

## TABLE OF CONTENTS

<u>Antelope</u>	<u>Herd #</u>	<u>Hunt Area #</u>	<u>Pages</u>
Big Horn	202	79 .....	1-8
Copper Mountain	203	76,114,115.....	9-20
Fifteenmile	204	77, 83,110.....	21-32
Carter Mountain	205	78, 81, 82.....	33-44
Badger Basin	207	80 .....	45-56
<u>Mule Deer</u>			
Paintrock	207	41, 46, 47.....	57-70
Southwest Bighorns	208	35-37, 39, 40, 164.....	71-82
Basin	209	125,127.....	83-94
Greybull River	210	124,165.....	95-106
Shoshone River	211	122,123.....	107-114
Owl Creek/Meeteetse	212	116-120 .....	115-126
Upper Shoshone	215	110-115 .....	127-138
Clarks Fork	216	105, 106, 109,121 .....	139-150
<u>White-Tailed Deer</u>			
Big Horn Basin	201	35, 37-53,105-127,164,165.....	151-156
<u>Elk</u>			
Medicine Lodge	211	41, 45.....	157-172
Gooseberry	214	62-64 .....	173-182
Cody	216	55, 56, 58-61, 66.....	183-192
Clarks Fork	217	51, 53, 54.....	193-202
<u>Moose</u>			
Absaroka	201	8, 9, 11.....	203-208
<u>Bighorn Sheep</u>		(HA/sub unit)	
Clarks Fork	201	1 .....	209-220
Trout Peak	201	2 .....	221-232
Wapiti Ridge	201	3 .....	233-244
Younts Peak	201	4 .....	245-256
Francs Peak	201	5, 22, OCM/WRIR.....	257-268
Devils Canyon	212	12.....	269-278
<u>Rocky Mountain Goat</u>			
Beartooth	201	1, 3, (514 MT) .....	279-286
<u>Appendix A.</u>			
Cody Region Habitat Data.....			287-291



## 2014 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2014 - 5/31/2015

HERD: PR202 - BIG HORN

HUNT AREAS: 79

PREPARED BY: LESLIE  
SCHREIBER

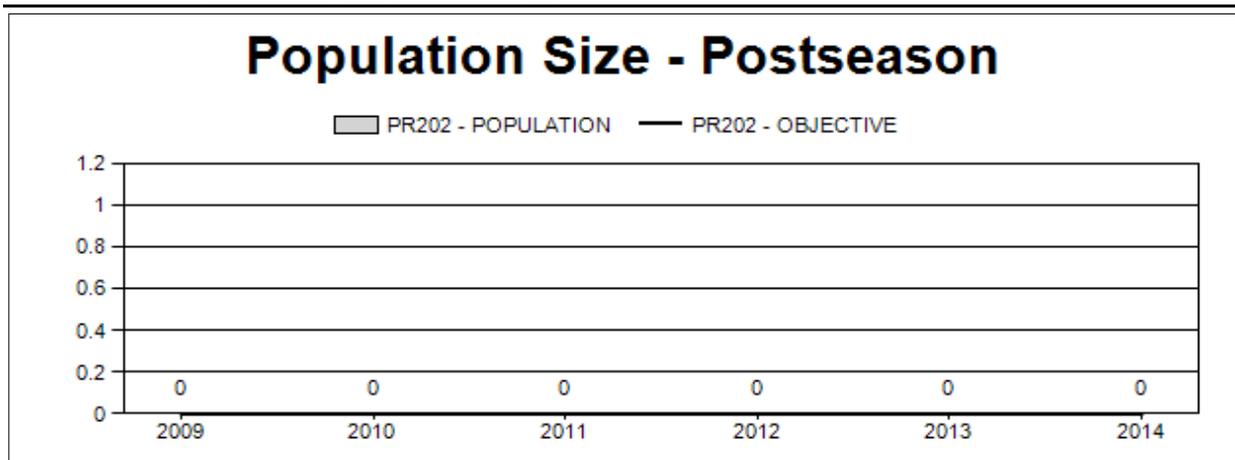
	<u>2009 - 2013</u> <u>Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	0	N/A	N/A
Harvest:	39	49	64
Hunters:	52	58	73
Hunter Success:	75%	84%	88 %
Active Licenses:	55	72	87
Active License Success:	71%	68%	74 %
Recreation Days:	206	354	375
Days Per Animal:	5.3	7.2	5.9
Males per 100 Females	52	66	
Juveniles per 100 Females	55	113	

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

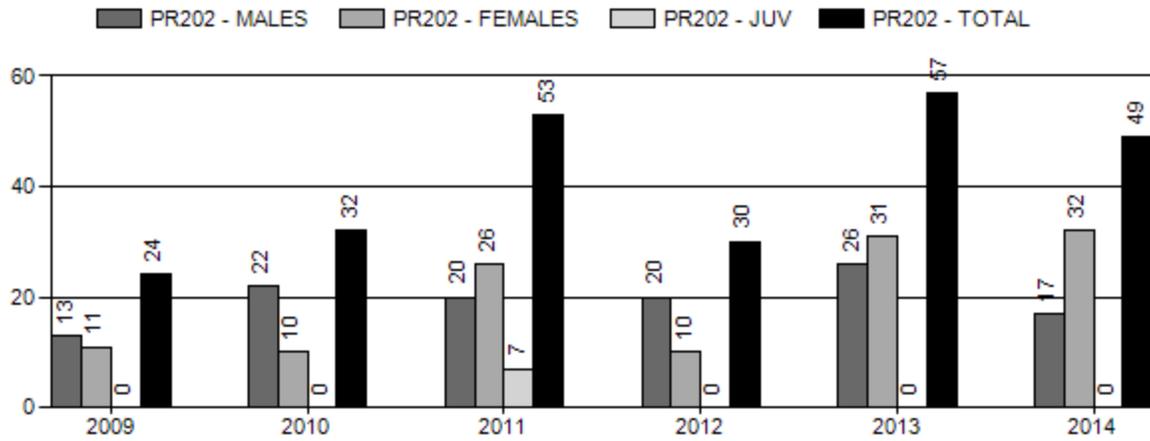
Management Strategy: Recreational  
 Percent population is above (+) or below (-) objective: N/A%  
 Number of years population has been + or - objective in recent trend: 0  
 Model Date: None

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

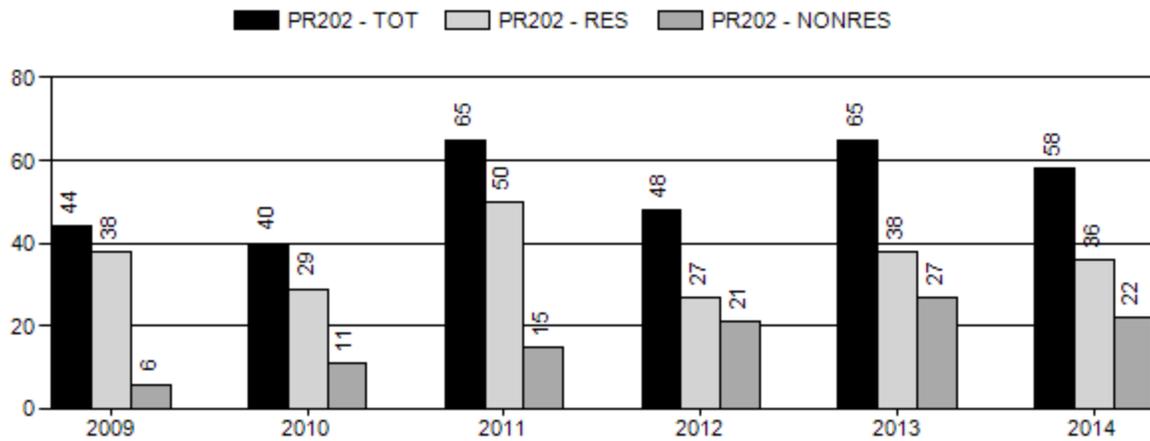
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	na%	na%
Males $\geq$ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%



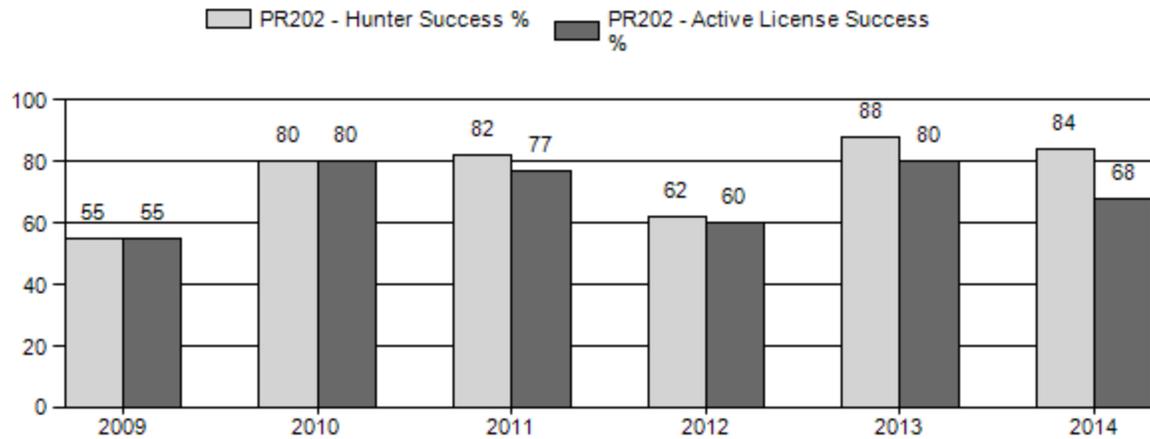
## Harvest



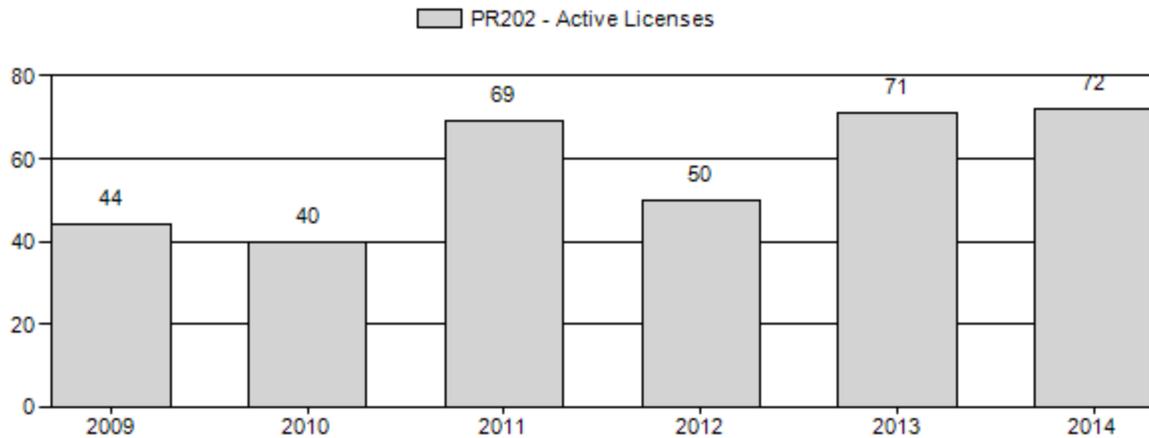
## Number of Hunters



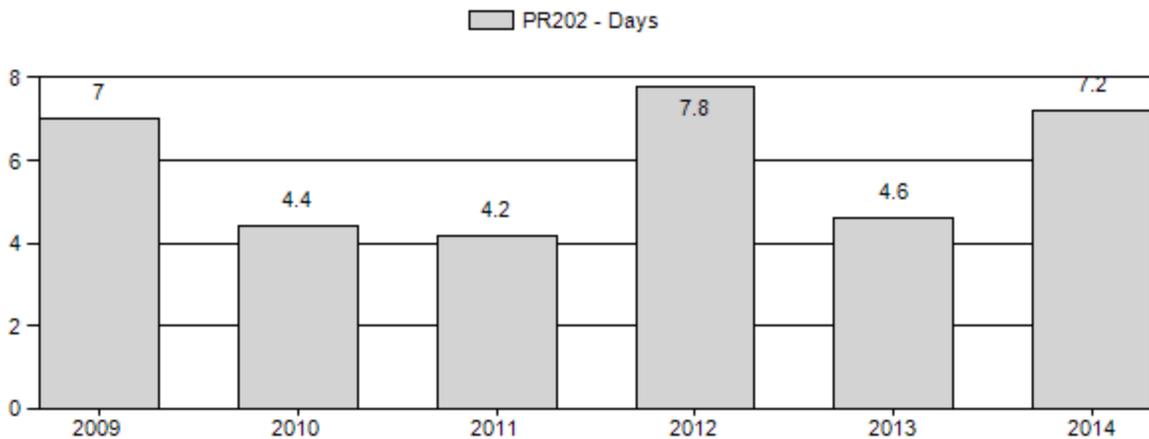
## Harvest Success



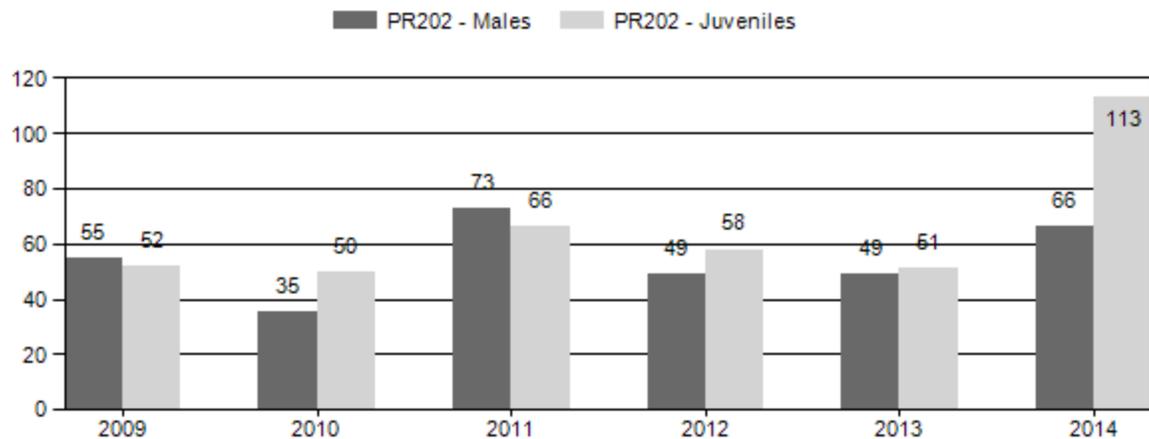
## Active Licenses



## Days Per Animal Harvested



## Preseason Animals per 100 Females



**2009 - 2014 Preseason Classification Summary**

for Pronghorn Herd PR202 - BIG HORN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Males to 100 Females				Young to				
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj				Int			
2009	0	23	43	66	27%	120	48%	63	25%	249	0	19	36	55	± 0	52	± 0	34
2010	0	6	19	25	19%	72	54%	36	27%	133	0	8	26	35	± 0	50	± 0	37
2011	0	24	46	70	31%	96	42%	63	28%	229	268	25	48	73	± 0	66	± 0	38
2012	0	30	50	80	24%	162	48%	94	28%	336	0	19	31	49	± 0	58	± 0	39
2013	0	28	43	71	24%	145	50%	74	26%	290	248	19	30	49	± 0	51	± 0	34
2014	0	19	38	57	24%	87	36%	98	40%	242	0	22	44	66	± 0	113	± 0	68

**2015 Hunting Seasons  
Big Horn Pronghorn Herd Unit (PR202)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
79	1	Sep. 1	Sep. 30	15	Limited quota; any antelope valid on or within one-half (1/2) mile of irrigated land
	6	Sep. 1	Oct. 31	50	Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land
	9	Aug. 15	Sep. 30	30	Limited quota; any antelope, archery only
Archery: 79	Not applicable				

Area	Type	Quota changes from 2014
79	1	+15
Total		+15

**Management Evaluation**

**Current Management Objective:** none

**2014 Postseason Population Estimate:** none

**2015 Proposed Postseason Population Estimate:** none

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

**Weather.** Habitat quality is probably most affected by desert-like conditions (< 12” annual precipitation) and poor soils. Both of those factors have allowed cheatgrass to invade and dominate some sites. Drought is the most important factor influencing survival and productivity of this pronghorn herd. Drought conditions occurred in 2000-04 and 2012. Affects of drought on upland vegetation resulted in a shift of pronghorn to agricultural fields where landowners have a low tolerance. In response, the number of doe/fawn licenses was increased throughout the herd unit in 2012. Growing season precipitation in 2014 was slightly below average, but excellent vegetation growth was observed overall in the Bighorn Basin.

**Habitat.** Dry conditions and poor soils across most of the herd unit resulted in marginal habitat for pronghorn. Saltbush and mixed shrub communities dominate the area. Sagebrush improves in quantity and quality with increased precipitation, higher elevation, and better soils on the east side of the herd unit; however, few pronghorn occur in the “best” habitat. Most pronghorn in the herd unit concentrate around irrigation canals and stock dams. Bentonite mining has been

expanding toward and into the best remaining stands of sagebrush on the west side of the herd unit. The 2 shrub transects established in this herd unit (Brokenback, Alkali) were located outside of areas used extensively by pronghorn in order to monitor deer browsing.

