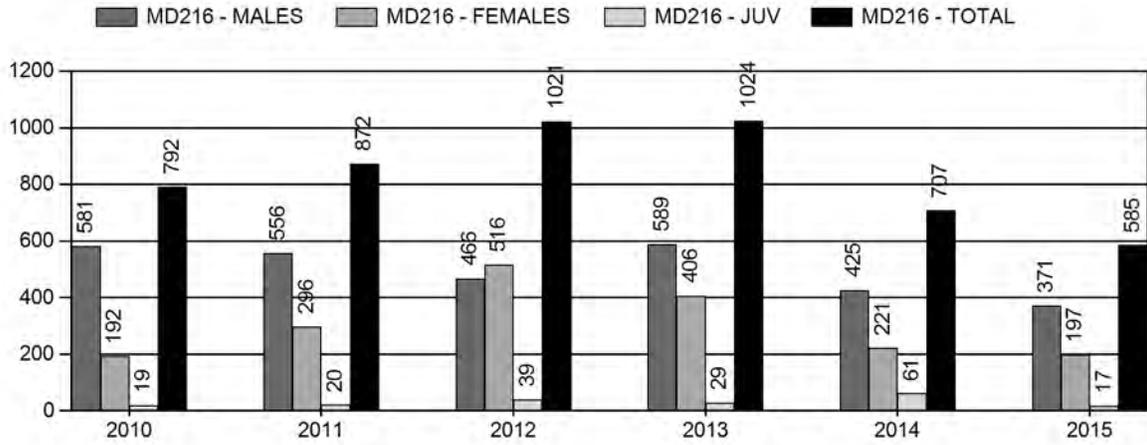
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2.1%	3.0%
Males ≥ 1 year old:	35.1%	34.9%
Juveniles (< 1 year old):	0.8%	0.3%
Total:	7.7%	8.2%
Proposed change in post-season population:	-7.6%	0.0%

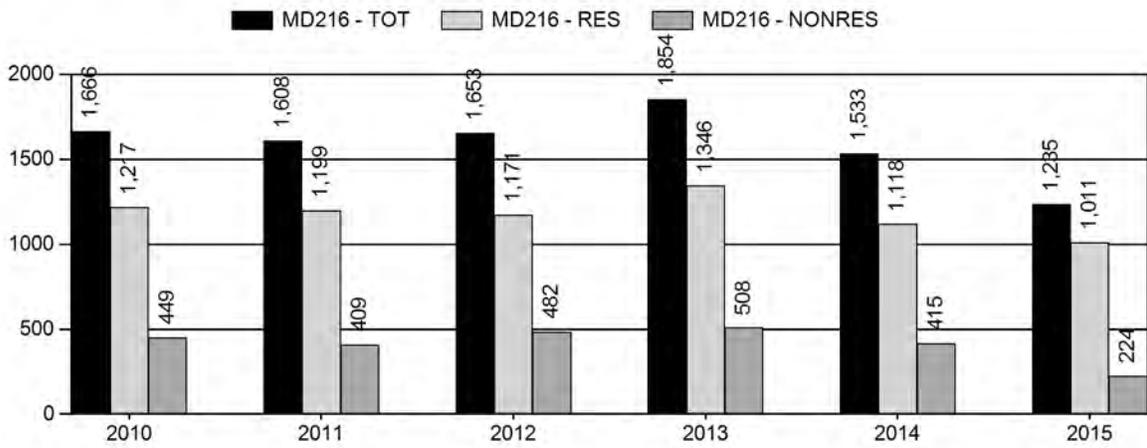
## Population Size - Postseason



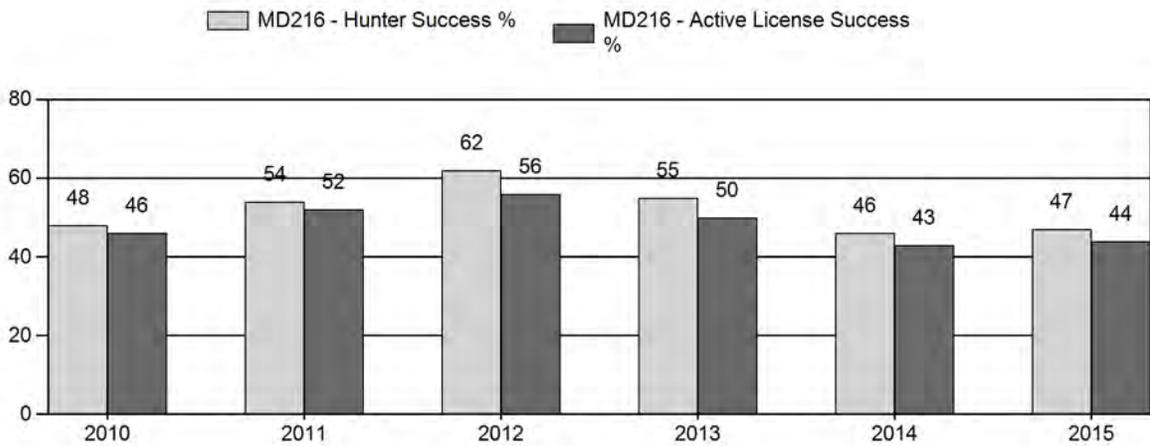
# Harvest



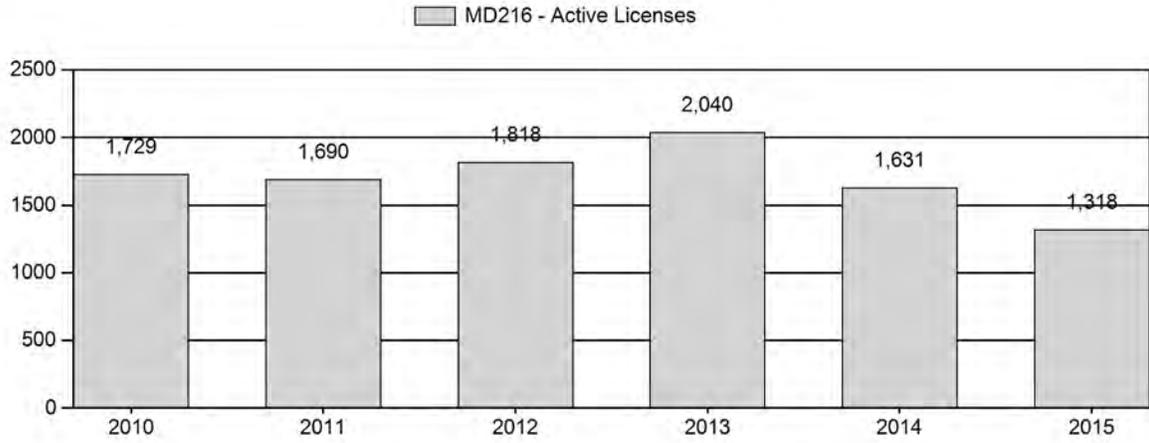
# Number of Hunters



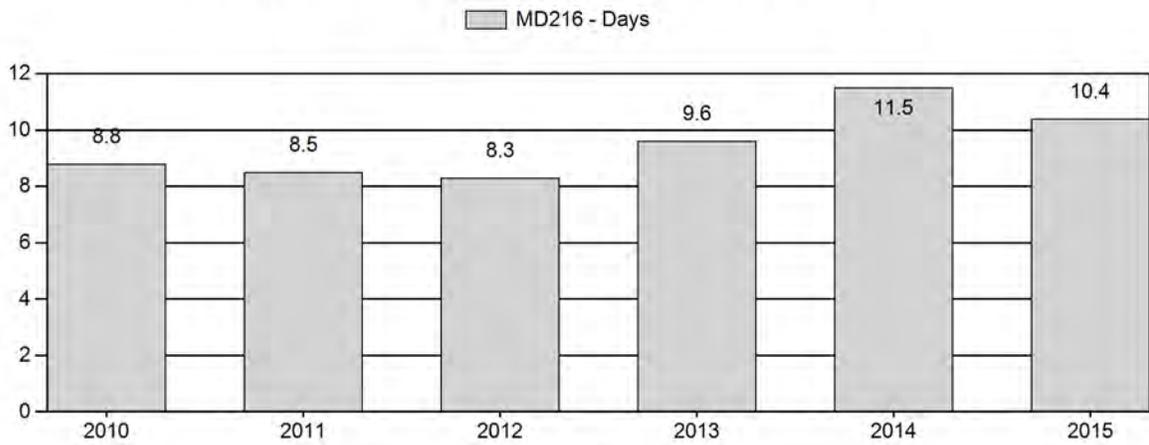
# Harvest Success



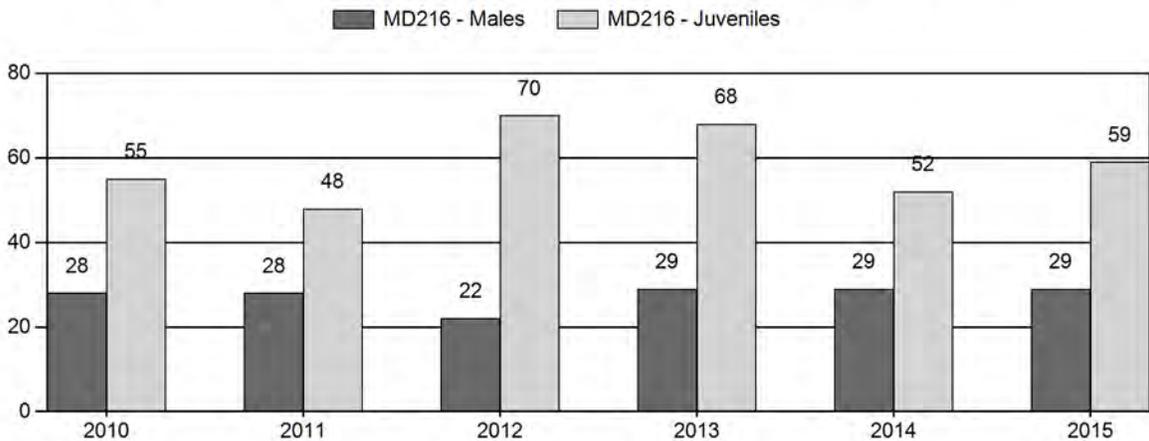
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2010 - 2015 Postseason Classification Summary

for Mule Deer Herd MD216 - CLARKS FORK

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females			Young to			
		Ylg	2+ CIs 1	2+ CIs 2	2+ CIs 3	2+ UnCIs	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	4,500	89	0	0	0	135	224	16%	788	55%	431	30%	1,443	1,043	11	17	28	± 2	55	± 3	43
2011	4,000	52	0	0	0	133	185	16%	656	57%	315	27%	1,156	1,051	8	20	28	± 3	48	± 4	37
2012	3,750	23	0	0	0	62	85	11%	386	52%	270	36%	741	947	6	16	22	± 3	70	± 6	57
2013	3,500	71	0	0	0	95	166	15%	576	51%	390	34%	1,132	1,083	12	16	29	± 3	68	± 5	53
2014	3,125	48	63	39	11	0	161	16%	550	55%	288	29%	999	893	9	21	29	± 3	52	± 4	41
2015	3,500	40	68	42	18	0	168	15%	580	53%	344	32%	1,092	800	7	22	29	± 3	59	± 4	46

**2016 HUNTING SEASONS  
CLARKS FORK MULE DEER HERD (MD216)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
105		Oct. 1	Oct. 31		General	Antlered mule deer or any white-tailed deer valid on national forest
105		Nov. 1	Nov. 5		General	Any deer valid off national forest
105		Nov. 6	Nov. 30		General	Antlerless deer valid off national forest
105	6	Nov. 1	Nov. 30	25	Limited quota	Doe or fawn valid off national forest
105, 106, 109	1	Nov. 1	Nov. 15	50	Limited quota	Any deer
106		Oct. 1	Oct. 31		General	Antlered mule deer or any white-tailed deer
121		Nov. 1	Nov. 10		General	Any deer
121		Nov. 11	Nov. 30		General	Antlerless deer
121	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
121	6	Oct. 15	Nov. 30	150	Limited quota	Doe or fawn

**Region F Nonresident general license quota -- 950**

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
105, 106, 109, 121	Sep. 1	Sep. 30

Hunt Area	Type	Quota change from 2015
<b>Total</b>		<b>No Change</b>
		<b>No Change</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 5,000**

**Management Strategy: Recreational**

**2015 Postseason Population Estimate: 3,500**

**2016 Proposed Postseason Population Estimate: 3,500**

### **Herd Unit Issues**

Much of the Clarks Fork Herd Unit is characterized by migratory deer (Hunt Areas 105, 106, 109), but substantial numbers of non-migratory deer associated with agricultural areas are found in Area 105 and 121. Migratory deer exhibit relatively poor productivity, while deer associated with agricultural fields have much higher productivity. Consequently, damage situations arise with non-migratory deer in Area 105 and 121, while poor productivity requires conservative management of migratory deer. This situation is further complicated by the skewed classification effort directed at migratory deer and the lack of classification data from Area 121. Deer management in Area 121 is driven almost exclusively by landowner tolerance, and therefore little effort is placed on gathering population data from this segment of the Clarks Fork Herd Unit. This situation was corrected in 2014 when Hunt Area 121 was removed from the Clarks Fork Herd unit when the Clarks Fork Herd Unit objective review was completed in 2014. The current JCR database, however, does not yet reflect this change and therefore shows harvest and hunter information that includes Hunt Area 121. Hunt Area 121 will be added to the Shoshone River Deer Herd Unit and corrected in the JCR database in the near future.

### **Weather**

Conditions during the 2015-2016 winter were relatively mild, although snow cover and colder than normal temperatures persisted from mid-December through mid-January. Conditions moderated and above average temperatures returned during February and early March. Several bouts of snow and cold temperatures returned in late winter, but did not persist. Although annual precipitation was below average, growing season precipitation was near to slightly above average.

### **Habitat**

No habitat monitoring data is collected in this herd unit, but sagebrush leader growth was above average in 2015 based on basin-wide monitoring sites. As a result of this and the relatively open winter conditions, sagebrush utilization levels during the 2015-2016 winter were likely lower than average.

### **Field Data**

Fawn recruitment in 2015 was average for this herd unit, at 59 fawns:100 does, and compares to the most recent 10-year (2005-2014) average fawn:doe ratio of 59.4 fawns:100 does (range 48:100 – 70:100). Buck ratios were 29:100 in 2015, and averaged 25.8 bucks:100 does over the 2005-2014 period (range 19:100 – 30:100), but recently have trended higher (27.9 bucks:100 does) since removing the General License season in November in Area 106 and portions of Area 105.

### **Harvest Data**

Since removing the General License season in November in Area 106 and portions of Area 105, buck harvest has declined as intended, resulting in higher postseason buck:doe ratios and more older age class bucks in the population. This was accomplished primarily by reducing hunter numbers, especially when bucks are most vulnerable in November. For example, in Area 106, 2008-2014 hunter numbers declined from the previous 5-year (2003-2007) average of 587 hunters/year to 490 hunters/year. Creation of Region X and the more intentional distribution of nonresident hunters resulted in a further decrease to 397 hunters in 2015. Current management

in Hunt Areas 105, 106, and 109 is preserving buck:doe ratios at improved levels while preserving general license hunting opportunities.

### **Population**

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be reasonable. The postseason population estimate for 2015 is 3,500 deer, or 30% below the population objective of 5,000 deer. Past problems of the very different management strategies of migratory deer in Hunt Area 105, 106, and 109 and farmground deer of Hunt Area 121 were corrected when Hunt Area 121 was removed from the Clarks Fork Herd unit when the Clarks Fork Herd Unit objective review was completed in 2014.

We will continue with the current management structure for migratory deer, which consists of conservative buck seasons, with no antlerless harvest, while continuing to address specific damage situations in Hunt Area 105. The 2016 seasons should result in post-season 2016 population near 3,500 deer, while maintaining improved buck ratios in Hunt Areas 105, 106, and 109.



## 2015 - JCR Evaluation Form

SPECIES: White tailed Deer

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

HERD: WD201 - BIGHORN BASIN

HUNT AREAS: 35, 37, 39-41, 46-47, 50-53, 105-106, 109-125, 127, 164-165

PREPARED BY: LESLIE SCHREIBER

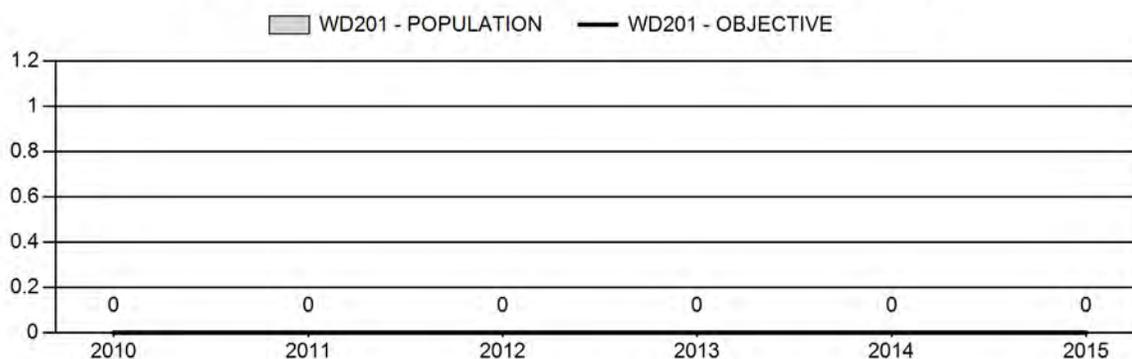
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	0	N/A	N/A
Harvest:	2,196	1,725	2,000
Hunters:	4,614	3,964	4,100
Hunter Success:	48%	44%	49 %
Active Licenses:	5,575	4,650	5,000
Active License Success:	39%	37%	40 %
Recreation Days:	21,588	17,585	20,000
Days Per Animal:	9.8	10.2	10
Males per 100 Females	34	0	
Juveniles per 100 Females	73	0	

Population Objective ( $\pm$ 20%) :	0 (0 - 0)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	03/10/2016

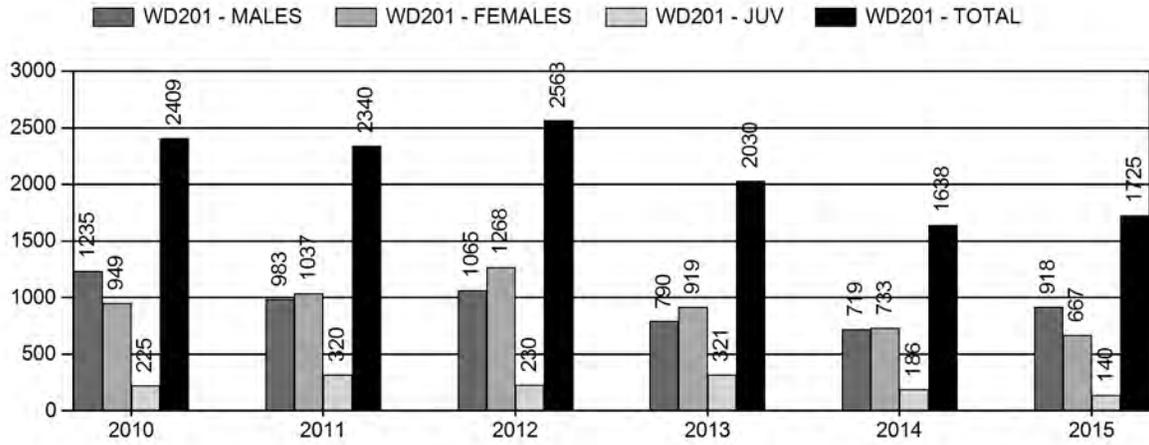
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	na%	na%
Males $\geq$ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%

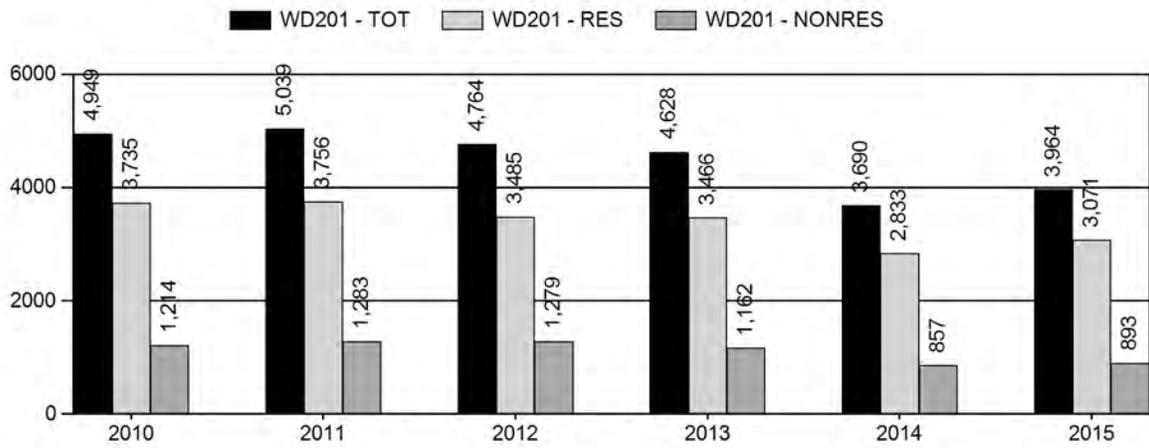
## Population Size - Postseason



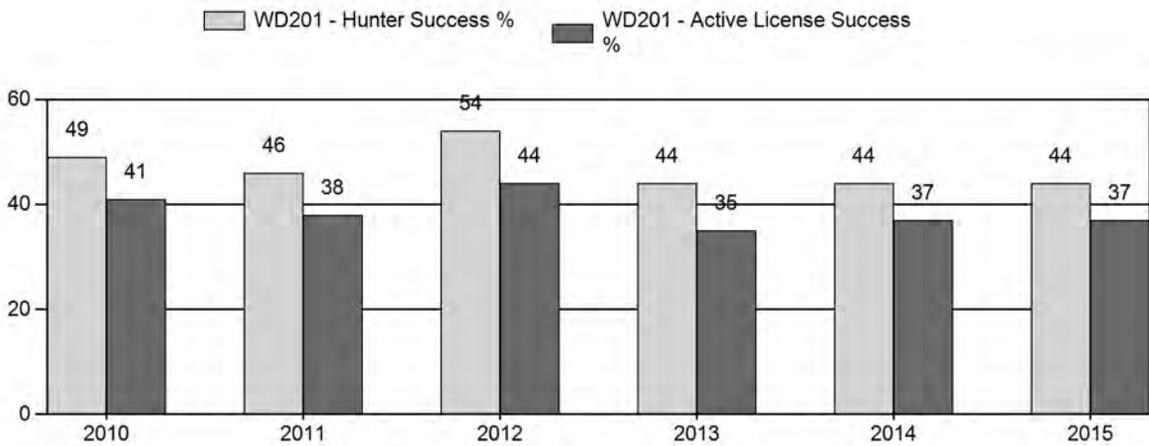
# Harvest



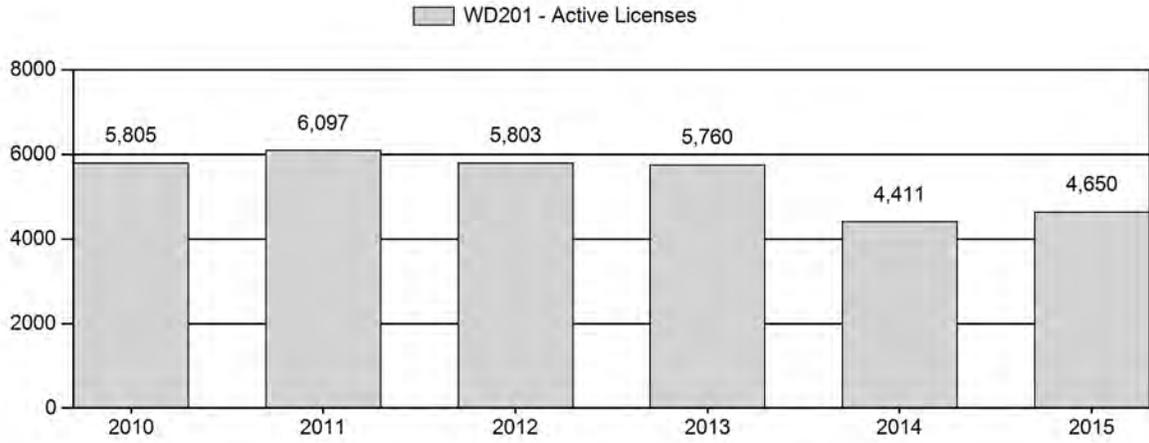
# Number of Hunters



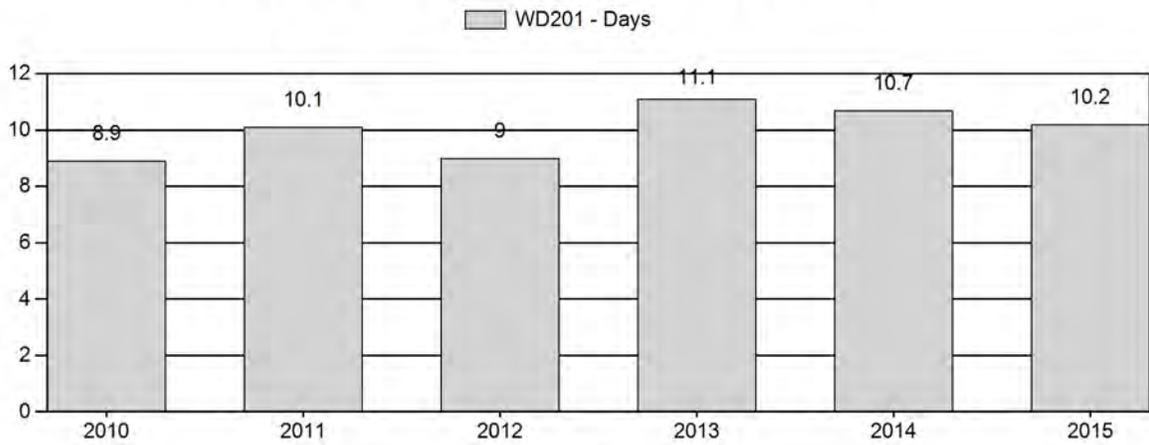
# Harvest Success



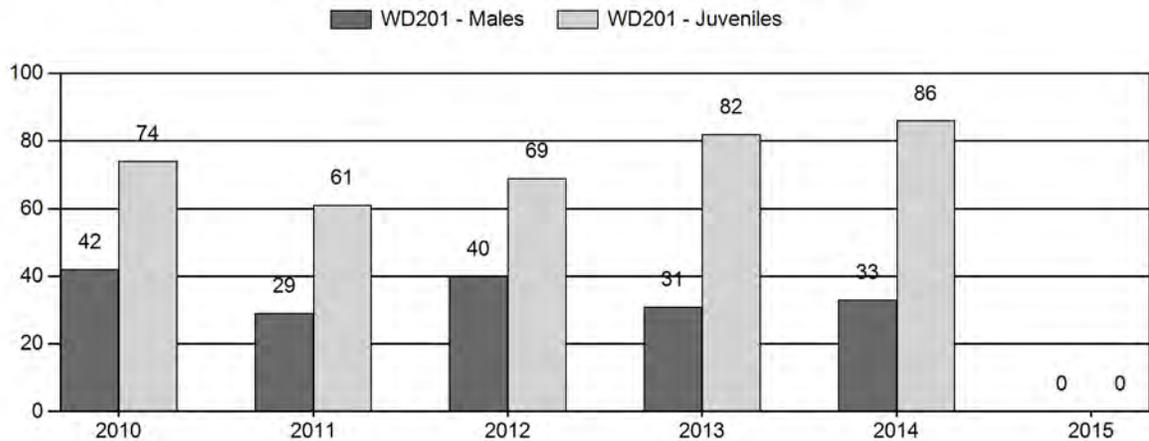
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for White tailed Deer Herd WD201 - BIGHORN BASIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	0	34	49	126	19%	300	46%	221	34%	647	0	11	16	42	±0	74	±0	52
2011	0	45	120	165	15%	571	53%	346	32%	1,082	0	8	21	29	±0	61	±0	47
2012	0	35	58	93	19%	234	48%	162	33%	489	1,109	15	25	40	±0	69	±0	50
2013	0	40	63	103	15%	330	47%	270	38%	703	0	12	19	31	±0	82	±0	62
2014	0	45	72	117	15%	359	46%	309	39%	785	0	13	20	33	±0	86	±0	65
2015	0	35	62	97	17%	279	49%	195	34%	571	0	13	22	35	±0	70	±0	52

**2016 HUNTING SEASONS  
BIGHORN BASIN WHITE-TAILED DEER (WD201)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
36	8	Oct. 15	Oct. 31	25	Limited quota	Doe or fawn white-tailed deer
37	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
40	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
41	3	Nov. 1	Nov. 30	75	Limited quota	Any white-tailed deer
41	8	Nov. 1	Nov. 30	75	Limited quota	Doe or fawn white-tailed deer
47, 51	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
47	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
51	8	Oct. 15	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
110, 111	8	Oct. 15	Dec. 31	100	Limited quota	Doe or fawn white-tailed deer
112, 113	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
112, 113	8	Oct. 15	Dec. 31	100	Limited quota	Doe or fawn white-tailed deer
116, 117, 118	3	Nov. 1	Nov. 30	100	Limited quota	Any white-tailed deer
116	7	Sep. 1	Oct. 14	100	Limited quota	Doe or fawn white-tailed deer valid on private land in the Wood River drainage
116, 117, 118	8	Oct. 15	Nov. 30	100	Limited quota	Doe or fawn white-tailed deer
119, 120	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
120	8	Sep. 1	Dec. 15	150	Limited quota	Doe or fawn white-tailed deer
121	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
122	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
124	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
124	8	Nov. 1	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer
127	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
164	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
165	3	Nov. 1	Nov. 30	50	Limited quota	Any white-tailed deer
165	8	Nov. 1	Nov. 30	100	Limited quota	Doe or fawn white-tailed deer

Hunt Area	License Type	Quota change from 2015
37	3	+10
41	3	+25
41	8	+25
116, 117, 118	8	+25
120	8	+50
122	3	-25
127	3	+10
<b>Herd Unit</b>	<b>3</b>	<b>+20</b>
<b>Total</b>	<b>8</b>	<b>+100</b>

## **Management Evaluation**

**Current Postseason Population Management Objective:** none

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** none

**2016 Proposed Postseason Population Estimate:** none

**2015 Hunter Satisfaction:** 66% Satisfied, 19% Neutral, 15% Dissatisfied

## **Herd Unit Issues**

All white-tailed deer within the Bighorn Basin are managed as one herd unit consisting of 33 hunt areas. Hunting seasons for white-tailed deer are typically set in conjunction with mule deer hunting seasons by Hunt Area. Some opportunity exists for licenses exclusive to white-tailed bucks such as Type 3 licenses. White-tailed deer in the Basin are managed to minimize crop depredation using Type 8 licenses. The herd is managed for recreational hunting. Blue tongue and epizootic hemorrhagic disease occurred in 2001, 2007, and 2011, sometimes severely reducing white-tailed deer numbers. With no population estimate of white-tailed deer, however, estimating the percent of population affected by mortality was never attempted. Anecdotally, white-tailed deer populations quickly rebounded from disease outbreaks.

## **Weather**

Despite drought conditions occurring across Wyoming in 2000-04 and again in 2012, white-tailed deer in the Bighorn Basin are only marginally affected, because they occur along riparian areas and irrigated crop lands. The main influence of weather on this herd is probably realized through impacts on gnat populations that carry diseases.

## **Habitat**

White-tailed deer are limited to riparian and agricultural lands along major streams. Some white-tailed deer have been observed in forested and other non-typical habitats. Urban development in riparian areas or on retired farm land, especially along the Shoshone River, may impact the amount of habitat available for white-tailed deer. However, white-tailed deer seem to be adaptable to human activity.

## **Field Data and Harvest Data**

Not enough data is collected to draw conclusions from classification data. White-tailed deer classification data is collected incidentally to mule deer classification data. Harvest data typically follows number of licenses issued and does not provide an index to population level.

## **Population**

Too little data is collected on white-tailed deer in the Bighorn Basin to justify creation of a population model. With no population model, there is no population estimate or objective.

## **Management Summary**

White-tailed deer hunting seasons will continue to be set to address landowner concerns. White-tailed deer specific licenses are needed to obtain adequate harvest. Harvest rates probably do not greatly affect the overall population. More licenses for bucks and does will be issued for 2016, because the white-tailed deer population in the Bighorn Basin is recovering from disease, and landowners are expressing concerns over white-tailed deer numbers on croplands.

