

TABLE OF CONTENTS

<u>Antelope</u>	<u>Herd #</u>	<u>Hunt Area #</u>	<u>Pages</u>
Copper Mountain	201	76,79,114,115.....	1-9
Fifteenmile	204	77, 83,110.....	11-18
Carter Mountain	205	78, 81, 82.....	19-29
Badger Basin	207	80	31-37
<u>Mule Deer</u>			
Paintrock	207	41, 46, 47.....	39-48
Southwest Bighorns Basin	208 209	35-37, 39, 40, 164..... 125,127.....	49-63 65-75
Greybull River	210	124,165.....	77-86
Shoshone River	211	122,123.....	87-99
Owl Creek/Meeteetse	212	116-120	101-111
Upper Shoshone	215	110-115	113-120
Clarks Fork	216	105, 106, 109,121	121-128
<u>White-Tailed Deer</u>			
Big Horn Basin	201	36, 37 47, 51, 53, 110-113, 116-118, 121- 122, 124, 127, 164, 165.....	129-136
<u>Elk</u>			
Medicine Lodge	211	41, 45.....	137-147
Gooseberry	214	62-64.....	149-157
Cody	216	55, 56, 58-61, 66.....	159-167
Clarks Fork	217	51, 53, 54.....	169-176
<u>Moose</u>			
Absaroka	201	8, 9, 11.....	177-183
<u>Bighorn Sheep</u>		(HA/sub unit)	
Clarks Fork	201	1	185-192
Trout Peak	201	2	193-199
Wapiti Ridge	201	3	201-207
Younts Peak	201	4	209-215
Francs Peak	201	5, 22, OCM/WRIR	217-224
Devils Canyon	212	12.....	225-232
<u>Rocky Mountain Goat</u>			
Beartooth	201	1, 3, (514 MT)	233-241
<u>Appendix A.</u>			
Cody Region Habitat Data.....			243-247

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR201 - Copper Mountain

HUNT AREAS: 76, 79, 114-116

PREPARED BY: Bart Kroger

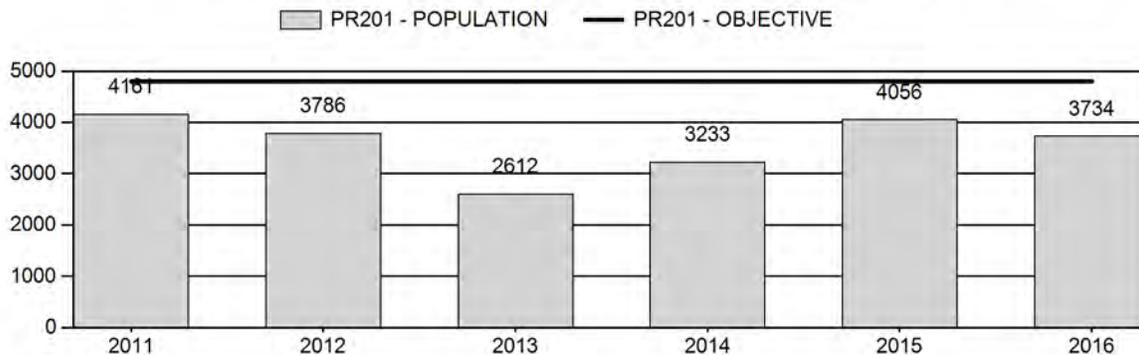
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,570	3,734	3,074
Harvest:	731	982	1,000
Hunters:	774	1,001	1,050
Hunter Success:	94%	98%	95 %
Active Licenses:	885	1,163	1,200
Active License Success:	83%	84%	83 %
Recreation Days:	3,126	3,825	3,900
Days Per Animal:	4.3	3.9	3.9
Males per 100 Females	49	59	
Juveniles per 100 Females	69	78	

Population Objective (\pm 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:	7
Model Date:	1/20/2017

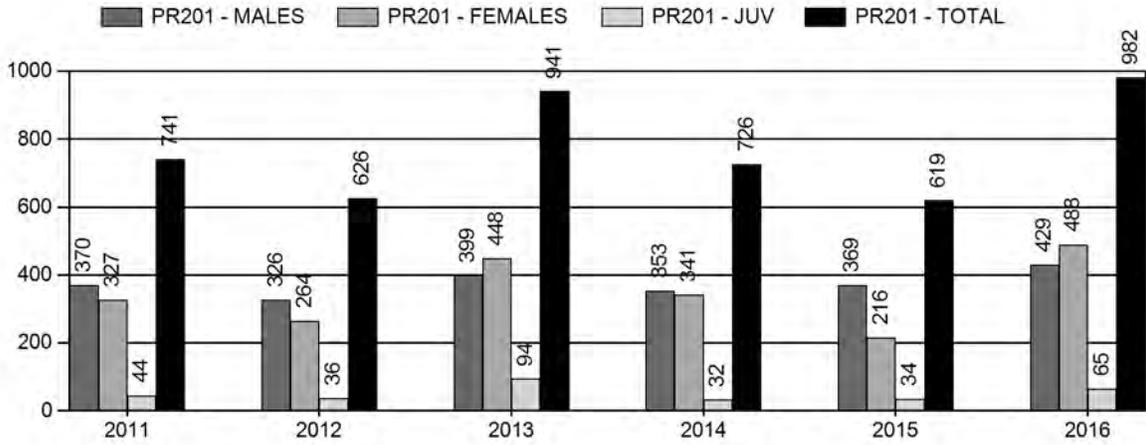
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	26%	31%
Males \geq 1 year old:	39%	46%
Total:	20%	24%
Proposed change in post-season population:	-10%	-16%

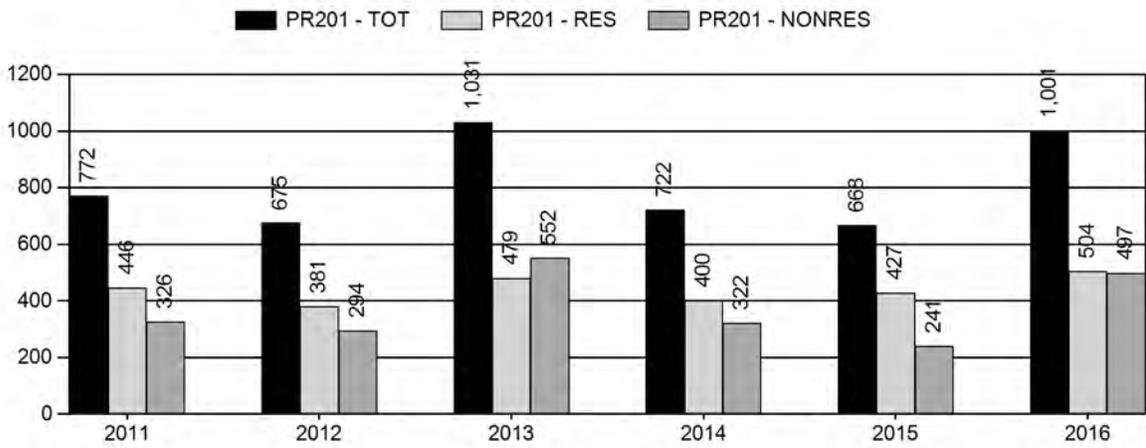
Population Size - Postseason



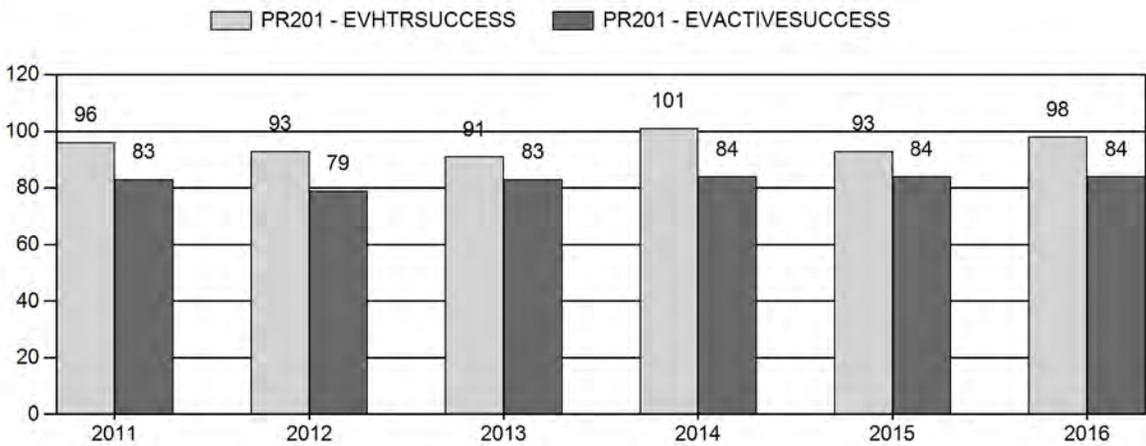
Harvest



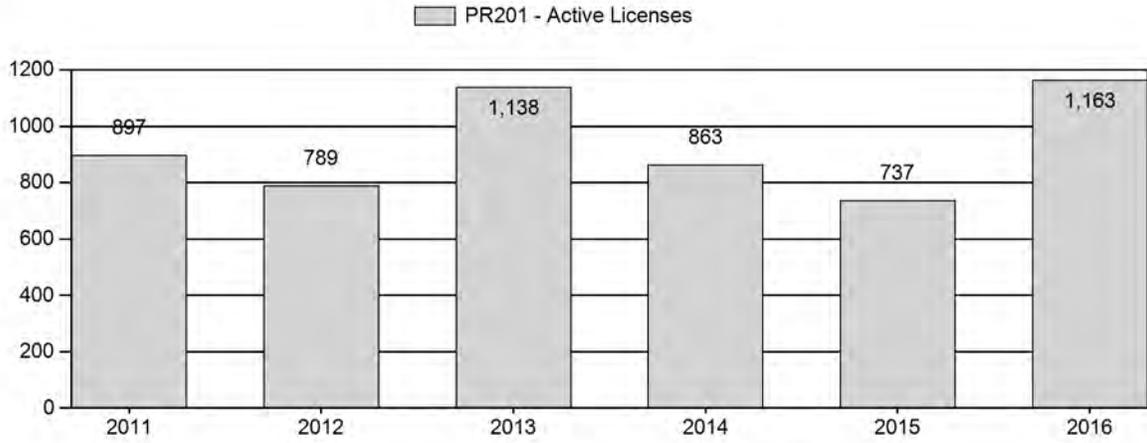
Number of Active Licenses



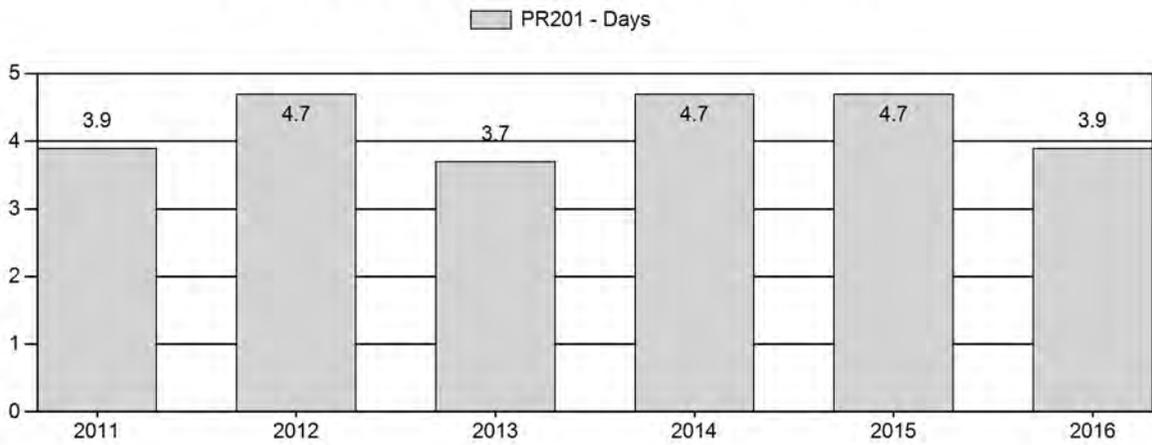
Harvest Success



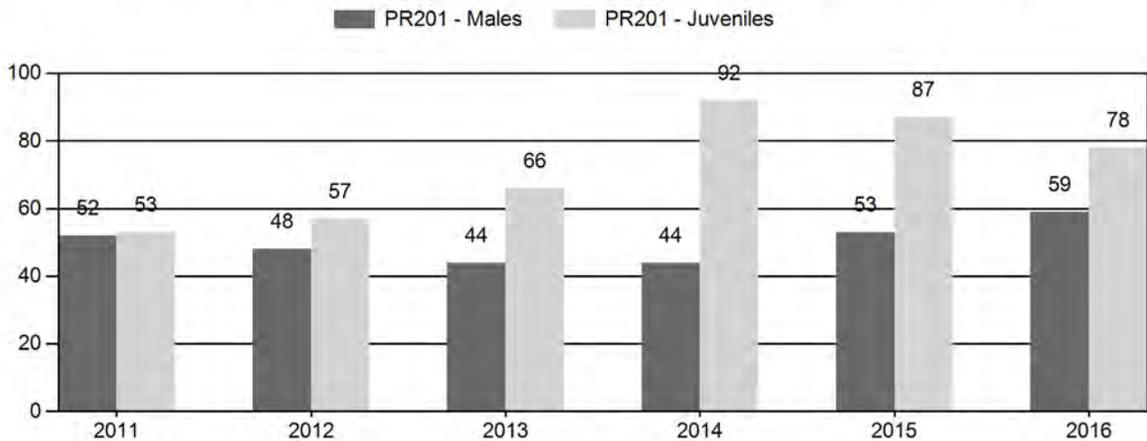
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary
for Pronghorn Herd PR201 - Copper Mountain

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Int	100 Fem	100 Int	100 Adult
2011	4,976	24	46	537	26%	1,024	49%	541	26%	2,102	1,545	2	4	52	± 3	53	± 4	35
2012	4,475	30	376	406	23%	844	49%	485	28%	1,735	1,285	4	45	48	± 4	57	± 4	39
2013	3,647	28	43	334	21%	763	48%	503	31%	1,600	1,753	4	6	44	± 4	66	± 5	46
2014	4,031	19	38	275	19%	621	42%	572	39%	1,468	1,810	3	6	44	± 4	92	± 7	64
2015	4,737	37	79	451	22%	853	42%	738	36%	2,042	2,071	4	9	53	± 4	87	± 5	57
2016	4,815	0	0	488	25%	826	42%	643	33%	1,957	2,048	0	0	59	± 4	78	± 5	49

**2017 HUNTING SEASONS
COPPER MOUNTAIN PRONGHORN HERD (PR201)**

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

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

Hunt Area	Type	Quota change from 2016
76	1	+25
76	6	+50
79	1	+10
79	9	+20
Total	1&2	+35
	6&7	+50
	9	+20

Management Evaluation

Current Postseason Population Management Objective: 4,800

Management Strategy: Recreational

2016 Postseason Population Estimate: 3700

2017 Proposed Postseason Population Estimate: 3100

2016 Hunter Satisfaction: 79% satisfied, 13% neutral, 8% 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. Cropland damage issues occur in the western portion of the herd unit, particularly hunt areas 114 and 76. Poor habitat conditions, long-term drought, and crop damage will and continue to be major management concerns for this herd. The herd objective and management strategy were last revised in 2013. In 2016, the Big Horn pronghorn herd PR202 (hunt area 79) was added to the Copper Mountain herd as part of that's herd unit revision process.

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 2016/17 winter has been semi-severe, with deep snow cover and below normal temperatures through early February, however since then significant snow melt has occurred and temperatures have moderated.

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.

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 have increased by about 40% since then. Buck ratios continue to remain mostly stable at about 50:100 on average, with fawn ratios averaging around 81:100, with 2013-2016 being four 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

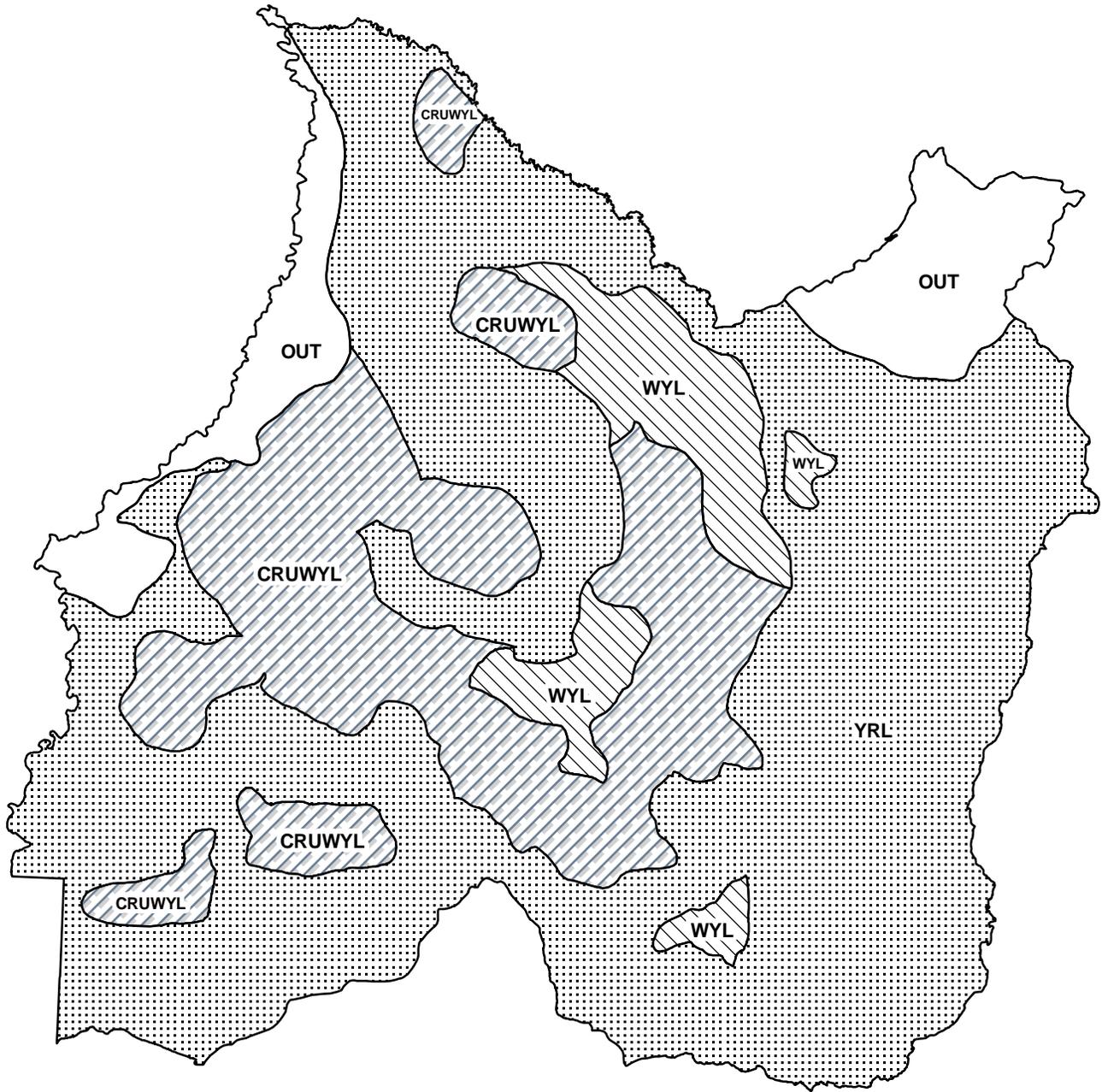
Overall total harvest has increased in this herd since the mid to late 2000's. In fact, since 2006, harvest has increased by about 200%. The increase in harvest is due in part to increasing pronghorn numbers along with increasing damage issues in areas 76 and 114. Overall, hunter success remains >90% 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 trends for this herd. This model has the highest AIC value (n=154), but the best fit (n=29) of all models. The model tracks well with past LT estimates, classification sample sizes, and mostly reflect what field personnel perceptions are of herd trends, but the model is probably underestimating population numbers. This pronghorn population declined 50% between 2009 and 2014, and has now started showing improving trend due to record high fawn ratios. Although the population is currently below objective by 23%, we are anticipating the population to continue to grow into 2017. The current model is a fair to good representation of this herd, but most field personnel feel the population is higher than model predictions.

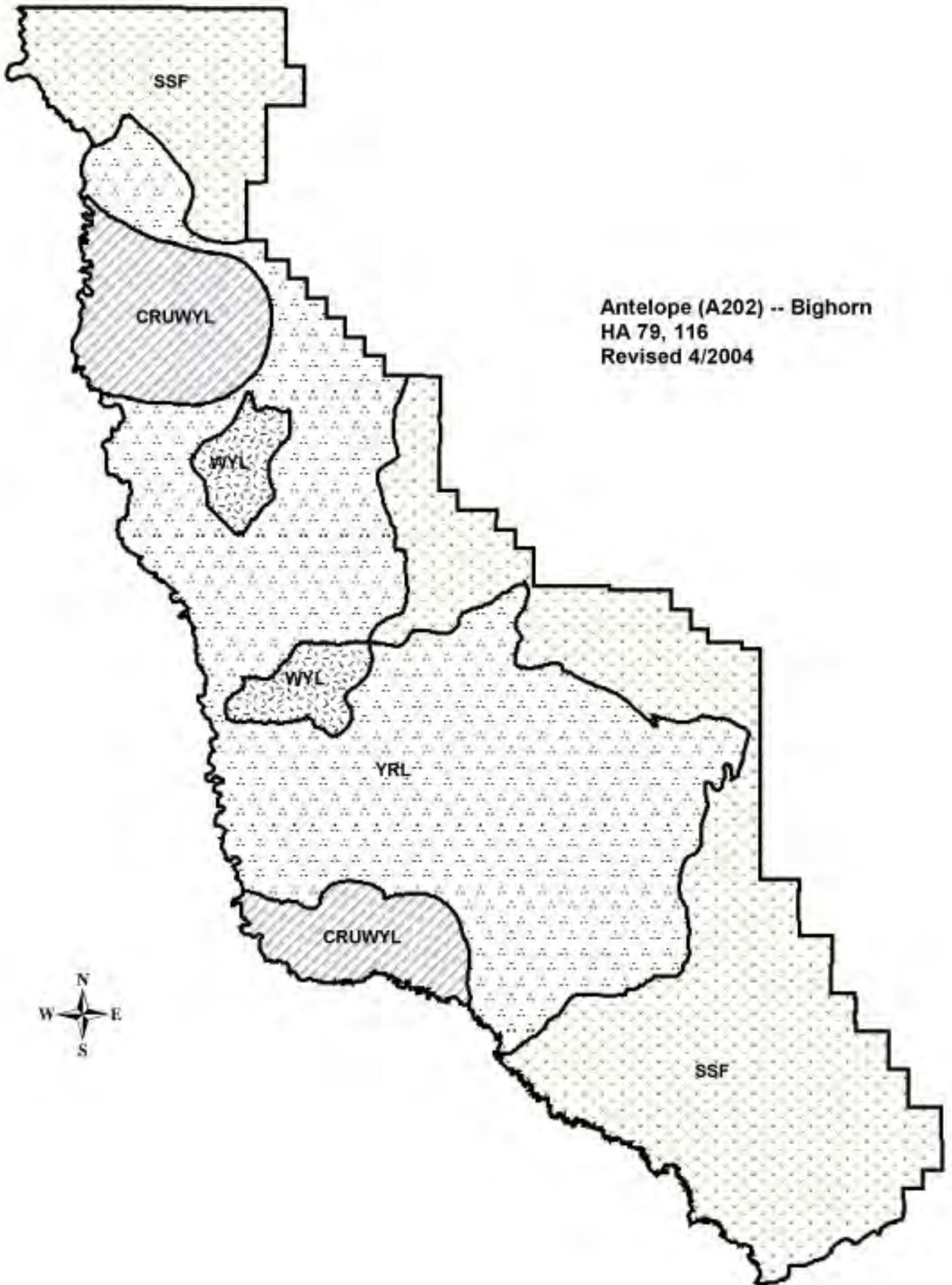
Management Summary

The 2017 season calls for an increase of 50 doe/fawn licenses, 35 any antelope licenses and 20 archery only licenses. With improved fawn ratios, and a noticeable increase in the overall population, along with the potential for damage issues to arise, these licenses quota increases are warranted given the population is still below objective. The projected 2017 harvest of about 1000 pronghorn will mostly stabilize this population at about 3100 pronghorn for post-season 2017.



Pronghorn (A203) - Copper Mountain
HA 76, 114, 115
Revised 4/2006





2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR204 - FIFTEENMILE

HUNT AREAS: 77, 83, 110

PREPARED BY: BART KROGER

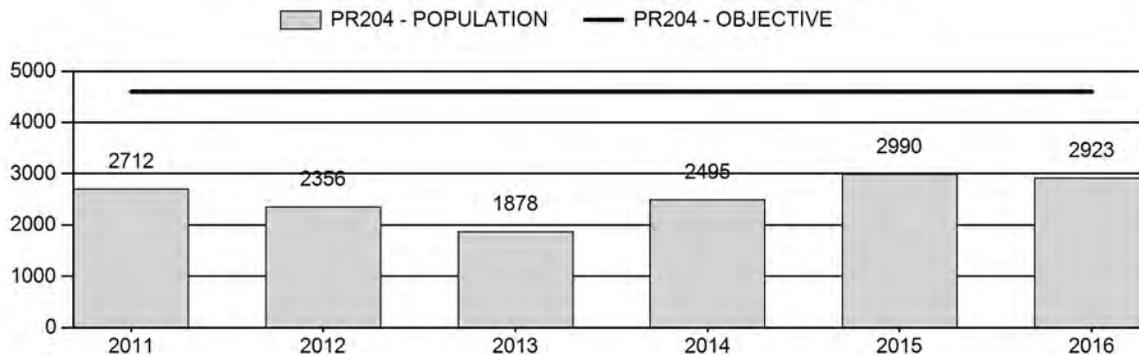
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	2,486	2,923	2,440
Harvest:	710	763	1,000
Hunters:	698	715	950
Hunter Success:	102%	107%	105 %
Active Licenses:	810	845	1,100
Active License Success:	88%	90%	91 %
Recreation Days:	2,430	2,309	3,000
Days Per Animal:	3.4	3.0	3
Males per 100 Females	34	45	
Juveniles per 100 Females	59	70	

Population Objective (\pm 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-36.5%
Number of years population has been + or - objective in recent trend:	7
Model Date:	1/20/2017

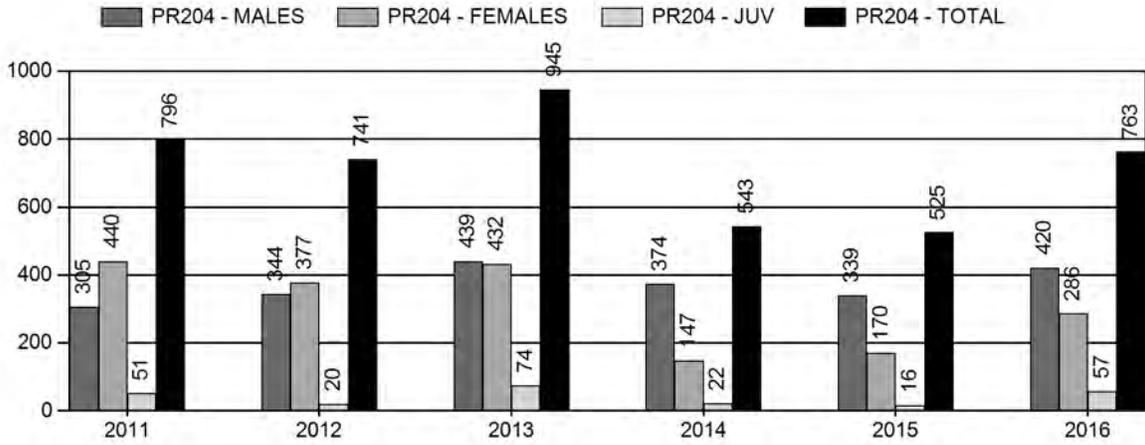
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	17%	32%
Males \geq 1 year old:	81%	88%
Total:	20%	28%
Proposed change in post-season population:	-1%	-16%

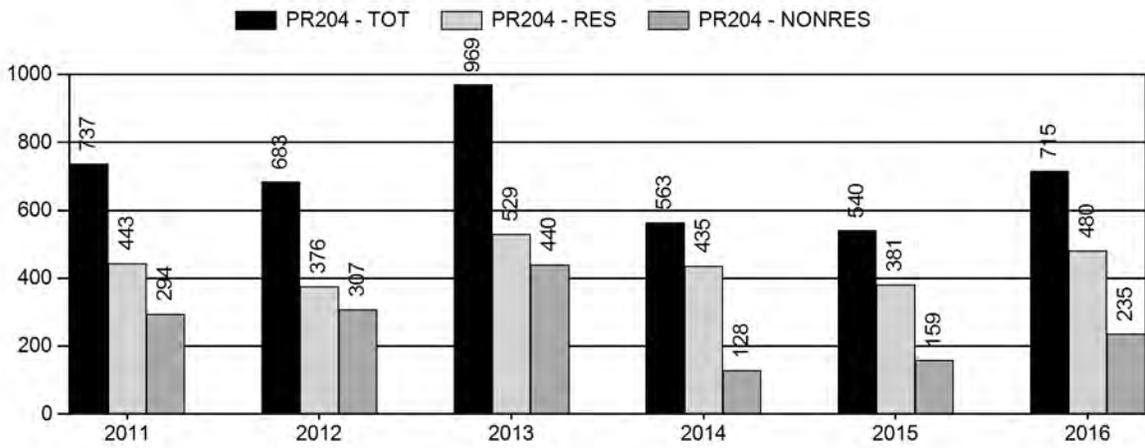
Population Size - Postseason



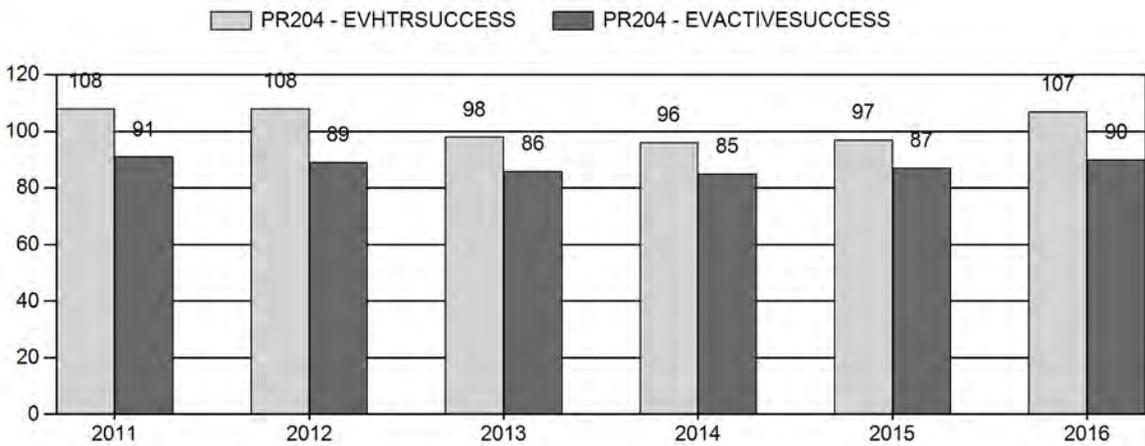
Harvest



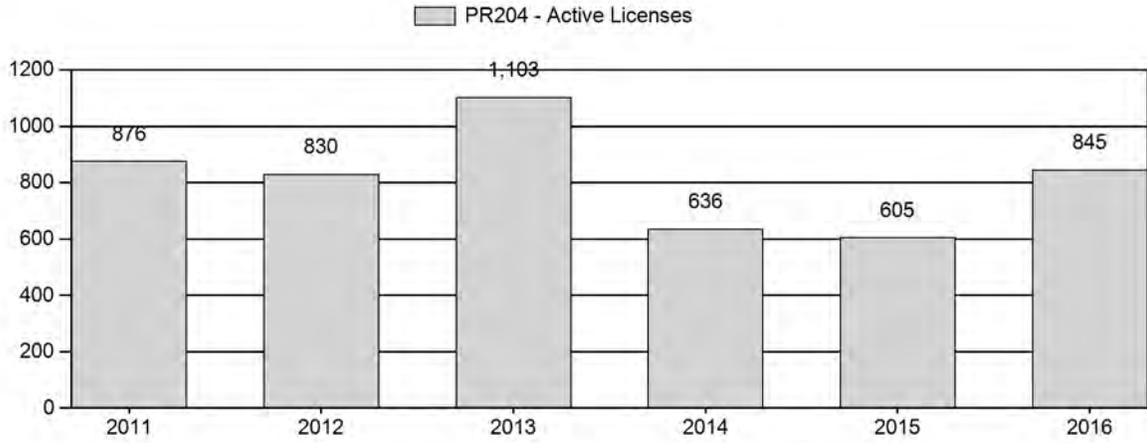
Number of Active Licenses



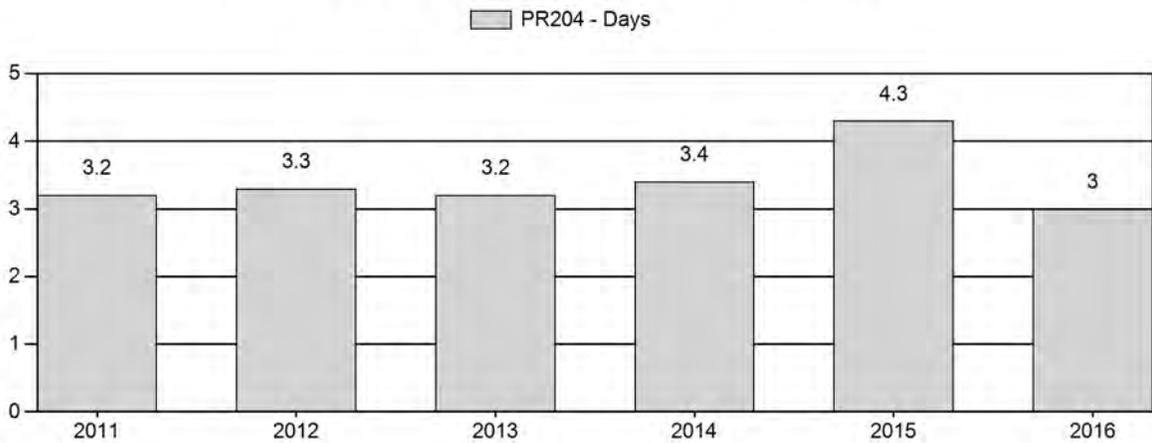
Harvest Success



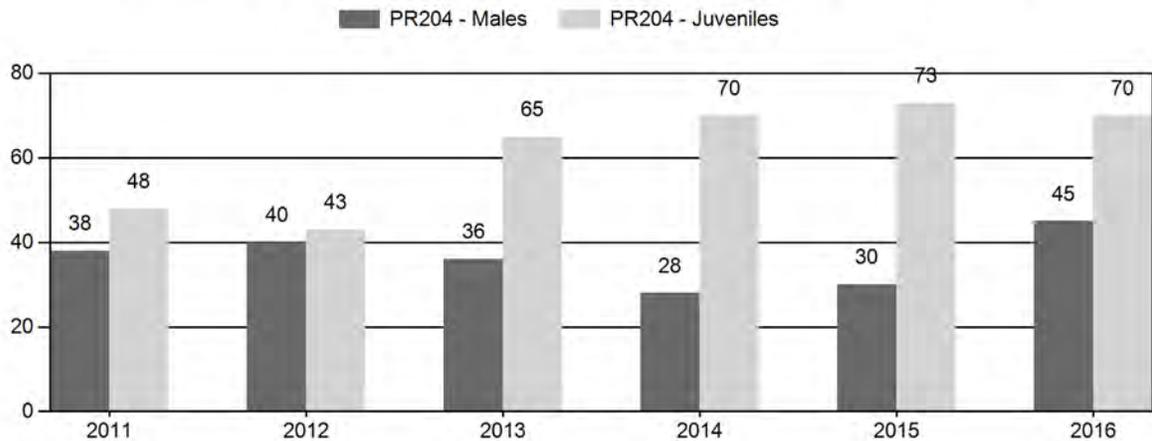
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary
for Pronghorn Herd 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	Int	100 Fem	100 Int	100 Adult
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	3,762	0	0	516	21%	1,148	46%	809	33%	2,473	1,595	0	0	45	± 2	70	± 3	49

**2017 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	Oct. 24	75	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
77	7	Oct. 25	Nov. 30	75	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
83	1	Sep. 20	Nov. 7	350	Limited quota	Any antelope
83	6	Aug. 15	Nov. 15	150	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	500	Limited quota	Doe or fawn valid 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 2016
77	6	-25
77	7	+75 new license type
83	1	+50
83	6	+75
83	7	+300
Total	1&2	+50
	6&7	+425

Management Evaluation

Current Postseason Population Management Objective: 4,600

Management Strategy: Recreational

2016 Postseason Population Estimate: 2900

2017 Proposed Postseason Population Estimate: 2400

2016 Hunter Satisfaction: 91% satisfied, 6% neutral, 3% dissatisfied

Herd Unit Issues

The herd unit is about 75% public lands and 25% private lands, with the majority of the pronghorn population in hunt area 83. Damage concerns are usually an issue in this herd unit, especially in areas 77 and 83. 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 2016/17 winter has been semi-severe, with deep snow cover and below normal temperatures through early February. Since early February significant snow melt has occurred and temperatures have moderated.

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 preseason 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 in fawn ratios have remained well above the long-term average the past four years, with 2013 – 2016 averaging 70:100. Prior to 2013 fawn ratios were averaging about 50:100. Buck ratios fluctuate annually due to missed buck groups during classification surveys, but appear to never exceed 45:100. Starting in 2010, classification sample sizes began to decline from a high of around 2,000 in 2010 to a low of 1,350 in 2013. However, in 2014, 1,600 pronghorn were classified, and by 2016 nearly 2,500 were classified. The number of pronghorn classified mirrors that of the population model trend in recent years, but field personnel feel population numbers are much higher than model estimates.

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. A 2016 end-of-biological year line transect survey will be flown in this herd. Data collection and analysis will not be completed in time to include in the 2016 JCR.

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 declined dramatically. Starting in 2014, 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.

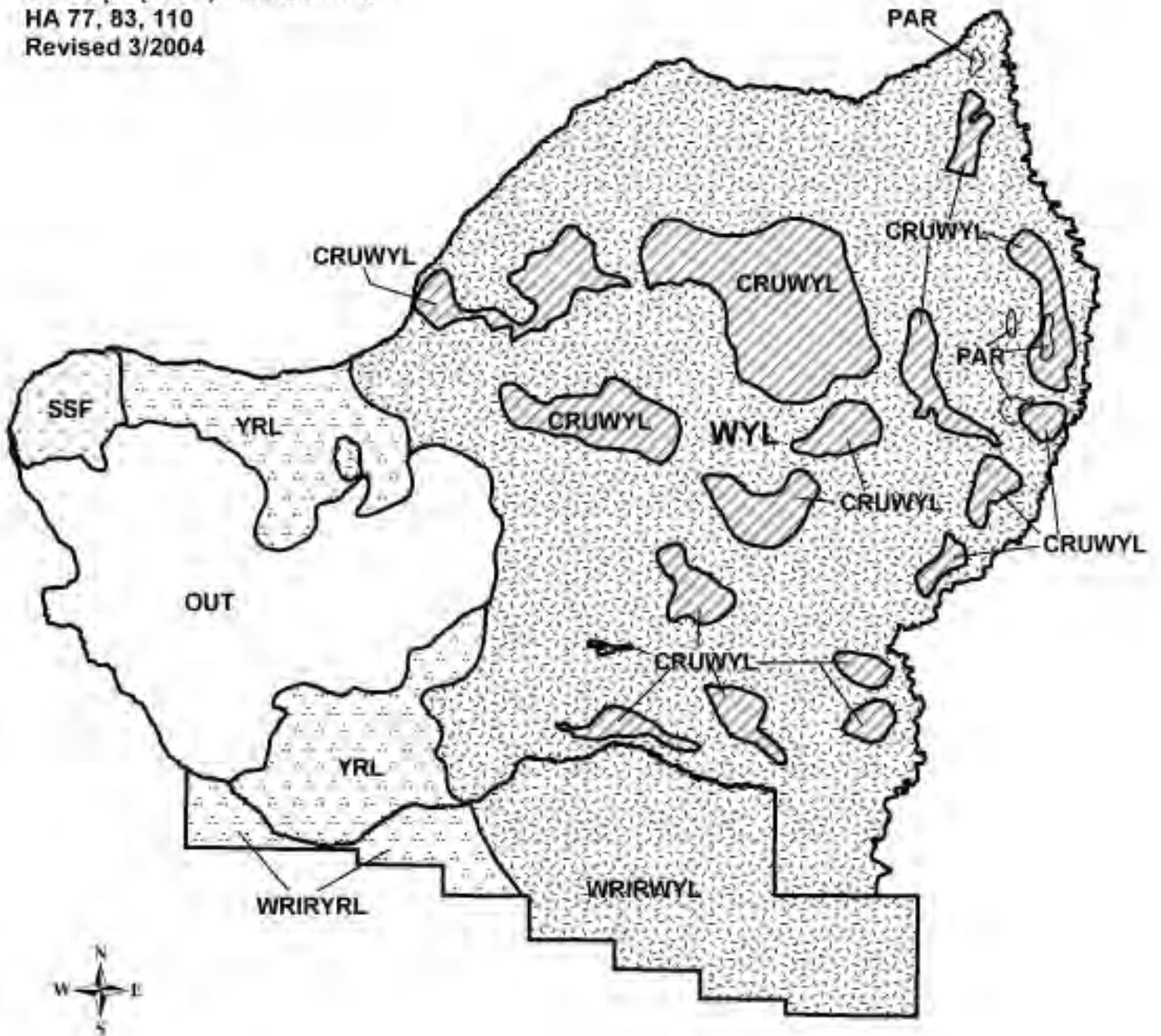
Population

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), but the best Fit (n=18) of all models, and tracks well with past LT estimates, classification sample sizes, and mostly reflects what field personnel perceptions of population trends. The 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 herd trends, but likely underestimates population numbers.

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 2017. Area 110 is not experiencing significant increases in pronghorn, plus the Pitchfork Ranch has expressed concern over low pronghorn numbers the past couple of years. The projected 2017 harvest of about 1000 pronghorn will mostly reduce this population to about 2,400 pronghorn, which is likely an underestimate of the population.

Antelope (A204) -- Fifteenmile
HA 77, 83, 110
Revised 3/2004



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR205 - CARTER MOUNTAIN

HUNT AREAS: 78, 81-82

PREPARED BY: LESLIE SCHREIBER

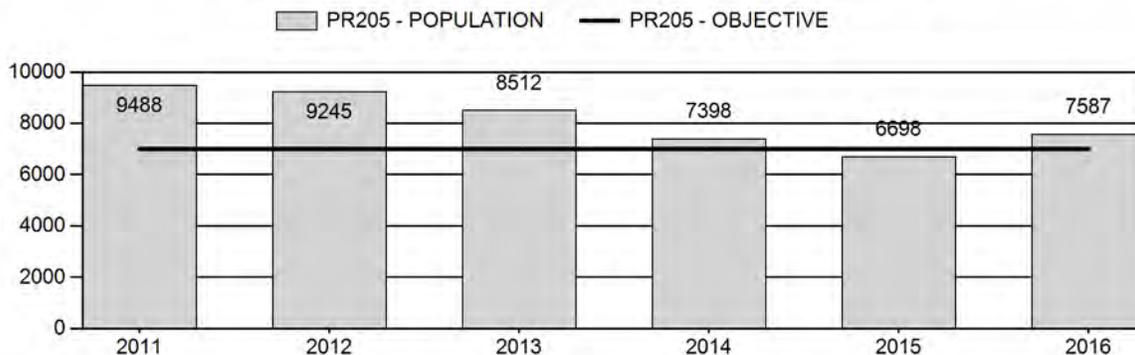
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	8,268	7,600	7,500
Harvest:	695	639	700
Hunters:	679	659	700
Hunter Success:	102%	97%	100 %
Active Licenses:	801	765	800
Active License Success:	87%	84%	88 %
Recreation Days:	2,611	2,305	2,600
Days Per Animal:	3.8	3.6	3.7
Males per 100 Females	49	50	
Juveniles per 100 Females	52	62	

Population Objective (± 20%) :	7000 (5600 - 8400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	9%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/25/2017

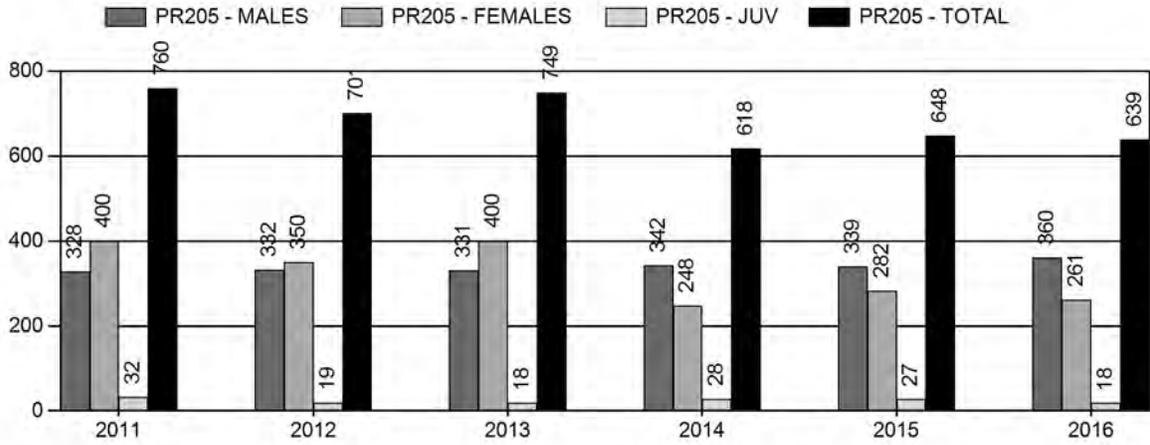
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	7%	10%
Males ≥ 1 year old:	16%	20%
Total:	23%	28%
Proposed change in post-season population:	-9%	-12%

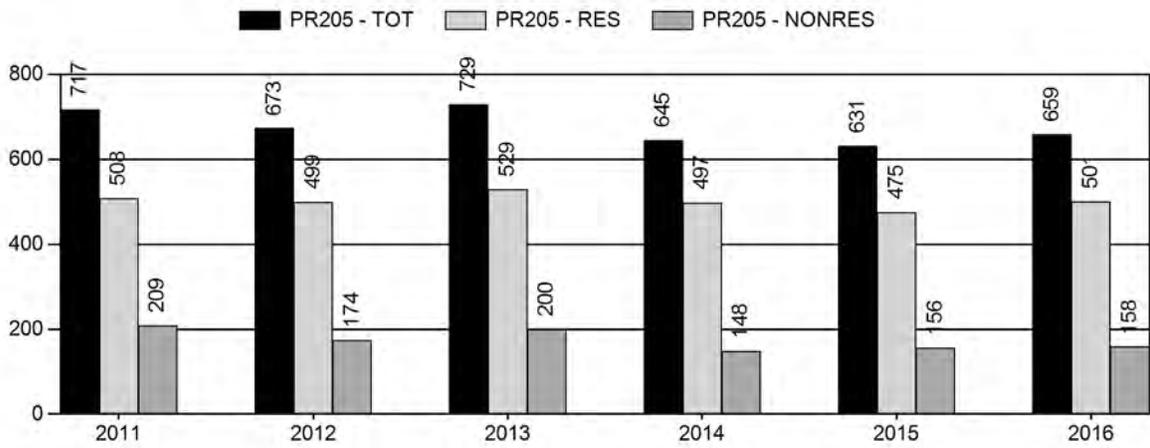
Population Size - Postseason



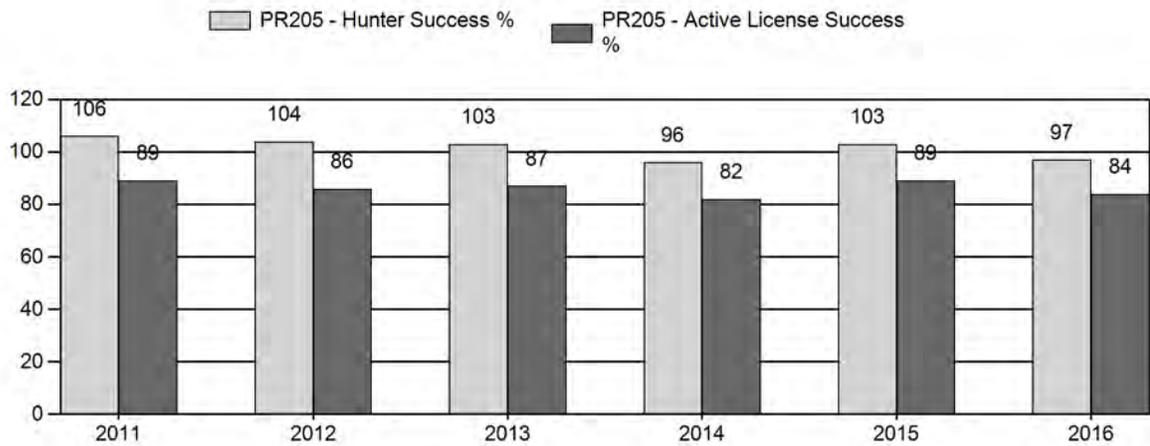
Harvest



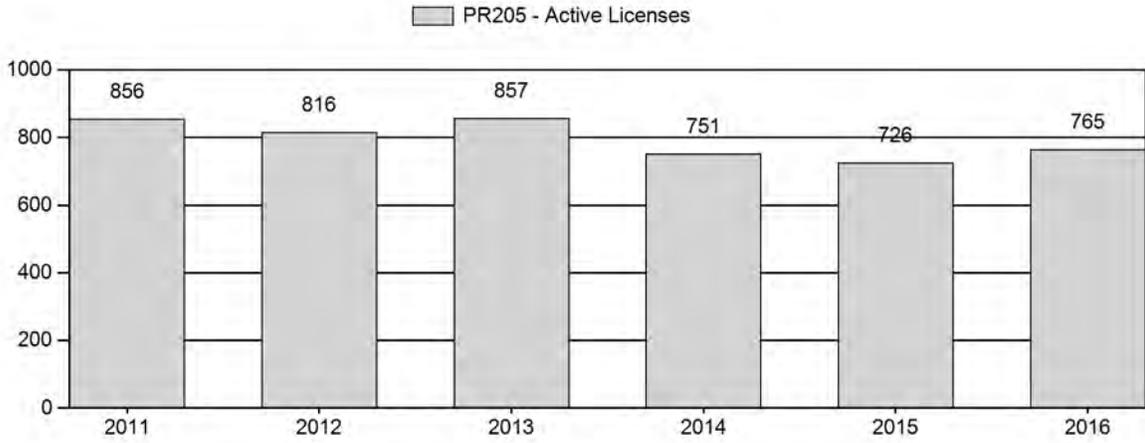
Number of Active Licenses



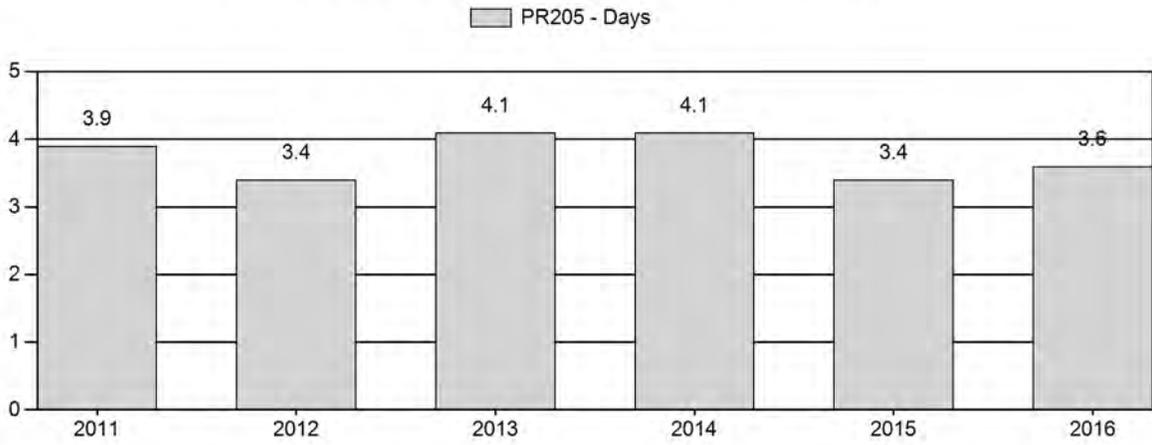
Harvest Success



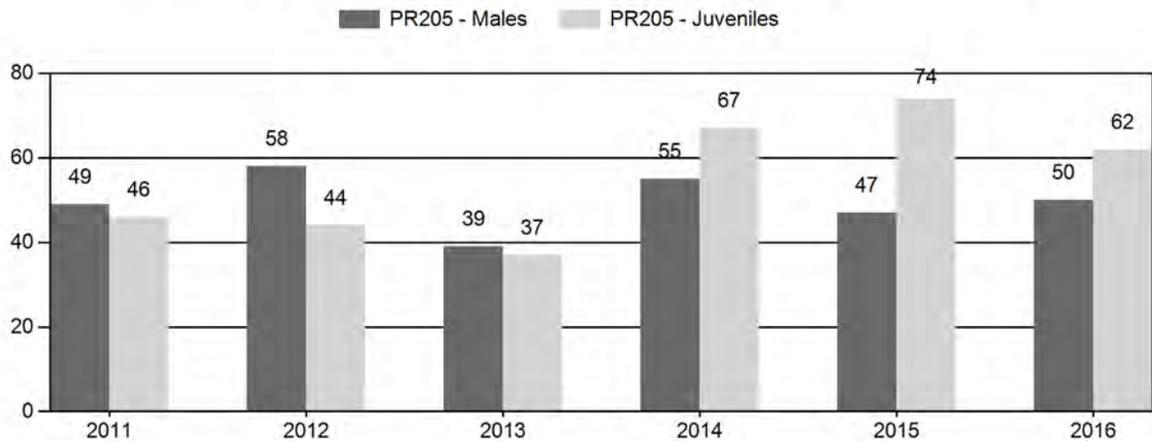
Active Licenses



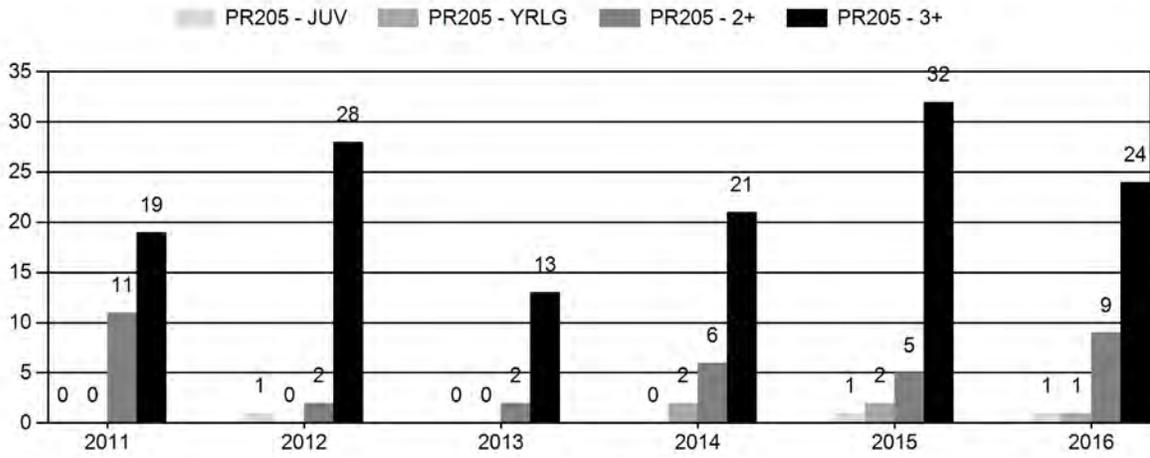
Days Per Animal Harvested



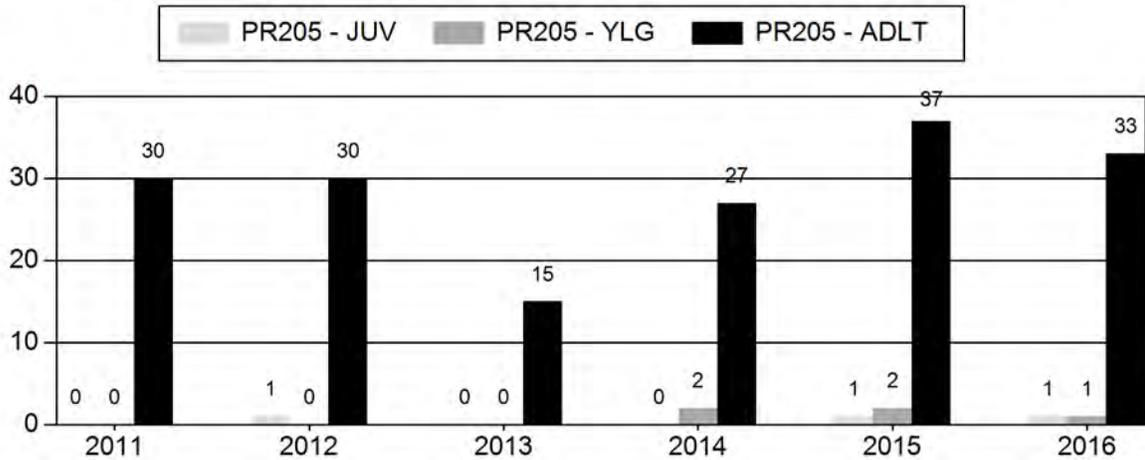
Preseason Animals per 100 Females



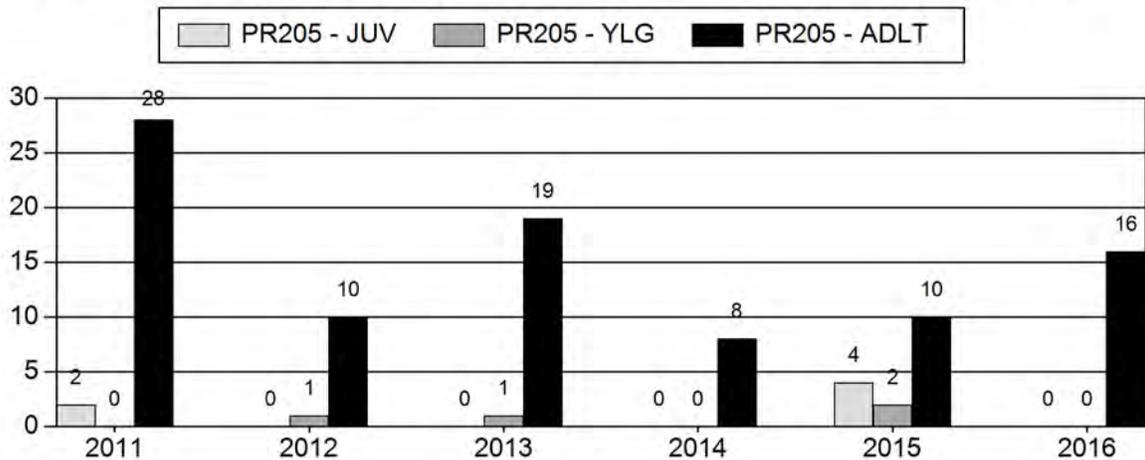
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR205 - CARTER MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	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	7,411	141	264	405	21%	862	45%	638	33%	1,905	1,922	16	31	47	± 4	74	± 5	50
2016	8,289	0	0	485	24%	969	47%	599	29%	2,053	1,684	0	0	50	± 4	62	± 5	41

**2017 HUNTING SEASONS
CARTER MOUNTAIN PRONGHORN HERD (PR205)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
78	1	Sep. 20	Oct. 31	175	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	175	Limited quota	Any antelope
81	6	Oct. 1	Nov. 15	150	Limited quota	Doe or fawn valid west of Wyoming Highway 120
82	1	Sep. 20	Oct. 14	200	Limited quota	Any antelope
82	6	Aug. 15	Oct. 31	50	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land east of Wyoming Highway 120
82	7	Sep. 20	Oct. 14	125	Limited quota	Doe or fawn valid west of Wyoming Highway 120
82	8	Oct. 15	Nov. 30	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 2016
78	1	+50
81	1	+50
81	6	+75
82	1	+25
82	7	+25
Herd Unit Total	1	+125
	6&7	+100

Management Evaluation

Current Postseason Population Management Objective: 7,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~7,600

2017 Proposed Postseason Population Estimate: ~7,500

2016 Hunter Satisfaction: 86% Satisfied, 10% Neutral, 4% Dissatisfied

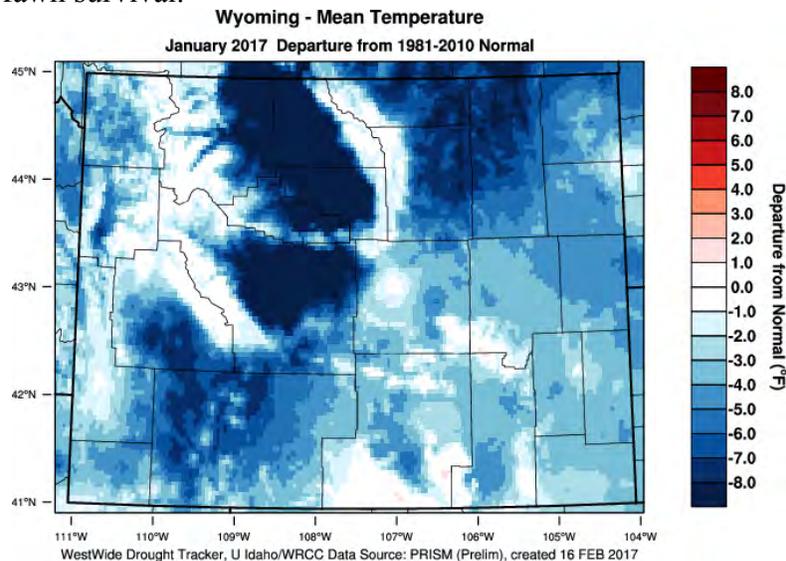
Herd Unit Issues

Carter Mountain pronghorn herd unit 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, anthropomorphic 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. Well-timed growing season precipitation in 2013-15 resulted in increased forage throughout the Bighorn Basin. The winter of 2016/17 started out with cold temperatures and deep snow, but temperatures moderated in February. The migratory portion of this herd seemed to effectively seek out snow-free range. Nevertheless, above average precipitation and colder than average temperatures probably had an adverse effect on fawn survival.



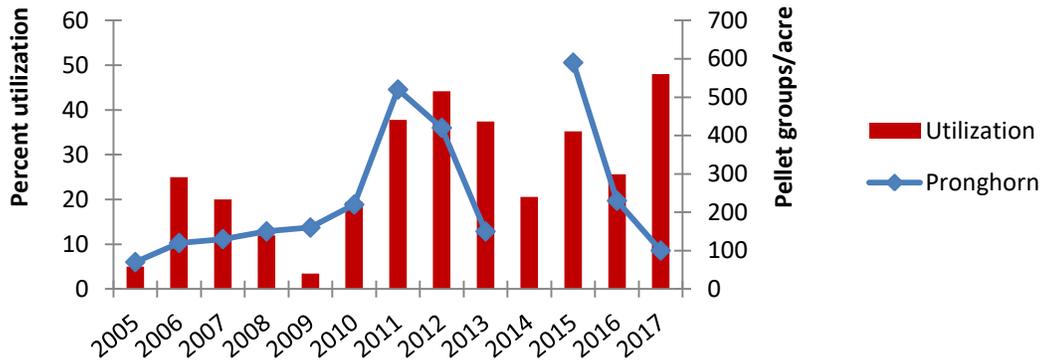
Habitat

Habitat quality is probably most affected by desert-like conditions, including less than 12 inches of annual precipitation, and poor soils. 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. Landowners have a low tolerance for pronghorn.

With only 1 sagebrush browse transect established in this herd unit, data is insufficient to draw any inferences across the entire herd unit. The transect in Dry Creek Basin was established in 2004. Historically, this single transect has been of limited utility in gauging browsing levels

with utilization ranging from <5% to 25% (2005-2010). However, utilization has been above 30% in 5 of the past 7 years with nearly 50% utilization this winter. The deep snow experienced last winter forced massive (1000+) herds to concentrate near this site.

Dry Creek Utilization and Pellet Counts



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 was 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 helping does reach excellent condition. The upward trend is continuing in 2016 with 62 fawns:100 does.

The 2016 buck:doe ratio (50:100) was exactly at the 5-year average. Historically, buck:doe ratios declined during drought years to 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 2016 (~2,000) was above the 5-year average (~1,700). Standardized survey routes were established in 2001.

Harvest Data

In response to increasing number of complaints of crop depredation in 2010, the number of hunting licenses, especially doe/fawn licenses, was increased. Days per harvest has remained relatively steady between 2011-16, averaging 3.8 days. Hunter success typically does not fluctuate greatly; however, 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 might also be influenced by number of licenses issued. For the hunter survey, 86% of respondents indicated satisfaction, while 10% were neutral, and 4% were dissatisfied.

Population

For the Carter Mountain pronghorn herd unit, the Time-Specific Juvenile/Constant Adult (TSJ,CA) survival model was selected. While the constant juvenile, constant adult survival model had the lowest AIC score (207), the TSJ, CA model was chosen, because the AIC score (243) 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 *good* and the results are biologically defensible. For post-season 2016, the TSJ,CA model estimated 7,600 pronghorn. The challenge with modeling this herd is that a portion of the population is migratory and a portion resides on agriculture fields nearly year-round.

Line transect surveys in 2006, 2009, 2012, and 2016 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. Furthermore, 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 2016 (2015 bio-year) estimated 8,000 (± 902) pronghorn which matches field personnel's perceptions and tracks well with model estimates.

Management Summary

The spreadsheet model estimates this herd is slightly above objective, but within the allowable range. Pronghorn numbers are coming back; therefore, an 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. We are increasing the number of Type 1 licenses across the herd unit. We will keep the doe/fawn license quota at a conservative level until the effects of this winter are fully evaluated.

AERIAL LINE TRANSECT REPORT

Herd Unit: **Carter Mountain**

Biological Year: **2016**

Date(s) of Survey: 28 May – 1 June, 2016

Observer: Leslie Schreiber

Pilot/Aircraft Information: Mark Packila, Plane, Scout, Sky Aviation, Worland, WY

Special Equipment: GPS, laser range finder, handheld computer with CyberTracker Program

Set-up: Both sides of plane marked to define line offset 65m from beneath the plane and distance bands of 0-20m, 20-45m, 45-80m, 80-145m, and 145-200m from the line (total of 265m from beneath the plane) when the plane is at 300 feet AGL. Observer sat in rear seat behind pilot.

Design: The study area was flown with generally northwest-southeast transect lines. See map.

Mean Height AGL: Based on 331 groups observed, mean AGL was 346 feet.

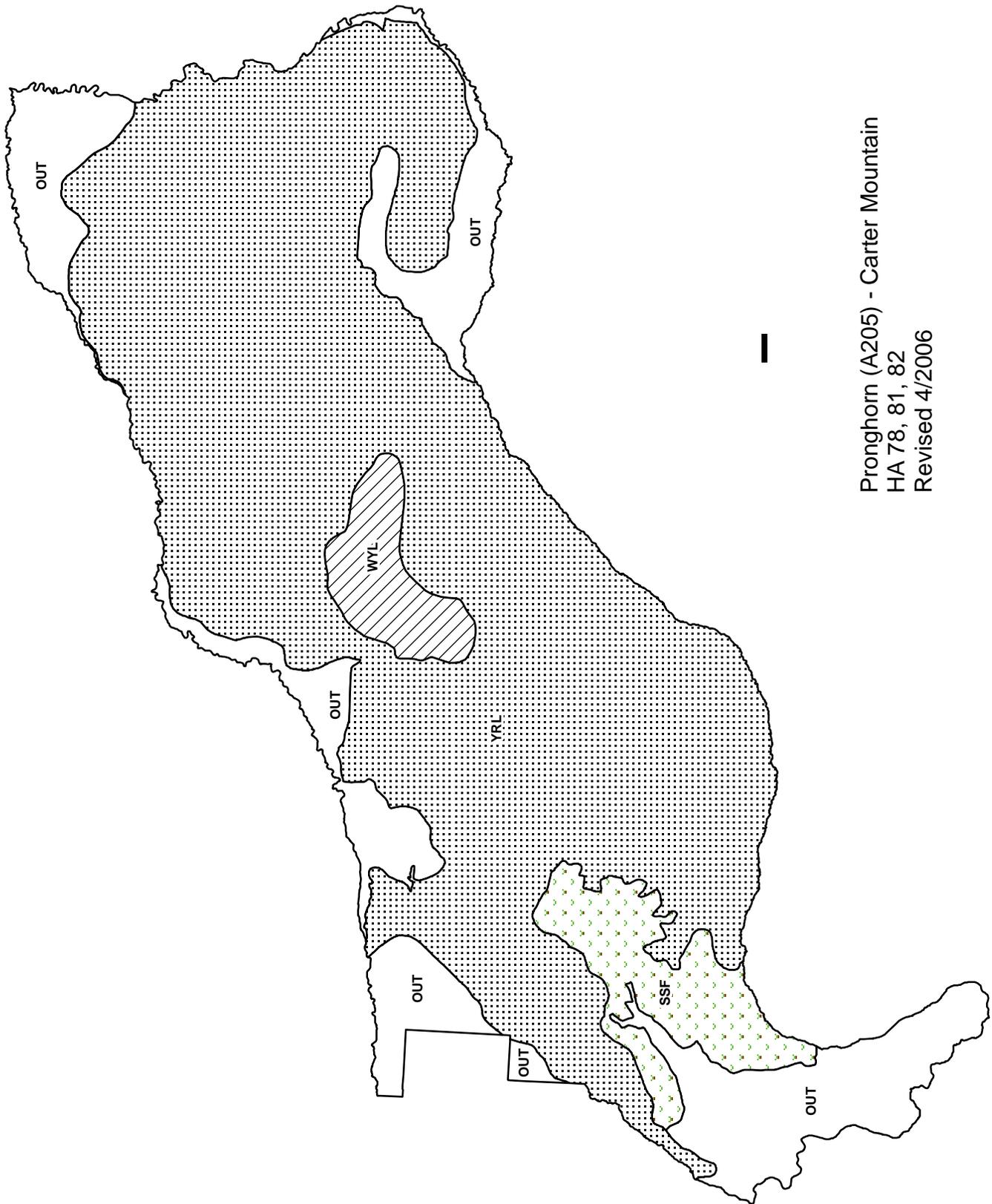
Total Transect Length: A total of 91 transect lines were flown, totaling 1,687 km.

Area Surveyed: The density estimate was applied across all occupied habitat (1,390 mi²). Hunt areas 78, 81, and 82 cover 2,097 mi².

Weather/Visibility: Weather conditions were fair to marginal for all flights, but the first day (May 28) was the worst. Skies ranged from complete cloud cover on May 28 to completely clear on June 1. Temperatures ranged from 50° to 70° F. Background was green on the west side of the herd unit, but mostly brown on the east side due to poor vegetation types (saltbush desert) and drought conditions.

Costs: 22.8 hours of flight time at \$255/hr = **\$5814 total** (includes ferry time)

Model Estimate: The Uniform model estimated 8,020 pronghorn (SE=902).