**Field Data.** The fawn:doe ratio obtained from the 2014 classification survey (113:100) was the highest in 27 years of records. Total number of pronghorn classified in 2014 (n=242) was average (2009-2014: n=247). The buck:doe ratio in 2014 (66:100) was also above the 6-year average (55:100). Both buck ratios and fawn ratios were showing a slight downward trend since the mid-1990s until a large increase in both ratios in 2011 and now again in 2014. However, the amount of effort (hours) to survey pronghorn in this herd unit has not been constant over the years, so trends in classification survey data should not be taken to represent trends in the overall population. This herd unit has been a low priority and classification data was not always collected. As noted, small sample sizes resulted in sex and age ratios that were not an accurate representation of the entire population. Although more data has been collected since 2006, sample sizes were insufficient in some years.

**Harvest Data.** Trends in hunting statistics do not suggest a clear trend in the population. From 1995-2014, recreation days and days per harvested animal have large fluctuations depending on if and how many doe/fawn licenses were issued. Considering only the archery licenses, hunter success has been increasing since 2005. Days per harvest have been trending downward, as has total recreation days, but to a lesser degree. Those statistics suggest that archery hunting for bucks has gotten easier and/or the population has been increasing. For the harvest survey, 33/72 (46%) active hunters responded indicating 75% satisfaction and 9% dissatisfaction.

**Population.** Preliminary attempts to construct a reliable population spreadsheet model have been marginally successful. Since 2006, more pronghorn have been observed during classification surveys (>200 animals in most years); thus, more accurate sex and age ratios were expected. However, modeling this herd unit as 1 distinct population may not be possible, because this herd unit is very large with low densities of animals concentrated near private land throughout the unit. The current hunt area was created from 2 hunt areas (116, 79) that were managed alike for the last 10 years then combined in 2013 to simplify the regulations. In these areas, classification data between old hunt areas suggests differences in juvenile and adult survival, and minimal movement between them, suggesting that the model's assumptions are likely violated.

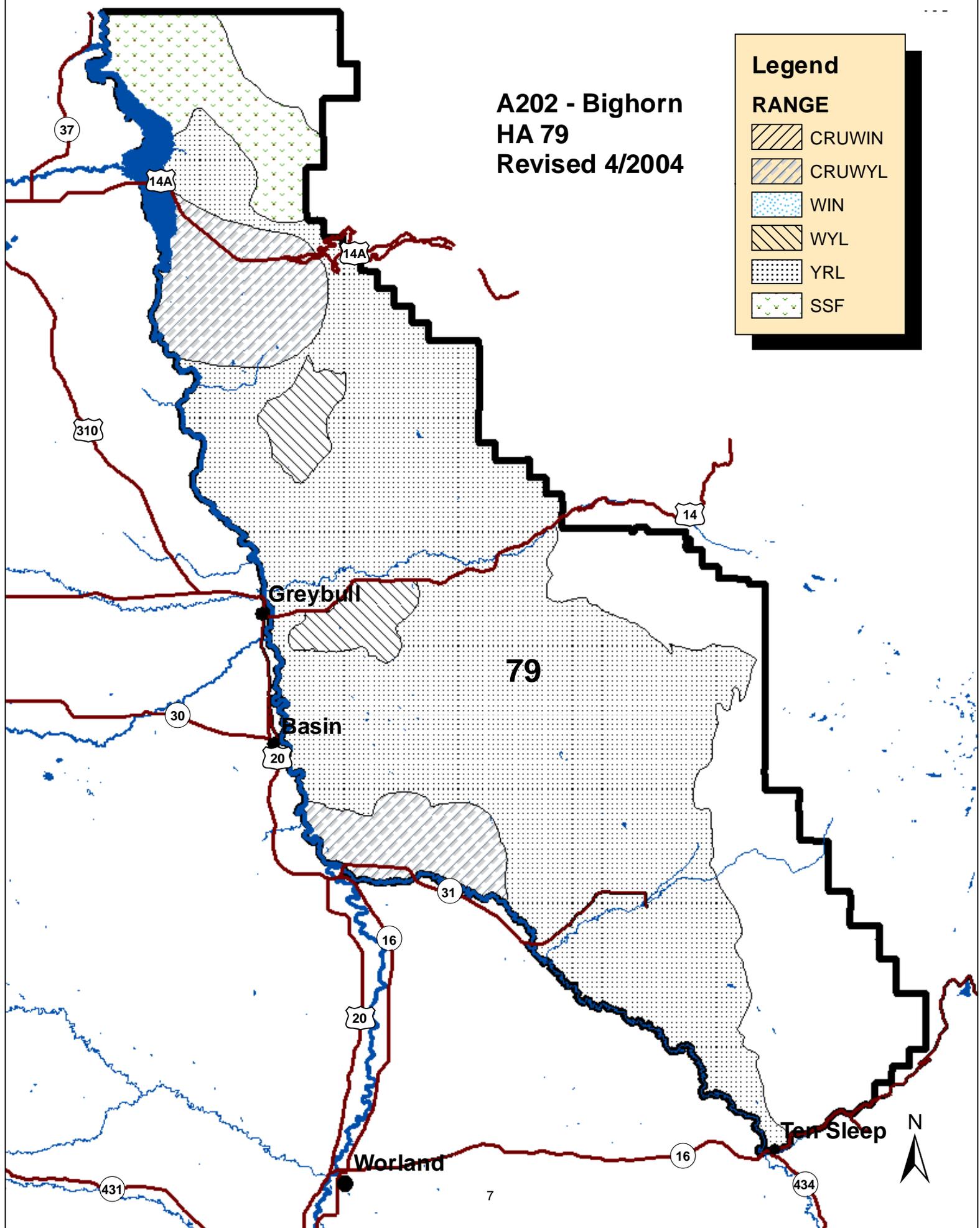
**Management Summary.** The Big Horn pronghorn herd is a small population (<300 animals), so only limited archery hunting has been historically offered, except with the arrival of doe/fawn (Type 6) licenses to address crop depredation. Several landowners have been requesting to hunt pronghorn bucks with rifles in this area for several years, and given trends suggesting this population is increasing, we are introducing 15 "any" antelope (Type 1) licenses valid within ½ mile of irrigated land to provide more opportunity in a growing herd. With our record fawn ratios and high buck ratios in 2014, field personnel believe that these licenses would not harm the population. We have received opposition to this license from archery hunters that traditionally hunt in the area. To continue addressing depredation to irrigated crops, no change to doe/fawn licenses are proposed. Although quantity and quality of data is lacking, it appears the Big Horn pronghorn herd has been increasing, but the population remains low.

**A202 - Bighorn  
HA 79  
Revised 4/2004**

**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  WIN
-  WYL
-  YRL
-  SSF





## 2014 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2014 - 5/31/2015

HERD: PR203 - COPPER MOUNTAIN

HUNT AREAS: 76, 114-115

PREPARED BY: BART KROGER

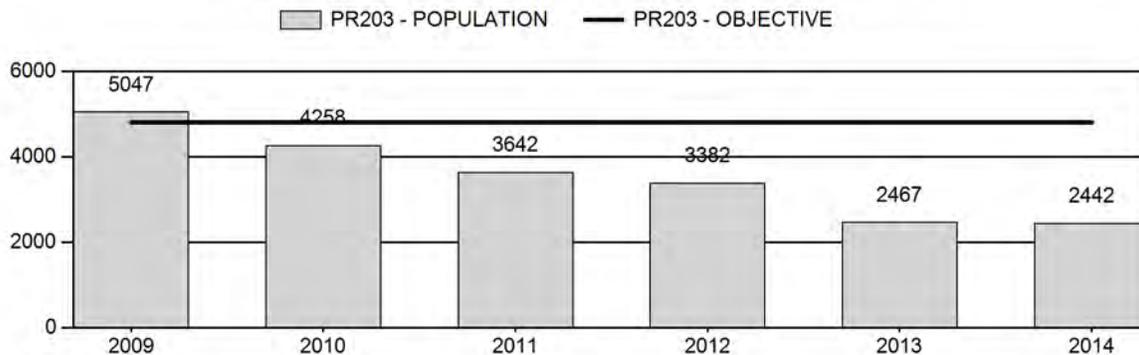
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	3,759	2,442	2,219
Harvest:	679	677	550
Hunters:	715	664	600
Hunter Success:	95%	102%	92%
Active Licenses:	825	791	650
Active License Success:	82%	86%	85 %
Recreation Days:	2,854	3,052	2,600
Days Per Animal:	4.2	4.5	4.7
Males per 100 Females	49	41	
Juveniles per 100 Females	58	89	

Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-49.1%
Number of years population has been + or - objective in recent trend:	13
Model Date:	2/11/2015

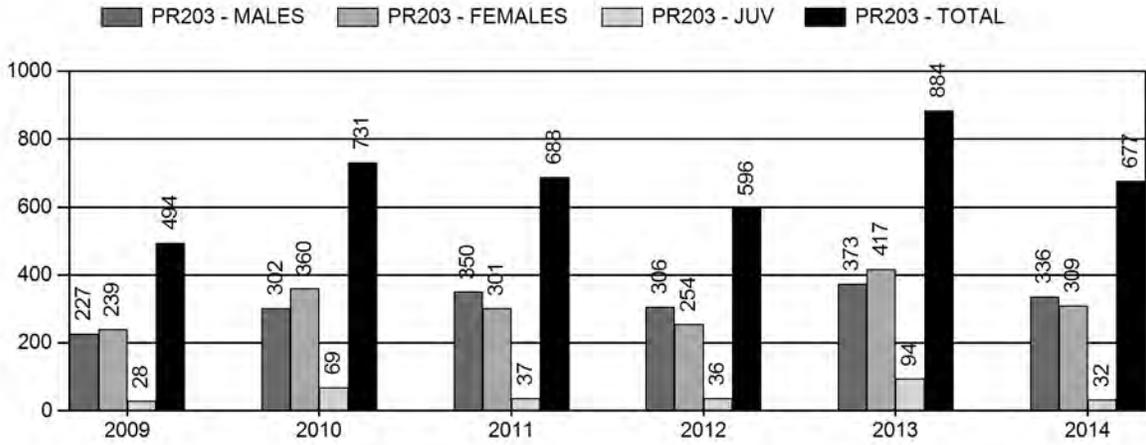
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	22%	18%
Males ≥ 1 year old:	58%	59%
Juveniles (< 1 year old):	3%	2%
Total:	21%	20%
Proposed change in post-season population:	-1%	-9%

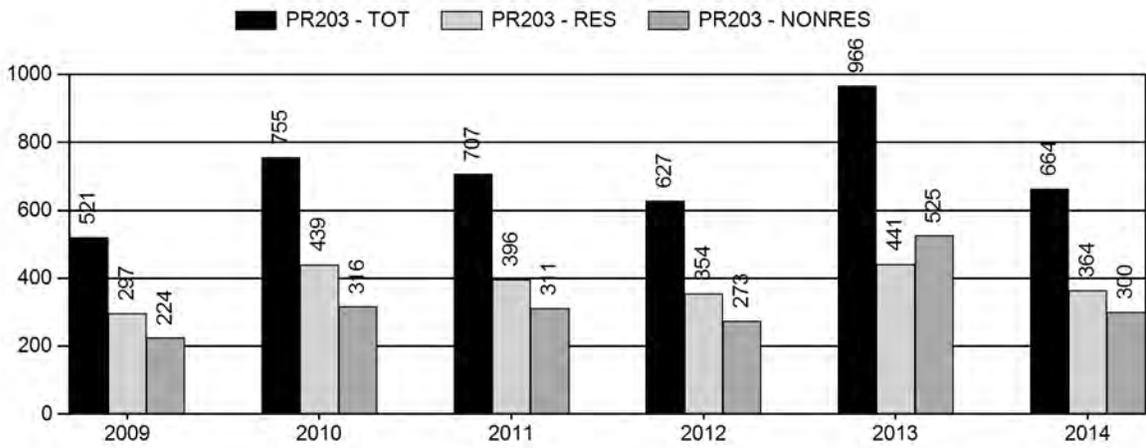
## Population Size - Postseason



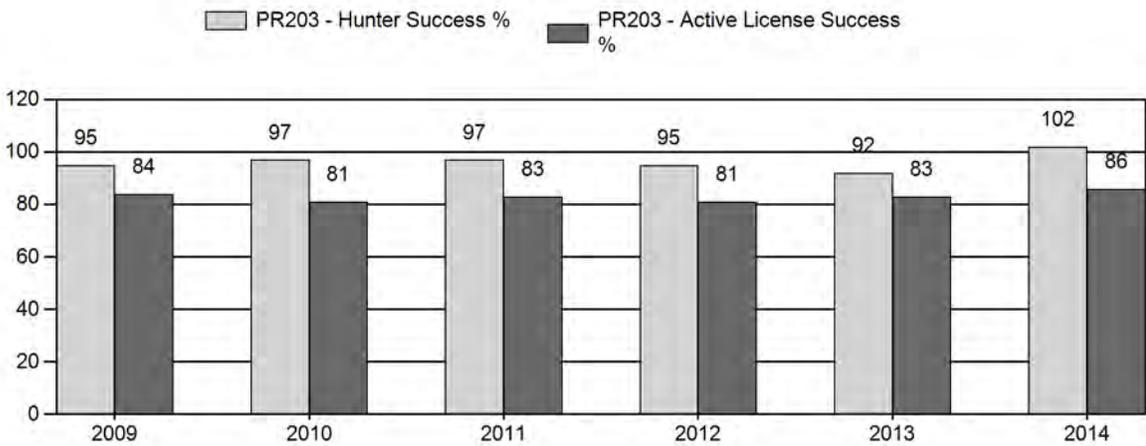
# Harvest



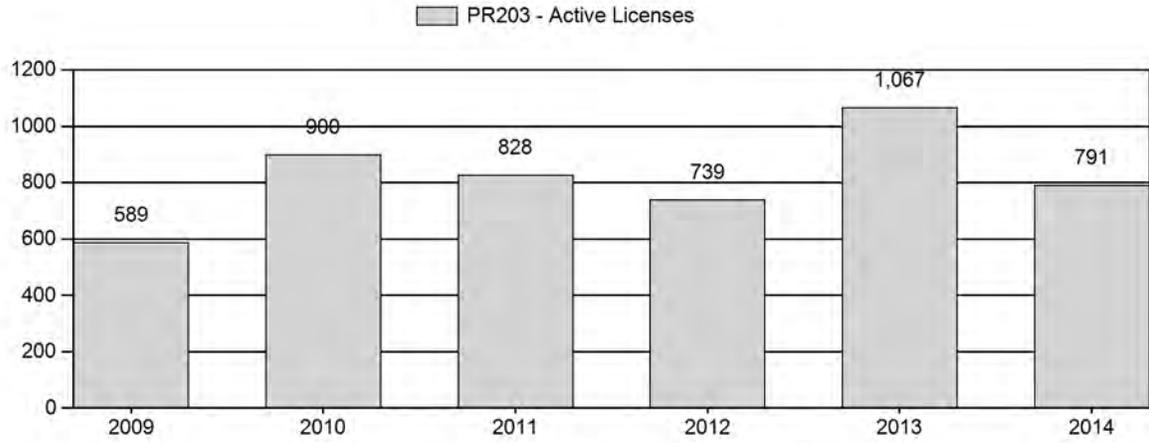
# Number of Hunters



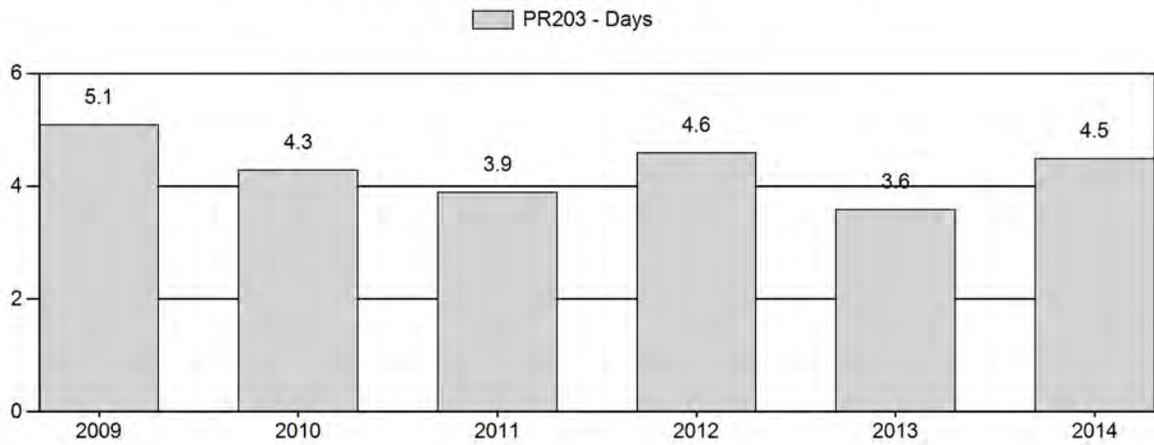
# Harvest Success



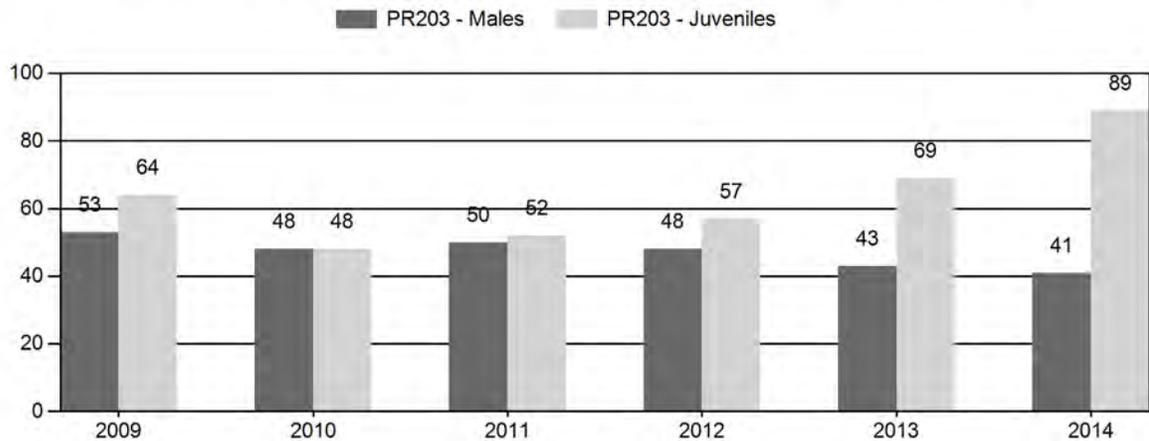
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR203 - COPPER MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	5,591	0	0	509	24%	961	46%	613	29%	2,083	1,686	0	0	53	± 4	64	± 4	42
2010	5,062	0	0	358	24%	752	51%	362	25%	1,472	1,172	0	0	48	± 4	48	± 4	33
2011	4,399	0	0	467	25%	928	50%	478	26%	1,873	1,277	0	0	50	± 4	52	± 4	34
2012	4,037	0	326	326	23%	682	49%	391	28%	1,399	1,285	0	48	48	± 4	57	± 5	39
2013	3,440	0	0	263	20%	618	47%	429	33%	1,310	1,505	0	0	43	± 4	69	± 6	49
2014	3,187	0	0	218	18%	534	44%	474	39%	1,226	1,810	0	0	41	± 4	89	± 7	63