## 2015 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL211 - MEDICINE LODGE

HUNT AREAS: 41, 45

PREPARED BY: LESLIE SCHREIBER

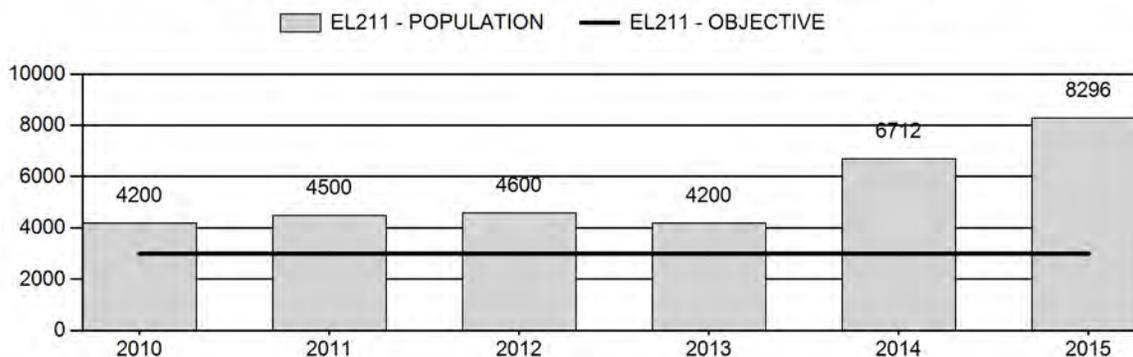
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	4,842	8,296	8,735
Harvest:	682	697	880
Hunters:	1,707	1,859	2,000
Hunter Success:	40%	37%	44%
Active Licenses:	1,736	1,935	2,000
Active License Success:	39%	36%	44 %
Recreation Days:	13,104	15,538	15,000
Days Per Animal:	19.2	22.3	17.0
Males per 100 Females	25	34	
Juveniles per 100 Females	45	62	

Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	177%
Number of years population has been + or - objective in recent trend:	24
Model Date:	5/10/2016

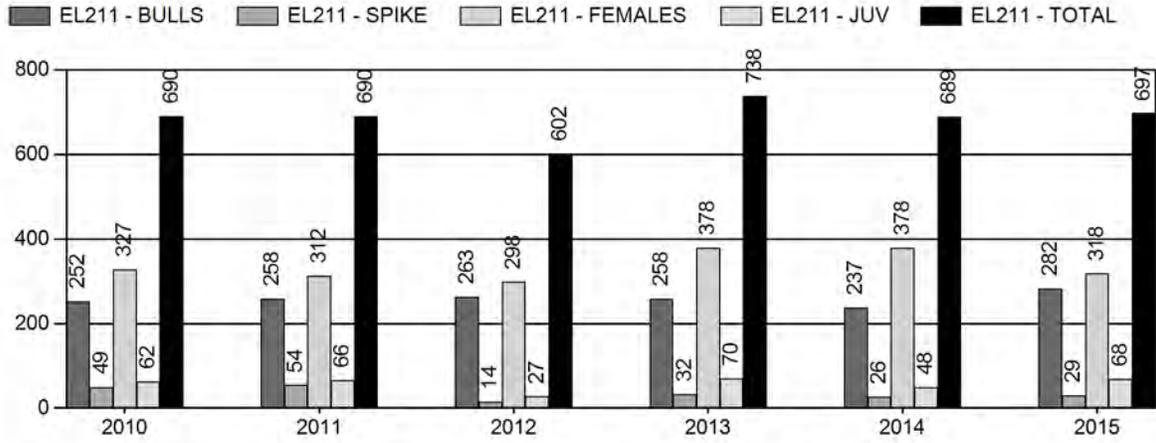
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	16%	8%
Males ≥ 1 year old:	30%	11%
Juveniles (< 1 year old):	3%	2%
Total:	16%	7%
Proposed change in post-season population:	-3%	+7%

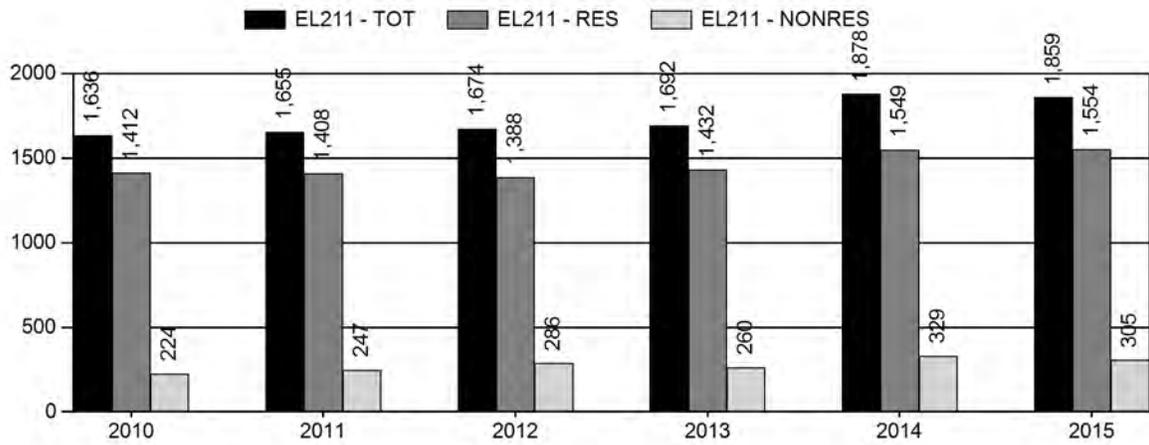
### Population Size - Postseason



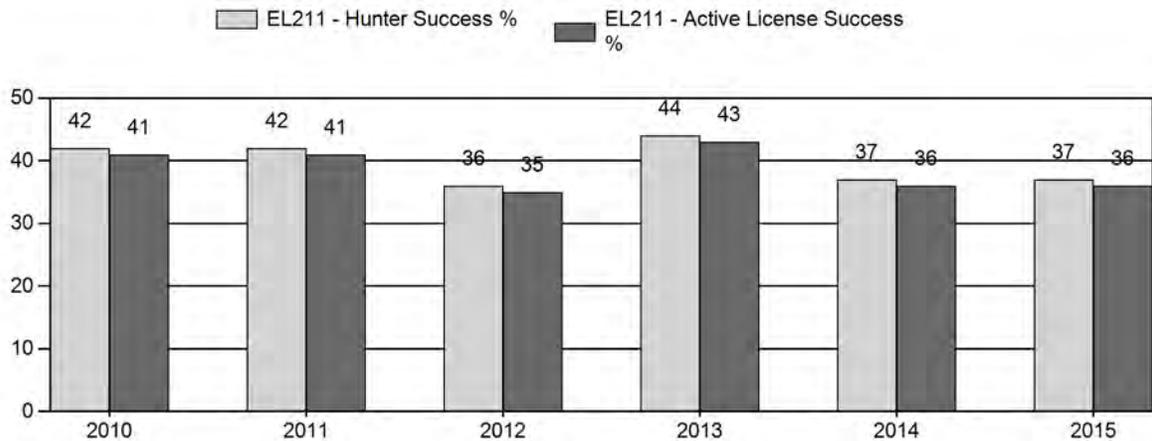
# Harvest



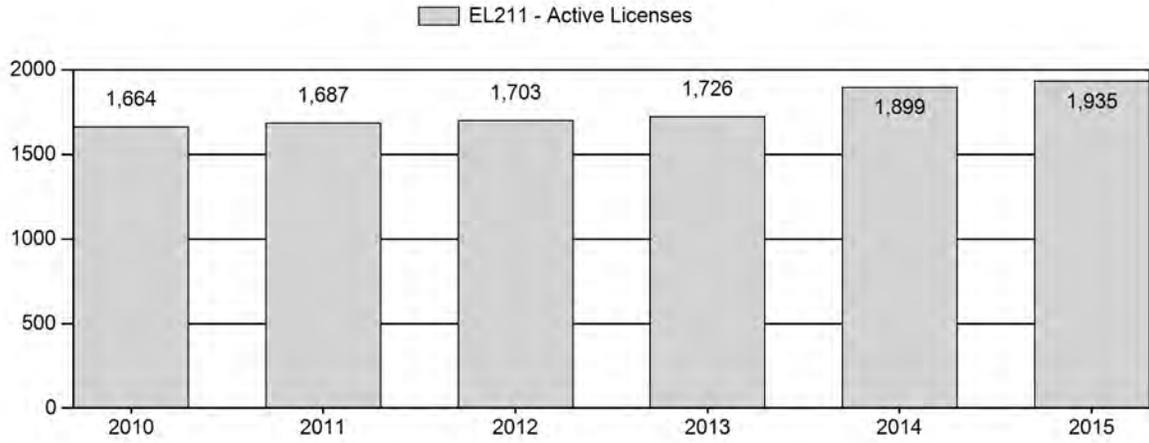
# Number of Hunters



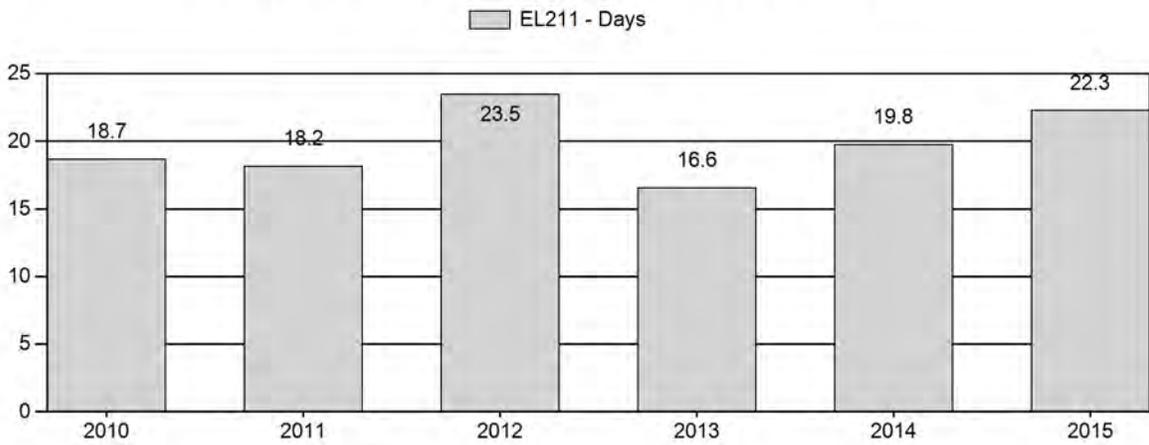
# Harvest Success



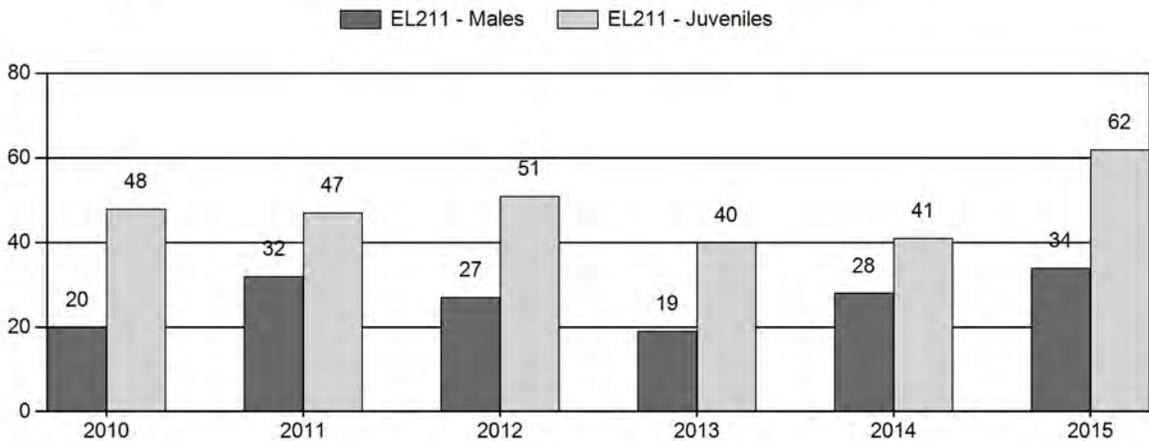
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2010 - 2015 Postseason Classification Summary**

for Elk Herd EL211 - MEDICINE LODGE

Year	Post Pop	MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	YIng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj							
2010	4,200	155	134	289	12%	1,430	60%	684	28%	2,403	506	11	9	20	± 1	48	± 2	40
2011	4,500	245	215	460	18%	1,453	56%	686	26%	2,599	582	17	15	32	± 1	47	± 2	36
2012	4,600	164	177	341	15%	1,251	56%	634	28%	2,226	753	13	14	27	± 2	51	± 2	40
2013	4,200	127	186	313	12%	1,622	63%	641	25%	2,576	614	8	11	19	± 1	40	± 1	33
2014	3,219	200	242	442	17%	1,570	59%	636	24%	2,648	513	13	15	28	± 1	41	± 1	32
2015	4,933	240	364	604	17%	1,771	51%	1,102	32%	3,477	556	14	21	34	± 1	62	± 2	46

**2016 HUNTING SEASONS  
MEDICINE LODGE ELK HERD (EL211)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
41	1	Oct. 15	Nov. 4	375	Limited quota	Any elk
41	1	Nov. 19	Nov. 27			Antlerless elk
41	1	Dec. 10	Dec. 18			Antlerless elk
41	4	Oct. 1	Nov. 4	400	Limited quota	Antlerless elk
41	4	Nov. 19	Nov. 27			Antlerless elk
41	4	Dec. 10	Dec. 18			Antlerless elk
41	6	Sep. 15	Nov. 4	250	Limited quota	Cow or calf valid off national forest
41	6	Nov. 19	Nov. 27			Cow or calf valid in the entire area
41	6	Dec. 10	Dec. 18			Cow or calf valid in the entire area
41	9	Sep. 1	Sep. 30	125	Limited quota	Any elk, archery only
45	1	Oct. 15	Nov. 4	350	Limited quota	Any elk
45	4	Oct. 15	Nov. 15	225	Limited quota	Antlerless elk
45	5	Oct. 10	Nov. 4	125	Limited quota	Antlerless elk
45	6	Aug. 15	Nov. 30	200	Limited quota	Cow or calf valid off national forest
45	7	Dec. 1	Jan. 15	50	Limited quota	Cow or calf valid on or within one (1) mile of irrigated land
45	9	Sep. 1	Sep. 30	150	Limited quota	Any elk, archery only

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
41,45	1, 4, 5	Sep. 15	Sep. 30	Valid in the entire area(s)

Hunt Area	License Type	Quota change from 2015
45	4	+25
45	6	+25
45	7	+50
<b>Herd Unit</b>	<b>4</b>	<b>+25</b>
<b>Total</b>	<b>6</b>	<b>+25</b>
	<b>7</b>	<b>+50</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 3,000

**Management Strategy:** Recreational

**2015 Postseason Population Estimate:** ~8,300

**2016 Proposed Postseason Population Estimate:** ~8,700

**2015 Hunter Satisfaction:** 59% Satisfied, 17% Neutral, 24% Dissatisfied

## **Herd Unit Issues**

Following a marking study in the early 1980s, this herd unit was formed by combining two pre-existing herds, Trapper-Medicine Lodge and Paintrock-Ten Sleep, due to interchange of elk. Due to the interchange of elk discovered in the 1980s marking study, the Trapper-Medicine Lodge and Paintrock-Ten Sleep were combined to form one herd unit. The herd unit continues to be managed with hunting licenses valid for either the northern Hunt Area 41 or the southern Hunt Area 45. The current population objective of 3,000 elk was first adopted in 1983. Formal internal reviews of the population objective and management goals were conducted in 1997, 2001 and 2007. A public herd unit objective review is scheduled for 2016.

Human activities in this herd unit are rarely severe enough to affect elk survival and productivity. Bentonite mining and oil/gas development occur on the west side of the herd unit where habitats are not suitable for elk. Farming occurs near elk habitats and elk often forage on irrigated crops or pastures. Antlerless elk hunting seasons are often driven by landowner complaints. Conversely, some landowners lease hunting to outfitters and allow no public access to hunt cow elk. During the past 10 years, lack of access to large groups of elk on private land has allowed this population to increase. No brucellosis seropositive hunter-harvested elk were detected during the 2015 hunting season. However, 2 seropositive cows were detected in the North Bighorns elk herd (EL321) during a collaring study in February 2016. Education for hunters and field personnel collecting brucellosis blood samples has resulted in more testable samples each year. Between 2011-15, the vet lab tested 77, 68, 141, 156, and 119 samples, respectively, from the Medicine Lodge herd. Management of the Medicine Lodge elk herd is focused on increasing harvest to bring the herd down to objective.

## **Weather**

Climatic factors affect this elk herd more than human-caused factors. Survival and productivity were affected by drought and severe winters, as evident in past low calf:cow ratios. A winter severe enough to affect elk herds in the Bighorn Basin has not occurred since the early 1980s. The winter of 2015 was relatively mild creating unfavorable late-season cow hunting conditions.

## **Habitat**

The herd unit contains approximately 1,500 mi<sup>2</sup>. High-elevation summer ranges are mainly sagebrush-grassland and alpine meadows interspersed with aspen, lodgepole pine, and spruce/fir timber stands. The majority of the summer range is public land managed by the U.S. Forest Service. Steep foothills and drainages that serve as winter and spring ranges are covered with juniper, sagebrush, and grasslands. Winter ranges are mainly public land managed by the Bureau of Land Management, interspersed with private land. The 2 sagebrush transects established in this herd unit, Alkali and Renner, were located outside of areas used extensively by elk in order to monitor mule deer browsing.

## **Field Data**

During the driest years of the most recent extended drought (2001-04), the calf ratio averaged 34 calves:100 cows. In years with “normal” precipitation (2009-14), the calf ratio average 45 calves:100 cows. The calf ratio was 62 calves:100 cows in 2015, the highest observed in the past 25 years. High calf ratios suggest this population can quickly increase if harvest does not keep up with production.

Annual bull ratios can vary depending on if bull groups were located during classification surveys. For example, 19 bulls:100 cows were observed in 2013, then jumped to 28 bulls: 100

cows in 2014, and has again increased to 34 bulls:100 cows in 2015. Annual bull ratios should not be used to annually adjust hunting licenses; rather short-term 3-5 year averages probably give a better indication to trends in the abundance of bulls. Sample sizes for classification surveys were calculated based on calf ratios, not bull ratios. Survey flight time has remained consistent (~4 helicopter hours) so that bull groups could be located.

Management of hunting seasons allowed bull ratios to increase over the past 30 years. The Medicine Lodge elk herd changed from general license hunting to limited quota in 1979 for the northern Hunt Area and 1983 for southern Hunt Area. From 1975 to 1984, an average of 9 bulls:100 cows was observed mostly consisting of yearling bulls. Bull ratios began to increase under limited quota hunting, averaging 13 bulls:100 cows from 1985-1997. Bull ratios are still on the rise averaging 22 bulls:100 cows from 1998-2015, with similar numbers of branch-antlered and yearling bulls.

### **Harvest Data**

By the late 1980s, limited quota hunting was manifesting in increased hunter success and decreased days per harvested animal. Since the change from “antlered elk” to “any elk” Type 1 licenses, those statistics have shown less variability, with hunter success ranging from 35-45% and days per harvest ranging from 15-23 days. The number of antlerless/cow licenses issued can mask harvest rates of bulls when overall herd unit results are analyzed for success and effort. The number of antlerless/cow licenses being issued in the herd unit has increased over the past 15 years due to increasing elk abundance.

More recently, the number of total licenses offered and number of hunters have increased. The number of elk harvested and hunter effort (days/harvested elk) are dependent upon weather and access to elk herds. During the 2015 season, about 1,800 hunters, of which 37% were successful, spent an average of 22 days harvesting 700 elk. These statistics are slightly above the 5-year-average.

### **Population**

This population was monitored using trend surveys until 2008. Classification survey totals were often higher than trend totals, so trend surveys were discontinued. Classification and trend survey totals suggest an increasing population since the early 1990s, except for a decline during extended drought (2000-04). Since 2004, the classification survey totals have been steadily rising. Field personnel agree with those trends.

The spreadsheet model fits to 23 years of data. The time specific juvenile, constant adult, male survival coefficient (TSJ, CA, MSC) model had the lowest AIC score of 269 (CJ/CA=771). However, the TSJ, CA, MSC model is appropriate for herd units that have high natural predation creating differing adult male and adult female survival, which is not the case for this herd unit. The TSJ/CA/MS model estimated this herd 8,300 elk in 2015, indicating this herd has doubled since 2004, which does not match the perception of field personnel. Field personnel believe the herd is increasing, but has not doubled. This model ranks as *poor* and would benefit from sample-based population estimates with standard errors. During the 2016 public review process, a mid-winter trend count objective will be proposed, eliminating the model-based population objective.

### **Management Summary**

Large areas of private land that allow limited to no elk hunting make management of this herd challenging. Elevated antlerless/cow license numbers and extended seasons should enable hunters to harvest cow elk in Hunt Area 45. In Hunt Area 41, seasons open and close to allow elk to come off private land refuges before opening again. Most nonresidents hunt a narrow band of National Forest between wilderness and private land. Hunters have complained about overcrowding on October 15<sup>th</sup>; therefore, our seasons are designed to spread hunters out over time, since they are spatially limited. By creating an “antlerless” extension for the Type 1 license, those license holders will have the opportunity to return later and harvest a cow when snow pushes the elk to more accessible areas.

## 2015 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL214 - GOOSEBERRY

HUNT AREAS: 62-64

PREPARED BY: BART KROGER

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Trend Count:	2,722	2,590	2,500
Harvest:	775	781	700
Hunters:	1,335	1,532	1,400
Hunter Success:	58%	51%	50 %
Active Licenses:	1,384	1,560	1,450
Active License Success	56%	50%	48 %
Recreation Days:	8,398	10,152	9,000
Days Per Animal:	10.8	13.0	12.9
Males per 100 Females:	20	16	
Juveniles per 100 Females	28	22	

Trend Based Objective (± 20%) 2,000 (1600 - 2400)

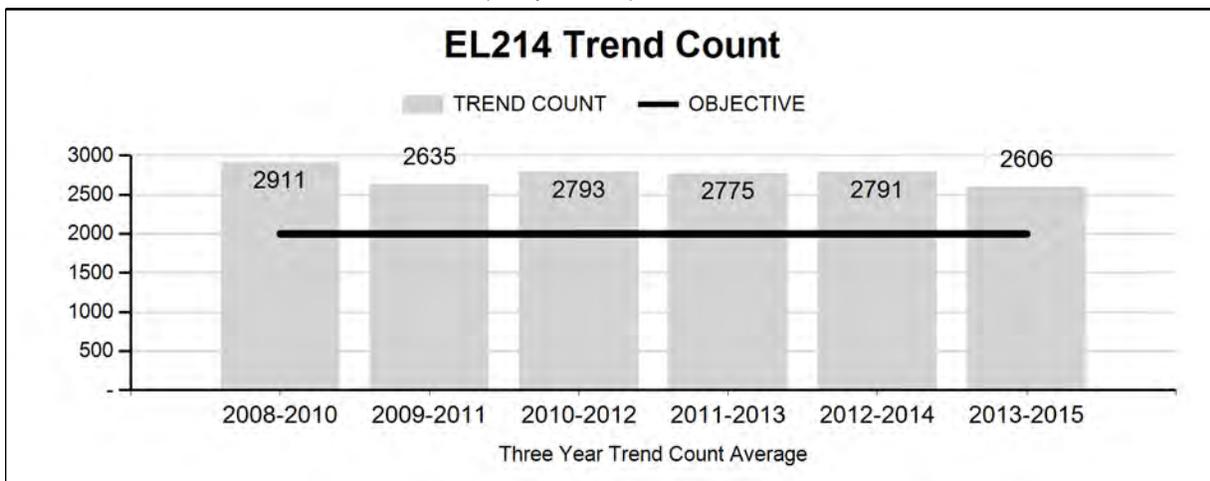
Management Strategy: Special

Percent population is above (+) or (-) objective: 30%

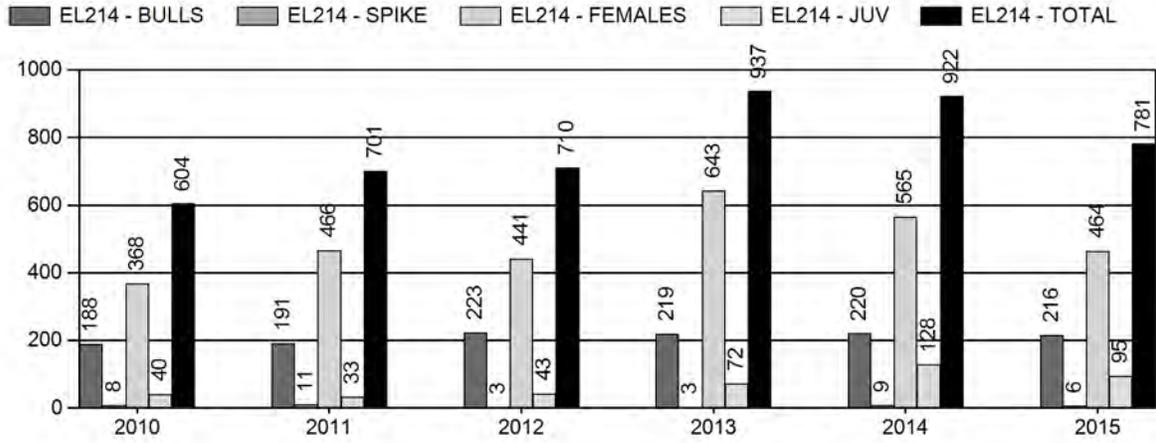
Number of years population has been + or - objective in recent trend: 11

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

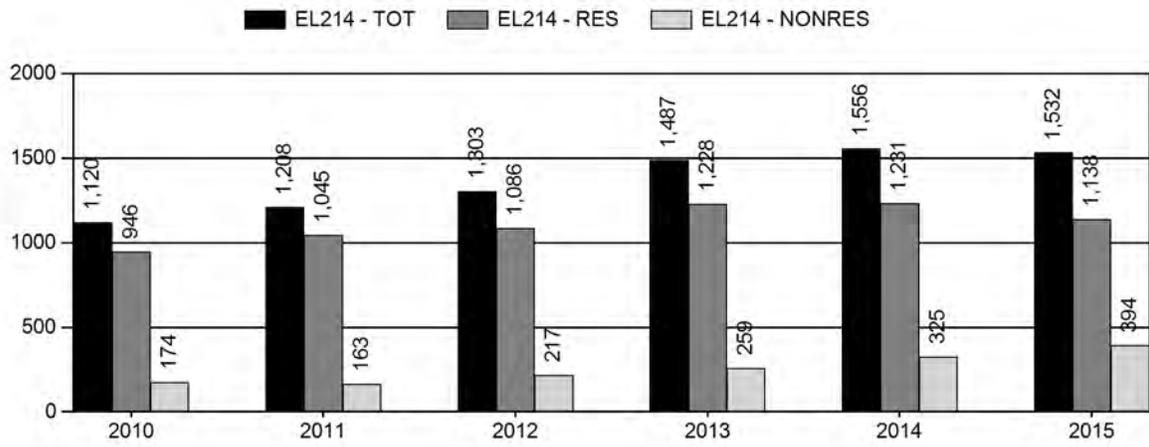
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%



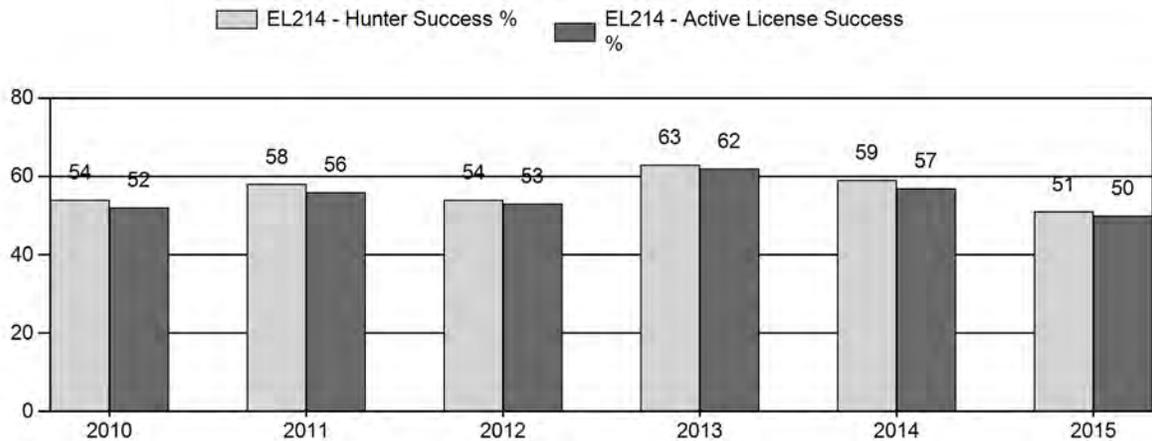
# Harvest



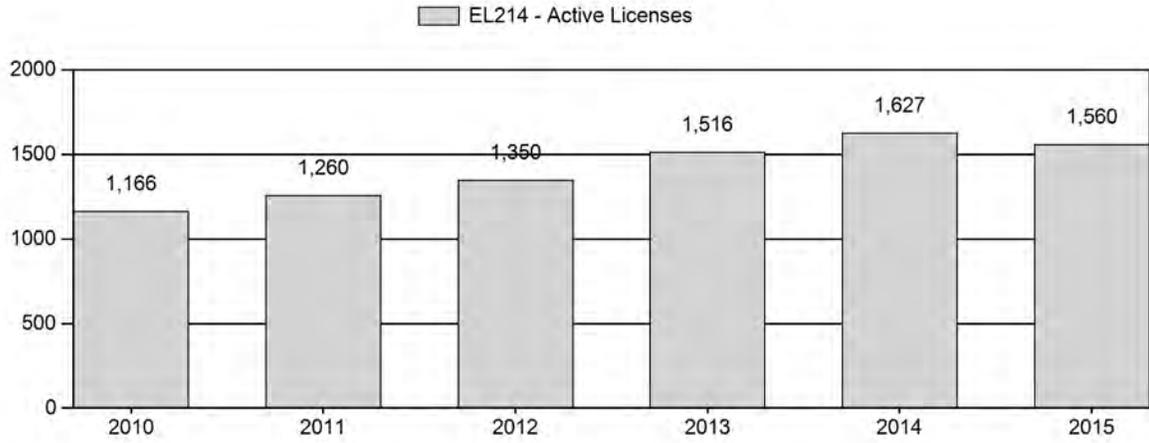
# Number of Hunters



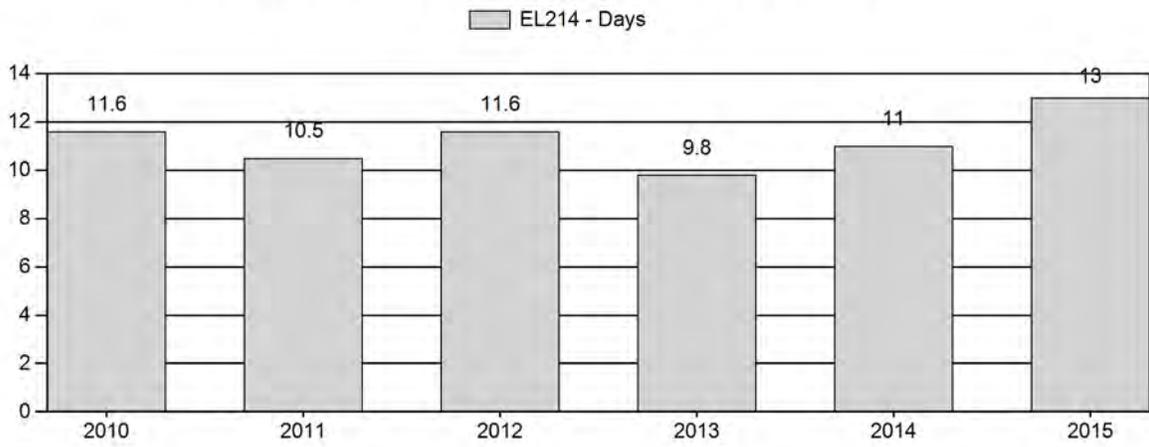
# Harvest Success



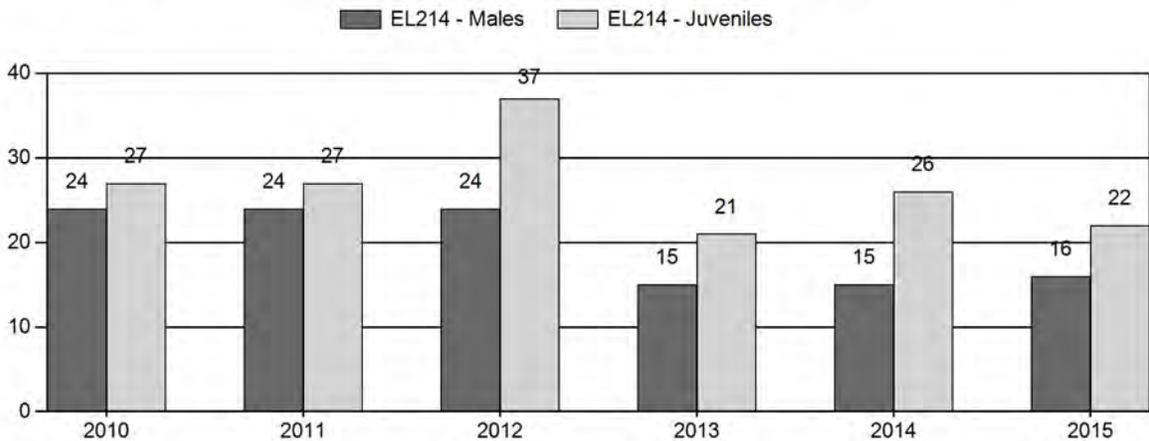
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Elk Herd EL214 - GOOSEBERRY

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	3,900	184	160	344	16%	1,461	67%	388	18%	2,193	315	13	11	24	± 1	27	± 1	21
2011	3,400	187	196	383	16%	1,611	66%	440	18%	2,434	309	12	12	24	± 1	27	± 1	22
2012	0	221	255	476	15%	1,944	62%	724	23%	3,144	468	11	13	24	± 0	37	± 0	30
2013	0	177	127	304	11%	2,022	74%	422	15%	2,748	0	9	6	15	± 0	21	± 0	18
2014	0	138	124	262	11%	1,758	71%	461	19%	2,481	0	8	7	15	± 0	26	± 0	23
2015	0	133	106	239	11%	1,521	73%	330	16%	2,090	0	9	7	16	± 0	22	± 0	19

**2016 HUNTING SEASONS  
GOOSEBERRY ELK HERD (EL214)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
62	1	Oct. 1	Oct. 21	125	Limited quota	Any elk
62	4	Oct. 1	Oct. 21	75	Limited quota	Antlerless elk
62, 63	5	Oct. 22	Nov. 15	200	Limited quota	Antlerless elk
62, 63	5	Nov. 26	Dec. 21			Antlerless elk
63, 64	1	Oct. 1	Oct. 21	200	Limited quota	Any elk
63, 64	1	Nov. 1	Dec. 21			Antlerless elk
63	4	Oct. 1	Dec. 21	200	Limited quota	Antlerless elk
63	6	Aug. 15	Oct. 31	200	Limited quota	Cow or calf valid off national forest north of Gooseberry Creek
63	6	Nov. 1	Dec. 21			Cow or calf valid off national forest
64	2	Nov. 1	Nov. 15	100	Limited quota	Any elk
64	2	Nov. 16	Dec. 21			Antlerless elk
64	6	Sep. 1	Nov. 14	300	Limited quota	Cow or calf valid within the Cottonwood Creek drainage off national forest; also valid within the Grass Creek Drainage downstream of the Grass Creek/Little Grass Creek confluence
64	6	Nov. 15	Dec. 21			Cow or calf valid in the entire area
64	7	Oct. 15	Dec. 21	300	Limited quota	Cow or calf valid south of and including the Cottonwood Creek drainage

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
62, 63, 64	All	Sep. 1	Sep. 30	Valid in the entire area(s)

Hunt Area	Type	Quota change from 2015
63	6	-200
64	6	-200
64	7	+200
<b>Total</b>	<b>6 &amp; 7</b>	<b>-200</b>

## **Management Evaluation**

**Current Mid-Winter Trend Count Objective:** 2,000

**Management Strategy:** Special

**2015 Mid-Winter Count:** 2,600

**Most Recent 3-year Running Average Trend Count:** 2,600

**2015 Hunter Satisfaction:** 65% satisfied, 20% neutral, 15% dissatisfied

## **Herd Unit Issues**

Hunter access to private lands, potential damage issues, brucellosis and large predator influences will continue to be major issues in managing this elk herd. The herd objective and management strategy were last revised in 2012. Efforts to develop and implement management ideas that result in more harvest and improved hunter success have and will continue to be major concerns with this elk herd. Currently, this herd unit supports three Hunter Management Areas (Pitchfork, Absaroka Front & Owl Creek HMA's), and one large Walk-in-Area. Hunting season structures, particularly antlerless and cow/calf seasons have become very liberal over the past 10 years. License quotas and season lengths have increased dramatically, with most antlerless and cow/calf hunting seasons being 3-4 months long. Because this herd is being managed under special management, Type 1 & 2 seasons are managed conservatively to maintain good bull quality and hunter satisfaction.