Pronghorn (A205) - Carter Mountain
 HA 78, 81, 82
 Revised 4/2006

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR207 - BADGER BASIN

HUNT AREAS: 80

PREPARED BY: Tony Mong

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	417	464	400
Harvest:	137	97	100
Hunters:	140	104	115
Hunter Success:	98%	93%	87%
Active Licenses:	168	117	125
Active License Success	82%	83%	80%
Recreation Days:	794	407	450
Days Per Animal:	5.8	4.2	4.5
Males per 100 Females:	48	39	
Juveniles per 100 Females	35	36	

Trend Based Objective (\pm 20%) 400 (320 - 480)

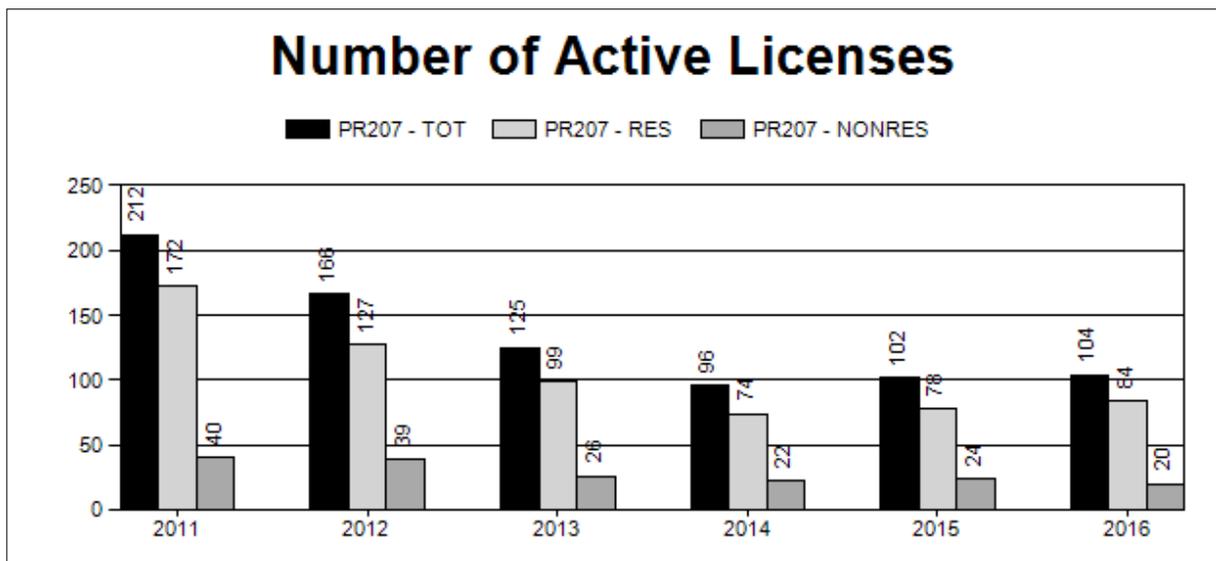
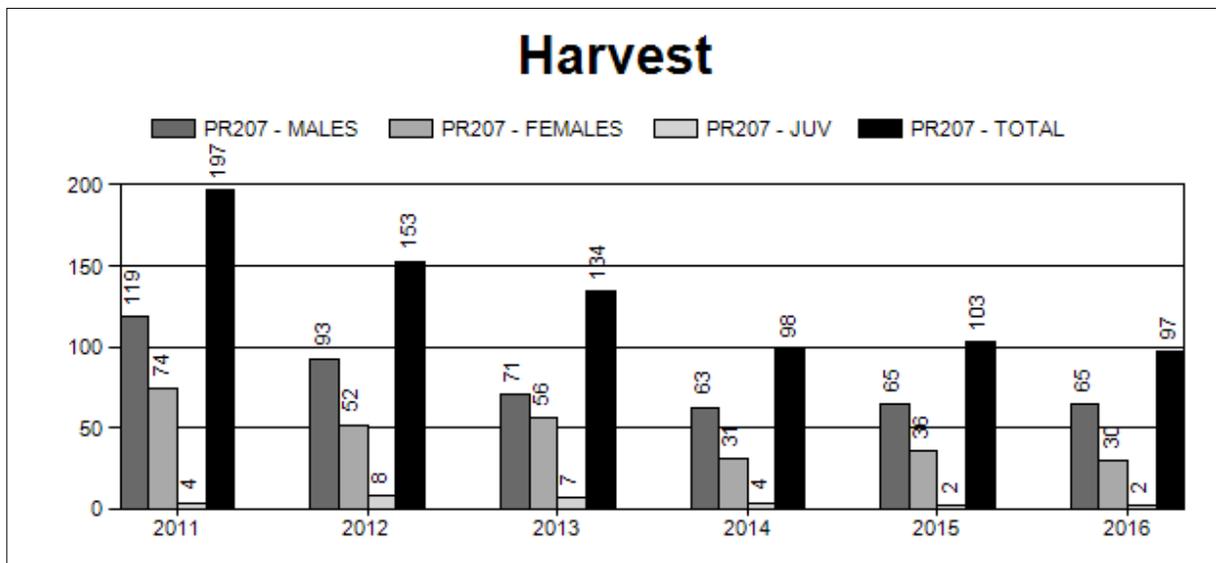
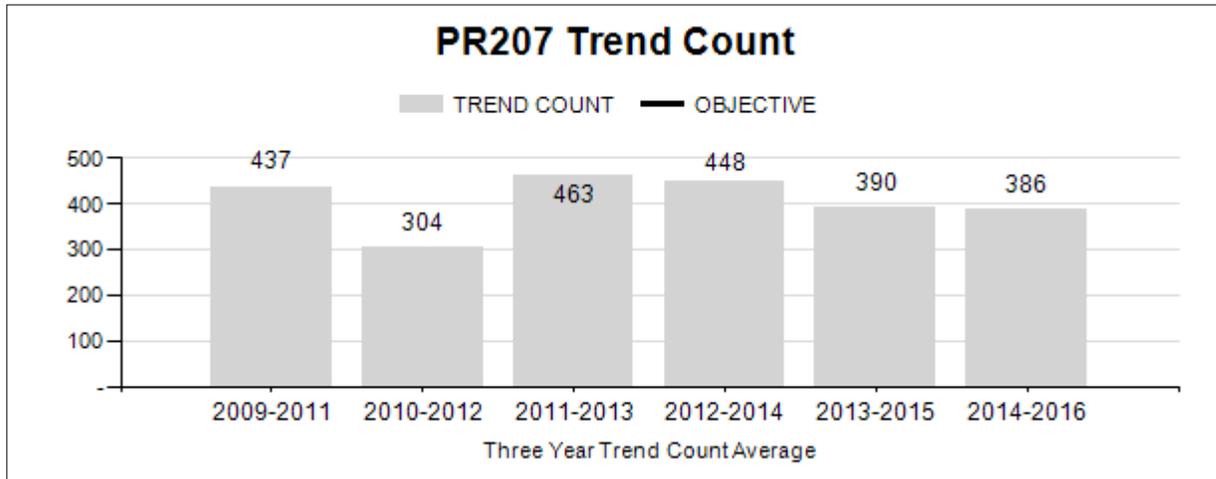
Management Strategy: Recreational

Percent population is above (+) or (-) objective: 16%

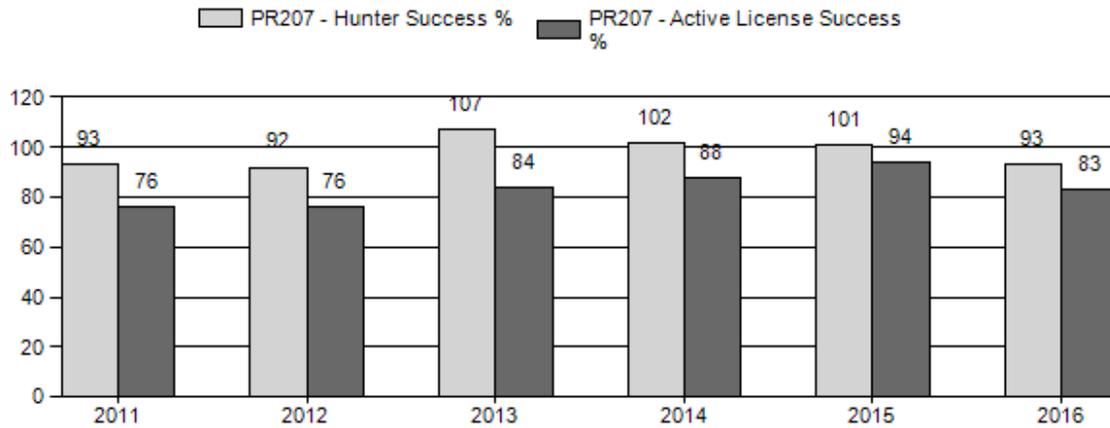
Number of years population has been + or - objective in recent trend: 1

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

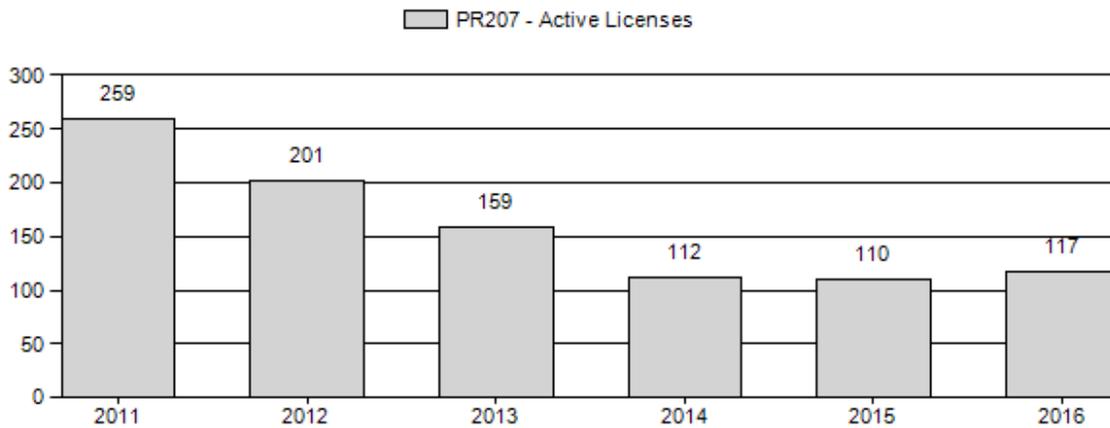
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	n/a%	n/a%
Males \geq 1 year old:	n/a%	n/a%
Juveniles (< 1 year old):	n/a%	n/a%
Total:	n/a%	n/a%
Proposed change in post-season population:	n/a%	n/a%



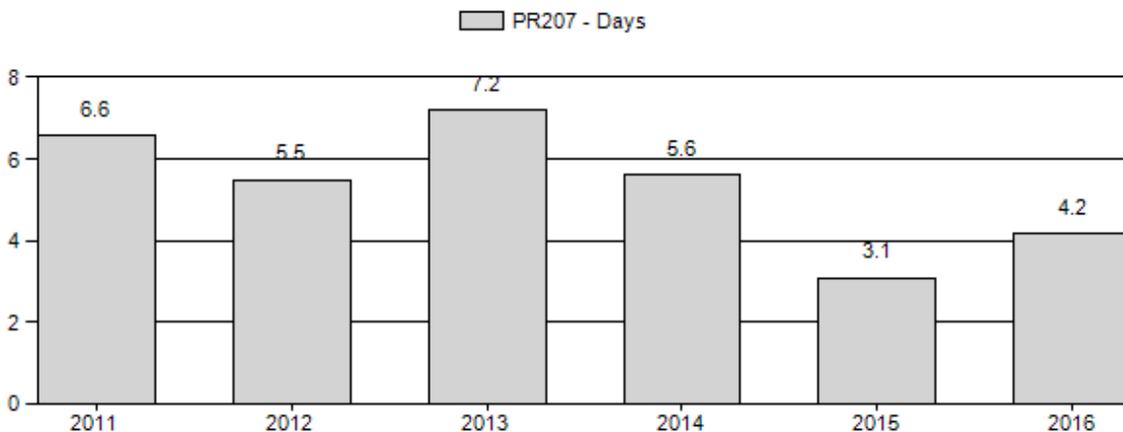
Harvest Success



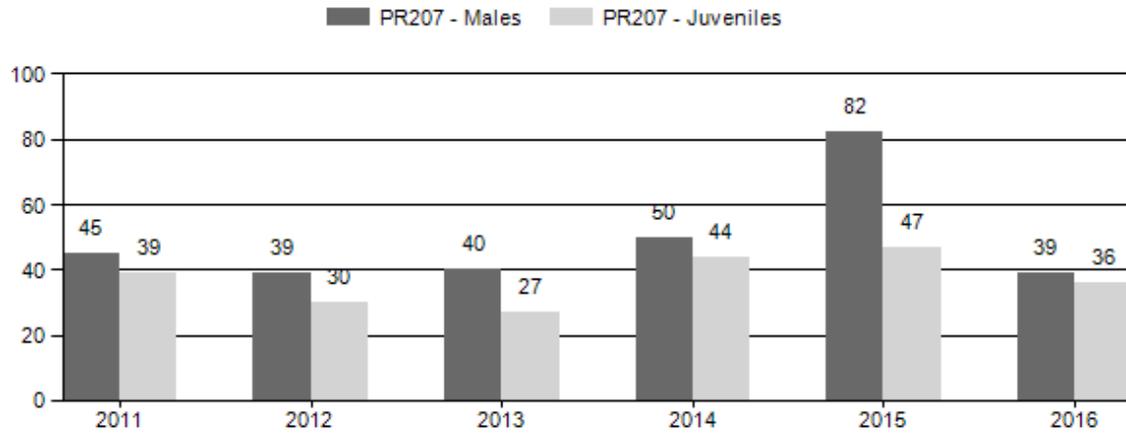
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



**2017 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	License Type	Quota change from 2016
80		No Change
Herd Unit Total		No Change

Management Evaluation

Current Trend Count Objective: 400

Management Strategy: Recreational

2015 3-year Running Average Trend Count: 390

2016 3-year Running Average Trend Count: 386

2016 Hunter Satisfaction: 87% Satisfied, 11% Neutral, 2% Dissatisfied

Herd Unit Issues

Badger Basin Herd Unit consists of mostly arid habitats interspersed with irrigated agricultural lands adjacent to the Shoshone River drainage. The herd has one of lowest fawn ratios statewide, and has low antelope densities throughout the herd unit. Antelope concentrate in agricultural lands in drier years, and these areas tend to have higher levels of productivity. As a result, damage to irrigated lands is often a problem in this herd unit, especially in drought periods.

Creating a reliable postseason population model for this herd has been difficult to impossible over the life of the herd. Because of these difficulties during the herd objective review in 2016 the objective was changed to a trend count survey objective of 400 in order to allow for a measurable and obtainable herd objective.

Weather

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures. We expect overwinter mortality to be higher than normal.

Habitat

No habitat monitoring data is collected in this herd unit. Although growing season precipitation was near normal, damage issues on agricultural lands continued to be a problem in some locations. A complete habitat report is included the Cody regional appendix.

Field Data

We observed a preseason fawn ratio of 36:100 does, and a total buck ratio of 39:100 does calculated from a sample size of about 460 antelope. The poor productivity during the last 20 years (especially in drought periods) is common with only three years it exceeded 50:100 (1996, 2005, and 2007). Classification sample sizes are often low and can result in varying buck:doe ratios (both adult and yearling) some years.

Harvest Data

In 2016, 104 hunters harvested 65 bucks, and 30 does, and 2 fawns for a success rate of 83%. When the population declined in 2011-2012, we reduced permits to allow this herd to stabilize. But, despite low antelope and permit numbers we see continued high hunter success on all license types, and is probably a reflection of low hunter density and increased hunter access to key irrigated lands with high antelope densities.

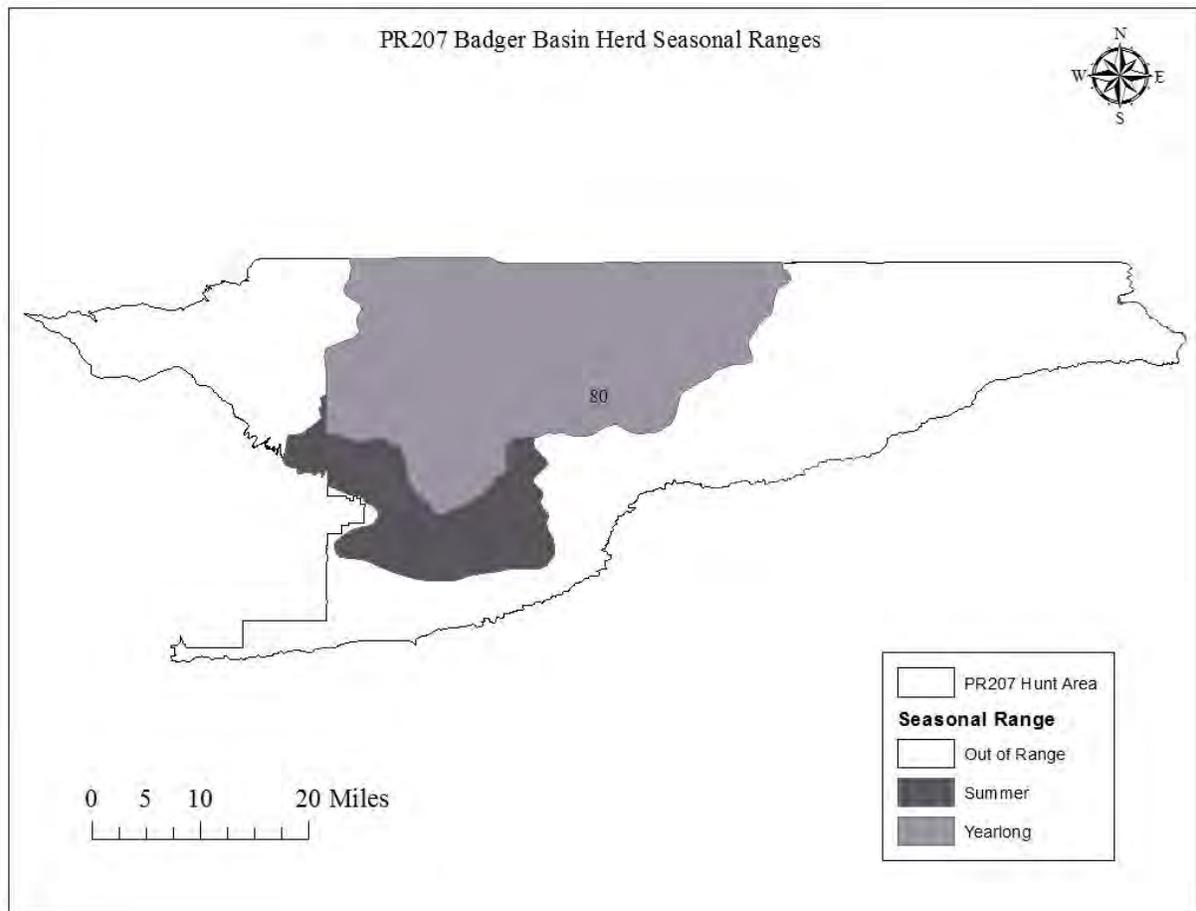
Population

The small size of this antelope herd has made population modeling difficult to portray a believable population size regardless of model selection. As a result, we use a preseason trend count to track the population, with an objective of 400 averaged over three years. Past aerial trend counts resulted in sample sizes lower than what was counted during annual standardized classification counts. Classification totals have tracked well over time with perceived abundance.

Management Summary

For the time being, no changes are proposed for the 2016 hunting season, which we believe should maintain or allow for a slight increase in antelope numbers. Past conservative hunting seasons and good fawn production (for this herd) allowed this population to substantially exceed the objective by 2005. We increased harvest from 2007-2011, to decrease the population and in conjunction with low fawn productivity, this herd as stayed at or below objective since the early

2000's. Recent poor fawn crops coupled with moderate female harvest, has kept this population in check.



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD207 - PAINTROCK

HUNT AREAS: 41, 46-47

PREPARED BY: LESLIE SCHREIBER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	9,220	8,000	8,000
Harvest:	803	854	850
Hunters:	1,550	1,444	1,400
Hunter Success:	52%	59%	61 %
Active Licenses:	1,615	1,549	1,500
Active License Success:	50%	55%	57 %
Recreation Days:	7,027	6,201	6,000
Days Per Animal:	8.8	7.3	7.1
Males per 100 Females	28	24	
Juveniles per 100 Females	68	65	

Population Objective (± 20%) : 11000 (8800 - 13200)

Management Strategy: Recreational

Percent population is above (+) or below (-) objective: -27.3%

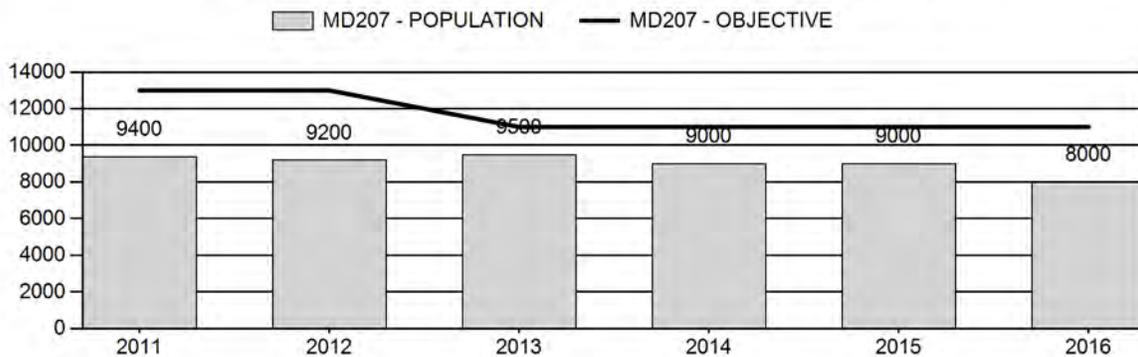
Number of years population has been + or - objective in recent trend: 10

Model Date: 02/25/2017

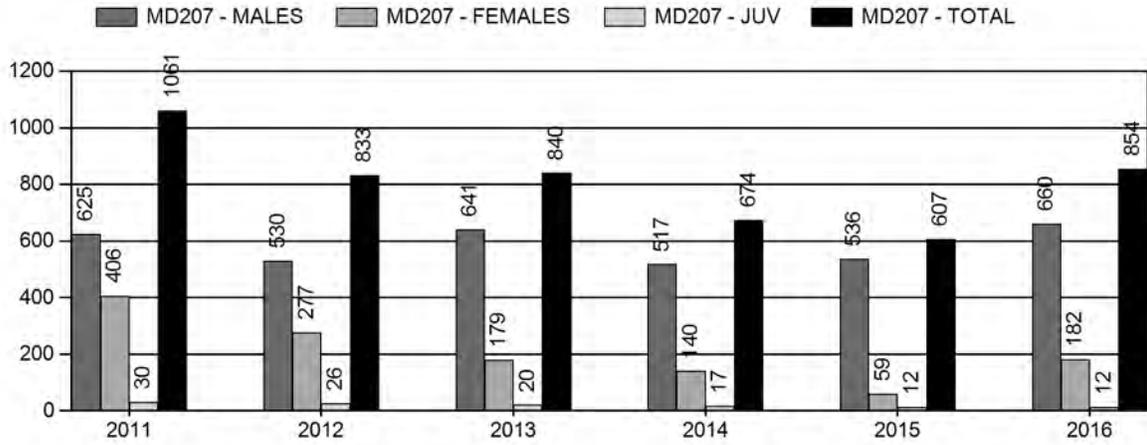
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	15%	15%
Males ≥ 1 year old:	27%	27%
Total:	14%	14%
Proposed change in post-season population:	-3%	-3%

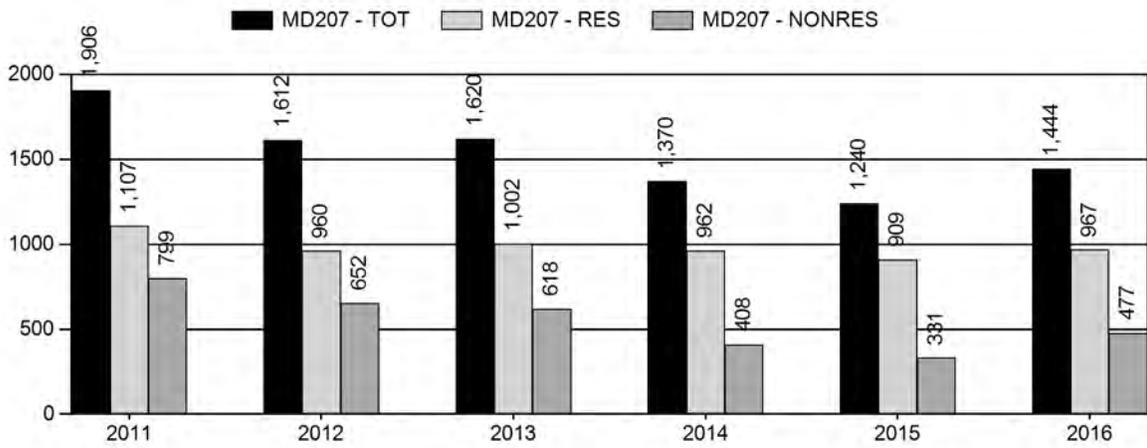
Population Size - Postseason



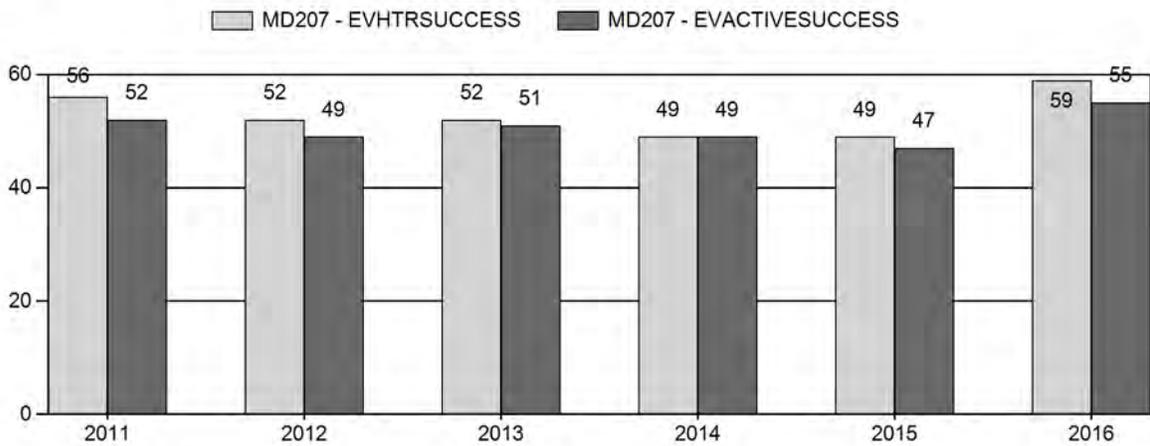
Harvest



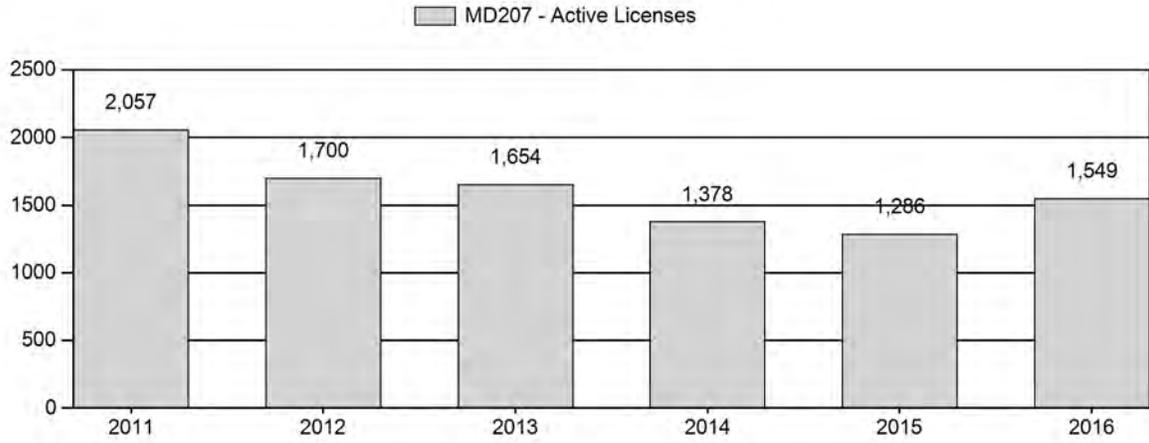
Number of Active Licenses



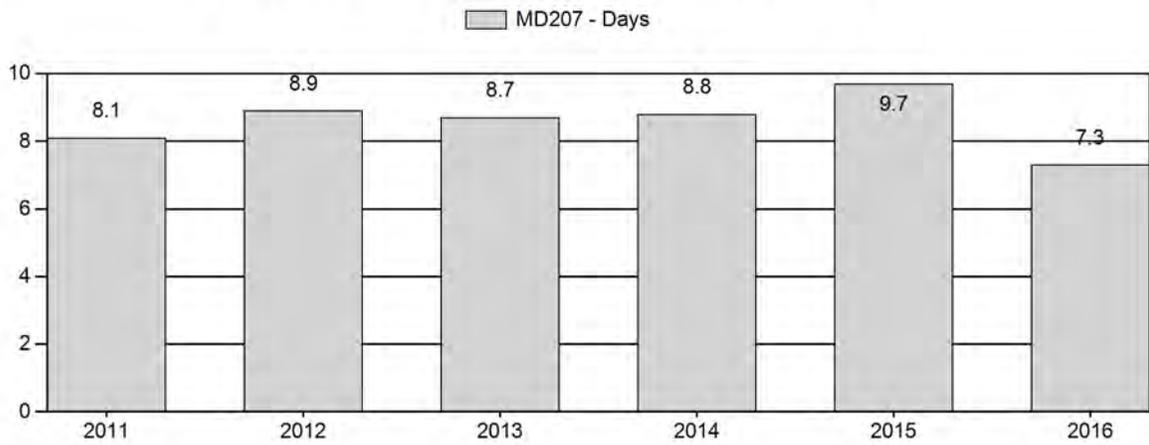
Harvest Success



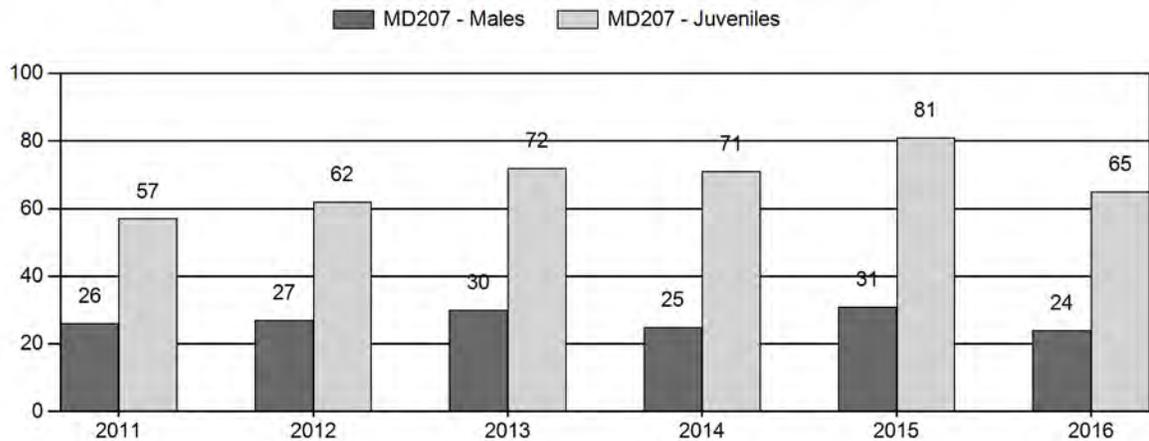
Active Licenses



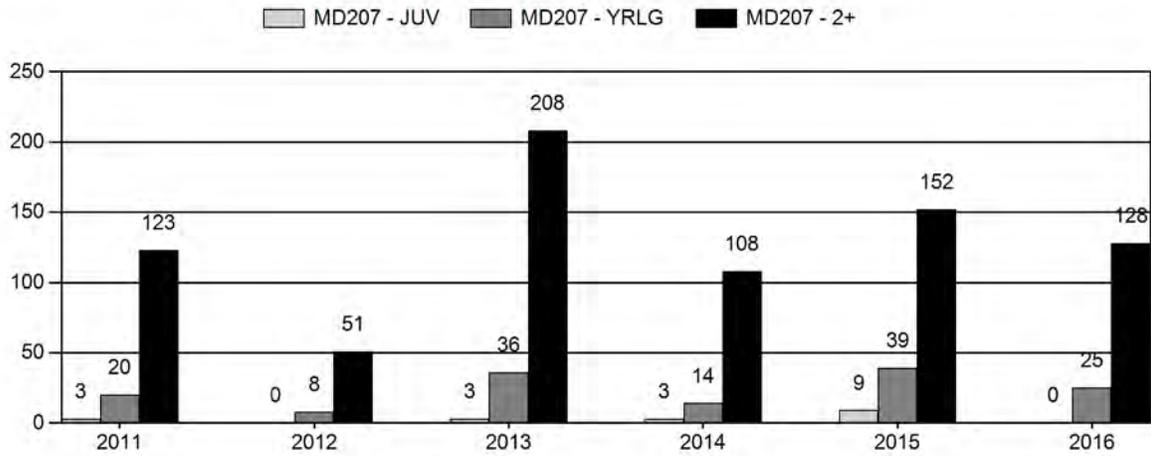
Days per Animal Harvested



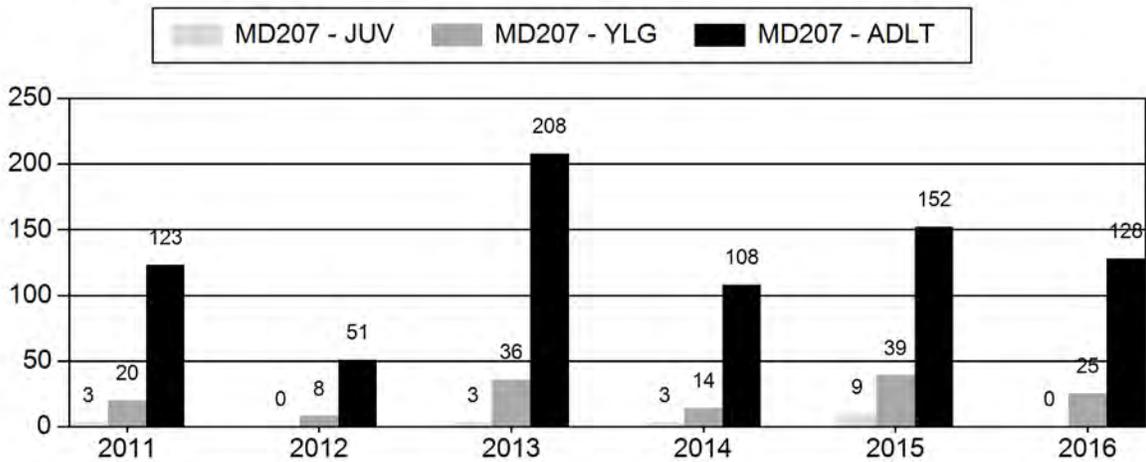
Postseason Animals per 100 Females



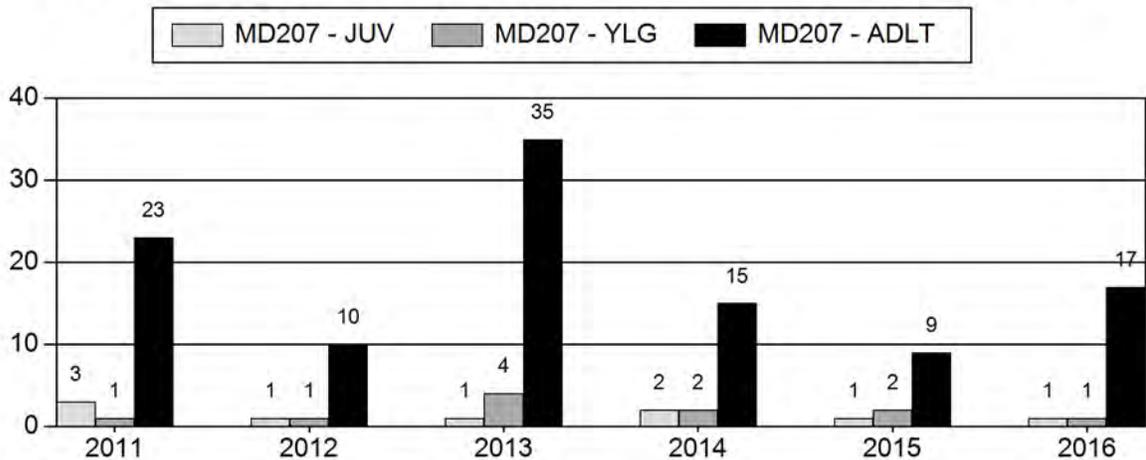
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD207 - PAINTROCK

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
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	9,000	94	0	0	0	85	179	13%	704	51%	499	36%	1,382	1,167	13	12	25	± 3	71	± 5	57
2015	9,000	115	96	56	5	0	272	15%	864	47%	703	38%	1,839	1,724	13	18	31	± 3	81	± 5	62
2016	8,000	71	87	63	4	0	225	13%	919	53%	593	34%	1,737	1,214	8	17	24	± 2	65	± 4	52

**2017 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	75	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	Nov. 1	Nov. 30	50	Limited quota	Doe or fawn white-tailed deer

Region R nonresident 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 2016	
47, 51	3	+25	
Herd Unit Total	3	+25	

Management Evaluation

Current Postseason Population Management Objective: 11,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~8,000

2017 Proposed Postseason Population Estimate: ~7,700

2016 Hunter Satisfaction: 71% Satisfied, 19% Neutral, 10% Dissatisfied

Herd Unit Issues

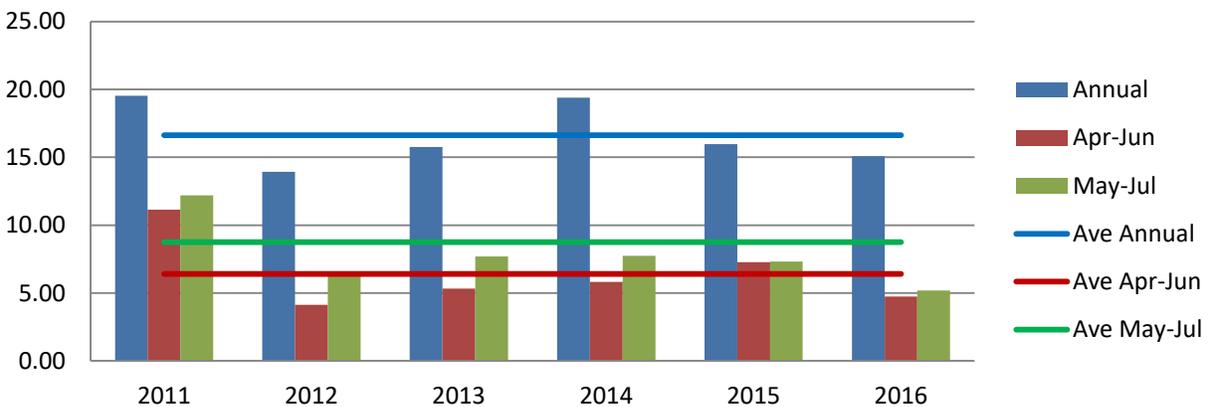
The population objective for the Paintrock mule deer herd was originally set at 13,000 deer in 1995 when the herd unit was created from two pre-existing herd units. After a public review process, the population objective was lowered to 11,000 deer in 2013, because the population was on a downward trajectory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

Weather

Climatic factors affect this deer herd more than human-caused factors. Drought and severe winters are the most important factors influencing survival and productivity of this deer herd. Drought conditions occurred in 2000-04 and 2012. Good to excellent growing season conditions occurred in 2013-15. Below average temperatures and above average snowfall occurred in December and January, but moderated in February. December precipitation levels ranked 8th highest out of the last 122 years.

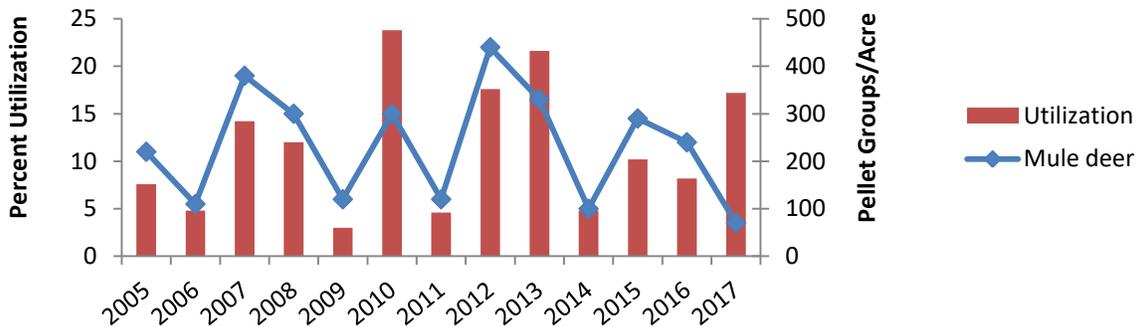
MD207 Annual and Growing Season Precipitation with 30 Year Averages



Habitat

Two sagebrush browse transects were established in this herd unit in 2004. One transect in the Brokenback/Renner area has been of limited utility in gauging browsing levels since production has been limited, even in non-drought years. Utilization of sagebrush along that transect has ranged from <1% to 3%. The other transect, Alkali, is in the northern portion of the herd unit. That site is only slightly more productive than Brokenback. In 2016, utilization increased to an average of 17%, likely as a result of deep snow.

Alkali Utilization and Pellet Counts



Field Data

Low fawn:doe 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. Fawn ratios in 2013-15 were >70:100. Unsworth et al. (1999) suggested that a winter fawn:doe ratio above 66:100 would result in an increasing population. For 2015, the model suggests an increasing population agreeing with Unsworth et al. (1999). For 2016 specifically, we observed 65 fawns:100 does.

The total number of deer observed during classification surveys has been declining over the past 20 years. In 1993 and 1994, 3,000 and 3,500 deer were surveyed, respectively. Numbers 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 2,865 deer were classified. In 2016, about 1,700 deer were classified. Farmland is surveyed from the ground and higher elevation winter ranges are surveyed from a helicopter.

Maintaining buck:doe ratios between 25-29:100 is a goal for recreational management of this herd unit. During the mid 1980s, ratios increased from 15:100 to around 30:100 in the early 1990s. A gradual decline in buck:doe 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 increased to 31:100 due to excellent productivity. At the same time, the general license was changed from “any deer” to “antlered deer” in an effort to arrest the previous downward trend. The buck ratio stabilized at 24:100 in 2016.

Harvest Data

Buck harvest can be dependent 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. Structure of the hunting seasons in this herd unit has remained fairly constant over the past 20 years. General licenses have been open Oct. 15 to Nov. 4. In some years, some Hunt Areas have changed between “any deer” and “antlered deer” depending on trends in previous year’s sex and age ratios. When the buck:doe 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 two years. 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 in 2004 due to declining buck ratios and again in 2014 to 750. Although this herd unit'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 are dissatisfied with the lack of mature bucks and consistently advocate for an antler point restriction.

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 100-250 during 2012-16.

Population

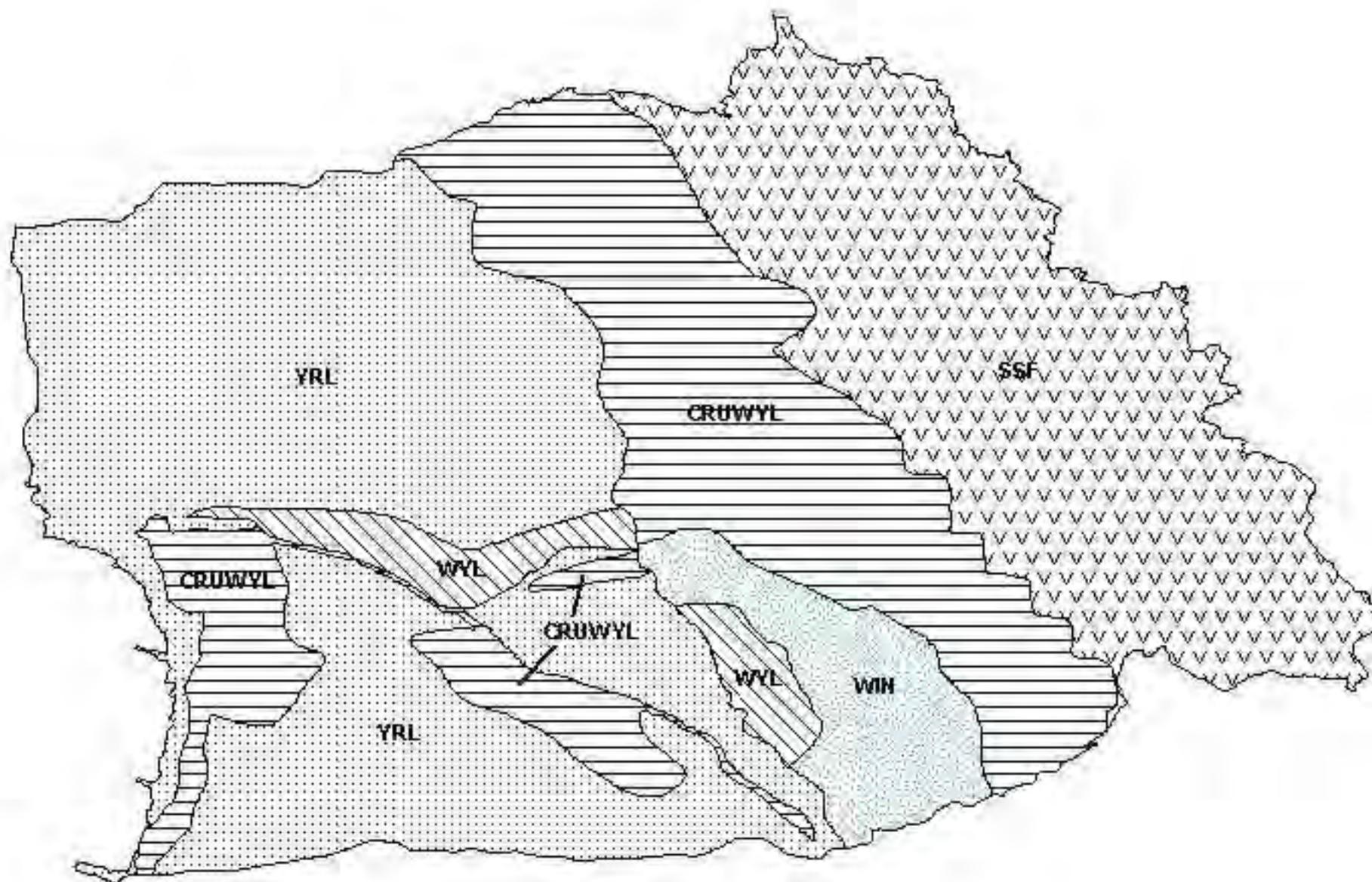
Spreadsheet models replaced POP-II for estimating populations of big game species. The time-specific juvenile, constant adult (TSJ,CA) survival model estimated this population was at objective (13,000 deer) through the late 1990s. Beginning with the extended drought in 2000-04, this population began decreasing, except for a spike in 2007. By 2012, the population had reached a low of 7,500 deer, then increased slightly to 8,000 by post-season 2016. While the constant juvenile, constant adult survival model had the lowest AIC score (116), the TSJ, CA model was chosen, because the AIC score (160) 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 may have temporarily stabilized with recent high fawn production. Buck:doe 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:doe ratios fall below 20:100. In this case, buck:doe ratios have been stable for the past five years, averaging 27:100.

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.



Mule Deer (MD207) - Paintrock
HA 41, 44-47, 49
Revised - 3/96



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD208 - SOUTHWEST BIGHORNS

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

PREPARED BY: BART KROGER

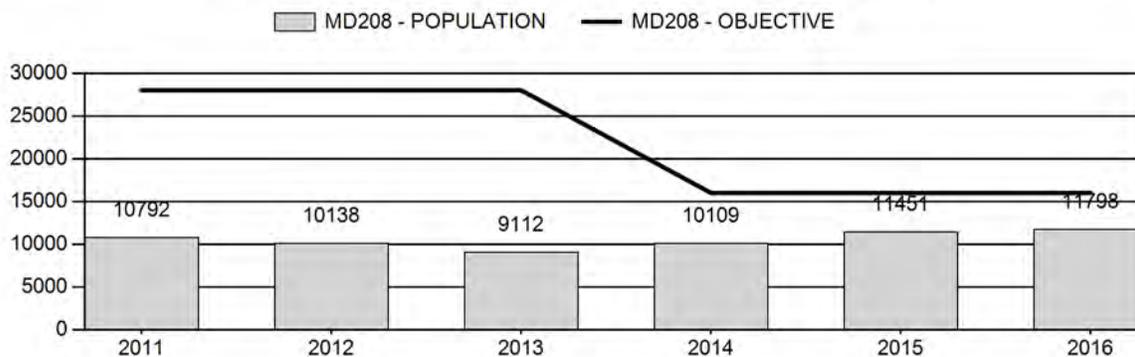
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,320	11,798	10,707
Harvest:	1,156	1,258	1,350
Hunters:	2,072	2,039	2,100
Hunter Success:	56%	62%	64%
Active Licenses:	2,178	2,143	2,200
Active License Success:	53%	59%	61%
Recreation Days:	9,176	8,877	9,000
Days Per Animal:	7.9	7.1	6.7
Males per 100 Females	31	41	
Juveniles per 100 Females	66	67	

Population Objective (\pm 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-26.3%
Number of years population has been + or - objective in recent trend:	1
Model Date:	05/05/2017

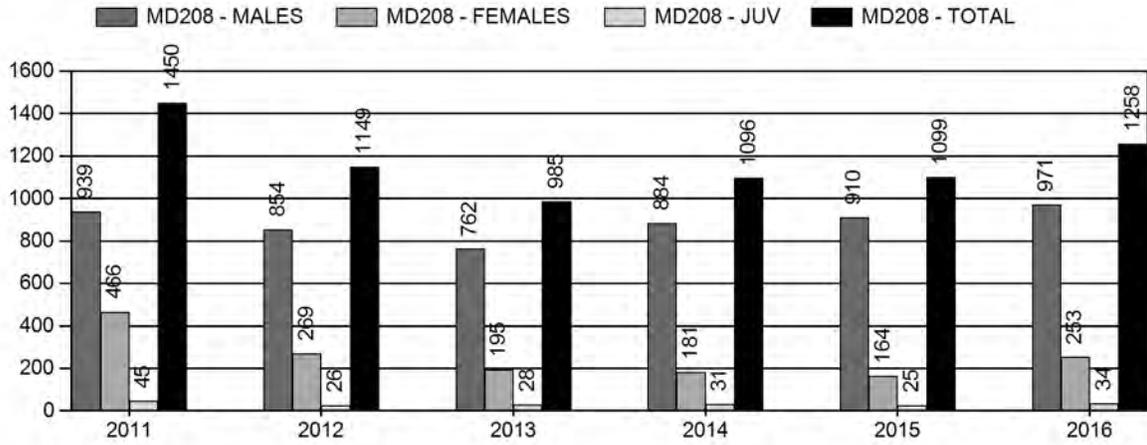
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	4%	5%
Males \geq 1 year old:	30%	35%
Total:	10%	11%
Proposed change in post-season population:	+3%	-10%

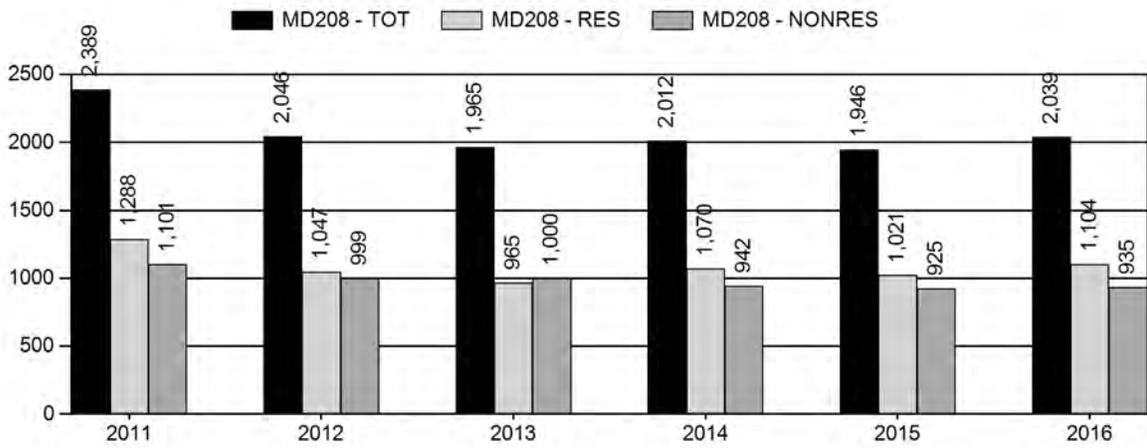
Population Size - Postseason



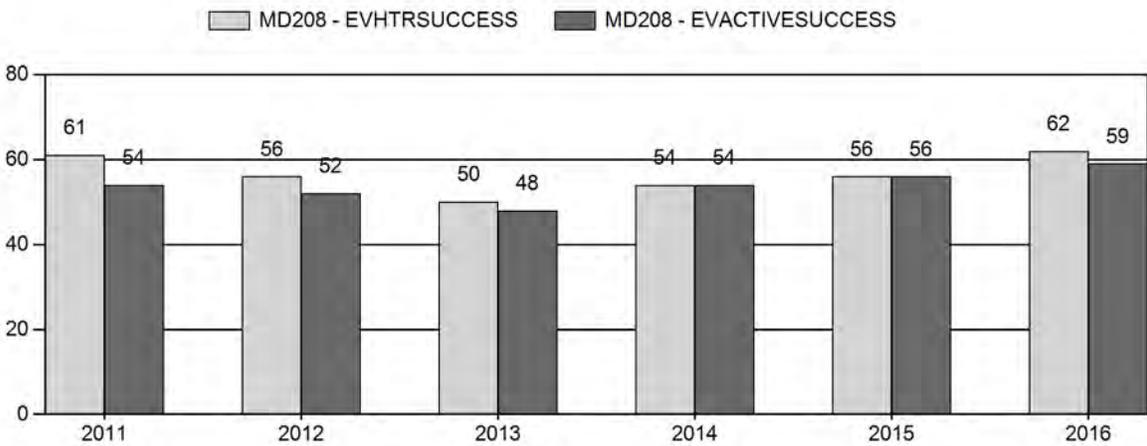
Harvest



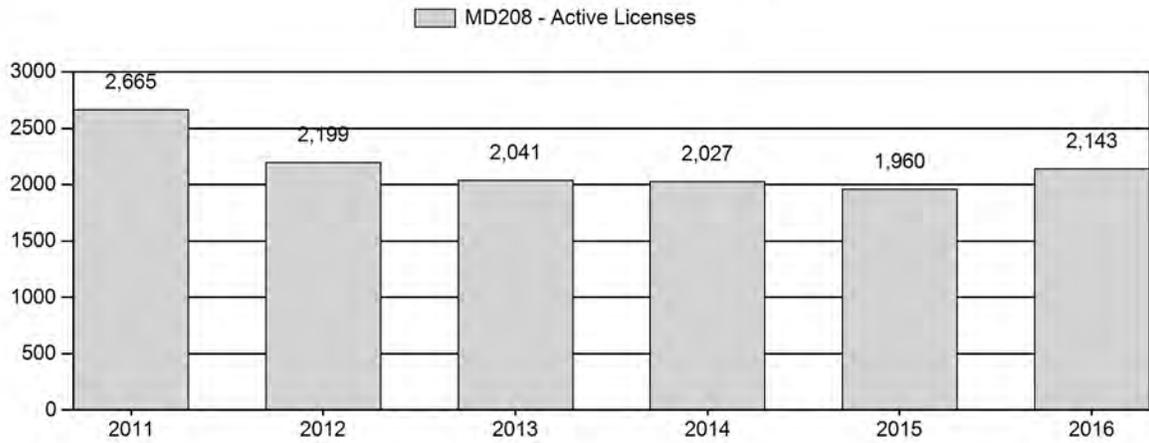
Number of Active Licenses



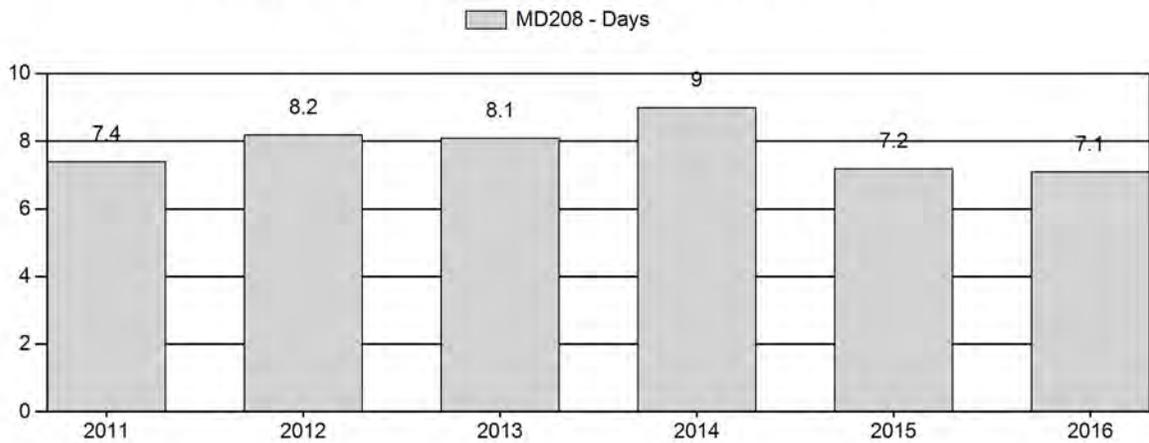
Harvest Success



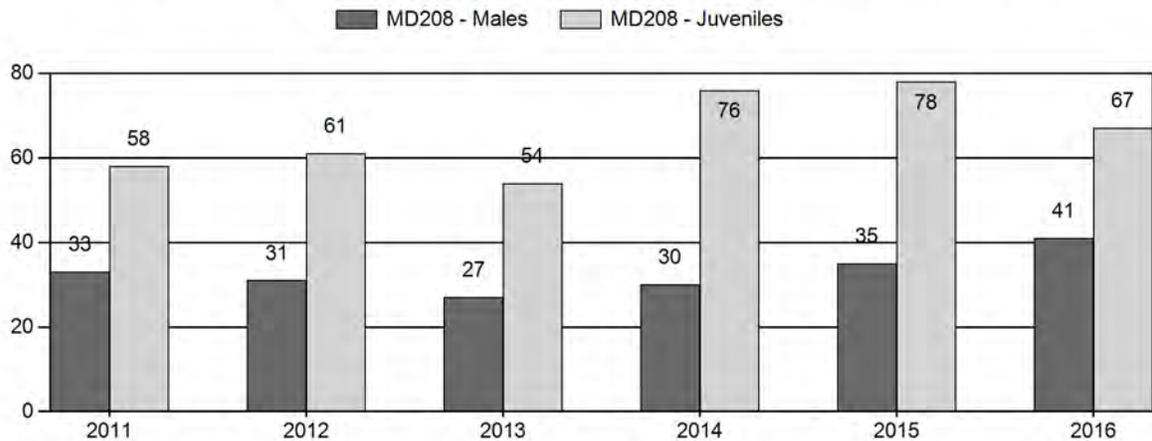
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD208 - SOUTHWEST BIGHORNS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls		Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	14,750	56	0	0	0	181	237	17%	721	52%	419	30%	1,377	1,094	8	25	33	± 3	58	± 4	44
2012	13,613	56	0	0	0	141	197	16%	633	52%	383	32%	1,213	1,152	9	22	31	± 3	61	± 5	46
2013	12,098	76	0	0	0	153	229	15%	858	55%	464	30%	1,551	918	9	18	27	± 2	54	± 4	43
2014	14,219	93	40	40	6	83	262	14%	882	49%	674	37%	1,818	1,584	11	19	30	± 3	76	± 5	59
2015	15,885	107	102	67	16	40	332	16%	961	47%	747	37%	2,040	814	11	23	35	± 3	78	± 5	58
2016	17,496	112	175	101	17	0	405	20%	979	48%	659	32%	2,043	1,406	11	30	41	± 3	67	± 4	48

**2017 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	325	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. 25	200	Limited quota	Antlered deer
37	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
37	6	Sep. 1	Nov. 15	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
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	200	Limited quota	Doe or fawn
40	8	Oct. 15	Nov. 30	100	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	100	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 2016
36	1	-50
37	6	+50
40	6	+100
40	8	+50
164	6	+25
Total	1	-50
	6	+175
	8	+50

Management Evaluation

Current Postseason Population Management Objective: 16,000

Management Strategy: Recreational

2016 Postseason Population Estimate: 11,800

2017 Proposed Postseason Population Estimate: 10,700

2016 Hunter Satisfaction: 66% satisfied, 19% neutral, 15% 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 support 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. A sightability survey was flown in February 2017, which resulted in a population estimate of about 11,800 deer, nearly 5,000 fewer deer than previous year model estimates.

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 2016 spring moisture was favorable, but conditions dried considerable through the summer. The 2016/17 winter started out severe, with deep snow cover and below normal temperatures persisting through early February. By mid February, most winter ranges were free of snow with moderate winter temperatures. These conditions persisted through the rest of the winter, with occasional snowfall events occurring into April.

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 A). Overall, annual production (leader growth) for these transects has average around 2.0cm. Winter utilization remains low at about 10% for these transects. Good spring moisture since 2014 has helped improve range conditions, particularly desert forb production.

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. Past post-season fawn ratios have remained fairly consistent in this herd unit, averaging 60 fawns:100 does. However, since 2014 fawn ratios have increased to an annual average of 74:100. This has resulted in an overall increase in the deer population. This is also reflected in the post-season classification sample sizes, which have increased by 68% since 2012. Buck ratios typically average around 32:100, but in 2016 the ratio jumped to 41:100.

Harvest Data

Recent harvest statistics further support increasing deer numbers in this herd. Since 2013, overall buck harvest has increased by 27%, while hunter success has increased from 50% in 2013 to 62% in 2016. These harvest trends are reflective of field personnel perceptions that deer numbers have increased and hunting conditions have improved. Doe/fawn harvest has remained low the past few years with an annual harvest of about 225 since 2013. Prior to that, the annual average harvest was about 400 does and fawns.

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 good representation of herd trend and population.

A mule deer sightability survey was flown in this herd unit in February 2017. Survey flight summary and results are listed below. Nine days (70.9 hrs) were needed to complete the survey, at a cost of \$60,555). Sixty-two (62) of the 79 units were flown in the herd unit, including 14 low density units, 11 medium density units and 37 high density units. A total of 8,088 mule deer were observed, which resulted in an abundance estimate of 11,442 (± 332) mule deer for the herd. Results of the sightability survey indicated the current spreadsheet model over estimated mule deer numbers by about 44%. Based on these results, and the fact mule deer numbers have improved in recent years, it is unlikely current management strategies would allow this herd to reach objective levels of 16,000 deer. Therefore, a revision to lower the herd unit objective will likely be needed in the future.

2016 MD208 – Southwest Bighorns Mule Deer Sightability Summary

Survey Dates:	5/7/2017 - 5/26/2017
Survey Time (Hrs)	70.9
Survey Cost:	\$ 60,555
Flight Service:	SKY AVIATION CORP.
Aircraft:	Jet Ranger
Observers:	Kroger, Lentsch, Desomber, Brown, Anderson, Beecham, Frude
Weather Conditions:	
Temperature (°F):	10°-60°
Cloud Cover (%):	0-100%
Wind Speed (MPH):	0 - 20

Management Summary

With improving deer numbers, and the likelihood of damage issues to arise, areas 37, 40 and 164 will have increased license quotas for doe/fawn hunting. Because hunt area 36 changed to limited quota in 2016, the Region M nonresident quota will again remain at 800 licenses to compensate for the displacement of 170 nonresident general hunters. No changes to the general license hunt area seasons will occur. Area 36 will have a slight reduction of 50 type 1 licenses due to a higher than expected harvest in 2016. The projected 2017 harvest is about 1,350 deer, and a post-season 2017 estimate of around 10,700 deer.

Wednesday, March 29, 2017 10:25 AM

Model: Mule Deer, Hiller 12-E, Idaho (Spring)

[Files]

Title = C:\Program Files\IDFG\Aerial Survey\MD208_K.ttl

Summary = C:\Program Files\IDFG\Aerial Survey\MD208_K.sum

.....

MD208_Kroger_Strata

Section 1: Summary of Raw Counts

	Units	
Stratum	Sampled	Total
1	14	133
2	11	596
3	37	7359
Total	62	8088

=====

Section 2: Summary of Raw Counts for Perfect Visibility Model

This table projects the number of animals that would have been counted if every unit had been flown and visibility had been perfect (no animals obscured by vegetation, etc.)