**2015 HUNTING SEASONS  
COPPER MOUNTAIN PRONGHORN HERD (PR203)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
76	1	Oct. 1	Oct. 31	150	Limited quota; any antelope
	2	Aug. 15	Sep. 30	25	Limited quota; any antelope valid on or within one-half (1/2) mile of irrigated land
	6	Aug. 15	Oct. 31	50	Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land
114	1	Oct. 1	Oct. 31	50	Limited quota; any antelope
	2	Aug. 15	Sep. 30	25	Limited quota; any antelope valid on or within one-half (1/2) mile of irrigated land
	6	Aug. 15	Nov. 30	100	Limited quota; doe or fawn valid on or within one-half (1/2) of irrigated land
115	1	Oct. 1	Oct. 31	150	Limited quota; any antelope
	6	Sep. 1	Oct. 31	200	Limited quota; doe or fawn valid east of the Nowood River or south and west of Cornell Gulch or Nowater Stock Trail (BLM Road 1404)
76, 114, 115	Archery	Aug. 15			Refer to Section 2 of this chapter

Hunt Area	Type	Quota change from 2014
114	2	-25
114	6	-100
<b>Total</b>	<b>2</b>	<b>-25</b>
	<b>6</b>	<b>-100</b>

**Management Evaluation**

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

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: 2400**

**2015 Proposed Postseason Population Estimate: 2200**

**Herd Unit Issues** - The current model represents a good reflection of the population and trends, which mirrors that of field personnel perceptions, harvest data and classification numbers. The herd unit is about 70% public lands and 30% private lands. Much of the herd unit is supported by vast areas of cheatgrass. Higher densities of pronghorn occur in the southern portion of herd unit along the upper slopes of Copper Mountain and the upper Nowood area. Pronghorn utilizing the low elevation desert country are at low densities, and in some cases are struggling to maintain current numbers. In summer 2012, significant cropland damage issues occurred in the western portion of the herd unit, particularly Hunt Area 114. Poor habitat conditions, long-term drought,

and crop damage will and continue to be major management concerns for this herd. The herd objective and management strategy were last revised in 2013.

**Weather** - The winter of 2010/11 was severe enough to have caused significant mortality in this herd. After this winter event, reduced numbers of pronghorn were apparent throughout the herd unit. Since then, winter conditions has been sporadic, with 2011/12 being mostly mild and 2012/13, 2013/14 and 2014/15 being slightly severe with persistent snow cover and cold throughout the winter. Overall, annual drought conditions continue to persist, with periodic moisture events occurring during the year. Spring and early summer moisture in 2010, 2011 and 2014 was above normal, but 2012 and 2013 was way below normal. These cyclic weather events for the most part appears to be having mostly negative effects on this herd since overall numbers continue to decline.

**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 1.5cm. Winter utilization remains low at about 10% for these transects. Until considerable moisture regimes return, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by drought.

**Field Data** - Both aerial and ground surveys are used in obtaining pre-season classification data for this pronghorn herd. Routine classification routes for each Hunt Area are maintained. The number of pronghorn classified has declined in recent years, from a high of 2,083 pronghorn in 2009 to 1,227 in 2013, a 41% decline. However, buck ratios continue to remain mostly stable at about 45:100 on average, with fawn ratios averaging around 55:100, with 2013 (69:100) and 2014 (89:100) being two of the highest ratios in the past 20 years. Although buck and fawn ratios remain favorable, the declines in overall pronghorn numbers are of concern.

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

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

**Population** - The constant juvenile & adult survival (CJ, CA) spreadsheet model best represents the long-term population estimate and trends for this herd. This model had the lowest AIC value (n=70), and tracks well with LT estimates, harvest data, and classification numbers. This pronghorn population has shown a decline of 50% since 2009; however some doe/fawn harvest is warranted to alleviate potential damage concerns. Although the population is currently below objective by 48%, we are anticipating the population to drop again in 2015. The current model is a fair to good representation of this herd.

**Management Summary** - The 2015 season calls for a drop in Type 6 and Type 2 license quotas in area 114 due to reduced damage issues in this area. Buck harvest for Type 1 licenses remains favorable for all areas so no changes will occur with those quotas. The projected 2015 harvest of about 550 pronghorn will continue to drive this population down to an estimated 2015 post-season population of around 2,200 pronghorn.

<b>INPUT</b>	
Species:	Pronghorn
Biologist:	Bart Kroger
Herd Unit & No.:	Copper Mtn PR203
Model date:	02/11/15

MODELS SUMMARY			Fit	Relative AICc	Notes
CJ,CA	Constant Juvenile & Adult Survival		61	70	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival		61	70	<input checked="" type="checkbox"/> CJ,CA Model
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival		28	144	<input type="checkbox"/> SC,J,SCA Model <input type="checkbox"/> TS,J,CA Model

Clear form

Check best model to create report

Year	Predicted Prehunt Population (year t)		Total	Predicted Posthunt Population (year t)		Total	Predicted adult End-of-bio-year Pop (year t)		Total Adults	LT Population Estimate	Field SE	Trend Count	Objective
	Juveniles	Total Males		Females	Total Males		Females	Total Males					
1993	1251	1632	3646	1205	1162	3076	5443	1325	3072	4397			4800
1994	1269	1288	3011	1232	973	2787	4992	1175	2852	4027			4800
1995	1119	1152	2794	1103	866	2666	4634	1052	2721	3773			4800
1996	1836	1031	2666	1836	797	2601	5235	1191	2866	4057			4800
1997	1300	1168	2808	1294	913	2763	4971	1152	2872	4024			4800
1998	2035	1129	2815	2025	847	2777	5649	1279	3077	4357			4800
1999	1852	1254	3015	1828	968	2897	5693	1335	3123	4458			4800
2000	1482	1308	3061	1468	1045	2893	5406	1316	3022	4339			4800
2001	865	1290	2962	858	1056	2877	4791	1170	2857	4027		666	4800
2002	918	1146	2800	913	913	2727	4552	1054	2735	3788			4800
2003	1240	1032	2680	1238	800	2625	4663	1037	2730	3767			4800
2004	1351	1016	2676	1340	782	2607	4729	1044	2737	3781			4800
2005	1516	1023	2682	1510	782	2617	4909	1090	2793	3882		693	4800
2006	1608	1068	2737	1595	851	2639	5085	1176	2830	4006			4800
2007	1677	1153	2773	1660	933	2623	5216	1267	2826	4093		657	4800
2008	1526	1241	2770	1493	999	2549	5042	1278	2703	3981			4800
2009	1689	1253	2649	1659	1003	2386	5047	1325	2593	3918			4800
2010	1223	1298	2541	1147	966	2145	4258	1137	2212	3349			4800
2011	1117	1114	2168	1076	729	1837	3642	973	2000	2973			4800
2012	1124	954	1960	1084	617	1680	3382	753	1627	2380			4800
2013	1107	738	1595	1004	328	1136	2467	592	1409	2001			4800
2014	1226	580	1381	1190	211	1041	2442	519	1332	1852			4800
2015	1009	509	1306	987	179	1053	2219						4800
2016													4800
2017													4800
2018													4800
2019													4800
2020													4800
2021													4800
2022													4800
2023													4800
2024													4800
2025													4800

Survival and Initial Population Estimates

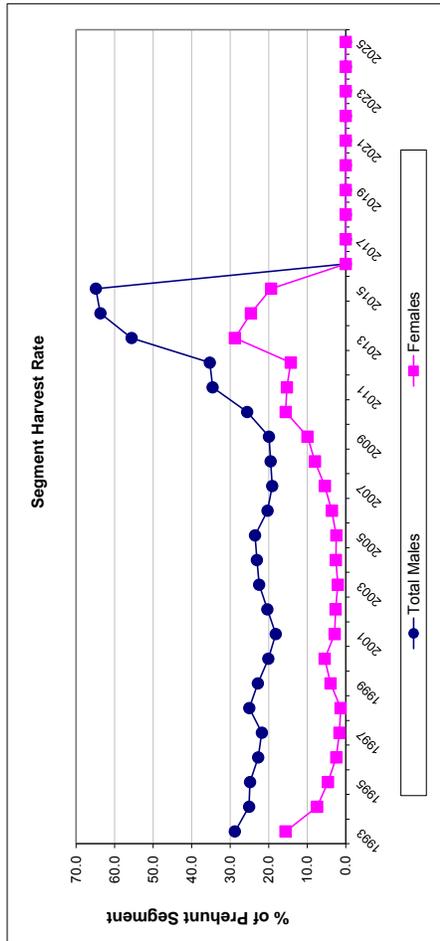
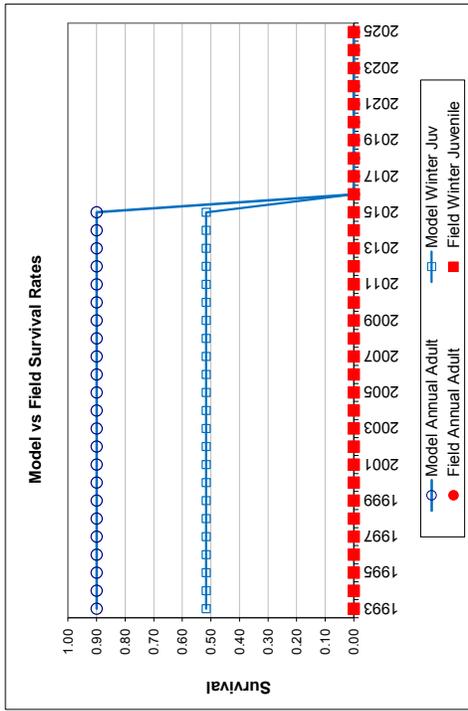
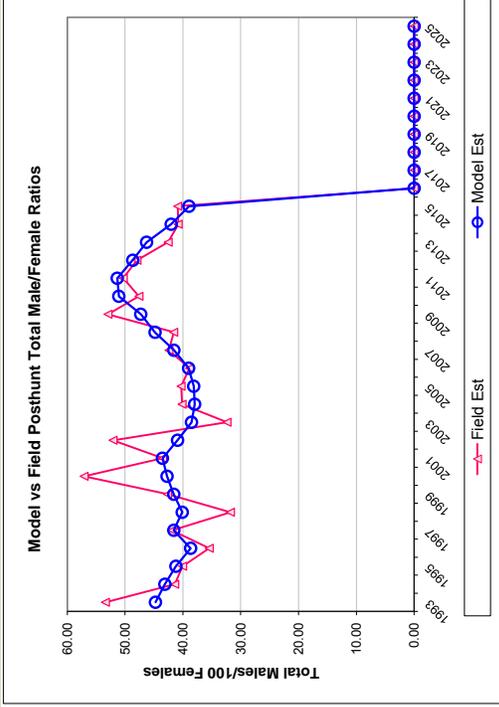
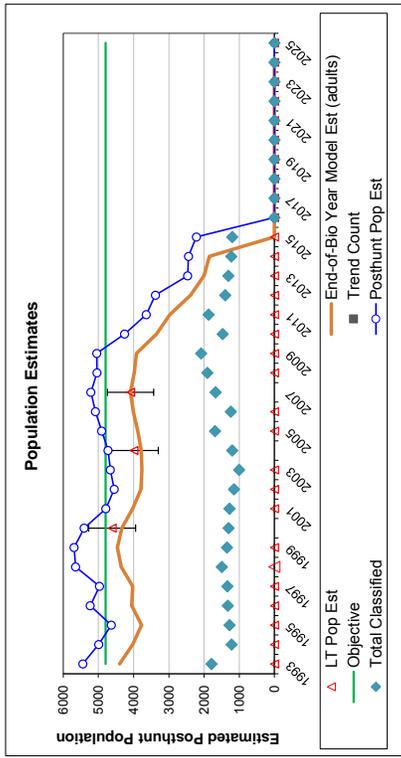
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est.	Field Est. SE	Model Est.	Field Est. SE
1993	0.52		0.90	
1994	0.52		0.90	
1995	0.52		0.90	
1996	0.52		0.90	
1997	0.52		0.90	
1998	0.52		0.90	
1999	0.52		0.90	
2000	0.52		0.90	
2001	0.52		0.90	
2002	0.52		0.90	
2003	0.52		0.90	
2004	0.52		0.90	
2005	0.52		0.90	
2006	0.52		0.90	
2007	0.52		0.90	
2008	0.52		0.90	
2009	0.52		0.90	
2010	0.52		0.90	
2011	0.52		0.90	
2012	0.52		0.90	
2013	0.52		0.90	
2014	0.52		0.90	
2015	0.52		0.90	
2016	0.52		0.90	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Juvenile Survival =		0.516
Adult Survival =		0.900
Initial Total Male Pop/10,000 =		0.163
Initial Female Pop/10,000 =		0.365

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

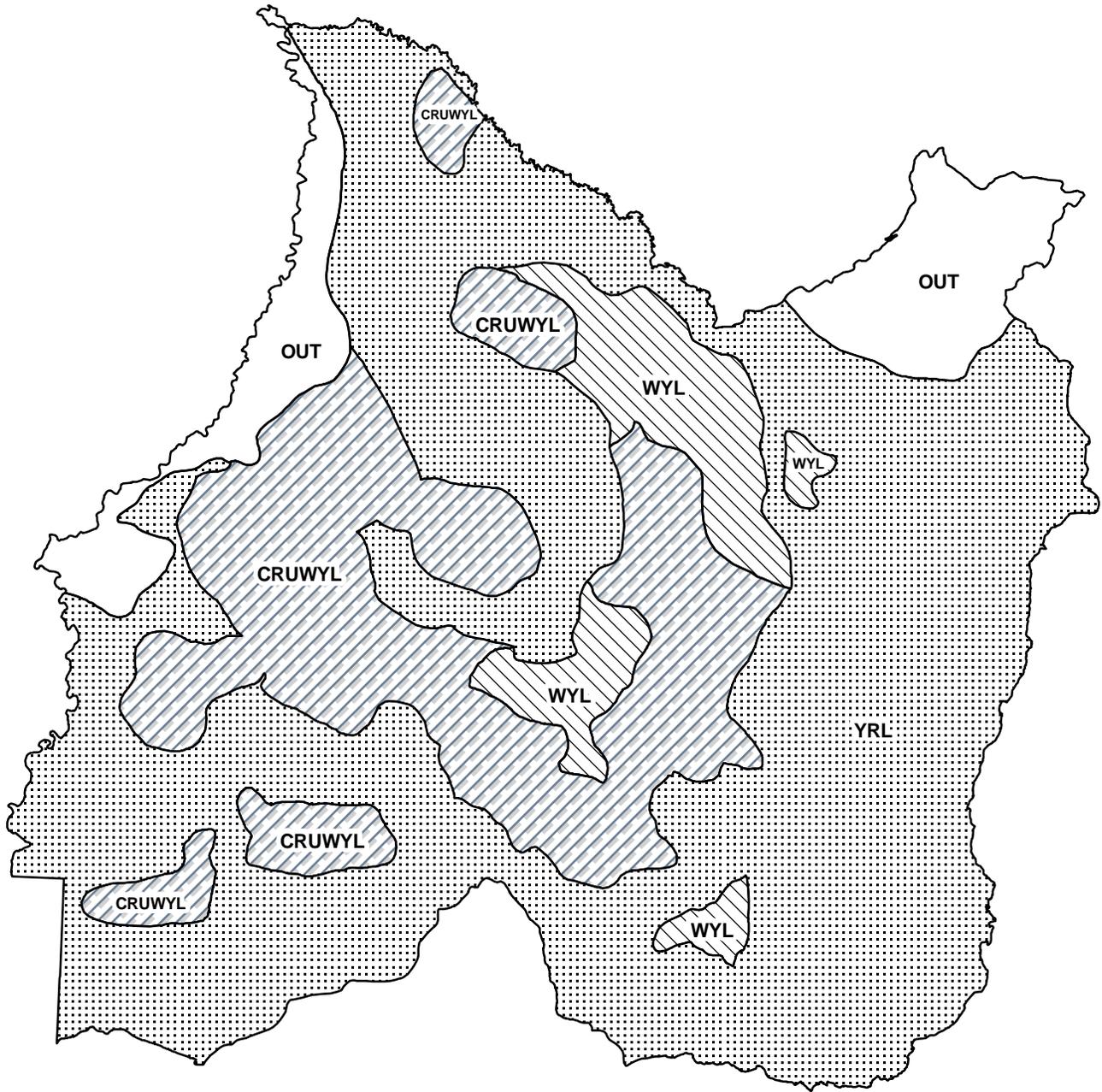
Year	Classification Counts				Total Male/Female Ratio				Harvest													
	Juvenile/Female Ratio		Field SE		Derived Est		Field Est		Field SE		Juv		Males		Females		Total Harvest		Segment Harvest Rate (% of			
	Derived Est	Field Est	Field SE	Field SE	Derived Est	Field Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females	Total Males	Females			
1993																						
1994																						
1995																						
1996																						
1997																						
1998																						
1999																						
2000																						
2001																						
2002																						
2003																						
2004																						
2005																						
2006																						
2007																						
2008																						
2009																						
2010																						
2011																						
2012																						
2013																						
2014																						
2015																						
2016																						
2017																						
2018																						
2019																						
2020																						
2021																						
2022																						
2023																						
2024																						
2025																						