## **Weather**

Winter conditions the past 3 years have been mild, with mostly low snowpack and normal temperatures, resulting in good over winter survival. However, the dry summer conditions in 2012 and 2013 appeared to influence elk distribution due to decreased forage production. Because of this, some damage issues on private land were reported. Overall, forage production increased significantly in 2014 and 2015 as a result of increased moisture throughout the year. Fall and winter precipitation in 2014 was well above normal, while 2015 is well below normal throughout this herd unit.

## **Habitat**

Numerous prescribed and wild fires have burned throughout this herd unit over the past 2 decades, particularly in areas 62 and 63. These fires have certainly improved forage quality and quantity for the herd. The Department initiated a 5-year rapid habitat assessment within the Grass Creek drainage of hunt area 64 that will primarily focus on the condition of aspen communities and sagebrush and riparian communities being encroached by conifers. Several aspen stands were assessed during summer 2015 and a 120-acre treatment to remove conifers from aspen will be initiated in 2016. Two permanent shrub transects occur in this herd unit. Utilization continues to be very low on sagebrush in this herd unit, indicating that forage quantity on winter range is not a limiting factor. These data can be found in Appendix B in the Cody Region JCRs.

## **Field Data**

Based on the 3-year average trend count, this elk herd has stayed fairly stable at around 2600 elk. The 2014 and 2015 annual counts have been 2 of the lowest in the last 10 years. If this trend continues, we will be reaching our winter count goal of 2000 ( $\pm 20\%$ ) by 2017 or 2018. Calf ratios have fluctuated in recent years, but on average have remained at about 27:100 cows. Hunt area count goals and trends are also monitored in order to make hunting season adjustments as

needed. Winter count goals for areas 62, 63 and 64 are 600, 600 and 800 elk, respectively. Since 2012, the 3-year average winter counts have been 700 for area 62, 500 for area 63 and 1400 for area 64 (Table 1).

Table 1. Gooseberry Elk Herd Unit and Hunt Area Mid-winter trend counts, 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	3yr. Avg.	Count Goal
HA 62	710	617	808	641	1203	1063	788	609	565	961	712	600 elk
HA 63	1171	670	556	991	535	961	698	604	463	354	474	600 elk
HA 64	636	1385	1897	1039	1063	410	1658	1535	1453	1275	1421	800 elk
Herd Unit	2517	2672	3261	2671	2801	2434	3144	2748	2481	2590	2606	2000 elk

### Harvest Data

Overall, total harvest of elk in this herd unit has increased by 100% since 2009, with 2013, 2014 and 2015 having the highest harvest on record. Hunter success improved in 2013 and 2014, but declined in 2015, likely because of warm dry hunting conditions. Hunter numbers have increased by 50% since 2009. Hunter effort (10-12 days/harvest) has remained mostly stable despite increased hunter numbers. These improving harvest trends along with winter counts also reflect field personnel and landowner perceptions of slightly declining elk densities.

### Population

Recent trends for this elk herd appear to be declining given harvest has increased by nearly 100% in recent years. Since 2008, this elk herd has stayed fairly stable at around 2700 elk counted. However, the 2014 and 2015 annual counts were two of the lowest in the last 10 years, thus contributing to the 2015 3-year average count of 2600 elk, which is the lowest since 2008. If this trend continues, we will be reaching our winter count goal of 2000 ( $\pm 20\%$ ) by 2017 or 2018.

### Management Summary

Currently for the herd unit, hunter densities, season lengths and landowner tolerance has been maximized. Bull harvest and quality, along with hunter satisfaction remains favorable so there is no need to change any Type 1 or Type 2 seasons or quotas. Season lengths will continue to run until late December in all hunt areas for antlerless elk. Area 62 will experience a closed period of 11 days in late November, similar to area 61. This should allow elk to settle back into the Pitchfork HMA and at lower elevations on National Forest. Since area 63 is below its winter count goal of 600 elk, the Type 6 licenses will be reduced by 200. A slight adjustment to the Type 6 and 7 licenses in area 64 will be made to help distribute hunters, and reduce hunting pressure on the Absaroka Front HMA. With a 2016 projected harvest of about 800 elk, we expect further declines in this population to occur, which should help push this elk herd further toward objective.

**2010 - 2015 Trend Count Summary**  
for Elk Herd EL214 - GOOSEBERRY

<b>Year</b>	<b>Count Dates</b>	<b>Flight Time</b>		<b>Number Counted</b>
		<b>Hours</b>	<b>Minutes</b>	
2010	FEBRUARY 2011	4	35	2,801
2011	JANUARY 2012	4	0	2,434
2012	JANUARY 2013	4	50	3,144
2013	JANUARY 2014	6	40	2,748
2014	JANUARY 2015	5	50	2,481
2015	JANUARY 2016	4	25	2,590

## 2015 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL216 - CODY

HUNT AREAS: 55-56, 58-61, 66

PREPARED BY: DOUG MCWHIRTER

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Trend Count:	5,622	4,205	4,500
Harvest:	1,540	1,283	1,300
Hunters:	2,911	3,097	2,900
Hunter Success:	53%	41%	45 %
Active Licenses:	3,064	3,235	3,000
Active License Success	50%	40%	43 %
Recreation Days:	18,750	19,986	19,000
Days Per Animal:	12.2	15.6	14.6
Males per 100 Females:	27	31	
Juveniles per 100 Females	29	27	

Trend Based Objective (± 20%) 4,400 (3520 - 5280)

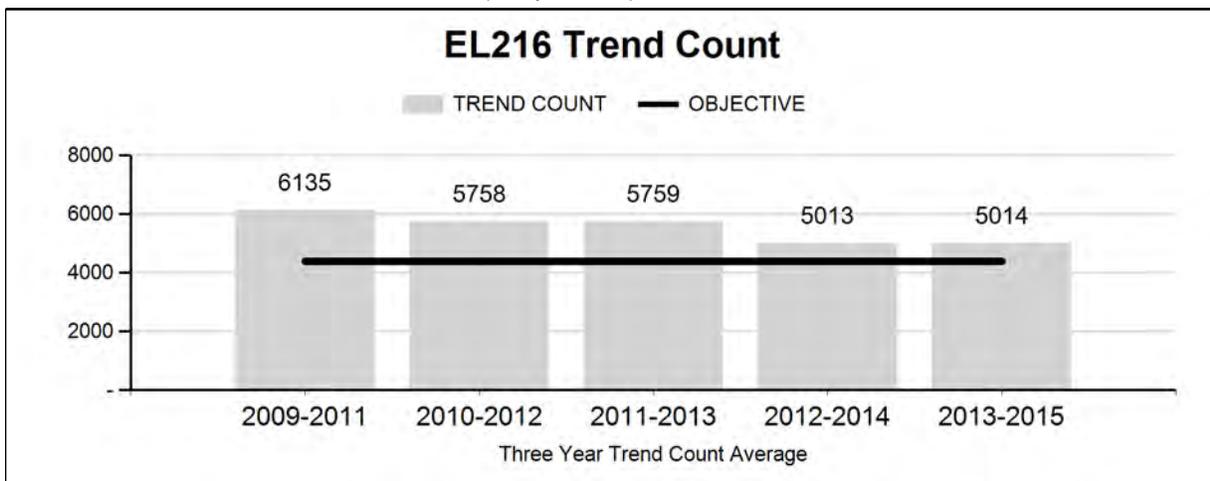
Management Strategy: Special

Percent population is above (+) or (-) objective: -4.4%

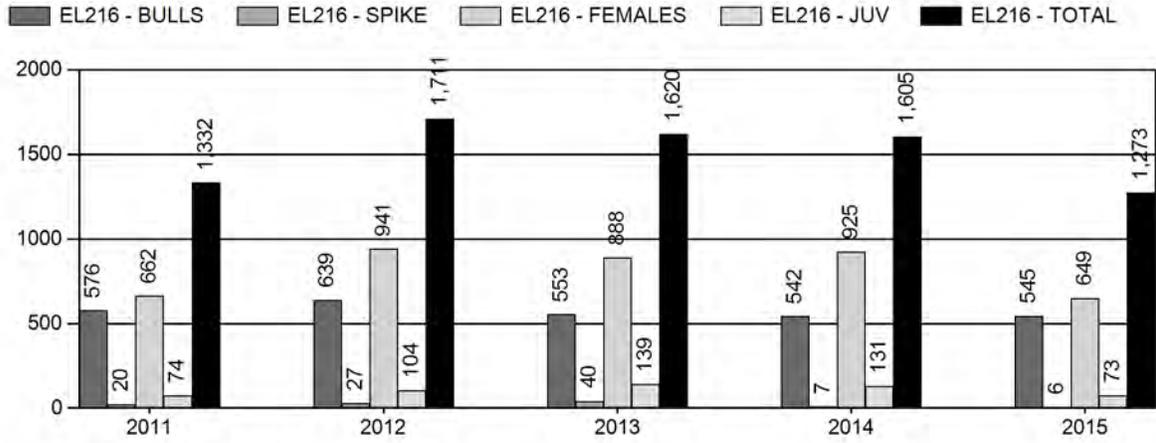
Number of years population has been + or - objective in recent trend: 18

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

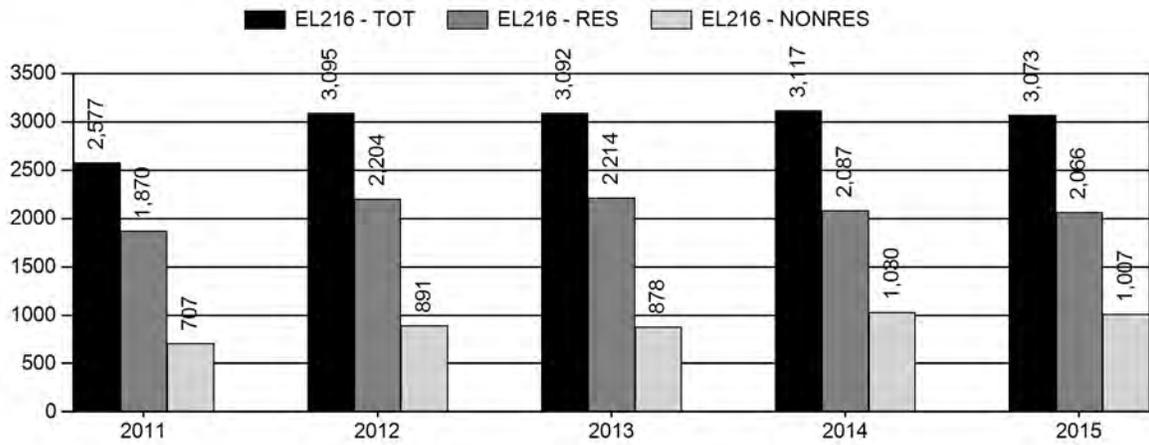
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	N/A%	N/A%
Males ≥ 1 year old:	N/A%	N/A%
Juveniles (< 1 year old):	N/A%	N/A%



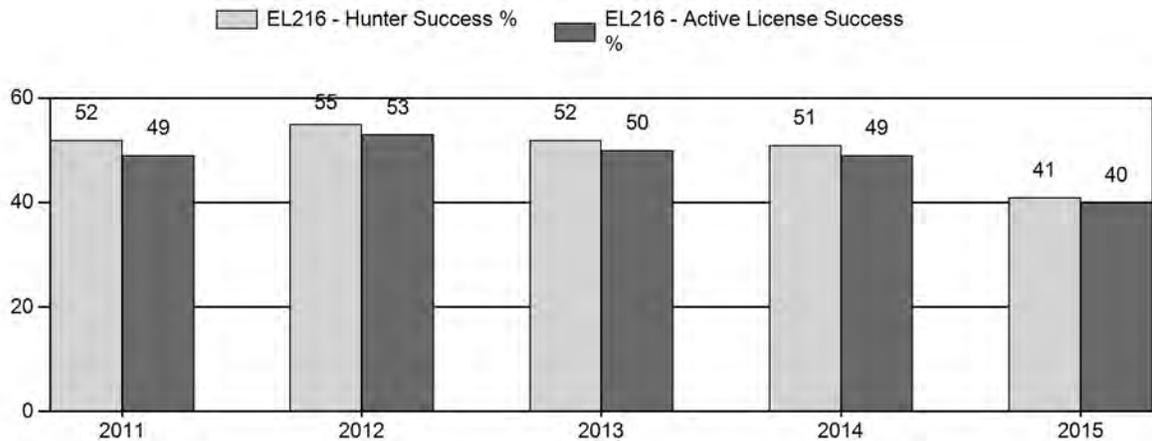
# Harvest



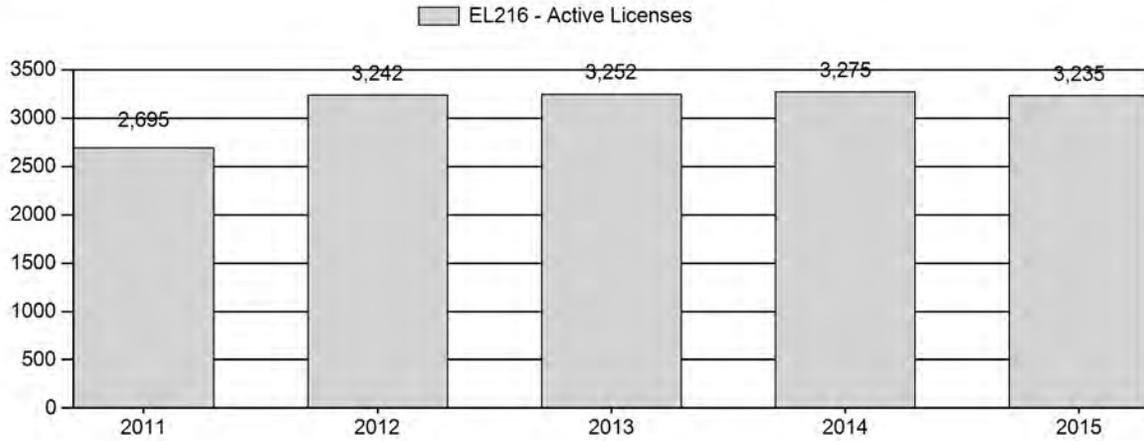
# Number of Hunters



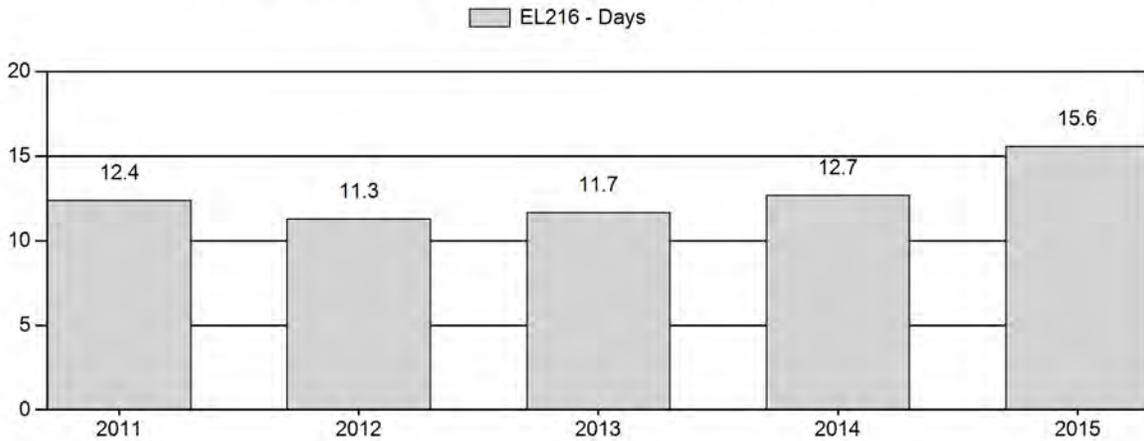
# Harvest Success



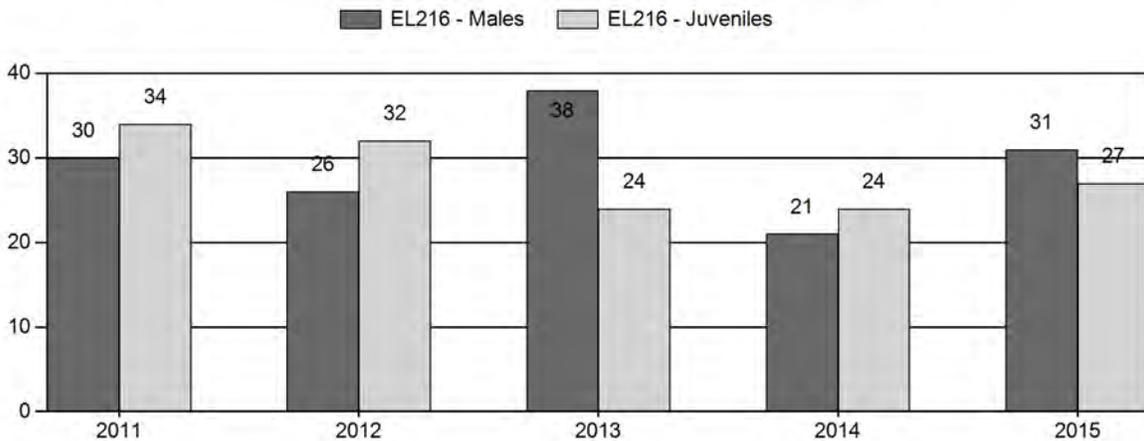
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Elk Herd EL216 - CODY

Year	Post 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
2010	8,000	375	335	710	12%	3,878	68%	1,135	20%	5,723	372	10	9	18	± 1	29	± 1	25
2011	8,000	582	755	1,337	18%	4,490	61%	1,519	21%	7,346	370	13	17	30	± 0	34	± 0	26
2012	0	262	397	659	16%	2,561	63%	815	20%	4,035	388	10	16	26	± 0	32	± 0	25
2013	0	333	860	1,193	24%	3,130	62%	740	15%	5,063	377	11	27	38	± 0	24	± 0	17
2014	0	176	155	331	14%	1,604	69%	384	17%	2,319	293	11	10	21	± 0	24	± 0	20
2015	0	209	394	603	20%	1,930	63%	530	17%	3,063	372	11	20	31	± 0	27	± 0	21

**2016 HUNTING SEASONS  
CODY ELK HERD (EL216)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
55	1	Oct. 1	Oct. 21	50	Limited quota	Any elk
55	9	Sep. 1	Sep. 30	25	Limited quota	Any elk, archery only
56		Oct. 1	Oct. 21		General	Antlered elk
56	1	Nov. 1	Dec. 7	10	Limited quota	Any elk
56	4	Oct. 1	Dec. 21	100	Limited quota	Antlerless elk
56	5	Nov. 1	Dec. 21	50	Limited quota	Antlerless elk valid off national forest
56	6	Nov. 1	Dec. 21	100	Limited quota	Cow or calf
56	9	Sep. 1	Sep. 30	30	Limited quota	Any elk, archery only
58	1	Oct. 1	Nov. 30	35	Limited quota	Any elk
58	4	Oct. 1	Dec. 21	100	Limited quota	Antlerless elk
58	6	Oct. 1	Dec. 21	300	Limited quota	Cow or calf
59		Oct. 1	Oct. 21		General	Any elk
59	1	Nov. 1	Nov. 15	10	Limited quota	Any elk
59	6	Oct. 1	Dec. 21	375	Limited quota	Cow or calf
59	7	Oct. 1	Oct. 31	25	Limited quota	Cow or calf valid within the Washakie Wilderness
59	9	Sep. 1	Sep. 30	25	Limited quota	Any elk, archery only
60		Sep. 20	Oct. 22		General	Any elk
60	9	Sep. 1	Sep. 30	20	Limited quota	Any elk, archery only
61	1	Oct. 1	Oct. 31	150	Limited quota	Any elk valid within the Washakie Wilderness, also valid in that portion of Area 62 within the Washakie Wilderness south of Avalanche Creek
61	2	Oct. 15	Nov. 15	50	Limited quota	Any elk, also valid in Area 66
61	2	Nov. 16	Jan. 15			Any elk valid only in Area 66
61	4	Oct. 15	Nov. 15	50	Limited quota	Antlerless elk
61	6	Sep. 1	Nov. 14	400	Limited quota	Cow or calf valid north of and including the Rawhide Creek drainage
61	6	Nov. 1	Nov. 14			Cow or calf valid within the Washakie Wilderness
61	6	Nov. 26	Dec. 21			Cow or calf valid in the entire area, also valid in Area 66 and that portion of Area 58 within the Dry

						Creek drainage
66		Aug. 15	Oct. 15		General	Any elk
66		Oct. 16	Dec. 21		General	Antlerless elk
66	6	Aug. 15	Jan. 15	350	Limited quota	Cow or calf

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
55, 56, 58, 59, 61	All	Sep. 1	Sep. 30	Valid in the entire area(s)
60	All	Sep. 1	Sep. 19	Valid in the entire area(s)

Hunt Area	Type	Quota change from 2015
61	4	-50
61	6	-200
66	6	+100
<b>Total</b>	<b>4</b>	<b>-50</b>
	<b>6</b>	<b>-100</b>

### **Management Evaluation**

**Current Mid-Winter Trend Count Objective:** 4,400

**Management Strategy:** Special

**2015 Mid-Winter Trend Count:** 4,205

**Most Recent 3-year Running Average Trend Count:** 5,014

### **Herd Unit Issues**

Most of the Cody Herd Unit is characterized by migratory elk, but substantial numbers of non-migratory elk are found in all areas. Calf productivity varies across this herd unit, but not as dramatically as that seen in the Clarks Fork Herd Unit. Damage situations do exist where overabundant elk overlap with private lands. Elk in areas with good productivity that reside at least seasonally on mixed ownership require liberal management, while those herd segments with poor productivity require conservative management.

### **Weather**

Conditions during the 2015-2016 winter were relatively mild, although snow cover and colder than normal temperatures persisted from mid-December through mid-January. Conditions moderated and above average temperatures returned during February and early March. Several bouts of snow and cold temperatures returned in late winter, but did not persist. Although annual precipitation was below average, growing season precipitation was near to slightly above average.

### Habitat

One herbaceous vegetation transect is monitored on Carter Mountain. Herbaceous production was greater than normal in 2015, perhaps 50% higher than average. As a result of this and the relatively open winter conditions, utilization levels during the 2015-2016 winter were generally lower.

### Field Data

Classification surveys in 2015 yielded a herd unit calf:cow ratio of 28:100 (range 21:100 – 42:100), while the most recent 10-year (2005-2014) average calf:cow ratio is 26.2 calves:100 cows (range 15:100 – 34:100). The 2015 surveys produced a yearling bull:cow ratio of 11:100 (range 6:100 – 15:100), while the average yearling bull ratio is 9.6 yearling bulls:100 cows over the 2005-2014 period (range 7:100 - 13:100).

### Harvest

A total of 557 bulls were harvested in 2015, which is very similar to the most recent 10-year average (608 bulls, range 525-773). At 726 the antlerless elk harvest was intentionally decreased from the average of nearly 1,100 antlerless elk achieved from 2012-2014.

### Population

The Cody Elk Herd Unit to a Mid-Winter Trend Count based population objective. Trend count objectives are based on 3-year running averages on a hunt area/multiple hunt area basis. The Trend Count Objective for Hunt Areas 55 & 56 is 1,150 elk, while the actual trend count average in this area is 1,296. Management efforts will be directed at maintaining elk numbers at this level. The Trend Count Objective for Hunt Areas 58 & 59 is also 1,150 elk, while the actual average trend count is 1,467 elk. Management direction for this area is to continue to reduce elk numbers. The Trend Count Objective for Hunt Area 61 is 2,100 elk, while the actual average trend count here is 2,043 elk. Management direction for this area will be to maintain elk numbers at current levels. Hunt Area 66 has a Trend Count Objective of 0 elk and management efforts here are to minimize elk numbers as much as possible.

In total, the Trend Count Objective for the entire Cody Elk Herd Unit is 4,400 elk, while the average 3-year trend count average is 5,014. Management efforts will continue to reduce elk numbers to meet this objective, with emphasis on Area 66, and to a lesser degree Area 58 and 59.

	Hunt Areas 55/56	Hunt Areas 58/59	Hunt Area 61	Hunt Area 66	Herd Unit Total
Count Goal	1,150	1,150	2,100	0	4,400
2013	1,401	1,726	2,431	168	5,726
2014	1,211	1,580	2,223	96	5,110
2015	1,277	1,096	1,474	358	4,205
3-year Average	1,296	1,467	2,043	207	5,014



## 2015 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL217 - CLARKS FORK

HUNT AREAS: 51, 53-54

PREPARED BY: DOUG MCWHIRTER

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Trend Count:	3,547	3,517	3,600
Harvest:	486	440	450
Hunters:	1,052	956	900
Hunter Success:	46%	46%	50%
Active Licenses:	1,124	999	900
Active License Success	43%	44%	50%
Recreation Days:	8,220	6,389	6,000
Days Per Animal:	16.9	14.5	13.3
Males per 100 Females:	20	12	
Juveniles per 100 Females	24	21	

Trend Based Objective (± 20%) 3,300 (2640 - 3960)

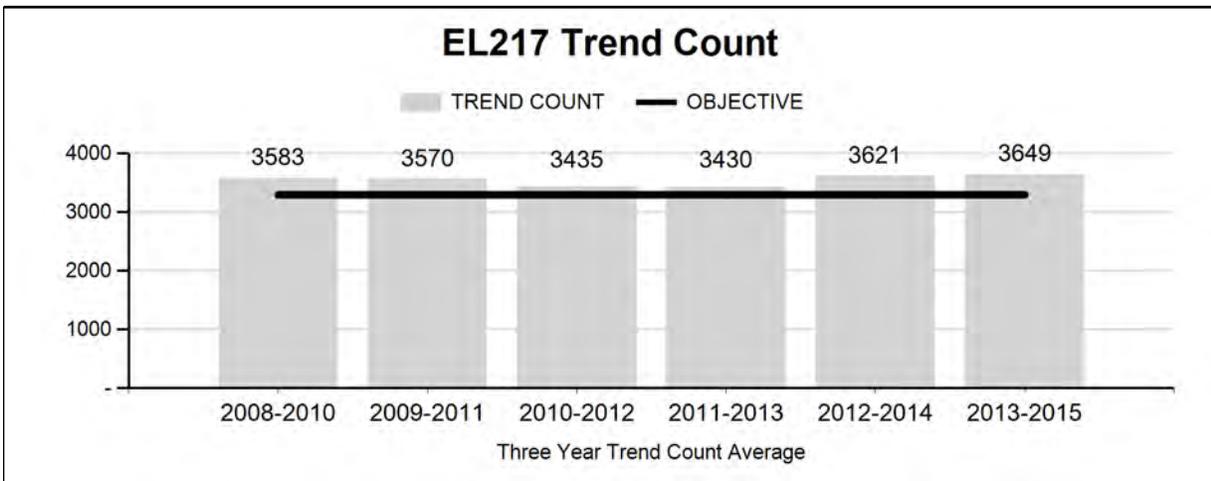
Management Strategy: Special

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

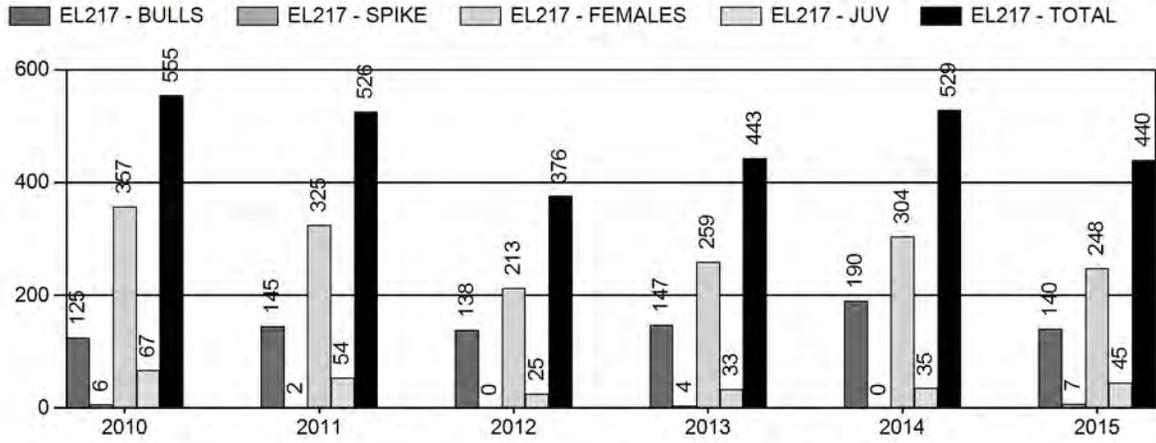
Number of years population has been + or - objective in recent trend: 23