Strat	No of Units		
Popn	Sample	Total	
1	27	14	257
2	15	11	813
3	37	37	7359
Total	79	62	8428

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Section 3: Estimates for Total Number

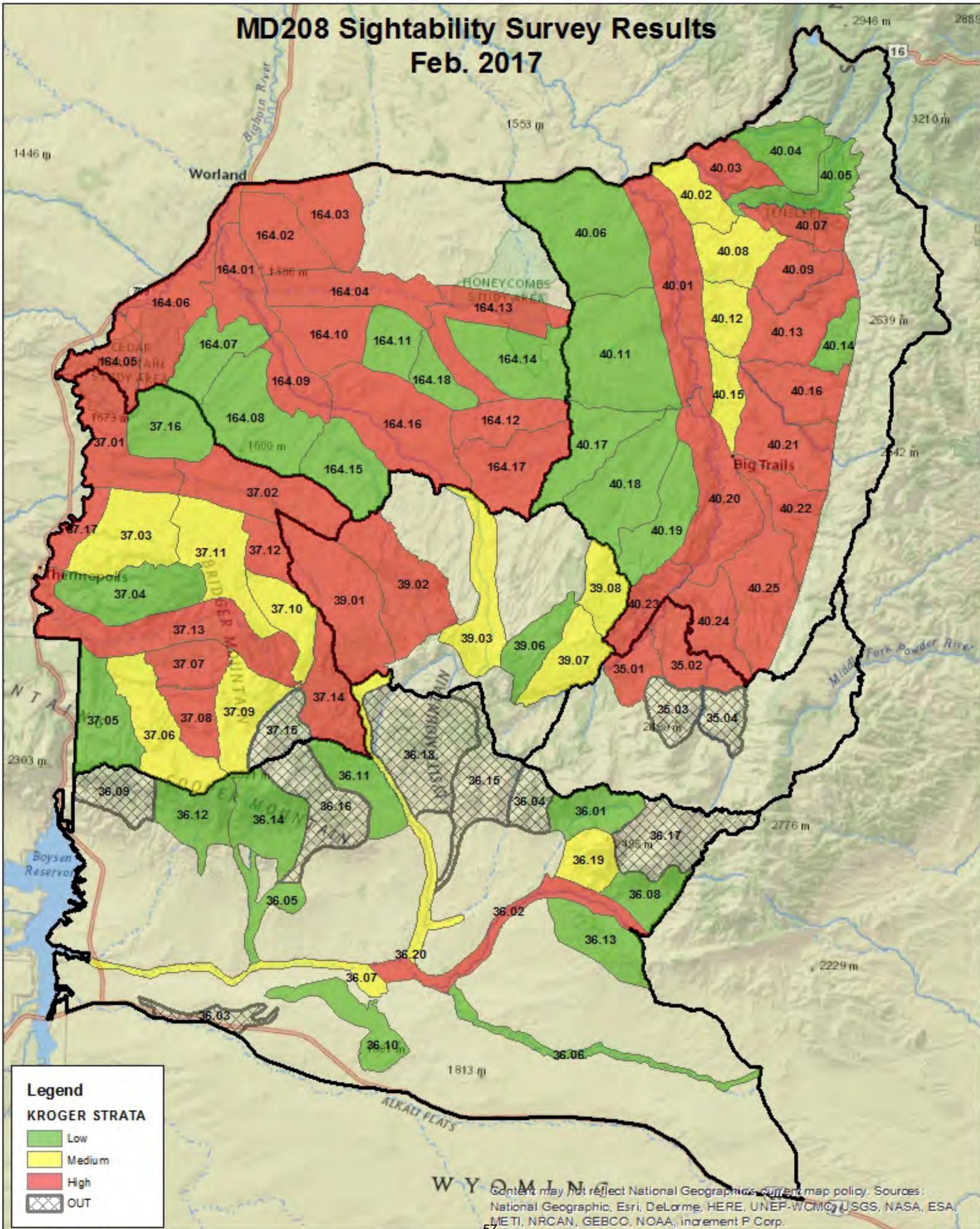
Total

Stratum	Number of Units		Estimate	Variance		Model	Bound 95%
Popn.	Sample	Sampling		Sightability			
1	27	14	335	10430	1218	134	213
2	15	11	1099	21441	6530	775	332
3	37	37	10008	0	61578	7741	516
Total	79	62	11,442	31871	69326	8650	650

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MD208 Sightability Survey Results Feb. 2017



Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

SUBUNIT	KROGER STRATA	RAW SUBUNIT TOTAL
35.01	High	80
35.02	High	553
35.03	OUT	
35.04	OUT	
36.01	Low	2
36.02	High	178
36.03	OUT	
36.04	OUT	
36.05	Low	0
36.06	Low	7
36.07	Medium	39
36.08	Low	0
36.09	OUT	
36.10	Low	0
36.11	Low	0
36.12	Low	0
36.13	Low	0
36.14	Low	0
36.15	OUT	
36.16	OUT	
36.17	OUT	
36.18	OUT	
36.19	Medium	69
36.20	Medium	12
37.01	High	166
37.02	High	435
37.03	Medium	126
37.04	Low	0
37.05	Low	0
37.06	Medium	152
37.07	High	256
37.08	High	0
37.09	Medium	85
37.10	Medium	26
37.11	Medium	0
37.12	High	331
37.13	High	209
37.14	High	68
37.15	OUT	
37.16	Low	0
37.17	High	94
39.01	High	414
39.02	High	61
39.03	Medium	0
39.06	Low	0

SUBUNIT	KROGER STRATA	RAW SUBUNIT TOTAL
39.07	Medium	0
39.08	Medium	6
40.01	High	322
40.02	Medium	0
40.03	High	70
40.04	Low	11
40.05	Low	13
40.06	Low	0
40.07	High	29
40.08	Medium	0
40.09	High	97
40.11	Low	0
40.12	Medium	39
40.13	High	76
40.14	Low	4
40.15	Medium	42
40.16	High	166
40.17	Low	13
40.18	Low	15
40.19	Low	68
40.20	High	340
40.21	High	174
40.22	High	382
40.23	High	267
40.24	High	504
40.25	High	397
164.01	High	269
164.02	High	98
164.03	High	83
164.04	High	63
164.05	High	36
164.06	High	353
164.07	Low	0
164.08	Low	0
164.09	High	60
164.10	High	189
164.11	Low	0
164.12	High	90
164.13	High	35
164.14	Low	0
164.15	Low	0
164.16	High	411
164.17	High	3
164.18	Low	0

KROGER STRATA				
STRATA	ALL	SAMPLED	RANGE	AVE
LOW	27	14	0 - 68	10
MEDIUM	15	11	0 - 152	54
HIGH	37	37	0 - 553	199
	79	62		

INPUT
 Species: Mule Deer
 Biologist: Bart Kroger
 Herd Unit & No.: SW Bighorn, MD208
 Model date: 05/05/17

Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
C,J,CA	Constant Juvenile & Adult Survival	81	90	<input type="checkbox"/> C,J,CA Model	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	78	98	<input type="checkbox"/> SC,J,SCA Modl	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	14	144	<input checked="" type="checkbox"/> TS,J,CA Model	

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective
				Juveniles	Total Males	Juveniles	Total Males		
1993				7345	8059	19149	17082	30038	28000
1994				5569	5997	14961	17082	23499	28000
1995				5841	4453	11986	13747	20233	28000
1996				5950	4125	10686	11374	19049	28000
1997				4958	3805	9452	10164	16515	28000
1998				6115	4159	9446	9143	17816	28000
1999				5248	4296	9568	9190	16959	28000
2000				3777	3854	9032	8615	14636	28000
2001				3196	3197	8205	7761	12840	28000
2002				3606	2723	7362	7041	12146	28000
2003				3852	2818	7184	6875	12431	28000
2004				4797	3091	7164	6878	13557	28000
2005				4592	3374	7302	6925	13751	28000
2006				4421	3718	7409	7123	13973	28000
2007				4390	3768	7440	7123	13659	28000
2008				4071	3310	6977	6450	12432	28000
2009				3333	3275	6828	6300	11439	28000
2010				3578	2946	6450	5896	11164	28000
2011				3333	2891	6163	5650	10792	28000
2012				3230	2585	5587	5291	10138	28000
2013				2717	2297	5182	4967	9112	28000
2014				3810	2363	5141	4942	10109	28000
2015				4249	2800	5611	5431	11451	16000
2016			332	3931	3188	6063	5784	11798	16000
2017				3506	2893	5793	5463	10707	16000
2018								16000	16000
2019								16000	16000
2020								16000	16000
2021								16000	16000
2022								16000	16000
2023								16000	16000
2024								16000	16000
2025								16000	16000

Survival and Initial Population Estimates

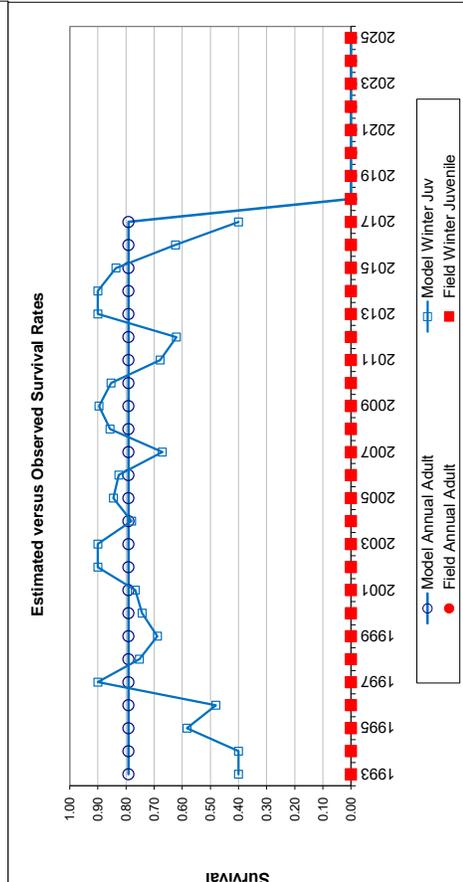
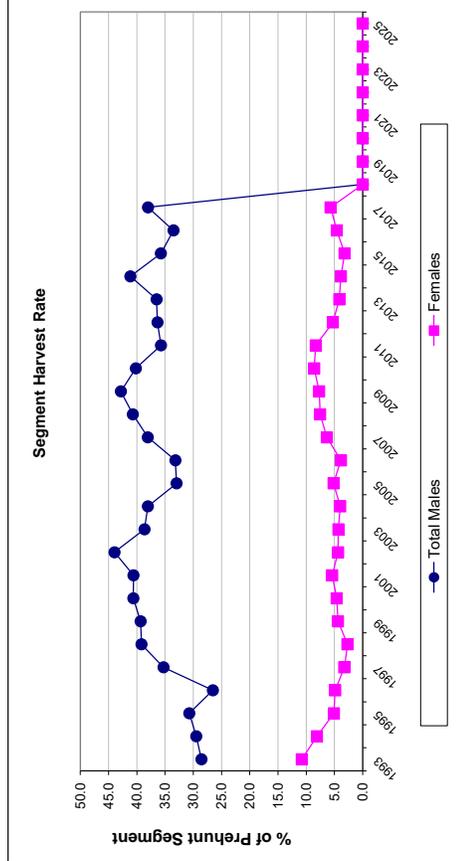
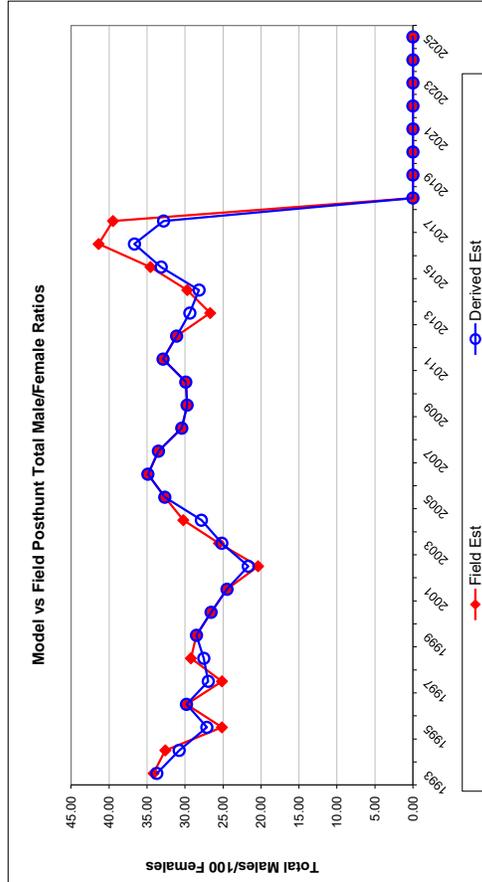
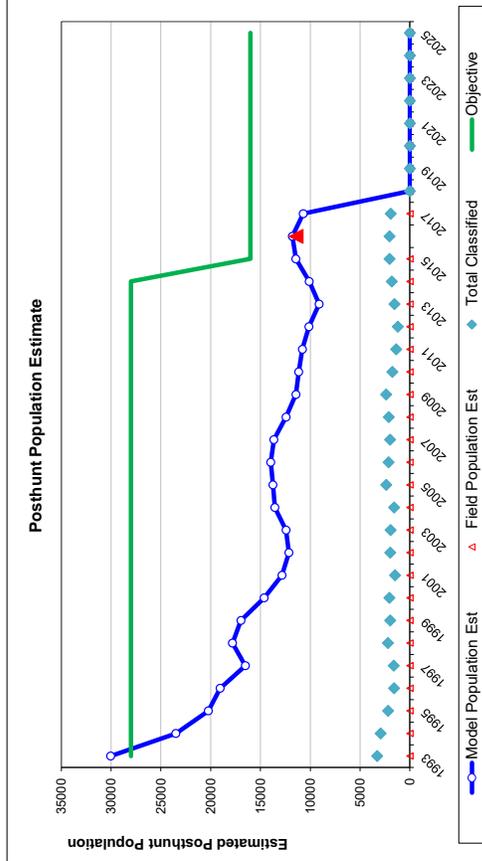
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.40		0.79	
1994	0.40		0.79	
1995	0.58		0.79	
1996	0.48		0.79	
1997	0.90		0.79	
1998	0.75		0.79	
1999	0.69		0.79	
2000	0.74		0.79	
2001	0.77		0.79	
2002	0.90		0.79	
2003	0.90		0.79	
2004	0.78		0.79	
2005	0.84		0.79	
2006	0.83		0.79	
2007	0.67		0.79	
2008	0.86		0.79	
2009	0.90		0.79	
2010	0.85		0.79	
2011	0.68		0.79	
2012	0.62		0.79	
2013	0.90		0.79	
2014	0.90		0.79	
2015	0.84		0.79	
2016	0.62		0.79	
2017	0.40		0.79	
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cals
Adult Survival =	0.792
Initial Total Male Pop/10,000 =	0.576
Initial Female Pop/10,000 =	1.708

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

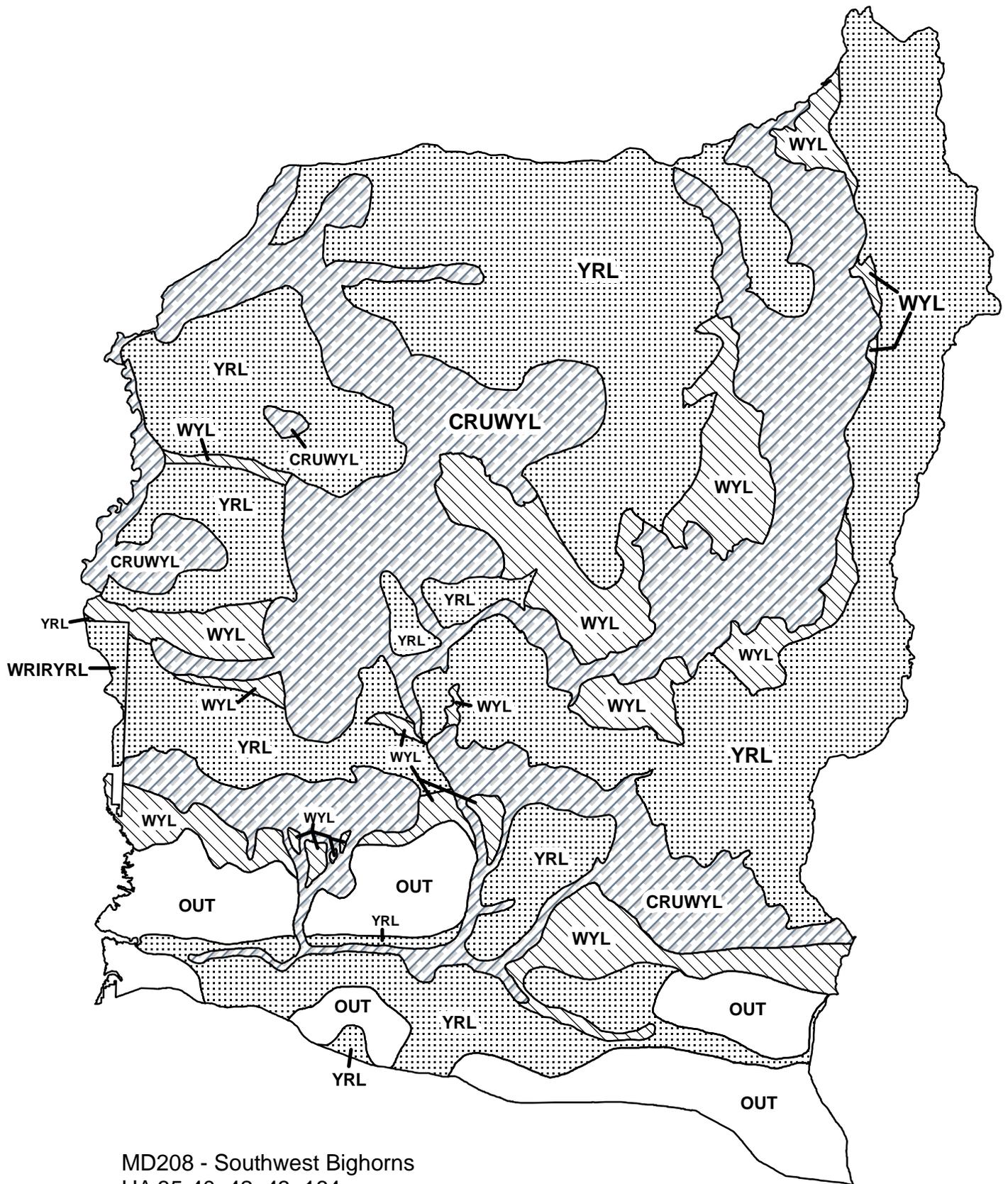
Year	Classification Counts					Harvest					
	Juvenile/Female Ratio		Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est					w/o bull adj	Field SE
1993		42.14	1.79	33.71	34.14	134	2082	1879	4105	28.6	10.8
1994		40.18	1.82	30.77	32.59	42	1607	1104	2753	29.5	8.1
1995		50.76	2.48	27.13	25.14	61	1243	556	1860	30.7	5.1
1996		57.60	3.27	29.81	29.80	87	995	474	1556	26.5	4.9
1997		53.69	3.02	26.94	25.14	44	1220	281	1545	35.3	3.3
1998		66.34	3.13	27.53	29.23	17	1481	233	1731	39.2	2.7
1999		56.89	2.89	28.49	28.49	40	1536	382	1958	39.3	4.4
2000		43.32	2.26	26.57	26.57	41	1423	379	1843	40.6	4.6
2001		40.97	2.53	24.47	24.47	15	1180	404	1599	40.6	5.4
2002		50.82	2.58	21.68	20.38	25	1088	292	1405	44.0	4.4
2003		55.66	2.85	25.16	25.54	23	990	281	1294	38.6	4.3
2004		69.27	3.84	27.84	30.23	30	1069	260	1359	38.0	4.0
2005		65.91	3.02	32.66	32.66	25	1011	343	1379	33.0	5.2
2006		61.26	3.01	34.89	34.89	52	1121	260	1433	33.2	3.9
2007		62.56	3.17	33.50	33.50	29	1304	430	1763	38.1	6.4
2008		62.31	3.03	30.43	30.43	47	1225	479	1751	40.7	7.6
2009		51.86	2.45	29.73	29.73	60	1275	480	1815	42.8	7.7
2010		59.46	3.19	29.90	29.89	66	1076	504	1646	40.2	8.6
2011		58.11	3.57	32.89	32.87	45	939	466	1450	35.7	8.3
2012		60.51	3.92	31.11	31.12	26	854	269	1149	36.3	5.3
2013		54.08	3.12	29.36	26.69	28	762	195	985	36.5	4.1
2014		76.42	3.91	28.15	29.71	31	884	181	1096	41.1	3.9
2015		77.73	3.79	33.13	34.55	25	910	164	1099	35.7	3.2
2016		67.31	3.39	36.65	41.37	34	971	253	1258	33.5	4.6
2017		63.16	3.29	32.82	39.47	50	1000	300	1350	38.0	5.7
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

FIGURES



Comments: Sighting survey conducted in February 2017. Abundance estimate = 11,442 mule deer (SE=332).

END



MD208 - Southwest Bighorns
 HA 35-40, 42, 43, 164
 Revised 4/2006

2016 - JCR Evaluation Form

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

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

PREPARED BY: BART KROGER

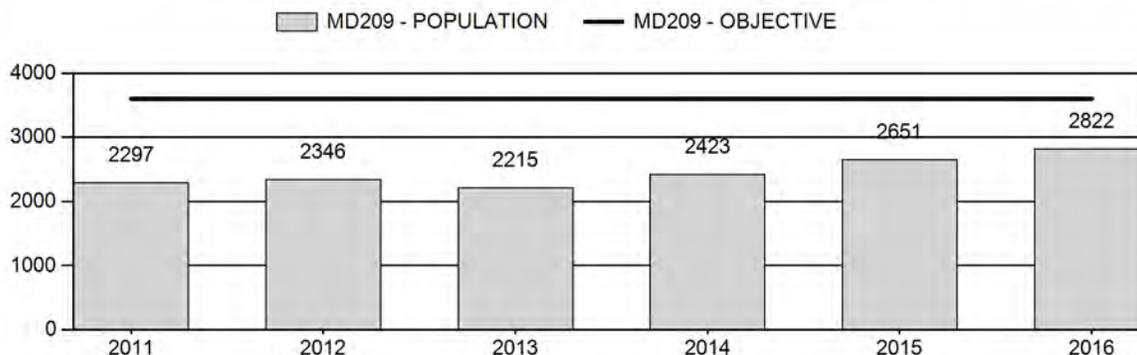
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	2,386	2,822	2,943
Harvest:	177	140	175
Hunters:	321	318	350
Hunter Success:	55%	44%	50 %
Active Licenses:	346	318	350
Active License Success:	51%	44%	50 %
Recreation Days:	1,376	1,332	1,400
Days Per Animal:	7.8	9.5	8
Males per 100 Females	33	40	
Juveniles per 100 Females	63	68	

Population Objective (± 20%) : 3600 (2880 - 4320)
 Management Strategy: Recreational
 Percent population is above (+) or below (-) objective: -21.6%
 Number of years population has been + or - objective in recent trend: 15
 Model Date: 02/17/2017

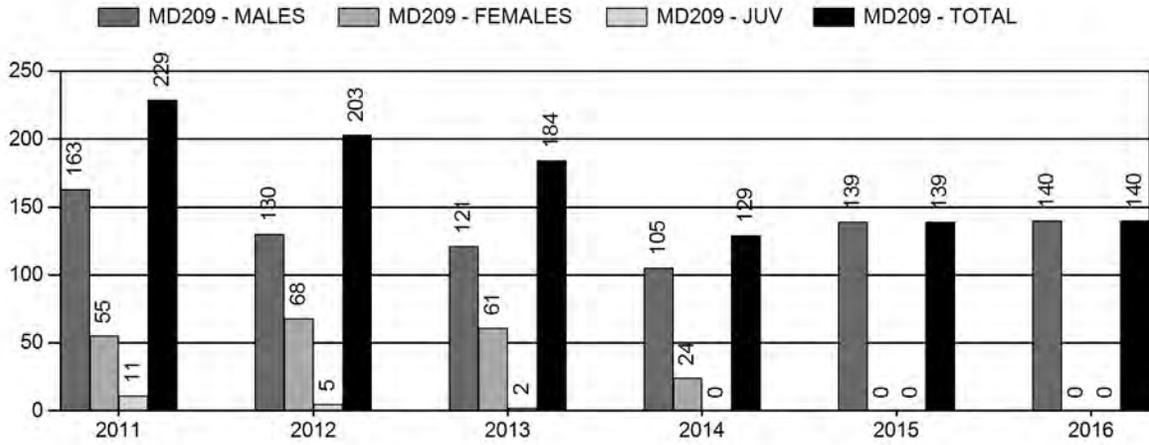
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	2%
Males ≥ 1 year old:	22%	20%
Total:	5%	6%
Proposed change in post-season population:	+6%	+3%

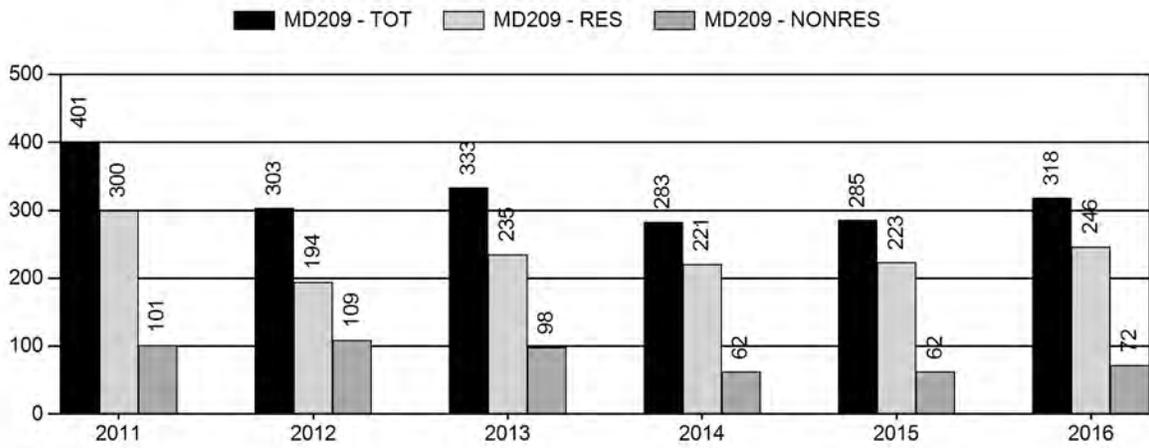
Population Size - Postseason



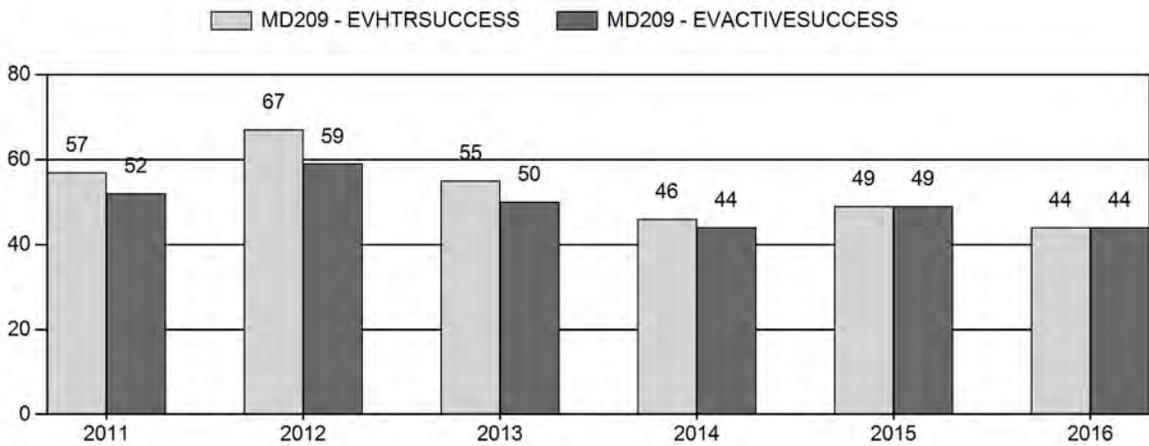
Harvest



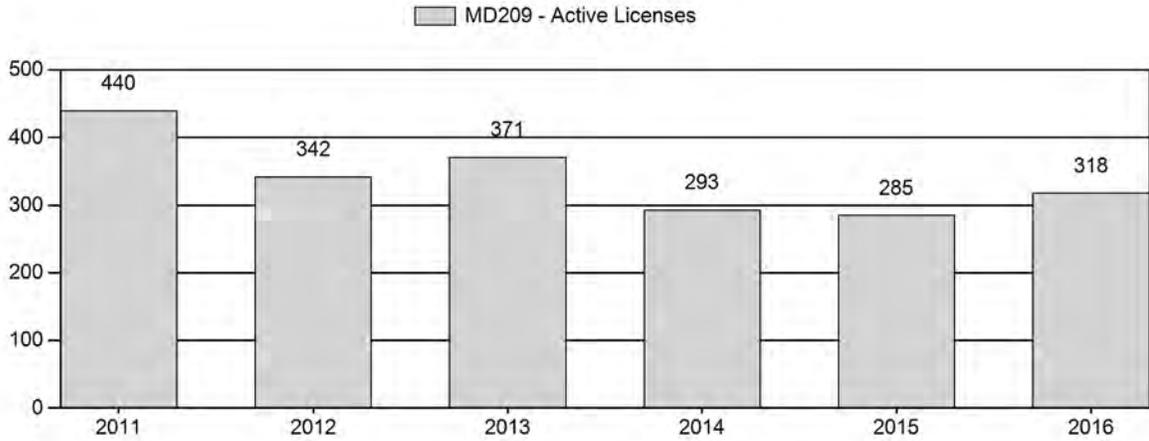
Number of Active Licenses



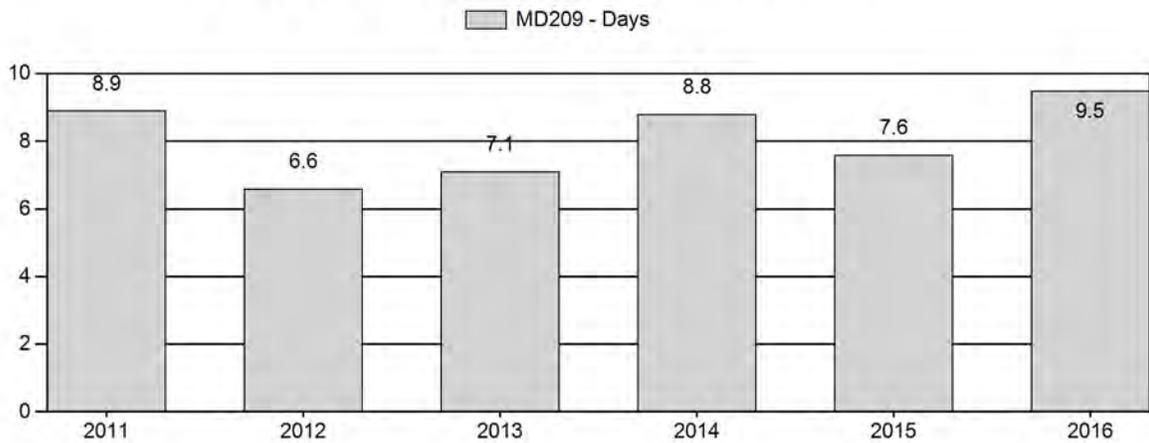
Harvest Success



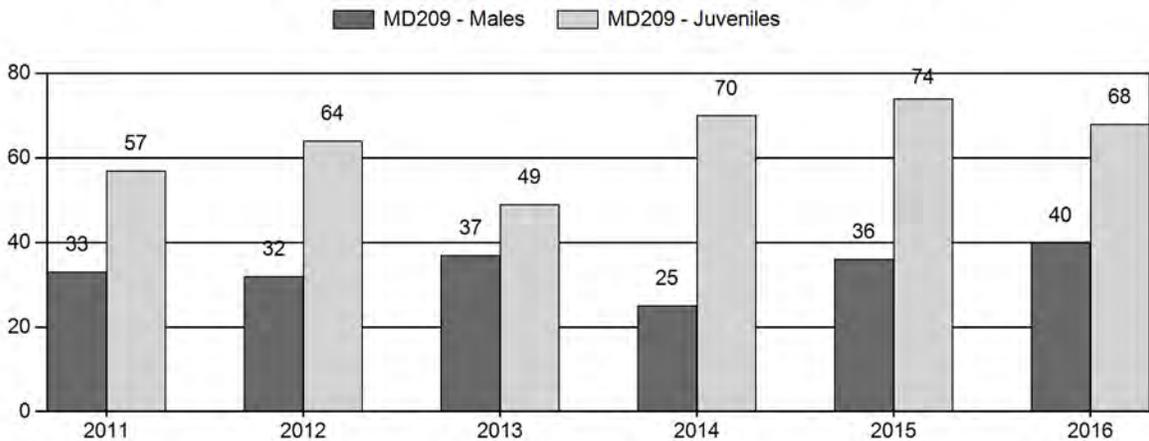
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD209 - BASIN

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls Obj	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	2,297	25	0	0	0	65	90	17%	274	53%	156	30%	520	811	9	24	33	± 4	57	± 6	43
2012	2,346	27	0	0	0	49	76	16%	236	51%	150	32%	462	878	11	21	32	± 5	64	± 8	48
2013	2,215	30	0	0	0	58	88	20%	236	54%	116	26%	440	669	13	25	37	± 5	49	± 6	36
2014	2,423	17	0	0	0	35	52	13%	210	51%	147	36%	409	998	8	17	25	± 4	70	± 9	56
2015	2,651	33	44	23	5	0	105	17%	295	48%	218	35%	618	1,118	11	24	36	± 5	74	± 7	54
2016	2,822	42	103	34	4	0	183	19%	460	48%	314	33%	957	1,004	9	31	40	± 4	68	± 5	49

**2017 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
125	6	Sep. 15	Oct. 15	50	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
127		Oct. 15	Oct. 24		General	Antlered deer
127	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer

Region X Nonresident General license quota – 300 licenses

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

Hunt Area	Type	Quota change from 2016
125	6	+50, new license type
HU Total	6	+50, new license type

Management Evaluation

Current Postseason Population Management Objective: 3,600

Management Strategy: Recreational

2016 Postseason Population Estimate: 2800

2017 Proposed Postseason Population Estimate: 2900

2016 Hunter Satisfaction: 64% satisfied, 14% neutral, 22% 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, CWD, 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, seven 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 southern Bighorn Basin to have caused significant mortality in this herd, thus keeping this population 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 2016 spring moisture was also favorable in this herd, but dry conditions persisted through the summer. The 2016/17 winter has been semi-severe, with deep snow cover and below normal temperatures persisting through early February, however since then significant snow melt has occurred and temperatures have moderated.

Habitat

Most of the herd unit is within a 5-9" precipitation zone. Limited opportunities exist to increase forage quality of native plant communities due to the prevalence of cheatgrass. 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. Record high fawn ratios have been observed in the herd the past three years, with a 3-year average of 72:100. Prior to that, the average fawn ratio was 54:100. The number of deer classified in recent years has also increased, over 100% since 2013. This recent increase in deer is the result of record high fawn ratios in 2014, 2015 and 2016. 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 stayed fairly stable through the 2000's, with roughly about 100 deer being observed annually in recent years. However, the 2015 and 2016 survey resulted in 150 and 244 deer being observed, respectively. These past trends along with the recent increase in deer observed are reflective of field personnel perceptions of this deer herd.

Harvest Data

Recent male harvest statistics do support an improving deer population. Since 2014, overall % hunter success in areas 125 and 127 have improved by 13% and 27%, respectively, while overall buck harvest in the herd unit improved by 33%. Most hunters and landowners agree deer numbers are improving. 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 2016, 64% were satisfied or very satisfied. Again, this is likely the result of recent improving deer numbers due to record high fawn ratios and survival.

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=86) 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 to good representative of herd trend and population estimate, mainly because it tracks well with classification sample sizes and reflects an increasing population.

Management Summary

Because of improving deer numbers, but the fact we are still below objective, 50 Type 6 licenses will be added to hunt area 125 to address potential damage issues and landowner concerns. The projected 2017 harvest is 175 deer, with a 2017 post-season population of 2900 deer, or 20% below objective.

INPUT
 Species: Mule Deer
 Biologist: Bart Kroger
 Herd Unit & No.: Basin, MD209
 Model date: 02/17/17

Clear form

MODELS SUMMARY			Relative AICc	Notes
CJ,CA	Constant Juvenile & Adult Survival	Fit	86	Check best model to create report <input checked="" type="checkbox"/> CJ,CA Model <input type="checkbox"/> SCJ,SCA Mod <input type="checkbox"/> TSJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	Fit	79	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	Fit	143	

Year	Posthunt Population Est. Field Est	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective			
			Juveniles	Total Males	Juveniles	Total Males			Females		
1993			741	691	2122	3554	726	379	1950	3056	3600
1994			873	559	1868	3301	868	335	1811	3013	3600
1995			730	570	1800	3099	726	383	1748	2857	3600
1996			1019	562	1700	3281	1019	313	1678	3010	3600
1997			1006	602	1739	3348	1006	468	1695	3170	3600
1998			1190	727	1750	3667	1190	513	1750	3453	3600
1999			1001	826	1857	3683	1001	571	1825	3396	3600
2000			629	811	1856	3295	629	517	1797	2943	3600
2001			626	642	1708	2976	626	434	1708	2768	3600
2002			683	571	1633	2886	683	372	1631	2885	3600
2003			682	539	1587	2808	682	360	1581	2623	3600
2004			751	529	1546	2825	751	328	1513	2592	3600
2005			813	525	1512	2850	797	361	1475	2634	3600
2006			944	588	1496	3009	944	354	1477	2775	3600
2007			649	611	1547	2807	647	440	1486	2574	3600
2008			814	584	1455	2853	811	392	1405	2608	3600
2009			707	599	1442	2748	700	370	1376	2445	3600
2010			632	543	1381	2556	630	367	1318	2315	3600
2011			723	517	1309	2549	711	337	1249	2297	3600
2012			771	519	1279	2569	765	376	1204	2346	3600
2013			588	570	1260	2418	586	437	1193	2215	3600
2014			815	560	1190	2565	815	445	1164	2423	3600
2015			918	643	1242	2804	918	491	1242	2651	3600
2016			917	716	1343	2976	917	562	1343	2822	3600
2017			934	776	1426	3135	929	622	1393	2943	3600
2018											3600
2019											3600
2020											3600
2021											3600
2022											3600
2023											3600
2024											3600
2025											3600

Survival and Initial Population Estimates

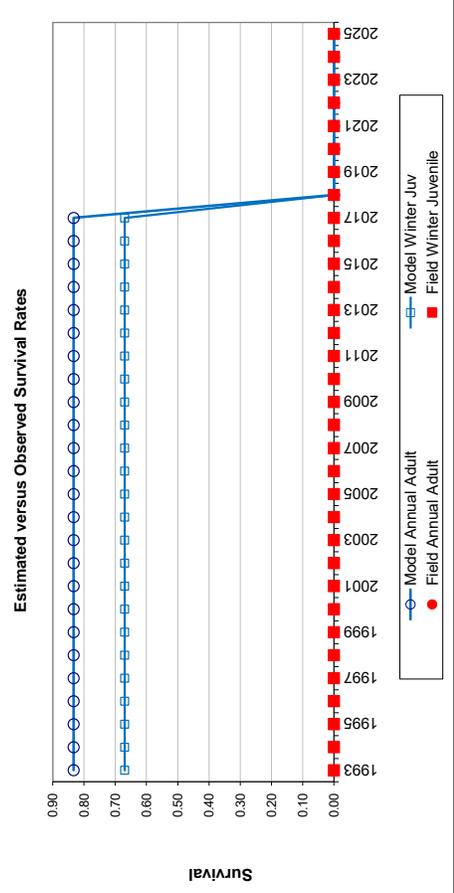
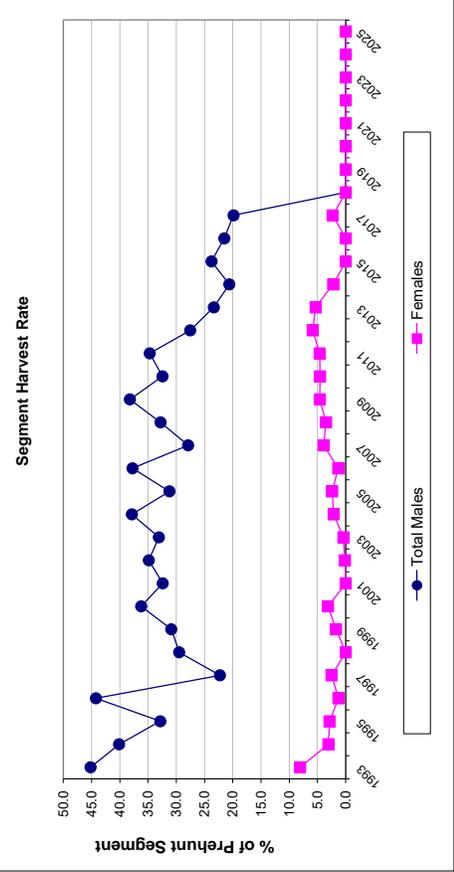
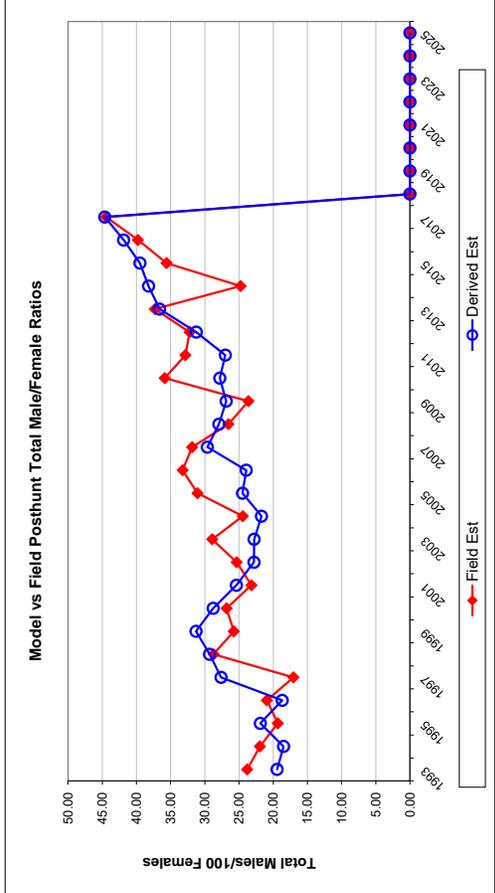
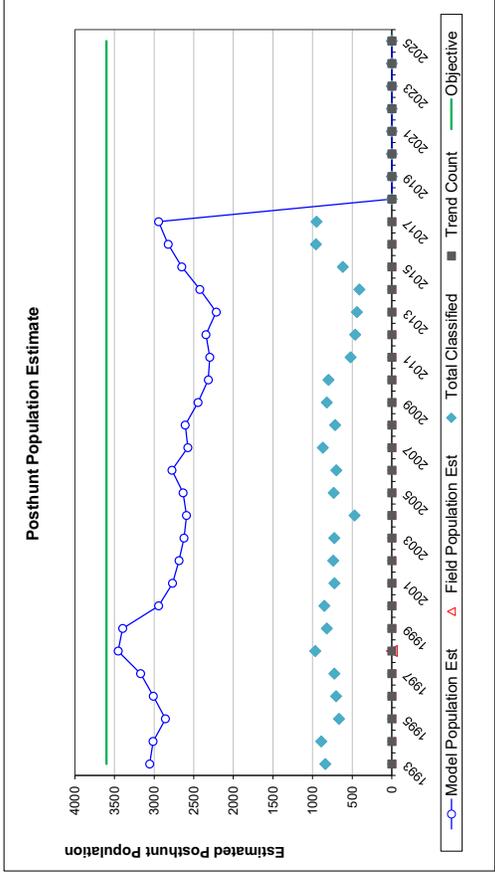
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.67		0.83	
1994	0.67		0.83	
1995	0.67		0.83	
1996	0.67		0.83	
1997	0.67		0.83	
1998	0.67		0.83	
1999	0.67		0.83	
2000	0.67		0.83	
2001	0.67		0.83	
2002	0.67		0.83	
2003	0.67		0.83	
2004	0.67		0.83	
2005	0.67		0.83	
2006	0.67		0.83	
2007	0.67		0.83	
2008	0.67		0.83	
2009	0.67		0.83	
2010	0.67		0.83	
2011	0.67		0.83	
2012	0.67		0.83	
2013	0.67		0.83	
2014	0.67		0.83	
2015	0.67		0.83	
2016	0.67		0.83	
2017	0.67		0.83	
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cals
Juvenile Survival =	0.670
Adult Survival =	0.833
Initial Total Male Pop/10,000 =	0.038
Initial Female Pop/10,000 =	0.195

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

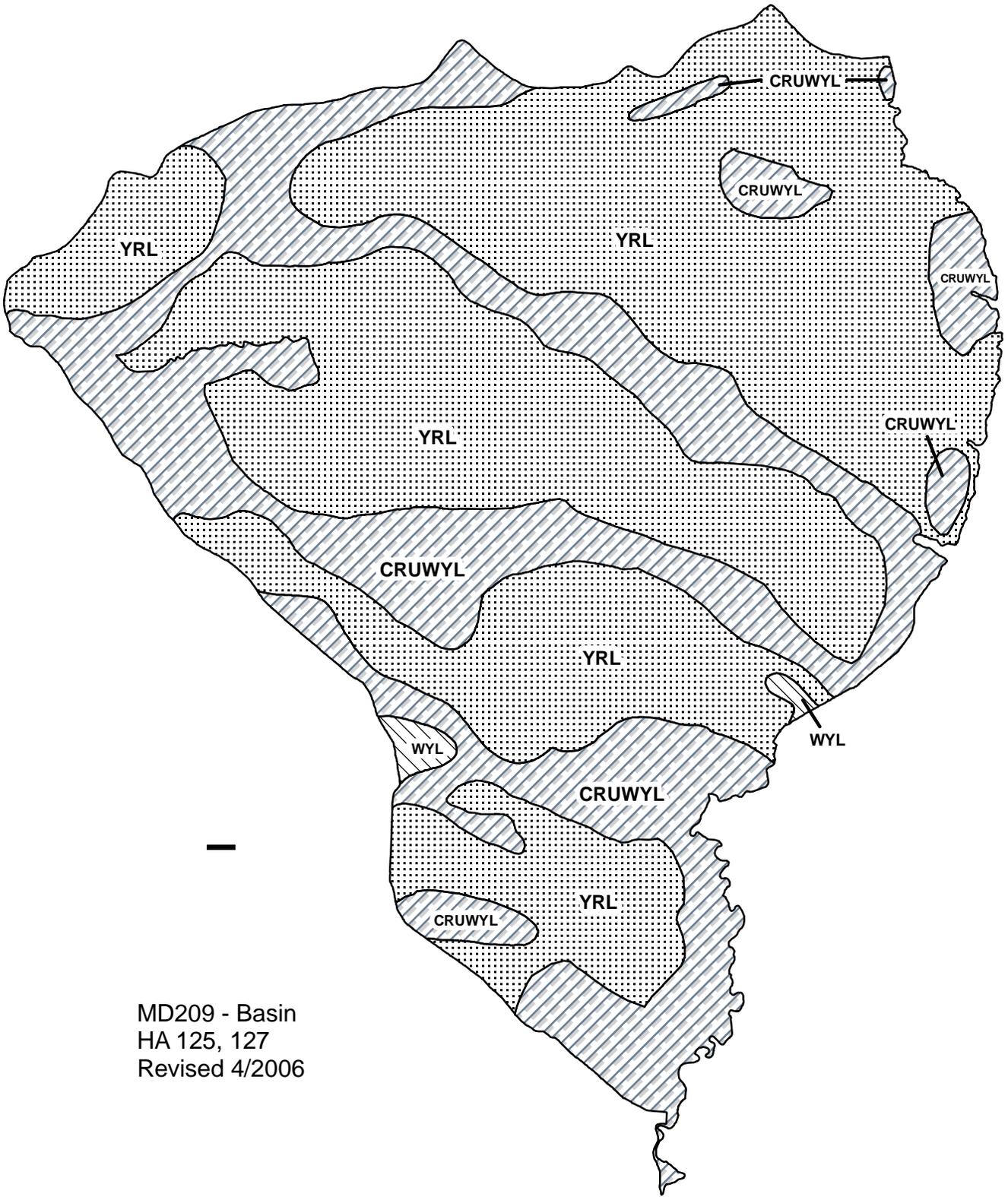
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		37.24	3.13	19.43	23.80	2.38	13	284	156	453	45.2	8.1	
1994		47.90	3.68	18.48	21.95	2.26	5	204	52	261	40.1	3.1	
1995		41.55	3.77	21.88	19.32	2.36	3	170	47	220	32.8	2.9	
1996		60.72	5.02	18.68	20.93	2.56	0	226	20	246	44.2	1.3	
1997		59.37	4.80	27.62	17.03	2.20	0	122	40	162	22.3	2.5	
1998		68.02	4.82	29.31	28.72	2.74	0	195	0	195	29.5	0.0	
1999		54.85	4.33	31.28	25.77	2.67	0	232	29	261	30.9	1.7	
2000		34.98	3.00	28.77	26.81	2.54	0	267	53	320	36.2	3.1	
2001		36.64	3.32	25.38	23.18	2.51	0	189	0	189	32.4	0.0	
2002		41.86	3.67	22.80	25.34	2.68	0	181	2	183	34.9	0.1	
2003		43.13	3.82	22.79	28.91	2.97	0	162	6	168	33.1	0.4	
2004		49.63	5.24	21.71	24.44	3.36	0	182	30	212	37.9	2.1	
2005		54.04	4.58	24.48	31.06	3.21	14	149	33	196	31.2	2.4	
2006		63.94	5.43	23.94	33.24	3.53	0	195	18	213	37.8	1.3	
2007		43.55	3.55	29.63	31.85	2.91	2	155	55	212	27.9	3.9	
2008		57.73	4.84	27.94	26.55	2.94	3	174	46	223	32.8	3.5	
2009		50.85	4.04	26.88	23.62	2.49	7	208	60	275	38.2	4.6	
2010		47.82	4.03	27.81	35.86	3.35	2	160	57	219	32.4	4.5	
2011		56.83	5.71	27.00	32.85	3.99	11	163	55	229	34.7	4.6	
2012		63.56	6.64	31.24	32.20	4.25	5	130	68	203	27.5	5.8	
2013		49.15	5.57	36.62	37.29	4.66	2	121	61	184	23.4	5.3	
2014		70.00	7.53	38.22	24.76	3.84	0	105	24	129	20.6	2.2	
2015		73.90	6.60	39.48	35.59	4.04	0	139	0	139	23.8	0.0	
2016		68.26	5.00	41.88	39.78	3.48	0	140	0	140	21.5	0.0	
2017		66.67	4.97	44.62	44.44	3.78	5	140	30	175	19.9	2.3	
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD210 - GREYBULL RIVER

HUNT AREAS: 124, 165

PREPARED BY: LESLIE
SCHREIBER

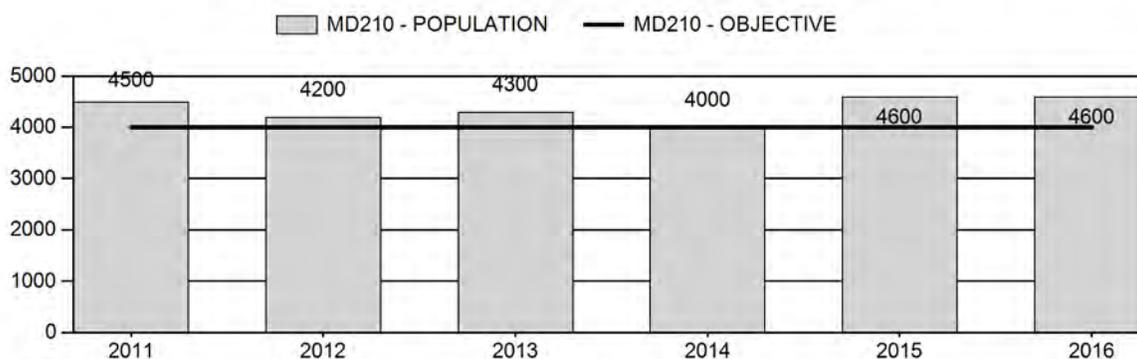
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,320	4,600	4,600
Harvest:	669	536	530
Hunters:	1,017	822	800
Hunter Success:	66%	65%	66 %
Active Licenses:	1,191	954	1,000
Active License Success:	56%	56%	53 %
Recreation Days:	4,279	3,193	3,200
Days Per Animal:	6.4	6.0	6.0
Males per 100 Females	34	35	
Juveniles per 100 Females	78	110	

Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	15%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/21/2017

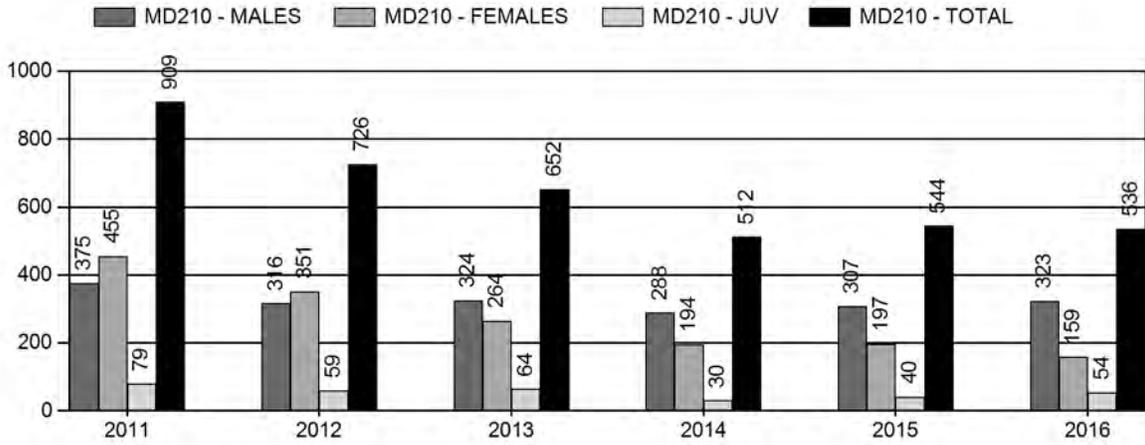
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	15%	15%
Males ≥ 1 year old:	27%	27%
Total:	14%	14%
Proposed change in post-season population:	3%	3%

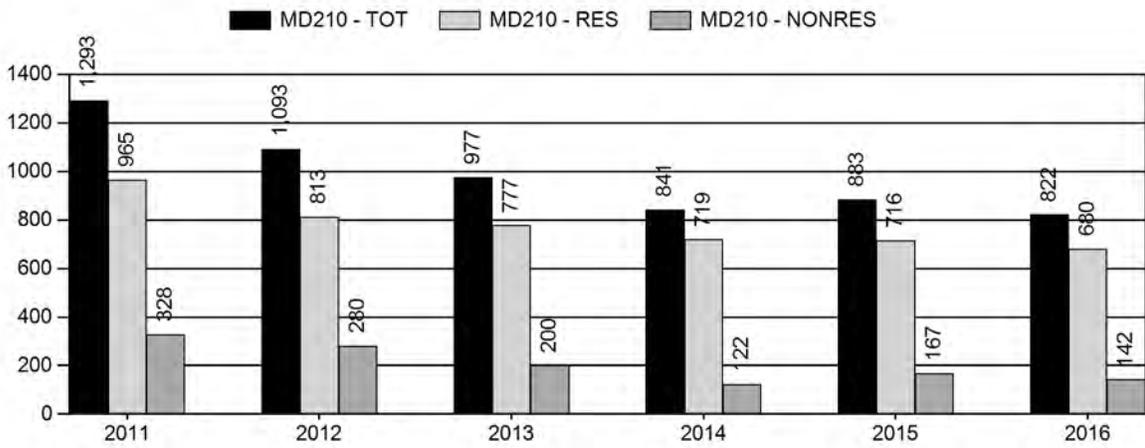
Population Size - Postseason



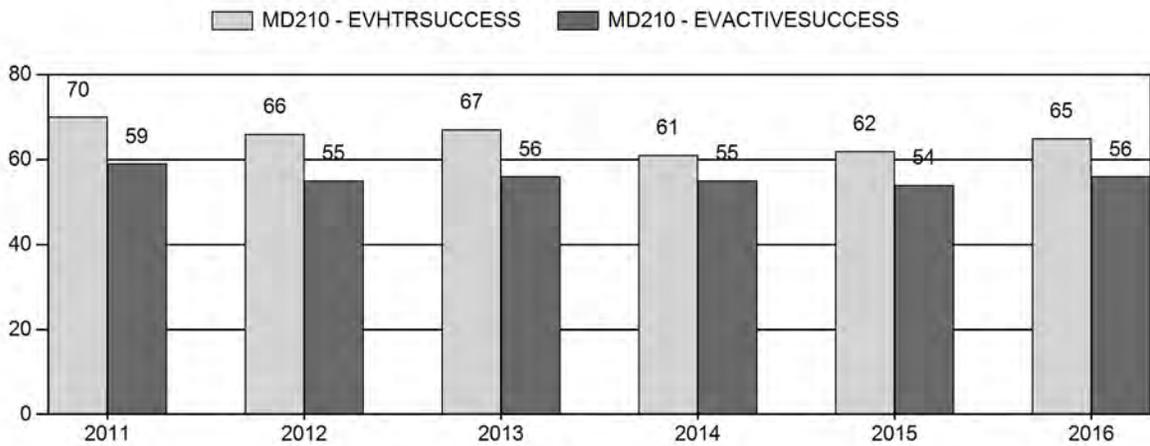
Harvest



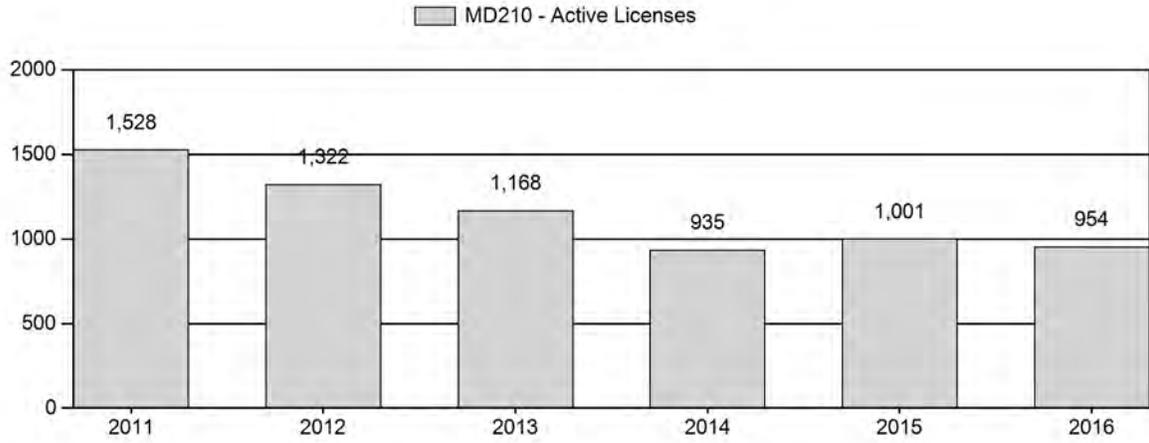
Number of Active Licenses



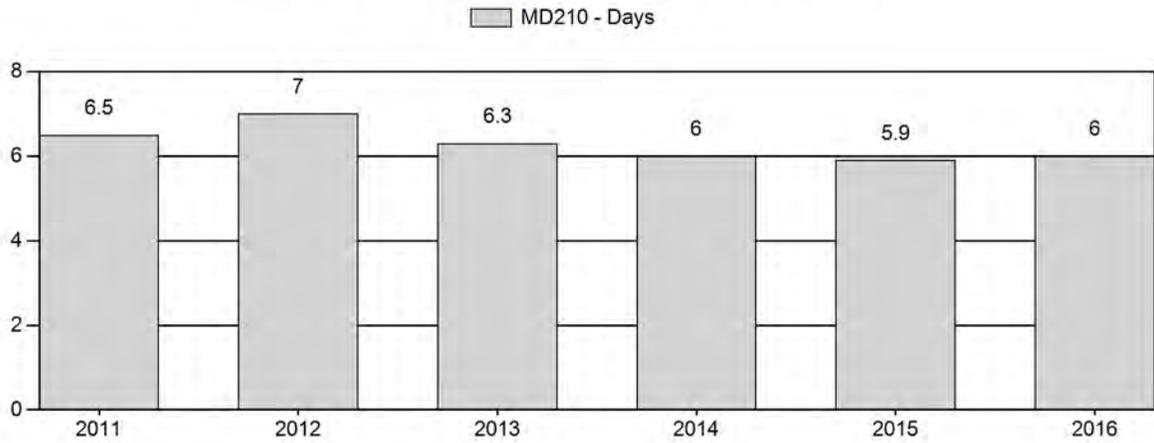
Harvest Success



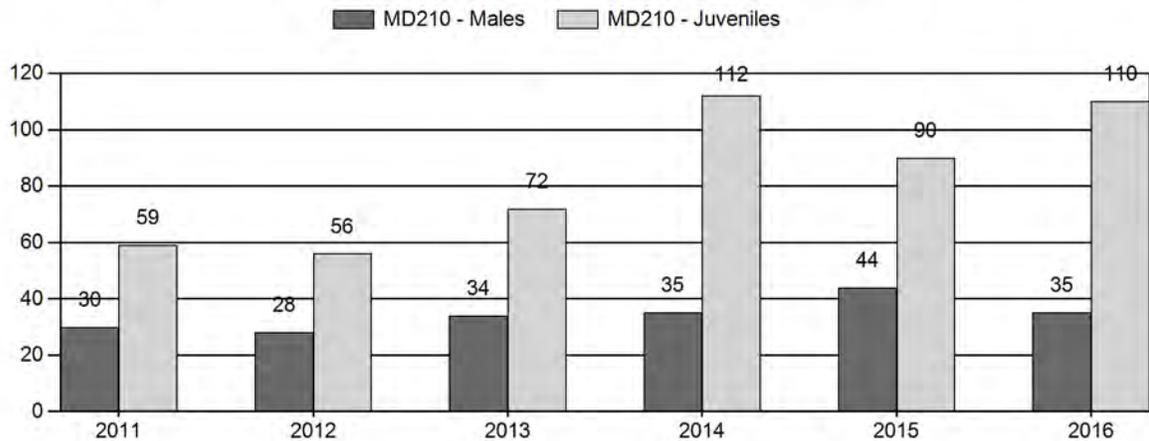
Active Licenses



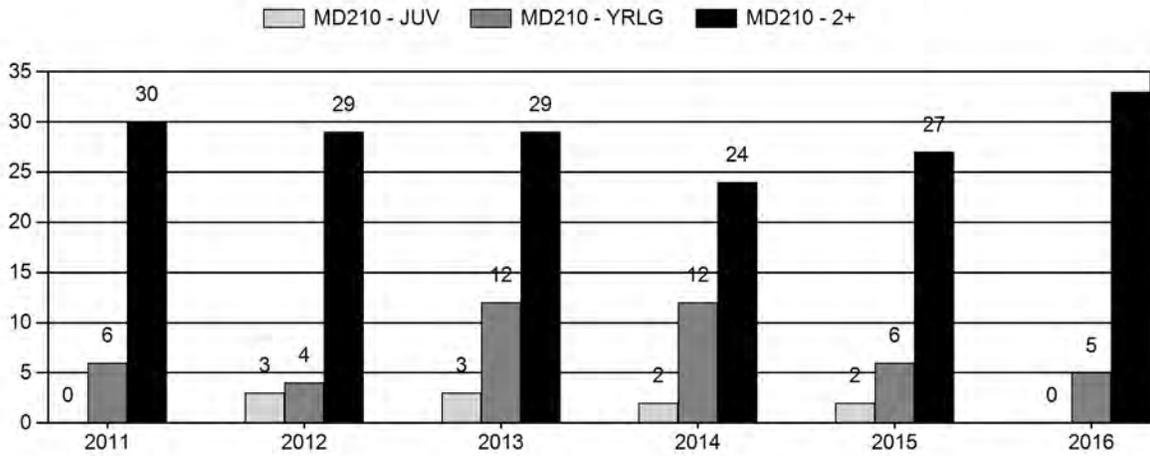
Days per Animal Harvested



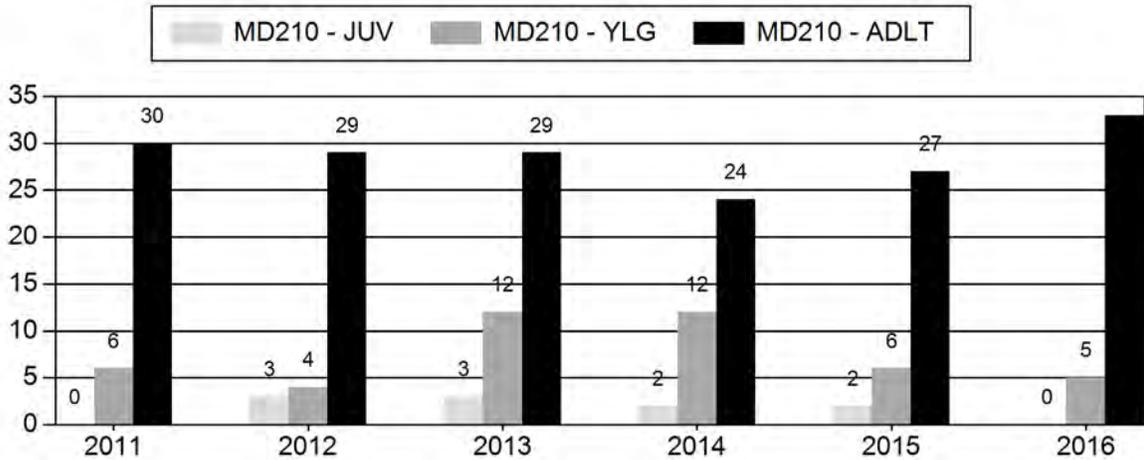
Postseason Animals per 100 Females



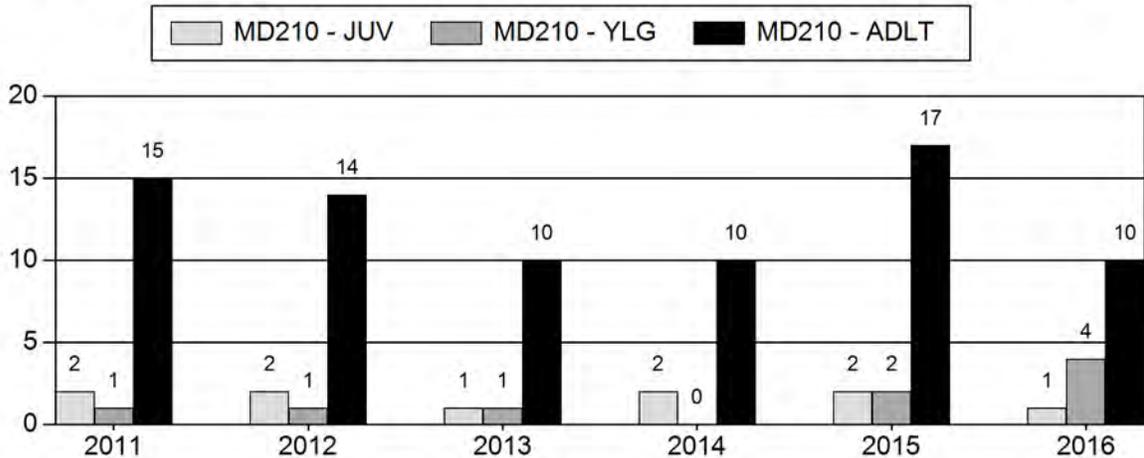
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD210 - GREYBULL RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Cls 1	Cls 2	Cls 3	UnCls	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	4,000	69	0	0	0	114	183	14%	525	40%	590	45%	1,298	1,331	13	22	35	± 3	112	± 7	83
2015	4,600	68	71	50	4	6	199	19%	454	43%	410	39%	1,063	1,529	15	29	44	± 4	90	± 7	63
2016	4,600	38	51	26	3	3	121	14%	347	41%	383	45%	851	1,371	11	24	35	± 4	110	± 9	82

**2017 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	75	Limited quota	Any white-tailed deer
124	6	Oct. 15	Nov. 30	150	Limited quota	Doe or fawn 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	75	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	Sep. 1	Oct. 31	100	Limited quota	Doe or fawn valid on private land
165	8	Nov. 1	Nov. 30	150	Limited quota	Doe or fawn white-tailed deer

Region X nonresident quota: 300

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

Hunt Area	License Type	Quota Change from 2016
124	3	+25
124	8	+25
165	8	+50
Herd Unit Total	3	+25
	8	+75

Management Evaluation

Current Postseason Population Management Objective: 4,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~4,600

2017 Proposed Postseason Population Estimate: ~4,600

2016 Hunter Satisfaction: 73% Satisfied, 14% Neutral, 13% Dissatisfied

Herd Unit Issues

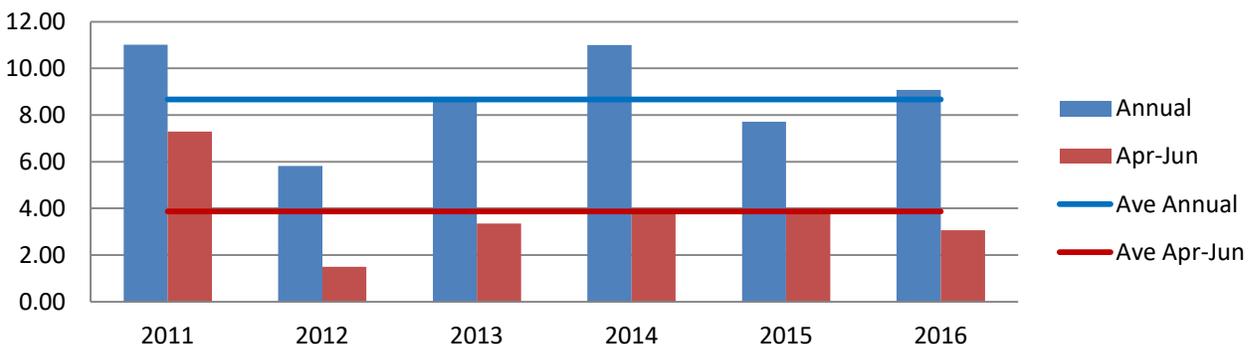
The population objective for the Greybull River mule deer herd was increased from 3,000 to 4,000 deer in 1994 after revisions to the POP-II model. The population objective remained unchanged following reviews in 2002, 2007, and 2015. Greybull River deer are managed for recreational hunting.

Anthropomorphic 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 majority 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. Well-timed growing season precipitation in 2013-15 resulted in increased forage, while 2016 precipitation was below average. Below average temperatures and above average snowfall occurred in December and January, but moderated in February. December precipitation levels ranked 8th highest out of the last 122 years.

MD210 Annual and Growing Season Precipitation with 30 Year Averages



Habitat

There is 1 sagebrush browse transect in this herd unit in Oregon Basin, but it was established in an area of low deer density to evaluate pronghorn antelope winter range. Mortality of individual sagebrush plants and increased precipitation in 2005, 2007, 2009-11, 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

Classification data has been used to monitor the population. Classification surveys were only conducted from the ground, so there is no measure of effort between years. Hunting seasons last the entire month of November and classification surveys occur in December during the late rut or after. By then, deer along the Greybull River do not come out of heavy cover until a few minutes before dark, so classification surveys can be strung out over the entire month. 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.

We assumed number of deer classified can be used as an index to population level. 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 and 110 fawns: 100 does in 2016. The increase in productivity was likely due to increased vegetation growth, subsidized by agricultural fields.

Buck numbers appear to have increased in this herd over the past 20 years; however, that may be more of a factor of less does in the population. Between 1993 and 2005, buck:doe ratios rarely exceeded 25:100 (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) between 2006-2016.

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, so does harvest of does. Doe/fawn licenses used to decrease the number of deer depredate crops also had major impacts at the population level, since most of the 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:doe ratios observed after 2005 was probably a reflection of less does in the population rather than an increase in number of bucks.

Buck harvest is influenced more by hunter effort, weather, season dates, harvest of crops especially corn, and private land access than a reflection of population level. Harvest in Hunt Area 124 using a general license is large enough to mask trends in Hunt Area 165 which is limited quota. Historically, general license seasons for bucks only in Hunt Area 124, have remained fairly constant ranging from 7 to 10 days (1990-present), opening Nov. 1. Hunt Area 165 has been limited quota hunting since 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 between 2007 to 2010. Buck harvest has decreased since 2010 to a low of 288 in 2014. During 1993-2004, harvest of bucks was 1.5 times greater than number of does harvested. With

increased doe/fawn licenses, the number of bucks and does harvested converged and doe harvest surpassed buck harvest in 4 of the past 10 years (2007-2016).

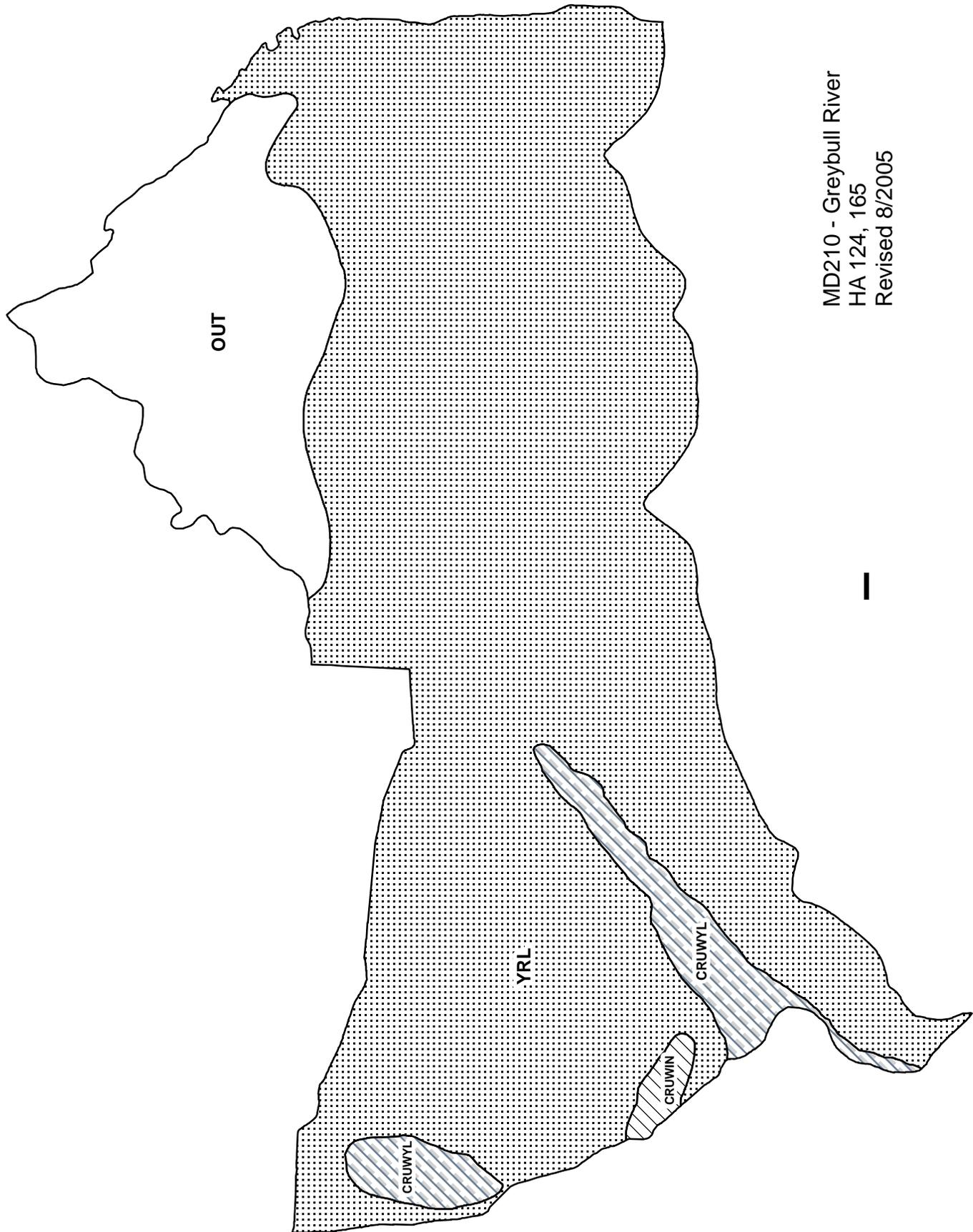
Hunters have complained about too few mature bucks in this herd, but high harvest to address crop depredation limits the “trophy” potential of this herd. Most (90-100%) of the bucks being harvested are fairly small in antler width. Likewise, 60-80% of the bucks classified are also in the smaller size classes. Antler size class is used as an index to age class.

Population

While the constant juvenile, constant adult survival model had the lowest AIC score (88), this model is too simple to adequately describe fluctuating juvenile survival rates. The time-specific juvenile, constant adult (TSJ, CA) model was chosen (AIC=175), 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 having each juvenile survival rate as a parameter. Survival constraints matched normal criteria. This 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 4,600 deer in 2016. The drastic increase estimated for 2014-15 is 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 15% above objective. Seasons will result in a medium increase in whitetail deer harvest this coming fall with an increase in Type 3 and 8 licenses (+100). In Hunt Area 165, an opening day one month earlier (Sep. 1) for the doe/fawn license valid on private land will address landowner concerns. 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. The nonresident quota was set at 300 licenses when nonresident Region X was split from Region F in 2015.