FIGURES



Comments:

END



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



## 2014 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2014 - 5/31/2015

HERD: PR204 - FIFTEENMILE

HUNT AREAS: 77, 83, 110

PREPARED BY: BART KROGER

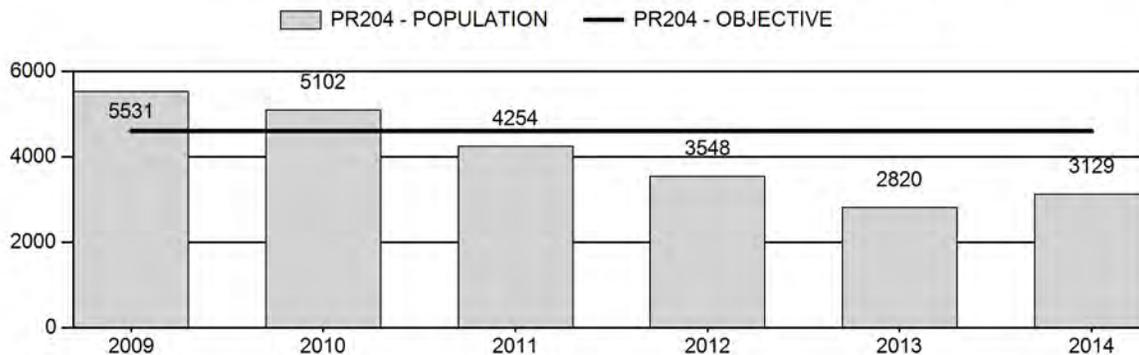
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	4,251	3,129	2,915
Harvest:	742	543	500
Hunters:	709	563	520
Hunter Success:	105%	96%	96 %
Active Licenses:	830	636	600
Active License Success:	89%	85%	83 %
Recreation Days:	2,317	1,843	1,800
Days Per Animal:	3.1	3.4	3.6
Males per 100 Females	41	28	
Juveniles per 100 Females	53	70	

Population Objective (± 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-32.0%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/11/2015

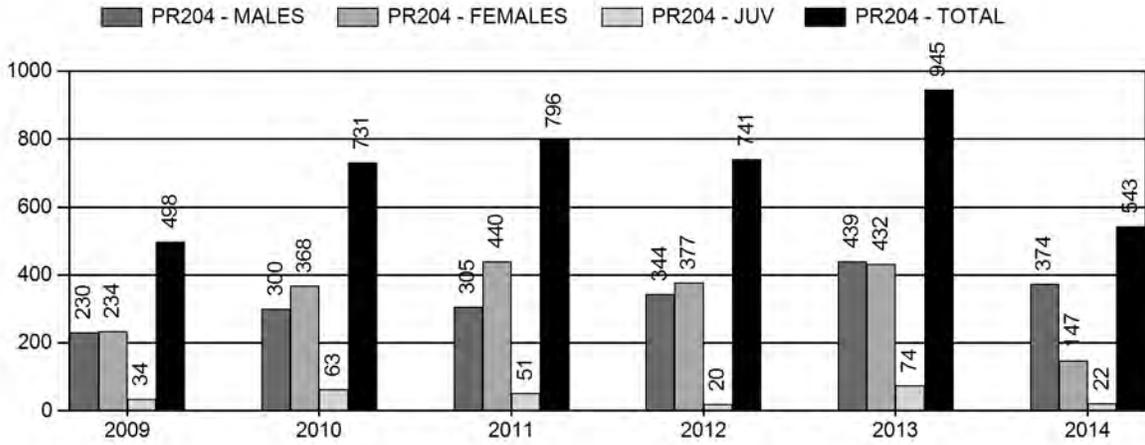
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8%	7%
Males ≥ 1 year old:	84%	100%
Juveniles (< 1 year old):	2%	2%
Total:	15%	14%
Proposed change in post-season population:	+10%	-8%

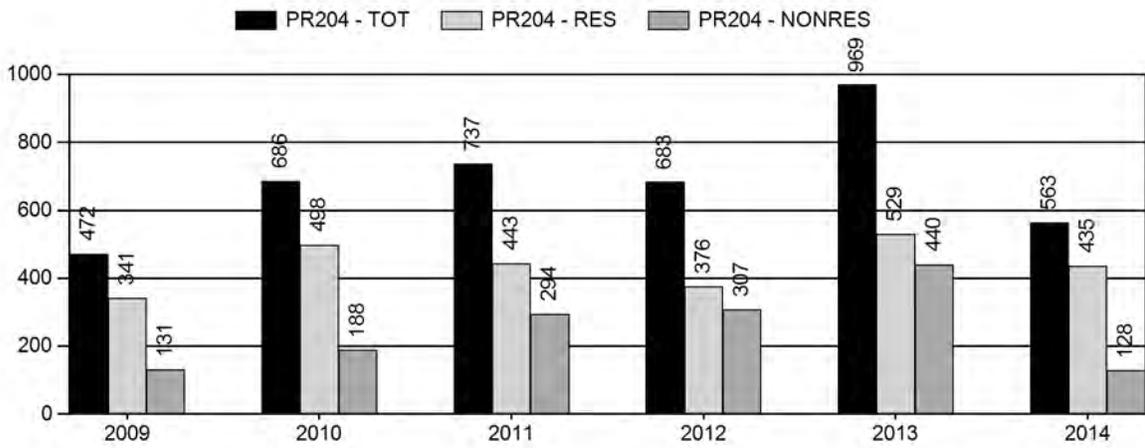
## Population Size - Postseason



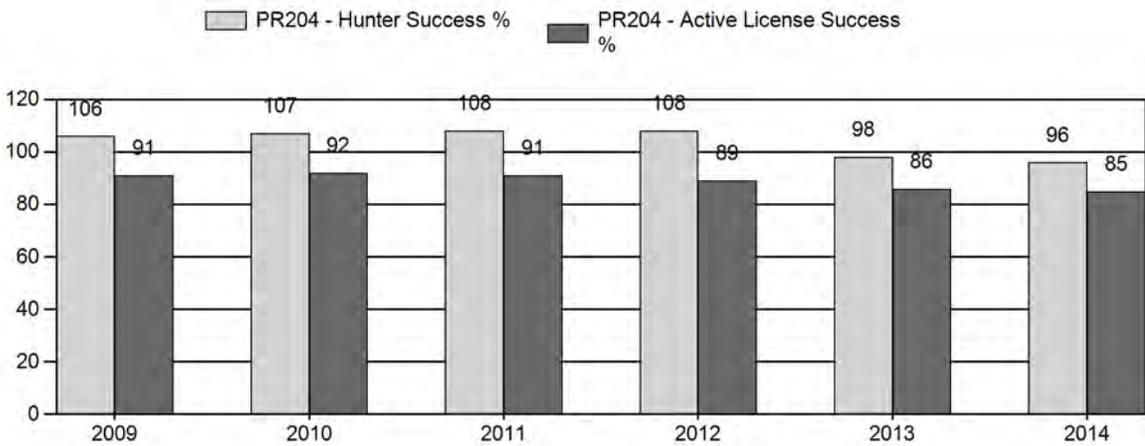
# Harvest



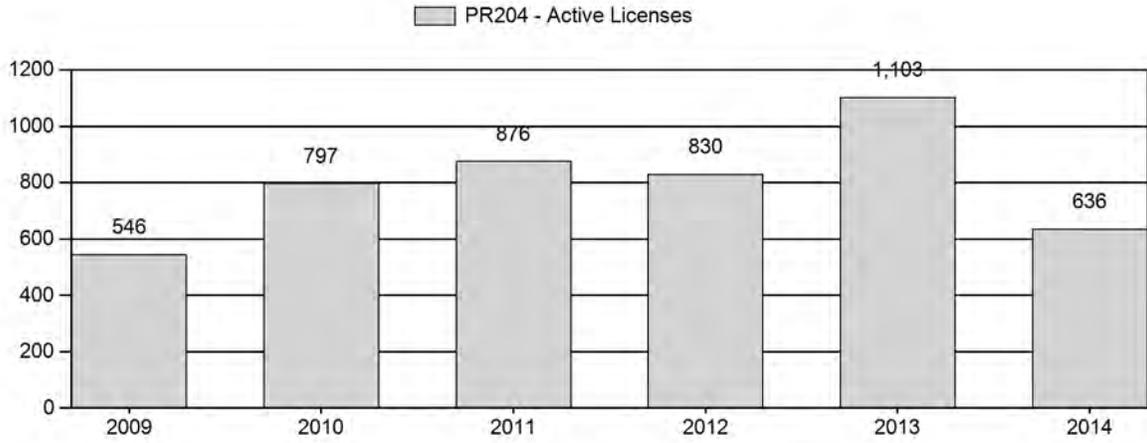
# Number of Hunters



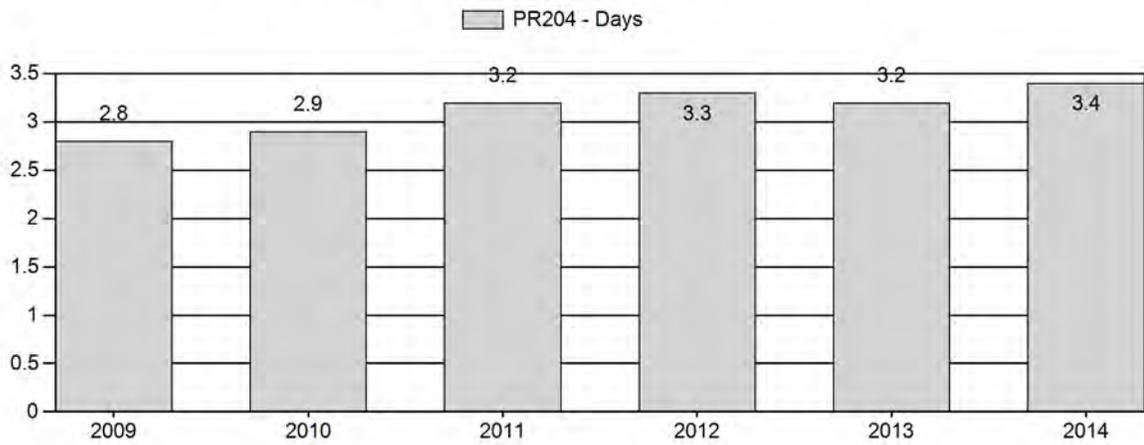
# Harvest Success



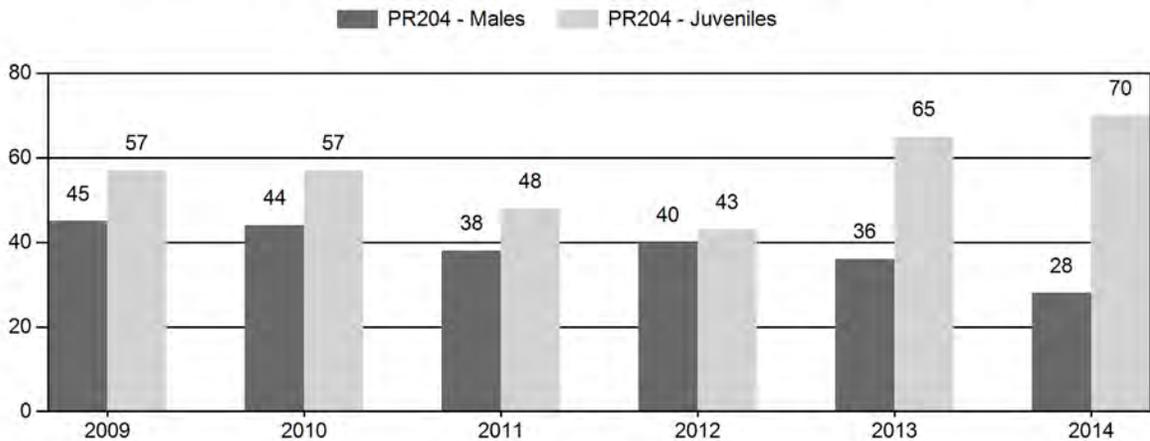
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR204 - FIFTEENMILE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	6,079	0	0	480	22%	1,069	49%	611	28%	2,160	1,406	0	0	45	± 3	57	± 4	39
2010	5,906	0	0	439	22%	1,008	50%	572	28%	2,019	1,411	0	0	44	± 3	57	± 4	40
2011	5,129	0	0	404	20%	1,060	54%	507	26%	1,971	1,147	0	0	38	± 3	48	± 3	35
2012	4,363	0	362	362	22%	900	55%	389	24%	1,651	971	0	40	40	± 3	43	± 3	31
2013	3,860	0	0	244	18%	672	50%	435	32%	1,351	1,456	0	0	36	± 4	65	± 5	47
2014	3,726	0	0	227	14%	817	51%	571	35%	1,615	1,515	0	0	28	± 3	70	± 5	55

**2015 HUNTING SEASONS  
FIFTEEN MILE PRONGHORN HERD (PR204)**

Hunt Area	Type	Season Dates		Quota	Limitations
		Opens	Closes		
77	1	Sep. 20	Oct. 14	75	Limited quota; any antelope
	2	Aug. 15	Sep. 19	25	Limited quota; any antelope valid on or within one-half (1/2) mile of irrigated land
	6	Aug. 15	Nov. 15	50	Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land
83	1	Sep. 20	Nov. 7	250	Limited quota; any antelope
	6	Aug. 15	Nov. 15	25	Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land east of Wyoming Highway 120
	7	Aug. 15	Nov. 15	100	Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land west of Wyoming Highway 120
110	1	Sep. 20	Oct. 14	75	Limited quota; any antelope
	6	Sep. 20	Oct. 14	25	Limited quota; doe or fawn
77, 83, 110	Archery	Aug. 15			Refer to Section 2 in this chapter

Hunt Area	Type	Quota change from 2014
77	2	-10
77	6	-50
83	6	-75
83	7	+100
110	1	-25
<b>Total</b>	<b>1&amp;2</b>	<b>-35</b>
	<b>6&amp;7</b>	<b>-25</b>

**Management Evaluation**

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

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: 3100**

**2015 Proposed Postseason Population Estimate: 2900**

**Herd Unit Issues** - Pronghorn utilizing mostly native ranges are at low densities, whereas those utilizing mostly private (irrigated) areas are at higher densities. This has led to increased damage concerns on some private lands in recent years, along with increased harvest even though this herd is well below objective levels. The current model represents a good reflection of the population and trends, which mirrors that of field personnel perceptions, harvest data and classification numbers. The herd unit is about 75% public lands and 25% private lands, with the

majority of pronghorn in the herd unit on or associated with private land. In summer 2012, private crop land damage issues occurred in the eastern portion of the herd unit, particularly Hunt Area 77 and 83. 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 2011-12 and 2012-13 were mild with low snowpack resulting in mostly good over winter survival. However, the winter of 2013/14 and 2014/15 along with the dry spring and summer of 2012 and 2013 appear to have been severe enough to cause some die-off and reduced survival. High moisture in 2014 will result in good spring green and shrub growth through the summer and fall. Overall, annual drought conditions continue to persist, with periodic moisture events occurring during the year. These cyclic weather events for the most part appear to be having mostly negative effects on this deer herd, since overall population numbers continue to decline.

**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. Overall, long-term drought conditions have affected habitat conditions in this herd unit. Most sagebrush communities continue to lack vigor, reproduction, and leader growth. Until considerable moisture regimes return, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by drought. Three sagebrush transects were established in this herd unit in 2004. Transect locations include 5-mile Creek, Grass Creek and Wagonhound Bench (Appendix A). Annual production of sagebrush (leader growth), continues to average about 3cm. Winter utilization of these three sagebrush transects was similar to slightly below the 7-year average of 12%.

**Field Data** - Aerial pre-season classification flights are conducted annually during the month of August in Hunt Areas 77 and 83, while Hunt Area 110 classifications are conducted from the ground. Relative trends for fawn ratios have increased the past two years, with both 2013 (65:100) and 2014 (70:100) ratios being the highest in the past 15 years. Conversely, buck ratios have declined the past few years, with a high of 45:100 in 2009 to 28:100 in 2014. Starting in 2008, classification sample sizes began to decline, with 2,100 classified in 2008, down to 1,350 in 2013, and 36% decline. However, in 2014, 1,600 pronghorn were classified, likely the result of better fawn production the past two years. The number of pronghorn classified mirrors that of the population model trend in recent years.