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

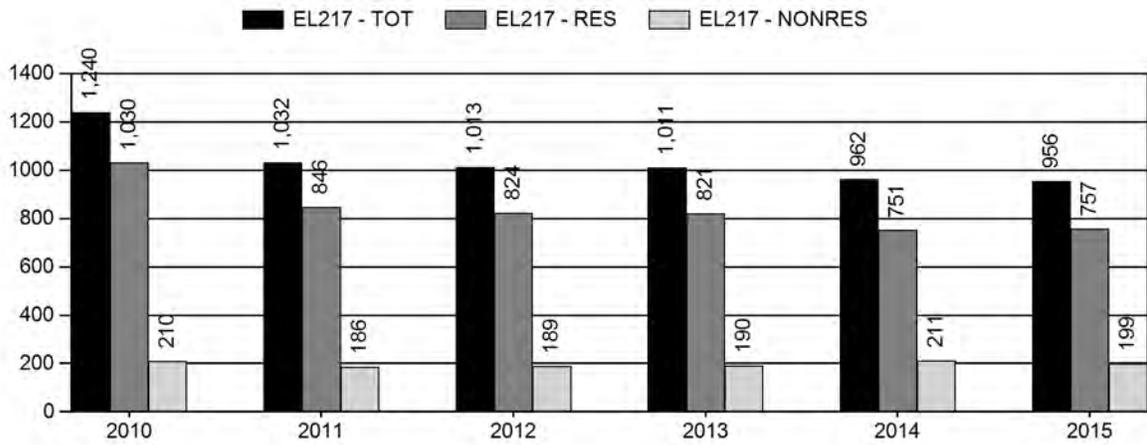
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	N/A%	N/A%
Males ≥ 1 year old:	N/A%	N/A%
Juveniles (< 1 year old):	N/A%	N/A%



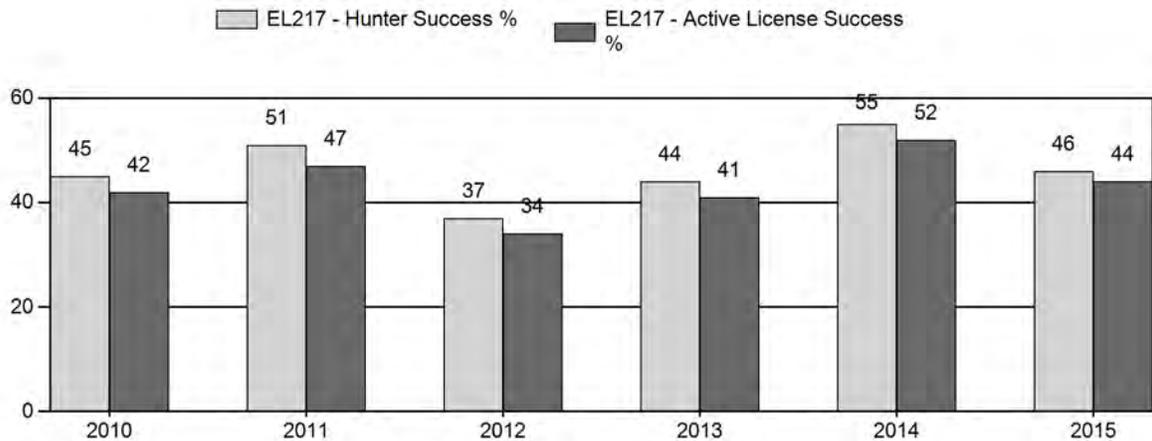
# Harvest



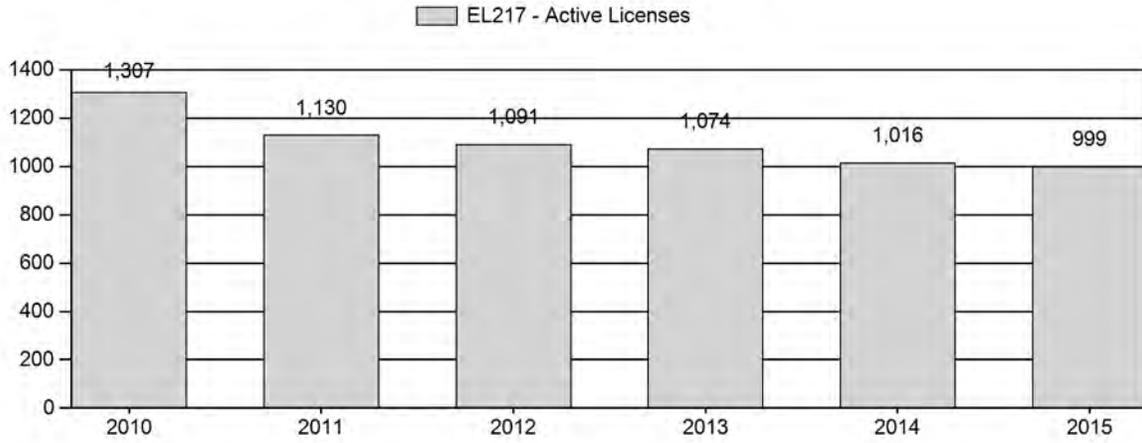
# Number of Hunters



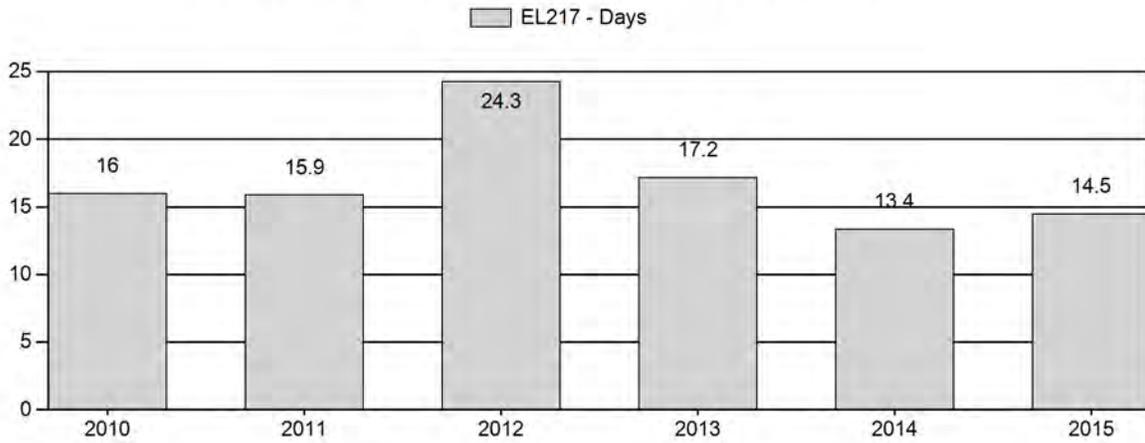
# Harvest Success



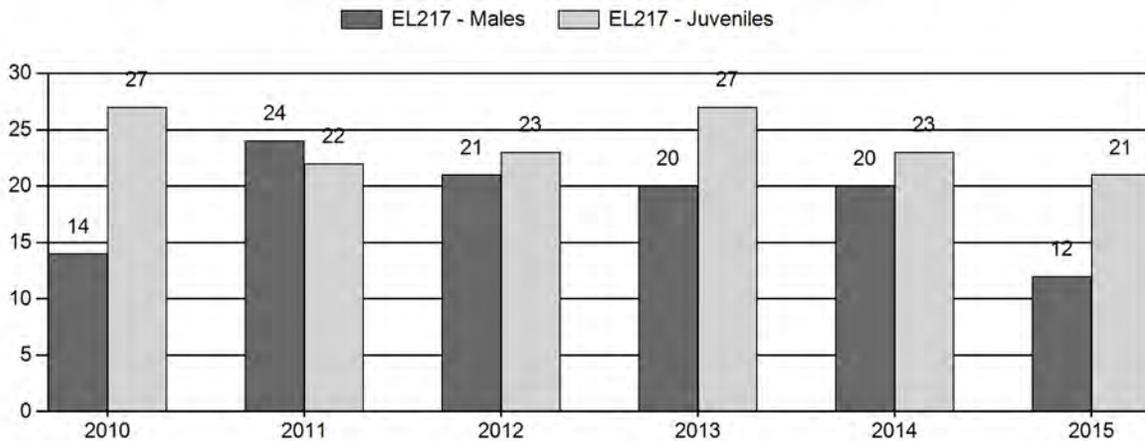
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Elk Herd EL217 - CLARKS FORK

Year	Post 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
2010	4,238	153	97	250	10%	1,782	71%	476	19%	2,508	369	9	5	14	± 1	27	± 1	23
2011	3,931	204	376	580	17%	2,379	68%	524	15%	3,483	283	9	16	24	± 0	22	± 0	18
2012	3,896	127	355	482	14%	2,331	69%	541	16%	3,354	287	5	15	21	± 0	23	± 1	19
2013	0	149	307	456	14%	2,252	68%	607	18%	3,315	366	7	14	20	± 0	27	± 0	22
2014	0	188	358	546	14%	2,670	70%	603	16%	3,819	288	7	13	20	± 0	23	± 0	19
2015	0	144	80	224	9%	1,857	75%	397	16%	2,478	366	8	4	12	± 0	21	± 0	19

**2016 HUNTING SEASONS  
CLARKS FORK ELK HERD (EL217)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
51	1	Oct. 1	Oct. 31	100	Limited quota	Any elk south and west of the Clarks Fork River
51	2	Oct. 1	Oct. 31	40	Limited quota	Any elk north and east of the Clarks Fork River
51	4	Nov. 16	Dec. 15	150	Limited quota	Antlerless elk
51	9	Sep. 1	Sep. 30	70	Limited quota	Any elk, archery only
53	1	Oct. 1	Oct. 31	10	Limited quota	Any elk
53	2	Nov. 1	Nov. 30	75	Limited quota	Any elk valid in the Shoshone River drainage
53	4	Oct. 1	Dec. 15	50	Limited quota	Antlerless elk
53	6	Nov. 1	Dec. 21	200	Limited quota	Cow or calf valid in the North Fork Shoshone River drainage
53	9	Sep. 1	Sep. 30	10	Limited quota	Any elk, archery only
54	1	Oct. 1	Nov. 30	50	Limited quota	Any elk valid south of the Clarks Fork River
54	2	Oct. 1	Oct. 31	25	Limited quota	Any elk valid north of the Clarks Fork River
54	6	Sep. 1	Oct. 31	50	Limited quota	Cow or calf
54	7	Nov. 1	Dec. 21	200	Limited quota	Cow or calf
54	9	Aug. 15	Sep. 30	35	Limited quota	Any elk, archery only

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
54	All	Sep. 1	Sep. 30	Valid in the entire area(s)

Hunt Area	Type	Quota change from 2015
54	6	-50
54	7	-50
<b>Total</b>	<b>6-7</b>	<b>-100</b>

## **Management Evaluation**

**Current Mid-Winter Trend Count Objective:** 3,300

**Management Strategy:** Special

**2015 Mid-Winter Trend Count:** 3,517

**Most Recent 3-year Running Average Trend Count:** 3,649

### **Herd Unit Issues**

Much of the Clarks Fork Herd Unit is characterized by migratory elk in the Sunlight Basin and Crandall Areas, while substantial numbers of non-migratory elk are found in along the Absaroka Front and Beartooth Face. Migratory elk exhibit poor productivity, while non-migratory elk have much higher productivity. Consequently, damage situations arise with non-migratory elk and require liberal management, while poor productivity requires conservative management of migratory elk.

To better manage migratory and non-migratory elk and simplify hunting regulations, hunt area boundaries were re-configured in 2014. To encompass migratory elk, the western portion of Area 50 and Area 52 were added to Area 51. Similarly, to encompass non-migratory elk the eastern portion of Area 50, the eastern portion of Area 12, and Area 65 were added to Area 54. To better define the semi-migratory elk in the Rattlesnake Creek, Trout Creek, and Dead Indian Creek drainages, the western portion of Area 121 and the Elk Creek drainage of Area 52 were added to Area 53. This change allows for more direct management of migratory and non-migratory elk and reduces complexity by eliminating 4 hunt areas and 4 license types.

### **Weather**

Conditions during the 2015-2016 winter were relatively mild, although snow cover and colder than normal temperatures persisted from mid-December through mid-January. Conditions moderated and above average temperatures returned during February and early March. Several bouts of snow and cold temperatures returned in late winter, but did not persist. Although annual precipitation was below average, growing season precipitation was near to slightly above average.

### **Habitat**

Herbaceous vegetation transects are monitored on upland vegetation types in Sunlight Basin, both on the Sunlight Wildlife Habitat Management Area (WHMA) and on adjacent US Forest Service lands. Herbaceous production in 2015 was generally above average, with some sites 20%-25% above average. As a result of this and the relatively open winter conditions, utilization levels during the 2015-2016 winter were generally lower.

### **Field Data**

Classification surveys in 2015 yielded calf:cow ratios of 14:100 in Hunt Area 51, 29:100 in Hunt Area 53 and 23:100 in Hunt Area 54. The most recent 10-year (2005-2014) average calf:cow ratio in Hunt Area 51 is 14.6 calves:100 cows (range 11:100 – 20:100), 36.3 calves:100 cows (range 27:100 – 45:100) in Hunt Area 53, and 34.4 calves:100 cows in Hunt Area 54 (range 23:100 – 39:100). Yearling bull:cow ratios in 2015 were 2:100 in Hunt Area 51, 13:100 in Hunt Area 53, and 9:100 in Hunt Area 54. The most recent 10-year (2005-2014) average yearling bull:cow ratios were 4.6 yearling bulls:100 cows in Hunt Area 51 (range 3:100 - 6:100), 8.8

yearling bulls:100 cows in Hunt Area 53 (range 3:100 – 15:100), and 12.1 yearling bulls:100 cows (range 7:100 – 19:100) in Hunt Area 54.

**Harvest Data**

Bull harvest was 153 in 2015 and has stabilized near 150 (2010-2015 average 152, range 131-192) in this herd unit since conversion to totally limited quota hunting. A total of 297 antlerless elk were harvested in 2015, but remained near the most recent 5-year average (2010-2014) of 337.

**Population**

Recent winter movement of elk out of Hunt Area 51 and into Hunt Area 54 has complicated efforts to determine trends in each hunt area. However, it is felt that elk numbers remain slightly above management goals in both Hunt Area 51 and Hunt Area 54. Antlerless licenses will be reduced in Hunt Area 54 in 2015 due to a significant loss of public access. Antlered elk seasons in Hunt Area 51 were split into Type 1 and Type 2 to better direct hunting pressure into the primarily Wilderness area south and west of the Clarks Fork River (Type1) and the primarily non-Wilderness area to the north and east of the Clarks Fork River (Type 2). We will continue with the current management structure, which consists of conservative seasons for both antlered and antlerless elk in Hunt Area 51, while continuing to maintain current elk numbers in Hunt Area 53 and reducing elk numbers in Hunt Area 54. The 2015 seasons should result in post-season 2016 population closer to the objective of 3,300 observed elk on winter range.

	Hunt Area 51	Hunt Area 53	Hunt Area 54	Herd Unit Total
Count Goal	1,800	600	900	3,300
2013	1,414*	610	1,348	3,372
2014	1,914	638	1,506	4,058
2015	1,337*	662	1,518	3,517
3-year Average	1,555*	637	1,457	3,649

\* Partial counts in 2013 & 2015, suspected movement into HA54 in both years



## 2015 - JCR Evaluation Form

SPECIES: Moose

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

HERD: MO201 - ABSAROKA

HUNT AREAS: 8-9, 11

PREPARED BY: DOUG  
MCWHIRTER

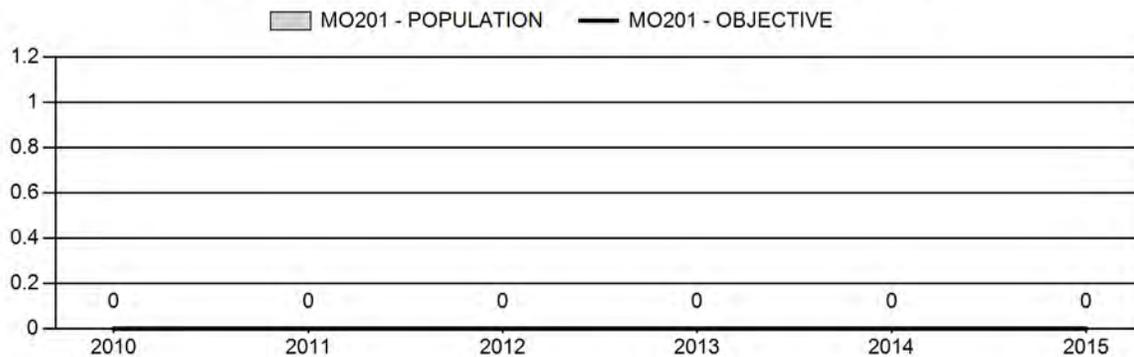
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	0	N/A	N/A
Harvest:	9	7	9
Hunters:	10	7	10
Hunter Success:	90%	100%	90 %
Active Licenses:	10	7	10
Active License Success:	90%	100%	90 %
Recreation Days:	81	47	75
Days Per Animal:	9	6.7	8.3
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

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

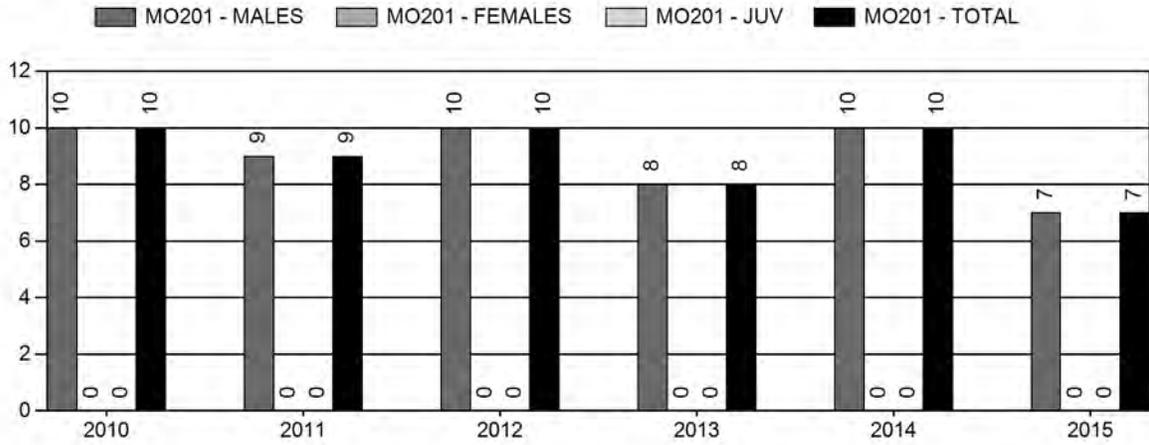
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	N/A%	N/A%
Males $\geq$ 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%

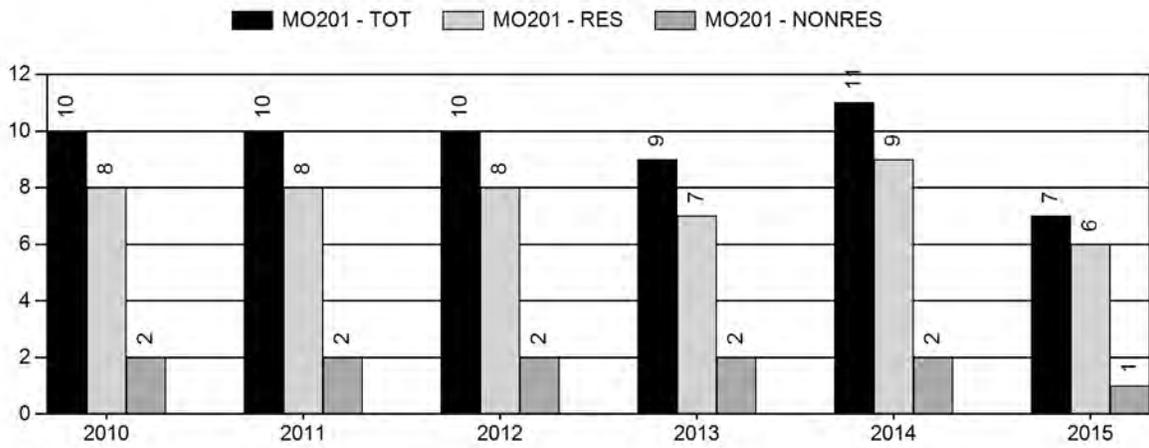
## Population Size - Postseason



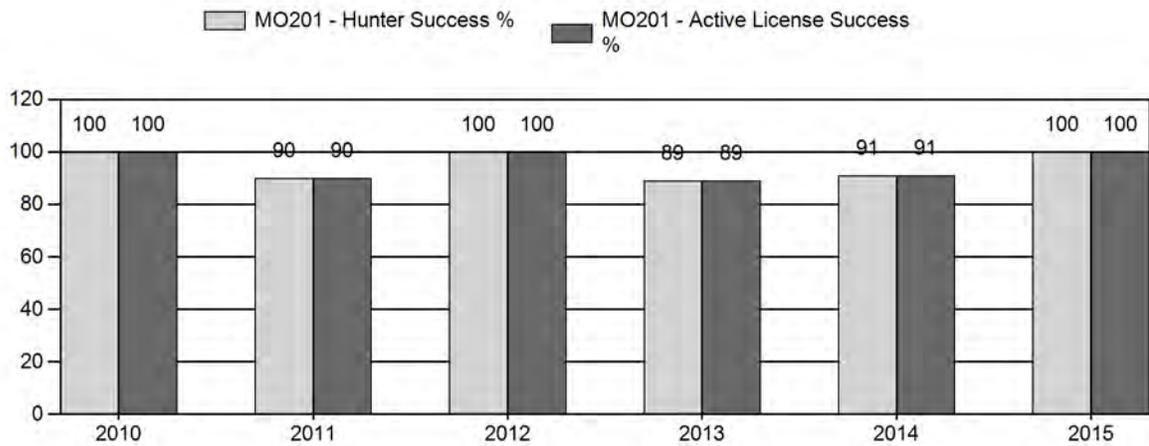
# Harvest



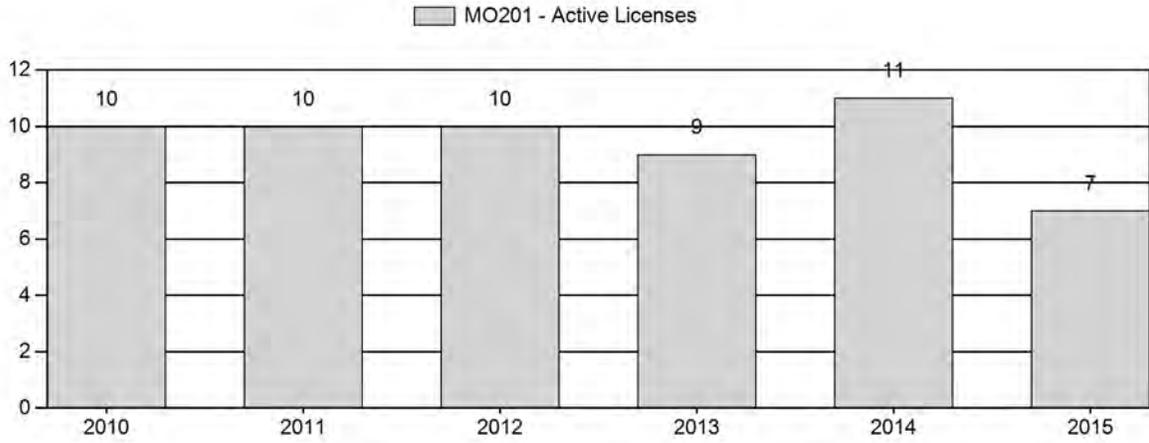
# Number of Hunters



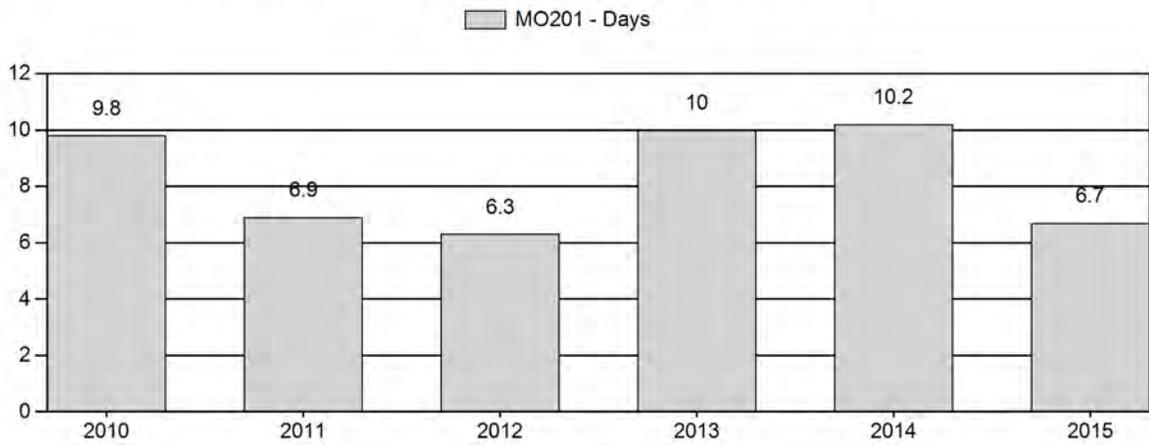
# Harvest Success



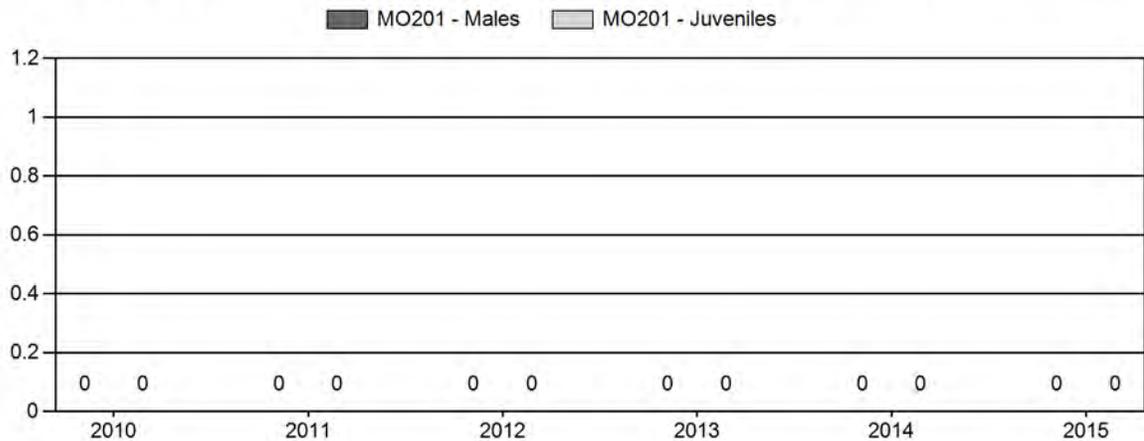
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2016 HUNTING SEASONS  
ABSAROKA MOOSE HERD (MO201)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
8						CLOSED
9	1	Oct. 1	Oct. 31	5	Limited quota	Antlered moose
11	1	Sep. 10	Nov. 10	5	Limited quota	Antlered moose

Special Archery Season Hunt Areas	Season Dates		Limitations
	Opens	Closes	
9	Sep. 1	Sep. 30	Refer to Section 2 of this Chapter
11	Sep. 1	Sep. 9	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2015
		No Changes
<b>Total</b>		<b>No Changes</b>

**Management Evaluation**

**Current Median Age Objective:** > 4.5 years

**Current Hunter Effort Objective:** < 12 days

**Current Secondary Median Age Objective:** 40% > 5 years

**Management Strategy:** Special

**Most Recent 5-Year Running Average Median Age:** 5.4 years

**Most Recent 5-Year Running Average Hunter Effort:** 7.7 days

**Most Recent 5-Year Running Average % > 5 Years:** 52.9%

**Herd Unit Issues**

Due to very low moose densities and the resulting lack of population data, there is no postseason population estimate for this herd unit. Six previously existing moose herd units (Thorofare, Crandall, Sunlight, North Fork, South Fork, Greybull/Gooseberry) were combined in 2003 to create the Absaroka Moose Herd Unit. In 2008 Hunt Areas 11, 12, 13, and 31 were combined to form the current Hunt Area 11. Hunt Area 9 (Greybull River and Gooseberry Creek drainages) and Hunt Area 8 (Thorofare, which has been closed since 2006) represent the remaining hunt areas in this herd unit. Management direction at the current time is to allow some moose hunting opportunity while encouraging moose numbers to grow, or at least be maintained.

## **Weather**

The influence of weather on moose population dynamics in the Absaroka and Beartooth Mountains is unknown. Most areas occupied by moose in this herd unit do not experience significant snow depths, and when and where that does occur, movement to more favorable areas is possible. On the other hand, because good moose habitats are so limited in this herd unit, weather conditions that negatively impact these habitats may have a significant role.

## **Habitat**

No habitat monitoring data is collected in this herd unit. Moose habitats throughout the Absaroka Mountains vary widely from expansive, willow-covered flood plains and remote wilderness setting of the Thorofare, to rather narrow ribbons of riparian habitats along the Absaroka Front. Lack of expansive willow-riparian habitats along most of this herd unit has made increased use of spruce-fir forest types a necessity for moose compared to other areas. Major portions of this herd unit burned in 1988 and effects of significant habitat changes from these fires on this habitat type specifically have generally been detrimental to moose. Recent drought has presumably had a negative effect on moose survival and recruitment, as have increasing numbers of large predators. It is suspected that the combination of habitat loss, drought, and predation has negatively influenced moose in most portions of this herd unit.

## **Field Data**

None exists for this herd unit. Because moose exist at such low densities in this herd unit, collection of classification and trend information is essentially impossible. The last effort was in 2004, when 9.3 hours of helicopter survey time was spent to survey the entire herd unit and only 32 moose were observed.

## **Harvest Data**

Management of moose in the Absaroka Moose Herd Unit since its creation in 2003 has remained similar, with 5 permits issued in Hunt Area 9 and 5 permits issued in Area 11. An average of 8-10 bulls/year are taken by hunters, and hunter effort usually ranges from 8-10 days per moose harvested. Moose hunters generally observe an average of 8-12 moose during their hunt.

In 2015, hunter success was 100% (4/4) in Area 9 and 100% (3/3) in Area 11. Aged animals from Area 9 included bulls aged 2.5, 2.5, 3.5, and 5.5, while three 4.5 year old bulls were aged from Area 11. Hunter effort was 3.3 days/moose harvested in Area 9 and 11.3 days/harvested moose in Area 11, and averaging 6.7 days/moose harvested for the herd unit.

## **Population**

Although population models have been constructed, the lack of data has rendered them useless and unreliable. Past attempts have tried to estimate population sizes based on extrapolations of the harvest rate of adult males from other moose populations, but again have produced estimates with little to no reliability.

Because the collection of survey data is difficult, if not impossible to collect, both population estimate and trend count based objectives are not possible. Therefore, information from hunters and harvested moose are used to manage the moose population in this herd unit. Primary objectives include managing for the following 5-year running averages; median age of 4.5 years

or greater and hunter effort of less than 12 days/moose harvested. A secondary objective is that 40% or greater of harvested bull moose meet or exceed 5 years of age. Currently all of these objectives are being met.

The current season structures in Hunt Areas 9 and 11 are addressing moose management goals. Therefore, 5 permits will be issued for Hunt Area 9 and 5 permits for Hunt Area 11 for 2016, which should result in the harvest of 9-10 bull moose.

## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS201 - CLARKS FORK

HUNT AREAS: 1

PREPARED BY: DOUG  
MCWHIRTER

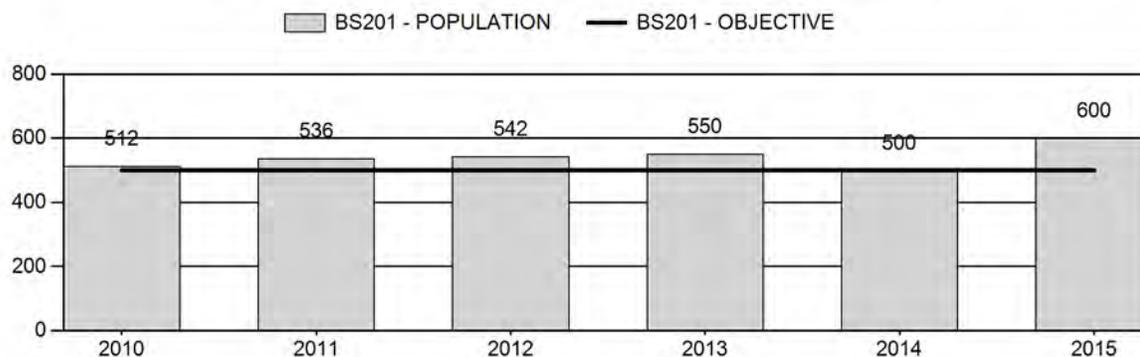
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	528	600	600
Harvest:	15	18	18
Hunters:	21	19	20
Hunter Success:	71%	95%	90%
Active Licenses:	21	19	20
Active License Success:	71%	95%	90%
Recreation Days:	190	229	225
Days Per Animal:	12.7	12.7	12.5
Males per 100 Females	27	43	
Juveniles per 100 Females	33	21	

Population Objective (± 20%) :	500 (400 - 600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	20%
Number of years population has been + or - objective in recent trend:	11
Model Date:	2/11/2016

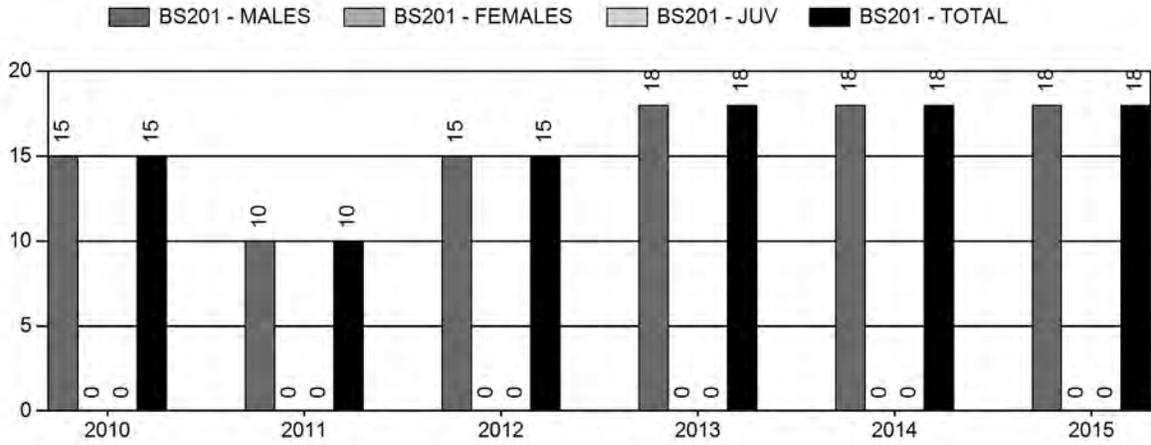
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	14.3%	12.3%
Juveniles (< 1 year old):	0%	0%
Total:	2.9%	2.8%
Proposed change in post-season population:	+4.0%	+3.5%

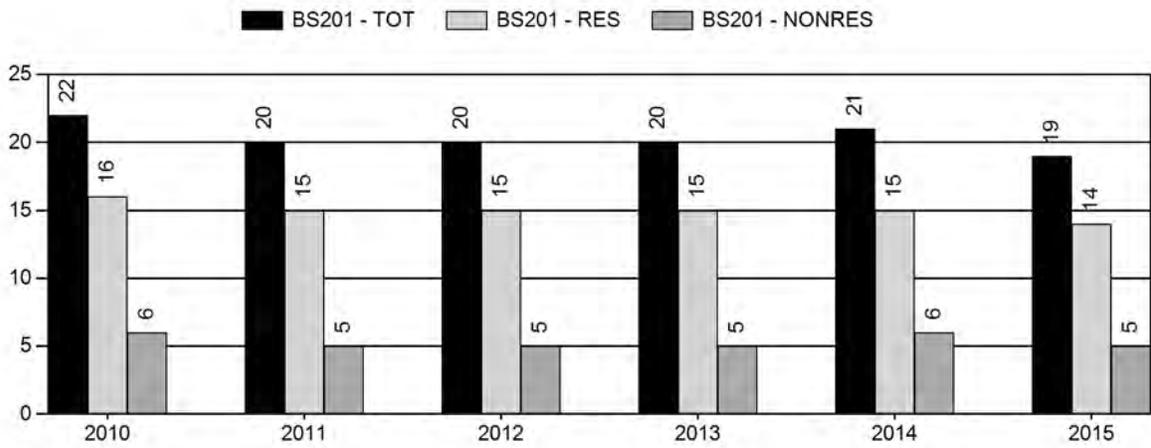
## Population Size - Postseason



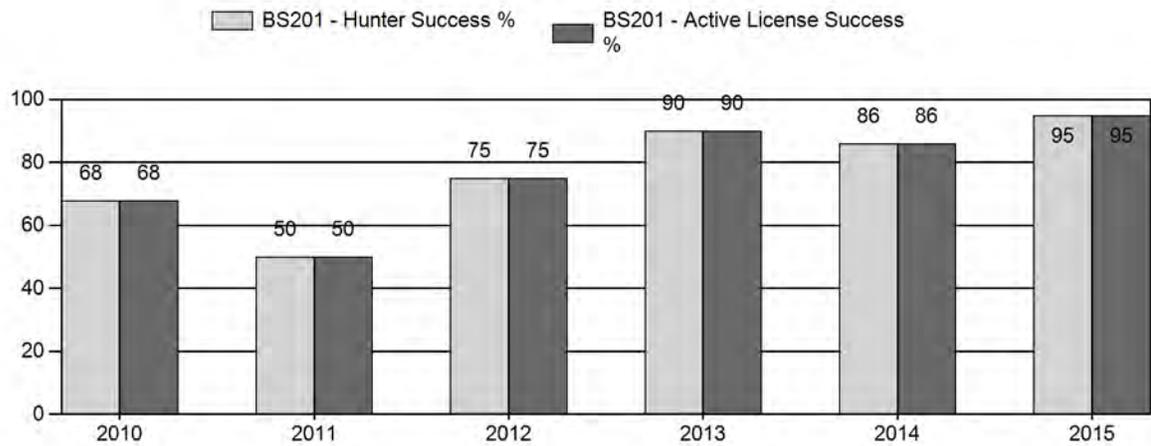
# Harvest



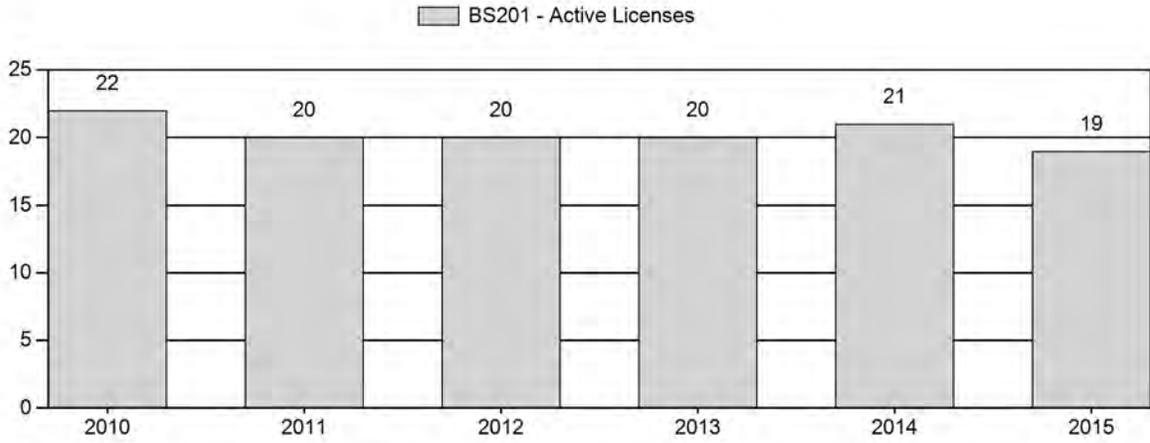
# Number of Hunters



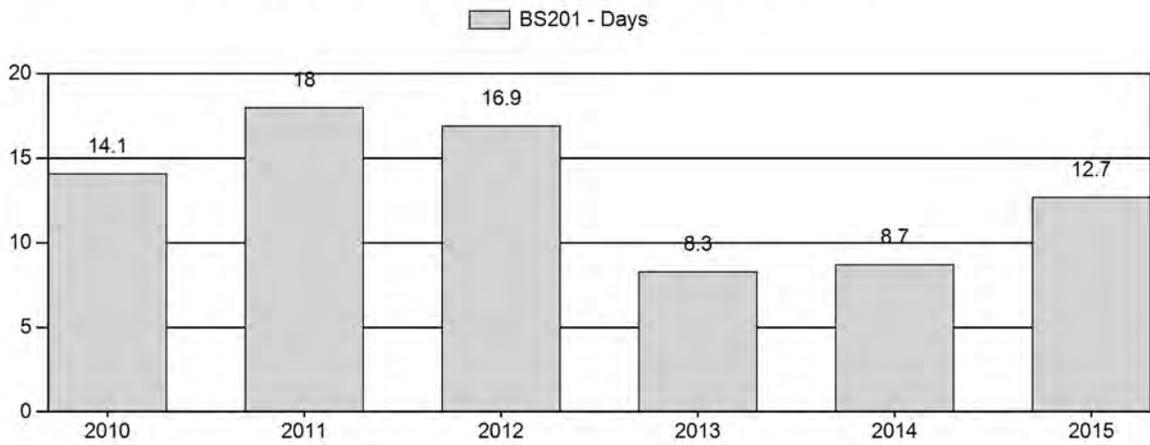
# Harvest Success



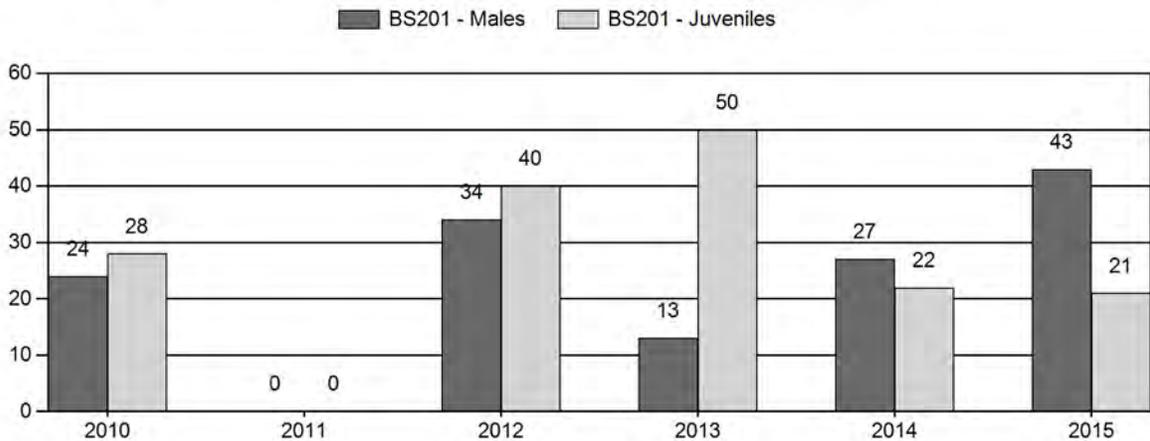
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS201 - CLARKS FORK

Year	Post 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
2010	512	0	7	7	16%	29	66%	8	18%	44	274	0	24	24	± 12	28	± 14	22
2011	536	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	542	0	26	26	19%	77	57%	31	23%	134	274	0	34	34	± 9	40	± 10	30
2013	550	0	4	4	8%	30	61%	15	31%	49	289	0	13	13	± 9	50	± 19	44
2014	500	0	25	25	18%	91	67%	20	15%	136	274	0	27	27	± 7	22	± 6	17
2015	600	4	16	20	26%	47	61%	10	13%	77	302	9	34	43	± 14	21	± 9	15

**2016 HUNTING SEASONS  
CLARKS FORK BIGHORN SHEEP HERD (BS201)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
1	1	Sep. 1	Oct. 31	20	Limited quota	Any ram

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
1	1	Aug. 15	Aug. 31	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
		No Changes
<b>Total</b>		<b>No Changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 500**

**2015 Postseason Population Estimate: 600**

**2016 Proposed Postseason Population Estimate: 600**

**Herd Unit Issues**

Most sheep in this herd unit are found in the Absaroka Mountains, although a small number (currently less than 50) occupy the Beartooth Mountains year-round. Some Absaroka Mountains sheep from the northern portion of the sub-herd migrate into Montana, where they are subjected to hunting seasons there (currently an unlimited season with a harvest quota of 2). These sheep often end up wintering in the Wyoming portion of the Beartooth Mountains. In addition, perhaps 10%-15% of the sheep in this sub-herd reside (some seasonally, some year-round) in Yellowstone National Park (YNP). Both of these factors (Montana harvest and sheep unavailable for harvest in YNP) must be taken into account when managing this herd.

Periodic fixed-wing trend counts (and more recently helicopter classification/trend surveys) during summer have been used to assess population performance. Summer surveys are done because many sheep migrate into Montana to winter, and surveys were designed to more closely monitor sheep while on Wyoming summer ranges. Classifications collected mid-summer are useful in tracking ram:ewe ratios, but allow little understanding of lamb survival as they are conducted so early in the year.

**Weather**

Snow depths and snow water equivalents at high elevation monitoring sites during the 2015-2016 winter were not excessive, with most sites 75%-90% of normal. Temperatures were also near normal, with cooler temperatures in early winter, followed by a very warm periods in February and March. Both annual precipitation and growing season precipitation at higher elevations were slightly below normal.

**Habitat**

No habitat monitoring data is collected in this sub-herd.

**Field Data**

Preseason classification samples from recent surveys, however, reflect good lamb:ewe (51:100 – 65:100) and ram:ewe (42:100 – 56:100) ratios in most years surveyed (6 surveys over the last 10 years). Poor lamb:ewe ratios as seen in 2009 (32:100) do occasionally occur and can affect ram recruitment. Recent trend counts (401 sheep in 2006, 409 in 2009, 390 in 2011) also provide support that this herd is probably near the objective of 500 sheep.

**Harvest Data**

In 2015, 19 hunters took 18 rams for a success rate of 95.0%, which is among the better years seen since permits were increased to 20 in 2007. The average age of rams killed in 2015 was 8.0 years old, with 61.1% of the rams killed being 8 years old and older. One ram less than  $\frac{3}{4}$  curl was killed in 2015.

**Population**

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be the most reasonable. The earlier trend projected by the model (early 1990s – early 2000s) is not felt to be entirely accurate, but estimates in the recent past appear reasonable. The postseason 2015 population is estimated to be approximately 600 sheep. Efforts will continue to improve this model and improve reliability.

All indicators show good population performance, and an acceptable presence of mature rams. Therefore license numbers will remain at 20 for the 2015 season. This should result in a postseason 2015 population of approximately 600 sheep.

Harvest parameters for the Clarks Fork Bighorn Sheep Herd Unit, 1968-2015 (Wyoming portion only).

	1968-72	1973-91	1992-97	1998-2002	2003-2006*	2007-2014*	2015*
Permits	20	24	20	16	16	20	20
Harvest	7.4	11.9	10.7	10.6	14.3	14.0	19
% Success	49.0%	53.5%	52.9%	67.7%	90.3%	70.0%	95.0%
Effort (days/ram)	6.8	16.7	17.7	16.7	10.3	17.0	12.7
Avg. Age	-	6.6	6.9	7.0	6.4	7.1	8.0
% Rams > 8 Yrs	-	31.7%	26.7%	32.0%	21.1%	37.8%	61.1%
% Rams < ¾ Curl	-	-	-	-	15.9%	6.3%	5.6%

\* “any ram” regulation in place



## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS202 - TROUT PEAK

HUNT AREAS: 2

PREPARED BY: DOUG  
MCWHIRTER

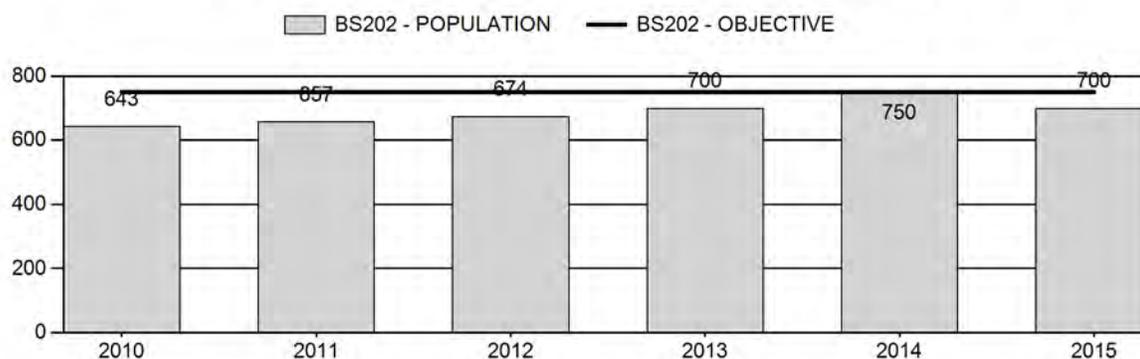
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	685	700	700
Harvest:	20	17	20
Hunters:	25	23	24
Hunter Success:	80%	74%	83%
Active Licenses:	25	23	24
Active License Success:	80%	74%	83%
Recreation Days:	211	178	200
Days Per Animal:	10.6	10.5	10
Males per 100 Females	38	24	
Juveniles per 100 Females	27	25	

Population Objective (± 20%) :	750 (600 - 900)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-6.7%
Number of years population has been + or - objective in recent trend:	7
Model Date:	2/16/2016

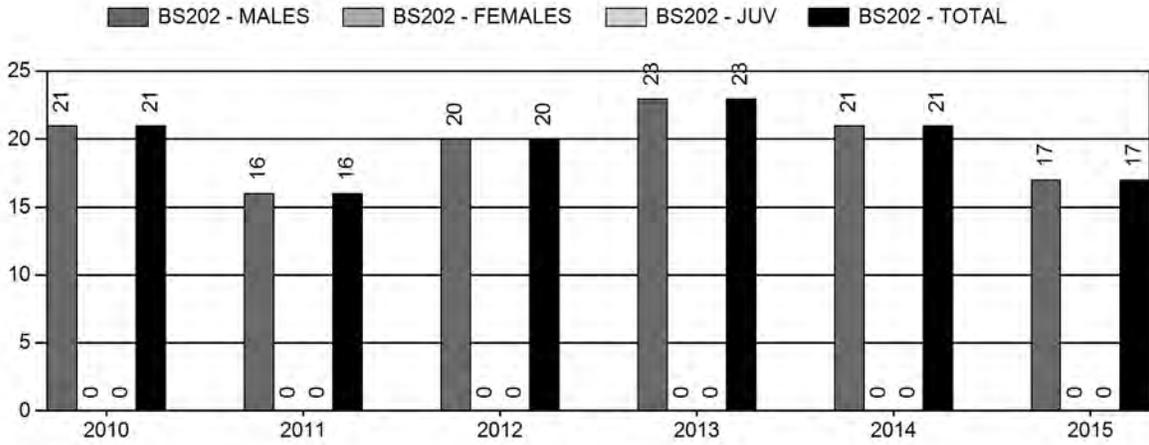
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	10.6%	11.8%
Juveniles (< 1 year old):	0%	0%
Total:	2.4%	2.7%
Proposed change in post-season population:	+2.7%	+2.8%

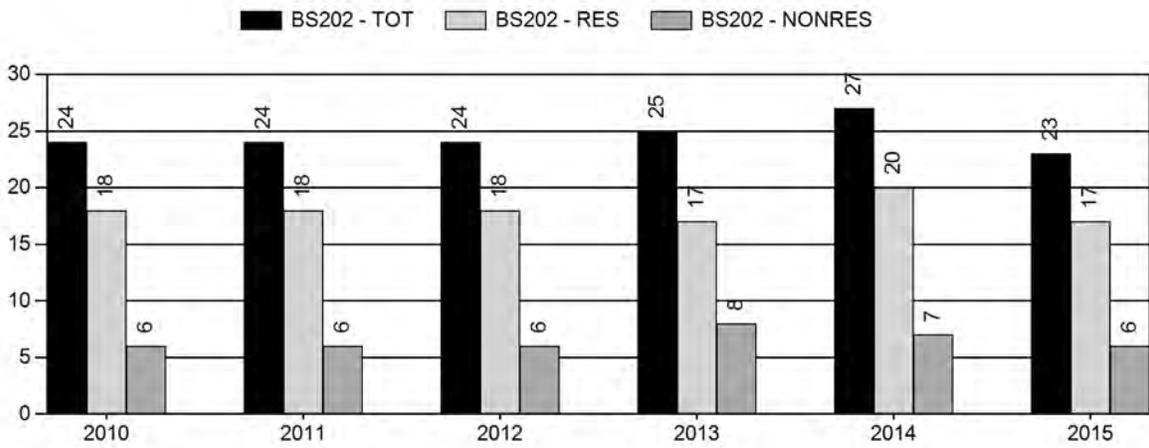
## Population Size - Postseason



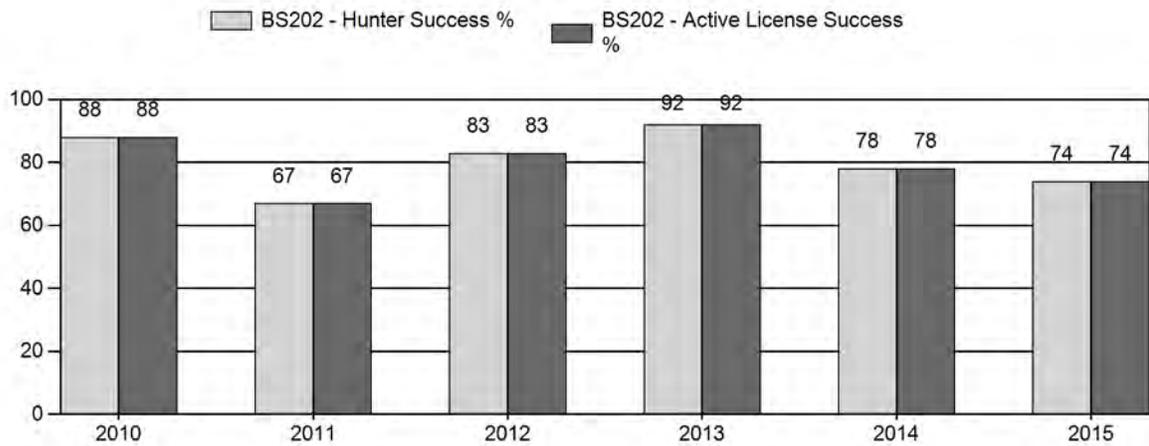
# Harvest



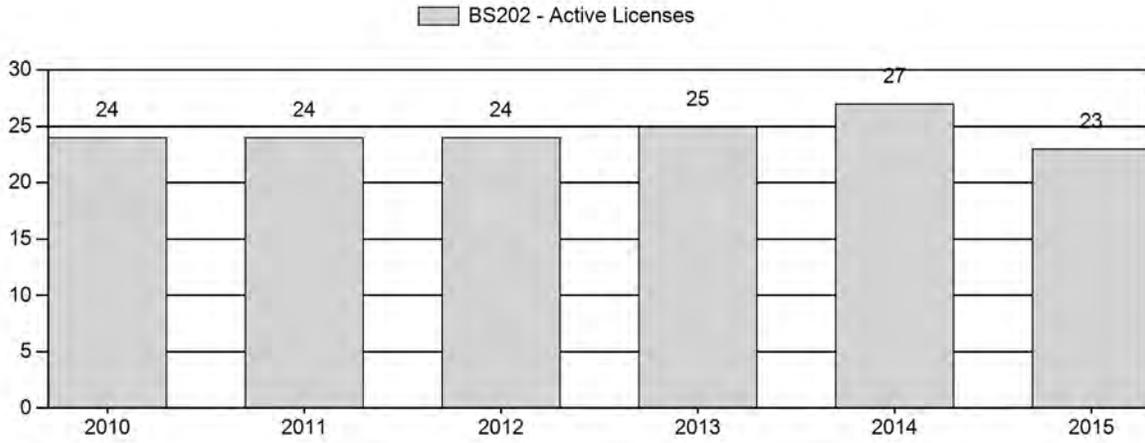
# Number of Hunters



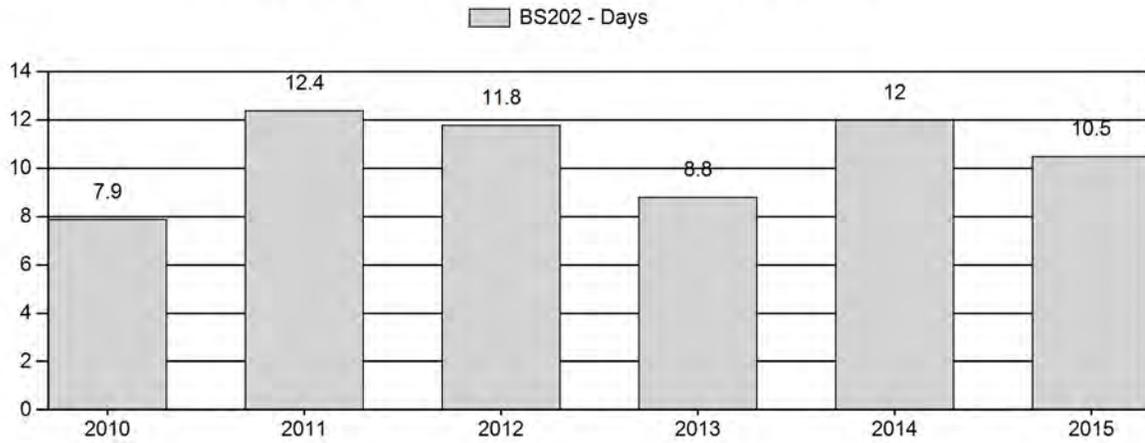
# Harvest Success



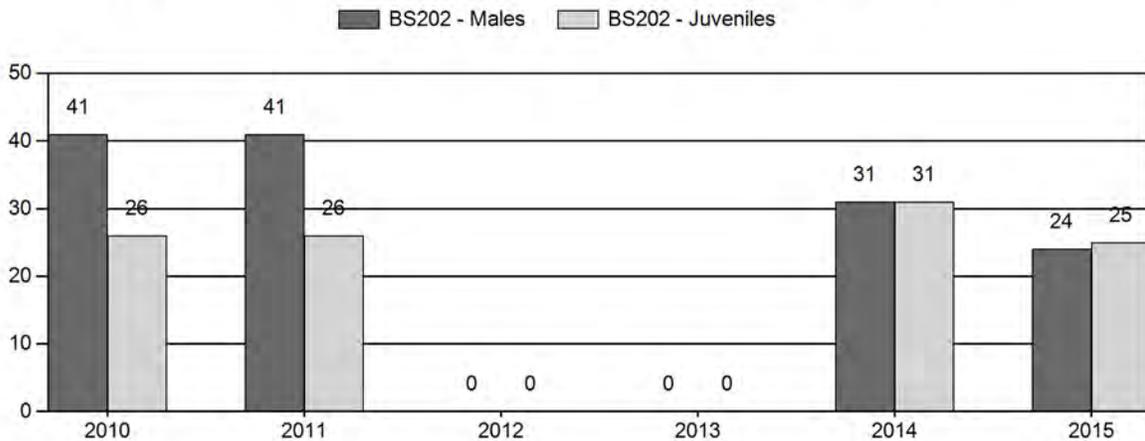
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS202 - TROUT PEAK

Year	Post 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
2010	643	0	111	111	24%	273	60%	71	16%	455	0	0	41	41	± 3	26	± 2	18
2011	657	1	110	111	24%	273	60%	71	16%	455	338	0	40	41	± 3	26	± 2	18
2012	674	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	700	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2014	750	3	63	66	19%	216	62%	66	19%	348	325	1	29	31	± 4	31	± 4	23
2015	700	0	23	23	16%	96	67%	24	17%	143	325	0	24	24	± 6	25	± 7	20

**2016 HUNTING SEASONS  
TROUT PEAK BIGHORN SHEEP HERD (BS202)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
2	1	Sep. 1	Oct. 31	24	Limited quota	Any ram (18 residents, 6 nonresidents)

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
2	1	Aug.15	Aug. 31	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
2		No Changes
<b>Total</b>		<b>No Changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 750**

**2015 Postseason Population Estimate: 675**

**2016 Proposed Postseason Population Estimate: 700**

**Herd Unit Issues**

The Trout Peak Herd Unit possesses some of the most difficult terrain in Wyoming, which is partially responsible for the wide variation in hunter statistics for which this herd is famous. A small percentage of sheep (presumably less than 10%) reside within Yellowstone National Park. Sheep can be found on low elevation winter ranges along the North Fork of the Shoshone River, but also occupy high elevation ranges throughout the hunt area.

**Weather**

Snow depths and snow water equivalents at high elevation monitoring sites during the 2015-2016 winter were not excessive, with most sites 75%-90% of normal. Temperatures were also near normal, with cooler temperatures in early winter, followed by very warm periods in February and March. Both annual precipitation and growing season precipitation at higher elevations were slightly below normal.

**Habitat**

No habitat monitoring data is collected in this herd unit.

### Field Data

Seven surveys have been conducted over the last 10 years, resulting in samples ranging from 117 to 480 classified sheep. Lamb:ewe ratios have ranged from 15:100 to 31:100 over this time, while ram:ewe ratios have varied from 30:100 to 67:100. The most recent survey in 2011 resulted in 465 sheep observed, representing one of the higher sample sizes obtained, even though the western portion of the hunt area was not surveyed. The lamb:ewe ratio for this sample was 26:100, which is slightly below the recent average. The ram:ewe ratio was 41:100 which is about average.

### Harvest Data

In 2015, 23 hunters took 17 rams for a success rate of 74%, which is essentially average for this herd unit since it has been managed with approximately 24 licenses. The average age of rams killed in 2015 was 7.3 years old, with 29.4% of the rams killed being 8 years old and older. One ram less than  $\frac{3}{4}$  curl was killed in 2015. All of these indicators, plus good lamb:ewe and ram:ewe ratios from recent surveys, indicate good population performance, and an acceptable presence of mature rams.

### Population

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate and trend appears to be very reasonable. The postseason 2015 population is estimated to be 700 sheep. Efforts will continue to improve this model and improve reliability.

Since adopting the any ram regulation in 2004, this herd unit has exhibited some of the variation in harvest parameters for which it has always been famous. When averaged over the last 8 years, however, harvest parameters are within desirable ranges. Therefore permit levels will remain at 24 licenses for the 2016 season. The predicted postseason 2016 population is estimated to be approximately 700 sheep.

Harvest parameters for the Trout Peak Bighorn Sheep Herd, 1978-2015.