MD210 - Greybull River
HA 124, 165
Revised 8/2005

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 121-123

PREPARED BY: LESLIE SCHREIBER

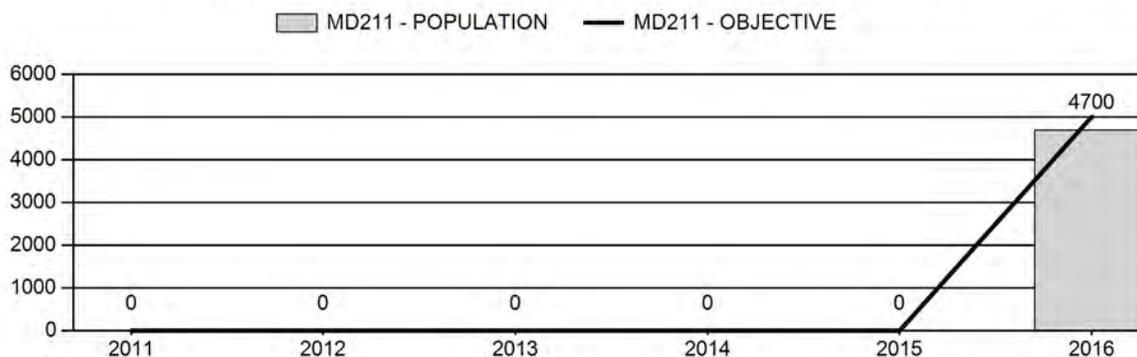
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	4,700	4,500
Harvest:	811	663	650
Hunters:	1,449	1,368	1,200
Hunter Success:	56%	48%	54 %
Active Licenses:	1,583	1,432	1,400
Active License Success:	51%	46%	46 %
Recreation Days:	6,368	5,423	5,400
Days Per Animal:	7.9	8.2	8.3
Males per 100 Females	32	36	
Juveniles per 100 Females	90	85	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-6%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/25/2017

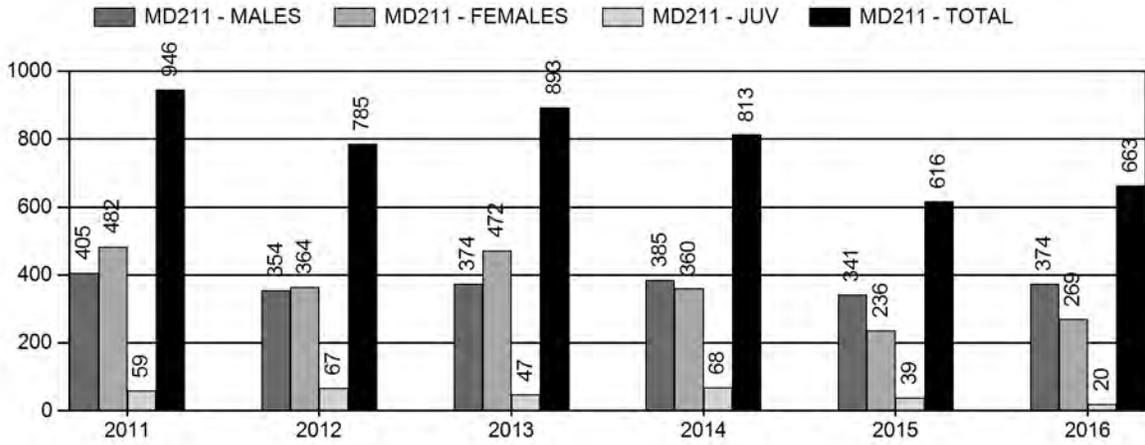
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	15%	15%
Males ≥ 1 year old:	27%	27%
Total:	14%	14%
Proposed change in post-season population:	-3%	-3%

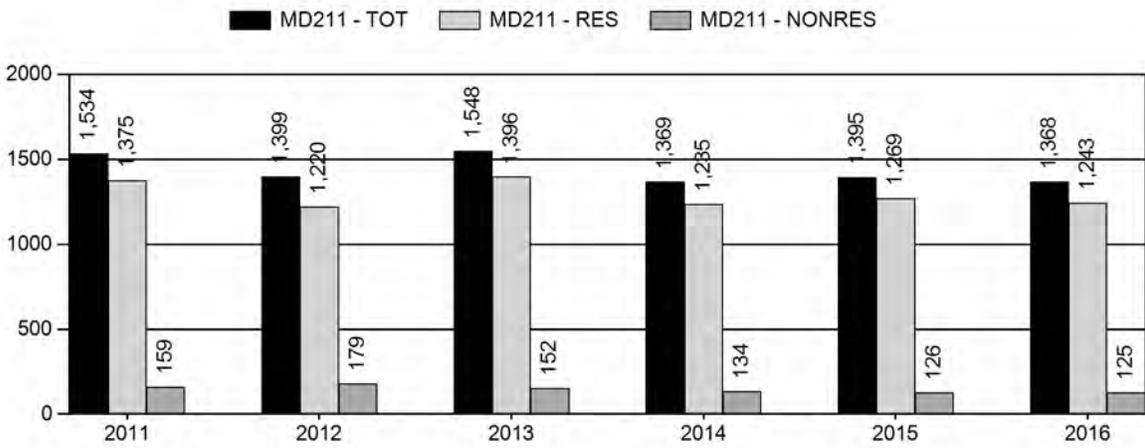
Population Size - Postseason



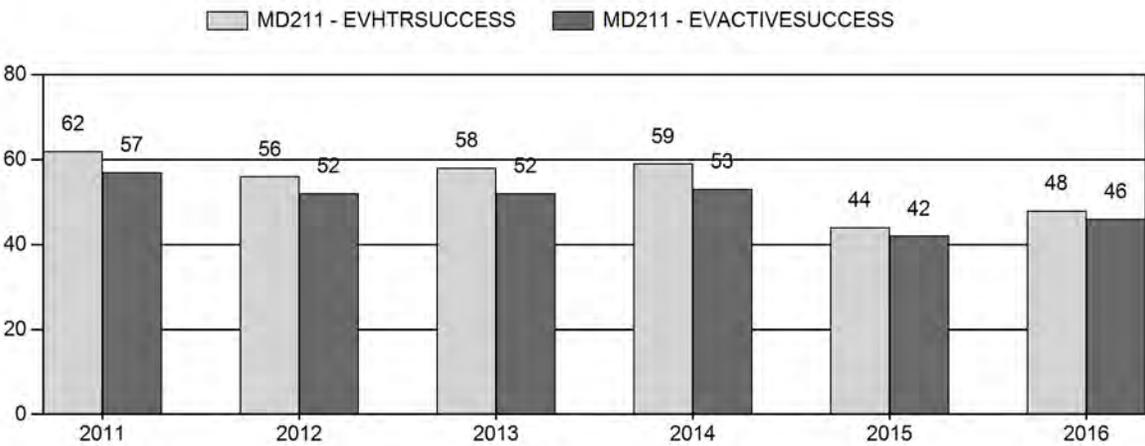
Harvest



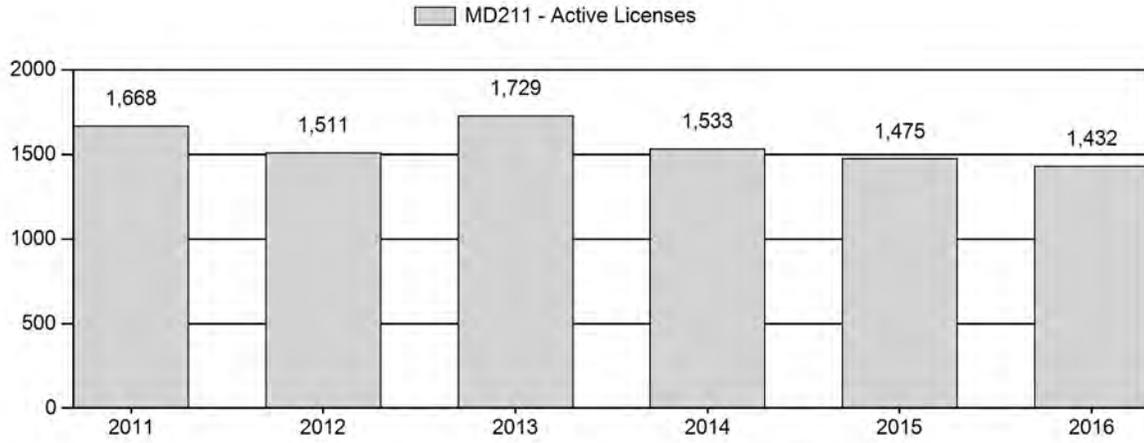
Number of Active Licenses



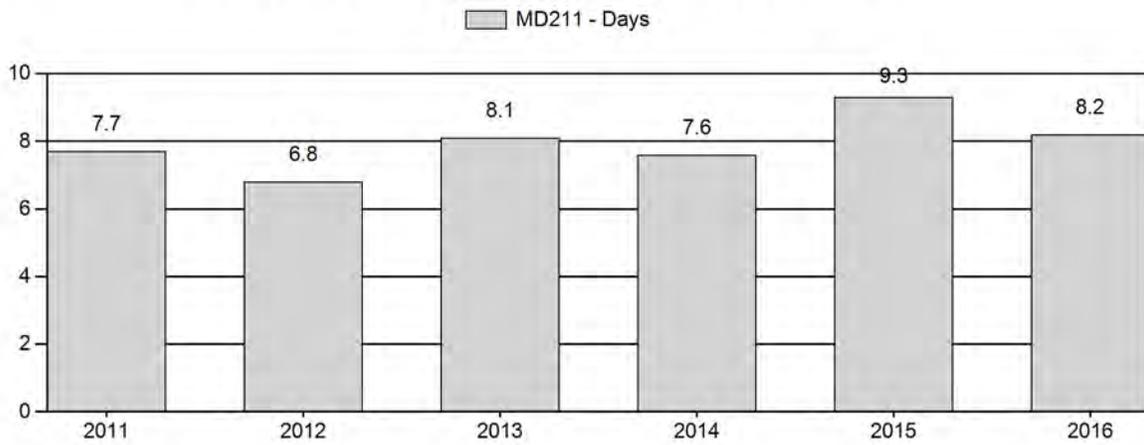
Harvest Success



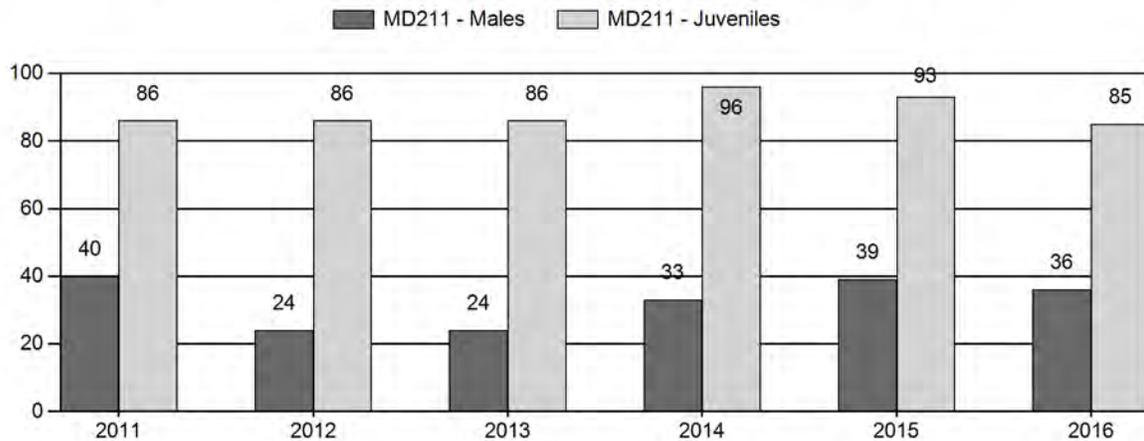
Active Licenses



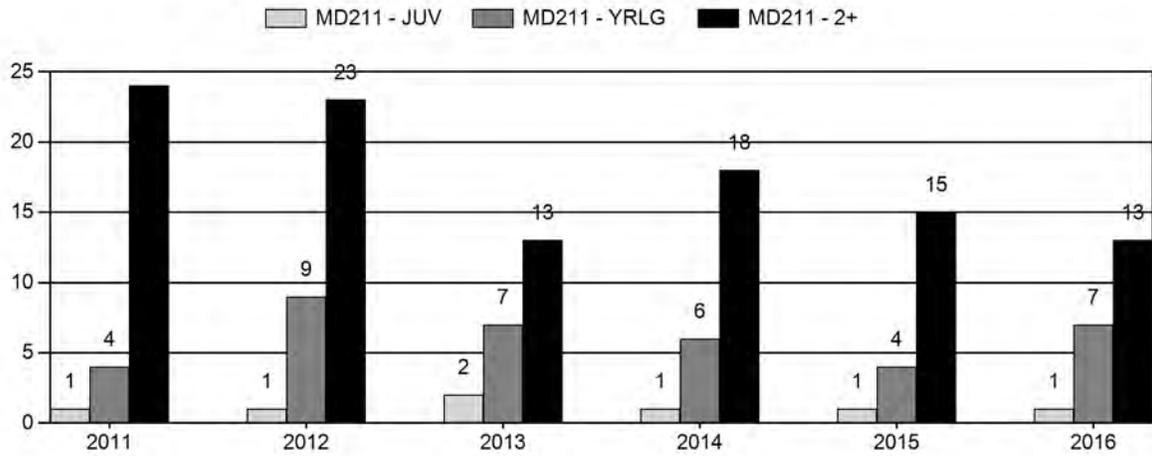
Days per Animal Harvested



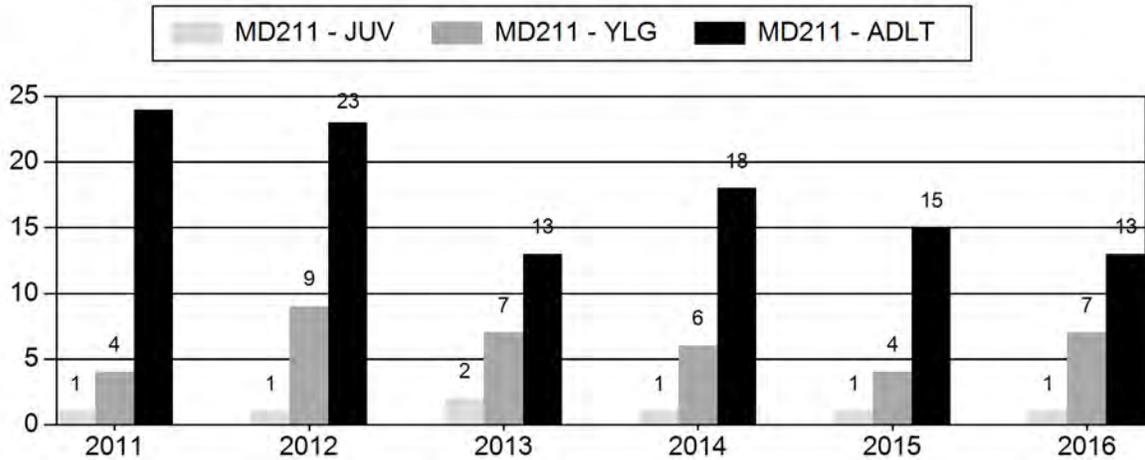
Postseason Animals per 100 Females



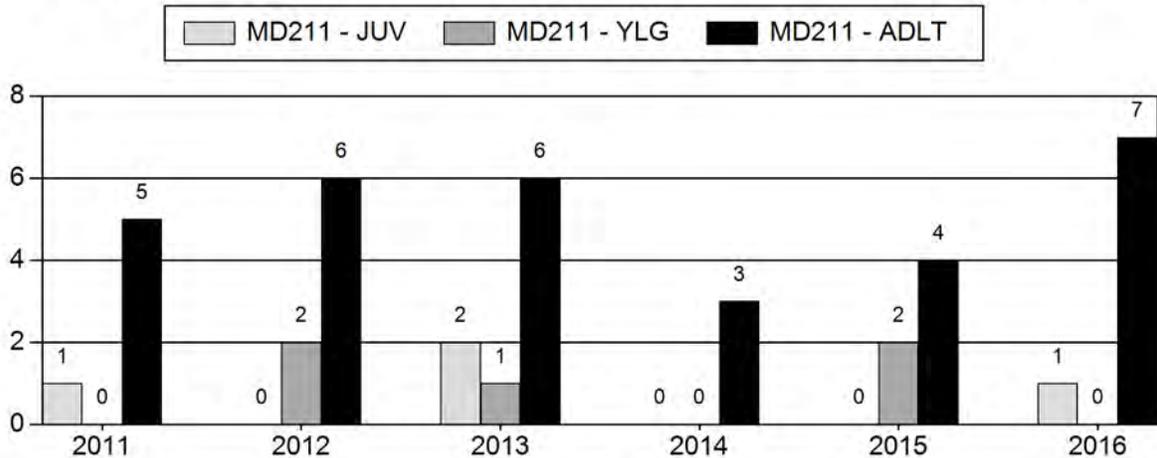
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD211 - SHOSHONE RIVER

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
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	4,700	43	39	6	0	8	96	16%	265	45%	225	38%	586	1,371	16	20	36	± 5	85	± 9	62

**2017 HUNTING SEASONS
SHOSHONE RIVER MULE DEER HERD (MD211)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
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
122		Nov. 1	Nov. 10		General	Any deer
122		Nov. 11	Nov. 30		General	Antlerless deer
122	3	Nov. 1	Nov. 30	25	Limited quota	Any white-tailed deer
122	6	Oct. 15	Nov. 30	150	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land within the Shoshone River drainage
123		Oct. 15	Oct. 31		General	Any deer
123	6	Oct. 15	Dec. 31	50	Limited quota	Doe or fawn valid on private land south of the Shoshone River

Region X Nonresident deer quota: 300

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
121, 122, 123	Sep. 1	Sep. 30

Hunt Area	License Type	Quota change from 2016
122		
Herd Unit Total		

Management Evaluation

Current Postseason Population Management Objective: 5,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~4,700

2017 Proposed Postseason Population Estimate: ~4,100

2016 Hunter Satisfaction: 61% Satisfied, 22% Neutral, 17% Dissatisfied

Herd Unit Issues

Management of the Shoshone River mule deer herd unit using a population objective was eliminated between 2001-15 due to insufficient classification sample sizes. Adequate sample

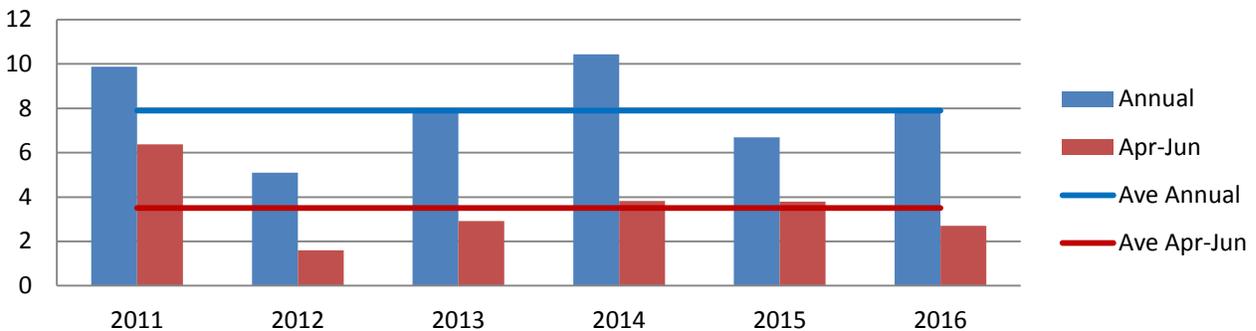
size is a key assumption to all population models. During the public herd unit review process in 2016, a population objective of 5,000 deer was set and Hunt Area 121 was transferred from the Clark’s Fork mule deer herd unit (MD 216) to the Shoshone River herd. Management issues include crop depredation, lack of “quality” bucks, and insufficient sample sizes.

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. Mining for bentonite has typically been in poor quality habitat with few to no deer. Farming has altered riparian areas on private land and actually increases amount of available forage; however, landowner tolerance is low. Thus, managing deer to decrease crop depredation is a focus.

Weather

Climate, specifically drought, has historically affected upland vegetation and water availability on public lands. Thus, deer congregate on agricultural areas in search of better forage. Drought during 2000-04 resulted in mortality of some sagebrush and probably affected herbaceous vegetation. Well-timed growing season precipitation in 2014-15 resulted in increased forage. Below average temperatures and above average snowfall occurred in December and January, but moderated in February. December precipitation levels ranked 8th highest out of the last 122 years.

MD211 Annual and Growing Season Precipitation with 30 Year Averages



Habitat

Cheatgrass has established itself on some upland sites. Habitat quality is low due to low precipitation and poor soils in most non-agricultural portions of the herd unit. There are no transects established within the herd unit to measure production and utilization of sagebrush. The majority of deer are found along river bottoms in agricultural areas.

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 district. During years 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, more deer (>400) were classified in recent years. More than 600 deer were classified between 2014-16 suggesting an increasing population. Classification effort has varied over the years. Unsworth et al. (1999) suggested that a winter fawn:doe ratio above 66:100 would result in an increasing population. Over the past 5 years, fawn:doe ratios have ranged between 85-96 fawns:100 does (average=89:100), suggesting an increasing population.

Harvest Data

Harvest statistics are closely linked to the number of doe/fawn licenses issued in response to crop damage. In 2016, hunters harvested less deer ($n=663$) compared to the 5-year average ($n=811$; 2011-15). Harvest success ranged from a low of 44% in 2015 to 62% in 2011, and mirrors license numbers over the last 6 years. In 2016 days per animal harvested (8.2) was about average (7.9; 2011-15). Doe harvest will continue to address agricultural damage.

Population

With recent sample sizes, plus the inclusion of HA 121 harvest data, the time-specific juvenile, constant adult (TSJ, CA) spreadsheet model appears functional, estimating the Shoshone River mule deer herd at about 4,700 deer, near the objective of 5,000. The population decreased from about 8,000 deer in 2009 to about 5,000 deer in 2015 after several years of high doe/fawn harvest targeting deer causing agriculture damage. While the constant juvenile, constant adult survival model had the lowest AIC score (86), the TSJ, CA model was chosen, because it biologically makes sense that fawn survival varies temporally, even though the AIC score was 163. 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. Consistent effort by personnel during classifications will be critical in keeping this population model functioning.

Management Summary

The objective of 5,000 deer provides opportunity, yet maintains acceptable levels of deer to satisfy most landowners. The General season in Hunt Areas 121-123 allows for ample harvest. Hunters have noticed decreased deer populations and have been vocal with their desires for more deer overall and some “quality” bucks. More negative hunter comments have been submitted with harvest surveys in recent years (17% dissatisfied), and more concerned hunters have been voicing opinions on low deer numbers during season-setting public meetings. However, the potential for agriculture damage limits the socially acceptable population size of this herd. When nonresident Region X was split from Region F in 2015, the nonresident quota was set at 300 hunters and seems to be working well.

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.

INPUT	
Species:	Mule Deer
Biologist:	Leslie Schreiber
Herd Unit & No.:	Shoshone R.-MD211
Model date:	02/25/17

Clear form

MODELS SUMMARY		Relative AICc	Fit	Notes
C,J,CA	Constant Juvenile & Adult Survival	86	77	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	117	97	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	163	17	

Year	Posthunt Population Est. Field Est	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective		
			Juveniles	Total Males	Females	Total				
1993			2015	1261	3181	1982	691	2720	5394	3000
1994			1243	1102	2882	1217	600	2540	4357	3000
1995			1298	830	2533	1269	445	2214	3929	3000
1996			1336	708	2260	1327	410	2110	3847	3000
1997			1433	724	2215	1424	376	2055	3855	3000
1998			1324	772	2246	1311	463	2053	3827	3000
1999			1521	996	2391	1482	482	2108	4072	3000
2000			1361	1089	2517	1309	600	2365	4274	3000
2001			1241	1115	2664	1233	584	2527	4343	3000
2002			1427	1067	2772	1424	501	2753	4678	3000
2003			1807	1080	3057	1757	604	2834	5195	3000
2004			1710	1128	3084	1675	559	2832	5066	3000
2005			2474	1244	3239	2442	810	3110	6362	3000
2006			2226	1809	3828	2220	1213	3706	7139	3000
2007			1988	1684	3871	1978	1011	3767	6756	3000
2008			2559	1597	4016	2514	814	3836	7164	3000
2009			2929	1846	4497	2908	1160	4121	8189	3000
2010			2613	1745	4343	2519	1013	3838	7369	3000
2011			2815	1518	3998	2728	732	3170	6630	3000
2012			2353	1324	3464	2256	744	2634	5634	3000
2013			1839	1217	2875	1768	556	2050	4375	3000
2014			2078	1284	2595	1946	666	2030	4643	3000
2015			1982	1306	2504	1923	797	2067	4788	3000
2016			1785	1405	2520	1752	802	2105	4659	3000
2017			1730	1142	2285	1697	548	1873	4118	3000
2018										5000
2019										5000
2020										5000
2021										5000
2022										5000
2023										5000
2024										5000
2025										5000

Survival and Initial Population Estimates

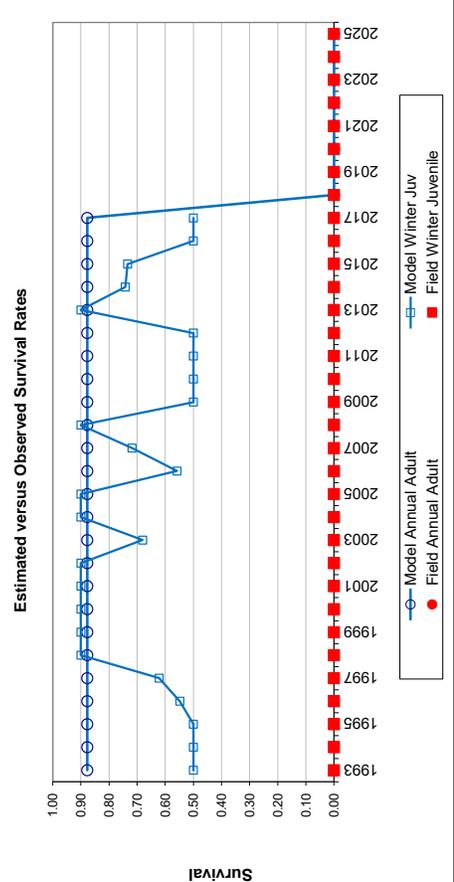
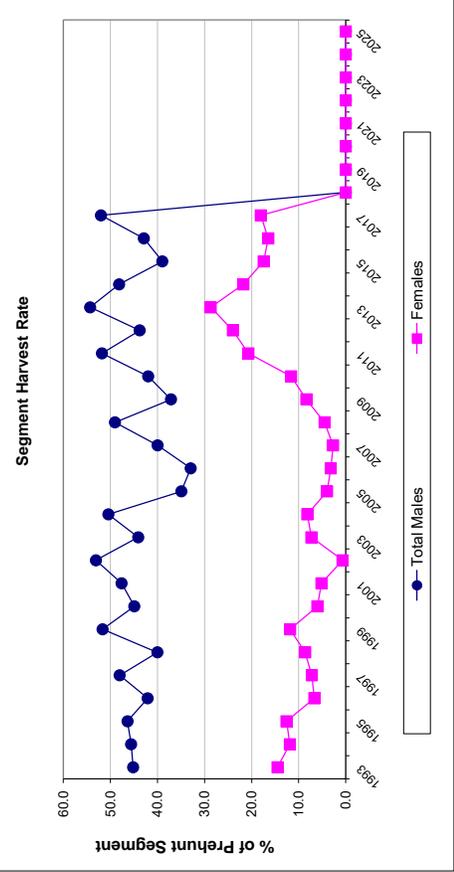
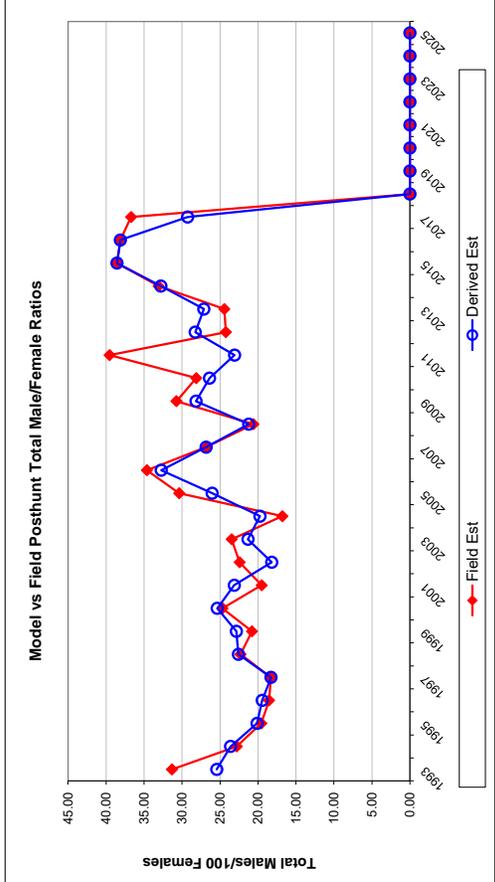
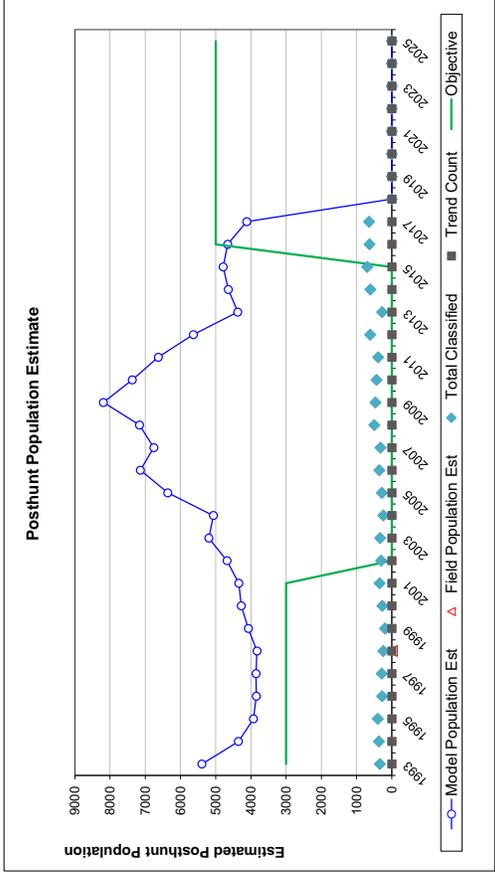
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.50		0.88	
1994	0.50		0.88	
1995	0.50		0.88	
1996	0.55		0.88	
1997	0.62		0.88	
1998	0.90		0.88	
1999	0.90		0.88	
2000	0.90		0.88	
2001	0.90		0.88	
2002	0.90		0.88	
2003	0.68		0.88	
2004	0.90		0.88	
2005	0.90		0.88	
2006	0.56		0.88	
2007	0.72		0.88	
2008	0.90		0.88	
2009	0.50		0.88	
2010	0.50		0.88	
2011	0.50		0.88	
2012	0.50		0.88	
2013	0.90		0.88	
2014	0.74		0.88	
2015	0.73		0.88	
2016	0.50		0.88	
2017	0.50		0.88	
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.878
Initial Total Male Pop/10,000 =	0.069
Initial Female Pop/10,000 =	0.272

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

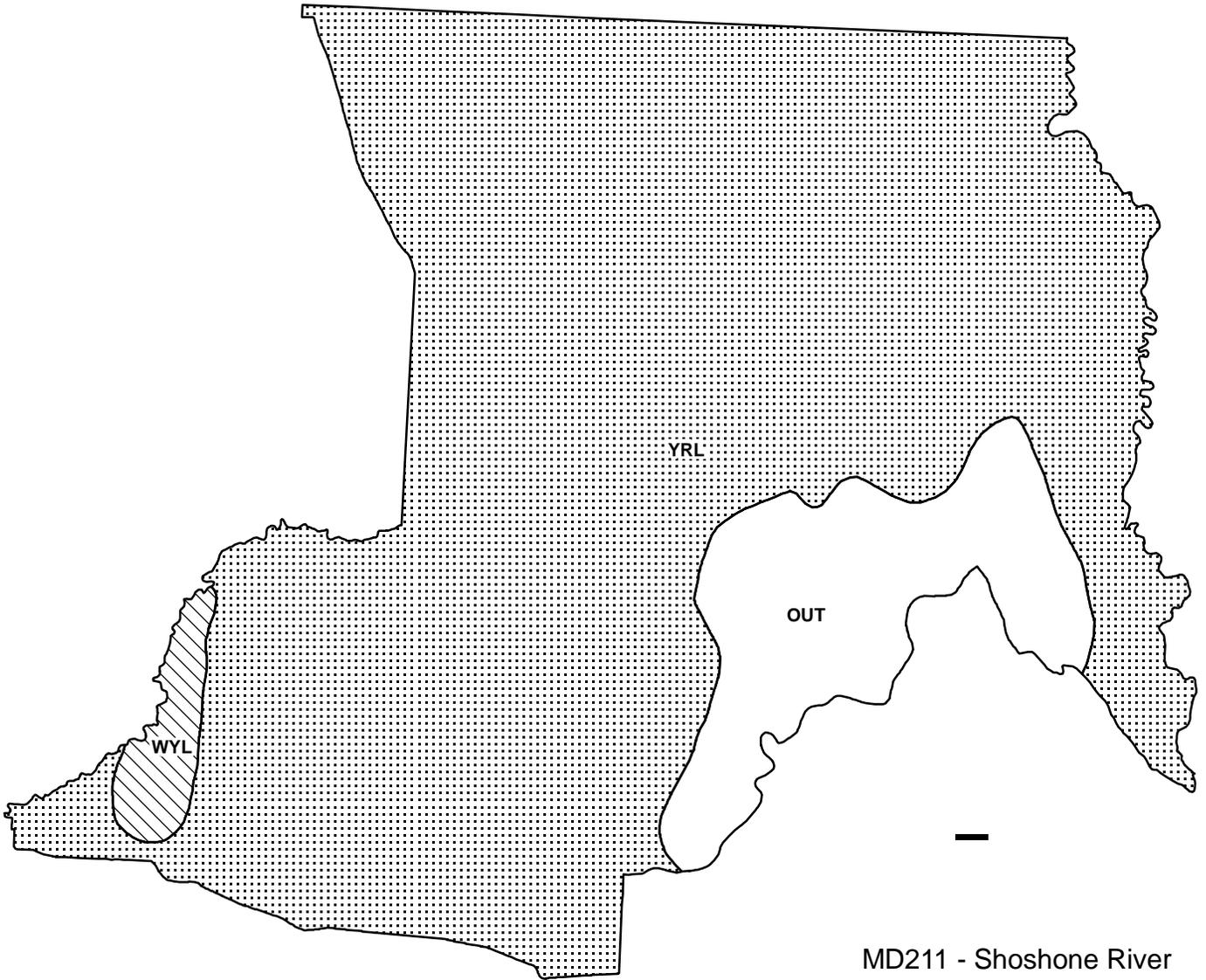
Year	Classification Counts						Harvest					
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females
1993		72.89	8.71	25.42	31.33	4.98	30	518	419	967	45.2	14.5
1994		47.91	5.74	23.61	22.79	3.61	24	457	311	792	45.6	11.9
1995		57.33	6.33	20.12	19.56	3.22	26	350	290	666	46.4	12.6
1996		62.91	8.24	19.44	18.54	3.82	8	271	137	416	42.1	6.7
1997		69.28	8.76	18.29	18.30	3.76	8	316	145	469	48.0	7.2
1998		63.85	8.97	22.58	22.31	4.58	12	281	176	469	40.0	8.6
1999		70.30	10.89	22.84	20.79	4.99	35	468	257	760	51.7	11.8
2000		55.33	7.57	25.37	24.67	4.53	48	445	338	631	44.9	6.0
2001		48.78	5.95	23.12	19.51	3.37	8	483	125	616	47.6	5.2
2002		51.72	6.72	18.19	22.41	3.97	3	515	17	535	53.1	0.7
2003		62.01	7.49	21.31	23.46	4.02	45	433	203	681	44.1	7.3
2004		59.12	8.29	19.74	16.79	3.78	32	517	229	778	50.4	8.2
2005		78.52	10.19	26.03	30.37	5.42	29	395	117	541	34.9	4.0
2006		59.89	7.25	32.74	34.62	5.06	6	542	111	659	32.9	3.2
2007		52.51	6.69	26.83	26.82	4.36	9	612	95	716	40.0	2.7
2008		65.54	6.37	21.22	20.60	3.05	41	712	164	917	49.0	4.5
2009		70.56	7.22	28.16	30.74	4.17	19	623	342	984	37.1	8.4
2010		65.63	6.97	26.38	28.13	4.01	86	666	459	1211	42.0	11.6
2011		86.05	9.65	23.08	39.53	5.66	79	715	752	1546	51.8	20.7
2012		85.67	7.37	28.26	24.23	3.21	88	527	755	1370	43.8	24.0
2013		86.26	11.07	27.13	24.43	4.82	64	601	750	1415	54.3	28.7
2014		95.86	8.40	32.78	33.08	4.07	120	562	513	1195	48.2	21.7
2015		93.02	7.72	38.56	38.54	4.21	53	463	397	913	39.0	17.4
2016		83.22	7.30	38.11	38.11	4.29	30	548	377	955	42.9	16.5
2017		90.62	7.79	29.26	36.69	4.20	30	540	375	945	52.0	18.1
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



Comments:

END



MD211 - Shoshone River
HA 122, 123
Revised 8/2005

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD212 - OWL CREEK/MEETEETSE

HUNT AREAS: 116-120

PREPARED BY: BART KROGER

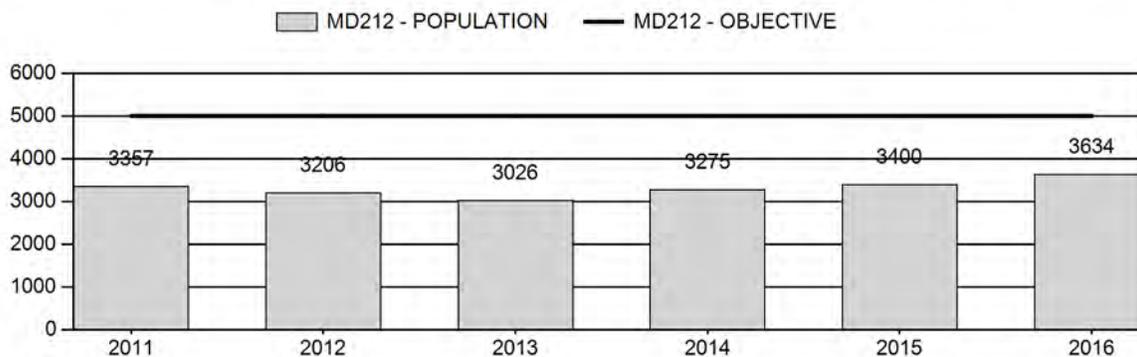
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,253	3,634	3,811
Harvest:	248	205	300
Hunters:	333	273	400
Hunter Success:	74%	75%	75 %
Active Licenses:	360	285	410
Active License Success:	69%	72%	73 %
Recreation Days:	1,491	1,277	1,500
Days Per Animal:	6.0	6.2	5
Males per 100 Females	39	43	
Juveniles per 100 Females	68	70	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-27.3%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/17/2017

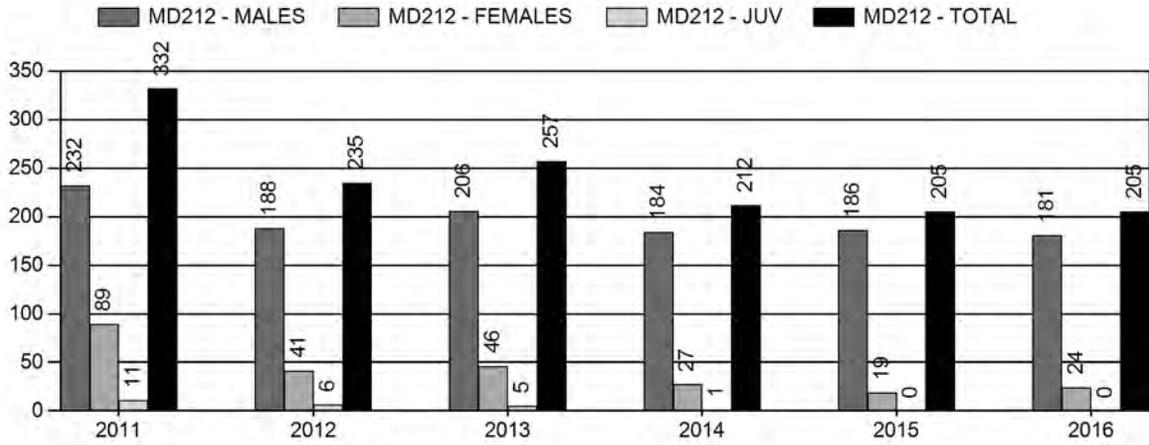
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2%	4%
Males ≥ 1 year old:	21%	26%
Total:	5%	7%
Proposed change in post-season population:	+7%	+5%

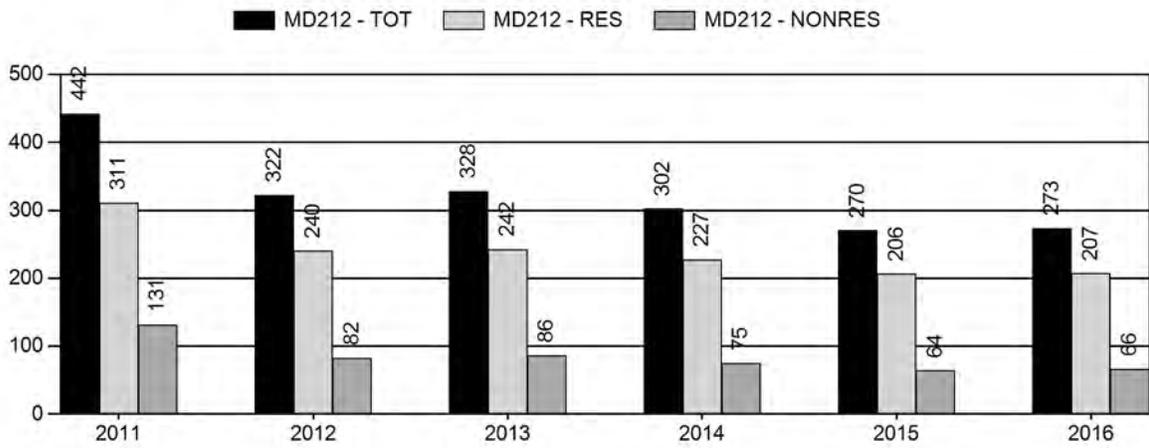
Population Size - Postseason



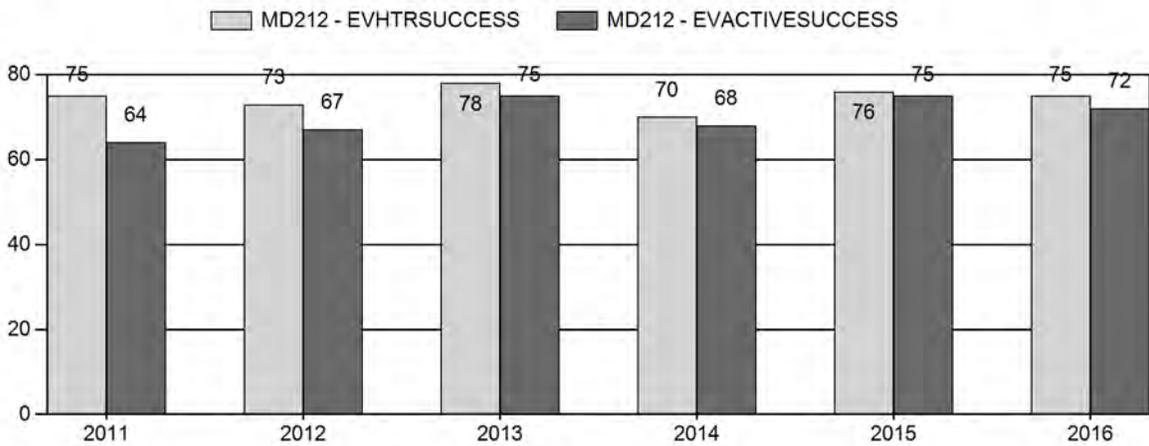
Harvest



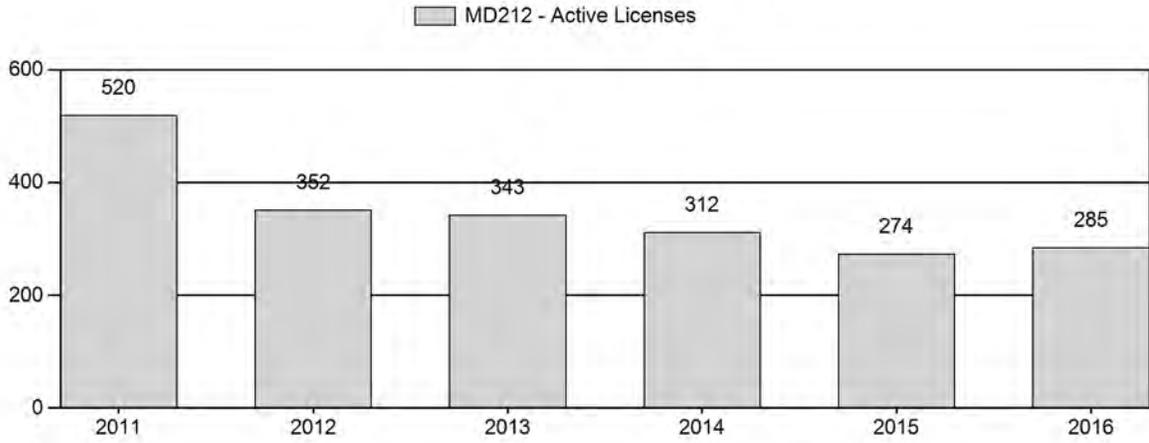
Number of Active Licenses



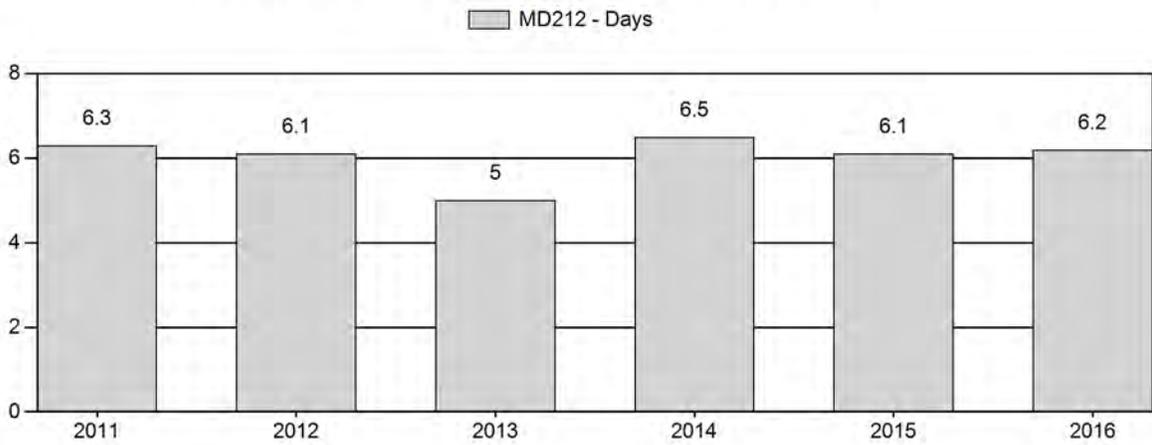
Harvest Success



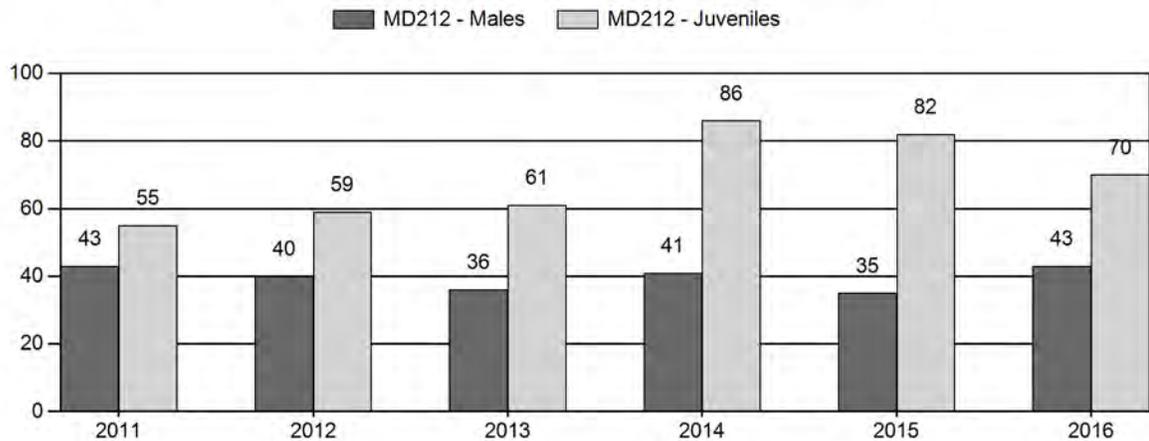
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 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 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	3,634	100	126	90	27	0	343	20%	789	47%	554	33%	1,686	1,141	13	31	43	± 3	70	± 4	49

**2017 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		Limited quota	Any white-tailed deer
119	1	Nov. 1	Nov. 15	50	Limited quota	Antlered deer
119	2	Oct. 1	Oct. 15	75	Limited quota	Antlered deer
119, 120	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
119	6	Sep. 1	Oct. 15	75	Limited quota	Doe or fawn valid on or within one-half (1/2) mile of irrigated land
120	1	Nov. 1	Nov. 15	75	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 2016
119	2	+25
119	6	+25
120	1	+25
HU Total	1,2	+50
	6	+25

Management Evaluation

Current Postseason Population Management Objective: 5,000

Management Strategy: Special

2016 Postseason Population Estimate: 3600

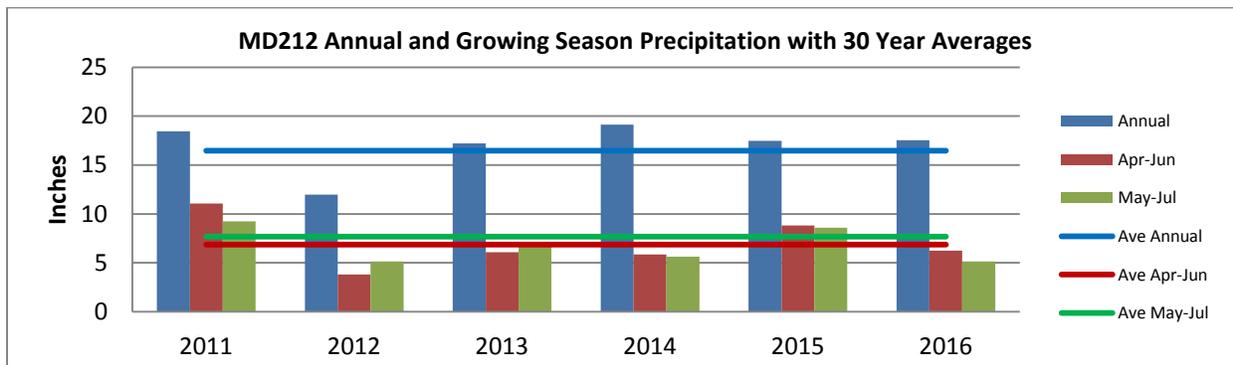
2017 Proposed Postseason Population Estimate: 3800

2016 Hunter Satisfaction: 75% satisfied, 14% neutral, 11% 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



Precipitation: Annual precipitation from October 2015 thru September 2016 was higher than the 30 year average. Precipitation during the growing season (April thru June) was lower, and the growing season precipitation for high elevation SSF seasonal ranges (May - July) was markedly lower than the 30 year average.

Winter Severity: The 2016-2017 winter was semi-severe with below normal temperatures and above normal snowfall and snow depths. Data from the Sunshine 3 NE climate station (10 miles southwest of Meeteetse) showed the average temperature in December and January was 10.3 and 7.24 degrees respectively lower than normal. Snowfall at this station for the period November-February was 189% of normal, however since then significant snow melt has occurred and temperatures have moderated.

Habitat

Between 2011 and 2013, winter snow conditions and summer drought conditions caused above normal mortality in this herd, keeping this population below objective. Annual precipitation has been higher than average for the last four years, which has contributed to record fawn production and an increasing population. The Department initiated a 5-year rapid habitat assessment of the herd unit that will primarily focus on the condition of aspen, sagebrush and riparian communities

being encroached upon by conifers. Several aspen stands were assessed during summer 2015 and 2016, and a 120-acre treatment to remove conifers from aspen stands was initiated in fall 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 ratios 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 from 1407 deer in 2007 to 601 deer in and 2014. However, in 2015 the number of deer classified increased to nearly 1400, and in 2016 to nearly 1700 deer. Three years of record high fawn production since 2014 has helped increase deer numbers. The past 3-year average fawn ratio is 80:100, whereas prior to 2014 the annual average was around 60:100. Buck ratios have remained favorable in recent years, with a 6-year average of 40 bucks per 100 does.

Harvest Data

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 process. Doe/fawn licenses have and will continue to be used for damage issues when warranted. Season structures have been designed to help increase this deer population, particularly those deer utilizing native ranges. License quotas, hunter numbers and total harvest have declined by over 100% over the past 10 years due to declines in deer numbers. The biggest declines have been mostly due to Type 6 and 7 license quota reductions. Type 1 hunter success and hunter effort continues to remain favorable at around 70% and 6.2 days/animal.

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 (n=21) of the model vs. field male ratios. The 2016 population estimate seems reasonable, and reflects field personnel perceptions, harvest and classification sample size trends, which indicate a slight increasing population. Because of this, the model is considered a good representation of the herd.

Management Summary

Overwhelming public support during the 2014 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 and 118 appear adequate, with most of these Hunt Areas having license quota reductions in recent years. However, areas 119 and 120 are showing improving deer numbers, and therefore will see slight increases in Type 1 and 2 license quotas. The Type 6 quota in area 119 will increase by 25 licenses to further address potential damage issues and increasing deer numbers. The projected 2017 harvest is roughly 300 deer, nearly 100 more than in 2016. Hopefully this deer herd will continue showing improving trends.

INPUT	
Species:	Mule Deer
Biologist:	Bart Kroger
Herd Unit & No.:	Owl Cr/Meeteetse, MD212
Model date:	02/17/17

Clear form

MODELS SUMMARY		Fit	Relative AICc	Notes
C,J,CA	Constant Juvenile & Adult Survival	31	40	<input type="checkbox"/> C,J,CA Model
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	21	61	<input checked="" type="checkbox"/> SC,J,SCA Mod
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	1	134	<input type="checkbox"/> TS,J,CA Model

Check best model to create report

Year	Posthunt Population Est. Field Est	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective	
			Juveniles	Total Males	Females	Total			
1993			1110	1390	2810	860	2463	4411	8000
1994			1206	1096	2447	651	2326	4165	8000
1995			954	953	2366	574	2235	3747	8000
1996			1397	803	2204	544	2128	4061	8000
1997			1208	931	2267	597	2179	3984	8000
1998			1504	914	2249	623	2160	4280	8000
1999			1550	1035	2331	652	2226	4421	8000
2000			1338	1075	2402	744	2315	4389	8000
2001			1126	1080	2405	757	2285	4158	8000
2002			1309	1018	2307	639	2125	4064	8000
2003			1368	981	2234	623	2066	4041	8000
2004			1328	986	2202	640	2048	4009	8000
2005			1276	989	2176	663	2015	3944	8000
2006			1230	990	2130	640	1946	3810	8000
2007			1185	956	2058	657	1900	3727	8000
2008			1250	952	2001	654	1846	3732	8000
2009			1131	971	1976	695	1839	3660	8000
2010			1227	969	1934	706	1828	3743	8000
2011			970	928	1825	673	1727	3357	8000
2012			970	825	1669	619	1624	3206	8000
2013			936	784	1588	557	1538	3026	8000
2014			1274	725	1509	523	1480	3275	5000
2015			1260	800	1566	596	1545	3400	5000
2016			1197	931	1731	732	1705	3634	5000
2017			1271	1025	1845	761	1779	3811	5000
2018									5000
2019									5000
2020									5000
2021									5000
2022									5000
2023									5000
2024									5000
2025									5000

Survival and Initial Population Estimates

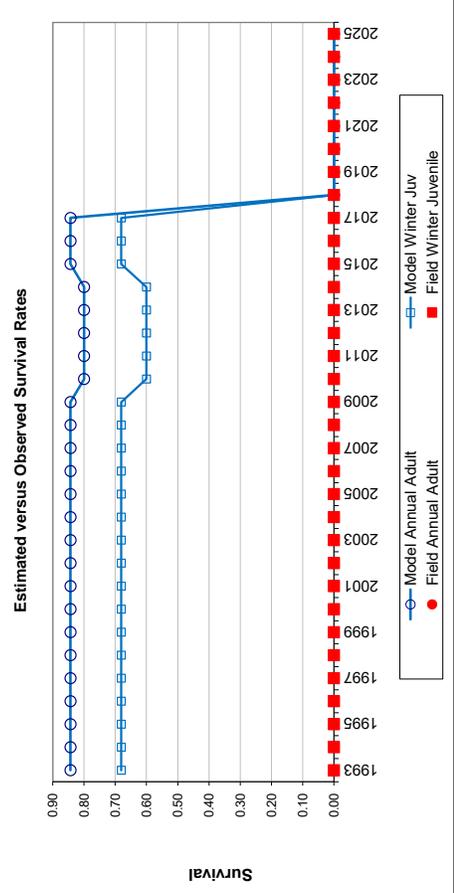
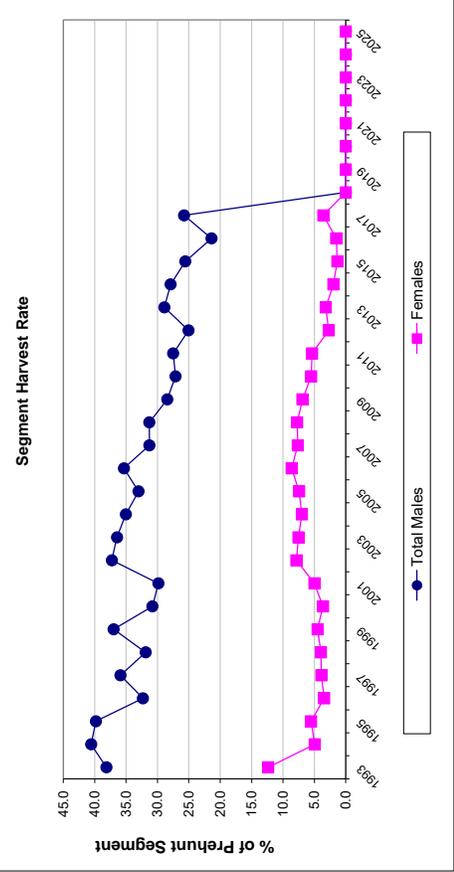
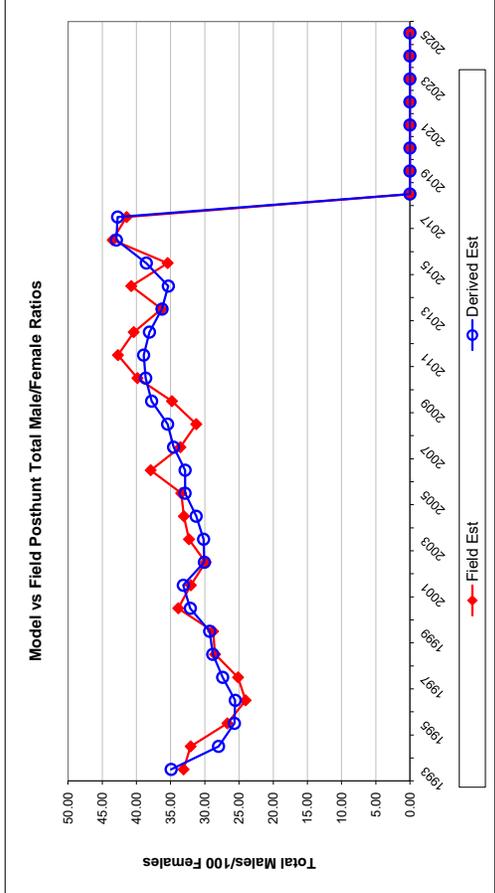
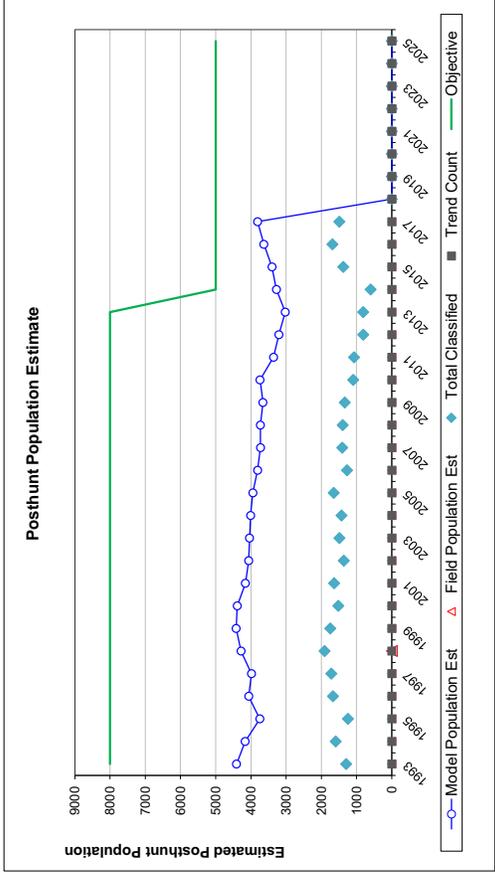
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.68		0.84	
1994	0.68		0.84	
1995	0.68		0.84	
1996	0.68		0.84	
1997	0.68		0.84	
1998	0.68		0.84	
1999	0.68		0.84	
2000	0.68		0.84	
2001	0.68		0.84	
2002	0.68		0.84	
2003	0.68		0.84	
2004	0.68		0.84	
2005	0.68		0.84	
2006	0.68		0.84	
2007	0.68		0.84	
2008	0.68		0.84	
2009	0.68		0.84	
2010	0.60		0.80	
2011	0.60		0.80	
2012	0.60		0.80	
2013	0.60		0.80	
2014	0.60		0.80	
2015	0.68		0.84	
2016	0.68		0.84	
2017	0.68		0.84	
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cals
Juvenile Survival =	0.681
Adult Survival =	0.843
Initial Total Male Pop/10,000 =	0.086
Initial Female Pop/10,000 =	0.246

MODEL ASSUMPTIONS
Sex Ratio (% Males) = 50%
Wounding Loss (total males) = 10%
Wounding Loss (females) = 10%
Wounding Loss (juveniles) = 10%

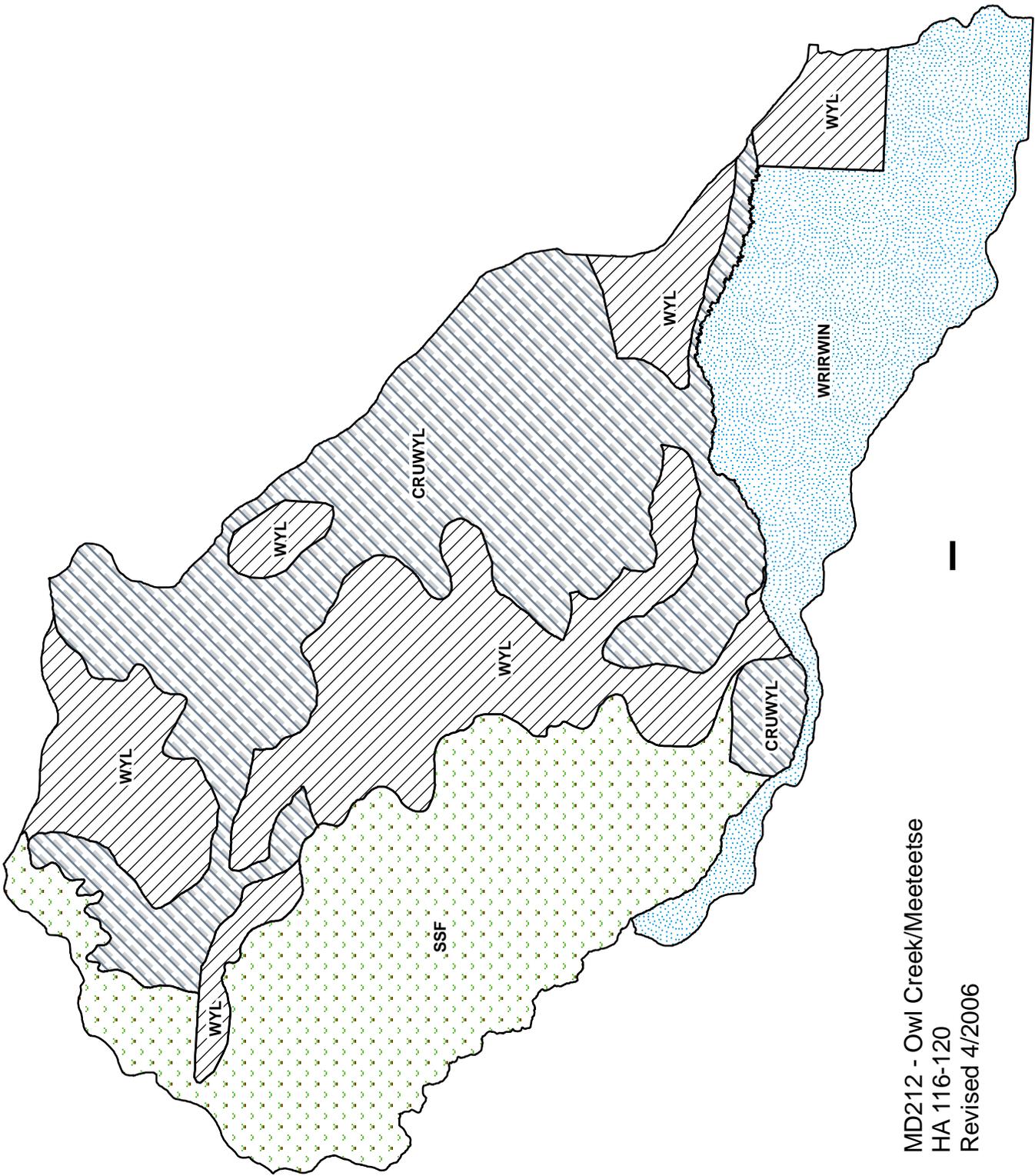
Year	Classification Counts										Harvest		
	Juvenile/Female Ratio		Total Male/Female Ratio		Juv	Males	Females	Total Harvest	Total Males	Females	Segment Harvest Rate (% of Total Males)	Females	
	Derived Est	Field Est	Field SE	Derived Est									Field Est
1993		44.19	2.95	34.92	33.11	20	482	316	818	38.1	12.4		
1994		51.03	2.98	27.99	32.07	17	321	110	531	40.6	4.9		
1995		42.01	2.84	25.67	26.69	14	345	119	478	39.8	5.5		
1996		65.31	3.50	25.54	24.04	7	236	69	312	32.3	3.4		
1997		55.42	3.01	27.39	25.13	0	304	80	384	35.9	3.9		
1998		69.33	3.49	28.84	28.50	6	285	81	352	31.9	4.0		
1999		69.27	3.65	29.29	28.80	7	348	95	450	37.0	4.5		
2000		57.43	3.37	32.12	33.88	8	301	79	388	30.8	3.6		
2001		48.84	2.83	33.14	32.04	9	293	109	411	29.9	5.0		
2002		61.15	3.72	30.06	29.87	9	345	165	519	37.3	7.9		
2003		65.43	3.79	30.18	32.31	15	325	153	493	36.4	7.5		
2004		64.45	3.83	31.26	33.06	7	314	140	461	35.0	7.0		
2005		62.86	3.49	32.89	33.45	9	297	147	453	33.0	7.4		
2006		62.88	4.02	32.88	37.91	6	318	167	491	35.3	8.6		
2007		61.58	3.71	34.57	33.56	13	272	143	428	31.3	7.6		
2008		66.76	3.98	35.44	31.25	16	271	141	428	31.3	7.8		
2009		61.23	3.81	37.77	34.80	4	251	124	379	28.4	6.9		
2010		66.17	4.55	38.65	39.85	16	239	97	352	27.1	5.5		
2011		55.45	3.99	38.95	42.70	11	232	89	332	27.5	5.4		
2012		59.36	4.83	38.10	40.39	6	188	41	235	25.1	2.7		
2013		60.53	4.85	36.25	36.32	5	206	46	257	28.9	3.2		
2014		86.04	7.77	35.33	40.75	1	184	27	212	27.9	2.0		
2015		81.57	4.83	38.55	35.43	0	186	19	205	25.6	1.3		
2016		70.22	3.89	42.93	43.47	0	181	24	205	21.4	1.5		
2017		71.43	4.18	42.75	41.43	0	240	60	300	25.8	3.6		
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



MD212 - Owl Creek/Meeteetse
 HA 116-120
 Revised 4/2006

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD215 - UPPER SHOSHONE

HUNT AREAS: 110-115

PREPARED BY: Doug McWhirter/Tony Mong

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	9,360	10,800	10,000
Harvest:	899	1,008	800
Hunters:	1,681	1,821	1,500
Hunter Success:	53%	55%	53%
Active Licenses:	1,756	1,847	1,500
Active License Success:	51%	55%	53%
Recreation Days:	8,624	9,525	8,500
Days Per Animal:	9.6	9.4	10.6
Males per 100 Females	24	29	
Juveniles per 100 Females	62	57	

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

Management Strategy: Recreational

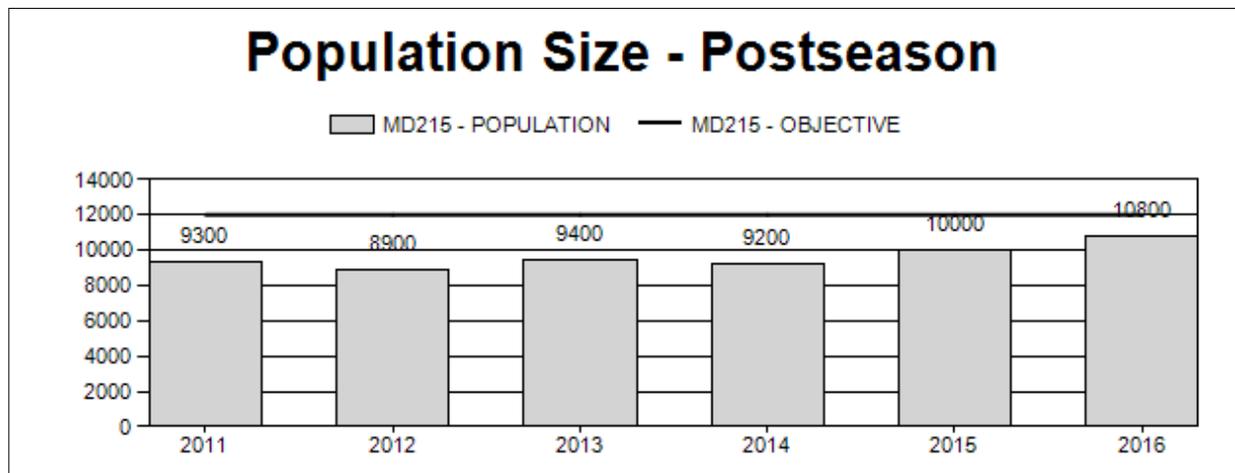
Percent population is above (+) or below (-) objective: -10%

Number of years population has been + or - objective in recent trend: 10

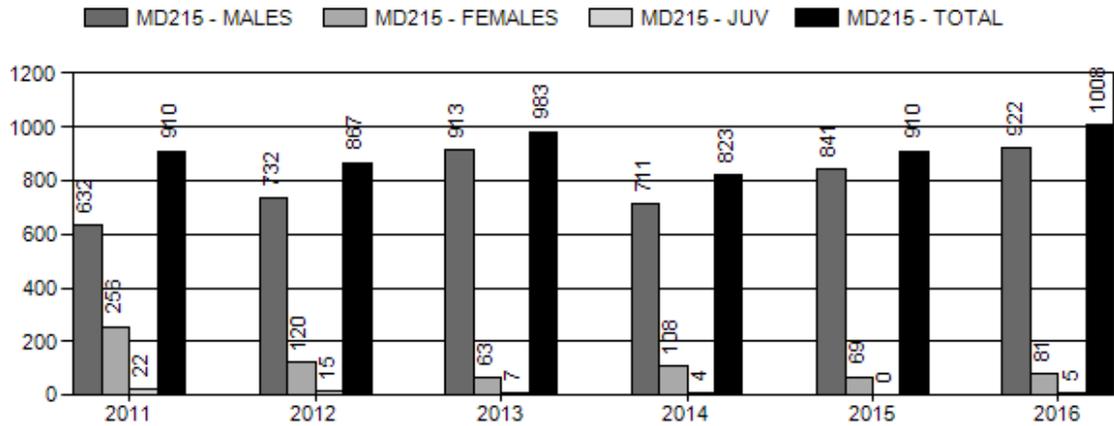
Model Date: 3/7/2017

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

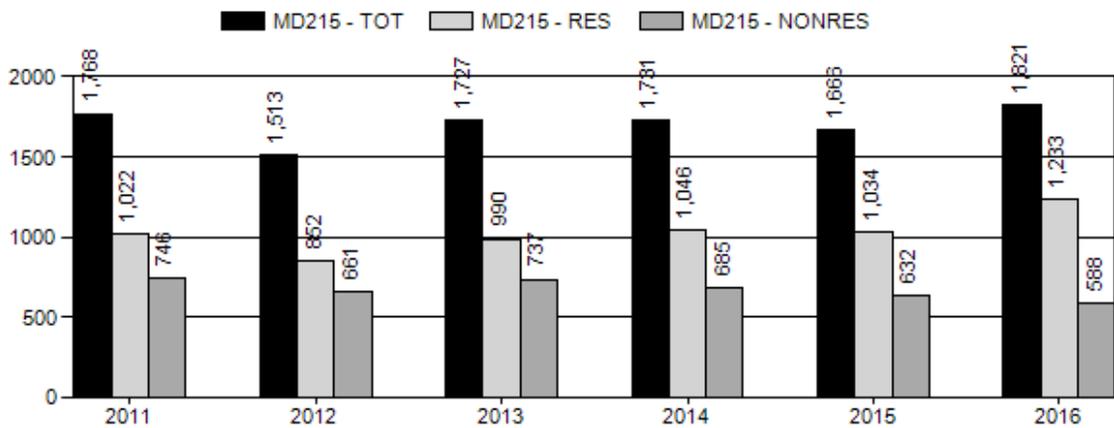
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.7%	1.5%
Males ≥ 1 year old:	45.4%	41%
Total:	8.7%	10%
Proposed change in post-season population:	+1.5%	-5%



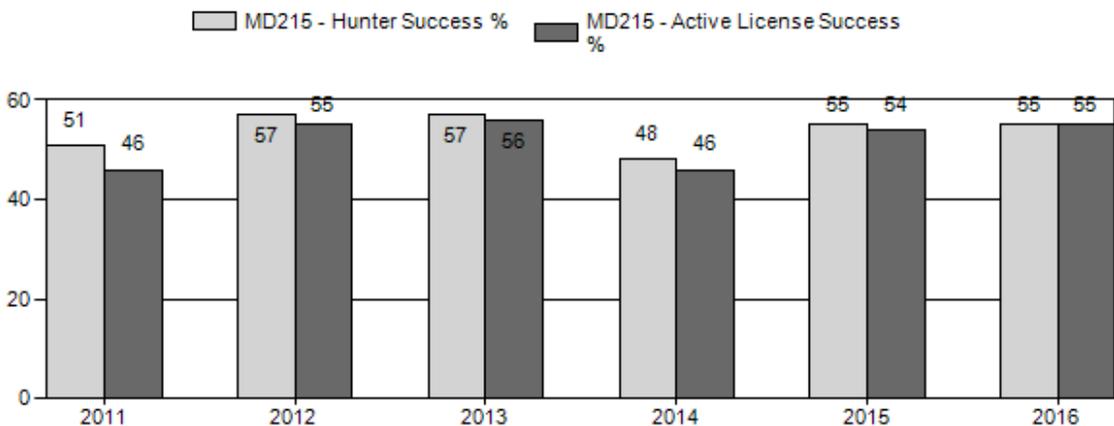
Harvest



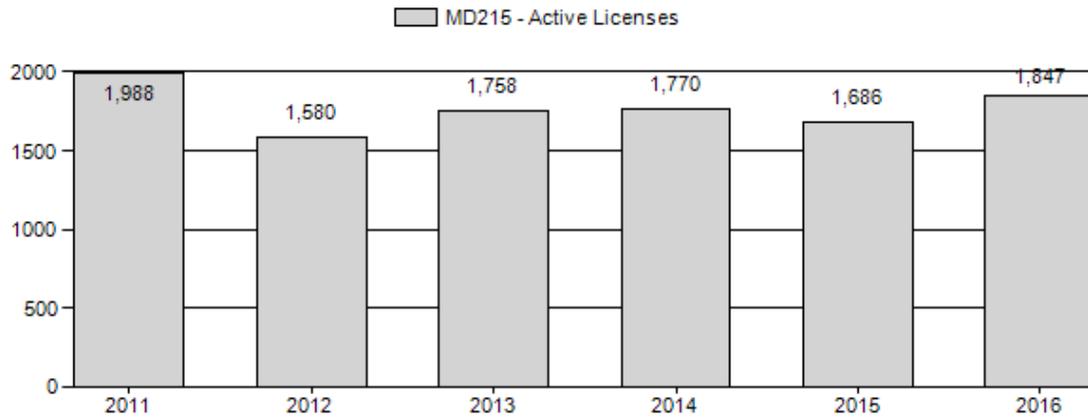
Number of Active Licenses



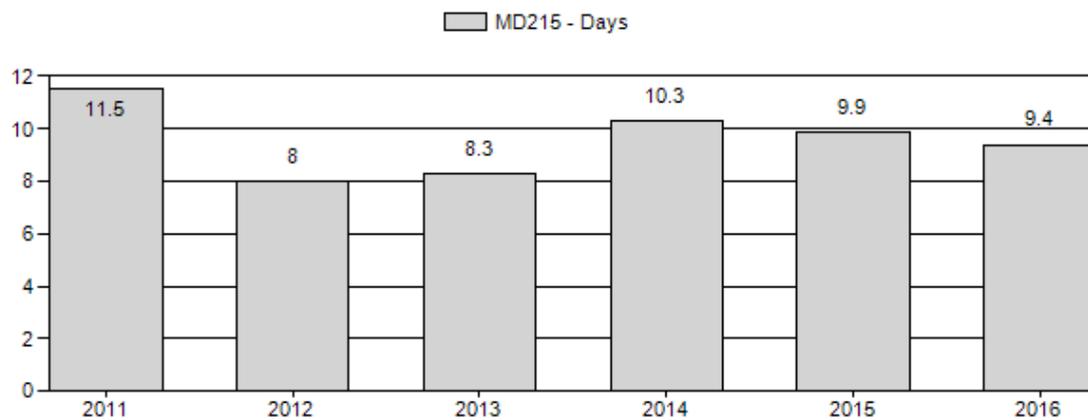
Harvest Success



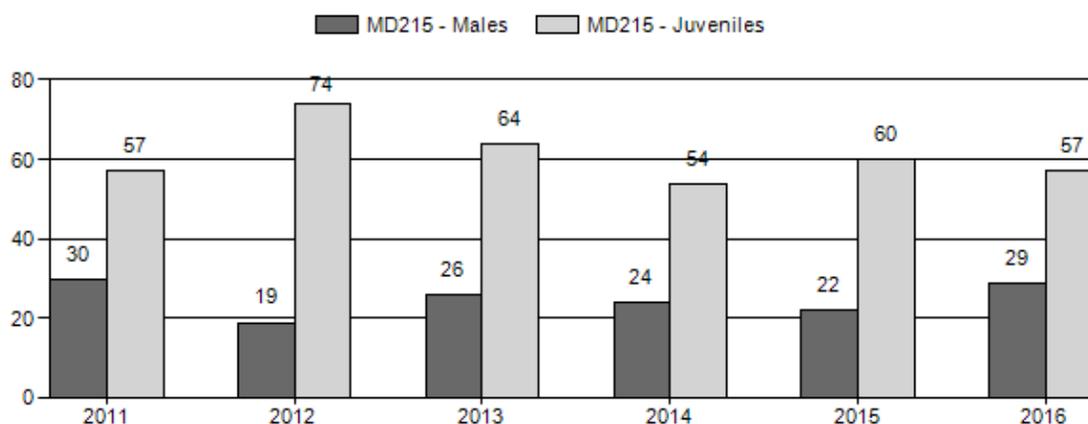
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD215 - UPPER SHOSHONE

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Cls		Males to 100 Females				Young to		
		Ylg	Cls 1	Cls 2	Cls 3	UnCls	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Int	±	100 Fem	Conf Int	±	100 Adult
2011	9,300	118	0	0	0	205	323	16%	1,071	53%	613	31%	2,007	1,071	11	19	30	± 2	57	± 3	44		
2012	8,900	79	0	0	0	139	218	10%	1,165	52%	863	38%	2,246	1,148	7	12	19	± 2	74	± 4	62		
2013	9,400	127	0	0	0	117	244	14%	946	53%	607	34%	1,797	1,148	13	12	26	± 2	64	± 4	51		
2014	9,200	98	101	20	4	0	223	13%	945	56%	512	30%	1,680	1,010	10	13	24	± 2	54	± 3	44		
2015	10,000	76	143	43	1	0	263	12%	1,200	55%	722	33%	2,185	1,020	6	16	22	± 2	60	± 3	49		
2016	10,800	189	163	40	6	0	398	16%	1,365	54%	782	31%	2,545	0	14	15	29	± 2	57	± 3	44		

**2017 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	150	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 Quota: 750

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 2016
Region F	Gen	-200
112, 113	8	+50
Herd Unit Total	8	+50
	Region F	-200

Management Evaluation

Postseason Population Management Objective: 12,000

Management Strategy: Recreational

2016 Postseason Population Estimate: 10,800

2017 Proposed Postseason Population Estimate: 10,000

2016 Hunter Satisfaction: 69% Satisfied, 17% Neutral, 14% Dissatisfied

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. Historically, these deer exhibit mediocre productivity, as evidenced by the 20-year (1995-2014) average fawn:doe ratio of 61:100 does (range 42:100 – 74:100). Buck harvest is influenced by fall weather and the timing of migration that can move deer to 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 that have averaged 26:100 does over the past 20 years (1995-2014), but have ranged from 14:100 to 35:100. Since this herd is mostly migratory deer, we find it difficult to manage for stable buck:doe ratios. Low deer harvest early in the hunting season is typical. For example, over the last 25 years buck harvest in Area 115 (September 10 opening date) has averaged 31 bucks harvested per year. Our check station records indicate that 75% of deer harvest occurs during the November. 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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures.