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

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

between 2008 and 2013, total harvest increased by over 300%. These harvest trends, along with model population estimates and trends are reflective of field personnel perceptions that pronghorn numbers have declined dramatically. In fact, starting in 2013, and now again for 2014, license quotas were reduced, mainly because of reduced damage issues and low population levels. Hopefully this will allow for some growth of this herd to occur.

**Population** - The constant juvenile & adult survival (CJ, CA) spreadsheet model best represents the long-term population estimate and trends for this herd. This model had the lowest AIC value of 72, and tracks well with field perceptions, LT estimates, harvest data, and classification numbers. Although this pronghorn population has declined by 44% since 2009, additional harvest has been needed to help alleviate damage issues, specifically in areas 77 and 83. The model is a fair to good representation of this herd.

**Management Summary** - Because of reduced damage issues in area 77 and declines in pronghorn numbers in area 110 only minor reductions in license quotas will occur for 2015. The Pitchfork Ranch has expressed concern over low pronghorn numbers in area 110 in recent years. Since area 83 continues to support fair numbers of pronghorn; doe/fawn licenses will remain high to address potential damage. The projected 2015 harvest of about 500 pronghorn will continue to drive this population down to an estimated 2015 post-season population of around 2,900 pronghorn, or about 37% below objective.

<b>INPUT</b>	
Species:	Pronghorn
Biologist:	Bart Kroger
Herd Unit & No.:	15-Mile, PR204
Model date:	02/11/15

Clear form

MODELS SUMMARY			Notes
	Relative AICc	Fit	
CJ,CA	72	63	<input checked="" type="checkbox"/> C,J,CA Model <input type="checkbox"/> SC,J,SCA I. <input type="checkbox"/> TS,J,CA Model
SC,J,SCA	73	64	
TS,J,CA	123	18	

Check best model to create report

Year	Predicted Prehunt Population (year t)			Predicted Posthunt Population (year t)			Population Estimates from Top Model			Predicted adult End-of-bio-year Pop (year t)			LT Population Estimate Field Est	Trend Count	Objective
	Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	Total Males	Females	Total Adults	Field SE			
1993	1584	1807	4485	7875	1543	1391	3737	6671	1614	3844	5459			4600	
1994	1576	1582	3767	6926	1543	1161	3102	5806	1395	3243	4638			4600	
1995	1462	1367	3178	6007	1441	1051	2964	5456	1279	3121	4400			4600	
1996	1687	1253	3059	5999	1670	937	2832	5440	1219	3042	4260			4600	
1997	1538	1194	2981	5713	1517	892	2772	5180	1143	2952	4095			4600	
1998	1606	1120	2893	5619	1584	838	2716	5139	1106	2914	4020			4600	
1999	1149	1084	2856	5089	1120	818	2664	4603	990	2766	3757	860		4600	
2000	1064	971	2711	4745	1052	729	2595	4375	897	2696	3592			4600	
2001	836	879	2642	4356	833	666	2617	4115	796	2680	3476			4600	
2002	869	780	2626	4275	869	615	2589	4072	758	2660	3418			4600	
2003	1025	743	2607	4375	1023	585	2580	4188	761	2684	3445			4600	
2004	1432	746	2630	4808	1432	614	2622	4668	876	2810	3686			4600	
2005	1515	858	2754	5127	1515	709	2754	4977	982	2953	3936			4600	
2006	1624	963	2894	5481	1619	814	2860	5283	1103	3073	4177	917		4600	
2007	1601	1081	3012	5994	1601	900	2905	5386	1171	3100	4271			4600	
2008	1763	1148	3038	5948	1747	983	2899	5629	1288	3128	4416			4600	
2009	1752	1262	3065	6079	1715	1009	2808	5531	1194	3019	4313			4600	
2010	1679	1268	2959	5906	1610	938	2554	5102	1190	2736	3926			4600	
2011	1282	1166	2681	5129	1226	831	2197	4254	996	2413	3409			4600	
2012	1022	977	2364	4363	1000	598	1950	3548	654	1994	2648			4600	
2013	1265	641	1954	3860	1183	158	1479	2820	456	1970	2425			4600	
2014	1349	447	1930	3726	1325	35	1769	3129	313	1983	2297			4600	
2015	1215	307	1944	3465	1193	-78	1801	2915						4600	
2016														4600	
2017														4600	
2018														4600	
2019														4600	
2020														4600	
2021														4600	
2022														4600	
2023														4600	
2024														4600	
2025														4600	

Survival and Initial Population Estimates

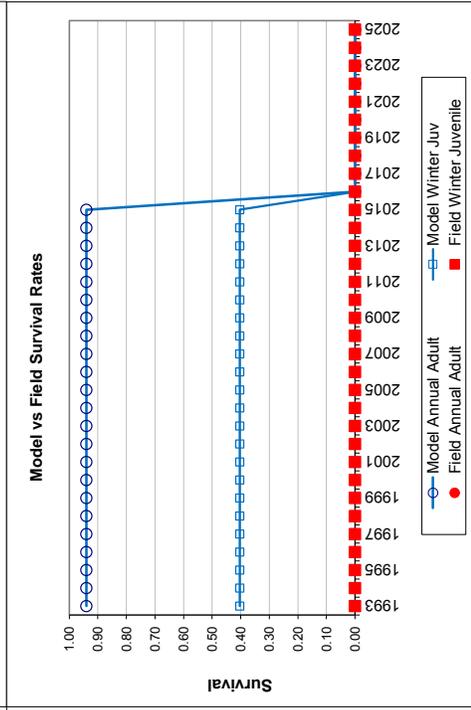
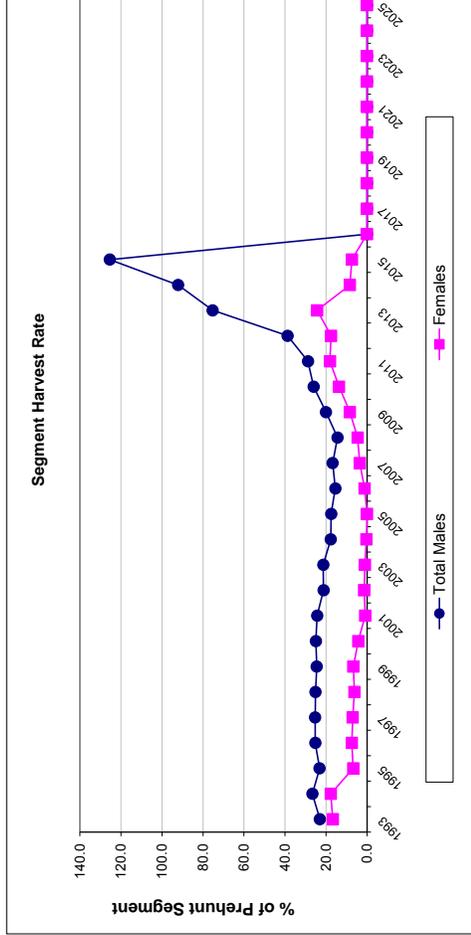
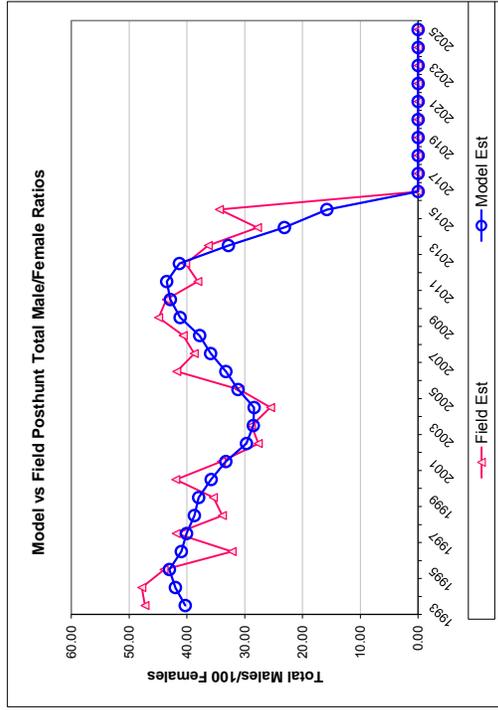
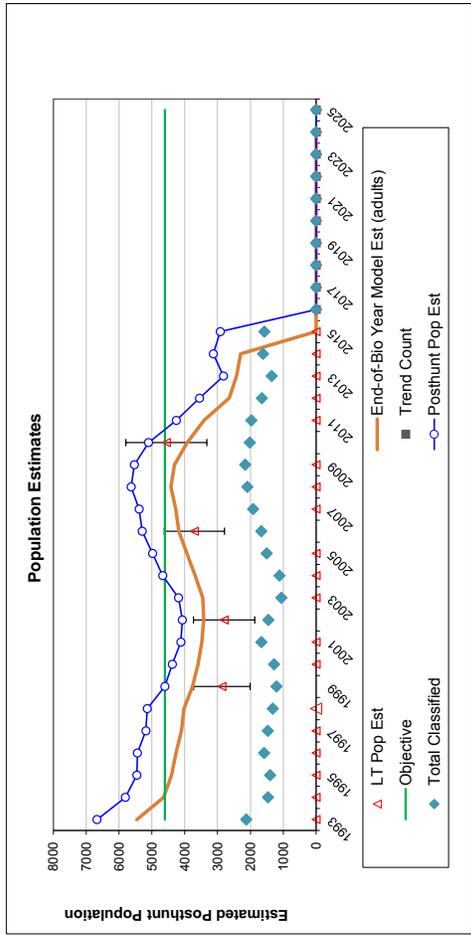
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est.	Field Est.	Model Est.	Field Est.
1993	0.40		0.94	
1994	0.40		0.94	
1995	0.40		0.94	
1996	0.40		0.94	
1997	0.40		0.94	
1998	0.40		0.94	
1999	0.40		0.94	
2000	0.40		0.94	
2001	0.40		0.94	
2002	0.40		0.94	
2003	0.40		0.94	
2004	0.40		0.94	
2005	0.40		0.94	
2006	0.40		0.94	
2007	0.40		0.94	
2008	0.40		0.94	
2009	0.40		0.94	
2010	0.40		0.94	
2011	0.40		0.94	
2012	0.40		0.94	
2013	0.40		0.94	
2014	0.40		0.94	
2015	0.40		0.94	
2016	0.40		0.94	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Juvenile Survival =	0.403
Adult Survival =	0.940
Initial Total Male Pop/10,000 =	0.181
Initial Female Pop/10,000 =	0.448

MODEL ASSUMPTIONS
Sex Ratio (% Males) = 50%
Wounding Loss (total males) = 10%
Wounding Loss (females) = 10%
Wounding Loss (juveniles) = 10%
Over-summer adult survival = 98%

Year	Classification Counts				Harvest					
	Juvenile/Female Ratio		Total Male/Female Ratio		Segment Harvest Rate (% of		Total Males	Females		
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest
1993		35.31	2.03	40.29	47.25	2.44	37	378	680	1095
1994		41.84	2.77	41.99	47.80	3.03	30	383	605	1018
1995		46.00	3.02	43.03	43.96	2.93	19	288	194	501
1996		55.15	3.18	40.97	32.19	2.24	15	287	206	508
1997		51.58	3.21	40.07	41.84	2.79	19	275	190	484
1998		55.52	3.52	38.71	33.86	2.55	20	256	161	437
1999		40.23	2.87	37.97	35.42	2.64	26	242	174	442
2000		39.24	2.78	35.80	41.93	2.90	11	220	105	336
2001		31.64	2.04	33.27	34.03	2.13	3	194	22	219
2002		33.08	2.21	29.69	27.65	1.98	0	150	34	184
2003		39.33	2.95	28.51	28.82	2.43	2	144	24	170
2004		54.44	3.69	28.37	25.53	2.28	0	120	7	127
2005		55.01	3.25	31.16	30.90	2.24	0	136	0	136
2006		56.11	3.22	33.26	41.76	2.65	5	135	31	171
2007		53.15	2.85	35.90	38.74	2.32	18	165	97	280
2008		58.02	2.95	37.79	40.65	2.33	14	150	126	290
2009		57.16	2.90	41.17	44.90	2.47	34	230	234	498
2010		56.75	2.97	42.86	43.55	2.49	63	300	368	731
2011		47.83	2.58	43.50	38.11	2.23	51	305	440	796
2012		43.22	2.62	41.30	40.22	2.50	20	344	377	741
2013		64.73	3.98	32.82	36.31	2.71	74	439	432	945
2014		69.89	3.81	23.14	27.78	2.08	22	374	147	543
2015		62.50	3.56	15.79	34.38	2.40	20	350	130	500
2016										
2017										
2018										
2019										
2020										
2021										
2022										
2023										
2024										
2025										

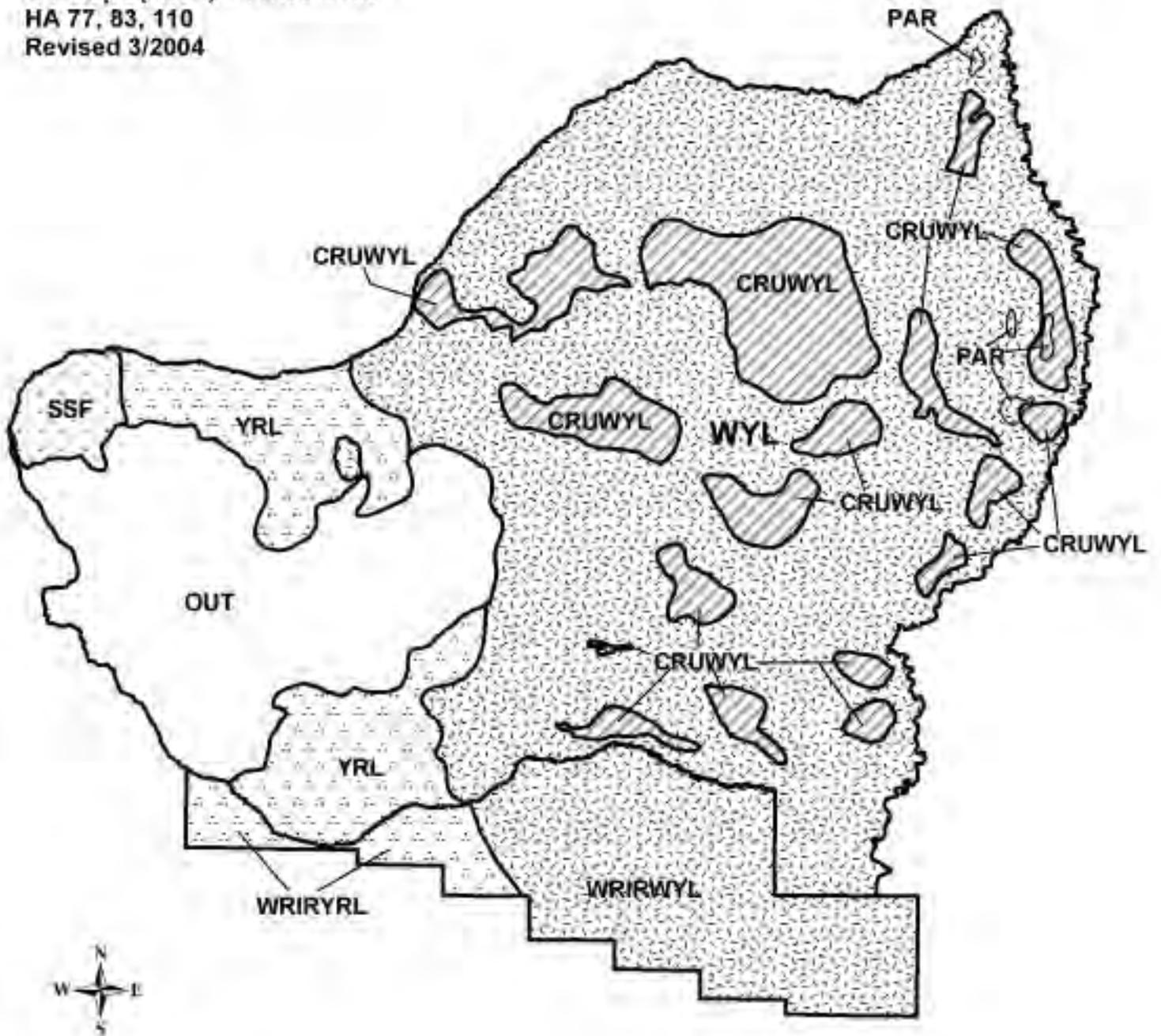
FIGURES



Comments:

END

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



## 2014 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2014 - 5/31/2015

HERD: PR205 - CARTER MOUNTAIN

HUNT AREAS: 78, 81-82

PREPARED BY: LESLIE SCHREIBER

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	9,357	7,398	7,404
Harvest:	603	618	580
Hunters:	584	645	600
Hunter Success:	103%	96%	97%
Active Licenses:	687	751	700
Active License Success:	88%	82%	83%
Recreation Days:	2,263	2,518	2,400
Days Per Animal:	3.8	4.1	4.1
Males per 100 Females	52	55	
Juveniles per 100 Females	46	67	

Population Objective (± 20%) : 7000 (5600 - 8400)