	1978-96	1997-2002	2003	2004-2014*	2015*
Permits	32	24	28	24 <sup>+</sup>	24
Harvest	18.8	15.2	16	19.1	17
% Success	61.0%	63.8%	61.5%	78.7%	74%
Effort (days/ram)	18.2	16.0	25.1	12.6	10.5
Avg. Age	5.9	6.7	6.6	7.1	7.3
% Rams > 8 Yrs	19.5%	25.6%	18.8%	33.1%	29.4%
% Rams < $\frac{3}{4}$ Curl	-	-	-	4.0%	5.9%

\*any ram regulation in place

+ 25 permits were issued in 2006, 2007, and 15 and 28 permits were issued in 2008 and 2009, respectively due to the Gunbarrel Fire

## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS203 - WAPITI RIDGE

HUNT AREAS: 3

PREPARED BY: DOUG  
MCWHIRTER

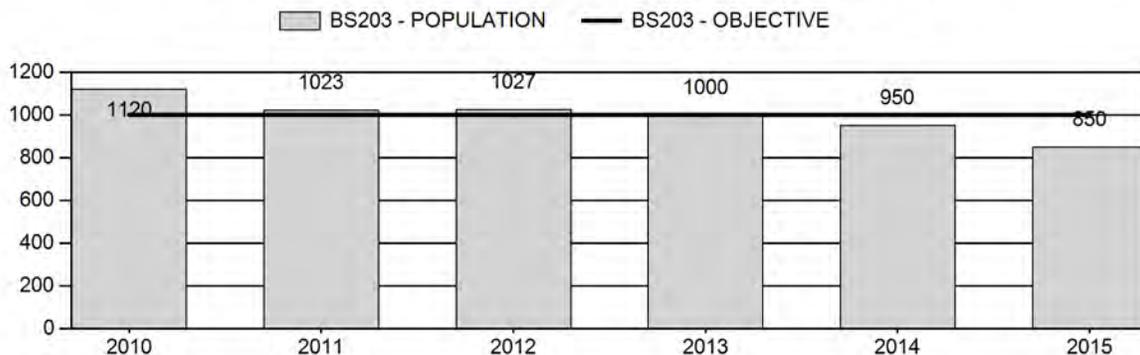
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	1,024	850	850
Harvest:	36	30	32
Hunters:	43	40	40
Hunter Success:	84%	75%	80%
Active Licenses:	43	40	40
Active License Success:	84%	75%	80%
Recreation Days:	348	402	400
Days Per Animal:	9.7	13.4	12.5
Males per 100 Females	29	27	
Juveniles per 100 Females	21	31	

Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-15%
Number of years population has been + or - objective in recent trend:	8
Model Date:	2/16/2016

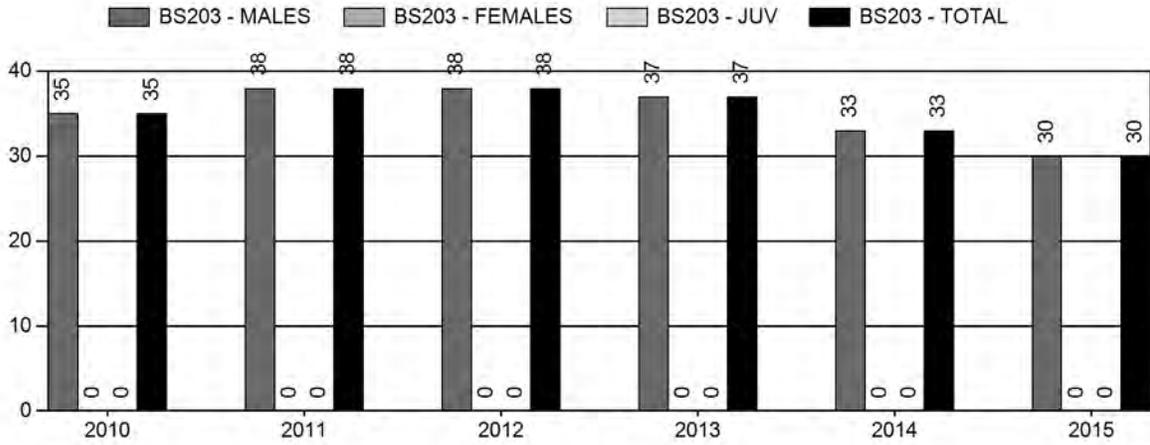
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	17.7%	18.6%
Juveniles (< 1 year old):	0%	0%
Total:	3.3%	3.6%
Proposed change in post-season population:	-0.3%	-0.8%

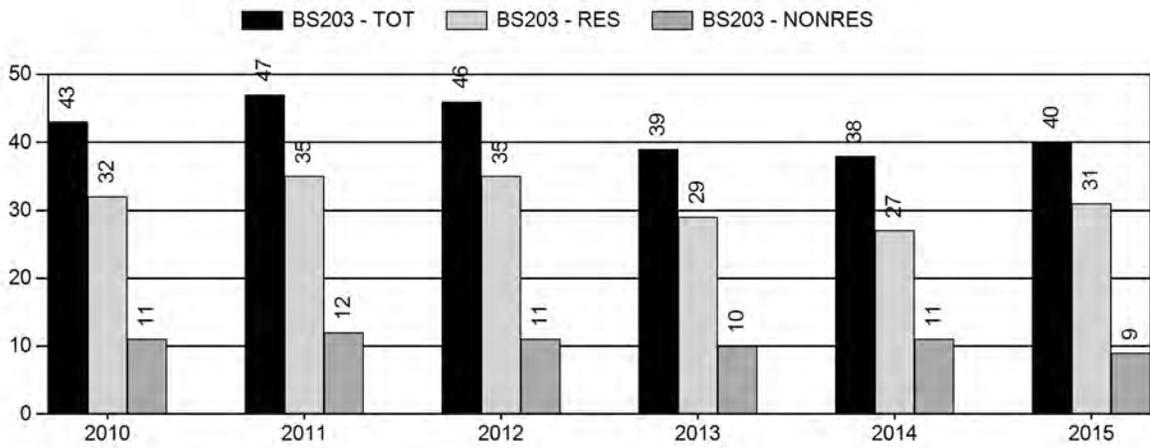
## Population Size - Postseason



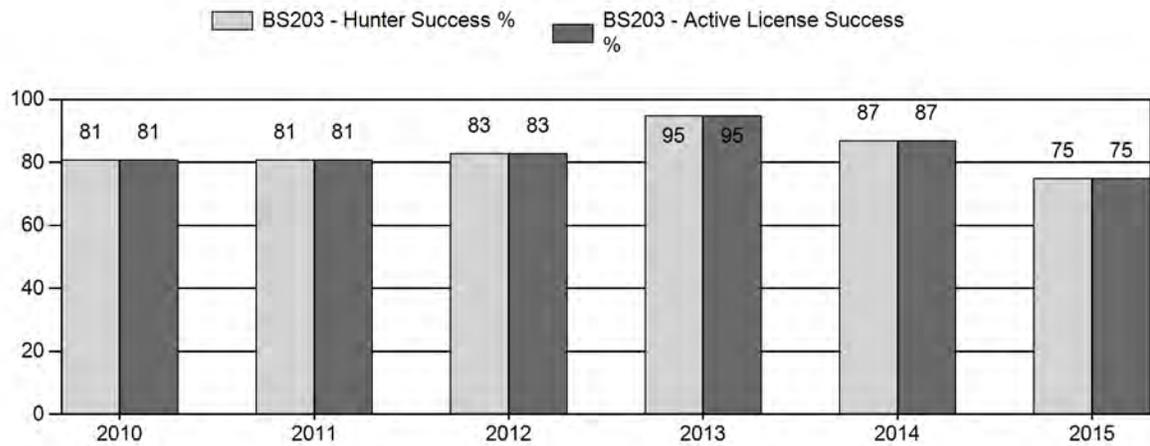
# Harvest



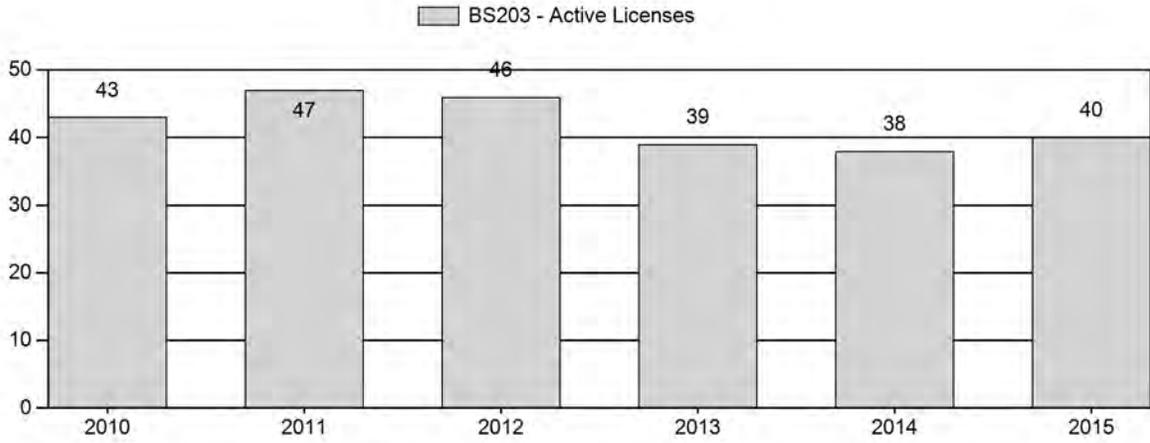
# Number of Hunters



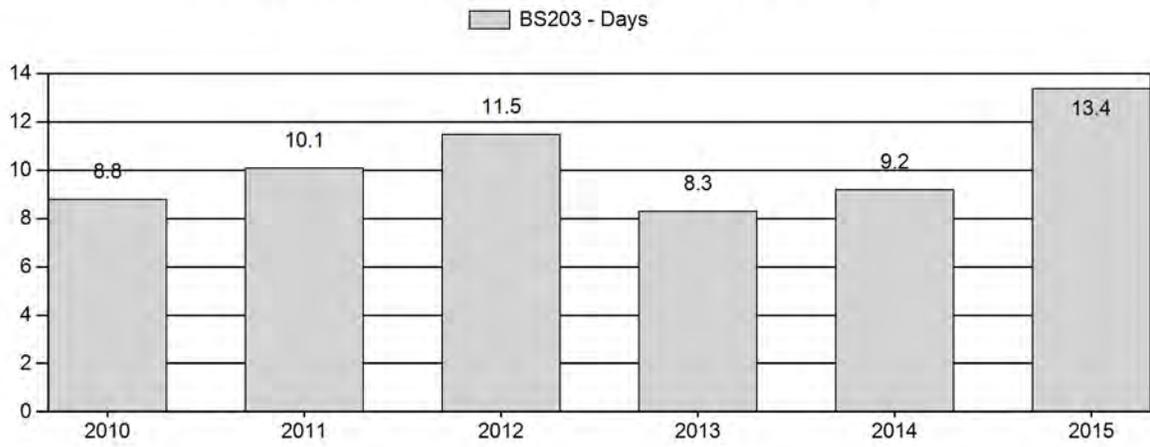
# Harvest Success



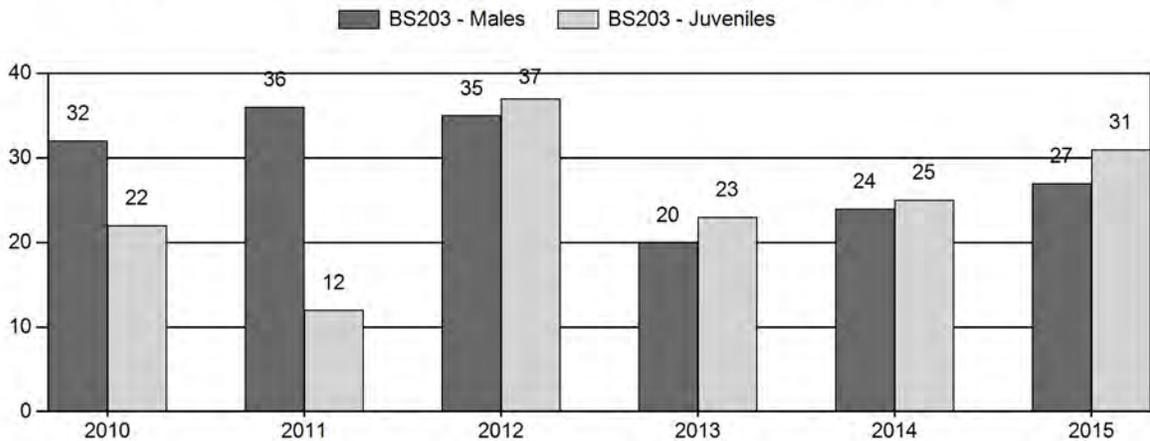
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS203 - WAPITI RIDGE

Year	Post 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
2010	1,120	8	33	41	21%	130	65%	28	14%	199	392	6	25	32	± 7	22	± 5	16
2011	1,023	12	148	160	24%	446	67%	55	8%	661	415	3	33	36	± 3	12	± 1	9
2012	1,027	7	32	39	20%	111	58%	41	21%	191	392	6	29	35	± 8	37	± 8	27
2013	1,000	9	41	50	14%	246	70%	56	16%	352	378	4	17	20	± 3	23	± 3	19
2014	950	6	109	115	16%	487	67%	124	17%	726	363	1	22	24	± 2	25	± 2	21
2015	850	17	74	91	17%	339	63%	106	20%	536	363	5	22	27	± 2	31	± 3	25

**2016 HUNTING SEASONS  
WAPITI RIDGE BIGHORN SHEEP HERD (BS203)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
3	1	Sep.1	Oct 31	40	Limited quota	Any ram

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
3	1	Aug. 15	Aug. 31	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
3	1	No Changes
<b>Total</b>	<b>1</b>	<b>No Changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective:** 1,000

**2015 Postseason Population Estimate:** 850

**2016 Proposed Postseason Population Estimate:** 850

**Herd Unit Issues**

The Wapiti Ridge Herd Unit consists of sheep that occupy low elevation winter ranges along the North and South Forks of the Shoshone River, but also occupy high elevation ranges throughout the hunt area. A small percentage of sheep (presumably less than 10%) reside within Yellowstone National Park.

**Weather**

Snow depths and snow water equivalents at high elevation monitoring sites during the 2015-2016 winter were not excessive, with most sites 75%-90% of normal. Temperatures were also near normal, with cooler temperatures in early winter, followed by a very warm periods in February and March. Both annual precipitation and growing season precipitation at higher elevations were slightly below normal.

**Habitat**

No habitat monitoring data is collected in this herd unit.

**Field Data**

Eight surveys have been conducted over the last 10 years, resulting in samples ranging from 315 to 914 classified sheep. Lamb:ewe ratios have ranged from 12:100 to 37:100 over this time, while ram:ewe ratios have varied from 32:100 to 46:100. The most recent survey in 2011

resulted in 661 sheep observed, a lamb:ewe ratio of 12:100 (which is well below the recent average), and a ram:ewe ratio of 36:100, which is about average for this herd unit.

**Harvest Data**

In 2015, 40 hunters took 30 rams for a success rate of 75%, which is slightly below average for this sub-herd. The average age of rams killed in 2013 was 7.3 years old, with 43.3% of the rams killed being 8 years old and older. Four rams less than ¾ curl were killed in 2015. Hunter effort was 13.4 days per ram harvested in 2015, which is above average for this sub-herd.

**Population**

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be reasonable. The rather steep decline produced by the model however, is not believed to entirely realistic. The postseason 2015 population is estimated to be 850 sheep. Efforts will continue to improve this model and improve reliability.

With the extremely poor lamb production experienced recently, it is likely that the availability of rams will decline in this herd unit in coming years as lambs from these cohorts enter mature ram age classes. Impacts from the 2010-2011 winter had localized impacts on this population as well. Further permit reductions may be necessary in the near future to preserve or improve ram hunting opportunities. Harvest statistics should be monitored closely to determine if such a situation is developing. License numbers were reduced to 40 for the 2013 season, and remained so for the 2014 and 2015 seasons. The postseason 2016 population is estimated to be approximately 850 sheep.

Harvest parameters for the Wapiti Ridge Bighorn Sheep Herd Unit, 1978-2015.

	1978-83	1984-85	1986-92	1993-99	2000-04*	2005-12*	2013-2014*	2015*
Permits	32	36	40	44	48	44+	40	40
Harvest	22.5	29.5	36.1	36.9	38.0	36.5	35.0	30
% Success	69.3%	81.2%	83.0%	79.0%	77.6%	81.4%	90.9%	75.0%
Effort (days/ram)	11.3	9.3	8.6	9.0	9.8	10.3	8.75	13.4
Avg. Age	5.9	7.1	6.9	7.1	6.8	6.7	7.5	7.3
% Rams > 8 Yrs	12.8%	49.2%	41.5%	35.1%	31.0%	29.3%	50.3%	43.3%
% Rams < ¾ Curl	-	-	-	-	8.4%	8.6%	7.1%	13.3%

\* “any ram” regulation in place

+ 46 licenses were issued in 2012 to achieve a 75:25 statewide split between residents and nonresidents

## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS204 - YOUNTS PEAK

HUNT AREAS: 4

PREPARED BY: DOUG  
MCWHIRTER

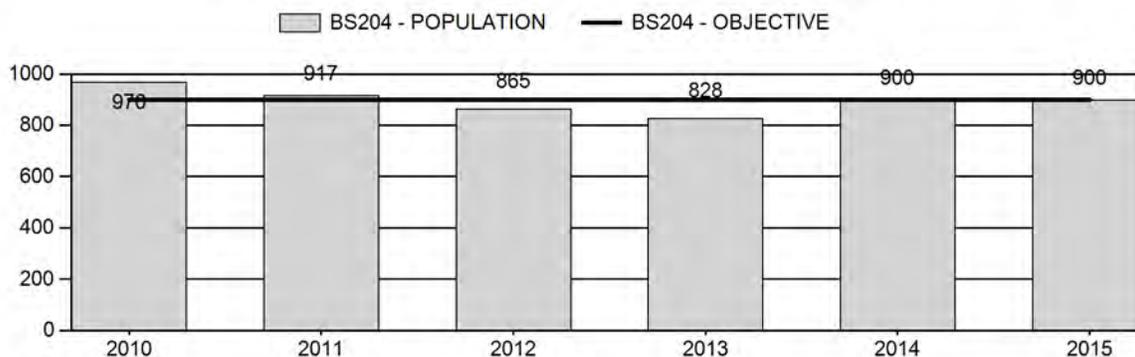
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	896	900	900
Harvest:	21	16	15
Hunters:	30	21	20
Hunter Success:	70%	76%	75%
Active Licenses:	30	21	20
Active License Success:	70%	76%	75%
Recreation Days:	229	143	150
Days Per Animal:	10.9	8.9	10
Males per 100 Females	41	39	
Juveniles per 100 Females	24	27	

Population Objective (± 20%) :	900 (720 - 1080)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	6
Model Date:	2/16/2016

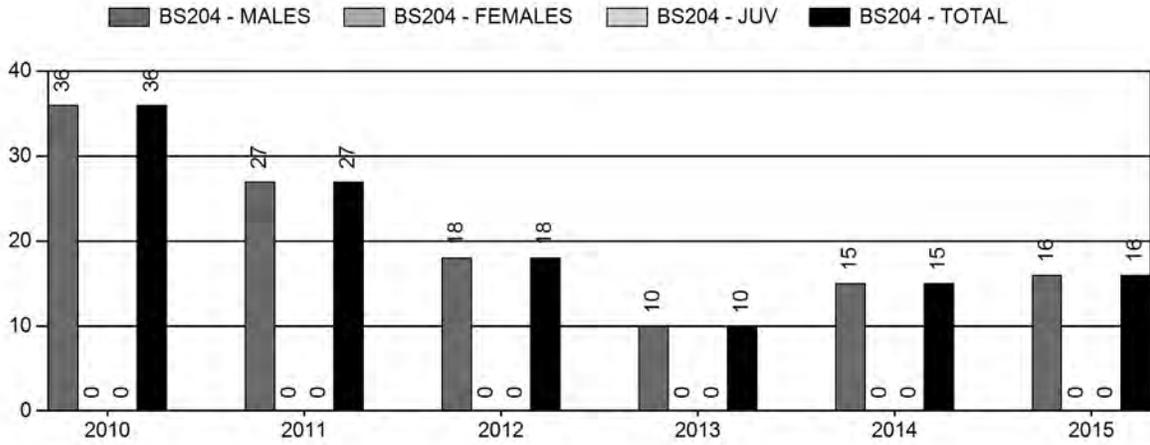
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	7.0%	6.5%
Juveniles (< 1 year old):	0%	0%
Total:	1.8%	1.7%
Proposed change in post-season population:	-3.0%	-0.1%

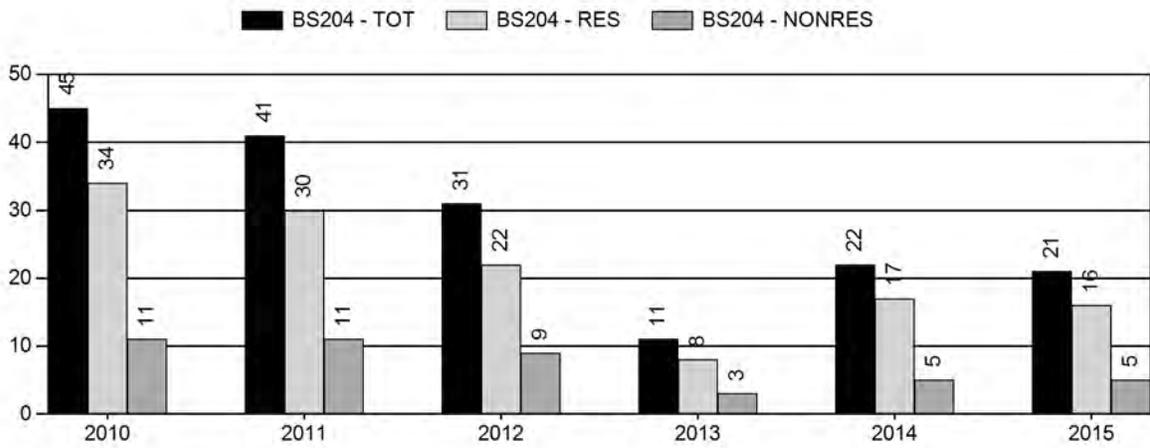
## Population Size - Postseason



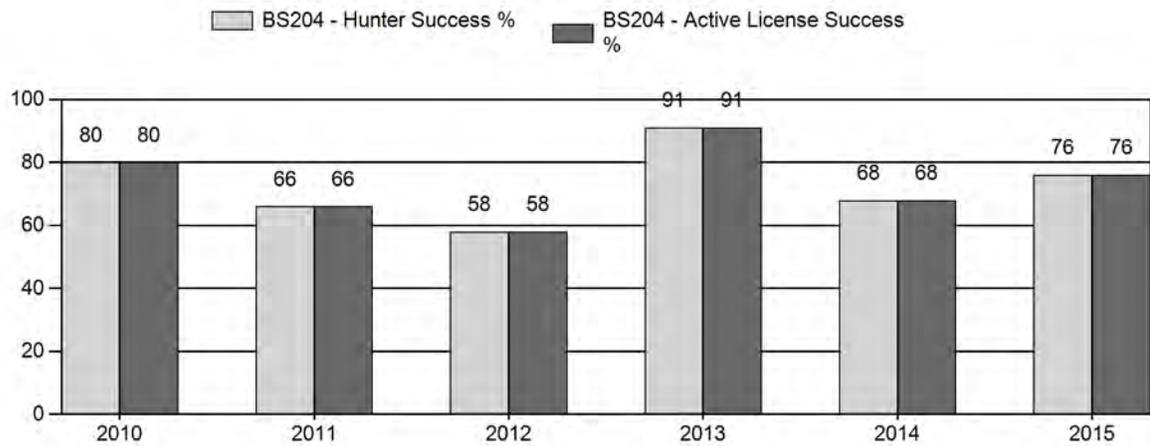
# Harvest



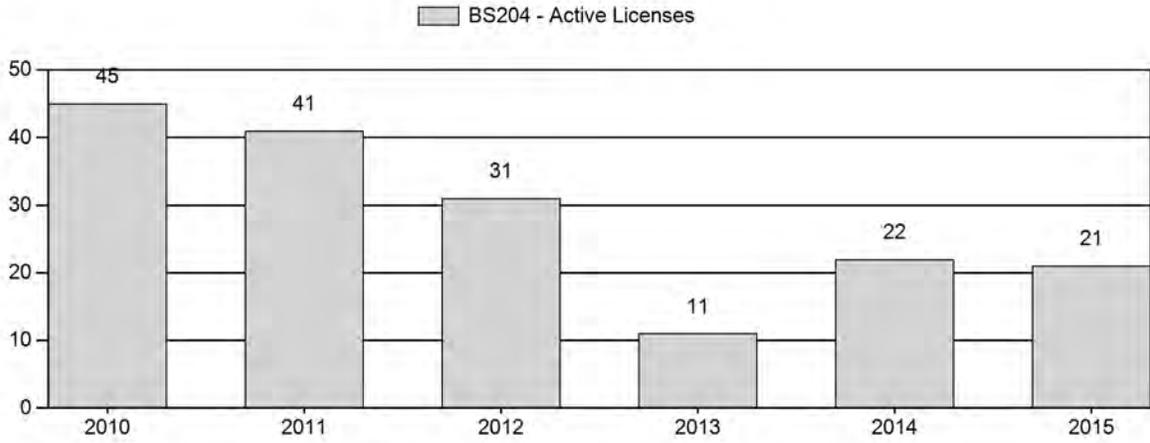
# Number of Hunters



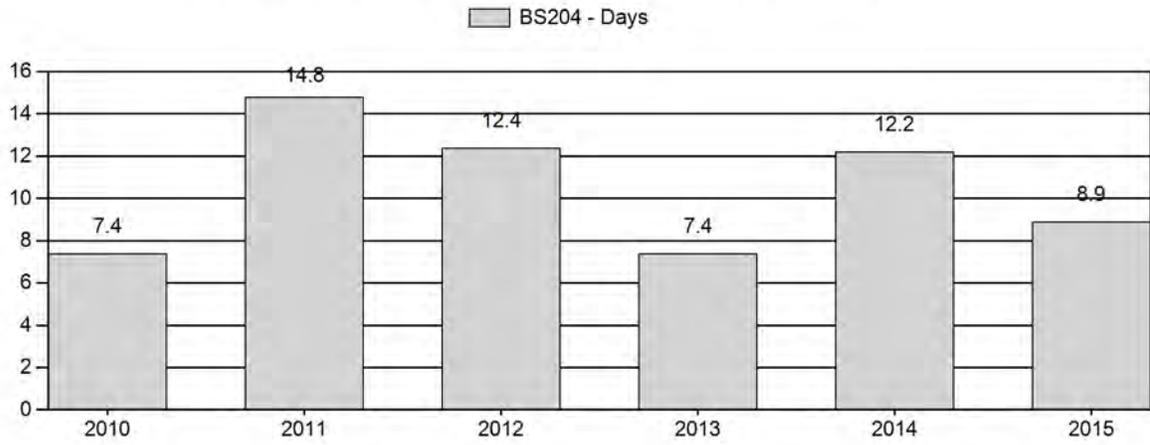
# Harvest Success



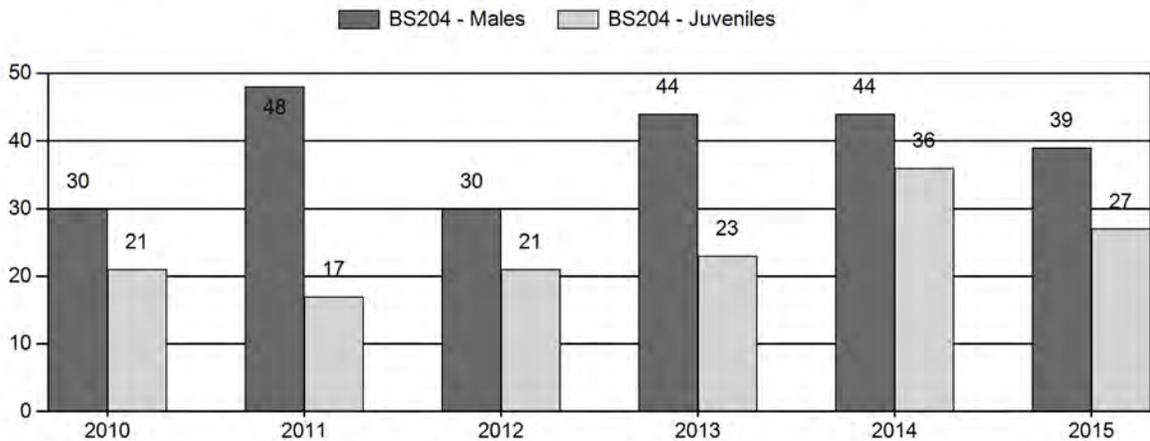
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS204 - YOUNTS PEAK

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	970	0	46	46	20%	155	67%	32	14%	233	409	0	30	30	± 6	21	± 4	16
2011	917	21	126	147	29%	305	60%	53	10%	505	386	7	41	48	± 4	17	± 2	12
2012	865	0	46	46	20%	155	67%	32	14%	233	345	0	30	30	± 5	21	± 4	16
2013	828	4	115	119	26%	269	60%	63	14%	451	345	1	43	44	± 4	23	± 3	16
2014	900	10	100	110	24%	252	56%	91	20%	453	355	4	40	44	± 5	36	± 4	25
2015	900	9	64	73	24%	186	60%	50	16%	309	363	5	34	39	± 6	27	± 4	19

**2016 HUNTING SEASONS  
YOUNTS PEAK BIGHORN SHEEP HERD (BS204)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
4	1	Sep. 1	Oct. 31	20	Limited quota	Any ram

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
4	1	Aug. 15	Aug. 31	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
4	1	No Changes
<b>Total</b>	<b>1</b>	<b>No Changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 900**

**2015 Postseason Population Estimate: 900**

**2016 Proposed Postseason Population Estimate: 900**

**Herd Unit Issues**

The Younts Peak Herd Unit is characterized by sheep that live at extremely high elevation year-round. This subjects many of them to occasionally heavy winter losses, which occurred in 1995, 1996, and 2010-13.

**Weather**

Snow depths and snow water equivalents at high elevation monitoring sites during the 2015-2016 winter were not excessive, with most sites 75%-90% of normal. Temperatures were also near normal, with cooler temperatures in early winter, followed by a very warm periods in February and March. Both annual precipitation and growing season precipitation at higher elevations were slightly below normal.

**Habitat**

No habitat monitoring data is collected in this herd unit.

**Field Data**

Seven surveys have been conducted over the last 10 years, resulting in samples ranging from 233 to 536 classified sheep. Lamb:ewe ratios have ranged from 17:100 to 36:100 over this time, although 5 of these surveys produced lamb:ewe ratios of 17:100, 21:100, 22:100, and 23:100. Ram:ewe ratios have varied from 30:100 to 54:100. The most recent complete survey in 2014

resulted in 453 sheep observed, a lamb:ewe ratio of 36:100 (which is slightly above average), and a ram:ewe ratio of 44:100, which is also slightly above average for this herd unit. Survey data from the Dubois portion of the herd unit in 2015 yielded a lamb:ewe ratio of 21:100 and a ram:ewe ratio of 51:100.

### Harvest Data

A total of 21 hunters took 16 rams in 2015 for a success rate of 76%. The average age of rams killed in 2013 was 8.3 years old, with 68.8% of the rams killed being 8 years old and older. One ram less than  $\frac{3}{4}$  curl was killed in 2015. Hunter effort was 8.9 days per ram harvested in 2015. These figures represent a return to levels previously seen in this sub-herd, but came at the expense of significantly reducing hunter opportunity.

### Population

The “Semi-Constant Juvenile – Semi-Constant Adult Mortality Rate” (SCJSCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population trend is much more reasonable than other models. The postseason 2015 population is estimated to be 900 sheep. Efforts will continue to improve this model.

With the extremely poor lamb production experienced recently, it is likely that the availability of rams will not recover rapidly in this herd unit in coming years as lambs from these cohorts enter mature ram age classes. Maintenance of reduced ram hunting opportunities may be necessary in the near future to preserve or improve ram hunting opportunities. Ram:ewe ratios, average age of harvested rams, and the percentage of rams at least 8 years of age and older should be monitored closely to determine if such a situation is developing. License numbers were reduced to 20 for the 2013-15 seasons and will remain there for the 2016 season. The postseason 2016 population is estimated to remain at be approximately 900 sheep.

Harvest parameters for the Younts Peak Bighorn Sheep Herd Unit, 1984-2015.

	1984-91	1992-95	1996-00*	2001-04*	2005-08*	2009-11*	2012*	2013-2014*	2015*
Permits	60	48	32	36	40	44 <sup>+</sup>	28	20	20
Harvest	33.1	28.3	22.6	32.3	34.0	32.7	18	16.5	16
% Success	59%	62%	74%	87%	83.3%	75.4%	58.1%	79.5%	76%
Effort (days/ram)	18.6	15.0	8.4	7.9	8.2	10.5	12.4	9.8	8.9
Avg. Age	6.6	6.5	6.7	7.3	7.3	7.5	7.2	7.9	8.3
% Rams > 8 Yrs	24.1%	17.5%	33.3%	44.1%	32.7%	47.6%	22.2%	61.7%	68.8%
% Rams < $\frac{3}{4}$ Curl	-	-	11.9%	15.0%	7.2%	5.9%	5.6%	11.7%	9.1%

\* “any ram” regulation in place

+ 46 permits were issued in 2010 and 2011.

## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS205 - FRANCS PEAK

HUNT AREAS: 5, 22, 999

PREPARED BY: BART KROGER

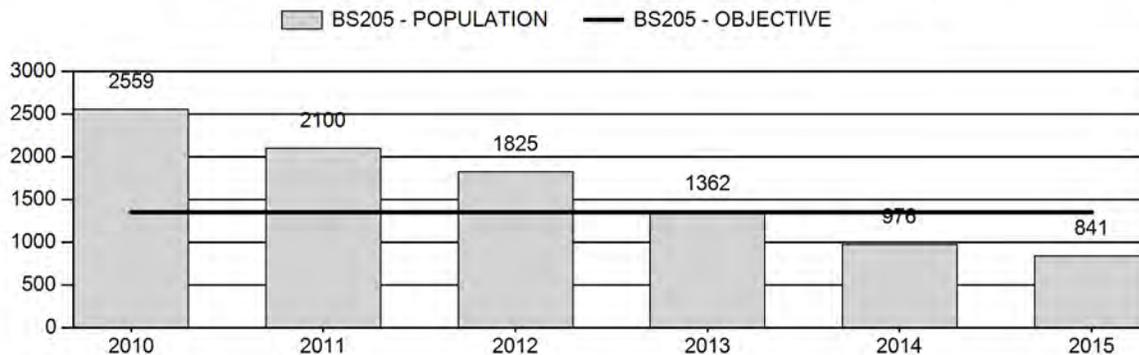
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	1,764	841	710
Harvest:	71	40	40
Hunters:	87	51	50
Hunter Success:	82%	78%	80 %
Active Licenses:	87	51	50
Active License Success:	82%	78%	80 %
Recreation Days:	587	383	380
Days Per Animal:	8.3	9.6	9.5
Males per 100 Females	58	55	
Juveniles per 100 Females	25	26	

Population Objective (± 20%) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-37.7%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/18/2016

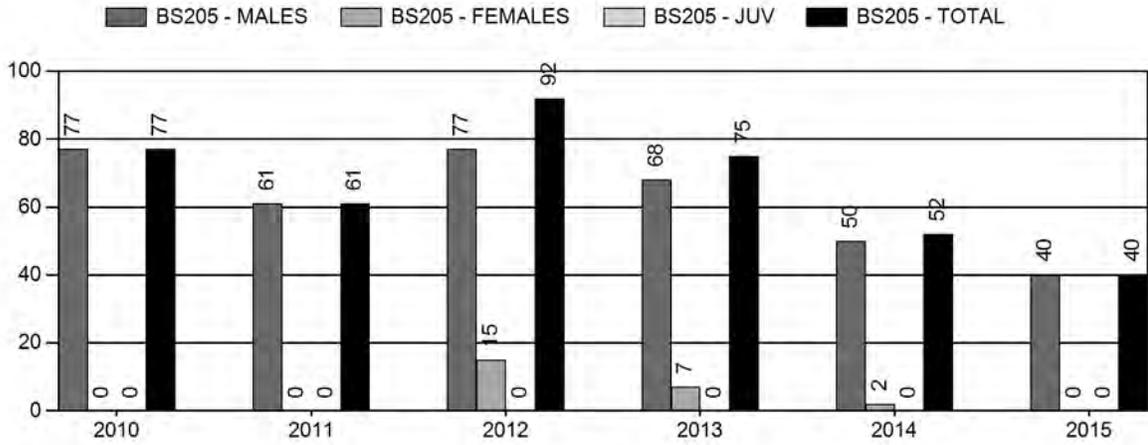
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	29%	30%
Juveniles (< 1 year old):	0%	0%
Total:	7%	7%
Proposed change in post-season population:	-14%	-16%

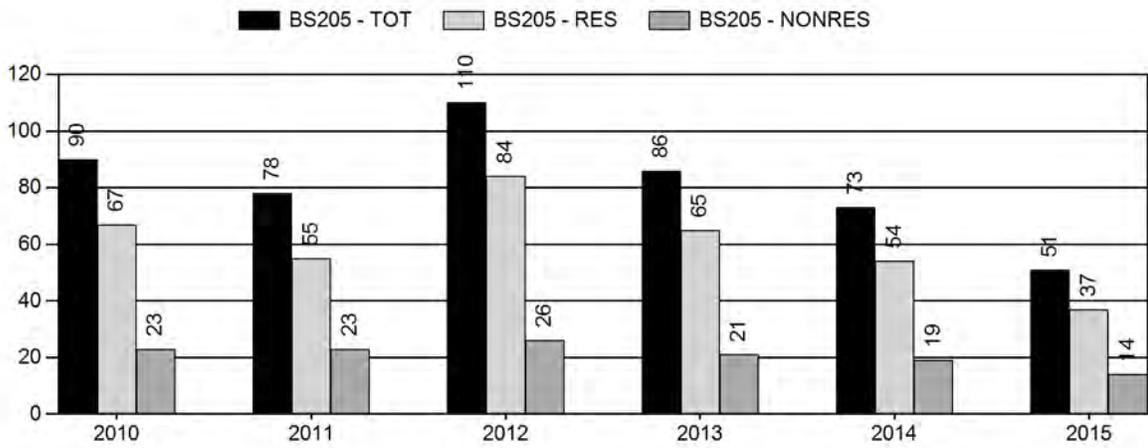
## Population Size - Postseason



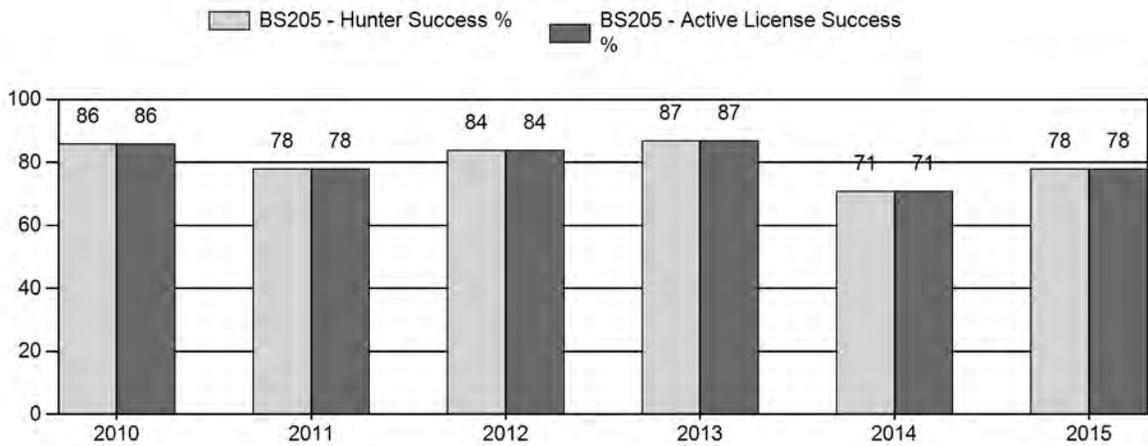
# Harvest



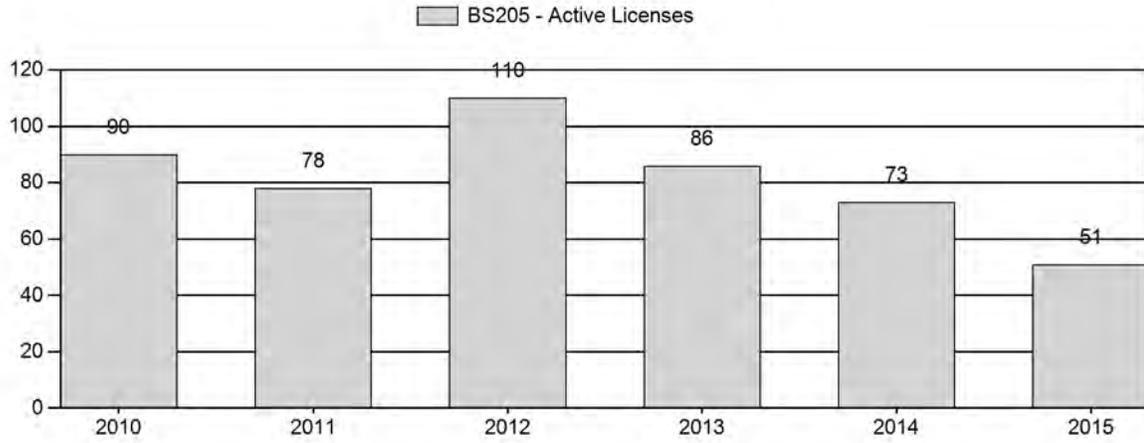
# Number of Hunters



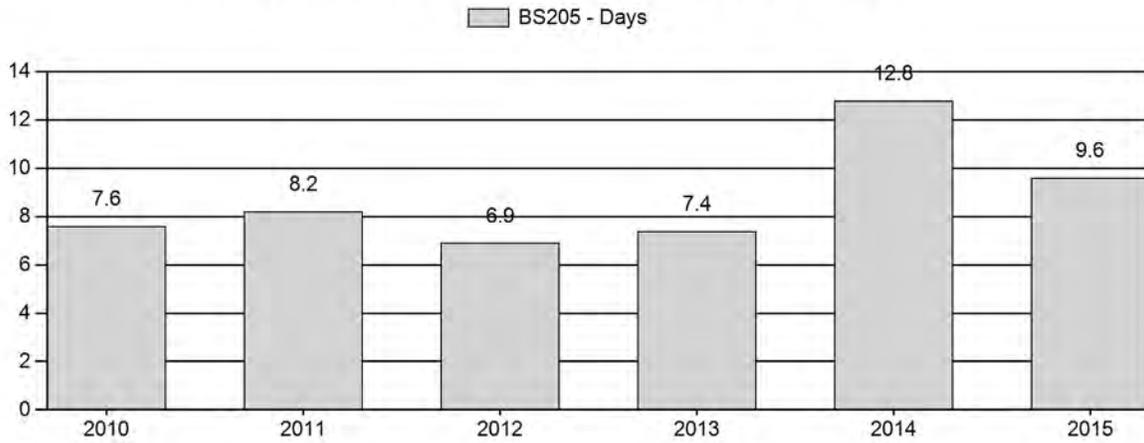
# Harvest Success



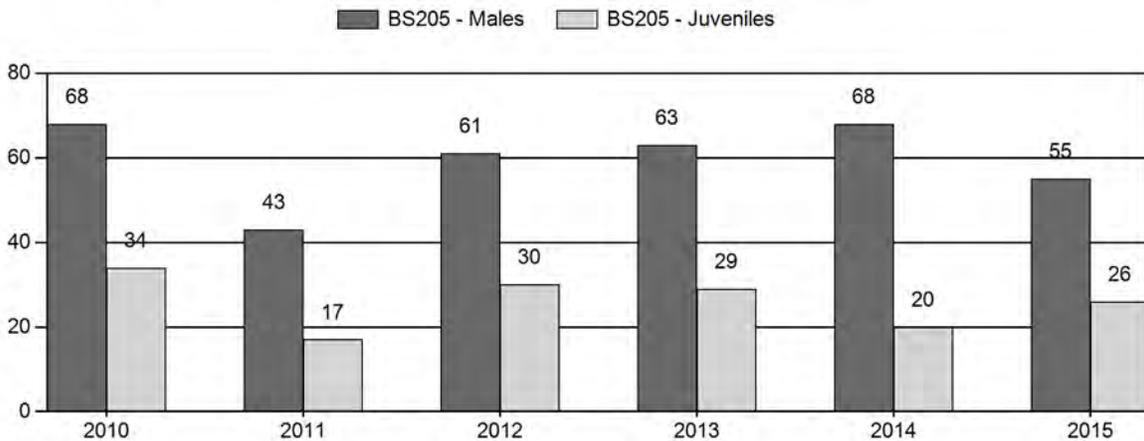
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS205 - FRANCS PEAK

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	2,559	0	153	153	34%	225	50%	76	17%	454	727	0	68	68	± 8	34	± 5	20
2011	2,100	0	0	172	27%	400	62%	68	11%	640	445	0	0	43	± 4	17	± 2	12
2012	1,825	0	140	140	32%	228	52%	68	16%	436	802	0	61	61	± 7	30	± 5	18
2013	1,362	0	144	144	33%	230	52%	66	15%	440	584	0	63	63	± 7	29	± 4	18
2014	976	0	135	135	36%	200	53%	41	11%	376	490	0	68	68	± 8	20	± 4	12
2015	841	0	0	103	30%	188	55%	48	14%	339	352	0	0	55	± 7	26	± 4	16

**2016 HUNTING SEASONS  
FRANCS PEAK BIGHORN SHEEP HERD (BS205)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
5	1	Sep. 1	Oct. 31	32	Limited quota	Any ram
22	1	Sep. 1	Oct. 31	4	Limited quota	Any ram
22	1	Oct. 1	Oct. 31			Unused Area 22 Type 1 licenses also valid in Area 5

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
5, 22	1	Aug. 15	Aug. 31	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
<b>HU Total</b>	<b>1</b>	<b>No changes</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 1,350**

**Management Strategy: Avg. age of harvested rams from 6-8 years**

**2015 Postseason Population Estimate: 850**

**2016 Proposed Postseason Population Estimate: 700**

**Herd Unit Issues**

The herd objective and management strategy was revised and approved in 2013 for this sheep herd. The management strategy is to maintain an average age of harvested rams between 6-8 years old, along with a hunter success of >80%. Lamb ratios are also monitored closely to anticipate potential changes in age classes of rams. After the 2010/11 winter, this population started showing declines, and between 2011 and 2013, 163 ram pickup heads were registered from area 5, about a 200% increase compared to normal. Hunter success dropped to 72% in 2014 and 81% in 2015, the two lowest since the year 2000.

**Weather**

The winter of 2010/11 appeared to have been severe enough to cause some die-off as well as reduced lamb production. The extreme dry conditions of 2012 resulted in some changes to the distribution of sheep on their summer range, likely because of reduced forage production and condition. The winter of 2013/14 was more severe than normal, with mainly deep snow at higher elevations. The summer of 2014 and 2015 were exceptional for moisture, and the winters appeared to be mostly normal.

**Habitat**

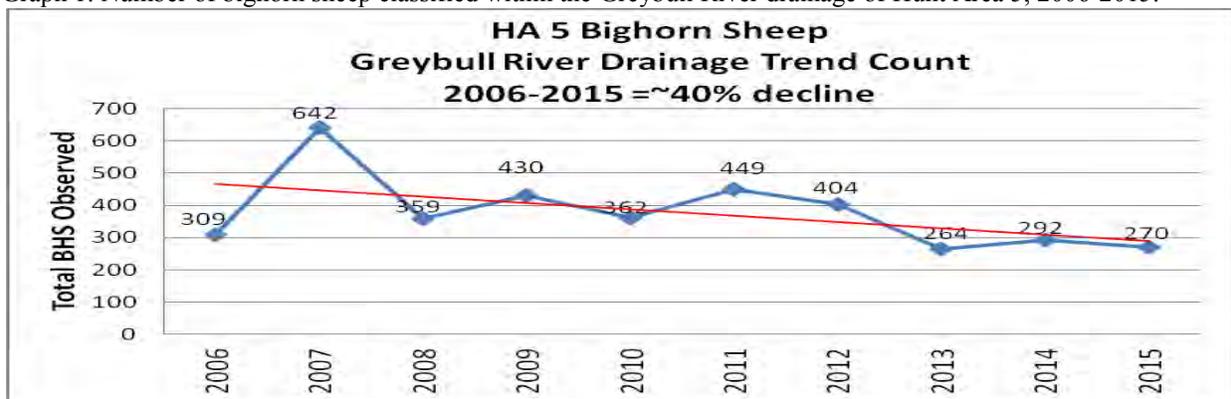
Habitat conditions for the most part are considered good to excellent in this herd unit. The Little Venus fire in 2006 and the Norton Point fire in 2011 improved overall forage availability and production in Hunt Area 5. The drought conditions in 2012 did cause lower than normal forage

production. Higher than normal precipitation in 2014 and 2015 were favorable for spring green up and winter forage.

### Field Data

Aerial classifications surveys are used in obtaining post-season lamb and ram ratio for this sheep herd. On average about 500-600 sheep are classified annually, except for the past three years where the average has been about 400 sheep. Lamb:ewe ratios for the herd have remained mostly favorable, with an average ratio of 25:100. Ram:ewe ratios typically exceed 50:100. Since 2005, a commonly flown flight path has been used during classification surveys within the Greybull River drainage. The number of sheep observed on these annual flights has been used to track population trends. Over the past 10 years the number of sheep observed on average has declined by 40% (Graph 1).

Graph 1. Number of bighorn sheep classified within the Greybull River drainage of Hunt Area 5, 2006-2015.



### Harvest Data

Since 2012 license quotas in area 5 have been reduced by 60% because of declines in sheep numbers. Typically in area 5 hunter success is usually around 90%, with an average hunter effort of about 6-7 days/ram. Starting in 2014 hunter success dropped to 72% and hunter days increased to 13.7. In 2015 hunter success increased slightly to 80%, while hunter effort improved to 10.1 days. Two rams were harvested from the area 22, while 8 were harvested from the Wind River Reservation. The average age of harvested rams has been maintained between 7-8 years.

### Population

The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd because it reflects a good recent year trend (2010-2015) in the population. The model supports an AIC value at 199. Because of this, the overall model is considered mostly reliable, at least for the last 4 year trend. The model also reflects trends in past year observations of sheep numbers during classification surveys. On average for the herd unit, the number of sheep classified has declined by about 40% in recent years.

### Management Summary

The low lamb ratios in 2011 (17:100) and 2014 (20:100), a drop in hunter success, an increase in days/animal, and the overall decline in observed sheep warrants some concern for this sheep herd. Because of these concerns the Type 1 quotas in both areas 5 and 22 will remain at 32 and 4 licenses, respectively. The license quota for the Owl Creeks hunt area of the Wind River

Reservation will again remain at 12. The projected 2016 harvest for the herd unit is roughly 35-40 rams. The 2016 post-season population estimate will be around 700 sheep.



## 2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep  
 HERD: BS212 - DEVIL'S CANYON  
 HUNT AREAS: 12

PERIOD: 6/1/2015 - 5/31/2016  
 PREPARED BY: LESLIE SCHREIBER

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Trend Count:	144	164	175
Harvest:	2	4	6
Hunters:	2	4	6
Hunter Success:	100%	100%	100%
Active Licenses:	2	4	6
Active License Success	100%	100%	100%
Recreation Days:	11	13	12
Days Per Animal:	5.5	3.2	2
Males per 100 Females:	44	48	
Juveniles per 100 Females	63	58	

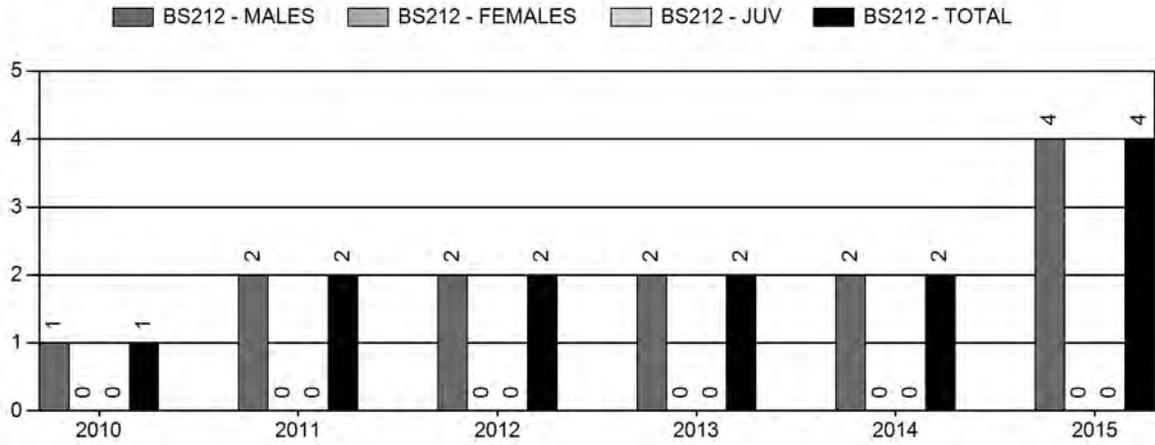
Trend Based Objective ( $\pm 20\%$ ) 175 (140 - 210)  
 Management Strategy: Special  
 Percent population is above (+) or (-) objective: -6.3%  
 Number of years population has been + or - objective in recent trend: 0

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

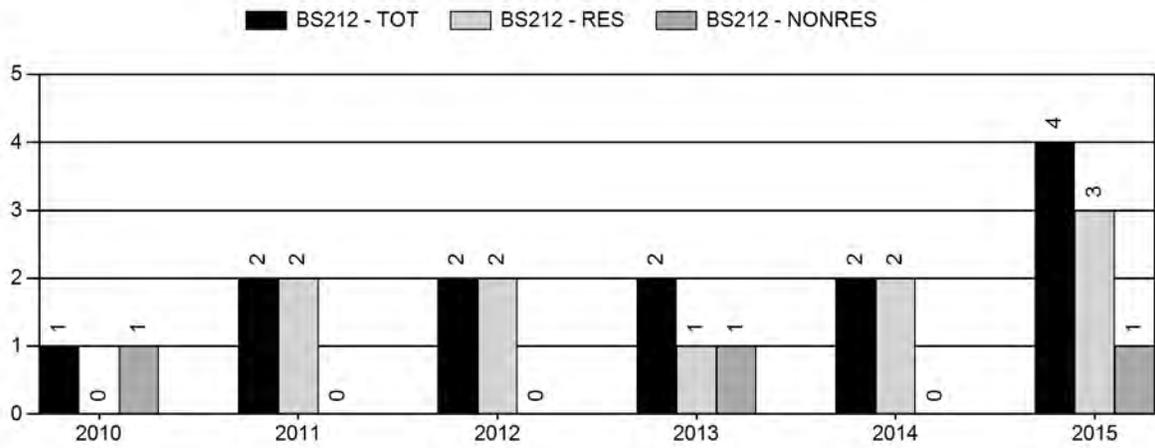
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	0%	0%
Males $\geq 1$ year old:	8%	12%
Juveniles ( $< 1$ year old):	0%	0%



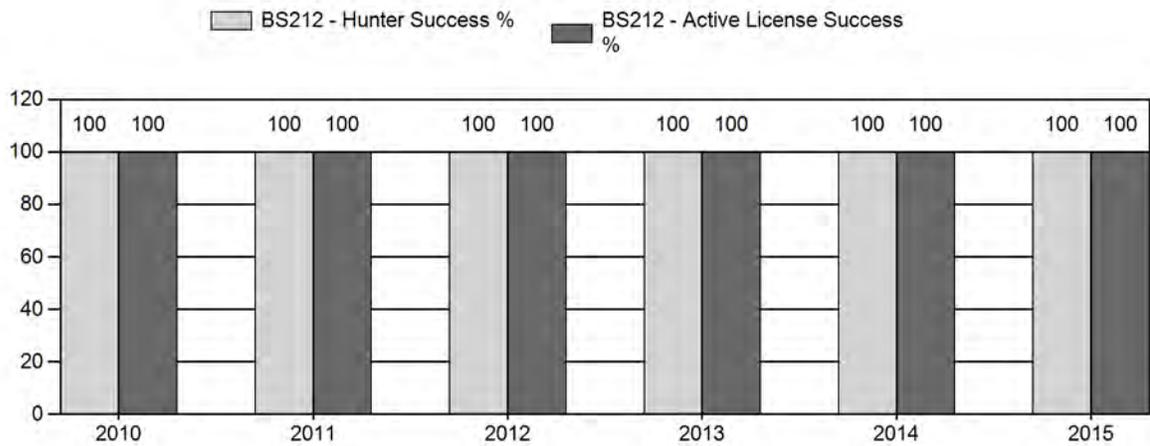
# Harvest



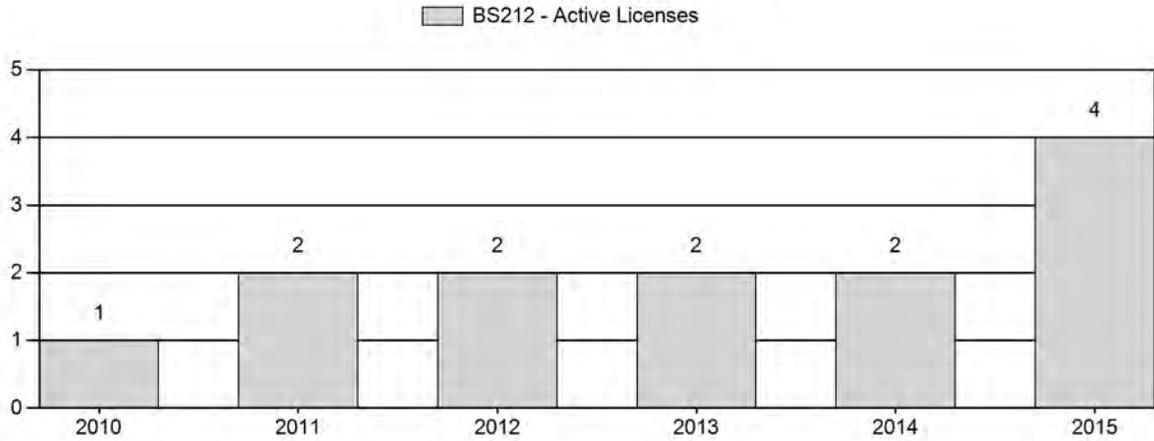
# Number of Hunters



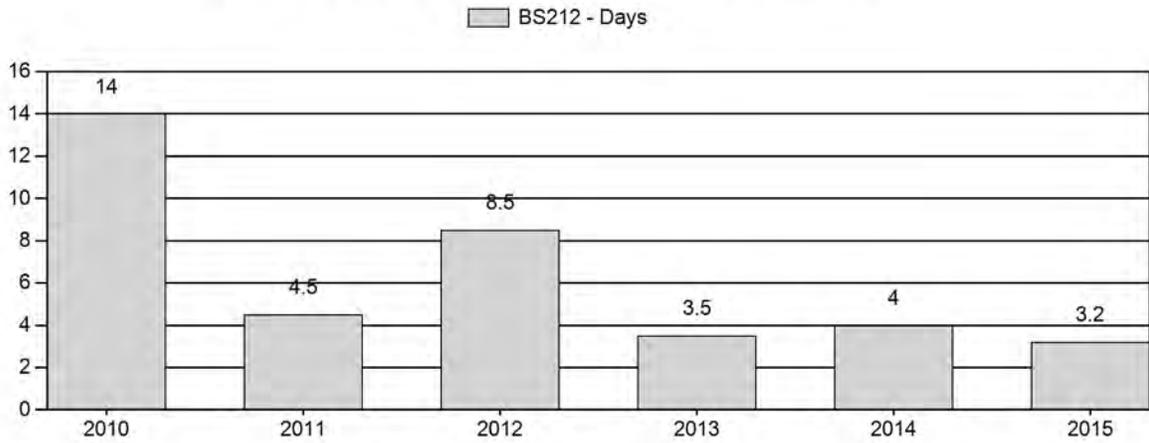
# Harvest Success



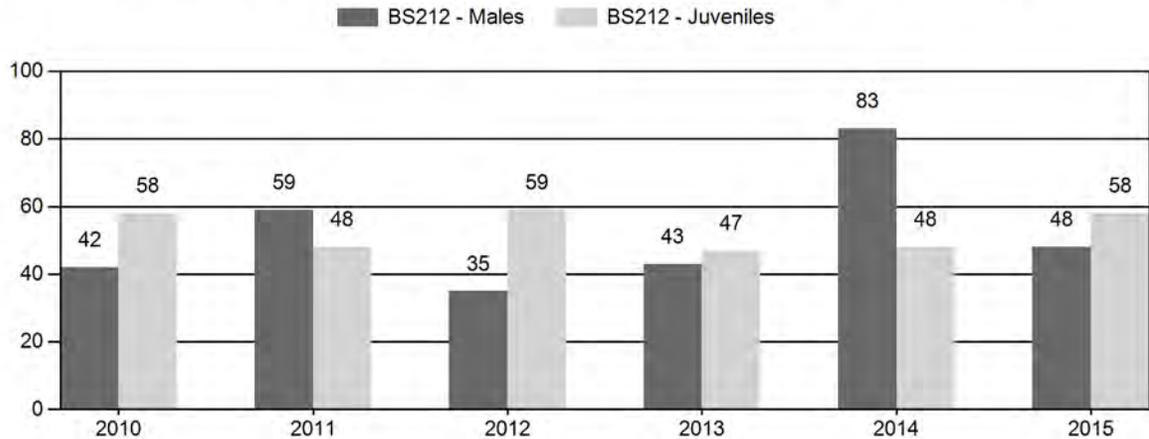
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



**2010 - 2015 Preseason Classification Summary**

for Bighorn Sheep Herd BS212 - DEVIL'S CANYON

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Int	100 Fem	Conf Int	100 Adult
2010	0	6	18	27	21%	64	50%	37	29%	128	142	9	28	42	± 0	58	± 0	41
2011	0	0	41	41	29%	69	48%	33	23%	143	141	0	59	59	± 0	48	± 0	30
2012	0	0	12	17	18%	49	52%	29	31%	95	142	0	24	35	± 0	59	± 0	44
2013	0	0	32	32	23%	74	52%	35	25%	141	143	0	43	43	± 0	47	± 0	33
2014	0	0	76	76	36%	92	43%	44	21%	212	136	0	83	83	± 0	48	± 0	26
2015	0	0	0	38	23%	80	49%	46	28%	164	167	0	0	48	± 0	58	± 0	39

**2016 HUNTING SEASONS  
DEVIL’S CANYON BIGHORN SHEEP HERD (BS212)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
12	1	Aug. 15	Oct. 15	6	Limited quota	Any ram

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
12	1	Aug. 1	Aug. 14	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2015
		+2
<b>Total</b>		<b>+2</b>

**Management Evaluation**

**Current Trend Count Management Objective:** 175

**Management Strategy:** Special

**2016 Trend Count:** 164

**Most Recent 3-year Running Average Trend Count:** 172

**Herd Unit Issues**

Prior to the first transplant into the Devil’s Canyon area in 1973, an informal goal of 200 bighorn sheep was established. That population objective was carried over following the more recent transplants in 2004 from Oregon and 2006 from Montana. In 2015, a formal objective of 175 bighorn sheep based on a summer aerial trend count calculated on a 3-year running average was established during the public herd unit review process. The management goals for this herd are three-fold: provide a disease-free source stock for in-state transplant while providing ram hunting opportunity and limiting comingling with other wild and domestic sheep.

The Devil’s Canyon herd occurs mostly on BLM lands, which are designated a “cooperative review area” by the Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group. Bighorn National Forest lands are designated a “non-emphasis” area by the same group. To keep separation between wild and domestic sheep, an agreement was reached where any wild sheep in and south of Cottonwood Canyon would be removed by WGFD personnel. Two rams were removed in November 2015 along US Highway 14A. One ram was removed in May 2016 in Cottonwood Canyon. The WGFD conducts clearance flights when flight money is available each spring before domestic sheep trail up US Highway 14A stock trail. In addition, USFS and WGFD personnel do ground surveys before sheep trailing in the spring and fall to ensure no comingling occurs.

**Weather**

Climatic conditions probably have the most influence on productivity and survival of this population. Cheatgrass has become established on some sites. No anthropogenic development currently affects this population or habitat. There is limited farming consisting of irrigated pastures on a small portion of private land. Bighorn sheep are attracted to those pastures especially during drought years. The landowners have commented on the concentration of sheep

on those pastures, but have not requested management to remove or reduce their numbers so far. In 2015, growing season moisture was well timed resulting in good herbaceous growth.

### **Habitat**

Although drought conditions were documented during summer 2012 and 2013 across most of Wyoming, effects on this bighorn sheep herd appear to have been minimal. Distribution to irrigated pastures probably negated any adverse effects.

### **Field Data**

Total number of sheep observed during pre-season classification surveys give the most consistent population trend estimate. However, some surveys prior to 2012 were not conducted across all areas used by bighorns and effort (flight time, aerial vs. ground) has not been consistent across years. For the July 2015 classification survey, personnel counted a total of 164 bighorn sheep, of which 80 were ewes (Appendix). We observed 38 rams (9 class I rams, 7 class II rams, 15 class III rams, and 7 class IV rams) for a ratio of 48 rams:100 ewes. We observed 46 lambs for a ratio of 58 lambs:100 ewes. Flight time and area surveyed in 2015 did not differ greatly from the previous 3 years. The day after the classification flight, a BLM employee observed 13 additional rams from the ground that were not observed during the flight.

### **Harvest Data**

Harvest statistics provide little information about this population's trend. Only 1-2 licenses were issued each year from 2008-14 with 100% hunter success. Four licenses were issued in 2015 with 100% hunter success. Recreation days and days per harvested animal vary depending on the amount of time each hunter allocated to his/her hunt. Similarly, average age of harvested rams does not indicate a trend, because only 1-4 rams were harvested each year. Furthermore, ram genetics from recent transplants allowed for more horn growth of young rams. For example, a Devil's Canyon ram with Montana's Missouri River breaks genes was harvested as a 6-year old and scored >180 Boone and Crockett points. Thus, average age of harvested rams could decrease even though larger rams are being harvested.

### **Population**

One landowner controls key access to the area where most bighorns occur in Devil's Canyon and has traditionally requested a low number of ram licenses each year, because of hunter crowding concerns. We have worked closely with the landowner this past year to develop acceptable management and consequently we are increasing the number of ram licenses to 6 in 2016. Devil's Canyon sheep occupy a relatively small area where rams are highly visible and are habituated to human activity creating a potential for conflict among hunters. If conflicts are minimal and the landowner is satisfied, we hope to keep 6 ram licenses in the future.

In February 2015, 25 bighorn sheep (4 rams, 1 ram lamb, 20 ewes) were captured, sampled, fitted with radio-collars and released in the Seminole Mountains north of Sinclair. In February 2016, another 25 sheep (3 rams, 1 ram lamb, 21 ewes) were captured, sampled, and fitted with radio-collars. One 3-year-old ewe died from capture myopathy and was not released. The remaining 24 sheep were released on the east end of the Ferris Mountains. With high lamb productivity in the Devil's Canyon herd, these transplants were necessary in keeping the Devil's Canyon herd at objective.

## **Management Summary**

Our current management strategy in Hunt Area 12 is to use translocations of ewes and lambs to keep the population at objective, which decreases the likelihood of wandering Devil's Canyon sheep comingling with other wild and domestic sheep. Translocations in 2015 and 2016 of 25 sheep each year assisted in this goal. Further, maintaining a good working relationship with the landowner is a high priority and critical for successful management of this herd, especially when allocating hunting licenses. The longer rifle season and earlier archery season for 2016 were designed to prevent hunter crowding, a major concern of the landowner. From 2008-2014, only 1-2 licenses were issued each year. Abundance and distribution of rams has grown in recent years, spurring the license quota to 4 in 2015 and 6 in 2016.

TO: Osterland, Woolley, Werbelow, Hobbs, McWhirter  
 FROM: Leslie Schreiber  
 COPIES: file  
 SUBJECT: July 17, 2015 – HA 12 bighorn sheep classification flight

Observer: Schreiber, Hobbs, Rael (WGF Commissioner)  
 Species: Bighorn Sheep  
 Survey Type: Classification/trend  
 Air Service: SKY Aviation  
 Aircraft: Jet Ranger Helicopter (L1)  
 Conditions: Overcast, wind 0-10 mph, 55-75°  
 Flight time: 1.2 hours ferry, 4.0 hours survey

Below are the classification/trend survey results flown for bighorn sheep in hunt area 12 on July 17, 2015. Total number of sheep observed was between 164 and 177. Locations of these sheep and our flight tracks (blue line) are mapped below on the Google Earth image. The highest concentrations of ewe/lamb groups were found along the upper ledges below the canyon rim near the confluence of Deer and Porcupine Creeks. Rams were found on both sides of Devil’s Canyon. Rams were classified based on horn curl/mass. Unclassified rams marked with an asterisk, were observed by BLM personnel on the ground the day after the flight.