Habitat

See Cody region appendix.

Field Data

Observed post-season buck ratios were 29:100 in 2016, an increase compared to the 2015 ratio of 22:100. The observed fawn ratio in 2016 (57:100 does) has not improved in the last few years, which affects overall growth of the herd. If the fawn production improves in future years, the abundance of bucks will gradually increase with time, especially with future mild winters that would delay the migration during the November portion of the hunting season. Since 2002, all adult bucks observed during postseason classification surveys are broken into antler width classes. In 2016, Class I bucks (those less than 20 inches) made up 78% of adult bucks, class II bucks (those 20-25 inches) made up 19%, and class III (those greater than 25 inches) made up 3%.

Harvest Data

A total of 1821 hunters harvested 922 bucks in 2016, 86 antlerless deer for a total of 1008 deer and 55% success. This is an increase compared to 2015 where 1,666 hunters harvested 841 bucks, 69 antlerless, and 910 total deer. The 2016 buck harvest was above the 10-year average of 818 bucks. Antlerless deer harvest was reduced beginning in 2012, and since then antlerless deer harvested has been minimal. Hunter numbers have remained relatively consistent over the last 10 years (2006-2014 avg. 1,876 hunters), and traditionally harbors a large proportion of non-resident hunters, averaging 42.6% over the 2006-2014 period (range 38.9% - 49.9%). In 2016, the percentage of non-resident hunters was 32%.

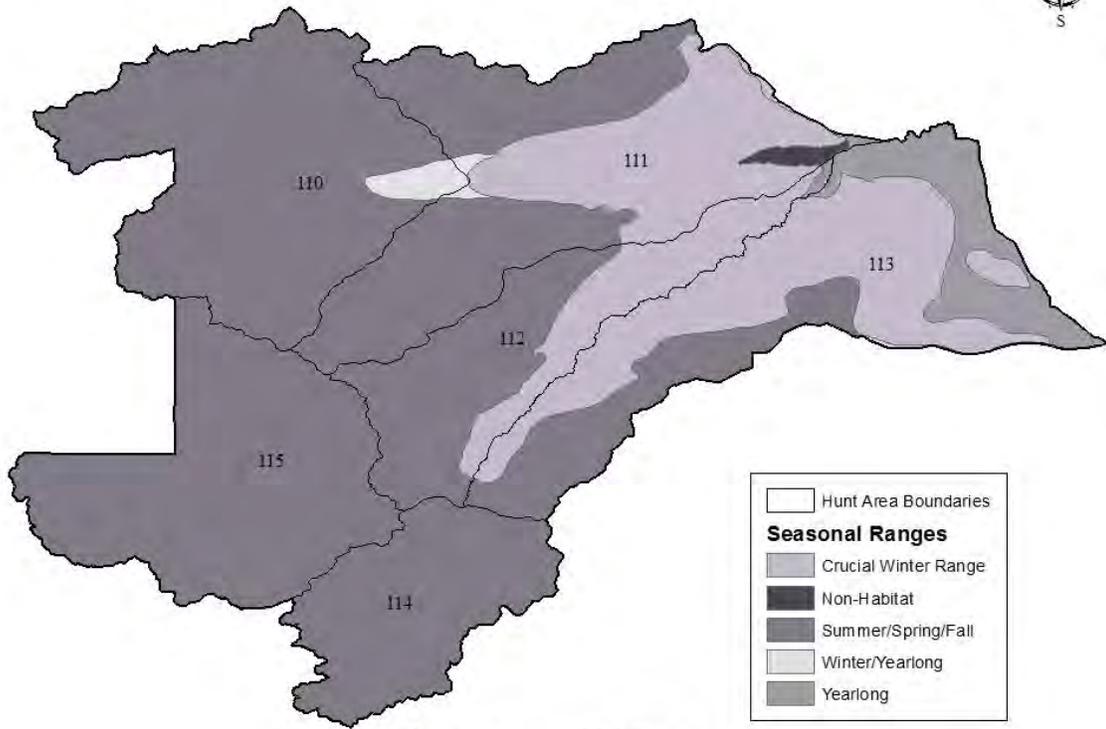
Population

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJ,CA) spreadsheet model was chosen to use for the post season population estimate of this herd, and was updated this year. The postseason population estimate for 2016 is about 10,000 deer and is higher mainly due to the changing of the model, compared to the old model which estimates about 1500 deer less. The herd is still below the objective, and with the extremely difficult winter we expect high overwinter mortality.

Management Summary

Conservative antlerless seasons were implemented in 2012 to allow deer numbers to grow and move the population towards objective; however, we have not seen the population respond to this conservative approach. Because we have not seen the population response to conservative seasons over the last 4 seasons coupled with the severe winter we experienced in 2016/17 doe/fawn harvest will be restricted as much as possible in 2017.

MD215 Upper Shoshone Mule Deer Herd Seasonal Ranges



0 5 10 20 Miles

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD216 - CLARKS FORK

HUNT AREAS: 105-106, 109

PREPARED BY: Doug McWhirter/Tony Mong

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,980	3,900	3,700
Harvest:	842	680	340
Hunters:	1,577	1,365	800
Hunter Success:	53%	50%	42%
Active Licenses:	1,699	1,425	800
Active License Success:	50%	48%	42%
Recreation Days:	7,974	5,902	3,500
Days Per Animal:	9.5	8.7	10.3
Males per 100 Females	28	32	
Juveniles per 100 Females	58	60	

Population Objective (± 20%) : 5000 (4000 - 6000)

Management Strategy: Recreational

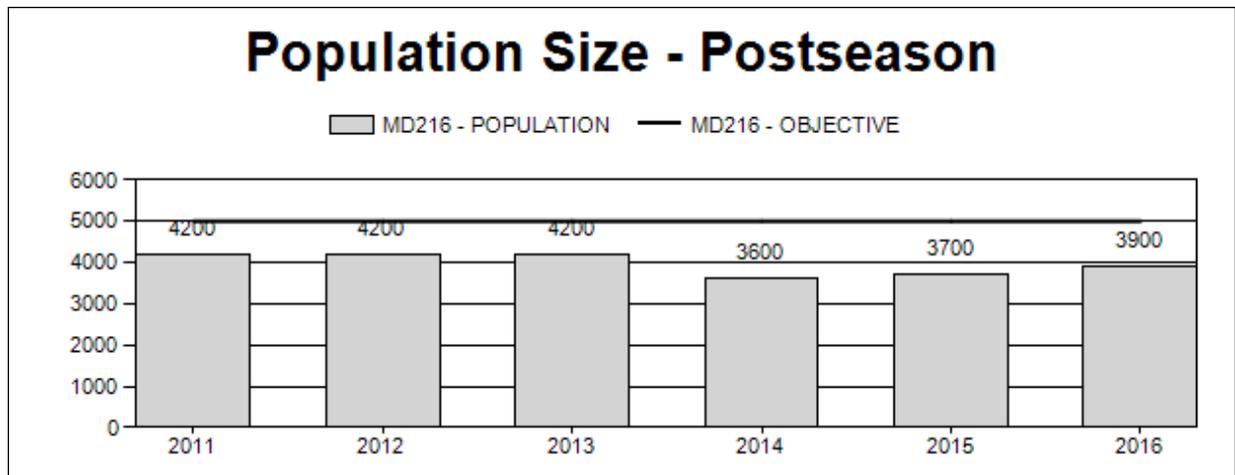
Percent population is above (+) or below (-) objective: -22%

Number of years population has been + or - objective in recent trend: 10

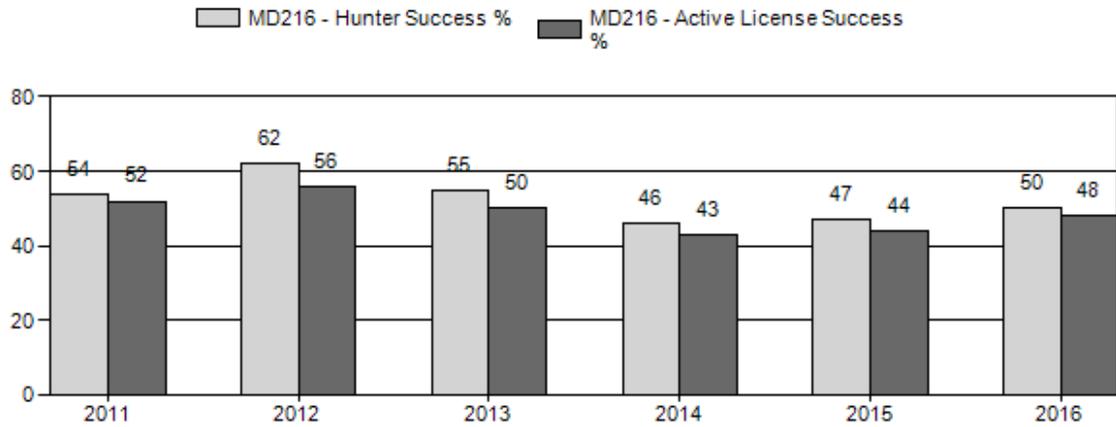
Model Date: 3/7/2017

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

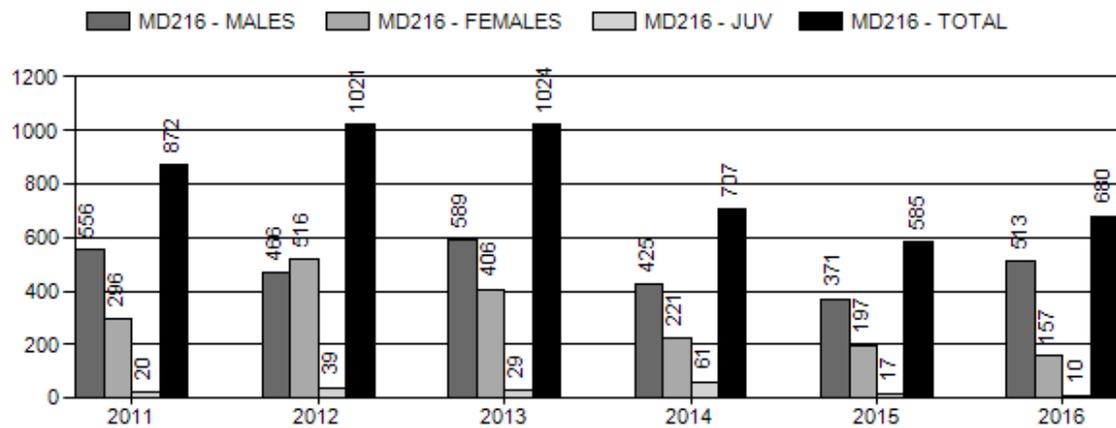
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	3.0%	2.5%
Males ≥ 1 year old:	34.9%	37%
Total:	8.2%	8%
Proposed change in post-season population:	0.0%	-4.5%



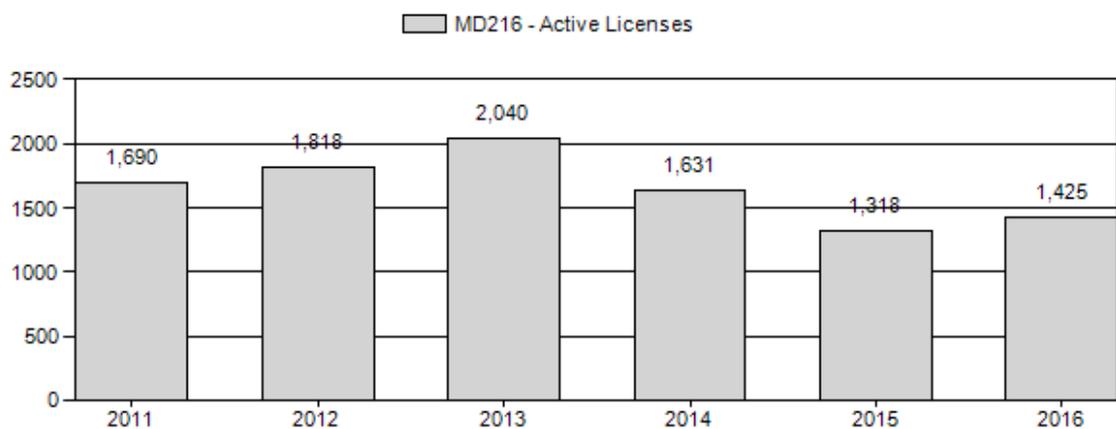
Harvest Success



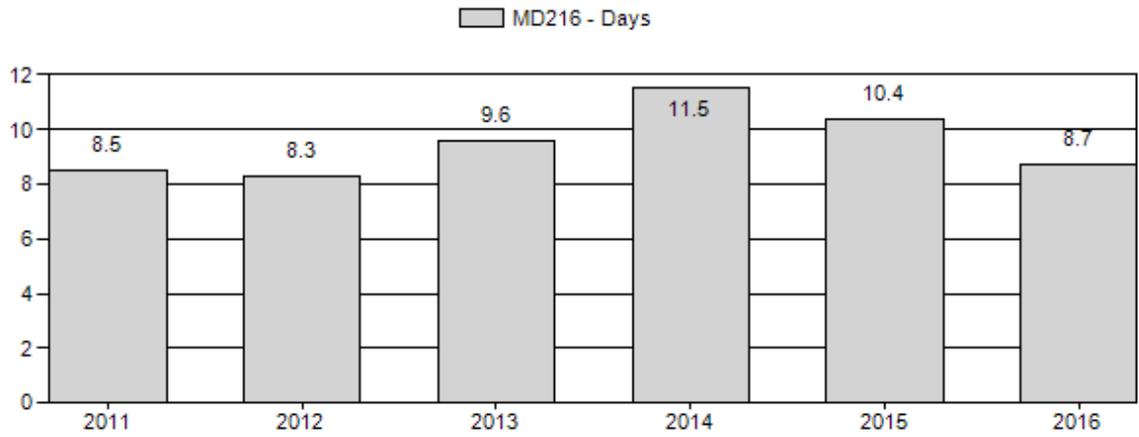
Harvest



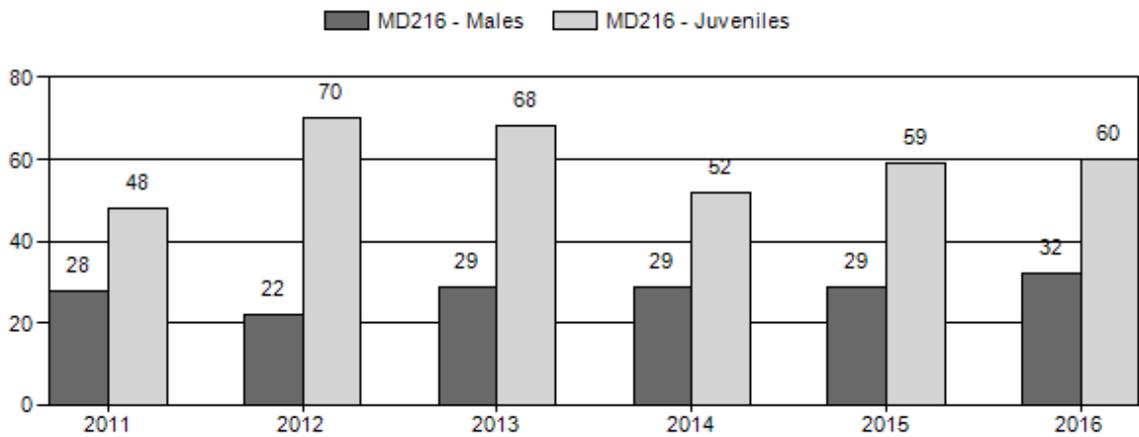
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD216 - CLARKS FORK

Year	Post Pop	MALES							FEMALES		ES		Tot		Cls		Males to 100 Females				Young to			
		Ylg	Cls 1	Cls 2	Cls 3	UnCls	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Int	±	100 Fem	±	Conf Int	±	100 Adult
2011	4,200	52	0	0	0	133	185	16%	656	57%	315	27%	1,156	1,051	8	20	28	± 3	48	± 4	37			
2012	4,200	23	0	0	0	62	85	11%	386	52%	270	36%	741	947	6	16	22	± 3	70	± 6	57			
2013	4,200	71	0	0	0	95	166	15%	576	51%	390	34%	1,132	1,083	12	16	29	± 3	68	± 5	53			
2014	3,600	48	63	39	11	0	161	16%	550	55%	288	29%	999	893	9	21	29	± 3	52	± 4	41			
2015	3,700	40	68	42	18	0	168	15%	580	53%	344	32%	1,092	800	7	22	29	± 3	59	± 4	46			
2016	3,900	59	71	33	16	0	179	17%	564	52%	336	31%	1,079	0	10	21	32	± 3	60	± 4	45			

**2017 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

Region F Nonresident Quota: 750

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

Hunt Area	License Type	Quota change from 2016
Region F	Gen	-200
Herd Unit Total	Region F	-200

Management Evaluation

Postseason Population Management Objective: 5,000

Management Strategy: Recreational

2016 Postseason Population Estimate: 3,900

2017 Proposed Postseason Population Estimate: 3,700

2016 Hunter Satisfaction: 65% Satisfied, 21% Neutral, 13% Dissatisfied

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.

Weather

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures. We anticipate higher than normal overwinter mortality.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Fawn production in 2016 was average at 60:100 does, and compares to the most recent 10-year (2005-2014) average fawn:doe ratio of 59:100 does (range 48:100 – 70:100). The buck ratio was 32:100 in 2016, up compared to the 29:100 in 2015. Buck ratios averaged 26 bucks:100 does over the 2005-2014 period (range 19:100 – 30:100), but recently have trended higher (28 bucks:100 does) since removing the General License November season (moved opening date into October) in HAs 106 and portions of HA105.

Harvest Data

Since removing the General License November season in Area 106 and portions of Area 105, buck harvest has declined, 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 316 hunters in 2016. Current management in HAs 105, 106, and 109 maintaining buck:doe ratios at acceptable levels.

Population

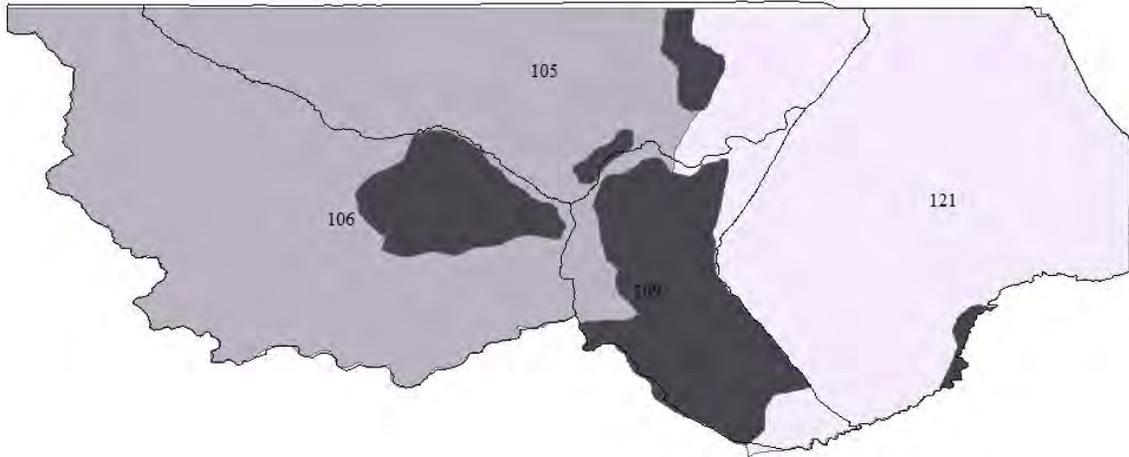
We constructed a new “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model for the post season population estimate of this herd. We think the population trend appears to be reasonable. The postseason population estimate for 2016 is about 3,900 deer, or 30% below the population objective of 5,000 deer.

Management Summary

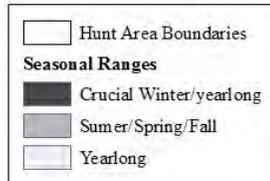
We will continue managing for a under objective migratory deer, which consists of conservative buck seasons, with no antlerless harvest, while continuing to address specific damage situations in Hunt Area 105. The 2017 seasons should result in post-season 2017 population near 3,700 deer, while maintaining improved buck ratios in Hunt Areas 105, 106, and 109.

Past problems of the very different management strategies of migratory deer in Hunt Area 105, 106, and 109 and farm ground deer of Hunt Area 121 were corrected when Hunt Area 121 was moved into the Shoshone River Herd, which contains similar agricultural habitats. We moved the HA during the 2014 objective review.

MD216 Clark's Fork Mule Deer Herd Seasonal Ranges



0 5 10 20 Miles



2016 - JCR Evaluation Form

SPECIES: White tailed Deer

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

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

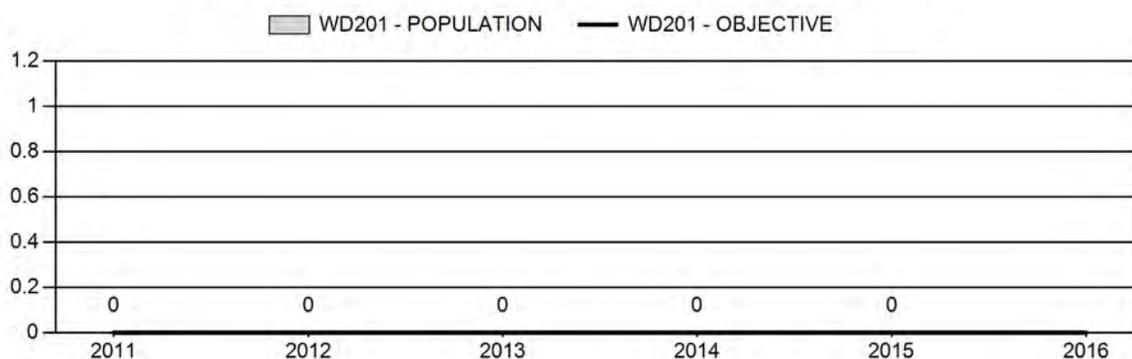
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	2,059	1,984	2,000
Hunters:	4,417	4,328	4,400
Hunter Success:	47%	46%	45%
Active Licenses:	5,344	5,109	5,200
Active License Success:	39%	39%	38%
Recreation Days:	20,835	17,952	19,000
Days Per Animal:	10.1	9.0	9.5
Males per 100 Females	32	0	
Juveniles per 100 Females	72	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:	None

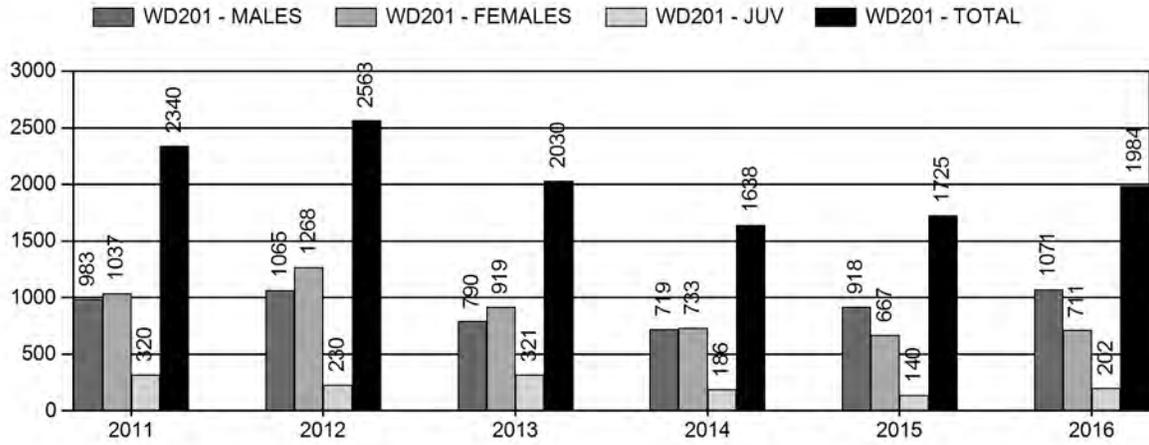
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	na%	0%
Males \geq 1 year old:	na%	0%
Total:	na%	0%
Proposed change in post-season population:	na%	0%

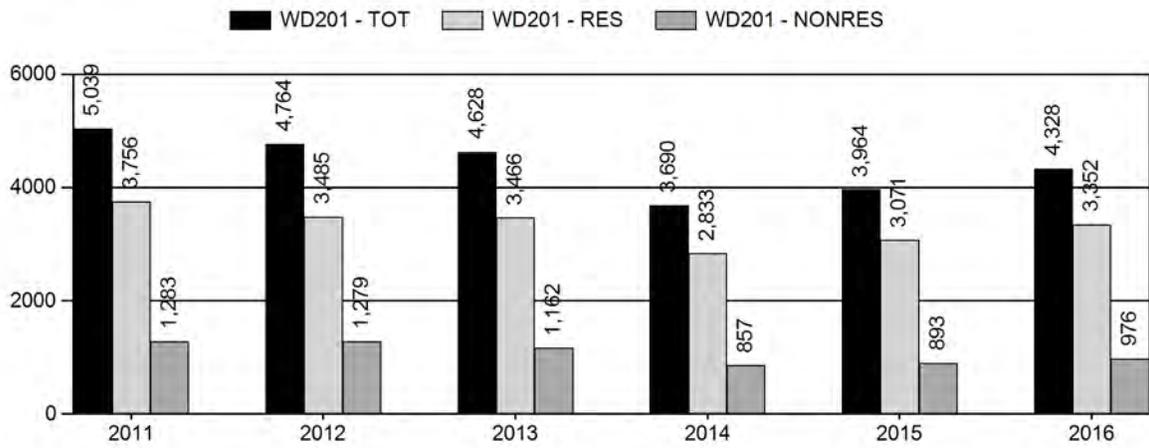
Population Size - Postseason



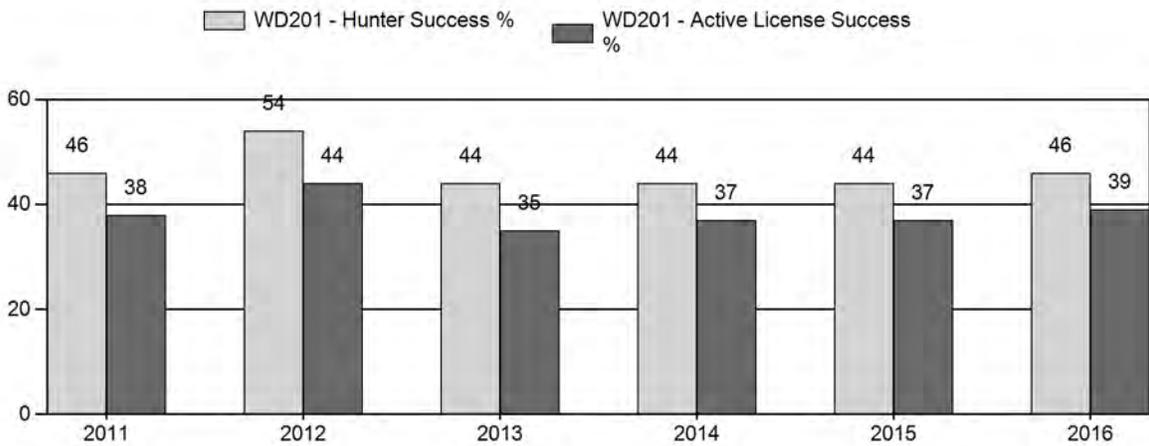
Harvest



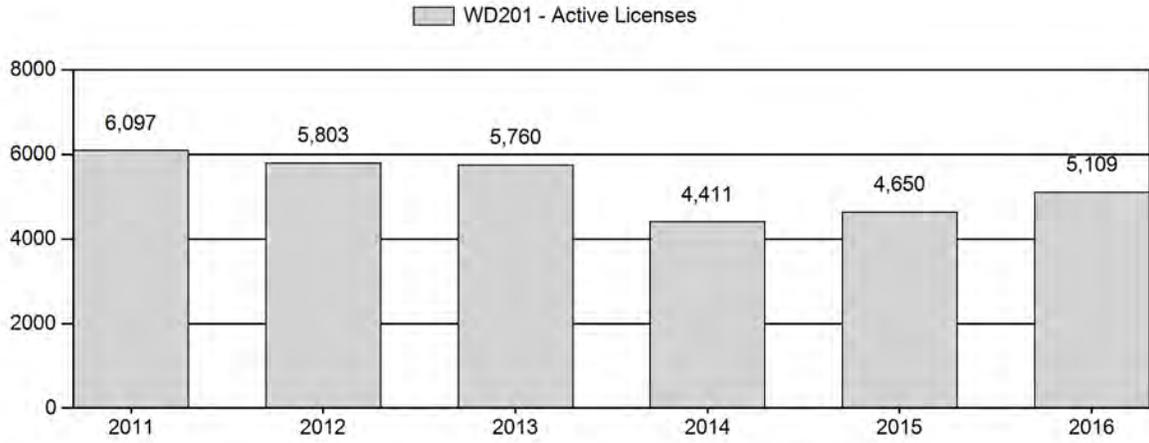
Number of Active Licenses



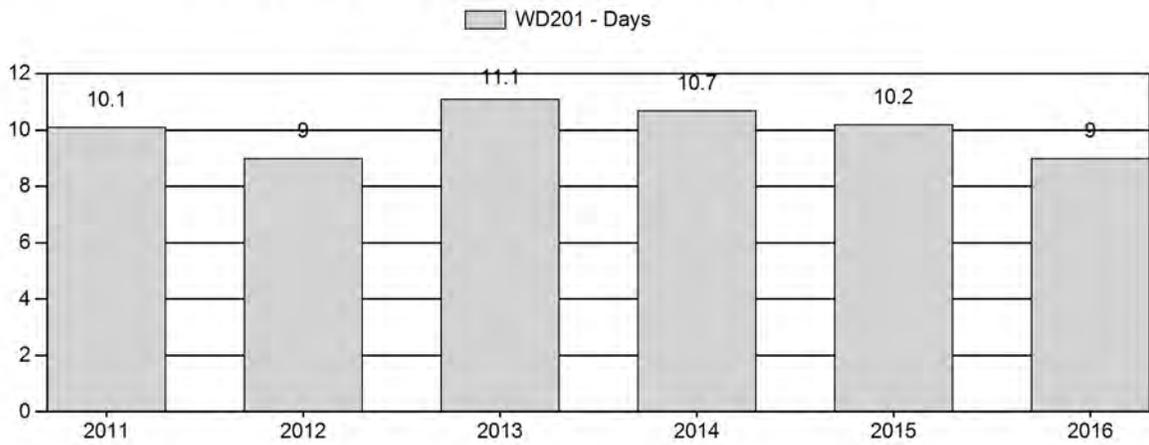
Harvest Success



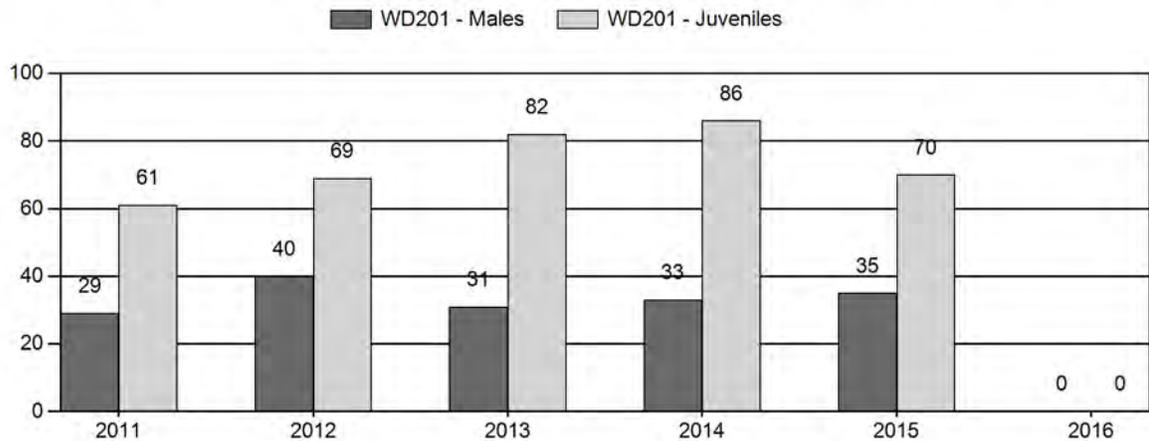
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary
for White tailed Deer Herd WD201 - BIGHORN BASIN

Year	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
	Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	45	120	165	15%	571	53%	346	32%	1,082	0	8	21	29	± 0	61	± 0	47
2012	35	58	93	19%	234	48%	162	33%	489	0	15	25	40	± 0	69	± 0	50
2013	40	63	103	15%	330	47%	270	38%	703	0	12	19	31	± 0	82	± 0	62
2014	45	72	117	15%	359	46%	309	39%	785	0	13	20	33	± 0	86	± 0	65
2015	35	62	97	17%	279	49%	195	34%	571	0	13	22	35	± 0	70	± 0	52
2016	47	96	143	20%	322	45%	256	36%	721	0	15	30	44	± 0	80	± 0	55

**2017 HUNTING SEASONS
BIGHORN BASIN WHITE-TAILED DEER HERD (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	100	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	75	Limited quota	Any white-tailed deer
47	8	Nov. 1	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	150	Limited quota	Doe or fawn white-tailed deer
116, 117, 118	3	Nov. 1	Nov. 30	100	Limited quota	Any white-tailed deer
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	75	Limited quota	Any white-tailed deer
124	8	Nov. 1	Nov. 30	75	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	150	Limited quota	Doe or fawn white-tailed deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
36, 37, 40, 41, 47, 51, 110 – 113, 116 – 122, 124, 127, 164 - 165	Sep. 1	Sep.30

Hunt Area	Type	Quota change from 2016
40	8	+50
47, 51	3	+25
112, 113	8	+50
124	3	+25
124	8	+25
165	8	+50
Total	3	+50
	8	+175

Management Evaluation

Current Postseason Population Management Objective: none

Management Strategy: Recreational

2016 Postseason Population Estimate: none

2017 Proposed Postseason Population Estimate: none

2016 Hunter Satisfaction: 72% Satisfied, 16% Neutral, 12% 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. The 2016-17 winter was severe on the west side of the Bighorn Basin with deep snow and colder than average temperatures. On the east side, severe conditions in December and January moderated in February.

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

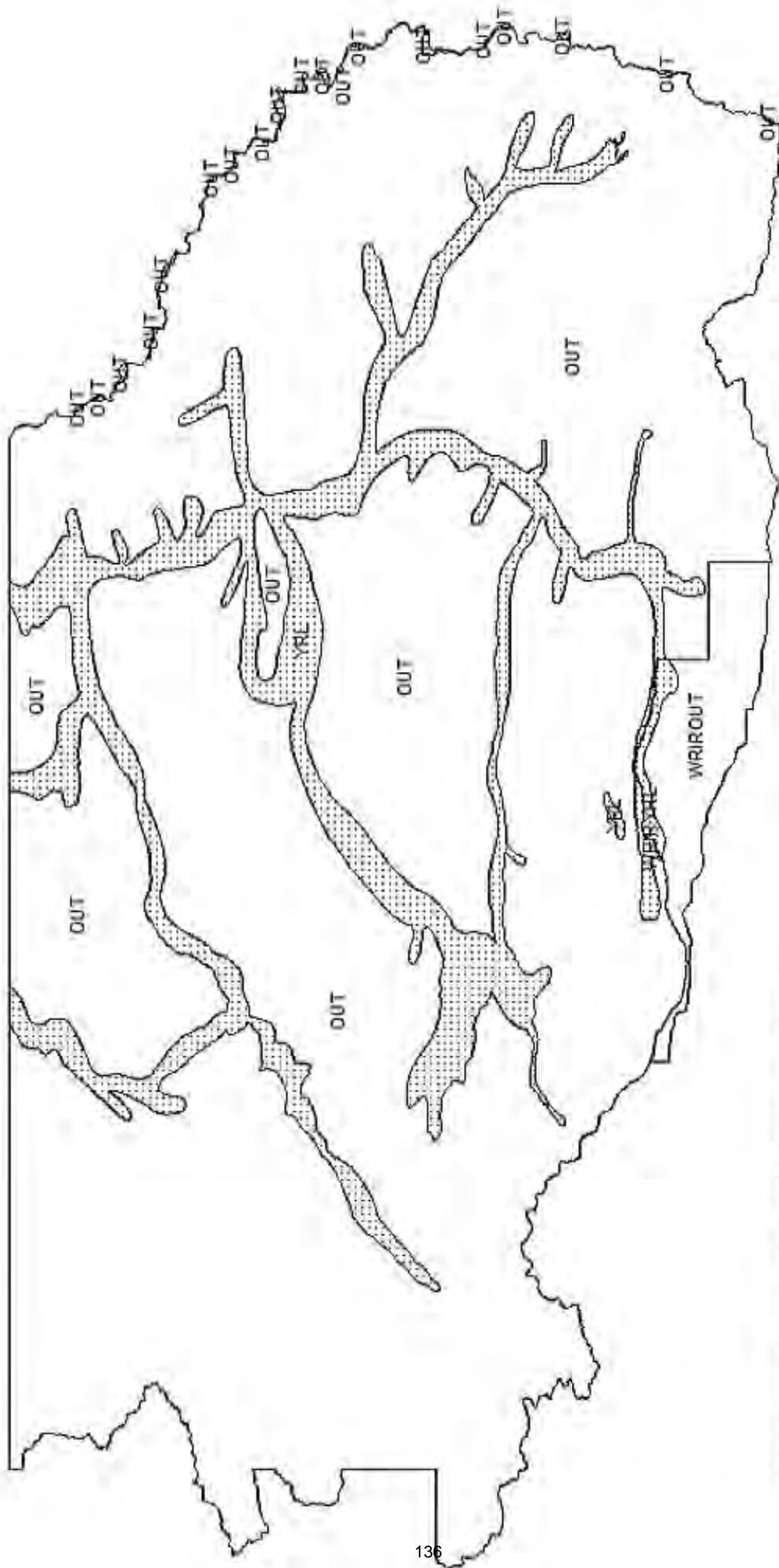
Not enough data is collected to draw conclusions from classification data. White-tailed deer classification data is collected incidentally to mule deer classification data. Harvest data typically follows number of licenses issued and does not provide an index to population level.

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 buck and doe licenses will be issued in 2017, because the population is quickly recovering from disease, and landowners have expressed concerns regarding deer numbers on croplands.



White-tailed Deer (WT201) - Bighorn Basin
HA35, 37-53, 105-127, 164, 165
Revised 2008

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL211 - MEDICINE LODGE

HUNT AREAS: 41, 45

PREPARED BY: LESLIE SCHREIBER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	2,705	2,495	2,500
Harvest:	683	798	800
Hunters:	1,752	1,960	2,000
Hunter Success:	39%	41%	40%
Active Licenses:	1,790	2,042	2,000
Active License Success	38%	39%	40%
Recreation Days:	13,625	15,472	15,000
Days Per Animal:	19.9	19.4	18.8
Males per 100 Females:	28	32	
Juveniles per 100 Females	48	48	

Trend Based Objective (± 20%)

2,200 (1760 - 2640)

Management Strategy:

Recreational

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

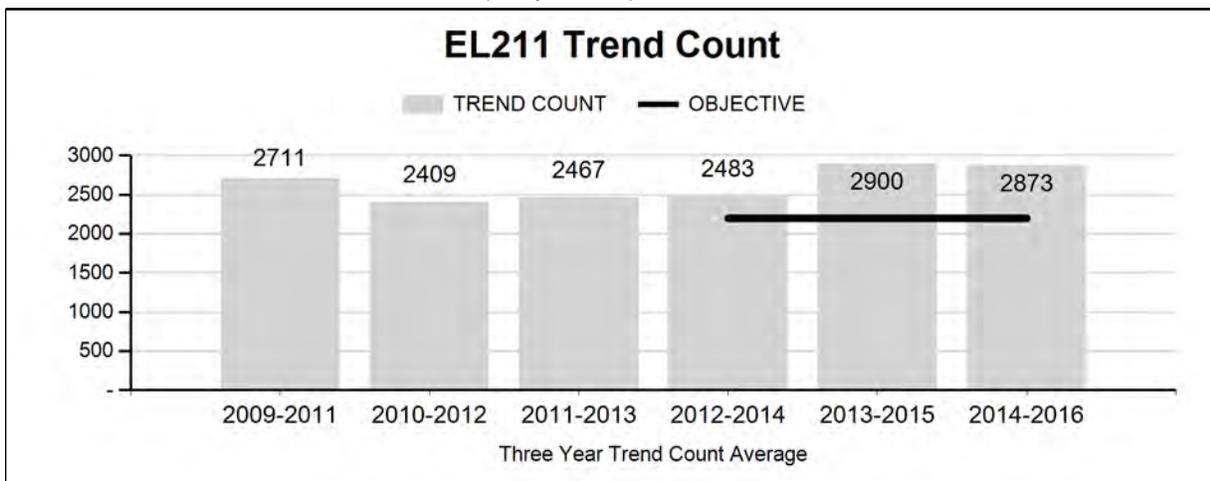
13%

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

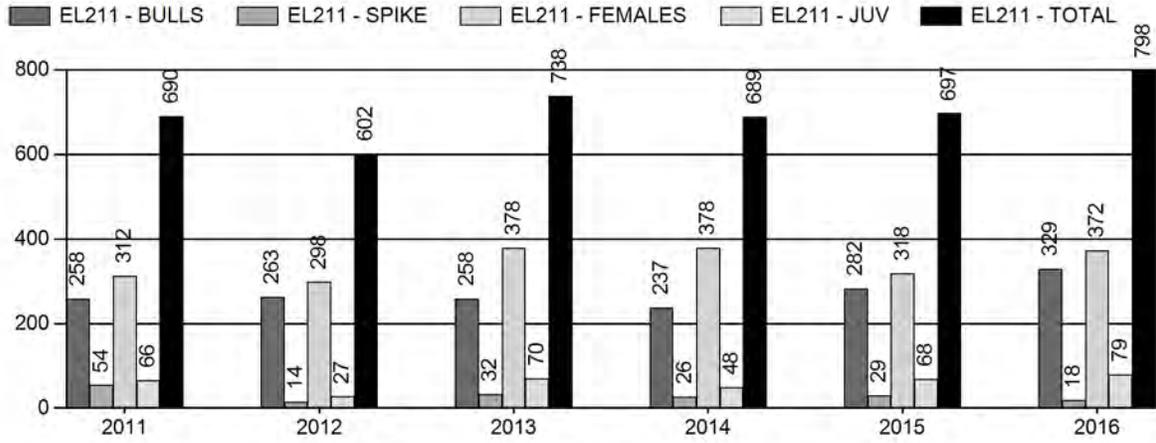
7

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

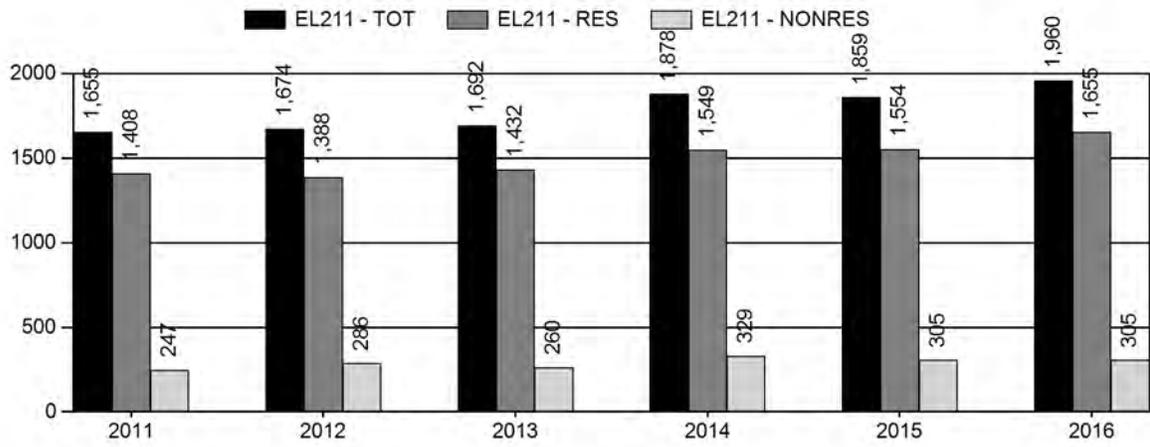
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8%	8%
Males ≥ 1 year old:	11%	11%
Juveniles (< 1 year old):	2%	2%



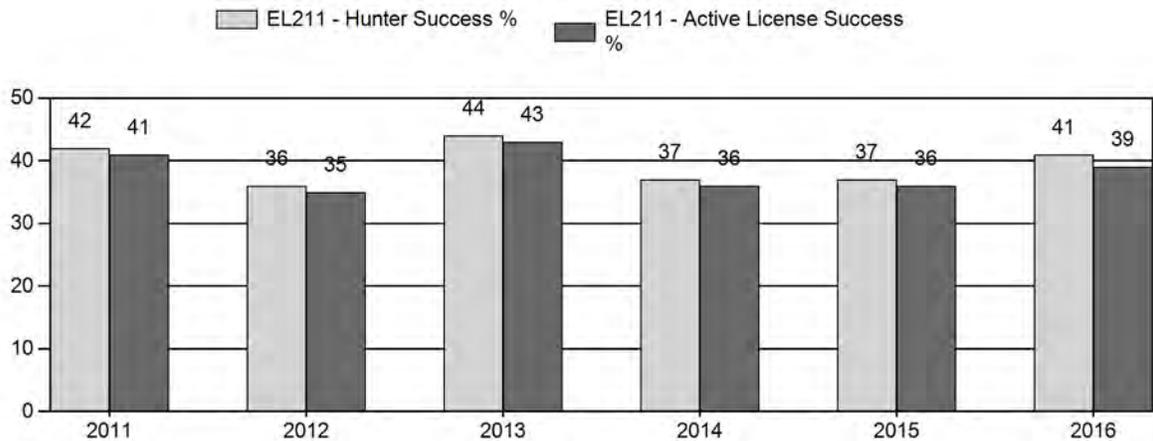
Harvest



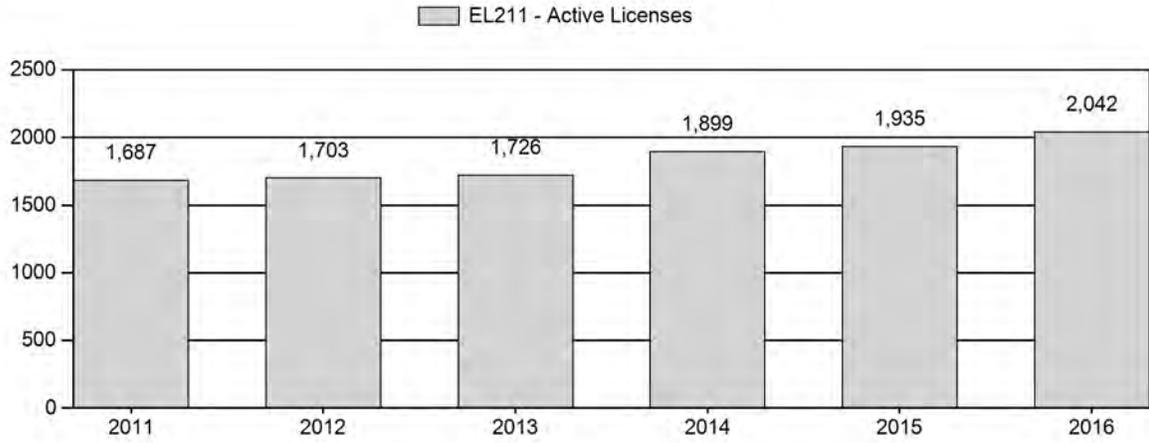
Number of Hunters



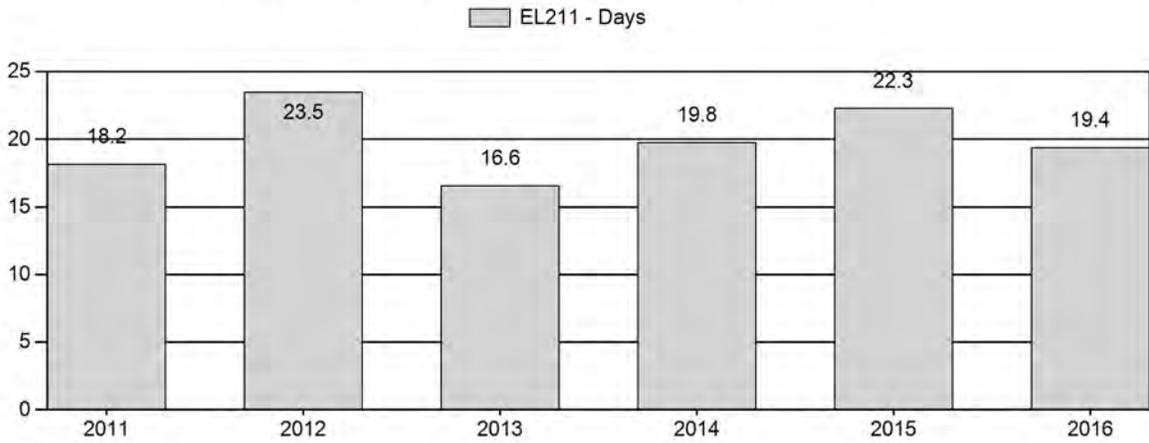
Harvest Success



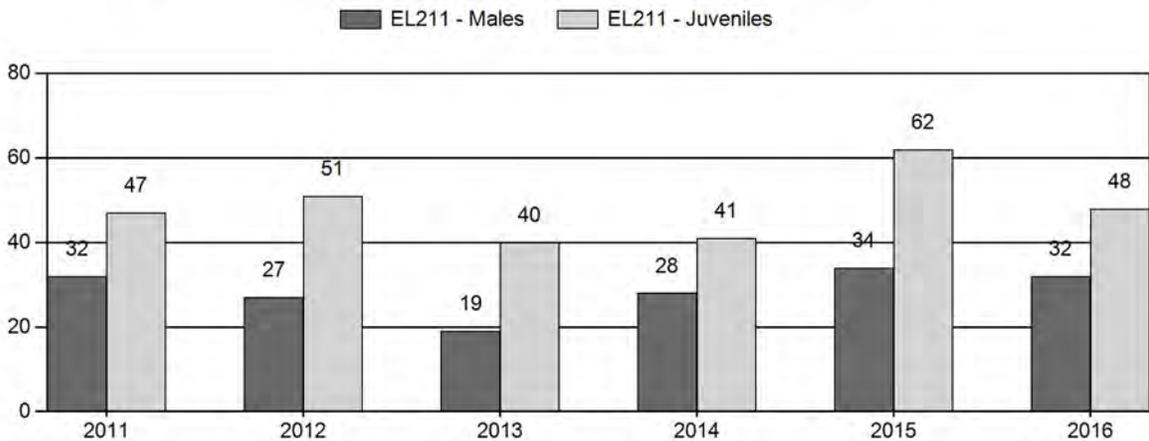
Active Licenses



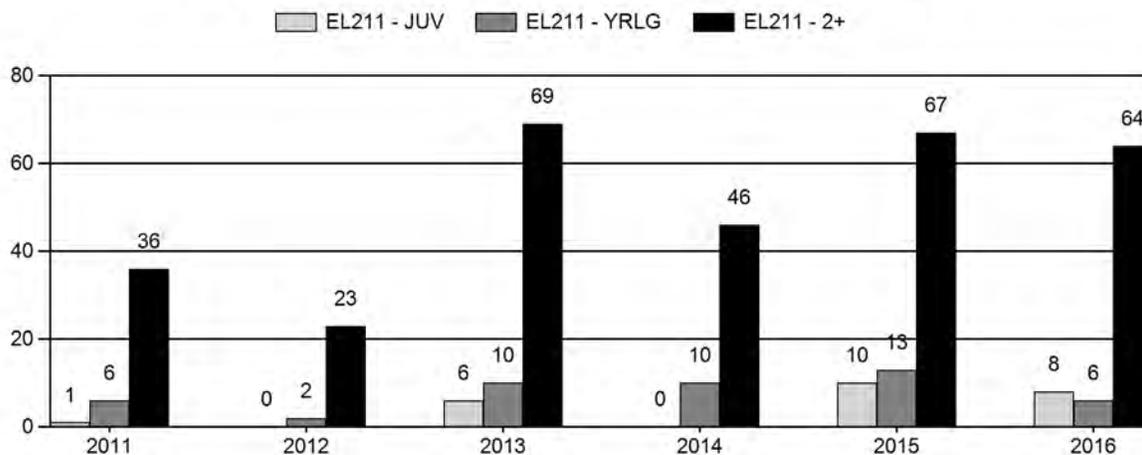
Days per Animal Harvested



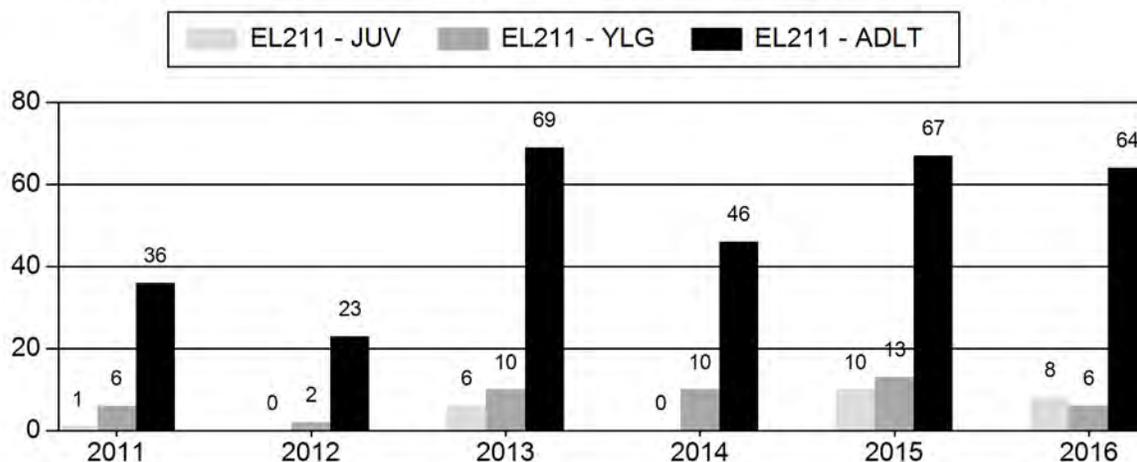
Postseason Animals per 100 Females



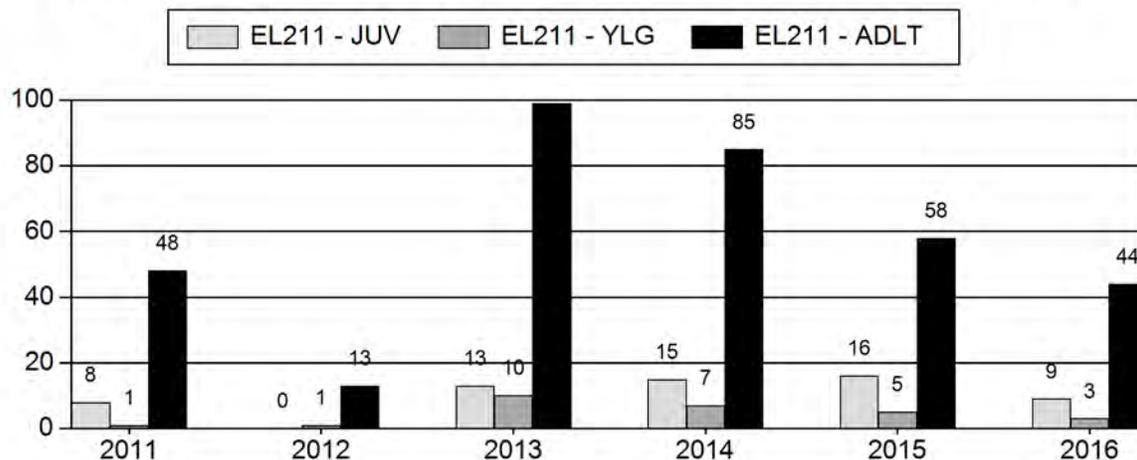
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Postseason Classification Summary

for Elk Herd EL211 - MEDICINE LODGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	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	6,712	200	242	442	17%	1,570	59%	636	24%	2,648	513	13	15	28	± 2	41	± 2	32
2015	8,296	240	364	604	17%	1,771	51%	1,102	32%	3,477	556	14	21	34	± 2	62	± 2	46
2016	0	174	275	449	18%	1,382	55%	664	27%	2,495	0	13	20	32	± 0	48	± 0	36

**2017 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	4	Oct. 15	Nov. 30	500	Limited quota	Antlerless elk
41	6	Dec. 1	Dec. 22	250	Limited quota	Cow or calf
41	9	Sep. 1	Sep. 30	150	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	250	Limited quota	Cow or calf valid off national forest
45	7	Dec. 1	Jan. 15	25	Limited quota	Cow or calf valid on or within one (1) mile of irrigated land
45	9	Sep. 1	Sep. 30	175	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 2016
41	4	+100
41	9	+25
45	6	+50
45	7	-25
45	9	+25
Herd Unit Total	4	+100
	6	+50
	7	-25
	9	+50

Management Evaluation

Current Mid-Winter Trend Count Management Objective: 2,200

Management Strategy: Recreational

2016 Trend Count: 2,495

Most Recent 3-year Running Average Trend Count: 2,873

2016 Hunter Satisfaction: 62% Satisfied, 22% Neutral, 16% 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. 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 post-season 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. During the public herd unit review process in 2016, the objective changed from a model-based postseason population objective to a mid-winter trend count objective of 2,200 elk based on a 3-year running average.

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 even 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. Two hunter-harvested brucellosis seropositive elk were found in the Bighorn Mountains in 2016: a bull in Hunt Area 49 and a cow in Hunt Area 40. Due to the possible presence of brucellosis, management of this herd unit is focused on bringing elk numbers to or below objective. Education for hunters and field personnel collecting brucellosis blood samples has resulted in more testable samples each year.

Weather

Climatic factors affect this elk herd more than human-caused factors. Survival and productivity can be affected by drought and severe winters, as evident in low calf:cow ratios. There are no transects in this area to monitor vegetative production or utilization. The winter of 2016/17 was somewhat severe with deep snow and cold temperatures. However, severe conditions in December and January did not continue into the latter part of the winter. Elk appeared to have entered the winter in good condition. Increased fall and winter precipitation, combined with prolonged periods of below average temperatures likely increased calf mortalities this winter.

Habitat

The herd unit contains approximately 1,500 mi². 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.

Field Data

During the driest years of the most recent extended drought (2001-04), calf ratios averaged 34 calves:100 cows. In years with “normal” precipitation (2009-14), 45 calves:100 cows have been observed on average. In 2015, the calf ratio vaulted to 62:100, then returned to about average (48:100) in 2016. High calf:cow ratios suggest this population can quickly increase if harvest does not keep up with production.

Bull:cow ratios can vary depending on if bull groups are 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 and 32 bulls:100 cows in 2016. 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 bull numbers. Sample sizes for

classification surveys are calculated based on calf:cow ratios and not bull:cow ratios. Survey flight time should remain consistent, so that bull groups can be located and more accurately reflect actual conditions. Furthermore, to satisfy the mid-winter trend count protocol, each hunt area should be flown 2.5 hours for a total of 5 helicopter hours.

Management of hunting seasons allowed bull:cow ratios to increase. These Hunt Areas changed from general license hunting to limited quota in 1979 and 1983, for the northern and southern Hunt Areas, respectively. From 1975 to 1984, an average of 9 bulls:100 cows was observed with most of those being yearling bulls. Bull ratios began to increase under limited quota hunting (average=13:100 between 1985-1997). Bull ratios have increased recently, except during drought years, averaging 26:100 (2007-2016). Branched antlered bulls have been observed in similar numbers to yearling bulls.

Harvest Data

Following changes to Type 1 licenses, harvest statistics indicated harvesting an elk became easier. Effects of limited quota hunting began to be noticed in increased hunter success and decreased days per harvested animal by the late 1980s-early 1990s. Since the change to “any elk” Type 1 licenses, those statistics have shown less variability (range between 35-54% hunter success and 12-23 days/harvest). The number of antlerless/cow licenses 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 in an attempt to keep up with production.

More recently, the number of total licenses offered and number of hunters have increased. In 2016, 808 elk were harvested, the highest since 2001. Hunter effort is dependent upon weather and access to elk herds, but Hunt Area 45 Type 1 hunters average 15 days per harvested elk, and Hunt Area 41 Type 1 hunters average 20 days per elk. Type 1 success in Hunt Area 45 is generally higher than Type 1 success in Hunt Area 41 due to less access in Hunt Area 41.

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 performed poorly estimating more than 8,000 elk which did not match the perceptions of field personnel. The 2016 herd unit review process established a mid-winter trend count of 2,200 elk for the herd unit with sub-objectives of 1,300 elk for Hunt Area (HA) 41 and 900 elk for HA 45. For the 2016 flight, personnel felt they found most of the cow/calf groups in HA 41, but could not find some groups in HA 45. Our 3-year average for the Medicine Lodge herd unit is about 2,900 elk which is above the objective of 2,200. HA 41 carries this high count for the herd unit.

Year	HA41	HA45	Herd Unit Total
2007	999	819	1818

2008	1714	475	2189
2009	1519	1612	3131
2010	1794	609	2403
2011	1769	830	2599
2012	1590	636	2226
2013	1786	790	2576
2014	1663	985	2648
2015	2191	1286	3477
2016	1855	640	2495

Hunt Area(Obj)	HA41 (1300)	HA45 (900)	Total (2200)
3-year average	1903	970	2873

Management Summary

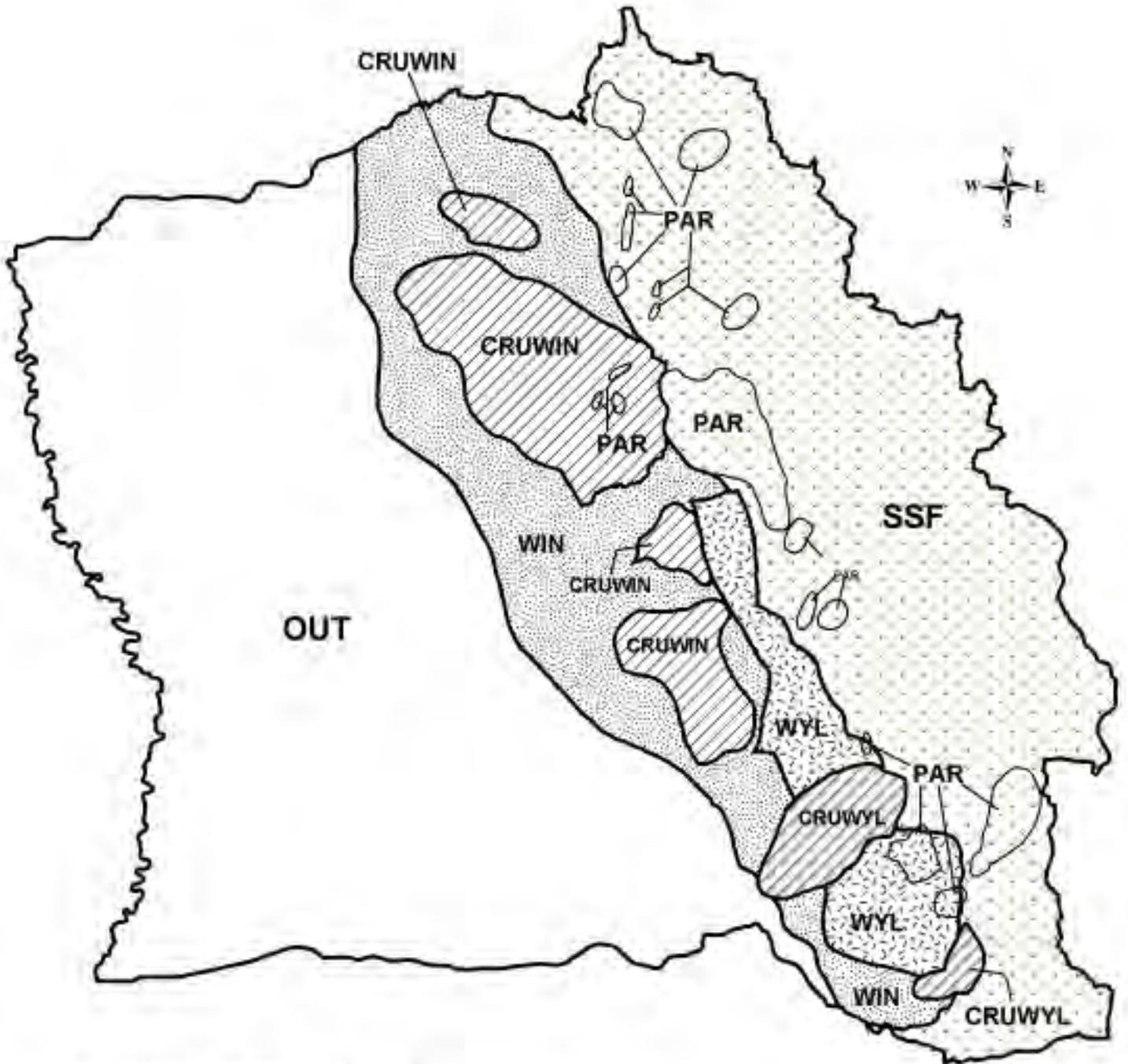
Large areas of private land that allow none to limited elk hunting make management of the northern half of this herd challenging. The “breaks” in HA 41 were removed in an effort to simplify the season and allow more days for an increased number (+100) of cow hunters to harvest an elk. In HA 45, elevated antlerless/cow license numbers and extended seasons off the Bighorn National Forest seem to be keeping elk from distributing to lower elevations where they risk comingling with livestock. In the Medicine Lodge herd unit, both Type 9 licenses (Sep. 1-30) and special archery seasons (Sep. 15-30) exist. The Type 9 quota was increased by 25 licenses in each Hunt Area in anticipation of eliminating the special archery season in 2018.