Management Strategy: Recreational

Percent population is above (+) or below (-) objective: 6%

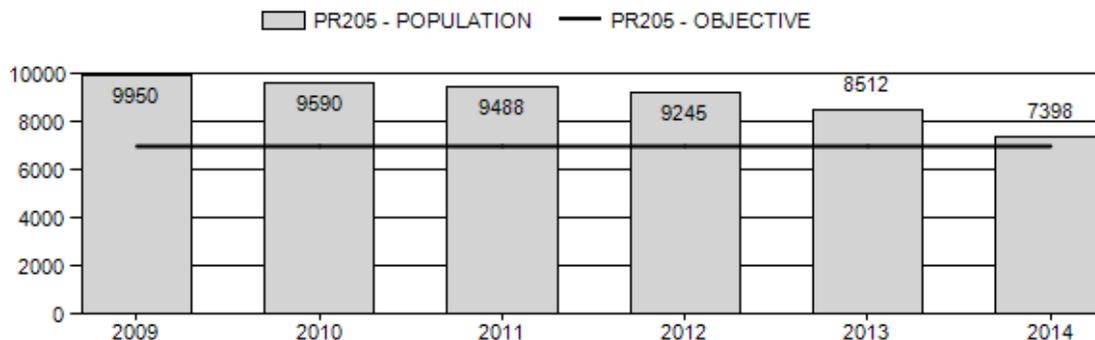
Number of years population has been + or - objective in recent trend: 0

Model Date: 3/09/2015

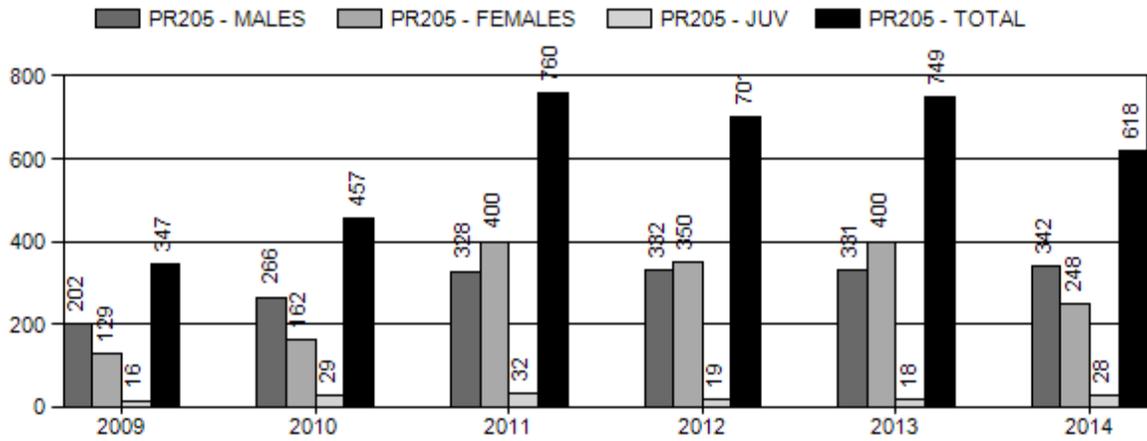
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8%	6%
Males ≥ 1 year old:	19%	17%
Juveniles (< 1 year old):	1%	1%
Total:	27%	23%
Proposed change in post-season population:	-8%	-8%

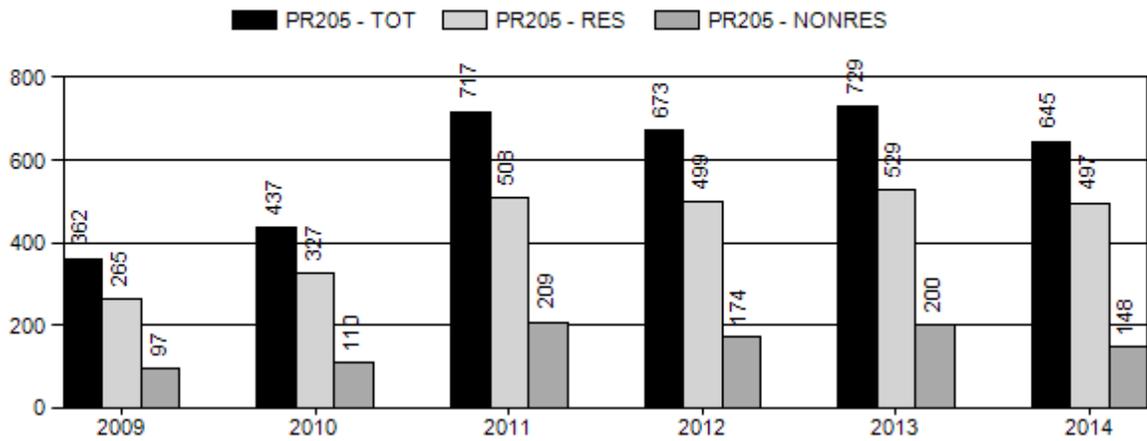
## Population Size - Postseason



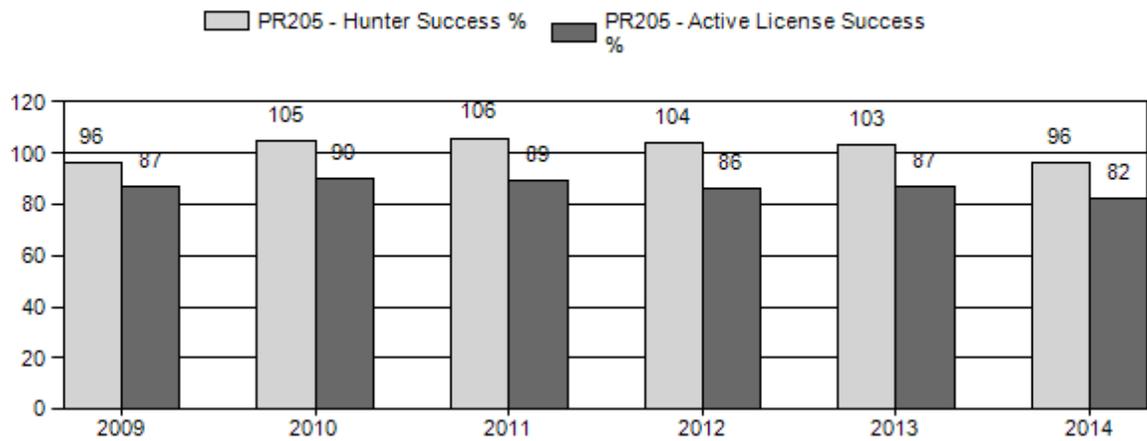
# Harvest



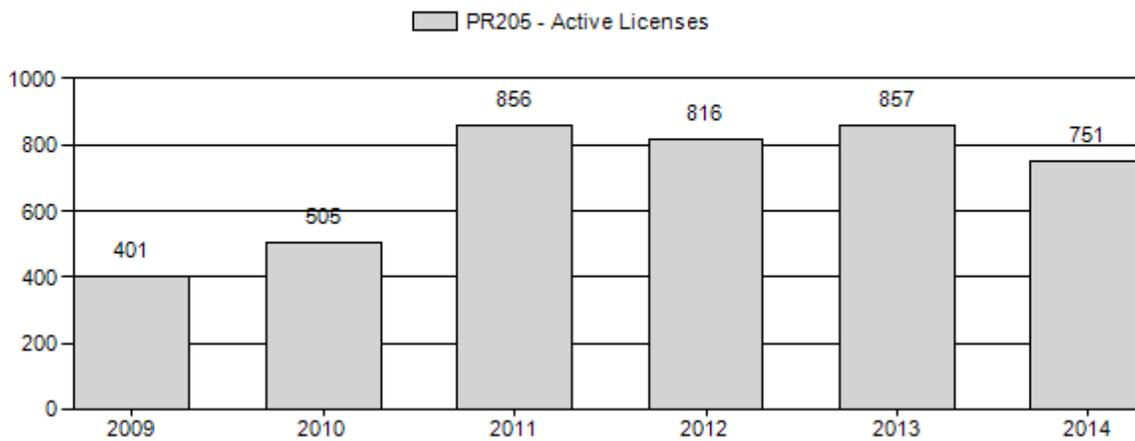
# Number of Hunters



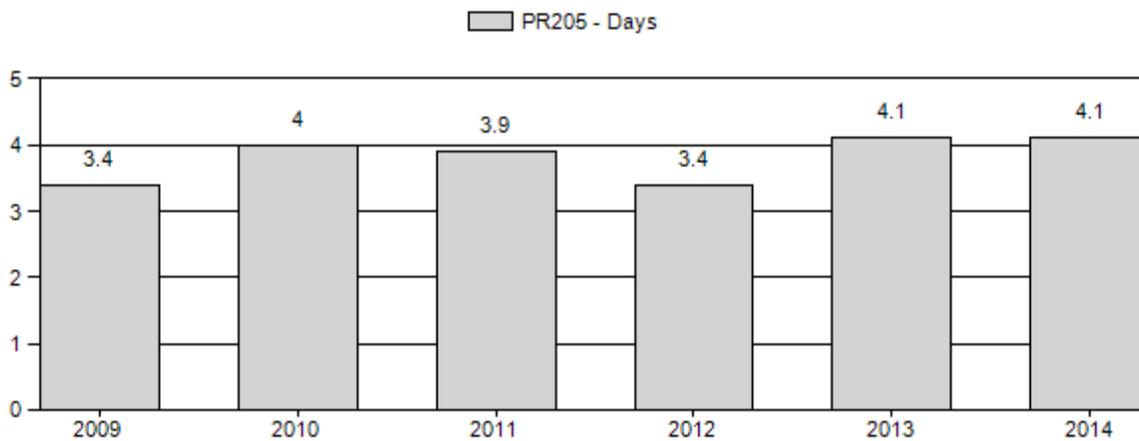
# Harvest Success



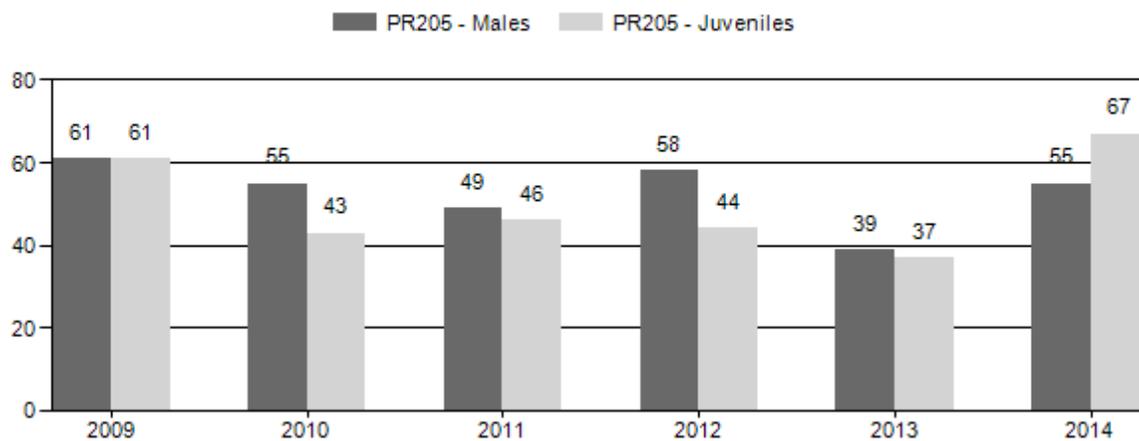
## Active Licenses



## Days Per Animal Harvested



## Preseason Animals per 100 Females



**2009 - 2014 Preseason Classification Summary**  
for Pronghorn Herd PR205 - CARTER MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj							
2009	10,332	156	273	568	28%	925	45%	568	28%	2,061	1,634	17	30	61	± 5	61	± 5	38
2010	10,093	198	410	608	28%	1,098	50%	473	22%	2,179	1,344	18	37	55	± 4	43	± 3	28
2011	10,324	115	367	482	25%	992	51%	458	24%	1,932	1,980	12	37	49	± 4	46	± 4	31
2012	10,023	125	365	490	29%	844	50%	370	22%	1,704	1,557	15	43	58	± 5	44	± 4	28
2013	9,336	74	302	376	22%	973	57%	358	21%	1,707	1,319	8	31	39	± 3	37	± 3	27
2014	8,078	79	278	357	25%	647	45%	433	30%	1,437	1,296	12	43	55	± 5	67	± 6	43

**2015 HUNTING SEASONS**  
**Carter Mountain Pronghorn Herd Unit (PR205)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
78	1	Sep. 20	Oct. 31	125	Limited quota; any antelope
	6	Aug. 15	Nov 30	150	Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land
81	1	Oct. 1	Nov. 15	125	Limited quota; any antelope
	6	Oct. 1	Nov. 15	75	Limited quota; doe or fawn valid west of Wyoming Highway 120
82	1	Sep. 20	Oct. 14	150	Limited quota; any antelope
	6	Aug. 15	Oct. 31	50	Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land east of Wyoming Highway 120
	7	Sep. 20	Oct. 14	75	Limited quota; doe or fawn valid west of Wyoming Highway 120
	8	Oct. 15	Nov. 30	50	Limited quota; doe or fawn valid in Big Horn County
<b>Archery:</b>					
78, 81, 82		Aug. 15			Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2014
78	6	+75
78	7	-150
81	6	+25
HU Total		-50

## **Management Evaluation**

**Current Management Objective: 7,000**

**2014 Postseason Population Estimate: 7,400**

**2015 Proposed Postseason Population Estimate: 7,400**

**Herd Unit Issues.** Carter Mountain pronghorn herd unit is managed under recreational management with a post-season population objective of 7,000 pronghorn set in 1984. The population objective was reviewed in 2002, 2007 and not changed, and is again under review in 2015 (no proposed change). Due to the large size of and varied habitats in the herd unit, anthropomorphic factors probably have a slight influence on herd survival and productivity. There is 1 major oil/gas field (Oregon Basin) and many oil/gas wells scattered across the herd unit. US Highway 14-16-20 and Wyoming Highway 120 are the major highways bisecting the herd unit, which may affect migration routes. Urban expansion is a small concern in Area 81 near Cody and the South Fork Highway, but the overall impact is thought minimal. Crucial winter range appears to not be a limiting factor since winter snow levels typically are low and winter habitat is readily available compared to other higher elevation herd units in the state. Summer and fall forage production, and timing of spring moisture are probably the biggest factors for the growth of this herd.

**Weather.** Drought is the most important factor influencing survival and productivity of this pronghorn herd. Drought conditions occurred in 2000-04 and again in 2012 impacting habitat conditions. Growing season precipitation in 2014 was slightly below average, but excellent vegetation growth was observed overall in the Bighorn Basin. Currently we are experiencing a third spring of improved moisture, which should help improve body condition in all age classes.

**Habitat.** Habitat quality is probably most affected by desert-like conditions, including less than 12 inches of annual precipitation, and poor soils. Those factors have allowed cheatgrass to invade and dominate some sites. With only 1 sagebrush browse transect established in this herd unit, data is insufficient to draw inferences across the entire herd unit. The 1 transect near Oregon Basin was established in 2004, and has been of limited value in for gauging habitat condition for the unit as a whole. Sagebrush use by pronghorns on near the shrub transect is typically low and has ranged from <5% to 25% (2005-2011). Drought effects on upland vegetation shifted pronghorn to agricultural fields, especially along the Shoshone River in Hunt Area 78. Landowners have a low tolerance for pronghorn so we use hunting seasons to reduce and move pronghorn from crop land.

**Field Data.** Fawn:doe ratios decreased starting in 2010 (55:100) and dropped to a low of 37:100 in 2013. The lag effects of the drought lagged in 2012 and 2013 with the lowest ratios during the recent 6 years. In 2014, 67 fawns:100 does was observed, the highest since 1996, indicating this herd is rebounding. The recent improved fawn ratios are likely a product of spring moisture and corresponding plant growth providing food and cover for pronghorn juveniles. Likewise, the 2014 buck:doe ratio (55:100) was up from 2013 (39:100). Historically, buck:doe ratios declined during and after drought years (26:100 in 2004); however, buck ratios increased since 2004 and peaked at 61:100 in 2009 (ranging between 39:100 in 2013 and 58:100 in 2012). Although total number of pronghorn classified in 2014 was only 85% of the 10-year average usually indicating a smaller population, we think caution is warranted when interpreting this metric, since 2 new observers performed classification surveys in this herd unit, and observers can vary in experience and how they complete surveys.

**Harvest Data.** We increased doe/fawn licenses significantly in 2011 (~70%) due to crop depredation complaints after drought moved pronghorn from unproductive habitat to farm ground. Hunter numbers increased from a low of 362 in 2009 and peaked at 729 in 2013 in response to increased opportunity and the need to harvest more pronghorn on private. Harvest success remained high from 2009 to 2014 (range 96-106%) and days per animal harvested (range 4-4.1) were similar among years indicating hunters were finding animals and having success with access to private. The good success along with decreasing fawn productivity helped to move this herd towards its objective of 7000 where we are maintaining the population. The harvest survey reported, 254/751 (34%) active hunters responded of which 84% indicated satisfaction and 5% dissatisfaction with their hunt in the herd unit.

**Population.** For the Carter Mountain pronghorn herd unit, we used the time-specific juvenile/constant adult (TSJ,CA) survival model that estimates about 7,400 pronghorn, post season in 2014. The population estimate peaked in 2009 at 7,900 pronghorn. This is a new model that estimates the population at a lower level than in the previous 5 years in the JCR database (range 9200-9900). The lower estimate aligns better with LT surveys in the 1990s and early 2000s, and is pulling the model estimate down below the later 2 surveys that we think are suspect due to potential survey design and we are redesigning our survey. Line transect surveys in 2006, 2009, and 2012 used a single observer while surveys in 2000 and 2003 used 2 observers. Use of a single observer significantly changed the line transect data calculations, resulting in estimates around 10,000-12,000 pronghorn, which were 2-3 times higher than previous estimates (higher estimates due to the change in protocol were mirrored in other herds). We think the 10,000 pronghorn estimate is high. The line transect survey in 2012 estimates 6,900 ( $\pm 877$ ) pronghorn, which seems reasonable. We plan to redesign surveys to fly each transect across areas of both dense and sparse pronghorn densities rather than flying each transect across only a sparse area then dense areas. The challenge with modeling this herd is that a portion of the population is migratory and a portion resides on agriculture fields almost year-round, regardless we believe the model performs well. While this model has the highest AIC value, this model allows juvenile survival to vary annually, which matches the perceptions of field personnel.