Ewes	Lambs	Unclass. ram	C1 ram Yrl - ½ curl	C2 ram ½ - ¾ curl	C3 ram ¾ - full curl	C4 ram ≥ full	Total Rams	Total Sheep	Lamb Ratio	Ram Ratio
80	46	13*	9	7	15	7	51	164(177*)	58:100	64:100



## 2015 - JCR Evaluation Form

SPECIES: Mountain Goat

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

HERD: MG201 - BEARTOOTH

HUNT AREAS: 1, 3, 514, 999

PREPARED BY: DOUG  
MCWHIRTER

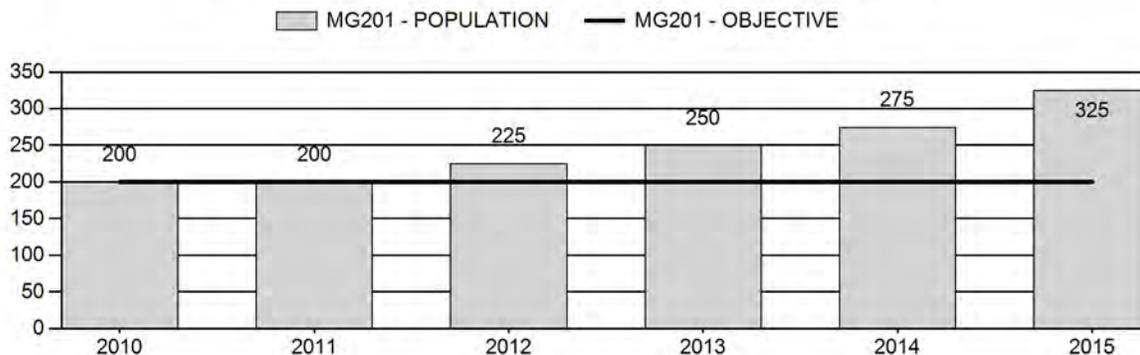
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	230	325	300
Harvest:	16	19	25
Hunters:	17	19	28
Hunter Success:	94%	100%	89%
Active Licenses:	17	19	28
Active License Success:	94%	100%	89%
Recreation Days:	91	111	175
Days Per Animal:	5.7	5.8	7
Males per 100 Females	0	0	
Juveniles per 100 Females	32	40	

Population Objective (± 20%) :	200 (160 - 240)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	62%
Number of years population has been + or - objective in recent trend:	6
Model Date:	None

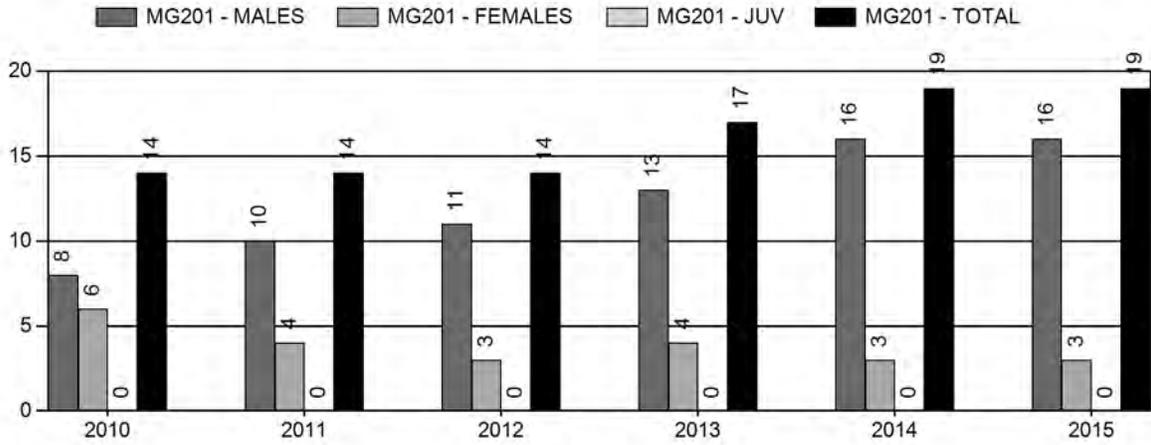
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<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%

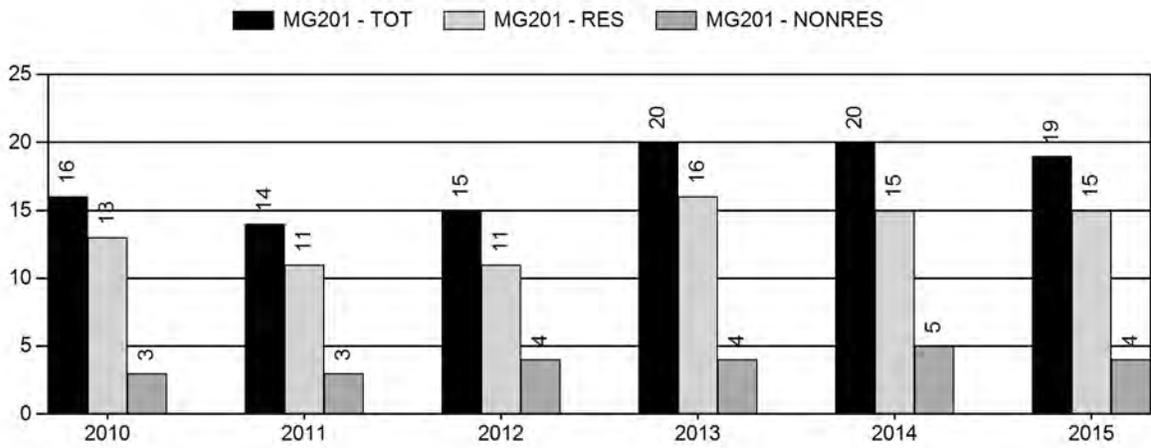
## Population Size - Postseason



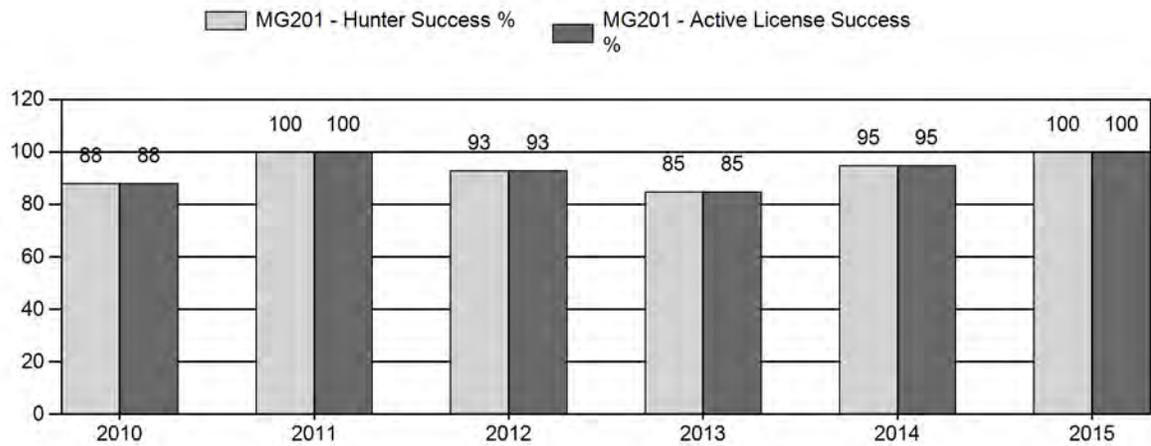
# Harvest



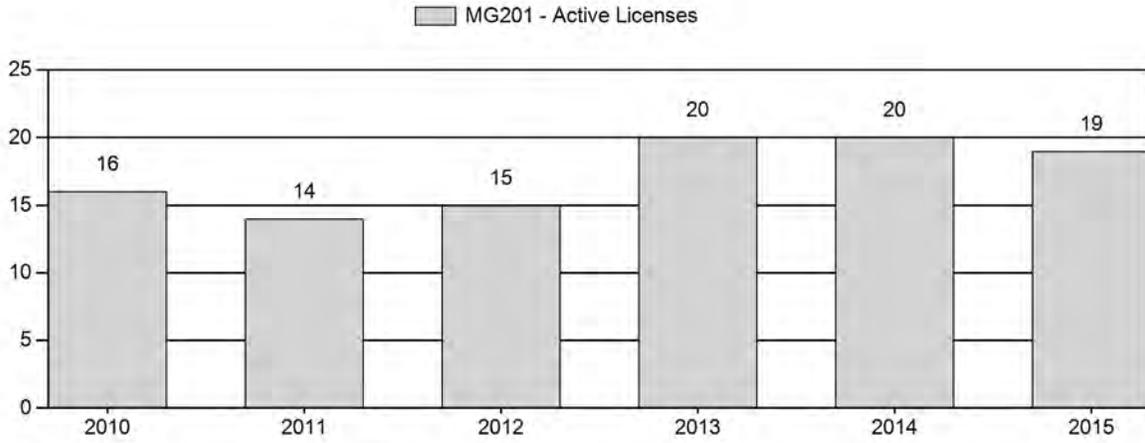
# Number of Hunters



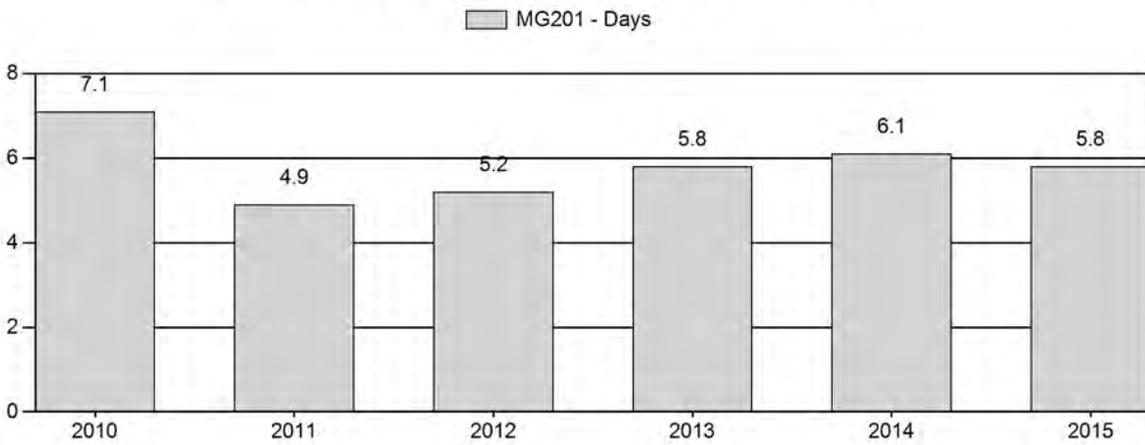
# Harvest Success



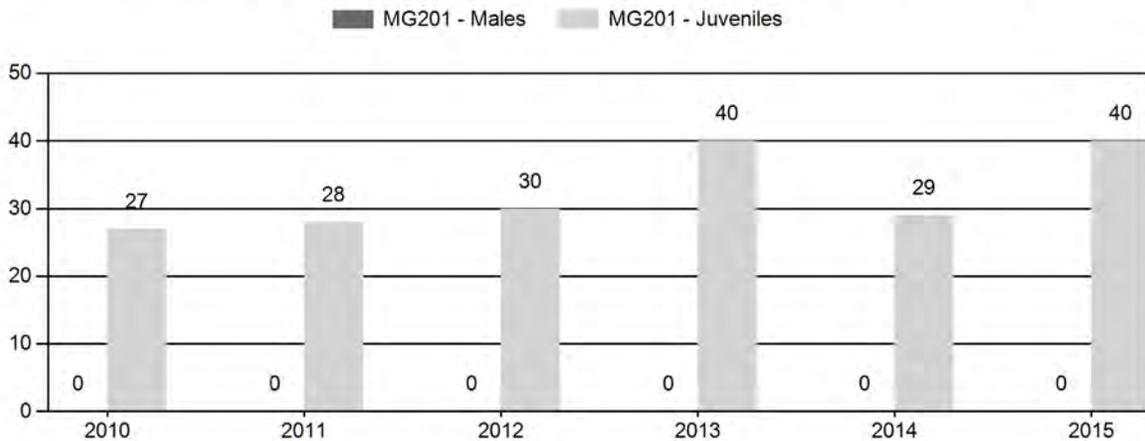
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2010 - 2015 Preseason Classification Summary

for Mountain Goat Herd MG201 - BEARTOOTH

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
2010	225	0	0	0	0%	37	79%	10	21%	47	165	0	0	0	± 0	27	± 0	27
2011	225	0	0	0	0%	76	78%	21	22%	97	179	0	0	0	± 0	28	± 0	28
2012	250	0	0	0	0%	60	77%	18	23%	78	179	0	0	0	± 0	30	± 0	30
2013	275	0	0	0	0%	125	71%	50	29%	175	167	0	0	0	± 0	40	± 0	40
2014	300	0	0	0	0%	56	78%	16	22%	72	155	0	0	0	± 0	29	± 0	29
2015	350	0	0	0	0%	216	71%	87	29%	303	207	0	0	0	± 0	40	± 0	40

**2016 HUNTING SEASONS  
BEARTOOTH MOUNTAIN GOAT HERD (MG201)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
1	1	Sep. 1	Oct. 31	12	Limited quota	Any mountain goat
3	1	Sep. 1	Oct. 31	8	Limited quota	Any mountain goat
3	2	Oct. 1	Oct. 31	8	Limited quota	Any mountain goat

Special Archery Season Hunt Areas	Season Dates		Limitations
	Opens	Closes	
1, 3	Aug. 15	Aug. 31	Refer to Section 7 of this Chapter

Hunt Area	Type	Quota change from 2015
3	2	+8
<b>Total</b>		<b>+8</b>

**Management Evaluation**

**Current Management Objective:** 200

**2015 Postseason Population Estimate:**

**2016 Proposed Postseason Population Estimate:**

**Herd Unit Issues**

Mountain goats were introduced into the Rock Creek drainage of the Beartooth Mountains of Montana, adjacent to the Wyoming border, in 1942. The first hunting season in Wyoming was in 1969. Since then mountain goats populated all available habitat in the Beartooth Mountains of Wyoming, and have colonized portions of the Absaroka Mountains as well, presumably from the Absaroka Mountains in Montana. To accommodate this expansion, Hunt Area 1 was enlarged in 1996 (to include the Sunlight Creek drainage) and again in 2009 (to include the area south to the North Fork of the Shoshone River). In 2011, Hunt Area 3 was carved out of Hunt Area 1 to direct hunting pressure at goats that inhabited the more remote areas of the Absaroka Mountains. In addition, expansion has taken place in Yellowstone National Park, where currently 75-100 goats reside. Hunting of this population of goats also occurs in Montana (Hunt District 514) adjacent to the Wyoming portion of the Beartooth Mountains. Both of these factors (Montana harvest and goats unavailable for harvest in YNP) must be taken into account when managing this herd.

**Weather**

Snow depths and snow water equivalents at high elevation monitoring sites during the 2015-2016 winter were not excessive, with most sites 75%-90% of normal. Temperatures were also near normal, with cooler temperatures in early winter, followed by a very warm periods in February and March. Both annual precipitation and growing season precipitation at higher elevations were slightly below normal.

### **Habitat**

No habitat monitoring data is collected in this herd unit.

### **Field Data**

A pre-season classification and trend survey conducted in summer 2015 yielded a total of 303 mountain goats. A total of 102 (34%) of these were seen in Area 1, while 93 (31%) were seen in Area 3. Another 108 were seen in Yellowstone National Park. Goat observations in Hunt Area 3 and in YNP represent the highest recorded goat numbers for these areas. The kid:adult ratio was 40:100, which is higher than the long-term (1986-2013) average of 33.5 kids:100 adults.

### **Harvest Data**

A total of 19 goats were harvested by 19 hunters in Wyoming in 2015, including 16 males and 3 females (100% success). Two licenses were issued in Montana for Hunt Area 514 in 2012, and 1 nanny was taken. Hunter effort for Wyoming goat hunters in 2015 was 5.8 days per goat harvested, which is slightly greater than the average for goat hunters in this area, as the long-term average (1970-2014) average is 4.6 days per goat taken.

The average age of all harvested goats in 2015 was 5.0 years for billies and 5.8 years for nannies, compared to the long-term average of 4.7 years for billies and 4.6 years for nannies since age records were first kept in 1998. The total number of goats seen by hunters in 2015 (average 21.1) was slightly less than the most recent 10-year average of 28.9 goats seen.

Various studies have shown that goat populations are sensitive to female harvest. The 3 nannies killed in 2008 represented 55% of the total Wyoming harvest for Hunt Area 1, which is considered high. In 2009 and 2010, nannies comprised 38.5% and 45.5% of the harvest, respectively. Three of the six highest nanny harvest percentages recorded for this herd unit have been recorded in the last 5 years (2008, 2009, 2010). In 2011 and 2012, the percentage of nannies in the Area 1 harvest was 36.4% and 27.3%, respectively. In 2013, nannies comprised 35% of the total harvest in this herd unit. In 2014 and 2015, this figure dropped to 15.8%.

### **Population**

Due to the difficulty of distinguishing males and females during aerial surveys, mountain goats are classified as either kids or non-kids. Only from close observation can males and yearlings be determined. Therefore, pre-season classification information for this herd unit (although graphed as juveniles:100 females) is actually kids:100 non-kids. Due to the inability to distinguish between males and females, construction and validation of a functional population model is difficult.

Based on an evaluation of recent trend counts and productivity estimates, the Beartooth Mountain Goat Herd is currently estimated to be above the post-season population objective of

200 goats. Due to concerns over expanding mountain goats on high elevation non-migratory bighorn sheep, it is felt that decreasing mountain goats densities in Hunt Area 3 are warranted. Therefore, it is recommended that 12 licenses be issued in Area 1 and 16 licenses be issued in Area 3 for the 2016 season, which should result in the harvest of approximately 25 goats.



**APPENDIX A**

**PRODUCTION AND UTILIZATION OF SHRUB AND HERBACEOUS SPECIES ON KEY AREAS**

**Sagebrush Production and Utilization**

Production and utilization data for sagebrush (*Artemisia tridentata wyomingensis*) are collected at ten sites in the Cody Region (Tables 1 and 2 and Figures 1 and 2). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production is measured in September/October using the leader length method described in WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol (August 1, 2004). Utilization is measured in April/May using a modified Cole browse method described in WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol (August 1, 2004).

**Table 1. Production expressed as average annual leader length in centimeters for sagebrush transects in the Cody Region.**

Transect	2011	2012	2013	2014	2015	Long-term Average
Breteche	3.58			3.56		2.48
Aldrich	0.27			2.75		1.23
Grass Creek	3.42	0.29	1.94	2.57	3.22	2.72
Wagonhound	3.71	1.75	2.72	2.72	4.59	2.47
Dry Creek Basin	4.83	0.55	2.42	4.37	2.31	2.55
Five-mile	5.71	0.74	2.46	3.57	4.66	3.23
Denver Jake	1.95	0.84	1.40	1.36	3.92	1.81
Lightning Ridge	1.90	0.76	1.00	1.56	1.78	1.43
Alkali	4.13	2.10	2.10	1.80	1.24	2.46
Renner			2.73	2.76	3.73	3.07
Average of Transects	3.25	1.08	1.93	2.70	3.18	2.27

**Table 2. Utilization expressed as percent leaders browsed for sagebrush transects in the Cody Region.**

Transect	2012	2013	2014	2015	2016	Long-term Average
Breteche	9.4	24.5	7.4		11	18.75
Aldrich	5.80	4.60	0.60	0.00	1.80	5.35
Grass Creek	0.60	0.40	0.00	0.00	0.00	1.75
Wagonhound	26.20	25.40	17.60	8.20	7.00	15.33
Dry Creek Basin	44.20	37.40	20.60	35.20	25.60	23.80
Five-mile	0.20	23.50	20.20	21.20	28.20	18.00
Denver Jake	26.20	18.80	1.60	2.40	6.60	12.68
Lightning Ridge	5.00	3.80	0.00	2.00	9.40	4.45
Alkali	17.60	21.60	4.80	10.20	8.20	11.03
Renner			13.40	1.00	1.20	5.20
Average of Transects	13.54	16.12	8.62	8.91	9.90	11.21

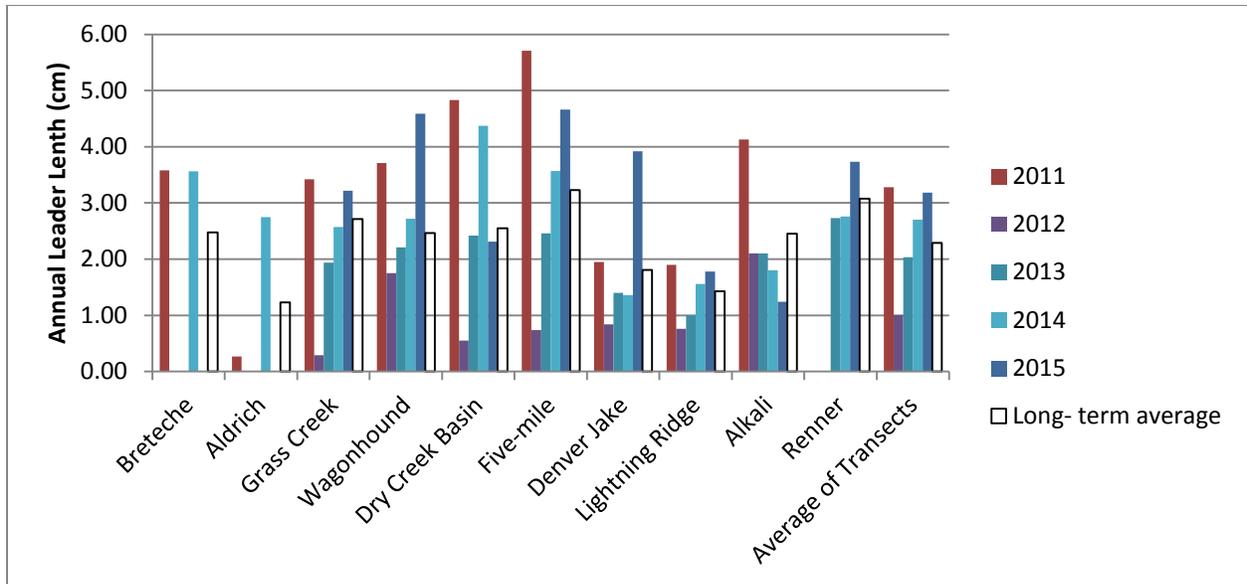


Figure 1. Average annual leader length for sagebrush transects in the Cody Region

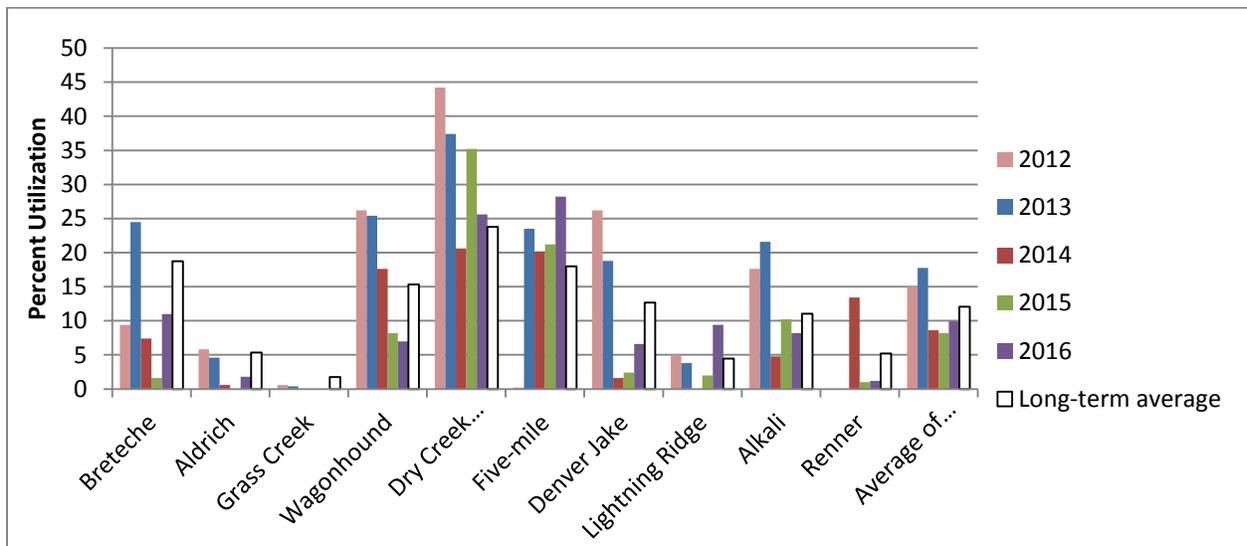


Figure 2. Percent utilization for sagebrush transects in the Cody Region

### Curleaf Mountain Mahogany Production and Utilization

Production and utilization data for curleaf mountain mahogany (*Cercocarpus ledifolias*) are collected at two sites in the Cody Region (Table 3 and Figures 3 and 4). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production and utilization are measured in September/October and April/May, respectively, using the twig length measurement

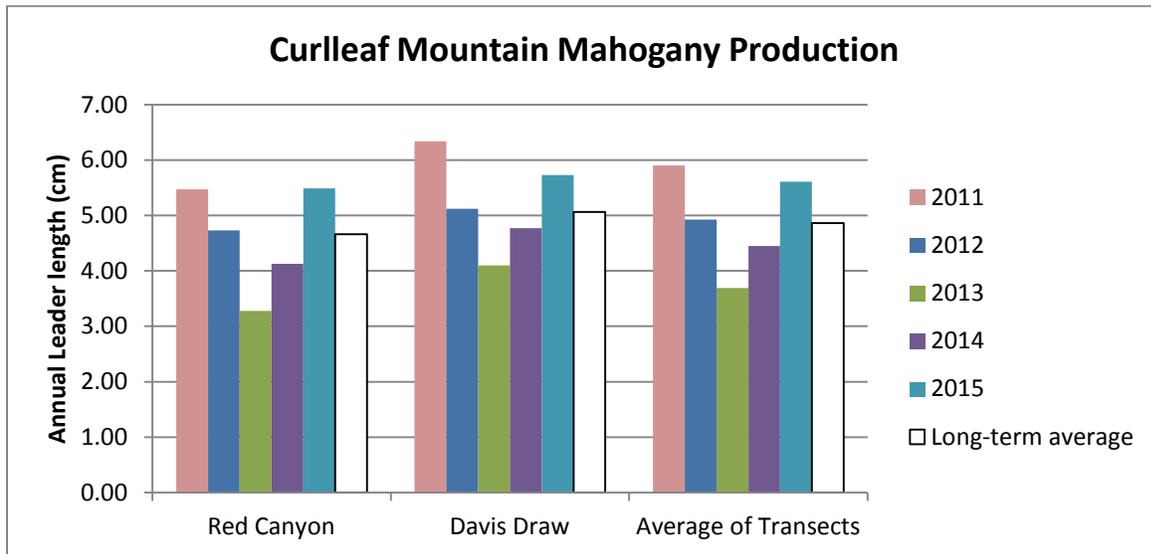
method described in Utilization Studies and Residual Measurements, BLM Technical Reference 1734-3 (1996).

**Table 3. Production expressed as average annual leader length in centimeters for curlleaf mountain mahogany transects in the Cody Region.**

Transect	2011	2012	2013	2014	2015	Long-term Average
Red Canyon	5.47	4.73	3.28	4.13	5.49	4.66
Davis Draw	6.43	5.12	4.10	4.77	5.73	5.06
Average of Transects	5.84	5.84	3.69	4.45	5.61	4.86

**Table 4. Utilization expressed as average annual leader length in centimeters and percent of total leader length removed for curlleaf mountain mahogany transects in the Cody Region.**

Transect	2012	2013	2014	2015	2016	Long-term Average
Red Canyon	63	66	44	61	61	46
Davis Draw	43	63	70	63	79	60
Average of Transects	53	65	57	62	70	54



**Figure 3. Average annual leader length for curlleaf mountain mahogany transects in the Cody Region.**

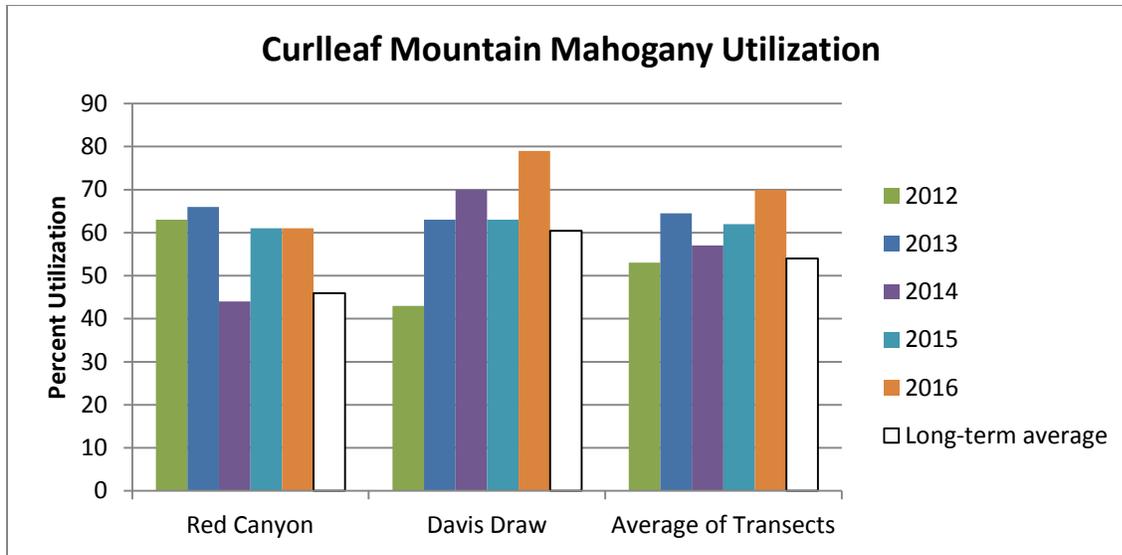


Figure 4. Average percent utilization for curlleaf mountain mahogany transects in the Cody Region.

#### **Herbaceous Production and Utilization**

Production and utilization data for herbaceous forage (grasses and forbs) are collected at six sites in the Cody Region (Tables 4 and 5 and Figures 5 and 6). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production is measured after peak seed ripe of key grass species by clipping and weighing samples. Utilization is measured by clipping and weighing samples inside and outside of a range cage just prior to green-up in the spring. Utilization is assumed to be primarily by elk unless noted. Methods can be found in [WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol \(August 1, 2004\)](#).

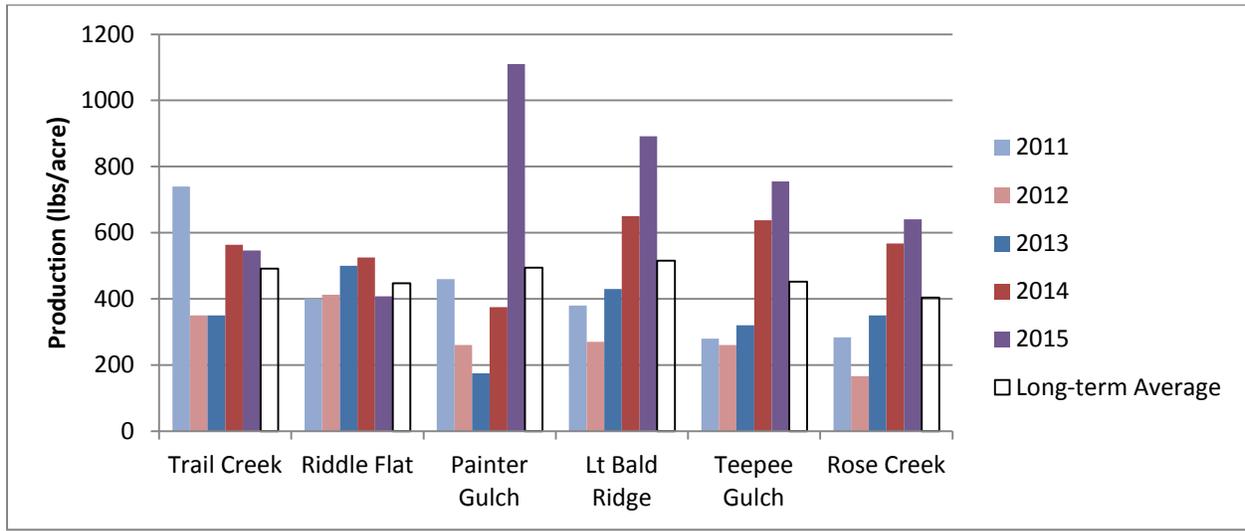
Table 5. Production in pounds per acre for herbaceous transects in the Cody Region.

Transect	2011	2012	2013	2014	2015	Long-term Average
Trail Creek	740	350	350	563	546	491
Riddle Flat	400	412	500	525	408	447
Painter Gulch	460	260	175	375	1110	494
Little Bald Ridge	380	270	430	650	892	515
Teepee Gulch	280	260	320	638	755	452
Rose Creek	383	166	350	567	640	403

**Table 6. Percent utilization for herbaceous transects in the Cody Region.**

Transect	2012	2013	2014	2015	2016	Long-term Average
Trail Creek	23	61			42	42
Riddle Flat	91	82	75	81	67	72
Painter Gulch	49	65	0	47	47	40
Lt Bald Ridge	81	50	67	58	85	72
Teepee Gulch	82	81	79	73	68	78
Rose Creek	50	57		0	5	32

**Figure 5. Production for herbaceous transects in the Cody Region.**



**Figure 6. Percent utilization for herbaceous transects in the Cody Region.**