In 2012, two blood samples collected from hunter-harvested elk in Hunt Area 40 tested seropositive for brucellosis. In response, an enhanced brucellosis surveillance effort was initiated in all elk hunt areas in the Bighorn Mountains in 2013 and has occurred every year since then. We also developed a research proposal and solicited funding from the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS). The study objectives are:

1. Evaluate movement of possible source herds to determine if elk are migrating into/near the Bighorn Mountains.
2. Evaluate movement/dispersal of migratory elk in the Bighorn Mountains with a focus on Hunt Area 40.
3. Evaluate movement and interactions of elk herds in the northern Bighorns to determine how brucellosis may spread if it becomes established.
4. Perform a landscape genetics study to further evaluate relatedness of elk herds in and around the Bighorns.

Using Native Range Capture Service, we captured 58 elk on February 16-19, 2016. Elk were capture via netgun fired from a helicopter. Once entangled, elk were hobbled, blood samples were collected, ear tags were attached, and an Advanced Telemetry System’s (ATS) GPS collar

was deployed. Elk were then released on-site. Of the 58 captured, 5 were within this herd unit. We captured another 53 elk on February 17-20, 2017 with 4 of those elk in this herd unit.



Elk (E211) -- Medicine Lodge
 HA 41, 42, 45, 46
 Revised 10/1999

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL214 - GOOSEBERRY

HUNT AREAS: 62-64

PREPARED BY: BART KROGER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	2,679	2,230	2,300
Harvest:	810	712	650
Hunters:	1,417	1,406	1,250
Hunter Success:	57%	51%	52 %
Active Licenses:	1,462	1,452	1,300
Active License Success	55%	49%	50 %
Recreation Days:	9,032	8,569	8,000
Days Per Animal:	11.2	12.0	12.3
Males per 100 Females:	19	21	
Juveniles per 100 Females	27	22	

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

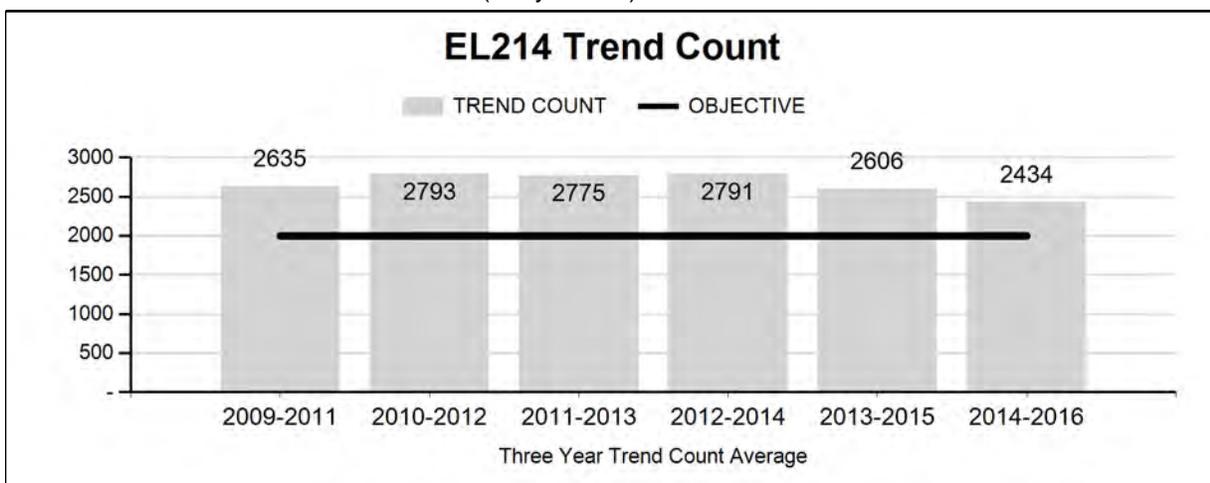
Management Strategy: Special

Percent population is above (+) or (-) objective: 12%

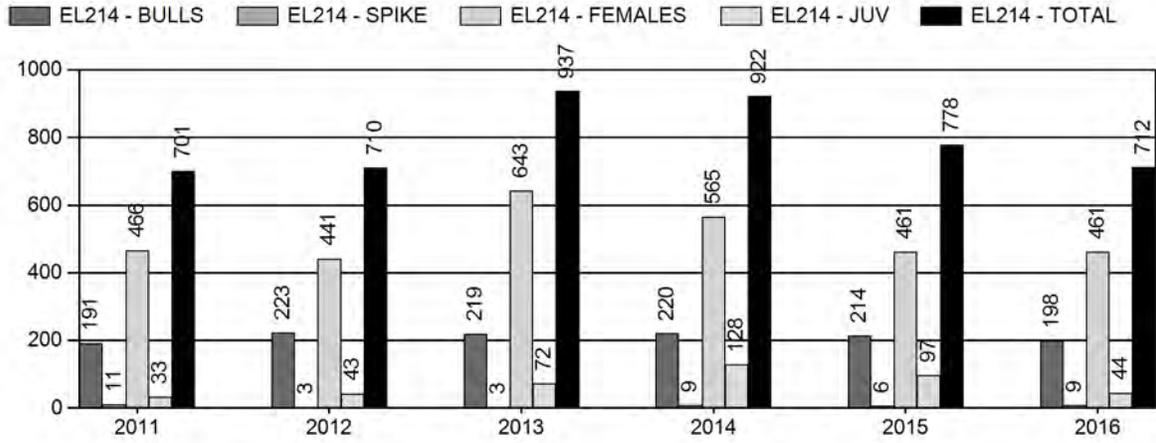
Number of years population has been + or - objective in recent trend: 8

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

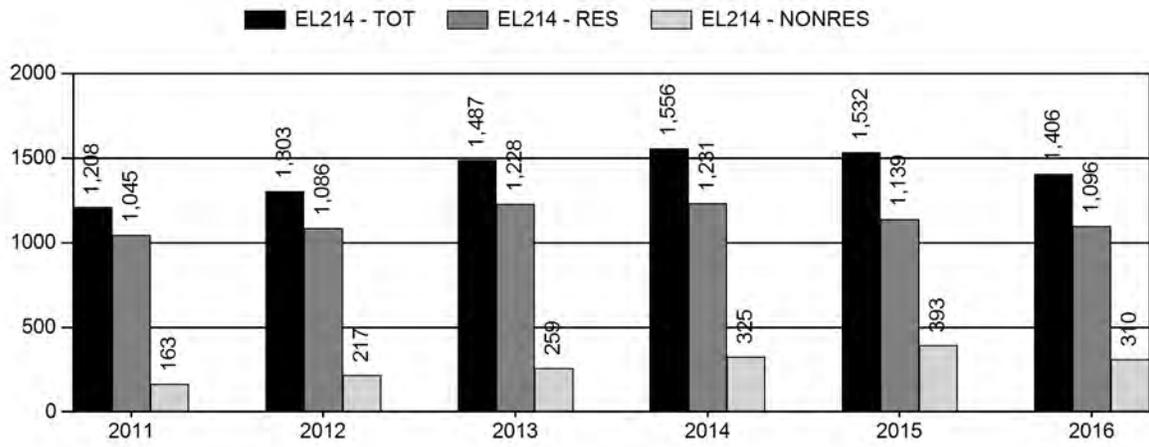
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%



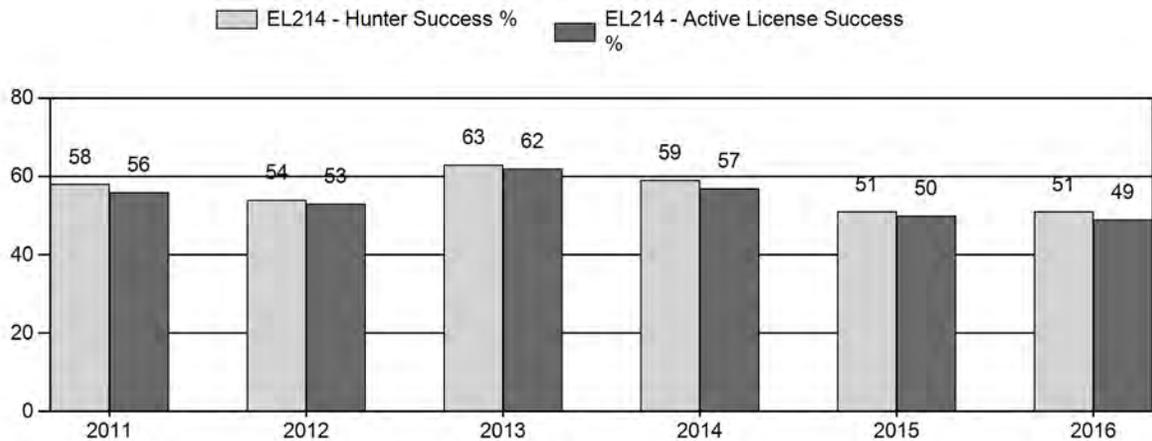
Harvest



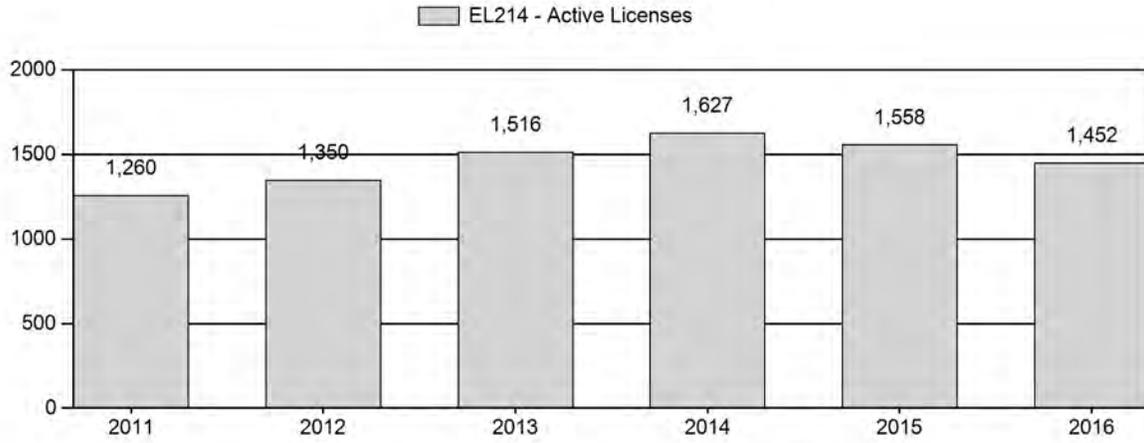
Number of Hunters



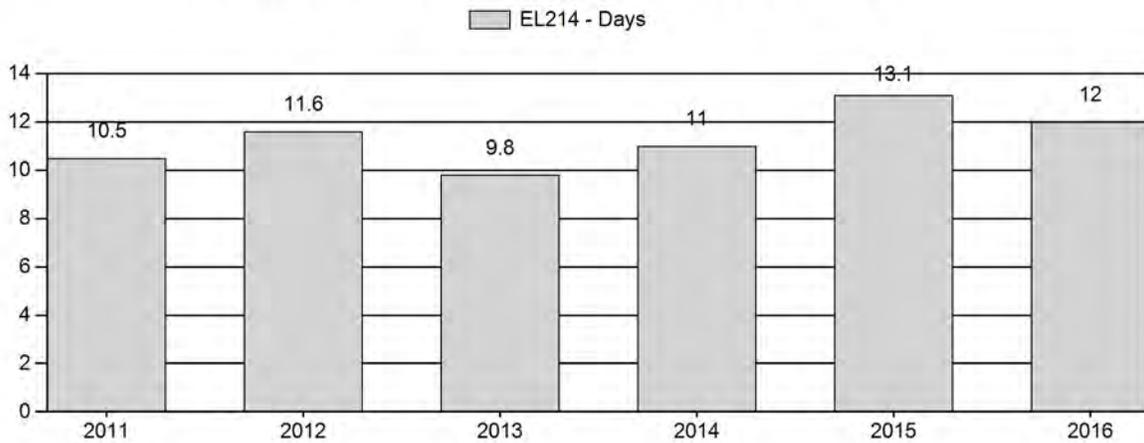
Harvest Success



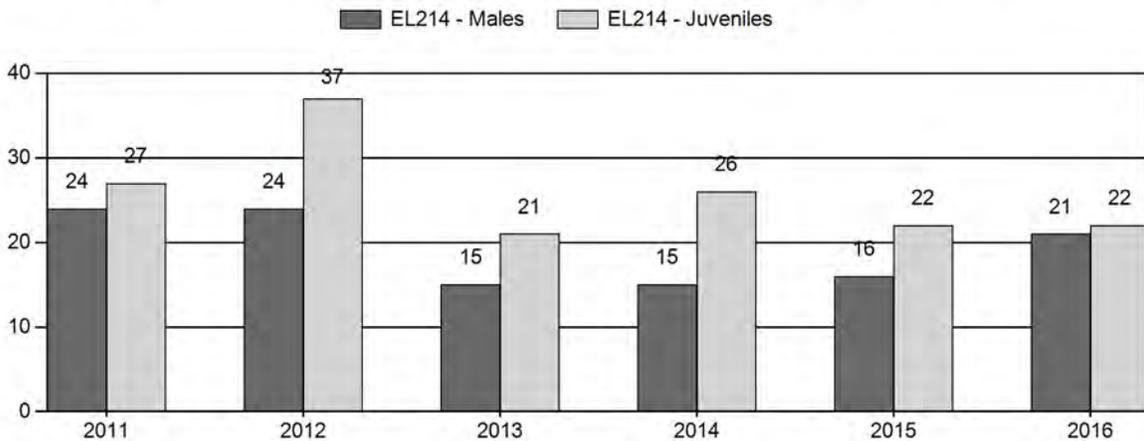
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 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	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	0	138	183	321	14%	1,561	70%	348	16%	2,230	0	9	12	21	± 0	22	± 0	18

**2017 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	Dec. 21	150	Limited quota	Antlerless elk
63, 64	1	Oct. 1	Oct. 21	200	Limited quota	Any 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	6	Sep. 1	Nov. 14	200	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 2016
62	5	-50
63	6	-50
64	6	-100
HU Total	5	-50
	6	-150

Management Evaluation

Current Mid-Winter Trend Count Objective: 2,000

Management Strategy: Special

2016 Mid-Winter Count: 2200

Most Recent 3-year Running Average Trend Count: 2400

2016 Hunter Satisfaction: 72% satisfied, 16% neutral, 12% 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 two Hunter Management Areas (Pitchfork & Absaroka Front 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 not had any adverse effects on this elk herd. 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 has increased significantly since 2014 as a result of increased moisture regimes. Snow conditions for the 2016/17 winter have been above normal through most of the winter. In early February 2017 snow conditions moderated and many winter ranges have become snow-free.

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 2016 and a 120-acre treatment to remove conifers from aspen was initiated in fall 2016.

Field Data

The 2014, 2015 and 2016 annual winter trend counts have been 3 of the lowest in the last 10 years, thus contributing to the 2016 3-year average count of 2400 elk. This 3-year average of 2400 elk puts this herd at objective given the $\pm 20\%$ CI of a 2000 elk winter count goal. Calf ratios have declined in recent years, and have remained at 22:100 the past two years. The number of bulls observed during classification surveys is still inadequate for confident ratio estimates. However, the number of mature bulls observed, and the quality of some of those bulls is sufficient to say bull quality and quantity remains good.

Harvest Data

Overall, total harvest of elk in this herd unit has declined by 24% since 2013, when 937 elk were reported harvested. Although the last four years of elk harvest have been the highest on record, the recent declining harvest trend is likely the result of fewer elk in the herd unit. Similar to harvest, % hunter success has also declined, from a high of 63% in 2013 to 51% in 2016. Hunter effort has remained mostly stable at around 10-12 days, but 2015 and 2016 had the two highest effort rates in the last 8 years. These declining harvest trends along with declining winter trend counts likely indicate a declining elk population.

Population

Prior attempts to model this herd have failed due to inadequate bull ratios. Because of this, a winter trend count objective was established for this elk herd in 2012. Based on 3-year average trend counts between 2008 and 2014, this elk herd has stayed fairly stable at around 2700 elk counted. Hunt area count goals and trends are also monitored in order to make hunting season adjustments has needed. Winter count goals for areas 62, 63 and 64 are 600, 600 and 800 elk, respectively. Since 2014, the average winter counts have been 770 for area 62, 442 for area 63 and 1222 for area 64 (Table 1).

Table 1. Gooseberry Elk Herd Unit and Hunt Area Mid-winter trend counts, 2006-2016

	2008	2009	2010	2011	2012	2013	2014	2015	2016	3yr. Avg.	Count Goal
HA 62	808	641	1203	1063	788	609	565	961	783	770	600 elk
HA 63	556	991	535	961	698	604	463	354	508	442	600 elk
HA 64	1897	1039	1063	410	1658	1535	1453	1275	939	1222	800 elk
Herd Unit	3261	2671	2801	2434	3144	2748	2481	2590	2230	2434	2000 elk

Management Summary

For the herd unit, hunter densities, season lengths and landowner tolerance for hunting pressure has been maximized. The herd is managed under special management criteria, but because bull ratios are inadequate, the percent of branch antlered bulls (BAB) in the male harvest is used to justify special management, which is currently at 90%. 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. Since winter trend counts, reduced calf ratios, along with harvest statistics, indicate a declining elk population; a reduction of 150 cow/calf licenses is warranted. With a 2017 projected harvest of about 600 elk, we expect slight declines in this population to continue, which should help push this elk herd further toward objective.

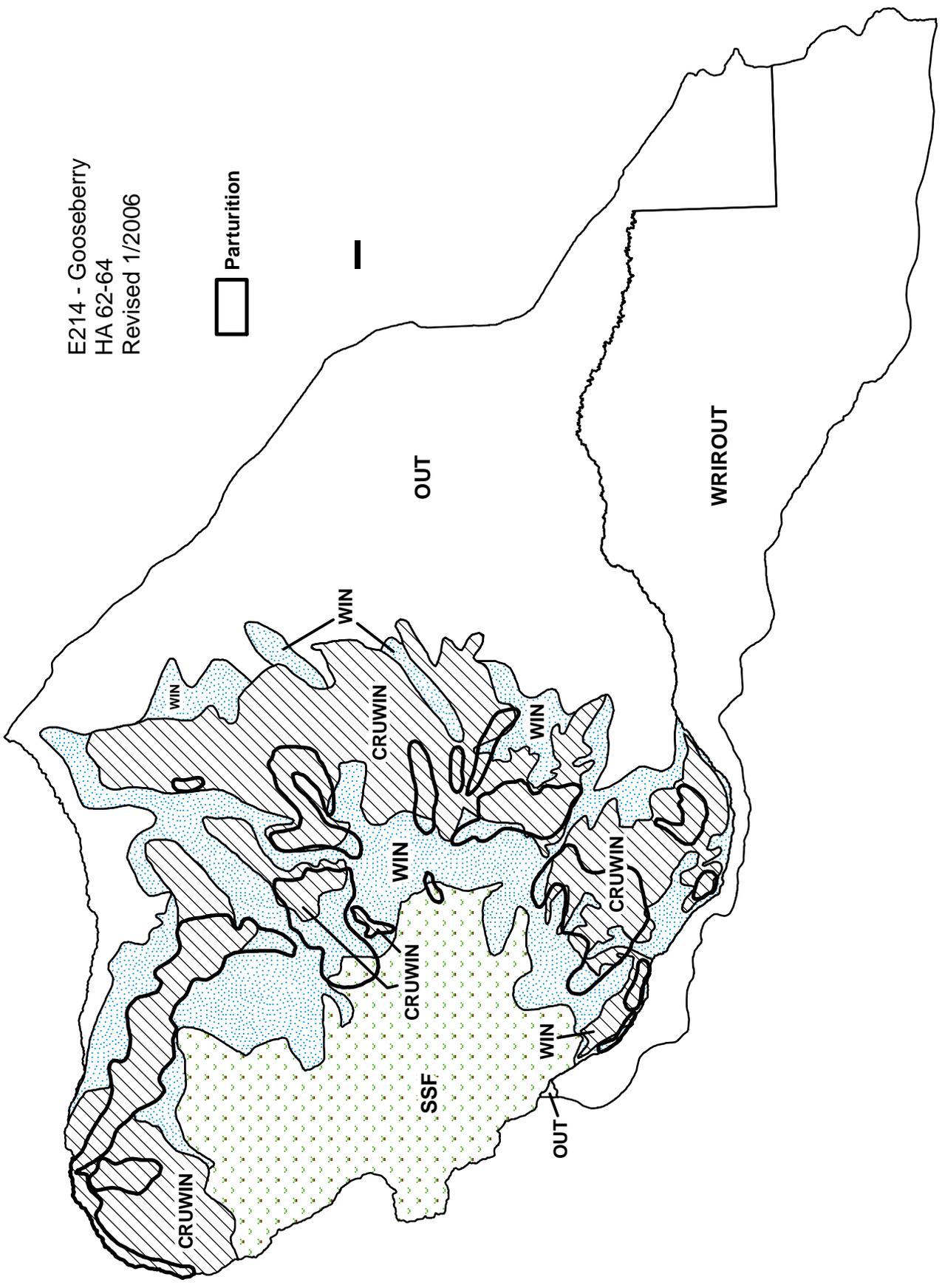
A 5-year herd unit review and update of the current management goal was submitted to Wildlife Administration in 2017. It appears the current management goal of a 3-year average winter count of 2000 elk is appropriate for this herd, and is providing more efficient data needed in managing this herd. Plus, hunters and landowners are more accepting of this management approach since it provides them concrete field data that they can relate to.

2011 - 2016 Trend Count Summary
for Elk Herd EL214 - GOOSEBERRY

Year	Count Dates	Flight Time		Number Counted
		Hours	Minutes	
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
2016	JANUARY 2017	5	45	2,230

E214 - Gooseberry
HA 62-64
Revised 1/2006

Parturition



2016 - JCR Evaluation Form

SPECIES: EIK

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

HERD: EL216 - CODY

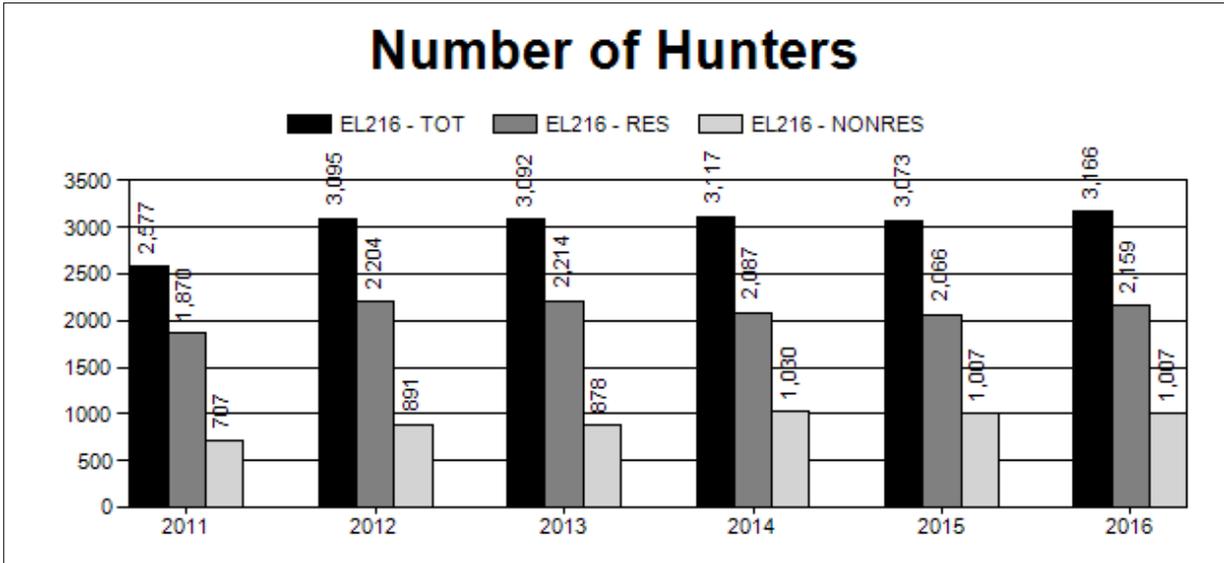
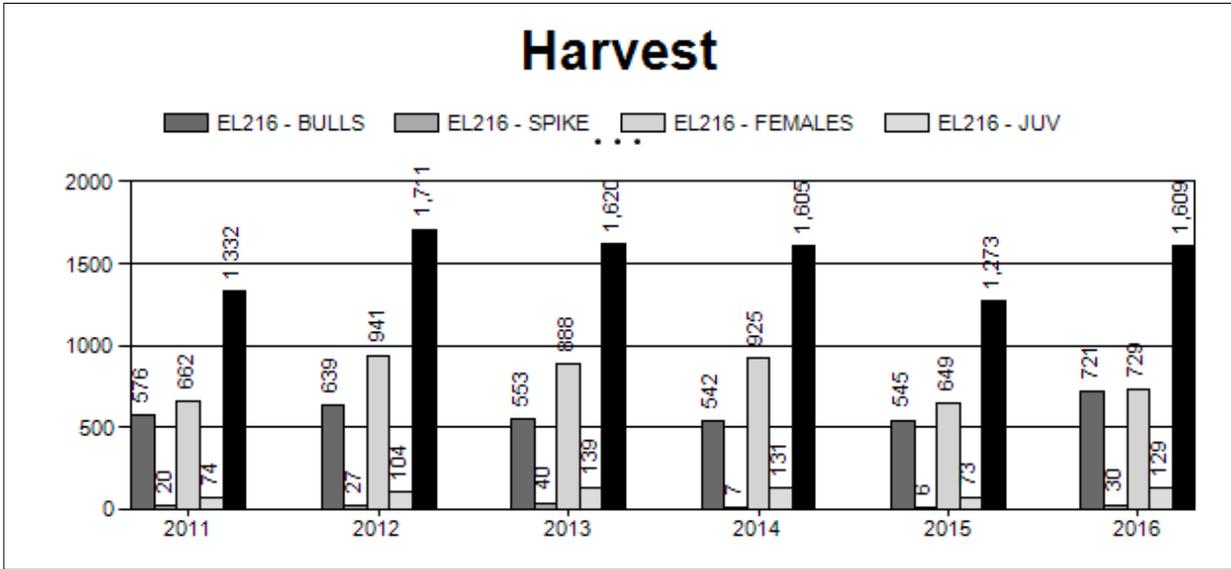
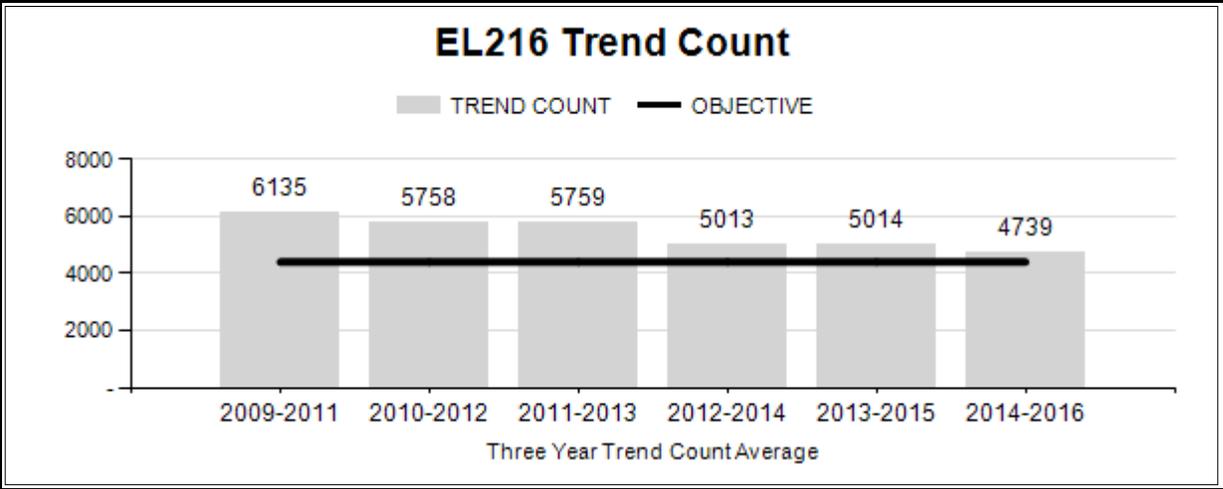
HUNT AREAS: 55-56, 58-61, 66

PREPARED BY: Doug McWhirter/
Tony Mong

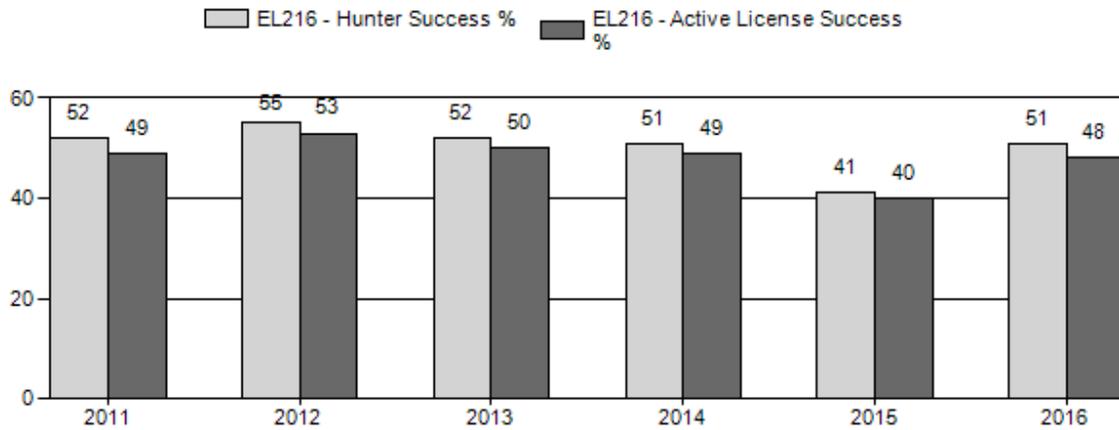
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	5,318	4,903	4,900
Harvest:	1,508	1,609	1,400
Hunters:	2,991	3,166	3,000
Hunter Success:	50%	51%	47%
Active Licenses:	3,135	3,372	3,300
Active License Success	48%	48%	42%
Recreation Days:	18,989	20,803	19,000
Days Per Animal:	12.6	12.9	13.6
Males per 100 Females:	30	48	
Juveniles per 100 Females	29	28	
 Trend Based Objective (\pm 20%)			4,400 (3520 - 5280)
Management Strategy:			Special
Percent population is above (+) or (-) objective:			11%
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):

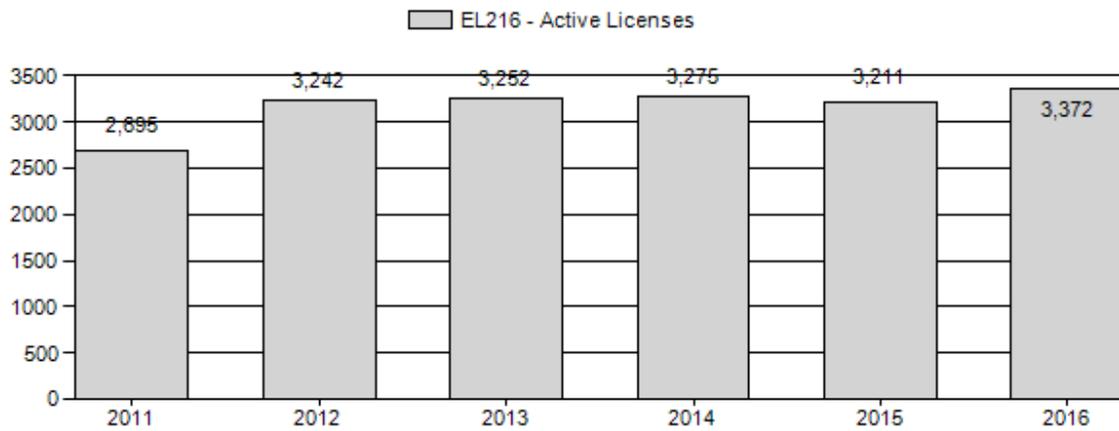
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	N/A%	n/a%
Males \geq 1 year old:	N/A%	n/a%
Juveniles (< 1 year old):	N/A%	n/a%
Total:	N/A%	n/a%
Proposed change in post-season population:	N/A%	n/a%



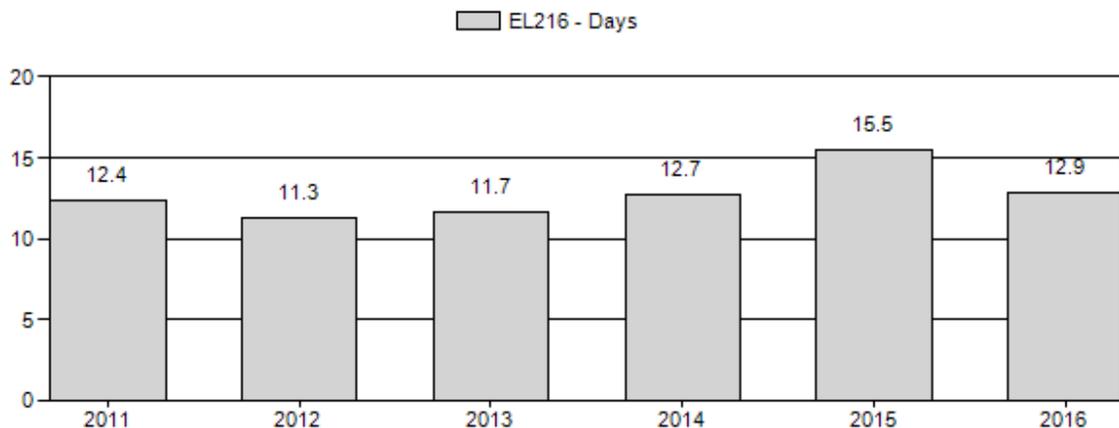
Harvest Success



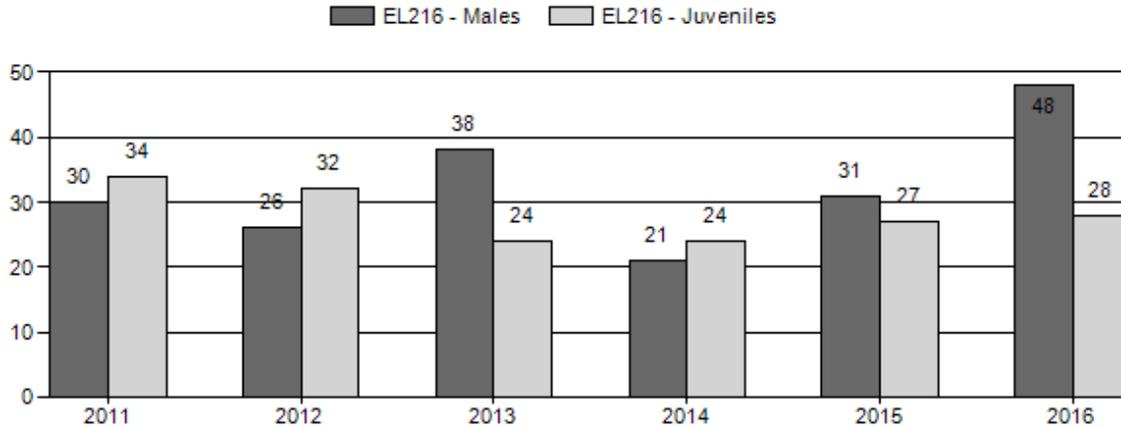
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL216 - CODY

Year	Post Pop	MALES				FEMALES		JUVENILES		Males to 100 Females			Young to					
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Conf	100 Fem	Conf Int	100 Adult			
										Cls	Obj					Ylng	Adult	Total
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	0	327	878	1,224	27%	2,566	57%	728	16%	4,518	290	13	34	48	± 0	28	± 0	19

2011 - 2016 Trend Count Summary

for Elk Herd EL216 - CODY

Flight Time				
Year	Count Dates	Hours	Minutes	Number Counted
2011	Feb-12	8	0	7,346
2012	FEBRUARY 2013, JANUARY 2013	9	0	4,204
2013	Feb-14	9	0	5,726
2014	Jan-15	10	0	5,110
2015	FEBRUARY 2016, JANUARY 2016	8	45	4,205
2016	Jan-17	8	15	4,903

**2017 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	150	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	50	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	275	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. 24	400	Limited quota	Cow or calf valid north of and including the Rawhide Creek drainage
61	6	Nov. 1	Nov. 24			Cow or calf also valid within the Washakie Wilderness

61	6	Nov. 25	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	License Type	Quota change from 2016
61	4	+ 50
61	6	-150
Hunt Area Total	4	+50
	6	-150

Management Evaluation

Current Mid-Winter Trend Count Objective: 4,400

Management Strategy: Special

2016 Mid-Winter Trend Count: 4,900

Most Recent 3-year Running Average Trend Count: 5,300

2016 Hunter Satisfaction: 66% Satisfied, 19% Neutral, 15% dissatisfied

Herd Unit Issues

The Cody Elk Herd Unit is made of migratory elk that occupy spring-summer-fall habitats in remote backcountry areas like the Thorofare and Yellowstone Park, and non-migratory elk that occupy habitats in and around the Absaroka foot hills and valleys (agricultural lands, transition and winter ranges). Calf productivity typically varies between migratory and nonmigratory elk, with lower calf ratios for migratory elk, and higher calf ratios for resident elk. To also complicate management, elk on private land can damage agricultural crops, especially when drought or human disturbance moves them to those areas. Damage situations typically exist where overabundant elk overlap with private lands, and require hunting seasons targeting those

specific elk subpopulations. Prescribing and managing hunting seasons for diverse publics often results in complicated regulations that consider many factors influencing the Cody elk herd.

Weather

Weather conditions during the 2016 biological year were characterized by near normal spring-summer moisture, and very mild fall conditions. Winter started mild, but became very harsh with record cold temperatures and snowfall for December and January at levels not observed during the last 50 years in some areas of the herd unit. Elsewhere conditions were slightly above normal conditions.

Habitat

See Cody regional appendix.

Field Data

Classification surveys in 2016 yielded a herd unit calf:cow ratio of 28:100 (range 21:100 – 42:100), while the most recent 10-year (2006-2016) average calf:cow ratio is 29:100 cows (range 24:100 – 34:100). Recent surveys produced a yearling bull:cow ratio of 13:100 (range 10:100 – 13:100), while the average yearling bull ratio is:100 cows over the 2005-2014 period (range 7:100 - 13:100).

Harvest

A total of 3,153 hunters harvested 757 bulls and 832 cows and calves totaling 1,589 elk in 2016. Bull harvest was up and cow harvest was similar compared to the most recent 5-year average of 1,508 total (n=591 bulls, n=813 cows). We decreased the antlerless elk harvest from an average of about 1100 cows to about 800 to accommodate lower calf production in the migratory segments in the past 10 years.

Population

The Cody Elk Herd Unit uses a Mid-Winter Trend Count for a population objective and we track counts by hunt area and overall total (Table 1) to help guide our management.

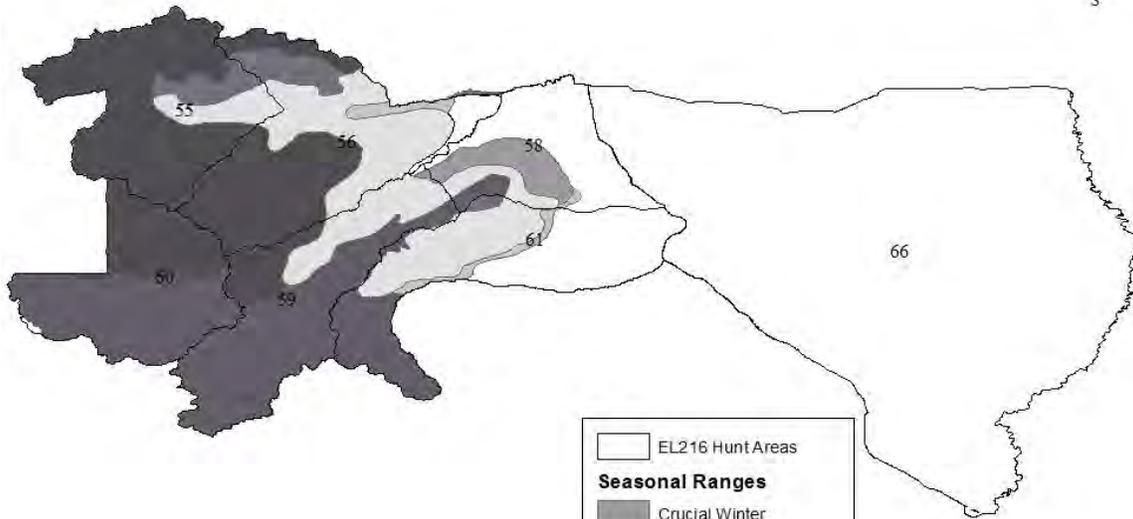
Table 1. Sub unit and herd unit winter counts.

	HA 55/56	HA 58/59	HA 61	HA 66	HU Total
<i>Count Goal</i>	<i>1,150</i>	<i>1,150</i>	<i>2,100</i>	<i>0</i>	<i>4,400</i>
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
2016	1,299	877	2,502	225	4,903
3-year Avg	1,262	1,184	2,066	226	4,739

Management Summary

Management direction for most subunits is to maintain elk at current numbers through limited cow harvest, while reducing elk-caused damage on private land through increased opportunity. In some areas of the herd unit, brucellosis transmission risk between elk and cattle influences management, e.g., late winter hunts near areas of private, Meeteetse Creek HMAP. In Hunt Area 66, we have a sub-objective of no elk that requires long liberal hunting seasons to harvest high numbers of elk, whenever possible.

EL216 Cody Elk Herd Seasonal Ranges



0 10 20 40 Miles



2016 - JCR Evaluation Form

SPECIES: EIK

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

HERD: EL217 - CLARKS FORK

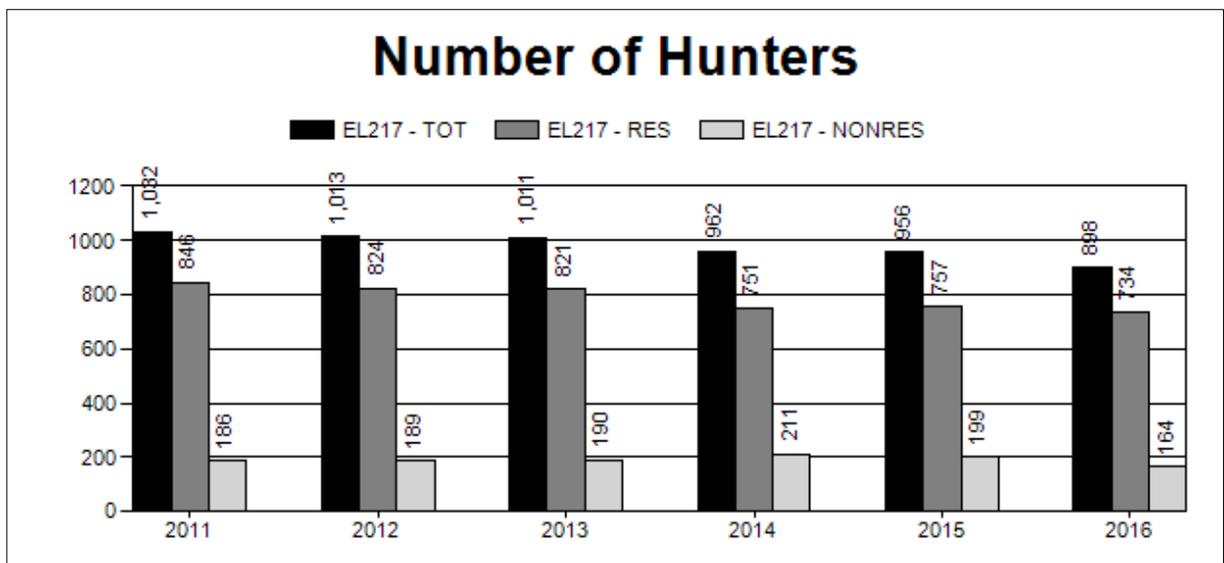
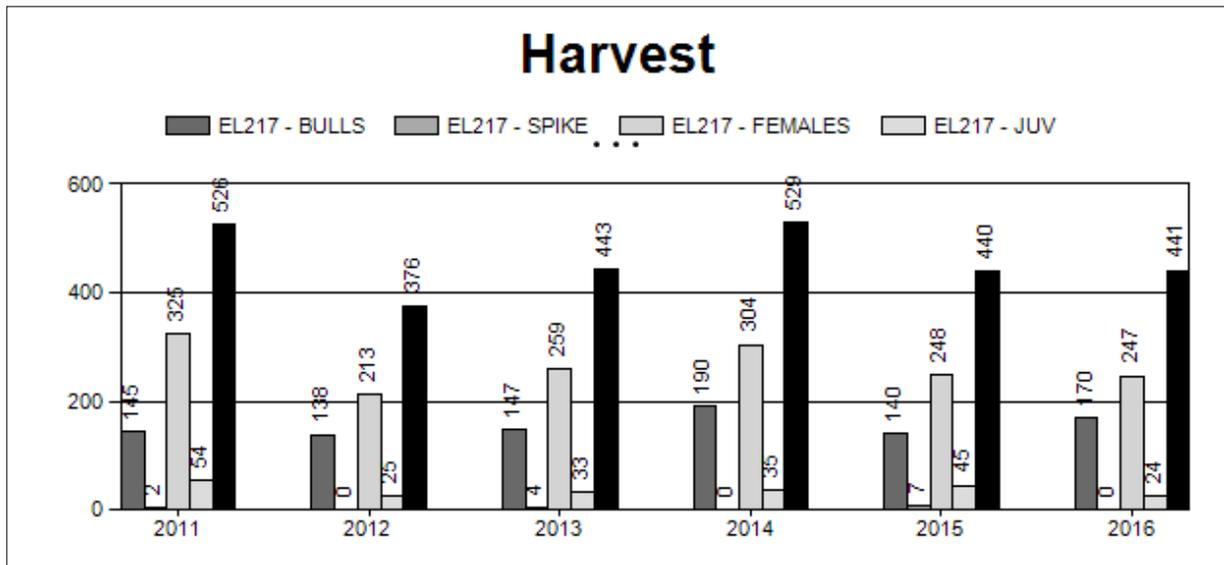
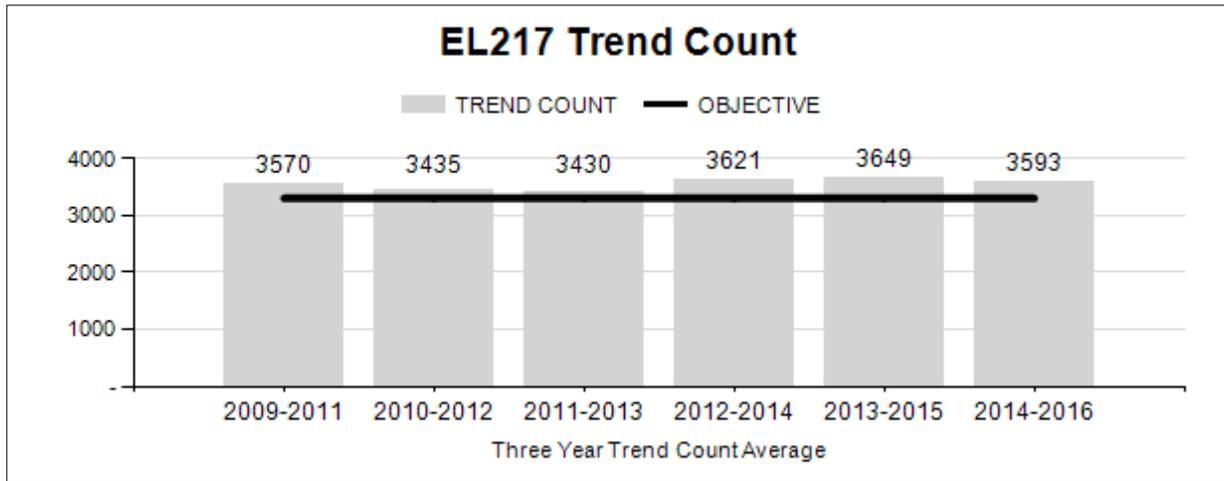
HUNT AREAS: 51, 53-54

PREPARED BY: Doug McWhirter/
Tony Mong

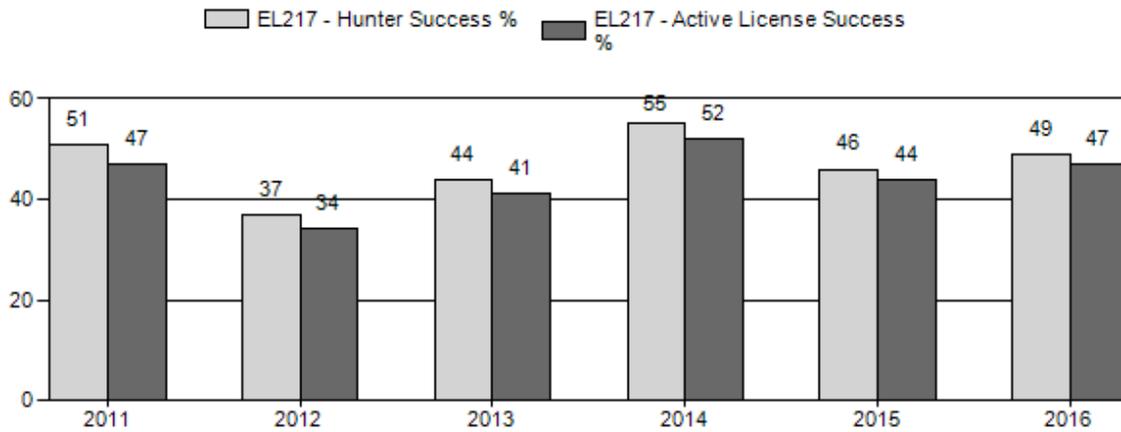
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	3,573	3,205	3,200
Harvest:	463	441	450
Hunters:	995	898	900
Hunter Success:	47%	49%	50%
Active Licenses:	1,062	938	900
Active License Success	44%	47%	50%
Recreation Days:	7,721	6,287	6,400
Days Per Animal:	16.7	14.3	14.2
Males per 100 Females:	20	80	
Juveniles per 100 Females	23	24	
 Trend Based Objective ($\pm 20\%$)			3,300 (2640 - 3960)
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-2.9%
Number of years population has been + or - objective in recent trend:			1

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

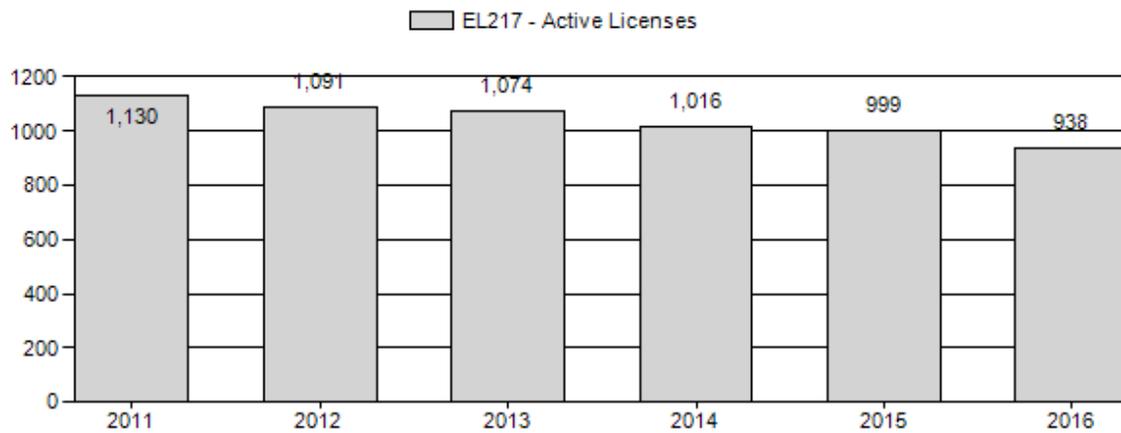
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	N/A%	n/a%
Males \geq 1 year old:	N/A%	n/a%
Juveniles (< 1 year old):	N/A%	n/a%
Total:	N/A%	n/a%
Proposed change in post-season population:	N/A%	n/a%



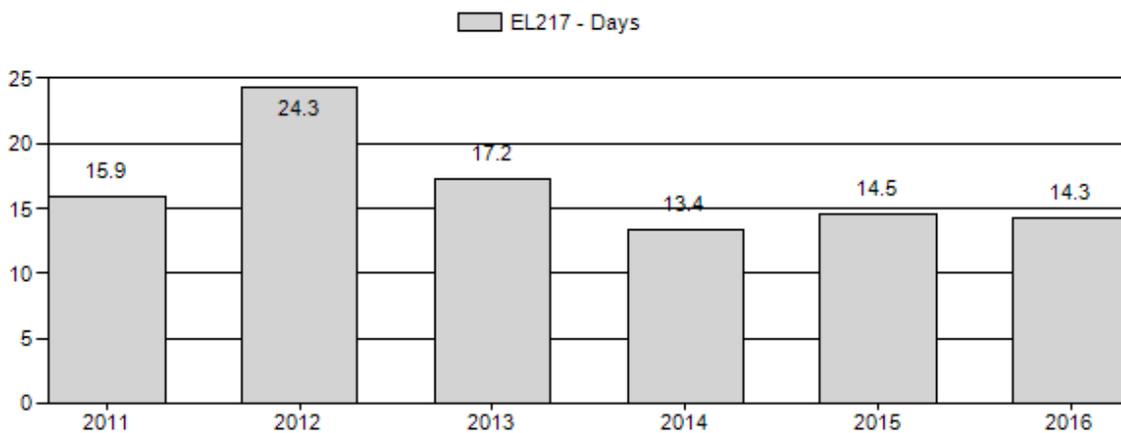
Harvest Success



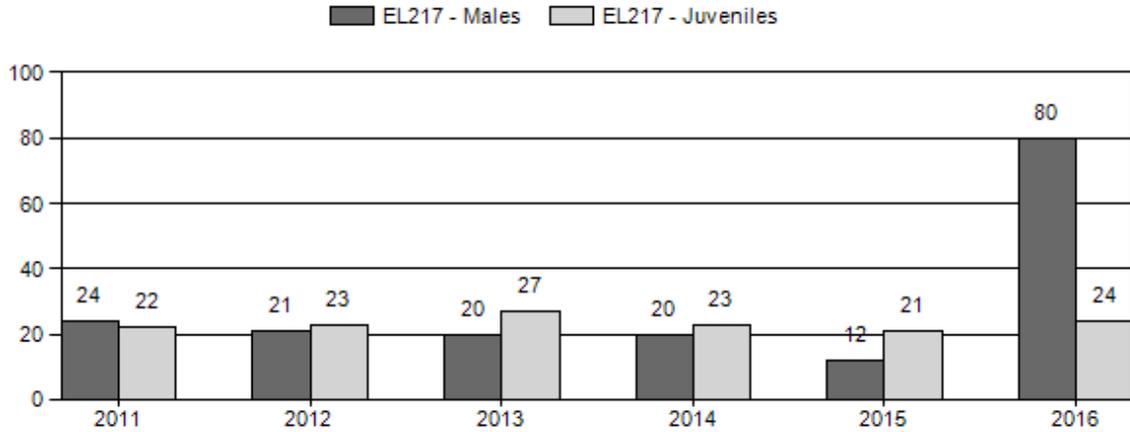
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL217 - CLARKS FORK

Year	Post Pop	MALES				FEMALES		JUVENILES				Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
										Cls	Obj							
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	0	53	467	520	39%	647	49%	158	12%	1,325	272	8	72	80	±0	24	±0	14

2011 - 2016 Trend Count Summary

for Elk Herd EL217 - CLARKS FORK

Year	Count Dates	Flight Time		Number Counted
		Hours	Minutes	
2011	Feb-12	4	0	3,483
2012	Feb-13	5	15	3,434
2013	Feb-14	5	0	3,372
2014	Jan-15	6	0	4,058
2015	Feb-16	7	0	3,517
2016	Jan-17	5	0	3,205

**2017 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 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	300	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	License Type	Quota change from 2016
54	7	+100
Herd Unit Total	7	+100

Management Evaluation

Mid-Winter Trend Count Objective: 3,300

Management Strategy: Special

2016 Mid-Winter Trend Count: 3,200

3-year Running Average Trend Count: 3,600

2016 Hunter Satisfaction: 60% Satisfied, 18% Neutral, 22% dissatisfied

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

Weather conditions during the 2016 biological year were characterized by near normal spring-summer moisture, and very mild fall conditions. Winter started mild, but became very harsh with record cold temperatures and snowfall for December and January at levels not observed during the last 50 years in some areas of the herd unit.

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.S Forest Service lands. See Cody region appendix.

Field Data

Classification surveys in 2016 yielded calf:cow ratios of 24:100, about the same compared to the most recent 5-year (2006-2015) average calf:cow ratio of 23:100, while the bull ratio was 80:100, about 4 times the current 5-year average of 19:100, and is due to the severe winter concentrating bulls into areas with other portions of the herd, both migratory and nonmigratory segments.

Harvest Data

Bull harvest improved in 2016 with 170 bulls taken in the herd unit during 2016, more than the 153 bulls harvested in 2015, and higher than the 5-year average (2011-2015) of 155 bulls. Although calf production has not improved in the migratory segment, harvest levels have been conservative enough to allow bull numbers and subsequent harvest to improve. The antlerless elk harvest in 2016 of 273, and was lower than the 5-year average (2011-2015) of 308 and the 293 antlerless harvest in 2016.

Population

The Clark's Fork Herd Unit uses a Mid-Winter Trend Count for a population objective and we track counts by hunt area and overall total (Table 1) to help guide our management.

Table 1. Sub unit and herd unit winter counts.

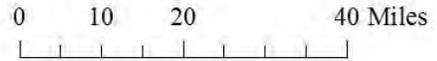
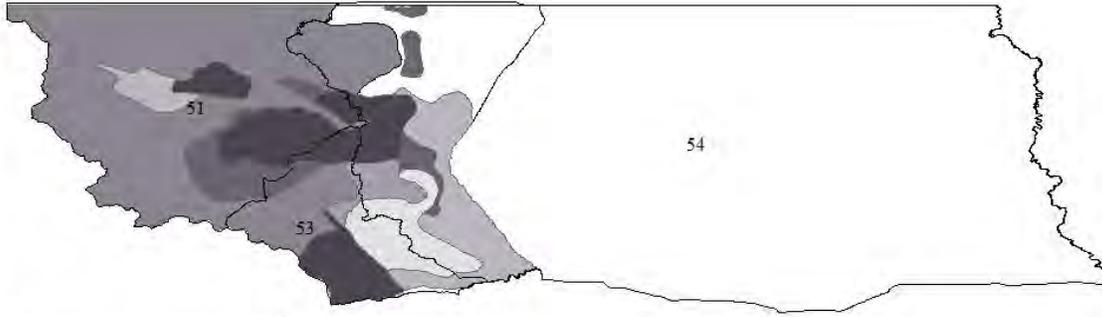
	Hunt Area 51	Hunt Area 53	Hunt Area 54	Herd Unit Total
Count Goal	1,800	600	900	3,300
2013	1,414	610	1,348	3,372
2014	1,914	638	1,506	4,058
2015	*	662	1,518	*
2016	760	458	1987	3205
3-year Average	1337	586	1670	3593

* No trend count data for Hunt Area 51 in 2015, 2012-2014 average was 1,790

Management Summary

We will continue with the current management structure that accommodates the migratory and nonmigratory segments of this population. We will have conservative bull seasons, with little antlerless harvest in Hunt Area 51 (migratory segment). In addition we will continue to maintain current elk numbers in Hunt Area 53 (migratory segment) through limited cow harvest and reduce elk numbers in Hunt Area 54 (nonmigratory segment) through increased cow harvest opportunity. The 2016 seasons should result in post-season population slightly above the objective of 3,300 observed elk on winter range.

EL217 Clark's Fork Elk Herd Seasonal Ranges



2016 - JCR Evaluation Form

SPECIES: Moose

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

HERD: MO201 - ABSAROKA

HUNT AREAS: 8-9, 11

PREPARED BY: Doug McWhirter/Tony Mong

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	9	11	10
Hunters:	9	11	10
Hunter Success:	100%	100%	100%
Active Licenses:	9	11	10
Active License Success:	100%	100%	100%
Recreation Days:	71	105	100
Days Per Animal:	7.9	9.5	10
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

Population Objective (\pm 20%) : 0 (0 - 0)

Management Strategy: Special

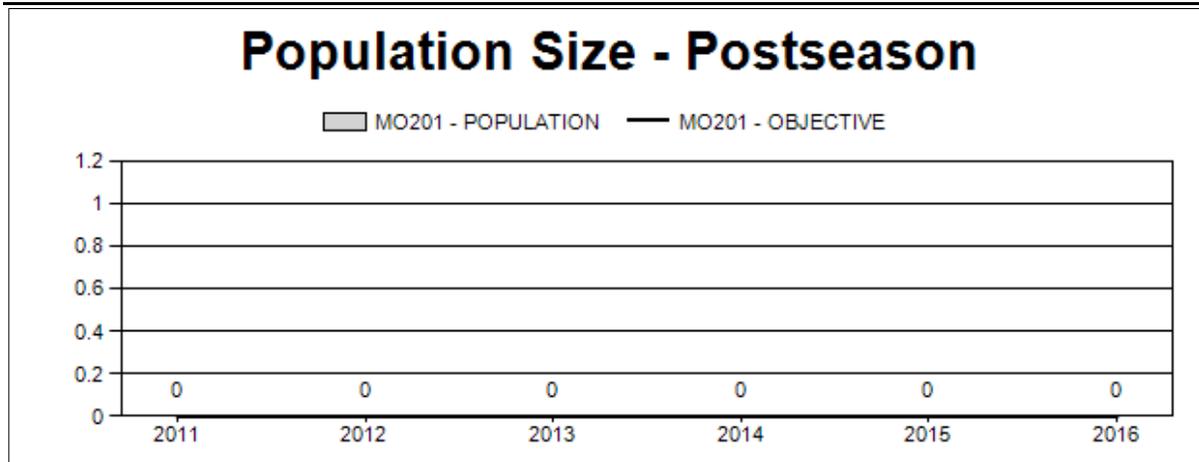
Percent population is above (+) or below (-) objective: N/A%

Number of years population has been + or - objective in recent trend: 0

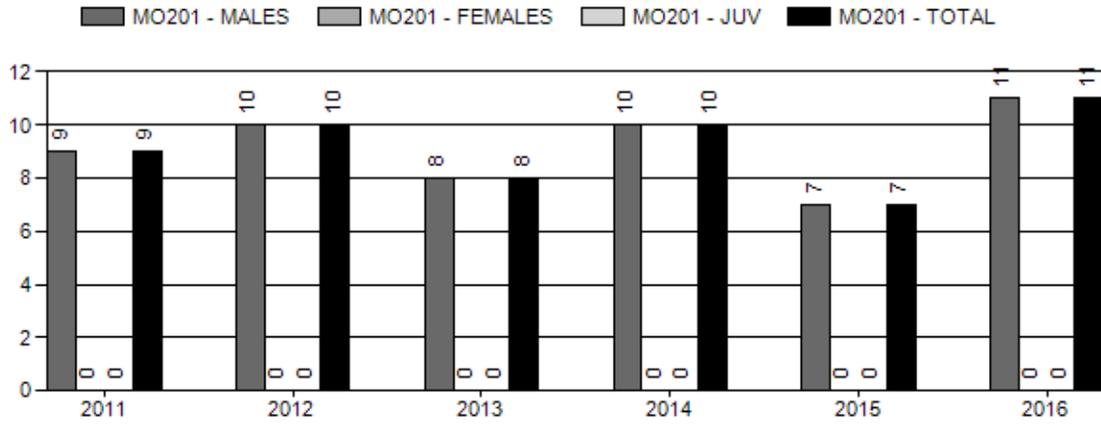
Model Date: 12/12/2016

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

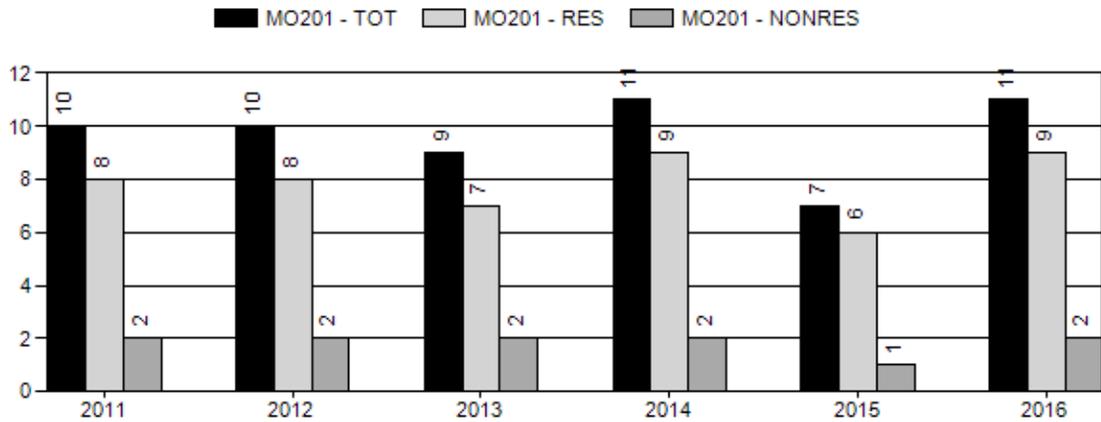
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	N/A%	n/a%
Males \geq 1 year old:	N/A%	n/a%
Total:	N/A%	n/a%
Proposed change in post-season population:	N/A%	n/a%



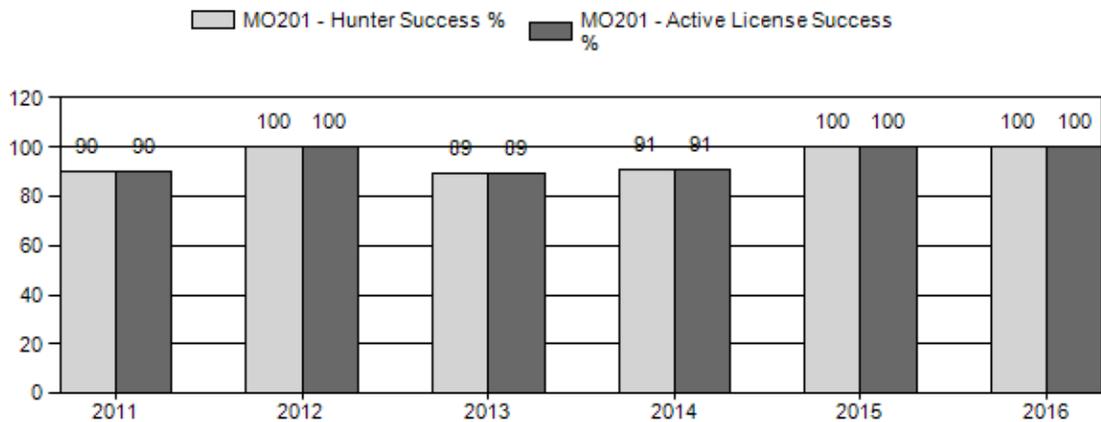
Harvest



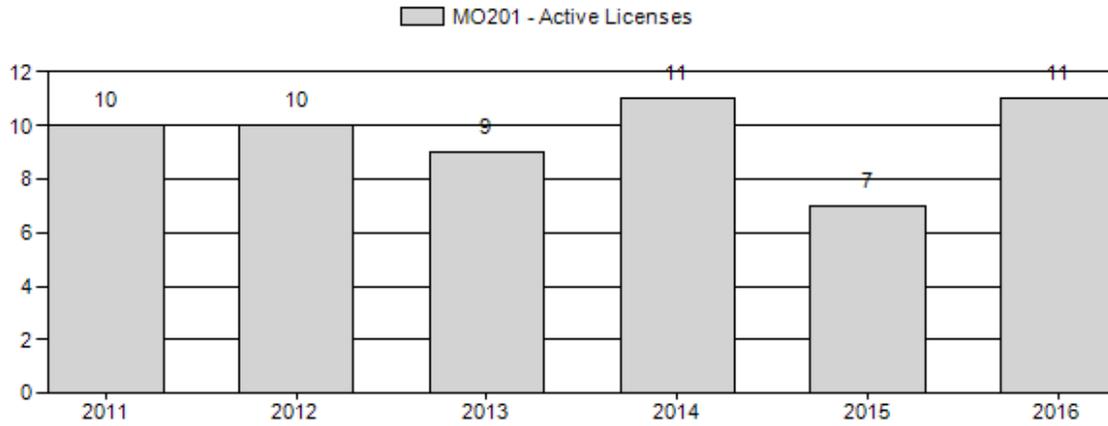
Number of Active Licenses



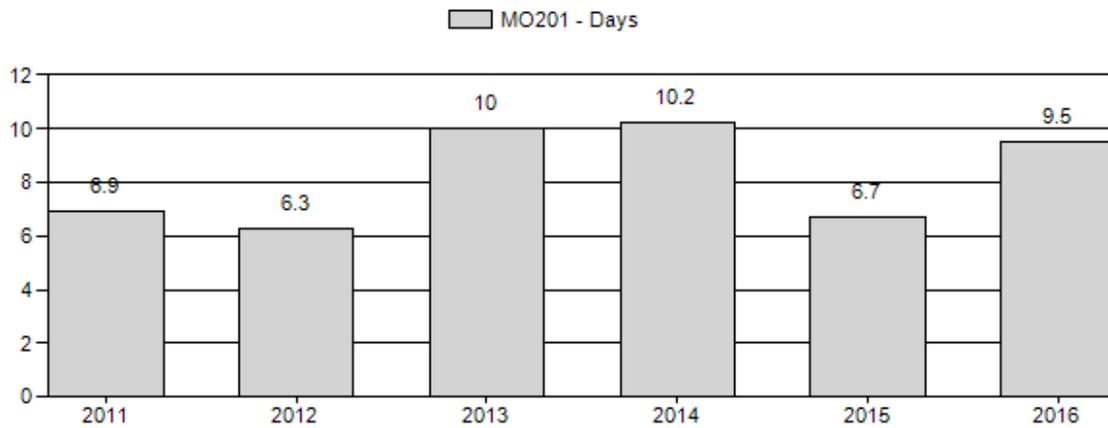
Harvest Success



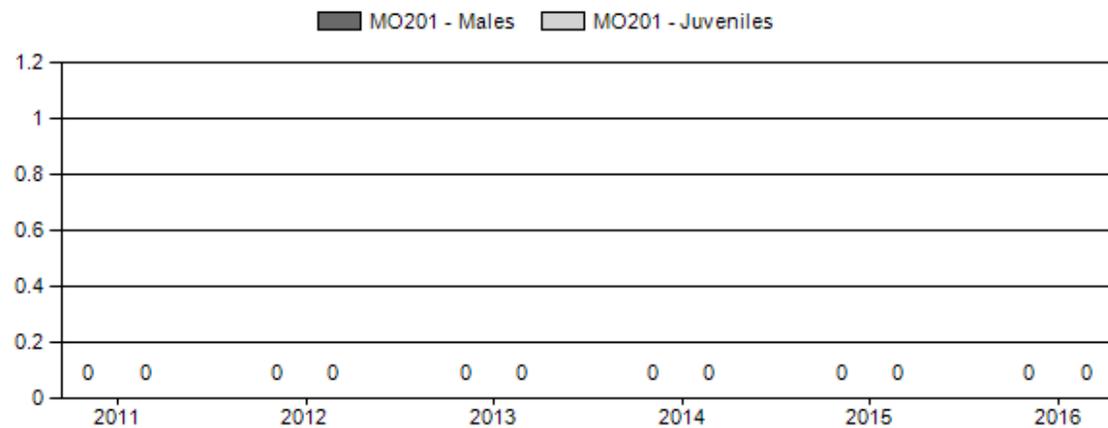
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2017 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; the Wood River drainage off national forest shall be closed
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	License Type	Quota change from 2016
		No Changes
Hunt Area Total		No Changes

Management Evaluation

Median Age Objective: > 4.5 years

Hunter Effort Objective: < 12 days

Secondary Median Age Objective: 40% > 5 years

Management Strategy: Special (2015 data)

Most Recent 5-Year Running Median Age: 5.0 years

Most Recent 5-Year Running Average Hunter Effort: 9.5 days

Most Recent 5-Year Running Average Age Objective, % > 5 Years: 49%

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.