**Management Summary.** This population is currently about at the population objective of 7000 and exhibiting good productivity after several years of moderate fawn production. The upland habitat is recovering some from drought and pronghorns have moved away from cropland, reducing crop depredation. We slightly decreased the number of licenses compared to 2013, but depending on this summer's fawn ratios, we will have to increase licenses again to keep this herd at objective. We are reviewing the population objective and management goals for this herd unit in 2015, and most likely will keep the current post season population objective of 7000.

**INPUT**  
 Species: Pronghorn  
 Biologist: Leslie Schreiber  
 Herd Unit & No.: Carter Min-PR205  
 Model date: 02/17/15

**MODELS SUMMARY**

	Fit	Relative AICc	Notes
CJ,CA	179	188	
SC,J,SCA	171	200	
TS,J,CA	159	275	

Clear form

Check best model to create report

- CJ,CA Model  
 SC,J,SCA Mod  
 TS,J,CA Model

**Population Estimates from Top Model**

Year	Predicted Prehunt Population (year t)		Total	Predicted Posthunt Population (year t)		Total	Predicted adult End-of-bio-year Pop (year t)		LT Population Estimate Field Est	Trend Count	Objective
	Juveniles	Total Males		Females	Juveniles		Total Males	Females			
1993	926	1712	5758	912	1230	2784	4927	1362	4209	2847	7000
1994	1256	1335	5381	1238	884	2590	4712	1118	3873	2755	7000
1995	1190	1096	4986	1179	640	2541	4361	873	3571	2698	7000
1996	1808	856	5308	1808	510	2465	4783	1198	4262	3064	7000
1997	1397	1174	5573	1364	859	2766	4989	1140	4097	2956	7000
1998	1508	1118	5522	1364	768	2642	4890	1305	4395	3090	7000
1999	1420	1279	5727	1381	915	2743	5040	1402	4545	3143	7000
2000	1263	1374	5717	1241	1014	2905	5160	1248	4303	3055	7000
2001	827	1223	5044	827	886	2965	4679	1028	4051	3023	7000
2002	940	1007	4910	940	641	2932	4513	822	3842	3020	7000
2003	1169	805	4934	1161	508	2946	4616	756	3844	3089	7000
2004	1171	740	4939	1171	548	3021	4740	805	3970	3165	7000
2005	1528	789	5418	1528	645	3097	5270	1182	4700	3519	7000
2006	2058	1158	6664	2055	1004	3409	6467	1465	5220	3755	7000
2007	1953	1436	7069	1949	1254	3576	6779	1673	5555	3881	7000
2008	2096	1640	7540	2091	1455	3719	7265	1900	5955	4055	7000
2009	2440	1862	8276	2423	1639	3832	7894	2153	6393	4240	7000
2010	1790	2110	8055	1758	1818	3977	7553	2144	6346	4201	7000
2011	1901	2101	8120	1866	1741	3677	7284	2107	6103	3996	7000
2012	1717	2065	7698	1693	1701	3528	6921	2026	5731	3705	7000
2013	1336	1986	6953	1316	1622	3191	6129	2046	5758	3712	7000
2014	2435	2005	8078	2404	1629	3365	7398	2317	6352	4035	7000
2015	1817	2271	8042	1784	1886	3735	7404				7000
2016											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

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		0.93	
1994	0.50		0.93	
1995	0.50		0.93	
1996	0.80		0.93	
1997	0.51		0.93	
1998	0.80		0.93	
1999	0.80		0.93	
2000	0.50		0.93	
2001	0.50		0.93	
2002	0.50		0.93	
2003	0.50		0.93	
2004	0.50		0.93	
2005	0.74		0.93	
2006	0.50		0.93	
2007	0.50		0.93	
2008	0.50		0.93	
2009	0.50		0.93	
2010	0.50		0.93	
2011	0.50		0.93	
2012	0.50		0.93	
2013	0.80		0.93	
2014	0.65		0.93	
2015	0.65		0.93	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

**Parameters:**

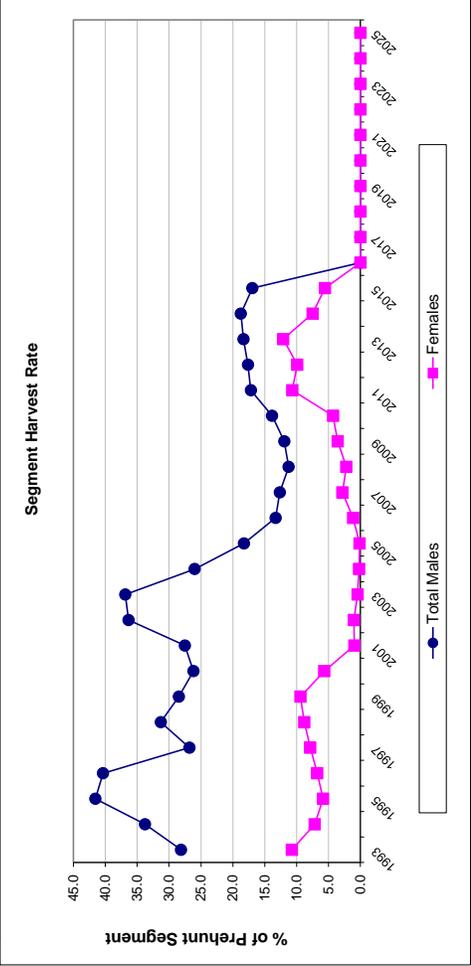
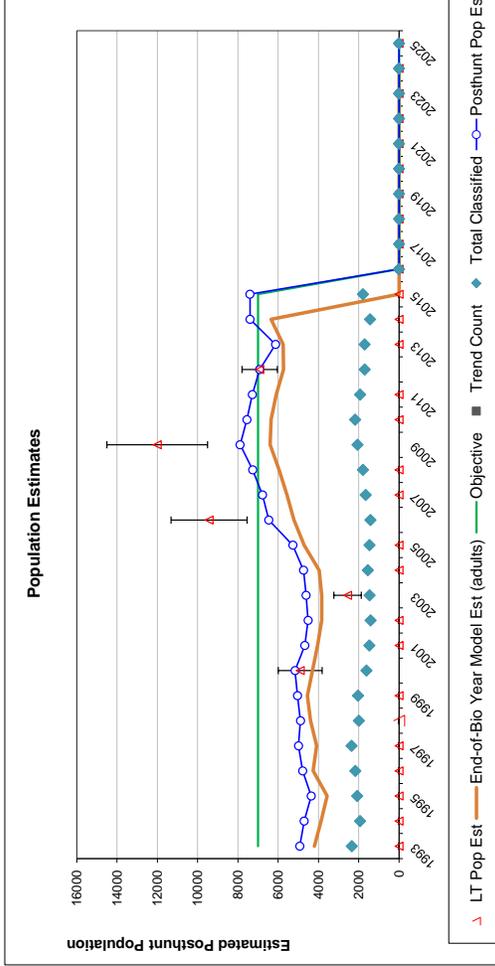
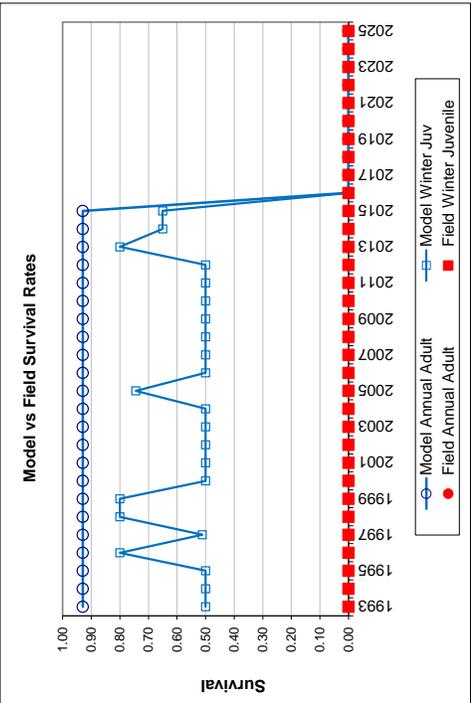
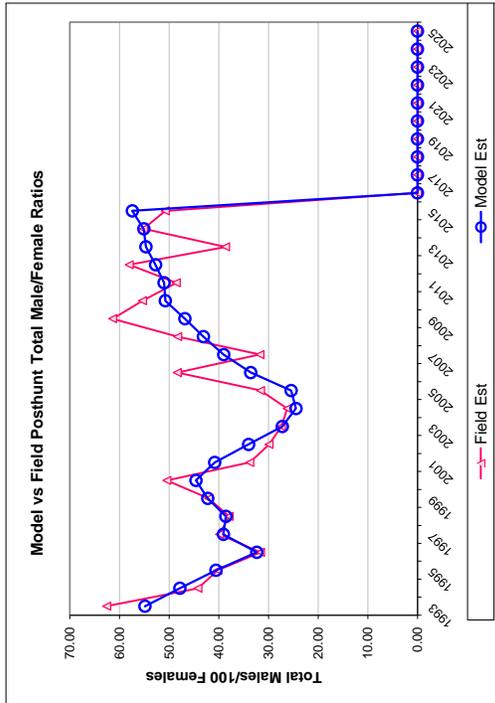
Adult Survival =	Optim cells
Initial Total Male Pop/10,000 =	0.930
Initial Female Pop/10,000 =	0.171
	0.312

**MODEL ASSUMPTIONS**

Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

Year	Classification Counts						Harvest								
	Juvenile/Female Ratio			Total Male/Female Ratio			Males			Females			Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juv	Total Harvest	Total Males	Females
1993		29.70	1.78	54.89	62.59	2.89	438	305	13	756	28.1	10.8			
1994		45.01	2.53	47.85	44.23	2.50	410	182	16	608	33.8	7.2			
1995		44.10	2.37	40.59	40.20	2.24	414	144	10	568	41.6	5.9			
1996		68.39	3.26	32.36	31.61	1.96	314	163	0	477	40.4	6.8			
1997		46.52	2.32	39.08	39.87	2.10	286	215	30	531	26.8	7.9			
1998		52.05	2.75	38.58	37.94	2.23	318	232	25	575	31.3	8.8			
1999		46.89	2.53	42.23	42.06	2.36	331	259	35	625	28.5	9.4			
2000		41.00	2.62	44.61	50.47	3.00	327	159	20	506	26.2	5.7			
2001		27.63	1.97	40.84	33.77	2.23	306	26	0	332	27.5	1.0			
2002		31.73	2.19	34.00	29.90	2.11	333	28	0	361	36.4	1.0			
2003		39.50	2.51	27.22	27.40	2.00	270	12	7	289	36.9	0.4			
2004		38.70	2.39	24.46	26.23	1.88	175	6	0	181	26.0	0.2			
2005		49.26	3.01	25.44	31.60	2.27	131	4	0	135	18.3	0.1			
2006		59.68	3.74	33.59	48.39	3.24	140	36	3	179	13.3	1.1			
2007		53.07	3.01	39.02	31.73	2.16	165	95	4	264	12.6	2.8			
2008		55.11	3.12	43.11	48.30	2.85	168	77	5	250	11.3	2.2			
2009		61.41	3.27	46.84	61.41	3.27	202	129	16	347	11.9	3.6			
2010		43.08	2.37	50.79	55.37	2.80	266	162	29	457	13.9	4.3			
2011		46.17	2.61	51.04	48.59	2.70	328	400	32	760	17.2	10.7			
2012		43.84	2.73	52.74	58.06	3.30	331	353	22	706	17.6	9.9			
2013		36.79	2.27	54.69	38.64	2.35	331	400	18	749	18.3	12.1			
2014		66.92	4.16	55.11	55.18	3.64	342	248	28	618	18.8	7.5			
2015		45.94	2.71	57.42	50.79	2.90	350	200	30	580	17.0	5.6			
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

FIGURES



Comments:

END



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

## 2014 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2014 - 5/31/2015

HERD: PR207 - BADGER BASIN

HUNT AREAS: 80

PREPARED BY: DOUG  
MCWHIRTER

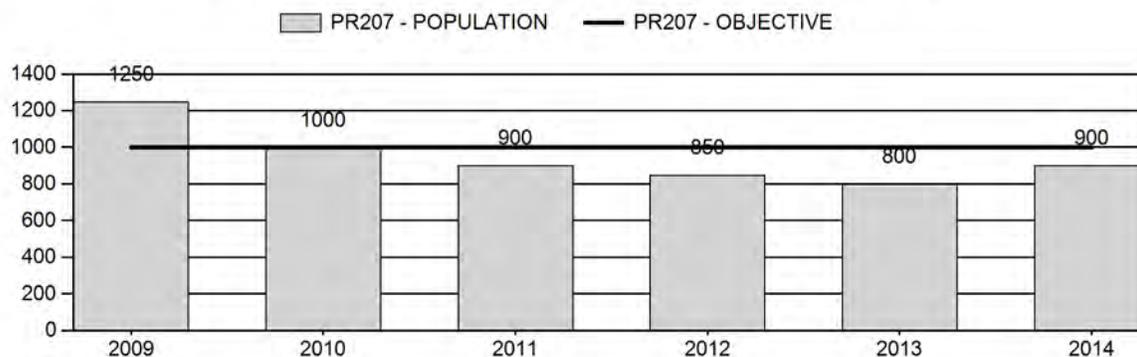
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	960	900	850
Harvest:	211	98	100
Hunters:	209	96	110
Hunter Success:	101%	102%	91%
Active Licenses:	252	112	125
Active License Success:	84%	88%	80%
Recreation Days:	1,086	548	550
Days Per Animal:	5.1	5.6	5.5
Males per 100 Females	47	50	
Juveniles per 100 Females	30	44	

Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10%
Number of years population has been + or - objective in recent trend:	6
Model Date:	2/19/2015

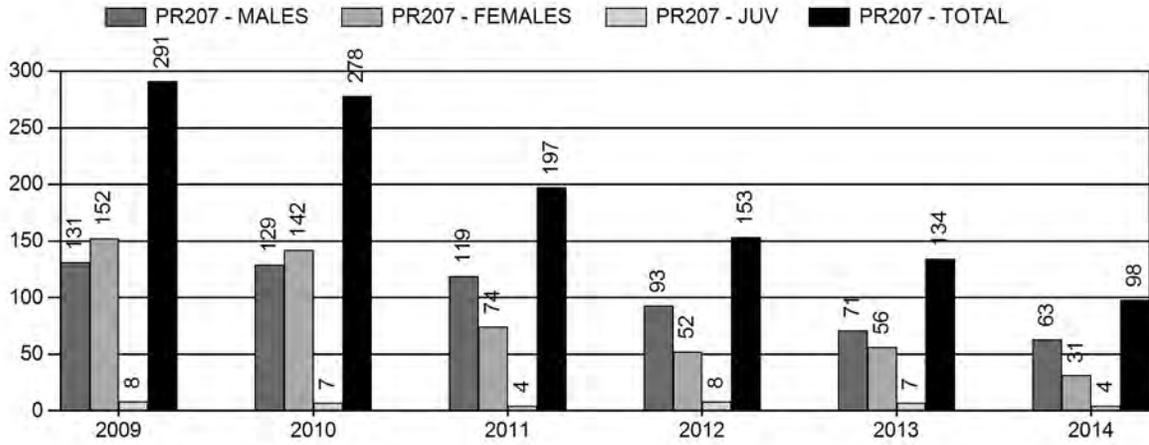
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	9.2%	8.0%
Males ≥ 1 year old:	30.9%	28.6%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	11.5%	10.4%
Proposed change in post-season population:	0.0%	5.5%