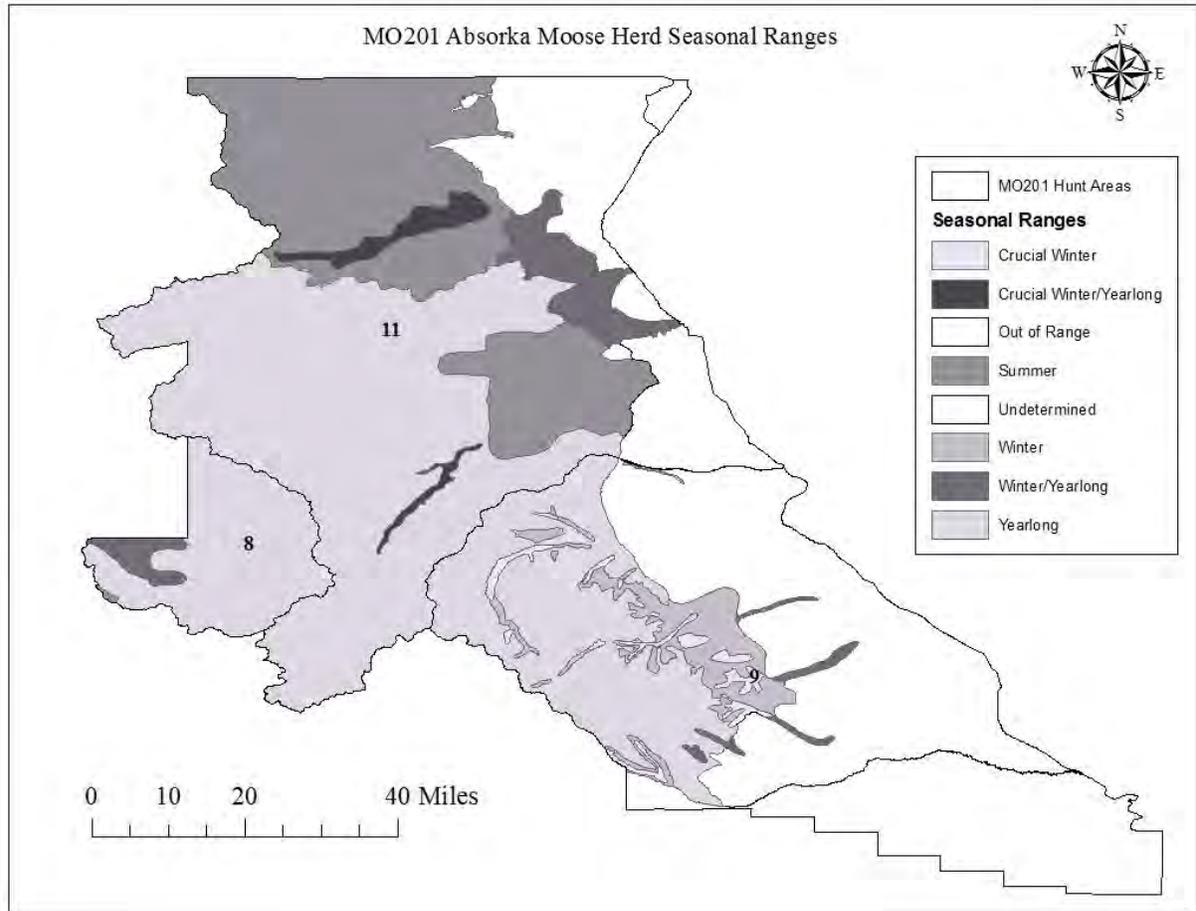
In 2016, hunter success was 100% (5/5) in Area 9 and 100% (6/6) in Area 11. Average age of harvested moose in hunt area 9 was 3.6 with 1 out of the 5 moose being 5 years or older. We saw a similar average age of moose harvested in hunt area 11 at 4.1 with 3 moose being 5 years or older. For the entire herd unit we see an overall average age of 3.9 and a 5 year running average of 5. Hunter effort was 7.8 days/moose harvested in Area 9 and 11.0 days/harvested moose in Area 11, and averaging 9.5 days/moose harvested for the herd unit.

Population

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

Management Summary

The current season structures in Hunt Areas 9 and 11 address moose management goals and we think 5 permits in Hunt Area 9 and 5 permits for Hunt Area 11 for 2016 should result in the harvest of 9-10 bull moose. The primary objectives for this herd 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.



2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS201 - CLARKS FORK

HUNT AREAS: 1

PREPARED BY: DOUG
MCWHIRTER

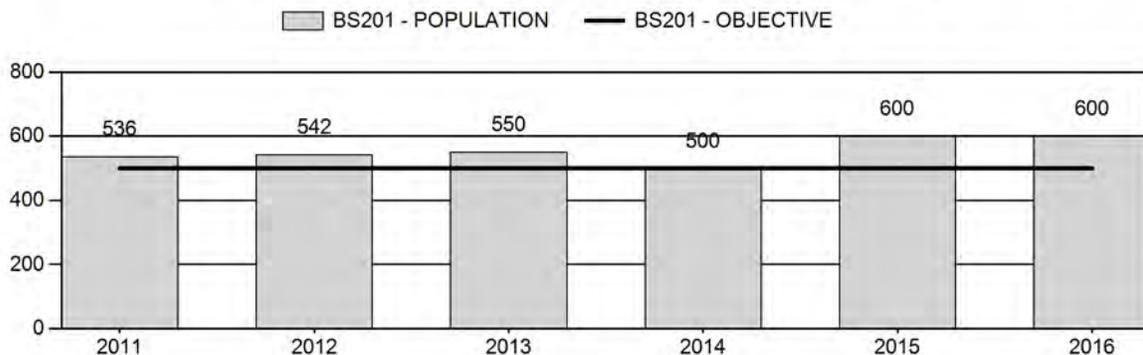
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	546	600	500
Harvest:	16	18	18
Hunters:	20	20	20
Hunter Success:	80%	90%	90 %
Active Licenses:	20	20	20
Active License Success:	80%	90%	90 %
Recreation Days:	194	166	175
Days Per Animal:	12.1	9.2	9.7
Males per 100 Females	31	0	
Juveniles per 100 Females	31	0	

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:	1
Model Date:	02/11/2016

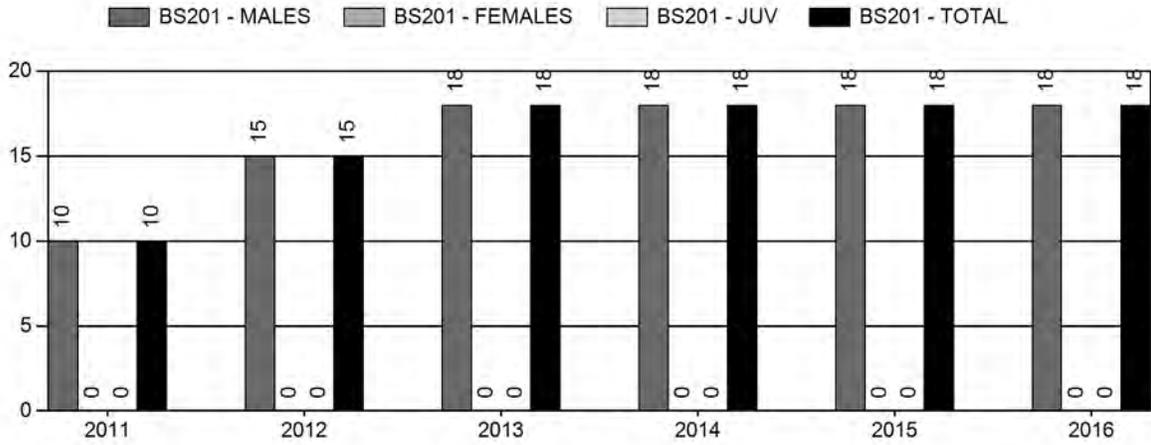
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	12.3%	12%
Total:	2.8%	2.5%
Proposed change in post-season population:	+3.5%	0%

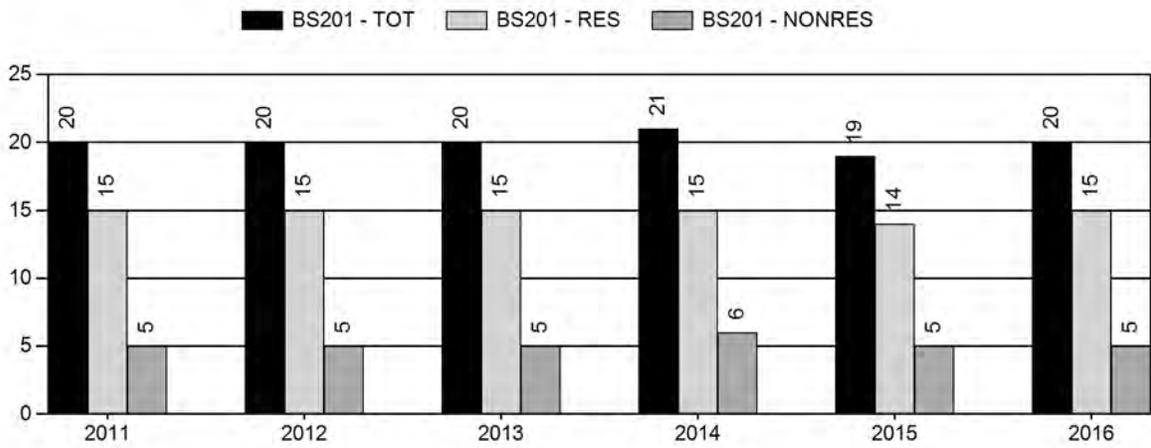
Population Size - Postseason



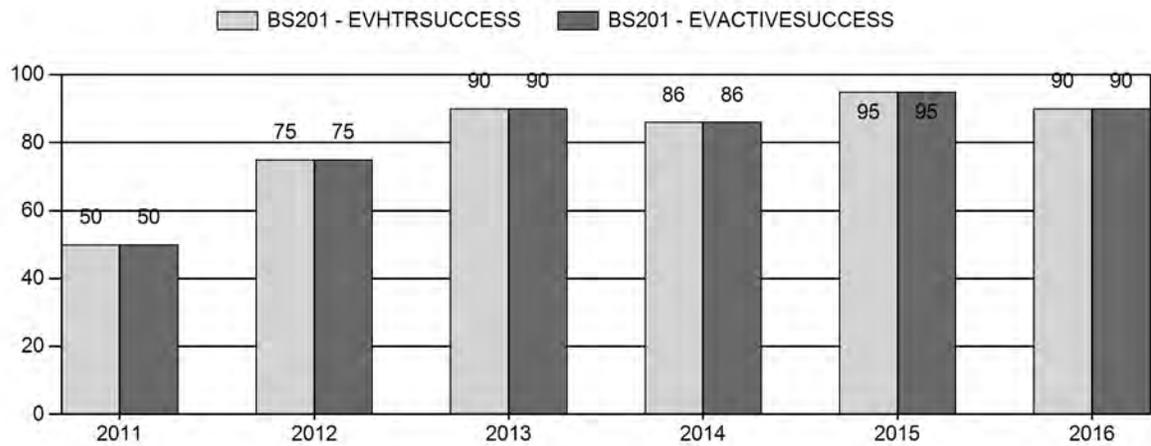
Harvest



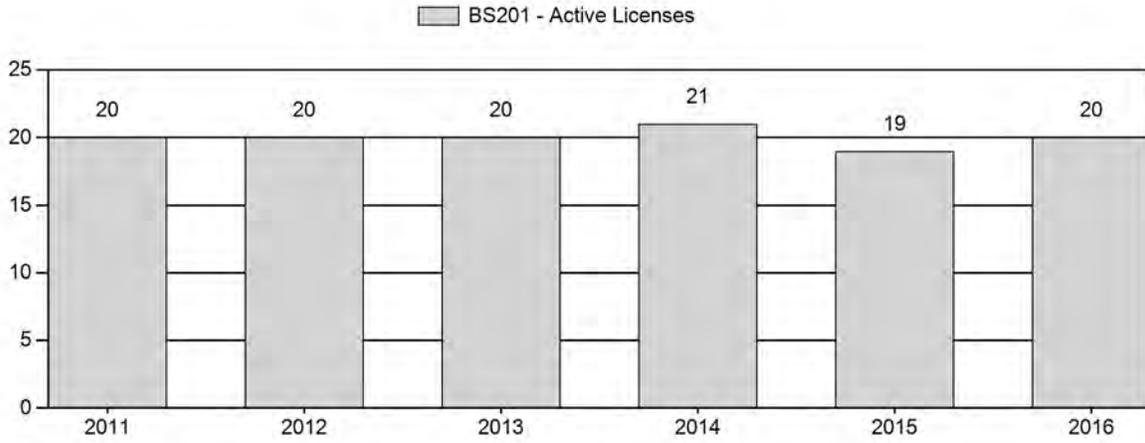
Number of Active Licenses



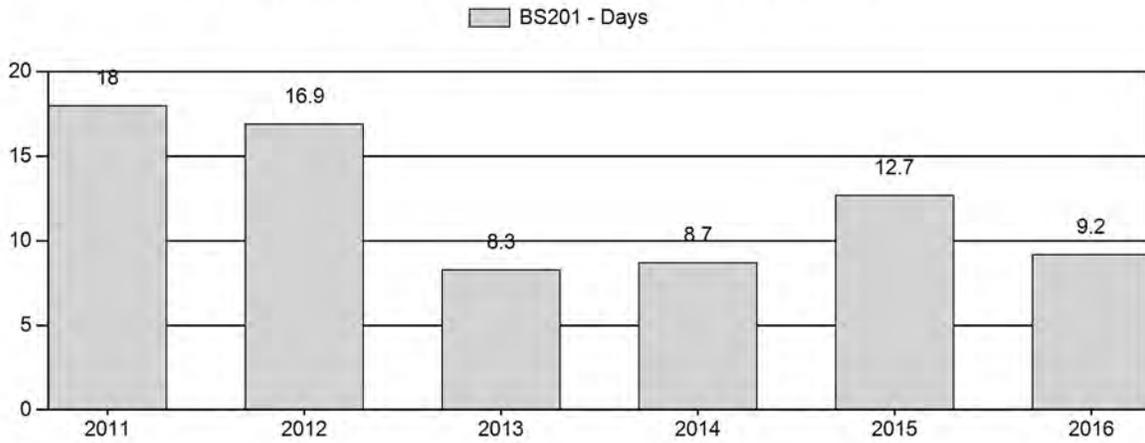
Harvest Success



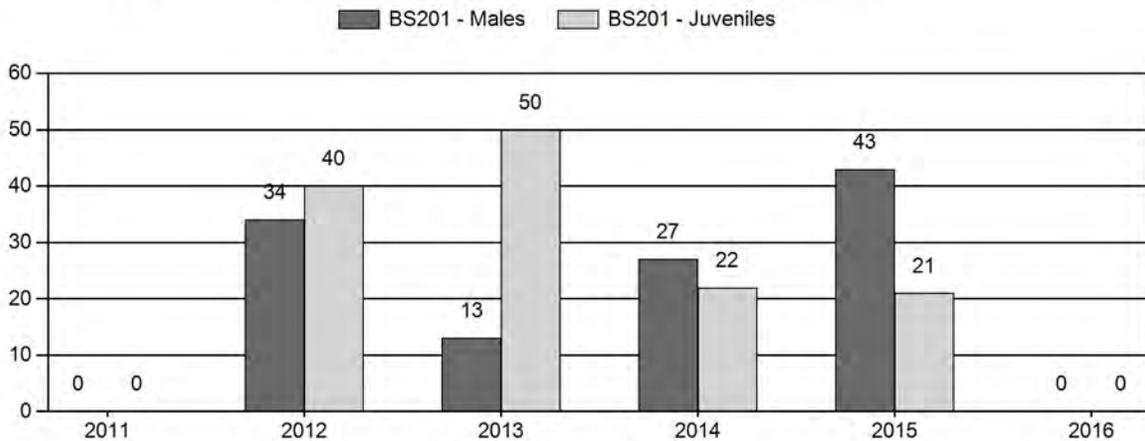
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 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
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	600	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

**2017 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 2016
		No Changes
Total		No Changes

Management Evaluation

Current Postseason Population Management Objective: 500

2016 Postseason Population Estimate: 600

2017 Proposed Postseason Population Estimate: 500

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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures.

Habitat

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

Field Data

Classification surveys were not flown in the winter of 2016-2017 (as of this time); however, samples from 2015 surveys 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 11 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 2016, 20 hunters took 18 rams for a success rate of 90.0%, which is among the better years seen since permits were increased to 20 in 2007. The average age of rams killed in 2015 was down to 6.5 years old, with only 22% of the rams killed being 8 years old and older.

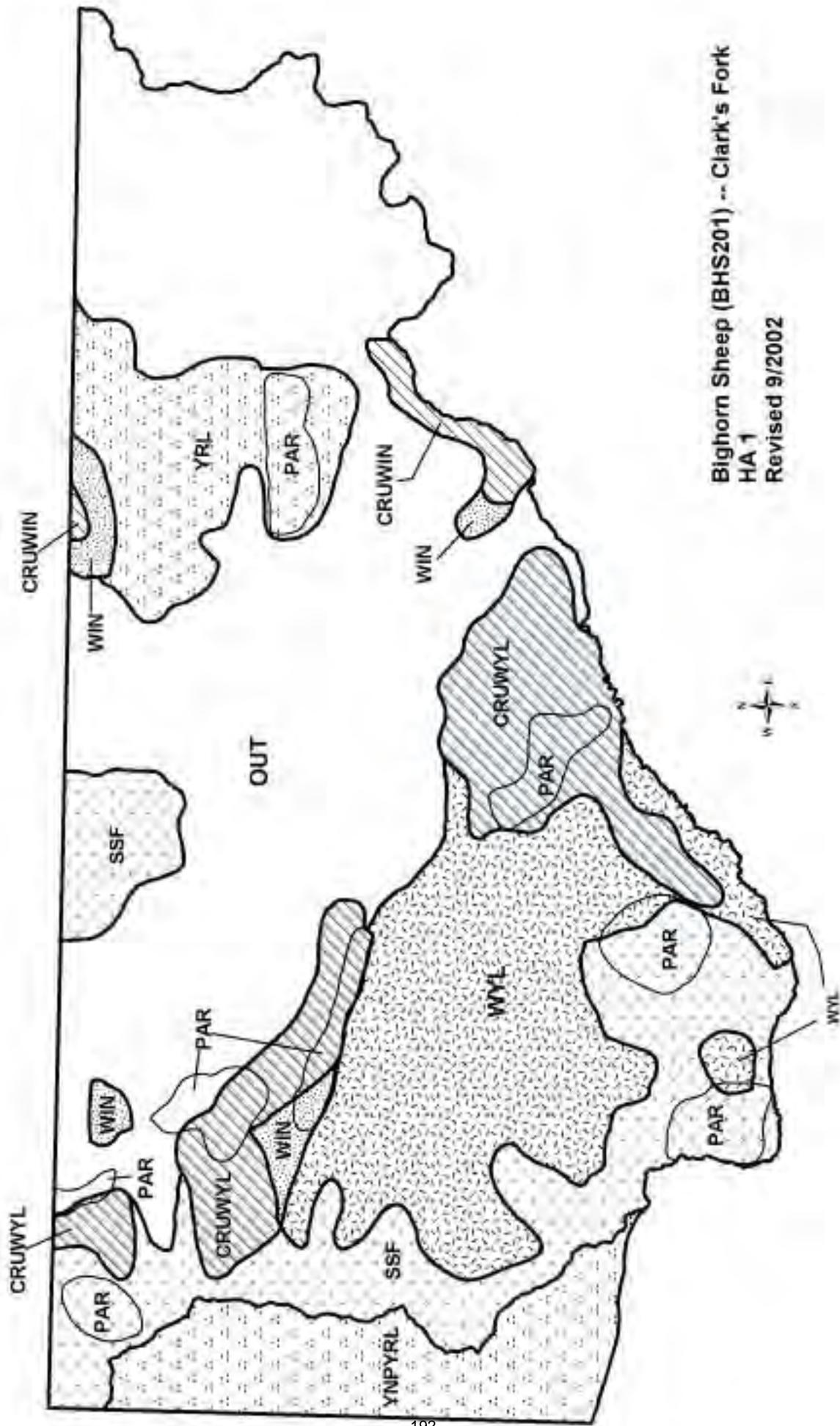
Population

The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model from 2016 was used to estimate the population 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 2016 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 2016 season.

Harvest parameters for the Clarks Fork Bighorn Sheep Herd Unit, 1968-2016 (Wyoming portion only).

	1968-72	1973-91	1992-97	1998-2002	2003-2006*	2007-2014*	2015*	2016*
Permits	20	24	20	16	16	20	20	20
Harvest	7.4	11.9	10.7	10.6	14.3	14.0	19	18
% Success	49.0%	53.5%	52.9%	67.7%	90.3%	70.0%	95.0%	90.0%
Effort (days/ram)	6.8	16.7	17.7	16.7	10.3	17.0	12.7	9.2
Avg. Age	-	6.6	6.9	7.0	6.4	7.1	8.0	6.5
% Rams \geq 8 Yrs	-	31.7%	26.7%	32.0%	21.1%	37.8%	61.1%	22.2%
% Rams \leq $\frac{3}{4}$ Curl	-	-	-	-	15.9%	6.3%	5.6%	5.6%

* “any ram” regulation in place



Bighorn Sheep (BHS201) -- Clark's Fork
 HA 1
 Revised 9/2002

2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS202 - TROUT PEAK

HUNT AREAS: 2

PREPARED BY: DOUG
MCWHIRTER

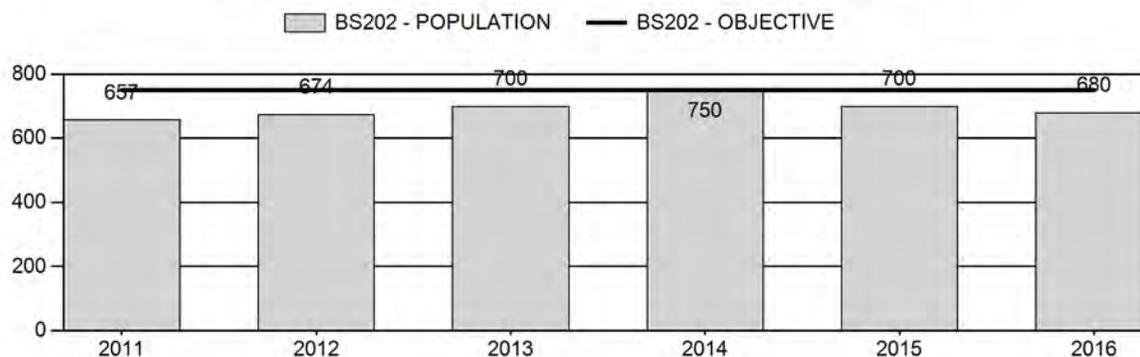
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	696	680	700
Harvest:	19	21	19
Hunters:	25	28	20
Hunter Success:	76%	75%	95 %
Active Licenses:	25	28	20
Active License Success:	76%	75%	95 %
Recreation Days:	213	275	275
Days Per Animal:	11.2	13.1	14.5
Males per 100 Females	34	0	
Juveniles per 100 Females	28	0	

Population Objective (± 20%) :	750 (600 - 900)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-9.3%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/11/2016

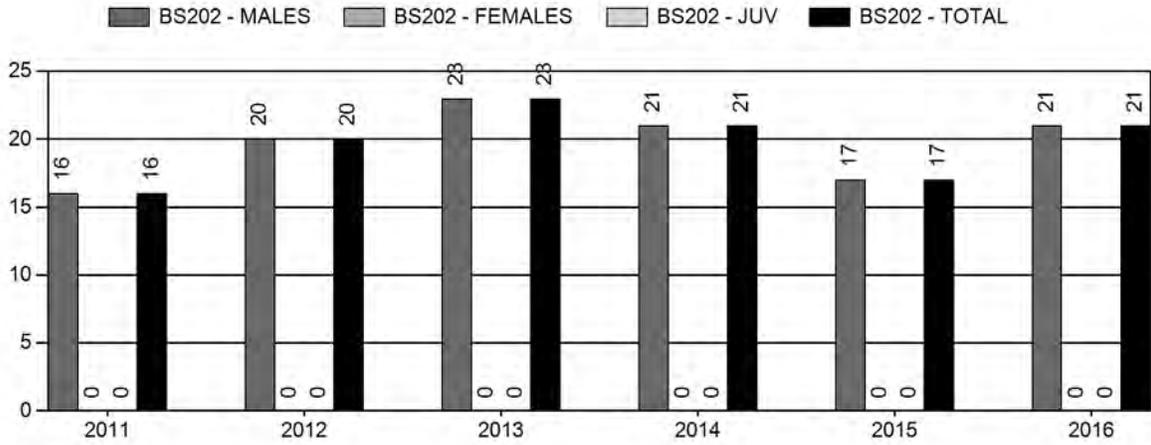
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	11.8%	12%
Total:	2.7%	2.5%
Proposed change in post-season population:	+2.8%	2.5%

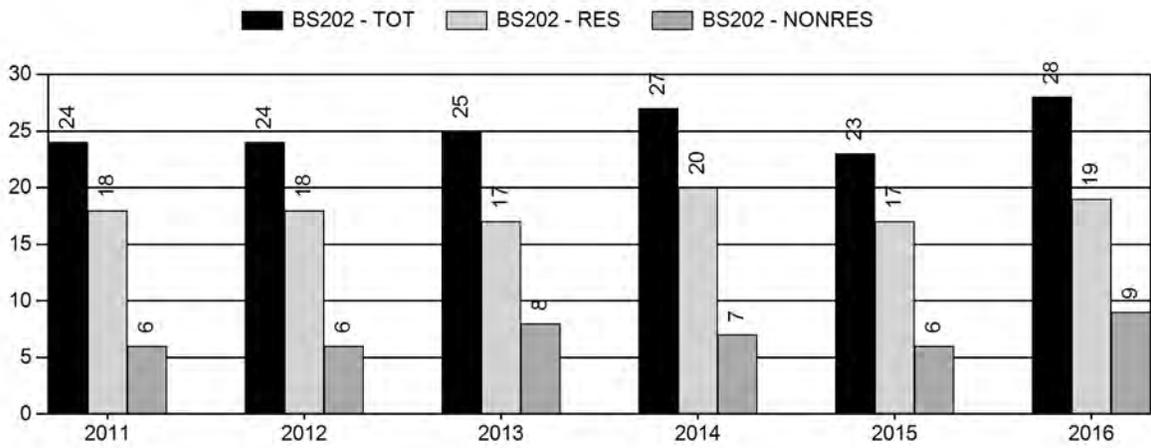
Population Size - Postseason



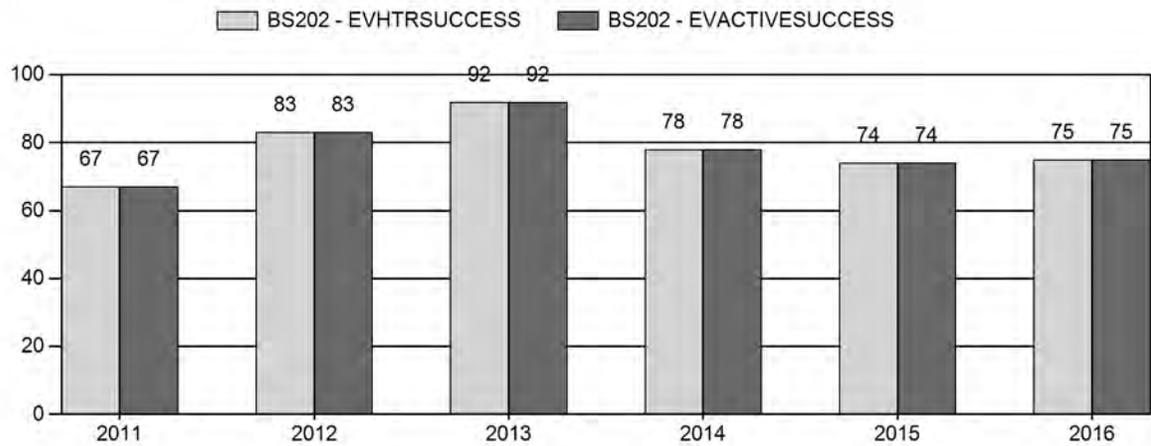
Harvest



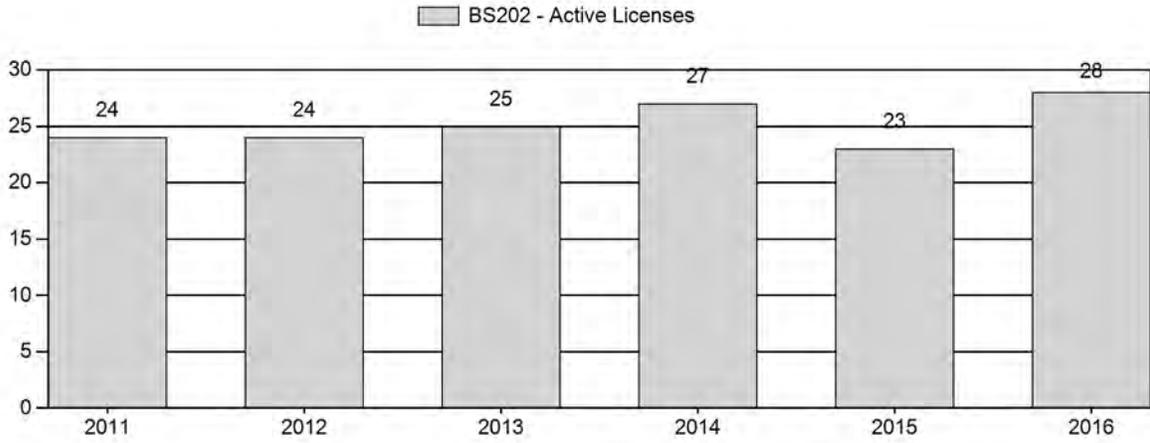
Number of Active Licenses



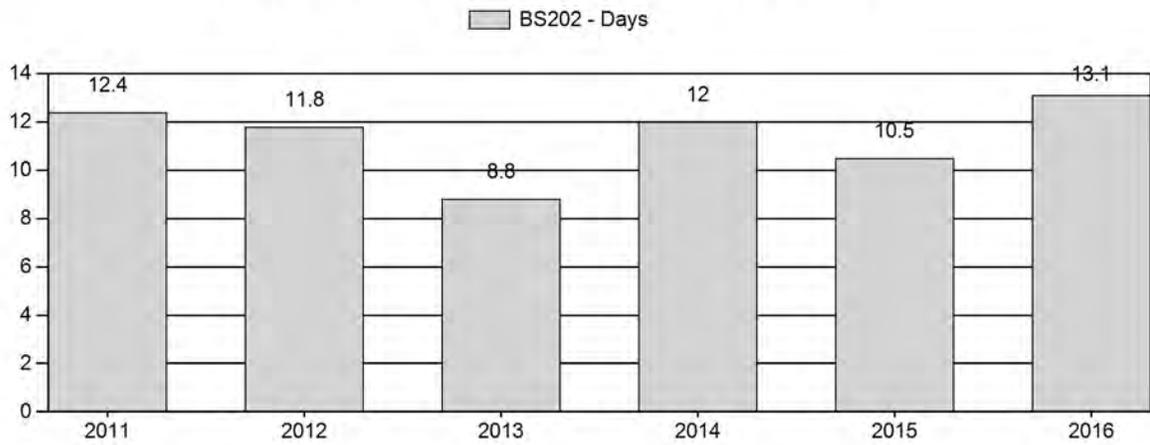
Harvest Success



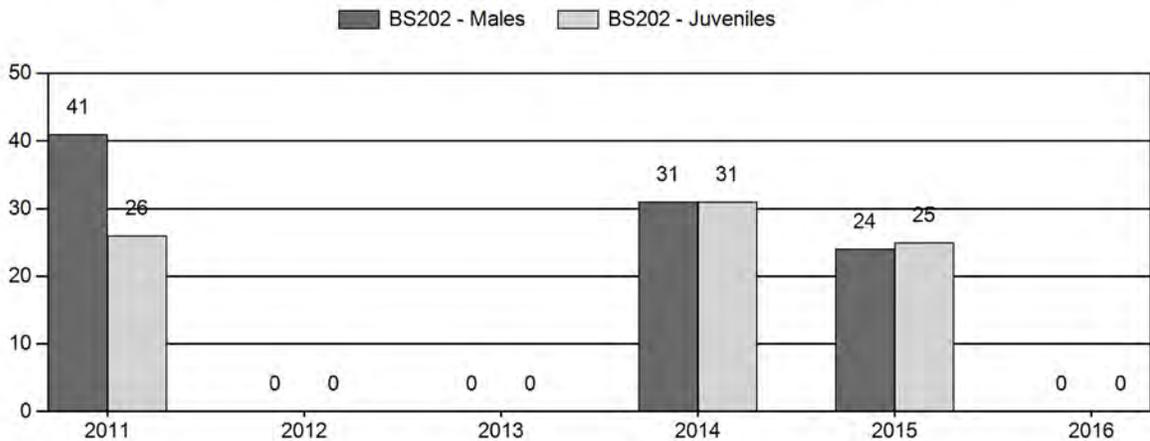
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2016 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	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

**2017 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

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 2016
2		No Changes
Total		No Changes

Management Evaluation

Current Postseason Population Management Objective: 750

2016 Postseason Population Estimate: 690

2017 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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Classification surveys have not been flown in the winter of 2016-2017 as of this time; however, seven surveys have been conducted over the last 11 years, resulted 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 2015 resulted in only 143 sheep classified with the lamb:ewe ratio of 20:100, and ram:ewe ratio of 24:100.

Harvest Data

In 2016, 28 hunters took 21 rams for a success rate of 75%, 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 8.3 years old, with 57.1% of harvested rams being 8 years old or older. One ram less than $\frac{3}{4}$ curl was killed in 2016. All indicators, plus good lamb:ewe and ram:ewe ratios from recent surveys, indicate good population performance, and an acceptable presence of mature rams.

Population

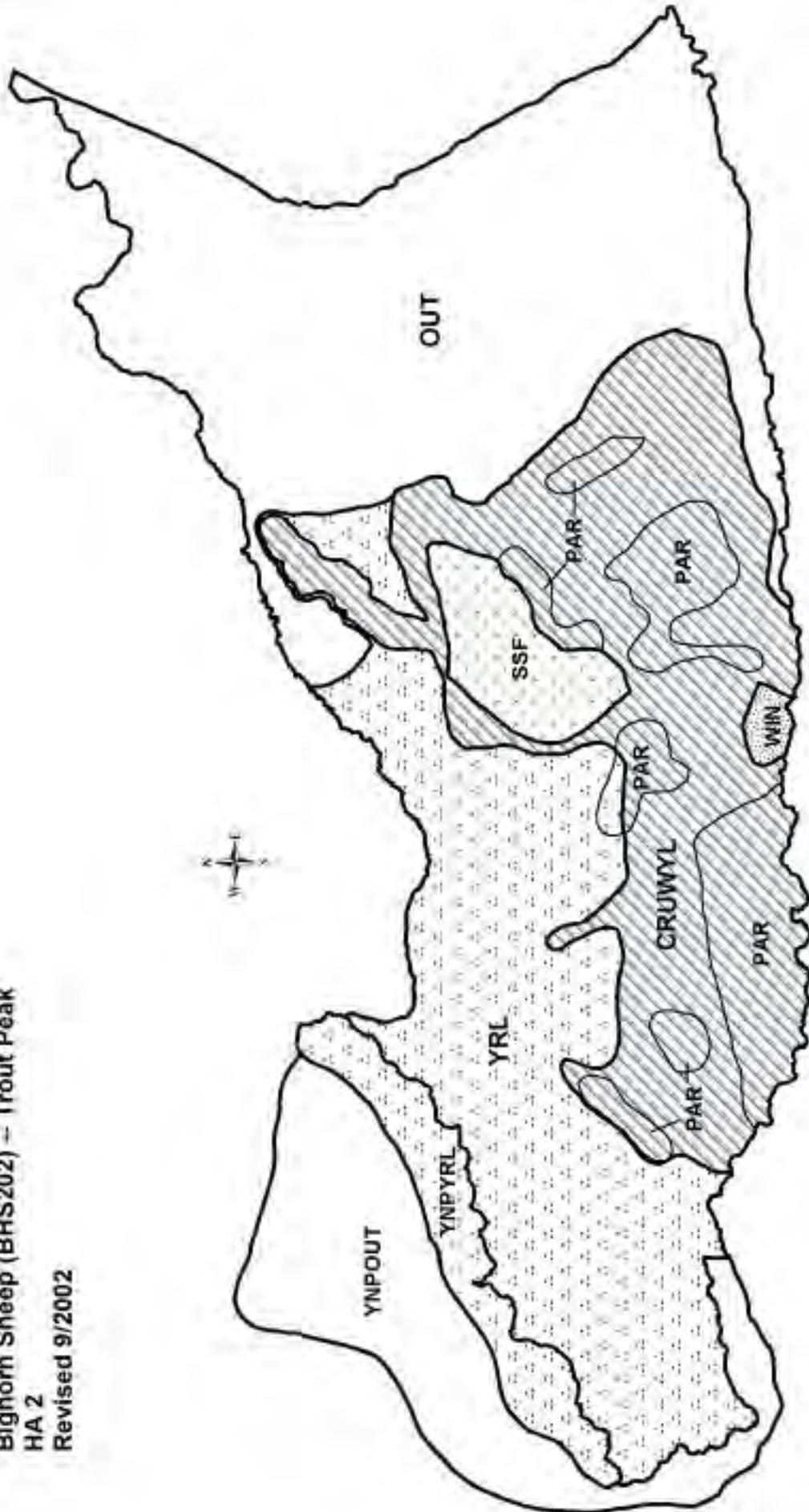
The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model from 2016 was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate and trend appears to be very reasonable. The postseason 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 HA 2 the Trout Peak Bighorn Sheep Herd, 1978-2016.

	1978-96	1997-2002	2003	2004-2014*	2015*	2016*
Permits	32	24	28	24 ⁺	24	28
Harvest	18.8	15.2	16	19.1	17	21
% Success	61.0%	63.8%	61.5%	78.7%	74%	75.0%
Effort	18.2	16.0	25.1	12.6	10.5	13.1
Avg. Age	5.9	6.7	6.6	7.1	7.3	8.3
% Rams \geq 8 Yrs	19.5%	25.6%	18.8%	33.1%	29.4%	57.1%
% Rams \leq $\frac{3}{4}$	-	-	-	4.0%	5.9%	4.8%

+ 25 permits were issued in 2006, 2007, and 15 and 28 permits were issued in 2008 and 2009, respectively due to the Gunbarrel Fire. *any ram regulation in place

Bighorn Sheep (BHS202) – Trout Peak
HA 2
Revised 9/2002



2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS203 - WAPITI RIDGE

HUNT AREAS: 3

PREPARED BY: DOUG
MCWHIRTER

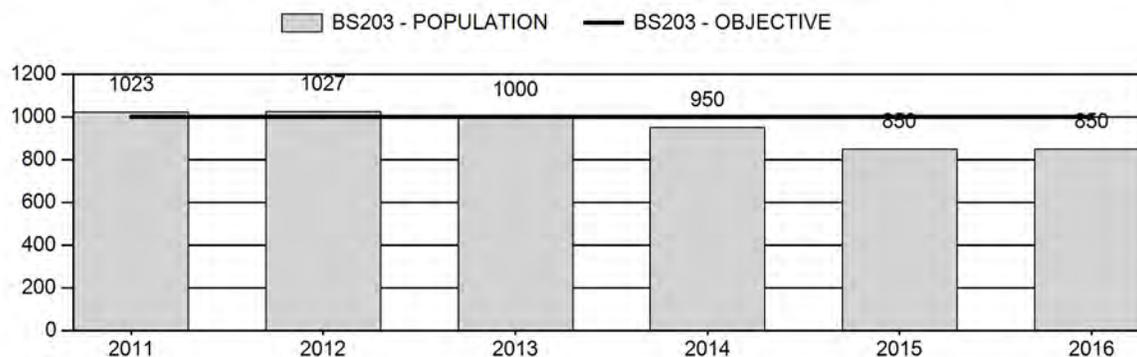
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	970	850	850
Harvest:	35	32	35
Hunters:	42	40	40
Hunter Success:	83%	80%	88 %
Active Licenses:	42	40	40
Active License Success:	83%	80%	88 %
Recreation Days:	367	282	300
Days Per Animal:	10.5	8.8	8.6
Males per 100 Females	28	0	
Juveniles per 100 Females	23	0	

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:	2
Model Date:	2/11/2016

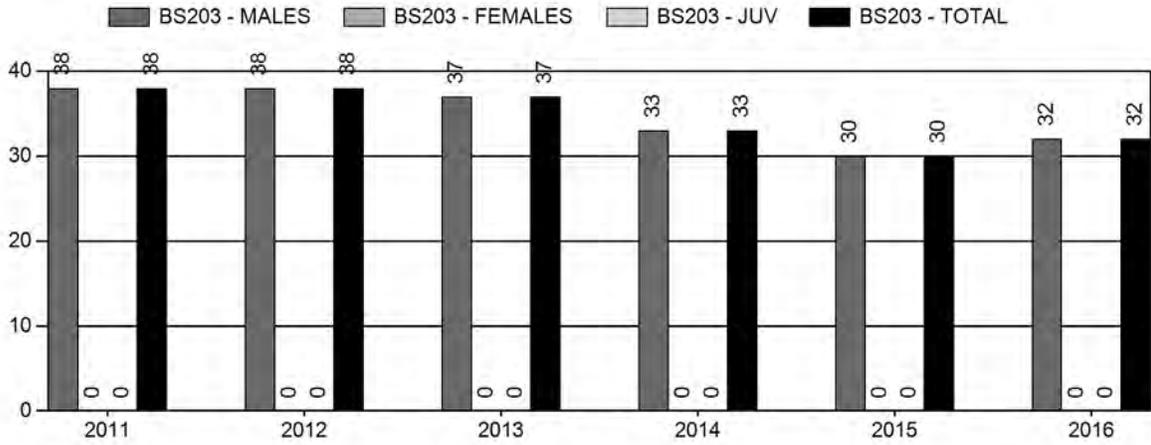
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	18.6%	15%
Total:	3.6%	2.5%
Proposed change in post-season population:	-0.8%	0%

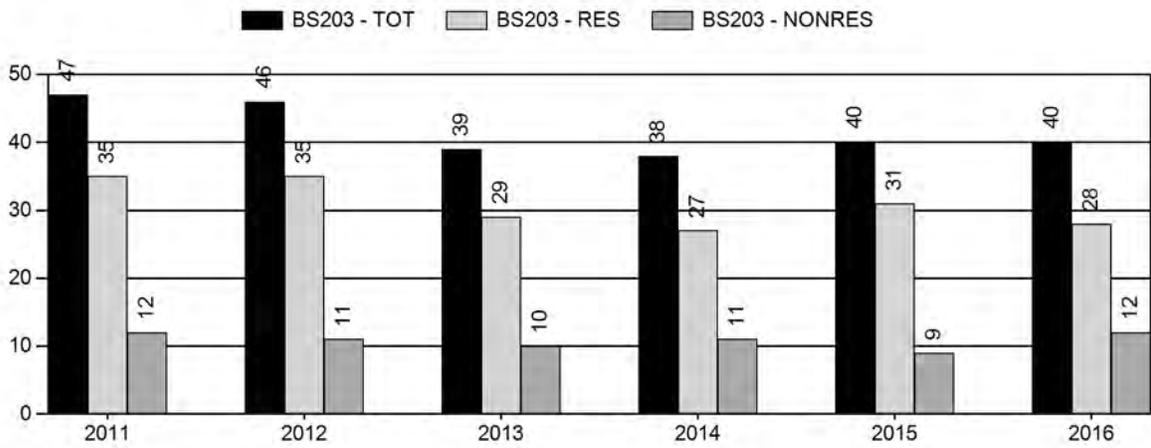
Population Size - Postseason



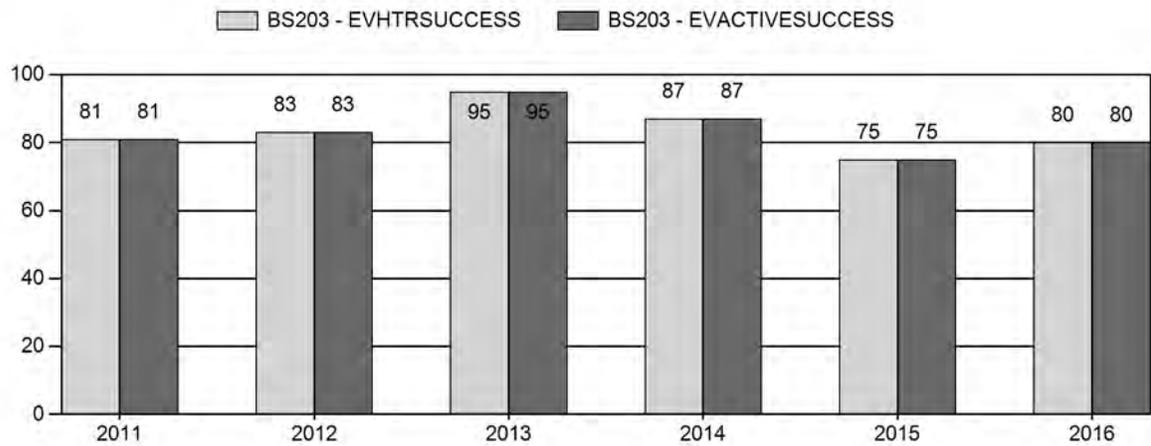
Harvest



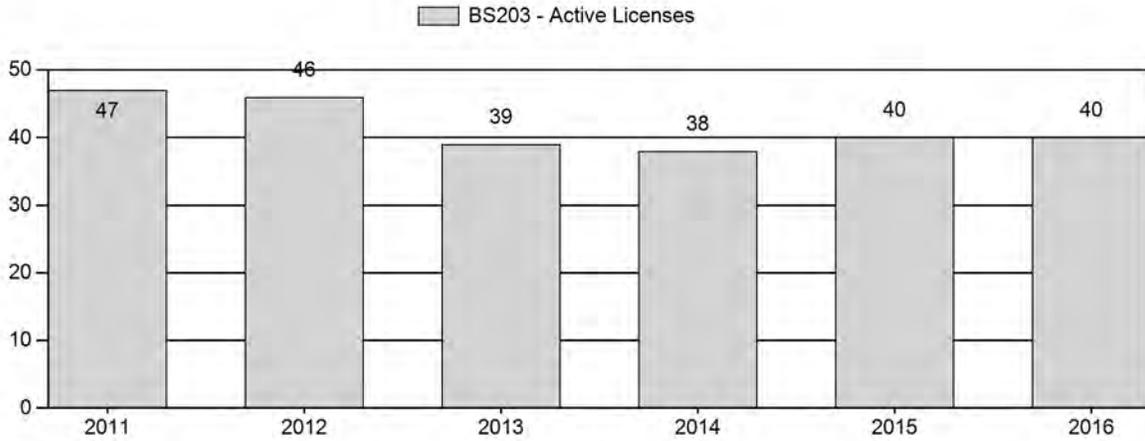
Number of Active Licenses



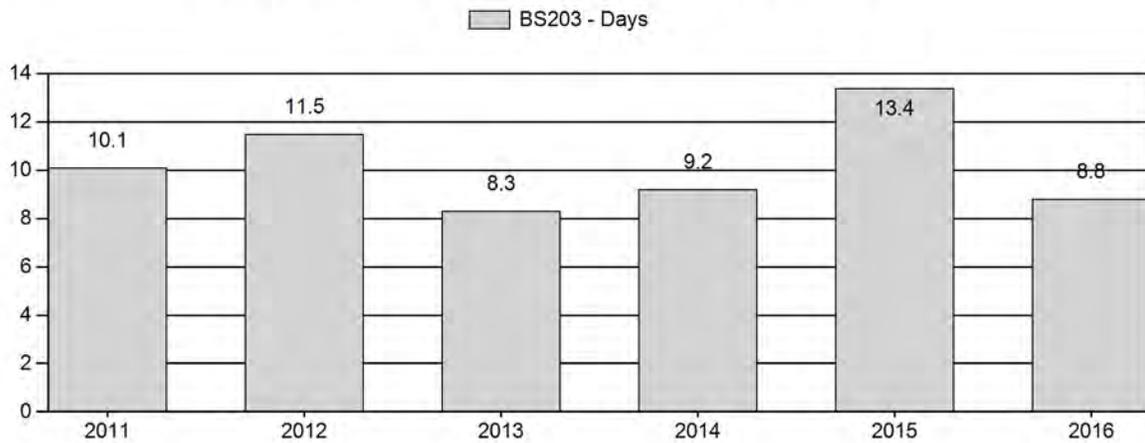
Harvest Success



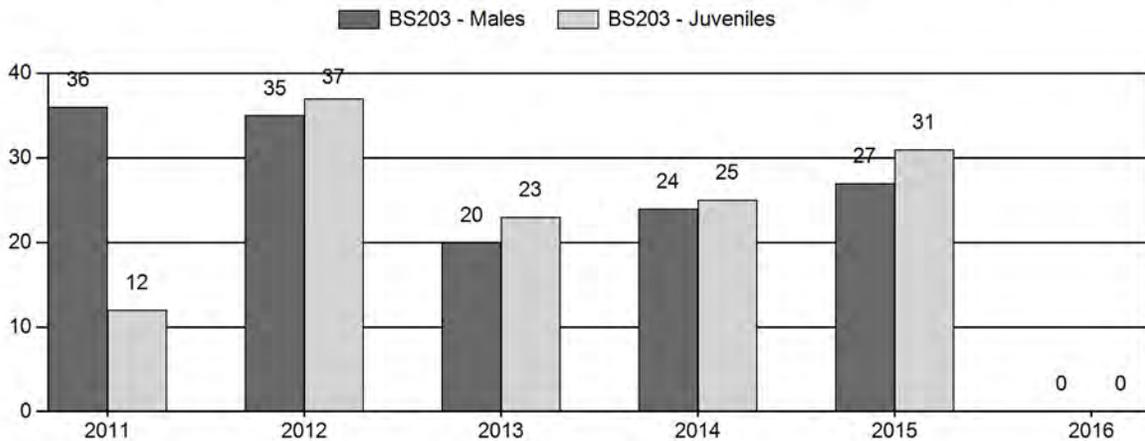
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 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
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

**2017 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 2016
3	1	No Changes
Total	1	No Changes

Management Evaluation

Postseason Population Management Objective: 1,000

2016 Postseason Population Estimate: 850

2017 Proposed Postseason Population Estimate: 800

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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Classification surveys have not been flown in the winter of 2016-2017 as of this time; however, eight classification surveys were flown over the last 11 years with samples ranging from 315 to 914 classified sheep. Lamb:ewe ratios 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 2015 resulted in 536 sheep observed, a lamb:ewe ratio of 31:100, and a ram:ewe ratio of 27:100, which is about average for this herd unit.

Harvest Data

In 2016, 40 hunters took 32 rams for a success rate of 80%, which is average for this sub-herd. The average age of rams killed in 2013 was 7.7 years old, with 59% of the rams killed being 8 years old and older, and three rams less than ¾ curl. Hunter expended 8.8 days per ram, which is about average for this sub-herd.

Population

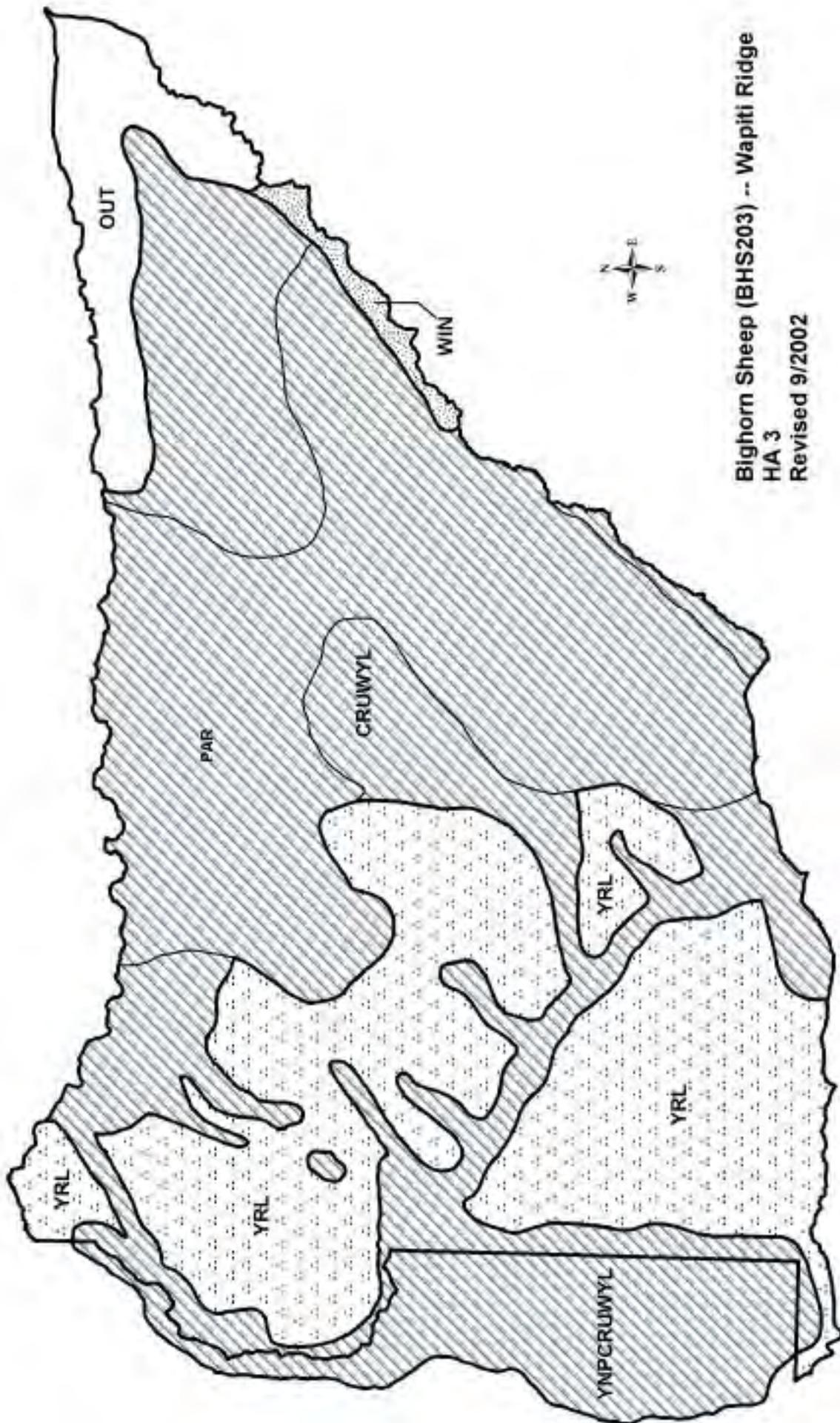
The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model from 2016 was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be reasonable. The rather steep decline produced by the model however, is not believed to entirely realistic. The postseason 2015 population is estimated to be 850 sheep with a slight decline expected. Efforts will continue to improve this model and improve reliability. Further permit reductions may be necessary in the near future to preserve or improve ram hunting opportunities, if surveys indicate this winter had a higher than normal mortality. 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 2014-2016 seasons. The postseason 2017 population is estimated to be approximately 850 sheep.

Harvest parameters for HA 3 the Wapiti Ridge Bighorn Sheep Herd Unit, 1978-2015.

	1978-83	1984-85	1986-92	1993-99	2000-04*	2005-12*	2013-14*	2015*	2016*
Permits	32	36	40	44	48	44+	40	40	40
Harvest	22.5	29.5	36.1	36.9	38.0	36.5	35.0	30	32
%	69.3%	81.2%	83.0%	79.0%	77.6%	81.4%	90.9%	75.0%	80.0%
Effort	11.3	9.3	8.6	9.0	9.8	10.3	8.75	13.4	8.8
Avg.	5.9	7.1	6.9	7.1	6.8	6.7	7.5	7.3	7.7
% Rams	12.8%	49.2%	41.5%	35.1%	31.0%	29.3%	50.3%	43.3%	59.4%
% Rams	-	-	-	-	8.4%	8.6%	7.1%	13.3%	9.4%

* “any ram” regulation in place

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



Bighorn Sheep (BHS203) -- Wapiti Ridge
HA 3
Revised 9/2002

2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS204 - YOUNTS PEAK

HUNT AREAS: 4

PREPARED BY: DOUG
MCWHIRTER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	882	875	875
Harvest:	17	19	21
Hunters:	25	21	23
Hunter Success:	68%	90%	91%
Active Licenses:	25	21	23
Active License Success:	68%	90%	91 %
Recreation Days:	205	160	175
Days Per Animal:	12.1	8.4	8.3
Males per 100 Females	42	0	
Juveniles per 100 Females	25	0	

Population Objective (± 20%) : 900 (720 - 1080)

Management Strategy: Special

Percent population is above (+) or below (-) objective: -2.8%

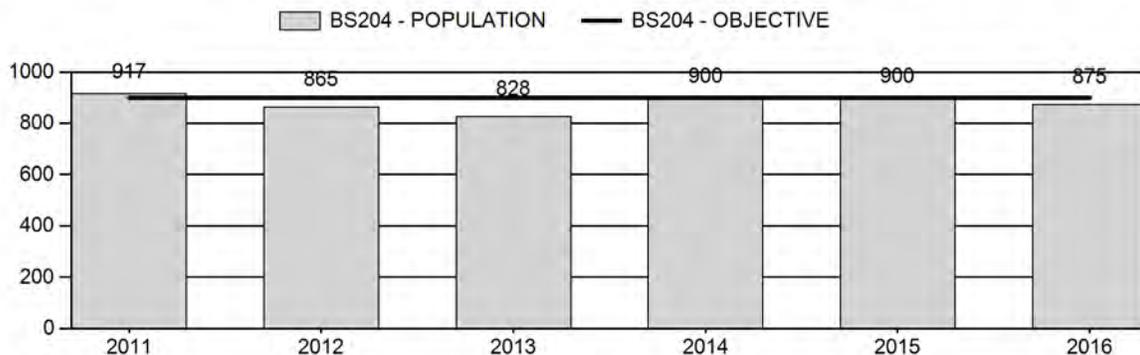
Number of years population has been + or - objective in recent trend: 4

Model Date: 2/11/2016

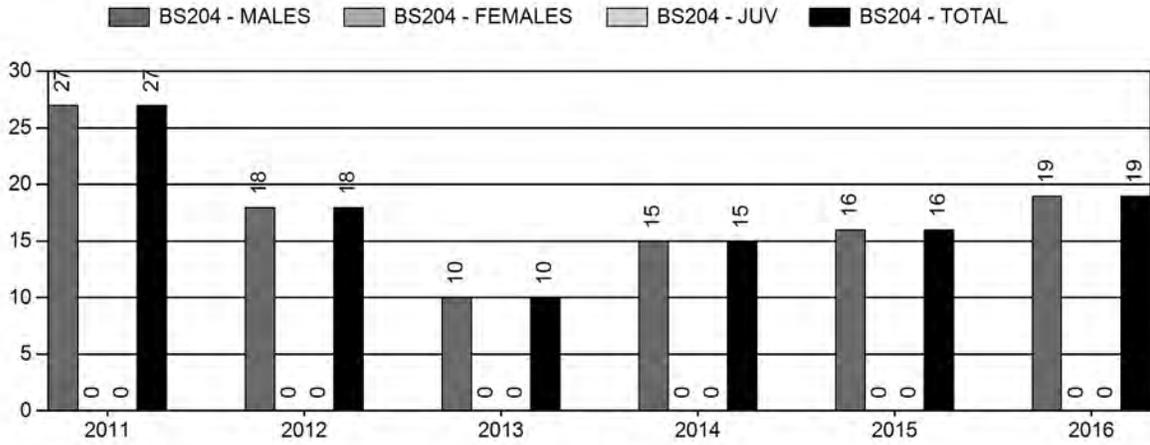
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6.5%	7%
Total:	1.7%	1.5%
Proposed change in post-season population:	-0.1%	-1%

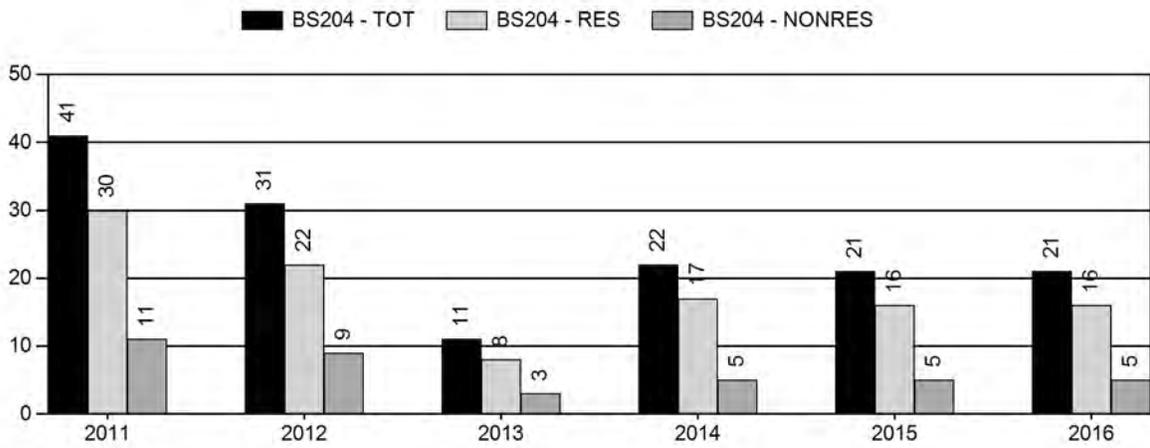
Population Size - Postseason



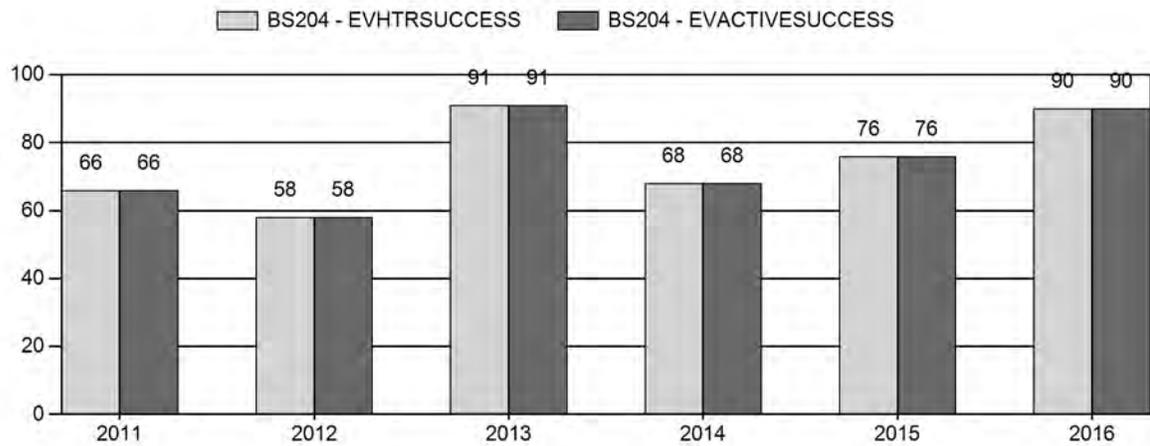
Harvest



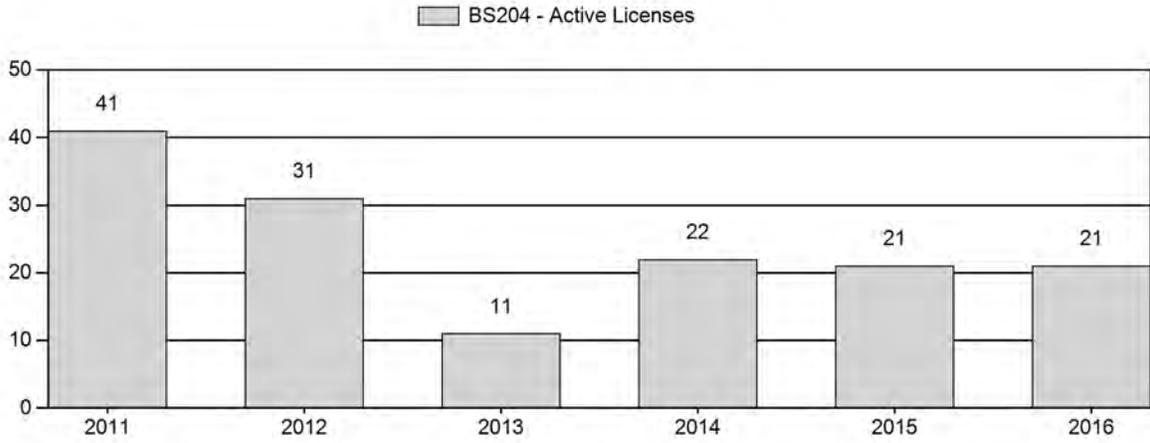
Number of Active Licenses



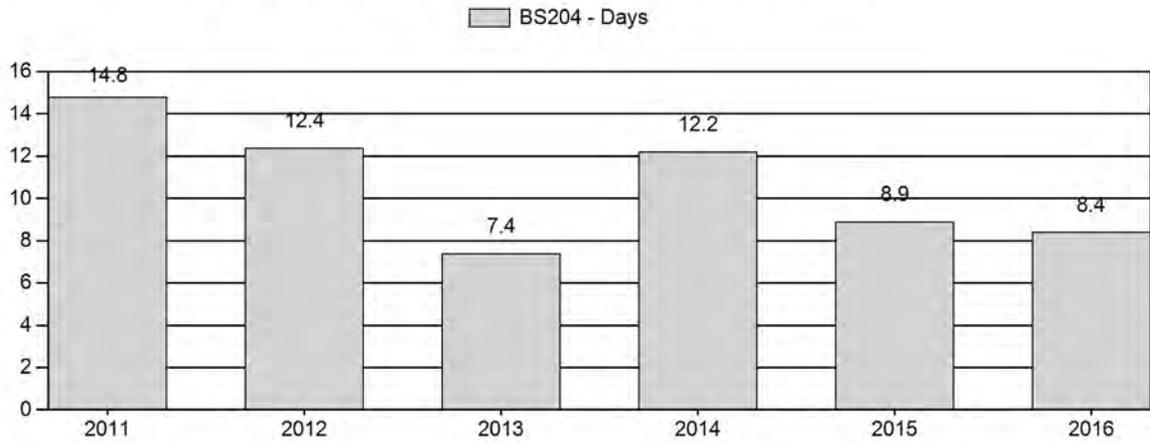
Harvest Success



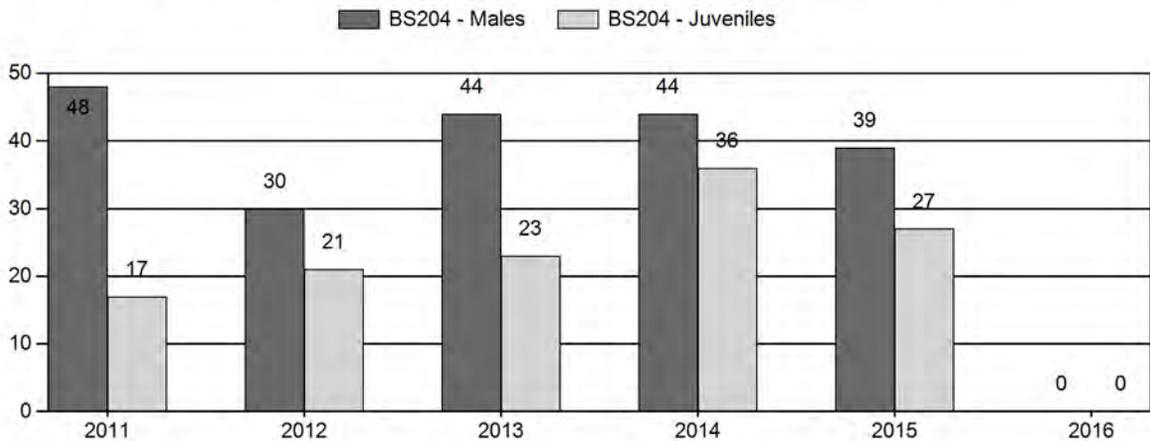
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Bighorn Sheep Herd BS204 - YOUNTS 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
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	875	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

**2017 HUNTING SEASONS
YOUNTS PEAK BIGHORN SHEEP HERD (BS204)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
4	1	Sep. 1	Oct. 31	23	Limited quota	Any ram (17 residents, 6 nonresidents)

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 2016
4	1	+2
Total	1	+2

Management Evaluation

Postseason Population Management Objective: 900

2016 Postseason Population Estimate: 900

2017 Proposed Postseason Population Estimate: 875

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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Classification surveys have not been flown in the winter of 2016-2017 as of this time; however, seven surveys were flown over the last 10 years, resulted 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 2015 resulted in 309 sheep observed, a lamb:ewe ratio of 27:100 (which is slightly above average), and a ram:ewe ratio of 34:100, which is slightly below 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 19 rams in 2016 for a success rate of 90%. The average age of rams killed in 2016 was 8.8 years old, with 68% of the rams killed being 8 years old and older. One ram less than $\frac{3}{4}$ curl was killed in 2016. Hunter effort was 8.4 days per ram harvested. These figures represent a return to harvest success previously seen, but with fewer licenses.

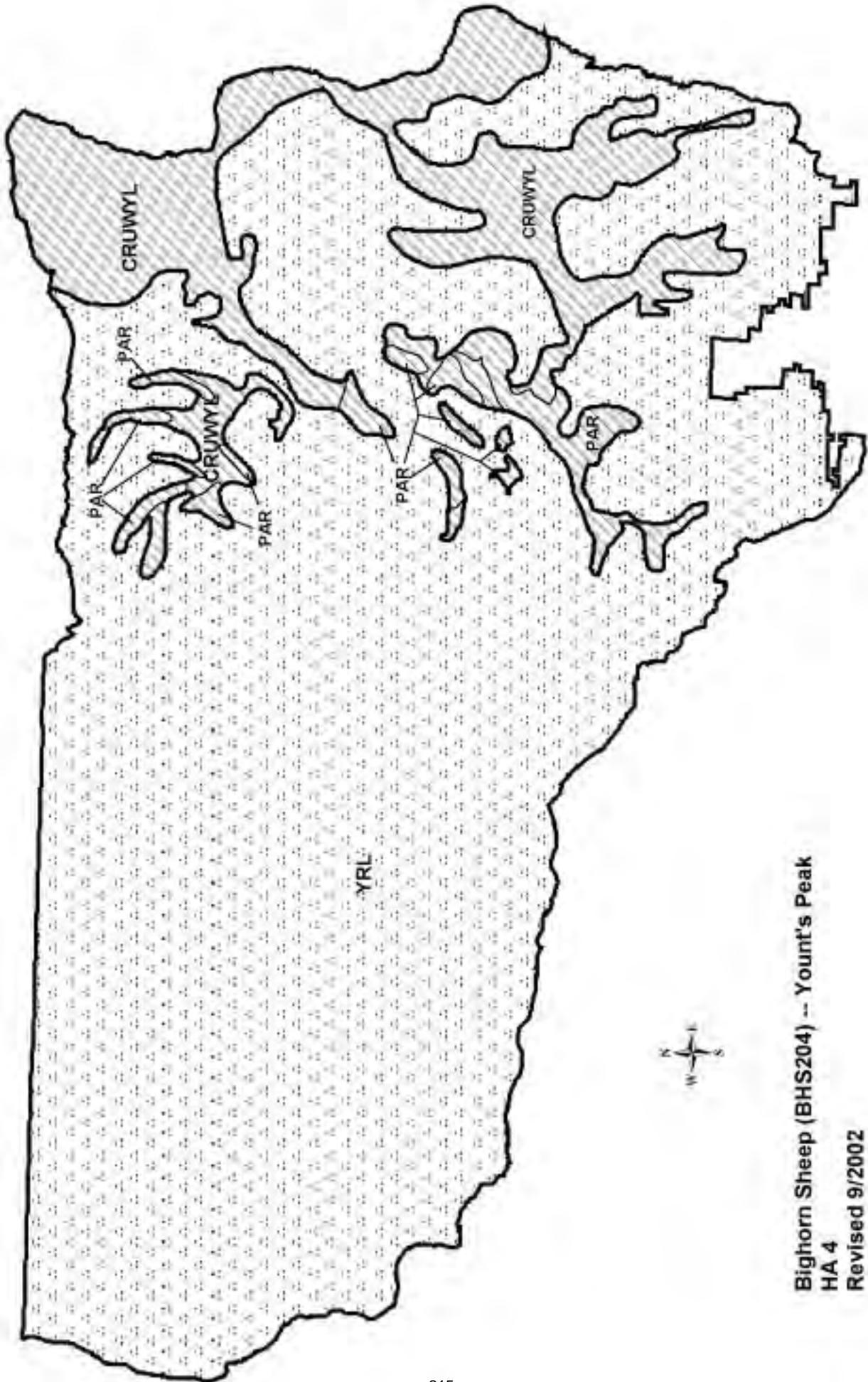
Population

The “Semi-Constant Juvenile – Semi-Constant Adult Mortality Rate” (SCJSCA) spreadsheet model from 2016 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 HA 4, Younts Peak Bighorn Sheep Herd Unit, 1978-2016.

	1984-91	1992-95	1996-00*	2001-04*	2005-08*	2009-11*	2012*	2013-14*	2015*	2016*
Permits	60	48	32	36	40	44 ⁺	28	20	20	21
Harvest	33.1	28.3	22.6	32.3	34.0	32.7	18	16.5	16	19
% Success	59%	62%	74%	87%	83.3%	75.4%	58.1%	79.5%	76%	90.5%
(days/ram)	18.6	15.0	8.4	7.9	8.2	10.5	12.4	9.8	8.9	8.4
Avg. Age	6.6	6.5	6.7	7.3	7.3	7.5	7.2	7.9	8.3	8.8
% \geq 8 Yrs	24.1%	17.5%	33.3%	44.1%	32.7%	47.6%	22.2%	61.7%	68.8%	68.4%
% $\leq \frac{3}{4}$ Curl	-	-	11.9%	15.0%	7.2%	5.9%	5.6%	11.7%	9.1%	5.3%

* “any ram” regulation in place



**Bighorn Sheep (BHS204) -- Yount's Peak
 HA 4
 Revised 9/2002**

2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS205 - FRANCS PEAK

HUNT AREAS: 5, 22, 999

PREPARED BY: BART KROGER

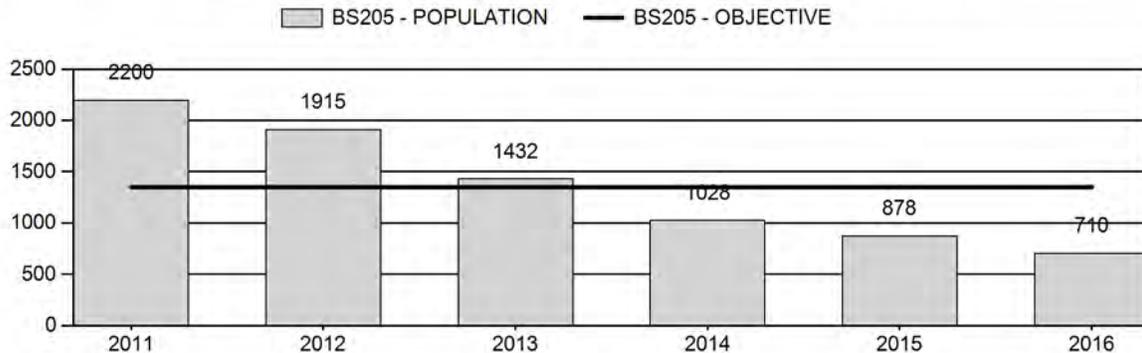
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	1,491	710	689
Harvest:	64	41	48
Hunters:	80	50	58
Hunter Success:	80%	82%	83%
Active Licenses:	80	50	58
Active License Success:	80%	82%	83%
Recreation Days:	547	378	400
Days Per Animal:	8.5	9.2	8.3
Males per 100 Females	56	50	
Juveniles per 100 Females	23	20	

Population Objective ($\pm 20\%$) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-47.4%
Number of years population has been + or - objective in recent trend:	5
Model Date:	05/15/2017

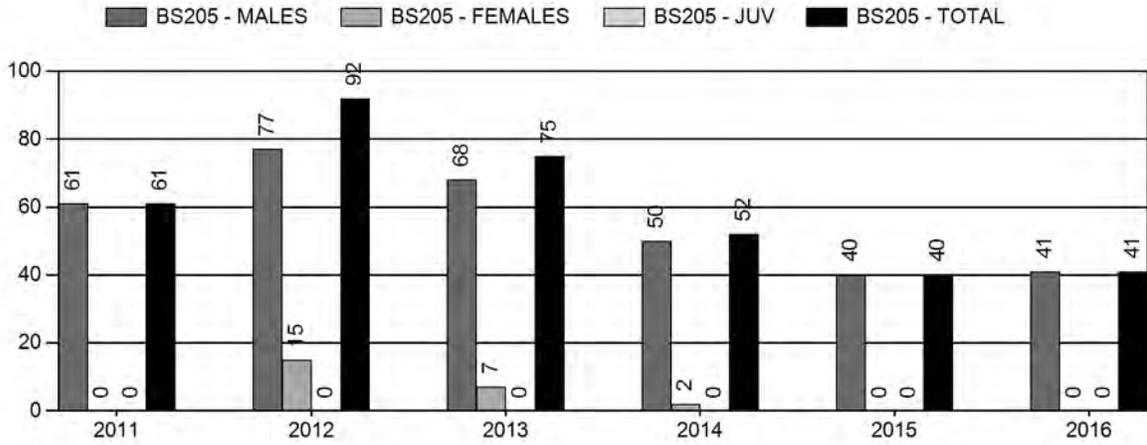
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	21%	29%
Total:	5%	6%
Proposed change in post-season population:	-19%	-2%

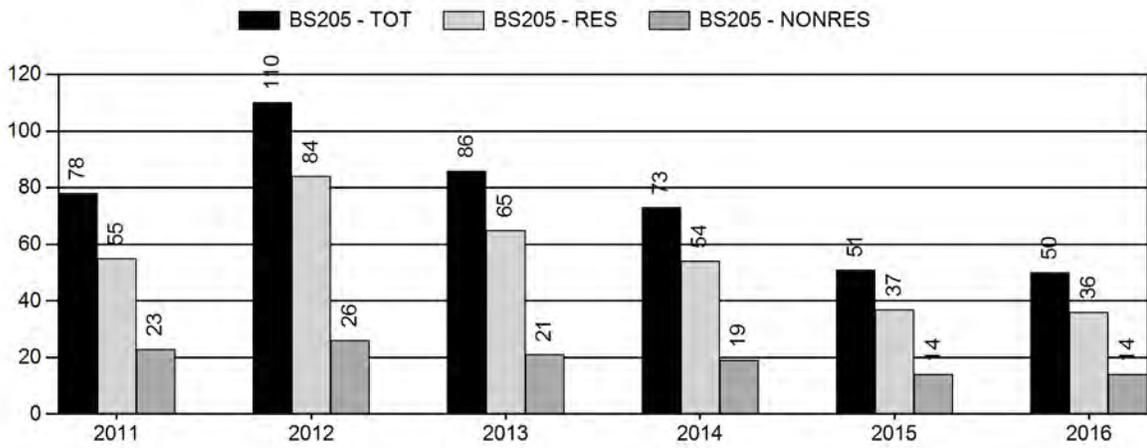
Population Size - Postseason



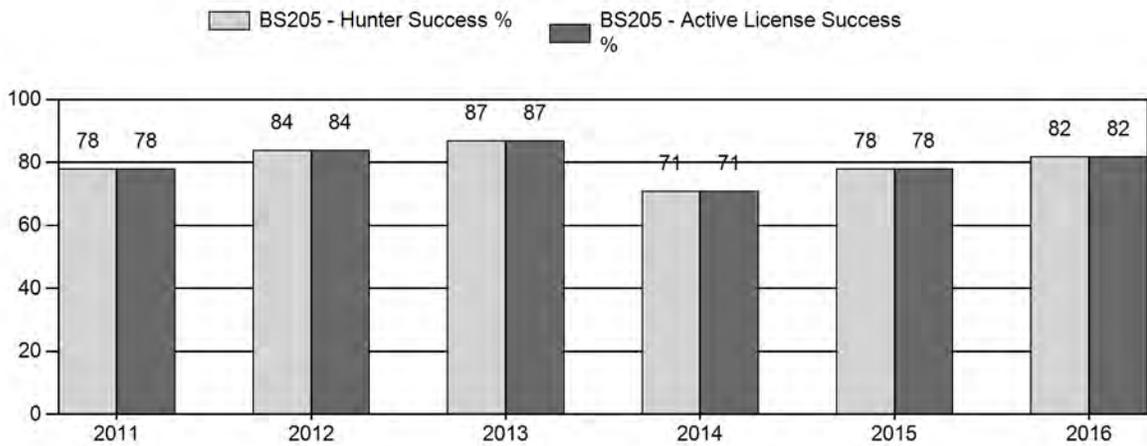
Harvest



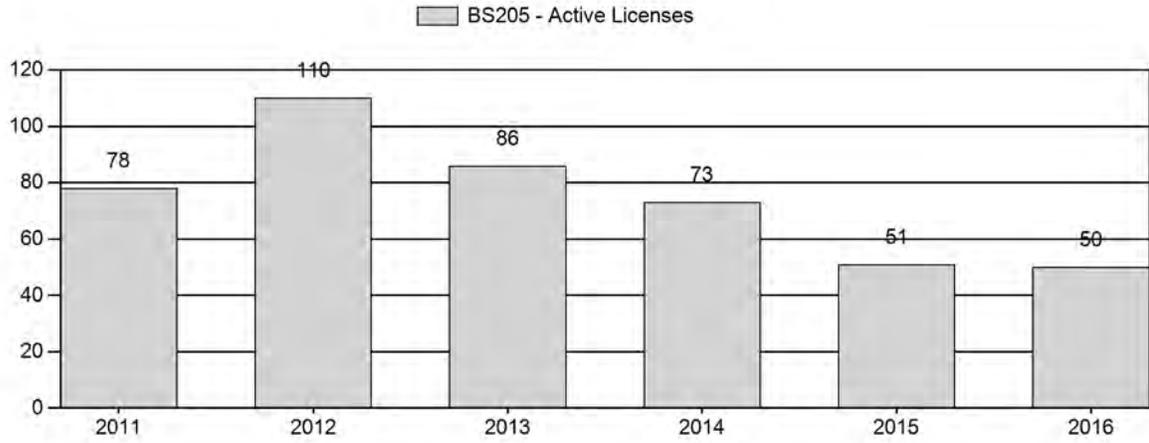
Number of Active Licenses



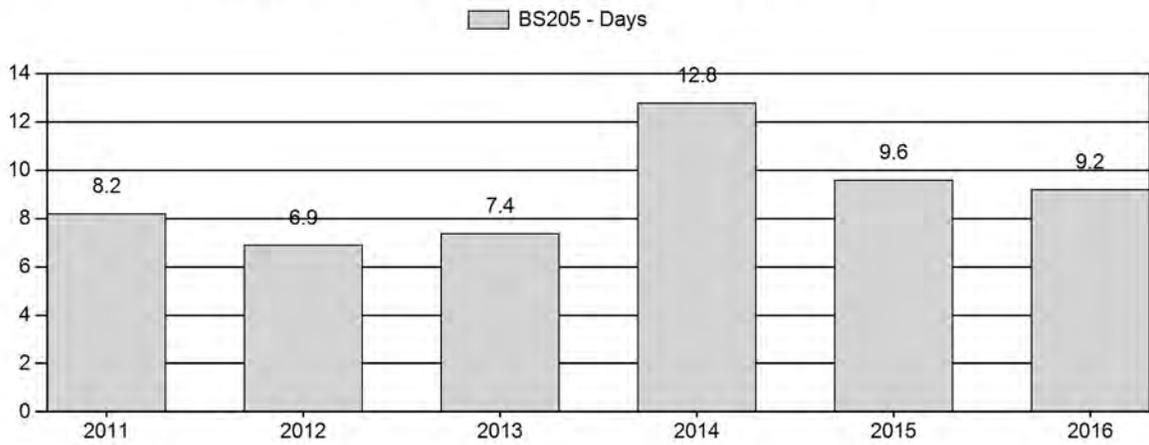
Harvest Success



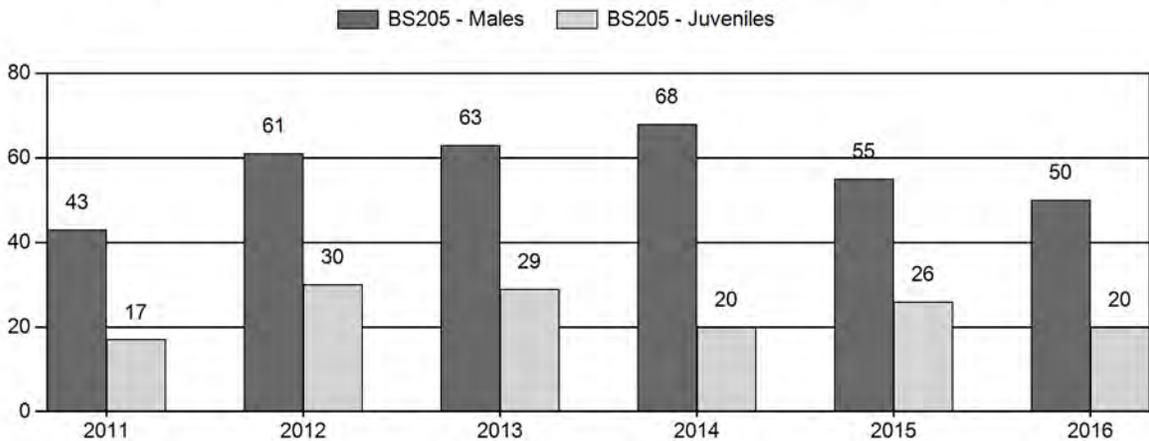
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Bighorn Sheep Herd BS205 - FRANCS 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
2011	2,200	0	0	172	27%	400	62%	68	11%	640	445	0	0	43	± 4	17	± 2	12
2012	1,915	0	140	140	32%	228	52%	68	16%	436	802	0	61	61	± 7	30	± 5	18
2013	1,432	0	144	144	33%	230	52%	66	15%	440	584	0	63	63	± 7	29	± 4	18
2014	1,028	0	135	135	36%	200	53%	41	11%	376	490	0	68	68	± 8	20	± 4	12
2015	878	0	0	103	30%	188	55%	48	14%	339	352	0	0	55	± 7	26	± 4	16
2016	707	0	182	182	29%	362	59%	73	12%	617	435	0	50	50	± 2	20	± 1	13

**2017 HUNTING SEASONS
FRANCS PEAK BIGHORN SHEEP HERD (BS205)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
5	1	Sep. 1	Oct. 31	40	Limited quota	Any ram
22	1	Sep. 1	Oct. 31	4	Limited quota	Any ram
22	1	Oct. 1	Oct. 31		Limited quota	Any ram, also valid in Area 5
999	1	Oct. 1	Nov. 30	12	Limited quota	Any ram, WRR/OCM

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 2016
5	1	+8
HU Total	1	+8

Management Evaluation

Current Postseason Population Management Objective: 1,350

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

2016 Postseason Population Estimate: 700

2017 Proposed Postseason Population Estimate: 700

Herd Unit Issues

This bighorn sheep herd consists of hunt area 5, 22 and that portion of the Owl Creek Mountain hunt area of the Wind River Reservation (WRR). Because of limited data collection on the WRR, most discussion in this report focuses on hunt areas 5 and 22. 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, likely because of late winter snow storms, along with potential disease issues. Since then the population has declined by 40-50%. Hunter success dropped to 71% in 2014 and 78% in 2015, the two lowest since 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. The 2016/17 winter has been above normal for snow fall, but

during classification flights in early January, most high elevation (8,000-11,000') wind-blown ridges were mostly clear of snow, thus most sheep groups appeared to be wintering in good conditions.

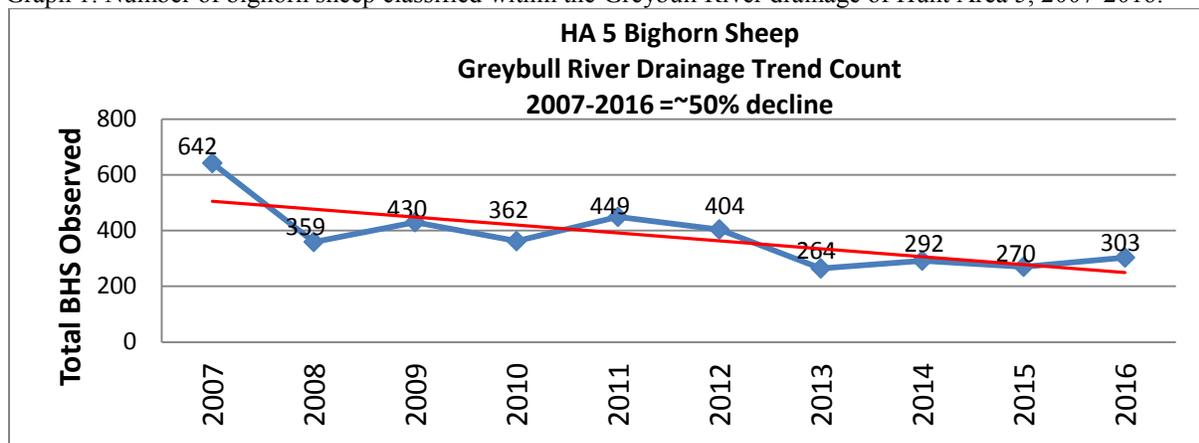
Habitat

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, 2015 and 2016 were favorable for spring green up and winter forage.

Field Data

Aerial classifications surveys from areas 5 and 22 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 four years where the average has been about 400 sheep. Lamb:ewe ratios have remained mostly favorable, with an average ratio of 24:100. Lamb ratios in 2011, 2014 and 2016 were $\leq 20:100$, thus contributing to slower growth in the population. 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 relative population trends within the Greybull River. Over the past 10 years the number of sheep observed on average has declined by 50% (Graph 1).

Graph 1. Number of bighorn sheep classified within the Greybull River drainage of Hunt Area 5, 2007-2016.



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 7 days/ram. Starting in 2014 hunter success dropped to 77% and hunter days increased to 13.2. In 2015 hunter success increased slightly to 81%, while hunter effort improved to 10.1 days. The 2016 harvest again showed improving trends with a hunter success of 91% and a hunter effort of 8.7 days. The average age of harvested rams has been maintained between 7-8 years. Hunt area 22 annually has a harvest of 1-2 rams, and the area 999 of the WRR will harvest about 8 rams annually for a hunter success of about 67%.

Population

The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd because it reflects a fair representation of recent year trends (2011-2016) in the population. However, the continuing decline in the population in 2015 and 2016 does not mirror that of harvest data, winter trend count data and field personnel perceptions that this population has likely stabilized and may be increasing slightly. The model supports an AIC value at 210. Because of this, the overall model is considered mostly poor.

Management Summary

The low lamb ratios in 2011 (17:100), 2014 (20:100) and 2016 (20:100) are a future concern for this sheep herd. However, with recent year improvements in harvest along with an increased number of sheep observed during classification surveys, a slight increase in the area 5 license quota is warranted. Area 22 will again support 4 licenses, and the Wind River Reservation of the Owl Creek Mountains will likely support 12 licenses. The projected 2017 harvest for the herd unit is roughly 48 rams. The 2017 post-season population estimate will be around 700 sheep.

2016 - JCR Evaluation Form

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

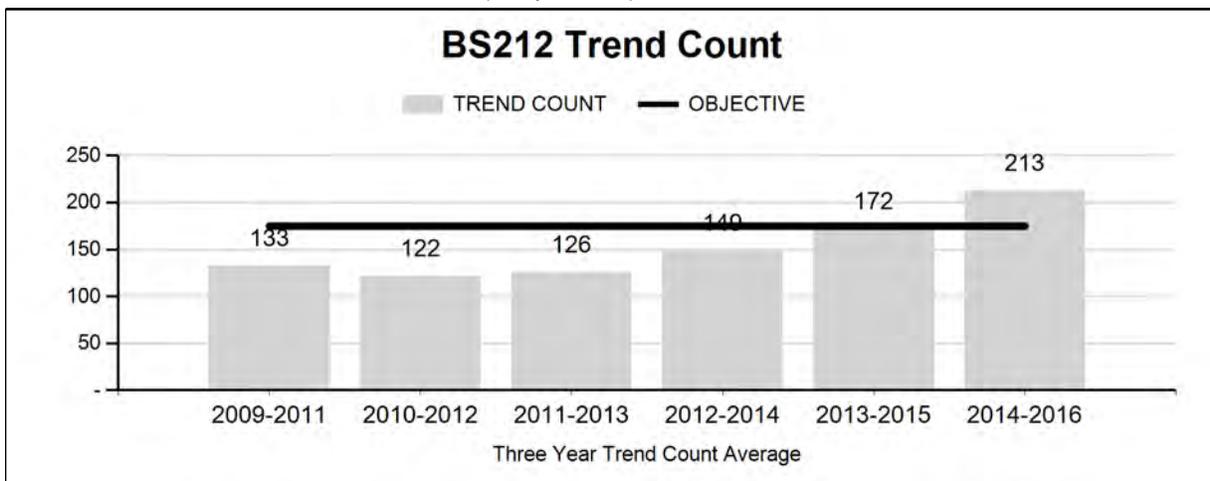
PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: LESLIE SCHREIBER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	151	263	220
Harvest:	2	6	6
Hunters:	2	6	6
Hunter Success:	100%	100%	100 %
Active Licenses:	2	6	6
Active License Success	100%	100%	100 %
Recreation Days:	11	51	50
Days Per Animal:	5.5	8.5	8.3
Males per 100 Females:	44	36	
Juveniles per 100 Females	63	46	

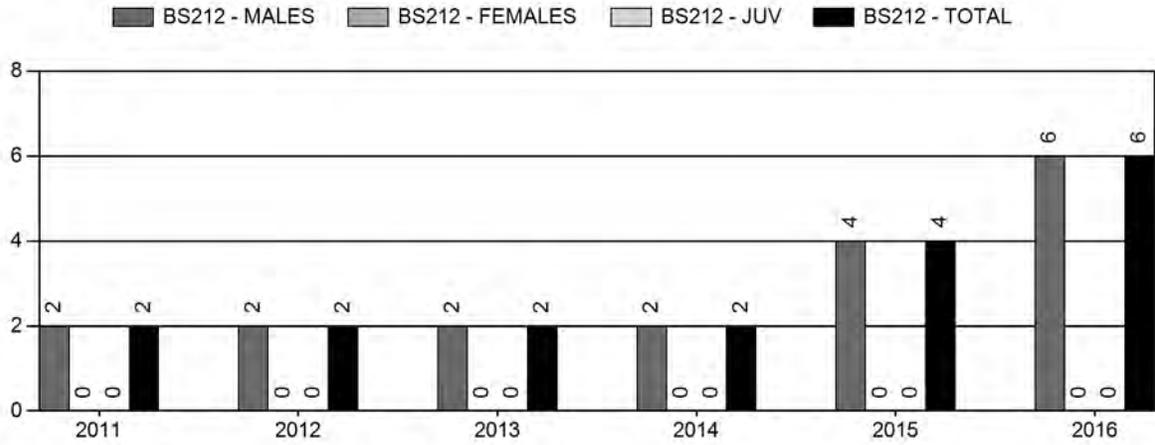
Trend Based Objective ($\pm 20\%$) 175 (140 - 210)
 Management Strategy: Special
 Percent population is above (+) or (-) objective: 50%
 Number of years population has been + or - objective in recent trend: 1

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

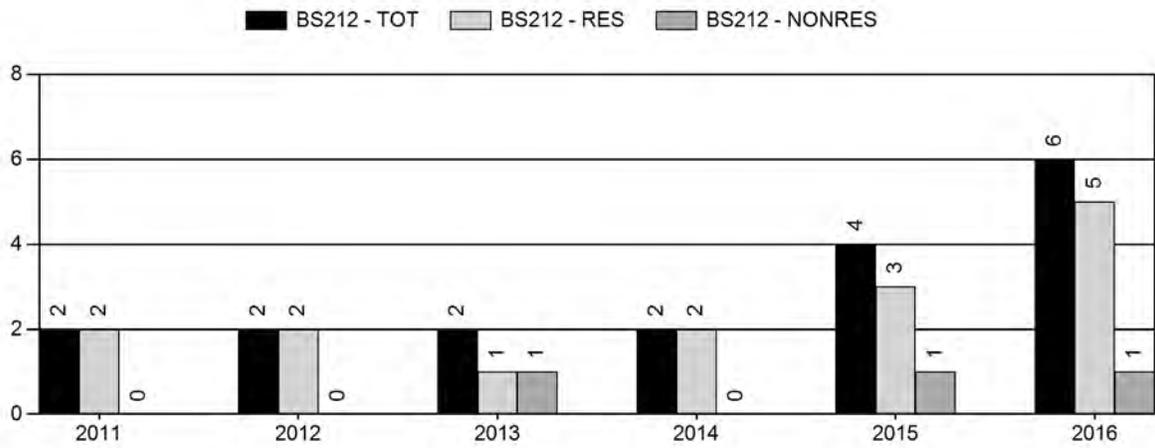
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	12%	12%
Juveniles (< 1 year old):	0%	0%



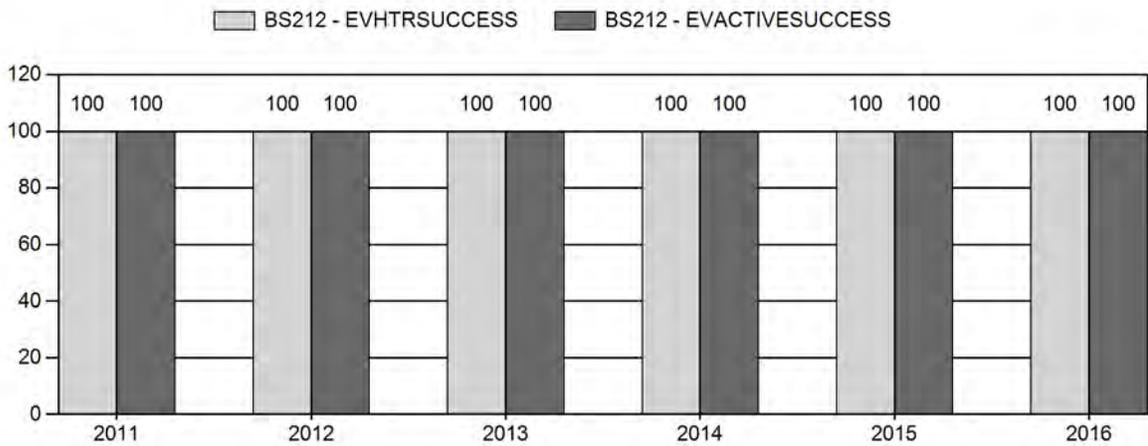
Harvest



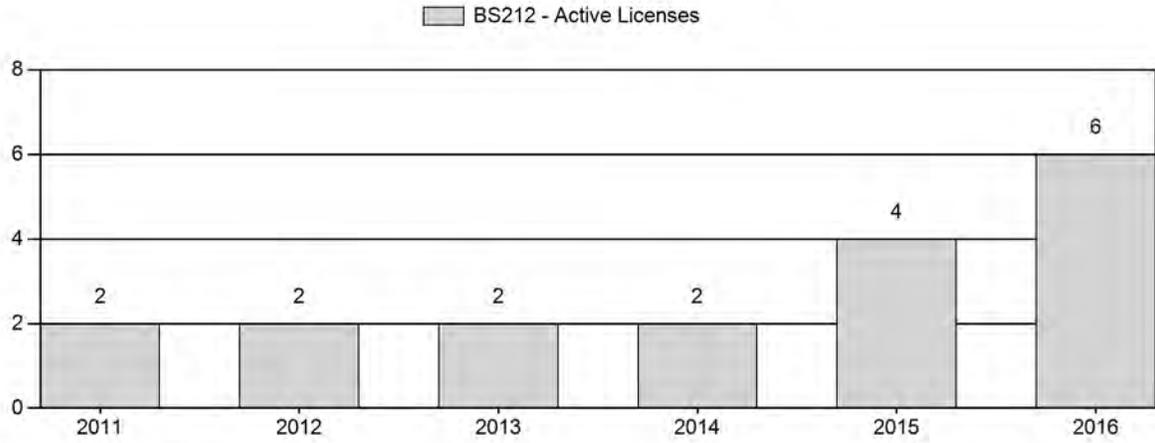
Number of Active Licenses



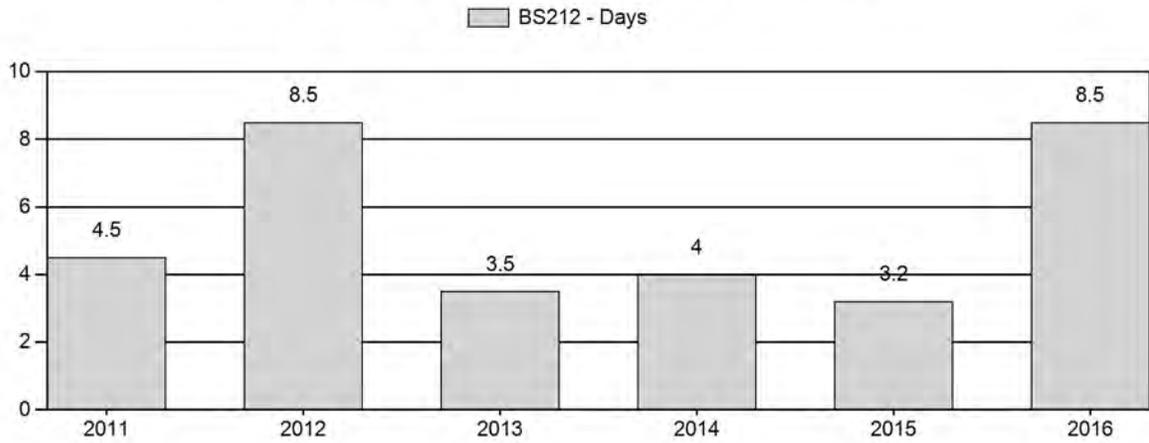
Harvest Success



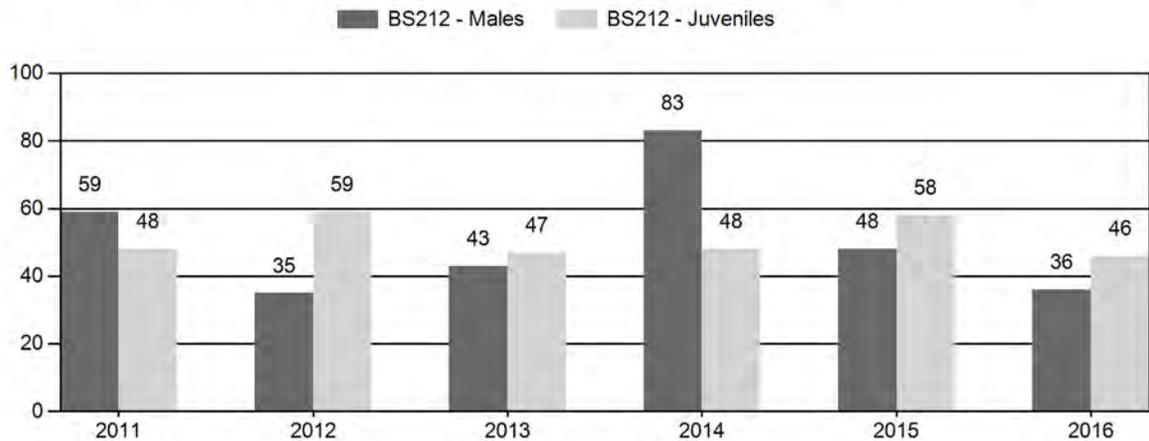
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Bighorn Sheep Herd BS212 - DEVIL'S CANYON

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	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	0	0	52	52	20%	145	55%	66	25%	263	152	0	36	36	± 0	46	± 0	34

**2017 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 (4 residents, 2 nonresident)

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 2016	
	12	1	0	
	Total	1	0	

Management Evaluation

Current Trend Count Management Objective: 175

Management Strategy: Special

2016 Trend Count: 263

Most Recent 3-year Running Average Trend Count: 213

2016 Hunter Satisfaction: %Satisfied, %Neutral, % Dissatisfied

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 sheep herd are three-fold: provide a disease-free source stock for in-state transplant while providing ram hunting opportunity and limiting comingling with 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. The WGFD conducts clearance flights when flight money is available each spring before domestic sheep trail up the 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. The Bighorn National Forest will be reviewing its Sheep Risk Assessment in Summer 2017.

Weather

Climatic conditions probably have the most influence on productivity and survival of this population. Temperatures were well below average in December and January, moderating in February. Precipitation was above normal to normal during December and January. December ranked 8th highest in precipitation levels over the last 122 years. Increased fall and winter precipitation, combined with prolonged periods of below average temperatures may have increased lamb mortalities this winter.

Habitat

Good growing conditions were documented 2014-2017. Cheatgrass has become established on some sites. No anthropogenic development currently affects this population or habitat. There is limited farming (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.

Field Data

Total number of sheep observed during pre-season classification surveys gives 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 been consistent only in recent years. During the July 2016 classification survey, personnel counted a total of 263 bighorn sheep, of which 145 were ewes. We observed 52 rams (11 class I rams, 12 class II rams, 20 class III rams, and 9 class IV rams) for a ratio of 36 rams:100 ewes. We observed 66 lambs for a ratio of 46 lambs:100 ewes. Flight time and area surveyed in 2016 did not differ greatly from the previous 4 years.

Four GPS collars (Telonics Globalstars) were deployed on rams near Bighorn Lake on February 22, 2017. The main herd of bighorn sheep typically range above the confluence of Porcupine, Deer, and Trout Creeks. Consistent observations of rams to the west near Bighorn Lake in the Armpit Cabin area suggest the distribution of sheep is expanding. GPS collars were deployed to better understand the movements of these rams, and document any intermingling with either the main herd or with Montana bighorn sheep.

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, and 6 were issued in 2016 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 1-6 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 Missouri River breaks, Montana 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

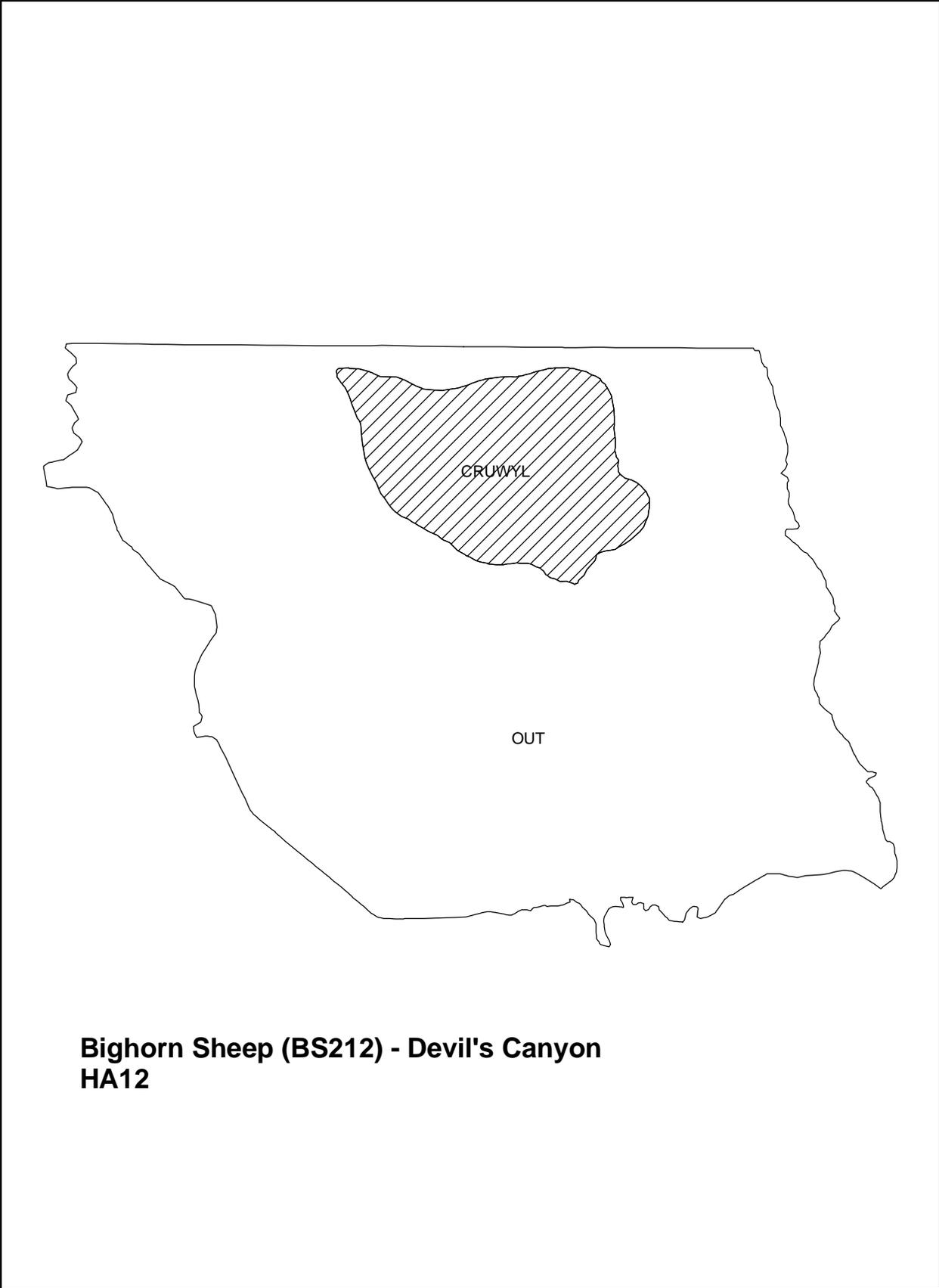
One landowner controls key access to the area where most bighorns occur in Devil's Canyon and has traditionally requested a low number of ram licenses each year, because of hunter crowding concerns. We have worked closely with the landowner to develop acceptable management and

consequently the number of ram licenses increased to 6 in 2016. Devil's Canyon sheep occupy a relatively small area, where rams are highly visible and are habituated to human activity so there is a high chance for conflict among hunters. During the 2016 hunting season, conflicts were minimal and the landowner was satisfied, therefore we are keeping 6 ram licenses for 2017.

WGFD planned to capture 40 bighorn sheep from Devil's Canyon to translocate to the Ferris Mountains. With high lamb production in this herd, transplants are necessary in keeping the Devil's Canyon herd at objective. The transportation of 40 sheep was split into 2 capture events. The first capture took place on February 18, 2016 with 24 bighorn sheep (3 rams, 1 ram lamb, 20 ewes) captured, sampled, and fitted with radio-collars. One ewe died of capture myopathy, one ewe died from a broken pelvis, and 22 were released in the Ferris Mountains. After release, we suspect another ewe died from delayed capture myopathy. WGFD delayed the 2nd capture event to confirm the cause of death was capture myopathy and not an undocumented disease. By the time the 2nd capture event was approved, the ewes were into the late stages of pregnancy, necessitating the cancellation of sheep capture until winter 2017/18. WGFD personnel will review and evaluate the protocol associated with handling sheep at transplants in an attempt to reduce mortality related to capture myopathy.

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 domestic sheep. Translocations in 2015, 2016, and 2017 of about 25 sheep each year assisted in this goal. We plan to translocate more sheep during the winter of 2017/18 to push this herd towards objective. 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. With 6 licenses, Hunt Area 12 will oscillate between 1 and 2 nonresident licenses each year.



**Bighorn Sheep (BS212) - Devil's Canyon
HA12**

2016 - JCR Evaluation Form

SPECIES: Mountain Goat

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

HERD: MG201 - BEARTOOTH

HUNT AREAS: 1, 3, 514, 999

PREPARED BY: Doug McWhirter/Tony Mong

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	255	280	250
Harvest:	17	28	32
Hunters:	18	28	34
Hunter Success:	94%	100%	94%
Active Licenses:	18	28	32
Active License Success:	94%	100%	100%
Recreation Days:	94	106	125
Days Per Animal:	5.5	3.8	3.9
Males per 100 Females	0	0	
Juveniles per 100 Females	36	0	

Population Objective (± 20%) : 175 (140 - 210)

Management Strategy: Special

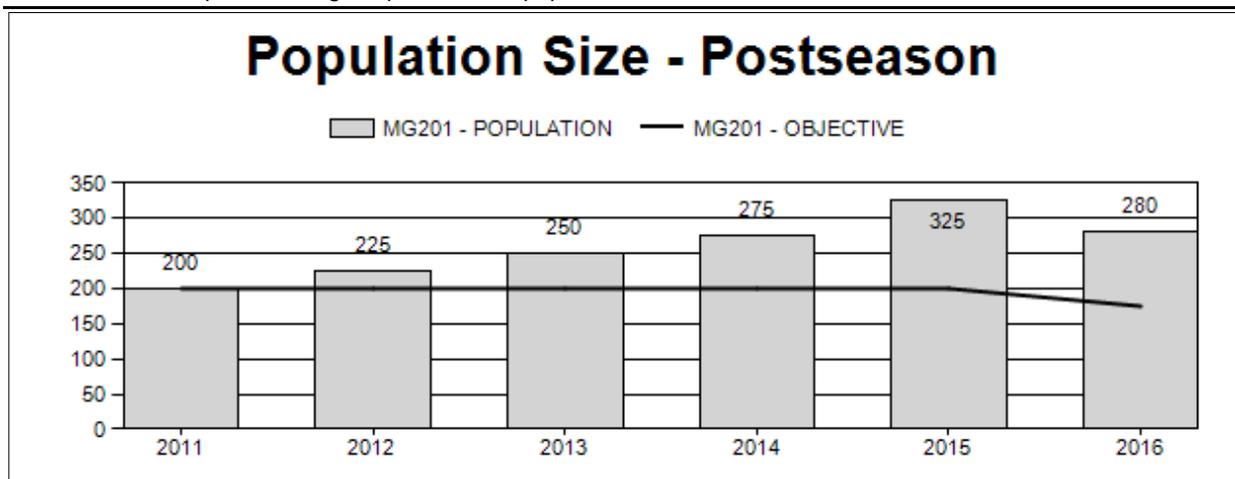
Percent population is above (+) or below (-) objective: 60%

Number of years population has been + or - objective in recent trend: 280

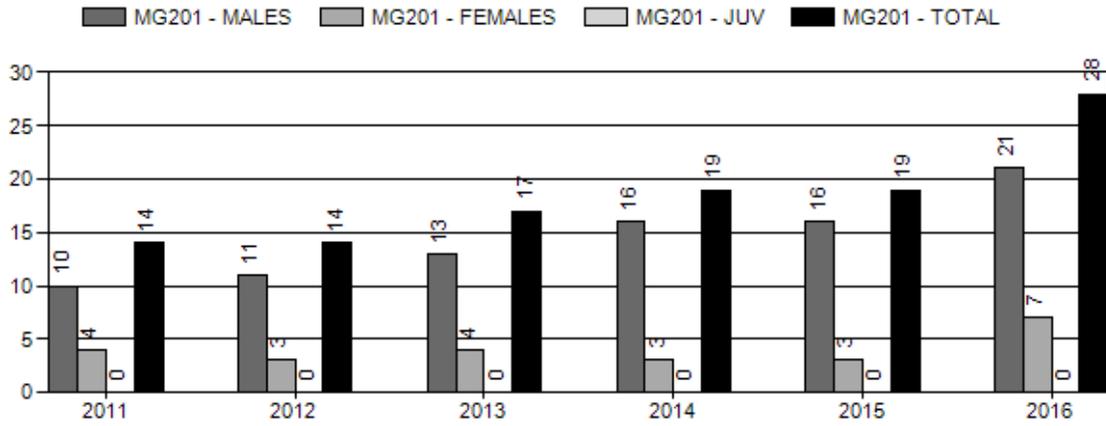
Model Date: 12/12/2016

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

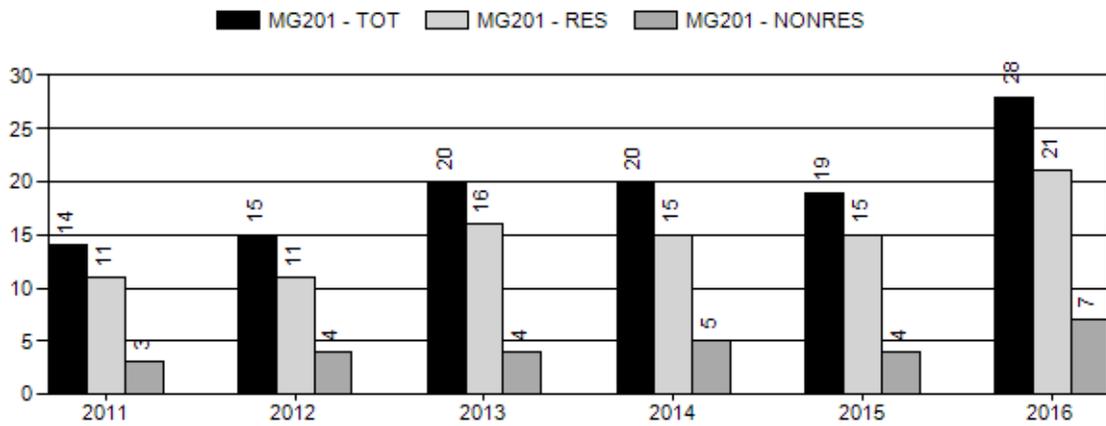
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	N/A%	n/a%
Males ≥ 1 year old:	N/A%	n/a%
Total:	N/A%	n/a%
Proposed change in post-season population:	N/A%	n/a%



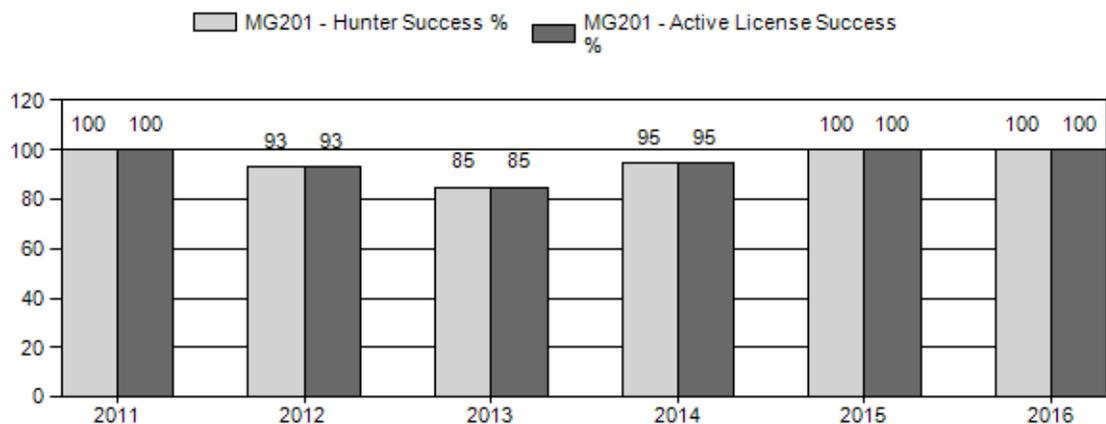
Harvest



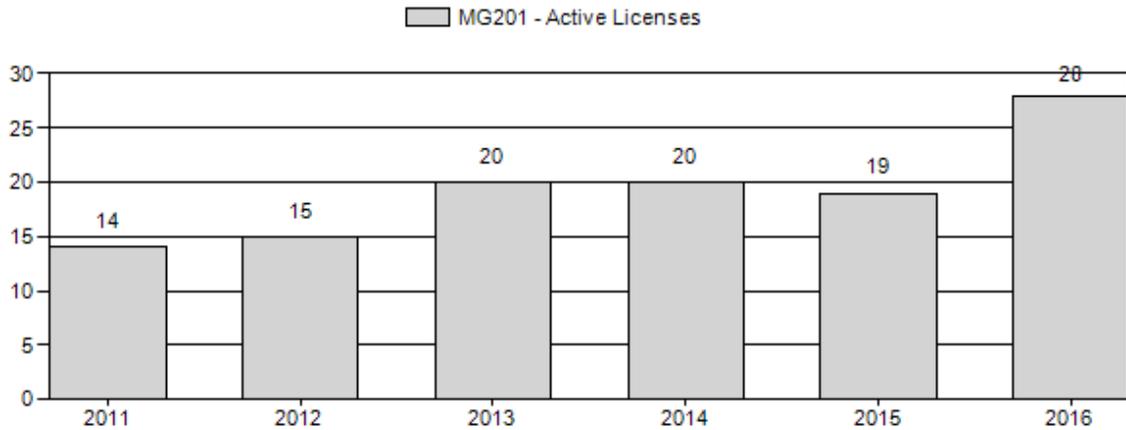
Number of Active Licenses



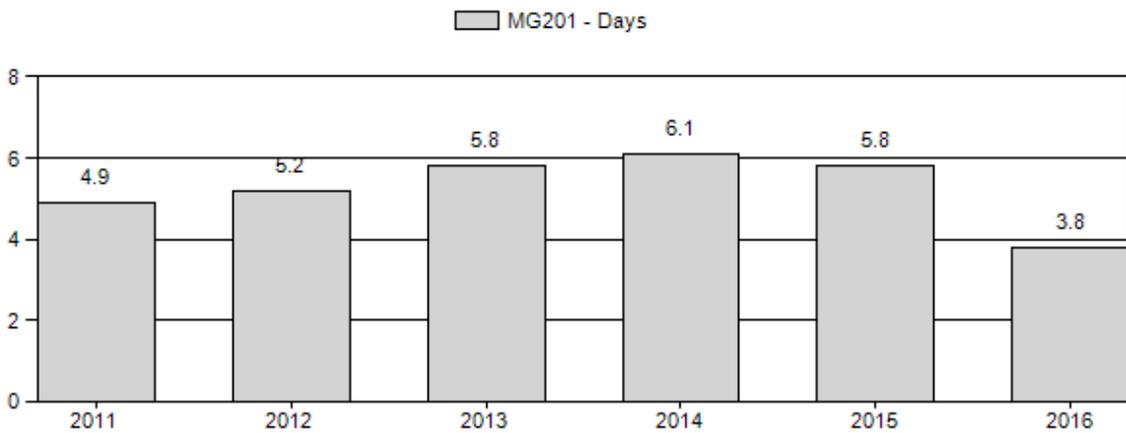
Harvest Success



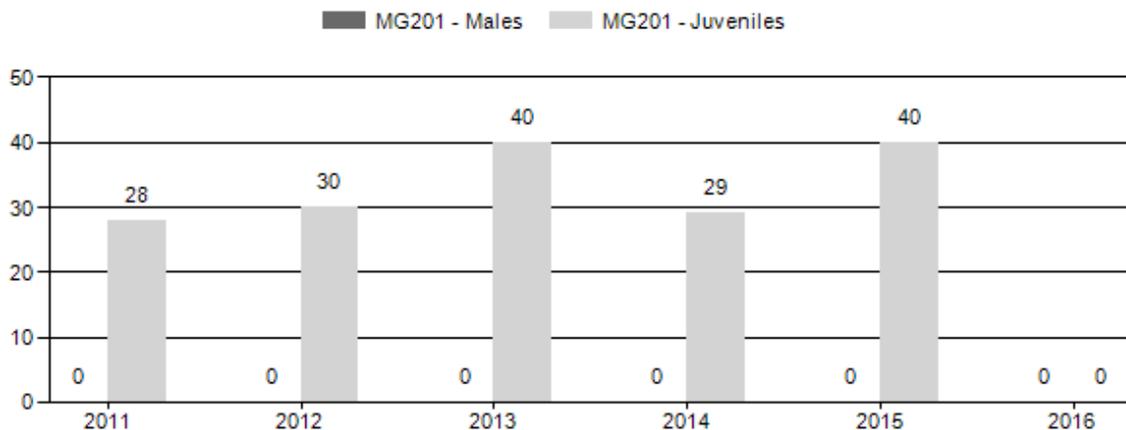
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary
for Mountain Goat Herd MG201 - BEARTOOTH

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot		CIs		Males to 100 Females			Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	CIs	Obj	YIng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult	
															Int				
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	300	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0	

**2017 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	12	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	License Type	Quota change from 2016
3	1	+4
Herd Unit Total	1	+4

Management Evaluation

Current Management Objective: 200

2016 Postseason Population Estimate:

2017 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

Weather conditions during the 2016 biological year were characterized by near normal precipitation during the growing season (April-June). Winter conditions; however, were relatively severe in most of the unit, with above average snowfall and colder than normal temperatures. We expect overwinter mortality to be higher than normal.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

A preseason 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, preseason 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.

Table 1. Management parameters for Hunt Area 1 of the Beartooth Mountain Goat Herd (Wyoming portion only), 1969-2016.

	1969-1979	1980-1992	1993-2010	2011	2012	2013	2014	2015	2016
Hunters	4	8	12	12	11	14	14	11	12
Harvest	3.4	7.3	11.7	11	11	12	14	11	12
Success	84.1%	95.1%	97.7%	100%	100%	86%	100%	100%	100%
Effort	5.4 days	3.7 days	4.5 days	3.5 days	5.2 days	6.9 days	4.6 days	7.5 days	3.3 days
Avg Age	-	-	4.5 years	5.9 years	5.1 years	5.2 years	5.7 years	4.8 years	5.5 years
% Nannies	23.5%	32.9%	32.5%	36.4%	27.3%	41.7%	14.3%	27.3%	41.7%
Trend Counts	19.0	104.7	125.5	-	-	125	-	102	28

Table 2. Management parameters for Hunt Area 3 of the Beartooth Mountain Goat Herd, 2011-2016.

	1969-1979	1980-1992	1993-2010	2011	2012	2013	2014	2015	2016
Hunters				3	4	6	6	8	16
Harvest				3	3	5	5	8	16
Success				100.0%	75%	83%	83%	100%	100%
Effort				9.7 days	5.3 days	3.2 days	10.4 days	3.6 days	4.1 days
Avg Age				3.5 years	4.8 years	4.9 years	4.5 years	5.4 years	4.5 years
% Nannies				0%	0%	20.0%	0%	0%	12.5%
Trend Counts				-	-	34	-	93	87

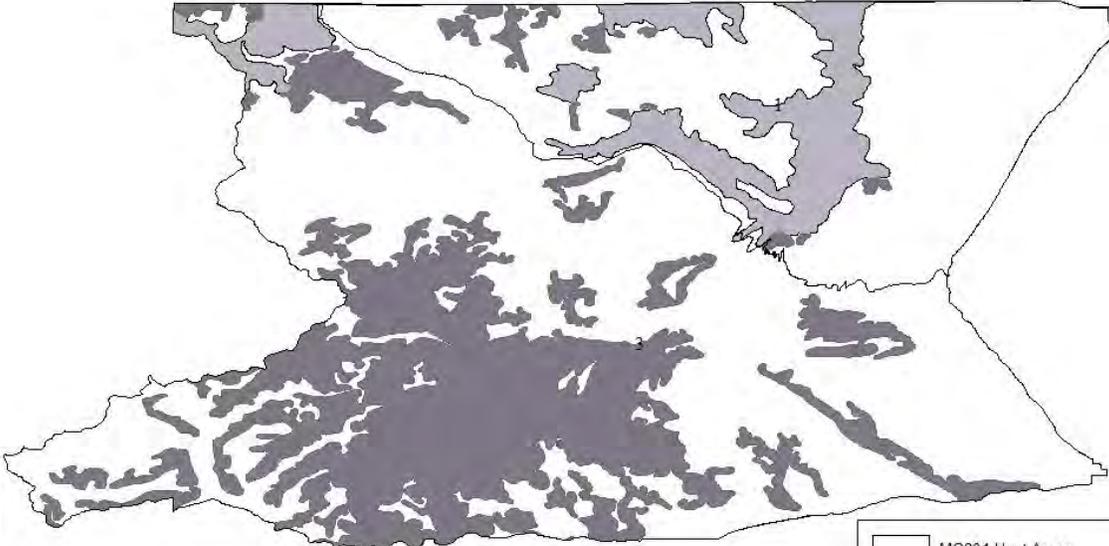
Table 3. Mountain goat trend counts in Yellowstone National Park (Soda Butte creek to Lamar Headwaters), 1998-2016.

	1969-1979	1980-1992	1993-2010	2011	2012	2013	2014	2015	2016
Trend Counts	-	-	13.5	-	-	74	67	108	-

Management Summary

Based on an evaluation of recent trend counts and productivity estimates, the Beartooth Mountain Goat Herd is currently estimated to be above the postseason 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 12 licenses will 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.

MG201 Rocky Mountain Goat Herd Seasonal Ranges



0 5 10 20 Miles

	MG201 Hunt Areas
Seasonal Ranges	
	Crucial Winter/Yearlong
	Out of Range
	Yearlong

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	2012	2013	2014	2015	2016	Long-term Average
Breteche			3.56			2.48
Aldrich			2.75		1.70	1.23
Grass Creek	0.29	1.94	2.57	3.22	3.24	2.76
Wagonhound	1.75	2.72	2.72	4.59	2.48	2.47
Dry Creek Basin	0.55	2.42	4.37	2.31	1.94	2.50
Five-mile	0.74	2.46	3.57	4.66	2.87	3.20
Denver Jake	0.84	1.40	1.36	3.92	3.81	1.96
Lightning Ridge	0.76	1.00	1.56	1.78	1.32	1.42
Alkali	2.10	2.10	1.80	1.24	1.07	2.35
Renner		2.73	2.76	3.73	1.91	2.78
Average of Transects	1.08	1.93	2.70	3.18	2.26	2.29

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

Transect	2013	2014	2015	2016	2017	Long-term Average
Breteche	24.5	7.4		11		18.75
Aldrich	4.60	0.60	0.00	1.80	0.00	4.94
Grass Creek	0.40	0.00	0.00	0.00	1.00	1.69
Wagonhound	25.40	17.60	8.20	7.00	18.40	15.57
Dry Creek Basin	37.40	20.60	35.20	25.60	48.00	25.66
Five-mile	23.50	20.20	21.20	28.20	22.40	18.34
Denver Jake	18.80	1.60	2.40	6.60	8.20	12.33
Lightning Ridge	3.80	0.00	2.00	9.40	3.80	4.40
Alkali	21.60	4.80	10.20	8.20	17.20	11.51
Renner		13.40	1.00	1.20	0.80	4.10
Average of Transects	16.12	8.62	8.91	9.90	13.31	12.08

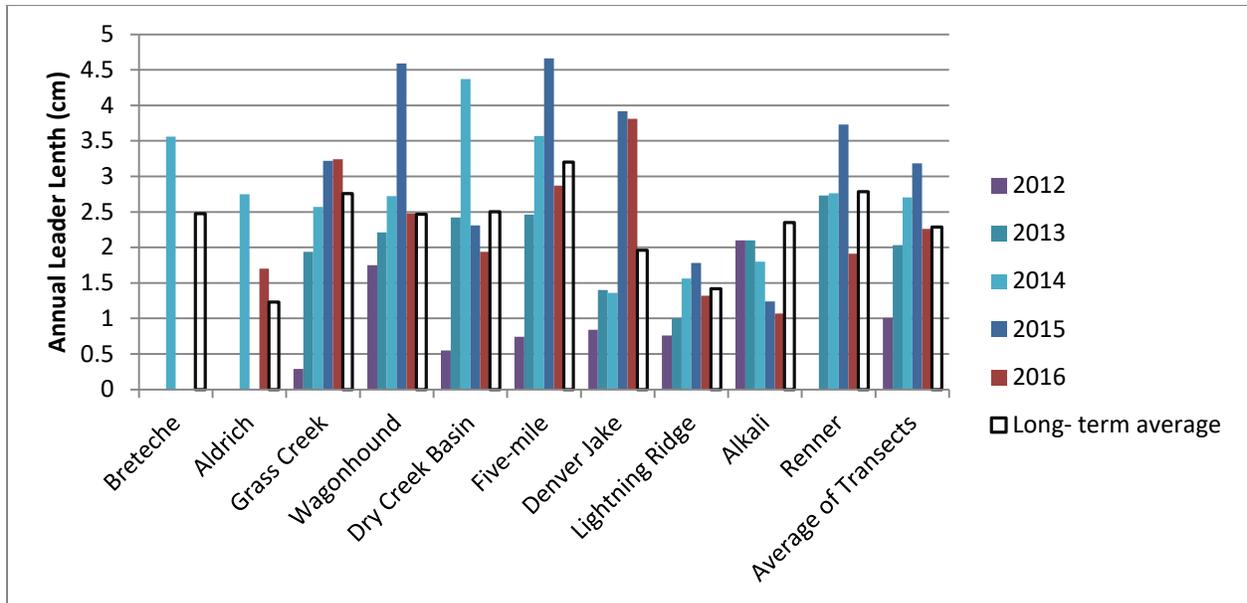


Figure 1. Average annual leader length for sagebrush transects in the Cody Region

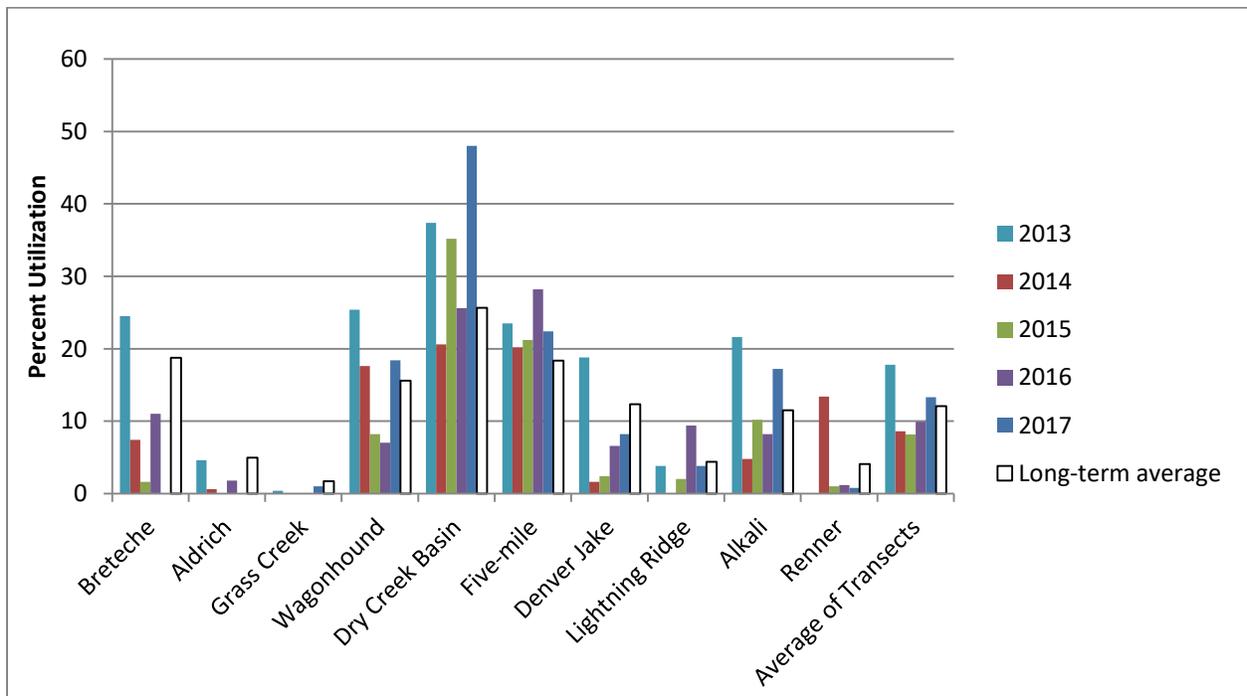


Figure 2. Percent utilization for sagebrush transects in the Cody Region

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	2012	2013	2014	2015	2016	Long-term Average
Red Canyon	4.73	3.28	4.13	5.49	4.46	4.65
Davis Draw	5.12	4.10	4.77	5.73	4.00	5.01
Average of Transects	5.84	3.69	4.45	5.61	4.23	4.83

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	2013	2014	2015	2016	2017	Long-term Average
Red Canyon	66	44	61	61	57	47
Davis Draw	63	70	63	79	76	61
Average of Transects	65	57	62	70	67	55

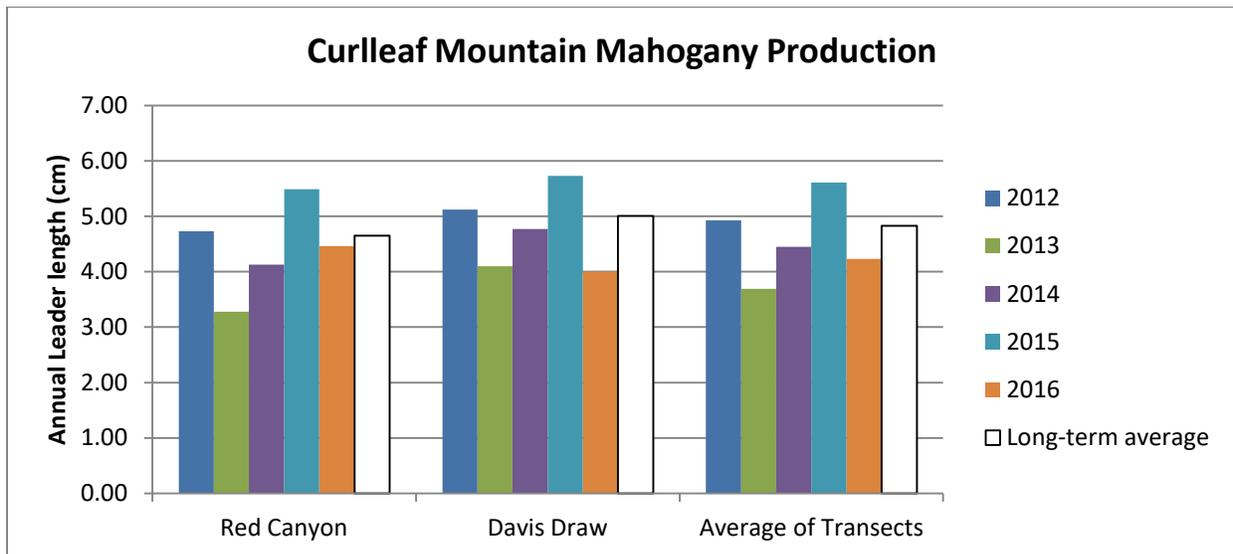


Figure 3. Average annual leader length for curlleaf mountain mahogany transects in the Cody Region.

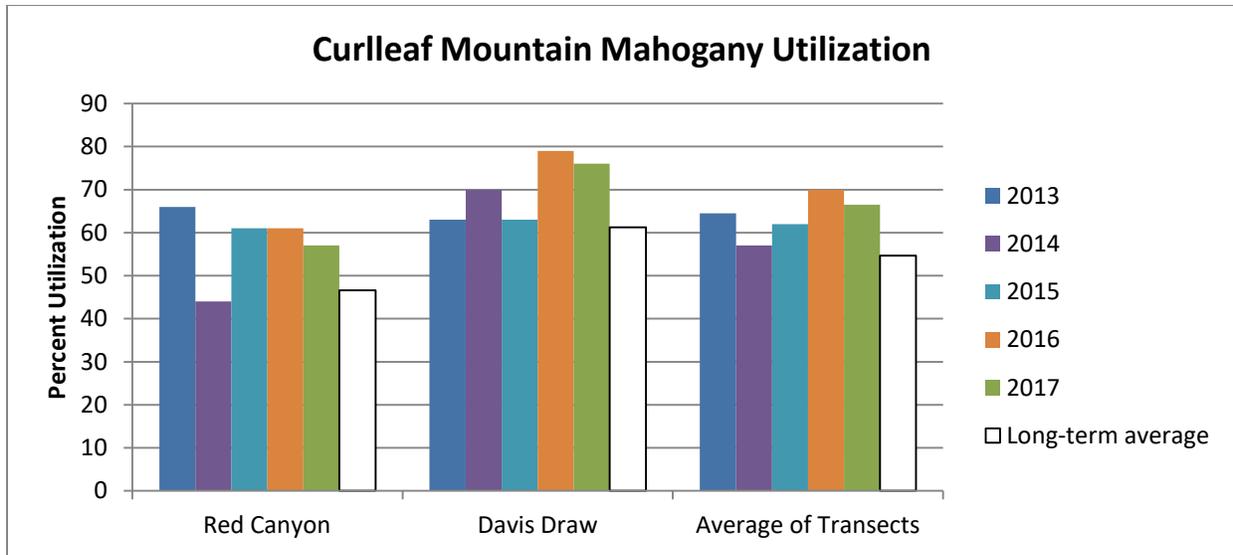


Figure 4. Average percent utilization for curleaf mountain mahogany transects in the Cody Region.

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	2012	2013	2014	2015	2016	Long-term Average
Trail Creek	350	350	563	546	440	487
Riddle Flat	412	500	525	408	606	460
Painter Gulch	260	175	375	1110	726	527
Little Bald Ridge	270	430	650	892	352	492
Teepee Gulch	260	320	638	755	392	444
Rose Creek	166	350	567	640	790	433

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

Transect	2013	2014	2015	2016	2017	Long-term Average
Trail Creek	61			42		42
Riddle Flat	82	75	81	67	89	73
Painter Gulch	65	0	47	47	61	43
Lt Bald Ridge	50	67	58	85		72
Teepee Gulch	81	79	73	68	77	78
Rose Creek	57		0	5	31	32

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

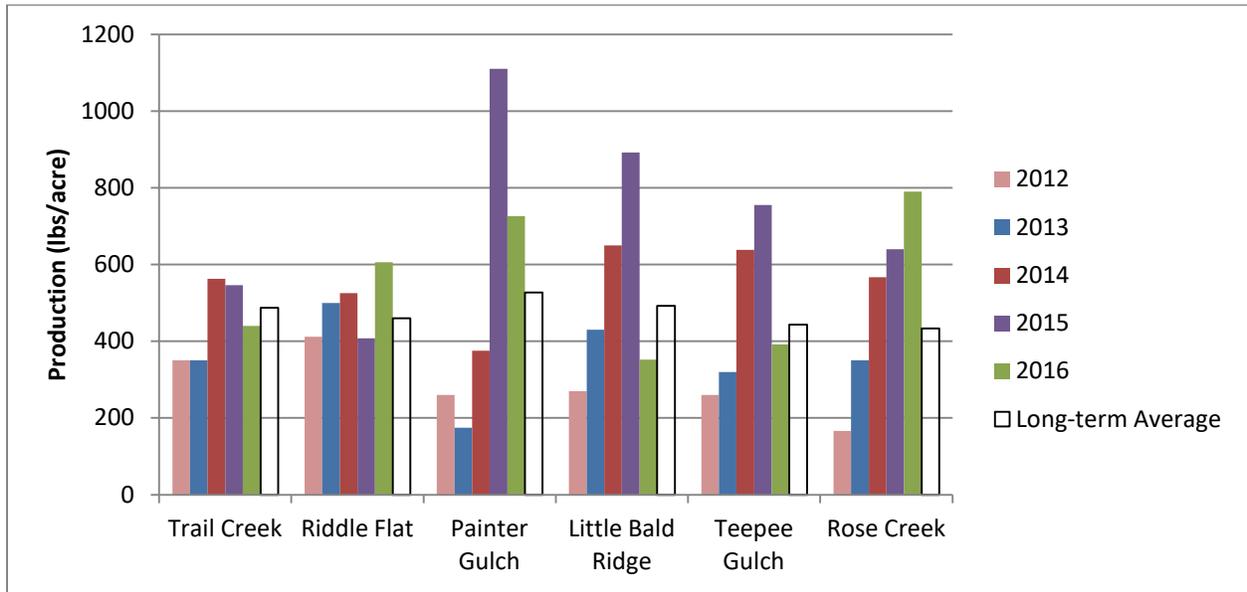


Figure 6. Percent utilization for herbaceous transects in the Cody Region.