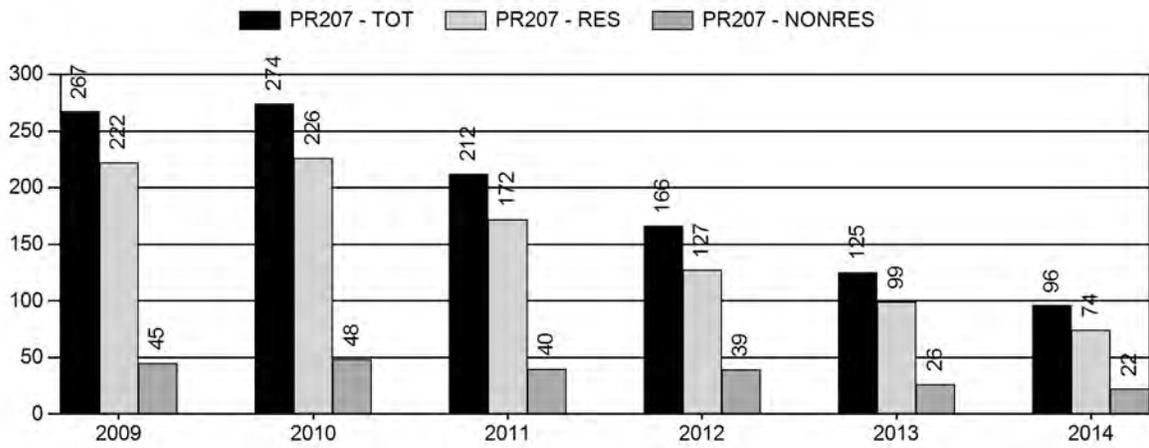
## Population Size - Postseason



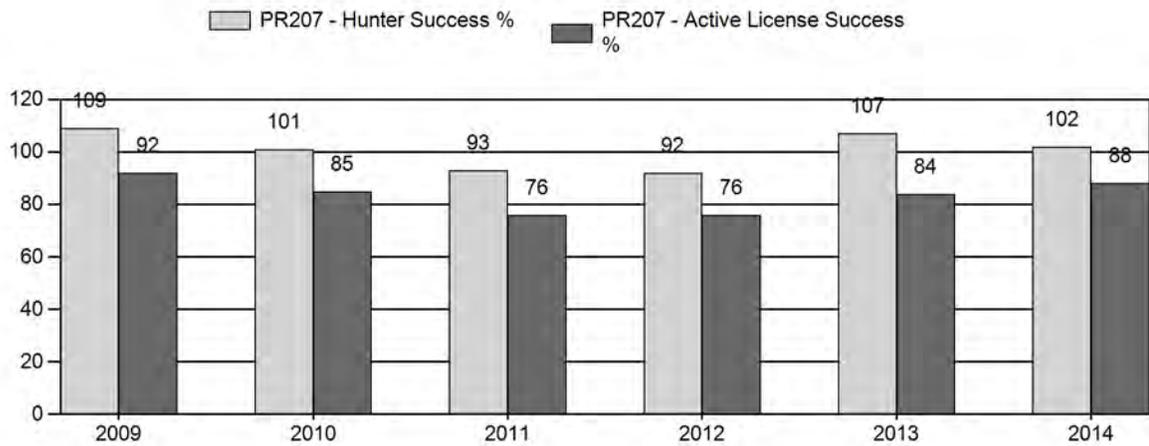
# Harvest



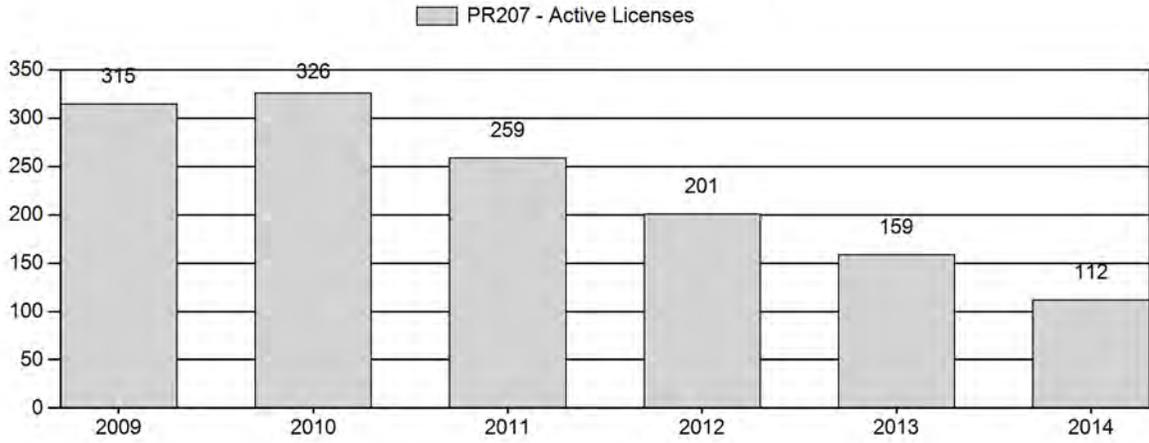
# Number of Hunters



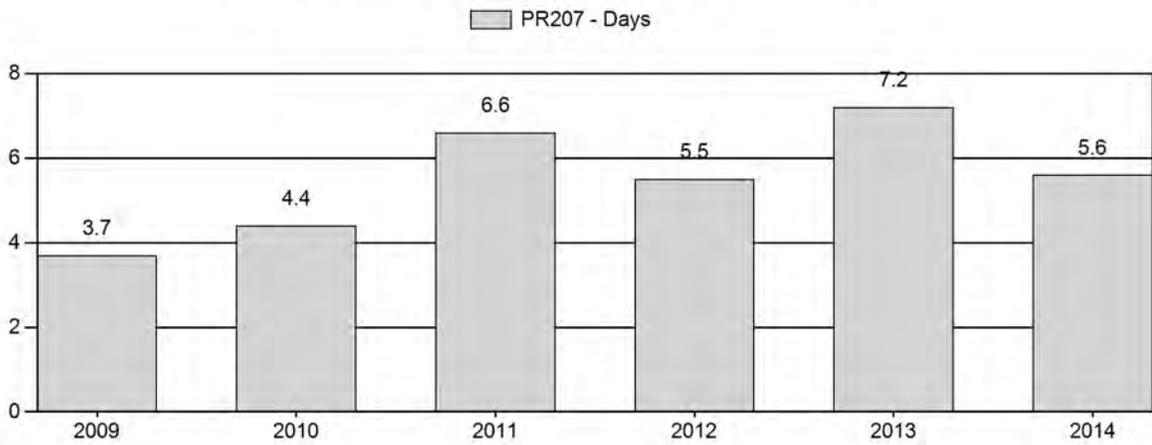
# Harvest Success



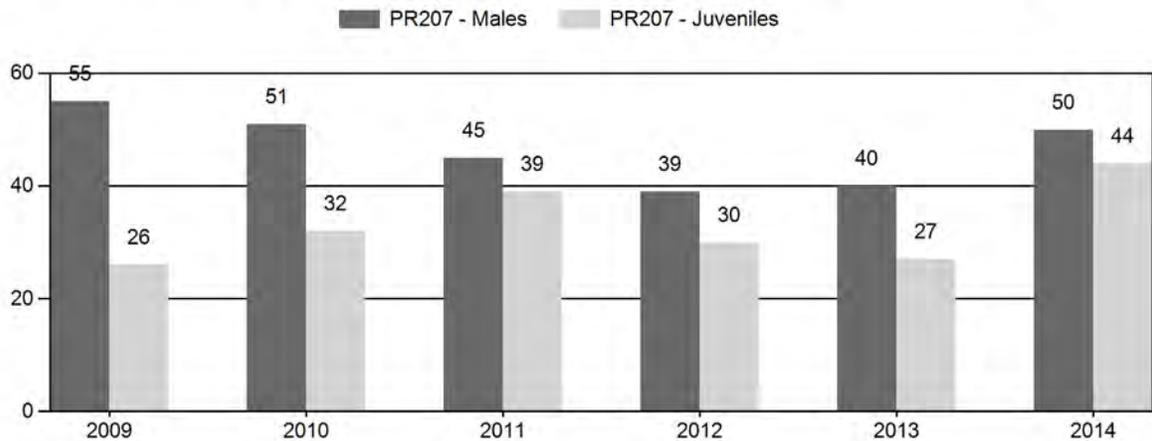
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR207 - BADGER BASIN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	1,549	56	122	178	31%	321	55%	83	14%	582	784	17	38	55	± 7	26	± 4	17
2010	1,313	58	157	215	28%	419	55%	132	17%	766	617	14	37	51	± 5	32	± 3	21
2011	1,118	15	92	107	25%	236	54%	92	21%	435	612	6	39	45	± 7	39	± 6	27
2012	1,032	37	73	110	23%	283	59%	85	18%	478	515	13	26	39	± 5	30	± 4	22
2013	944	36	79	115	24%	286	60%	76	16%	477	451	13	28	40	± 5	27	± 4	19
2014	988	27	73	100	26%	201	52%	88	23%	389	515	13	36	50	± 8	44	± 7	29

**2015 HUNTING SEASONS  
BADGER BASIN PRONGHORN HERD (PR207)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
80	1	Sep. 1	Sep. 30	75	Limited quota; any antelope
	6	Sep. 1	Oct.31	50	Limited quota; doe or fawn
Archery		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
80	1	No Changes
	6	No Changes
<b>Total</b>	<b>1</b>	No Changes
	<b>6</b>	No Changes

**Management Evaluation**

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

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: ~900**

**2015 Proposed Postseason Population Estimate: ~850**

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

**Weather.** Weather conditions during the 2014 biological year were characterized by near normal precipitation during the growing season (April-June). Early winter conditions were relatively severe, but moderated dramatically in late winter.

**Habitat.** No habitat monitoring data is collected in this herd unit. Although growing season precipitation was near normal, damage issues continued to be significant in some locations, and fawn recruitment was extremely poor.

**Field Data.** Preseason classifications in 2014 yielded a fawn ratio of 44 fawns:100 does, and a total buck ratio of 50 bucks:100 does. The poor productivity generally exhibited by this herd (especially in drought periods) is reflected in the fact that in the last 20 years, fawn:doe ratios have only exceeded 50:00 3 times (1996, 2005, 2007). The 20-year (1994-2013) average fawn:doe ratio is only 37.3 fawns:100 does. Buck ratios increased as the population grew from 2002 to 2007 (remaining above 50 bucks:100 does from 2006 to 2010), but have declined as the population has been reduced.

**Harvest Data.** Permit levels (both doe/fawn and any antelope licenses) were reduced in 2012 as the population declined. Hunter success on Type 1 licenses declined from 2010-2013 in response to the relative abundance of buck antelope, but rebounded in 2014. Lower hunter success on Type 6 doe/fawn licenses in 2014 is probably a reflection of reduced permit levels restricted only to the Shoshone River drainage, even though the area possessed increased hunter access to key irrigated lands with higher antelope densities.

**Population.** Conservative hunting seasons and good fawn production (for this herd) allowed this population to substantially exceed the objective by 2005. Measures were taken to increase harvest from 2007-2011, and the population declined below the objective in 2011. Recent poor fawn crops (31:100 in 2008, 26:100 in 2009, 32:100 in 2010, 39:100 in 2011, 30 in 2012, 27:100 in 2013), coupled with increased female harvest, have reduced pronghorn numbers in this herd unit. Still, pronghorn damage in agricultural areas continues to be a chronic problem in this herd unit, with some damage prone areas having been addressed, while other new damage situations have arisen.

The “Constant Juvenile – Constant Adult Mortality Rate” (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd, as this model had the lowest relative AIC of all the models and the population estimate and trend appears to be reasonable. The postseason population estimate for 2014 is approximately 900 antelope, or 10% below the population objective.

Type 1 licenses will remain at 75, which were reduced in 2013 to preserve buck ratios. We will also shift to a single doe/fawn license valid area-wide since permit levels are relatively low. The result of the 2015 seasons should be a postseason 2015 population of approximately 850 pronghorn with a preseason buck:doe ratio of approximately 40:100.

<b>INPUT</b>	
Species:	Pronghorn
Herd Unit & No.:	Doug McWhirter Badger Basin
Model date:	02/19/15

Clear form

MODELS SUMMARY			Notes
	Relative AICc	Fit	
CJ,CA	65	56	<input checked="" type="checkbox"/> CJ,CA Model <input type="checkbox"/> SCJ,SCA Mod <input type="checkbox"/> TSJ,CA Model
SCJ,SCA	2020	2011	
TSJ,CA	207	27	

Check best model to create report

Year	Predicted Prehunt Population (year <i>t</i> )		Total	Predicted Posthunt Population (year <i>t</i> )		Total	Predicted adult End-of-bio-year Pop (year <i>t</i> )		LT Population Estimate	Trend Count	Objective
	Juveniles	Total Males		Females	Juveniles		Total Males	Females			
1993	192	248	643	179	148	529	856	209	560	769	1000
1994	131	205	549	130	92	501	723	133	519	652	1000
1995	173	131	508	173	31	507	710	98	548	646	1000
1996	346	96	537	346	1	506	854	151	625	776	1000
1997	209	148	612	209	53	588	849	135	637	773	1000
1998	246	133	625	240	64	583	868	163	645	808	1000
1999	193	160	632	190	90	609	888	163	648	811	1000
2000	280	160	635	278	87	611	976	201	690	892	1000
2001	215	197	677	215	133	658	1007	216	706	922	1000
2002	313	212	691	310	151	673	1134	277	763	1040	1000
2003	217	271	748	217	198	727	1142	276	770	1046	1000
2004	274	271	754	272	193	737	1201	295	805	1100	1000
2005	391	289	788	389	214	776	1379	369	895	1264	1000
2006	395	361	877	395	295	840	1531	448	955	1403	1000
2007	492	439	936	485	335	853	1674	522	1004	1526	1000
2008	305	512	984	280	363	849	1492	449	899	1348	1000
2009	228	440	881	219	296	714	1229	360	745	1105	1000
2010	230	353	730	222	211	574	1007	283	617	901	1000
2011	236	278	605	231	147	524	902	261	609	870	1000
2012	179	256	597	171	153	540	864	239	572	811	1000
2013	149	234	561	141	156	499	796	214	552	767	1000
2014	237	210	541	232	141	507	880	236	564	800	1000
2015	178	231	553	178	165	509	852	228	548	776	1000
2016	173	223	537	173	157	493	824				1000
2017											1000
2018											1000
2019											1000
2020											1000
2021											1000
2022											1000
2023											1000
2024											1000
2025											1000

Survival and Initial Population Estimates

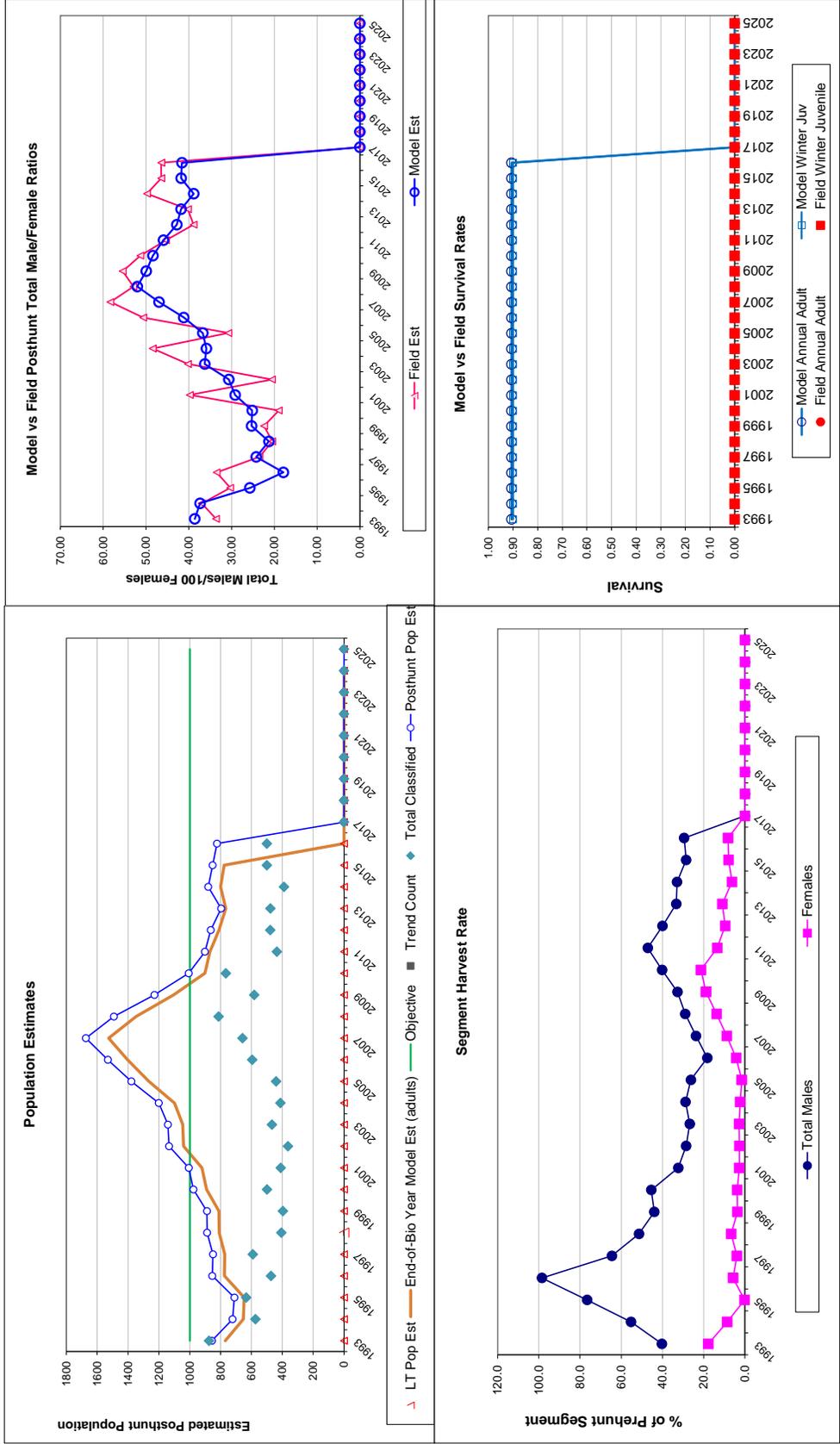
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.90		0.91	
1994	0.90		0.91	
1995	0.90		0.91	
1996	0.90		0.91	
1997	0.90		0.91	
1998	0.90		0.91	
1999	0.90		0.91	
2000	0.90		0.91	
2001	0.90		0.91	
2002	0.90		0.91	
2003	0.90		0.91	
2004	0.90		0.91	
2005	0.90		0.91	
2006	0.90		0.91	
2007	0.90		0.91	
2008	0.90		0.91	
2009	0.90		0.91	
2010	0.90		0.91	
2011	0.90		0.91	
2012	0.90		0.91	
2013	0.90		0.91	
2014	0.90		0.91	
2015	0.90		0.91	
2016	0.90		0.91	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Juvenile Survival =	0.9000
Adult Survival =	0.9006
Initial Total Male Pop/10,000 =	0.025
Initial Female Pop/10,000 =	0.064

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

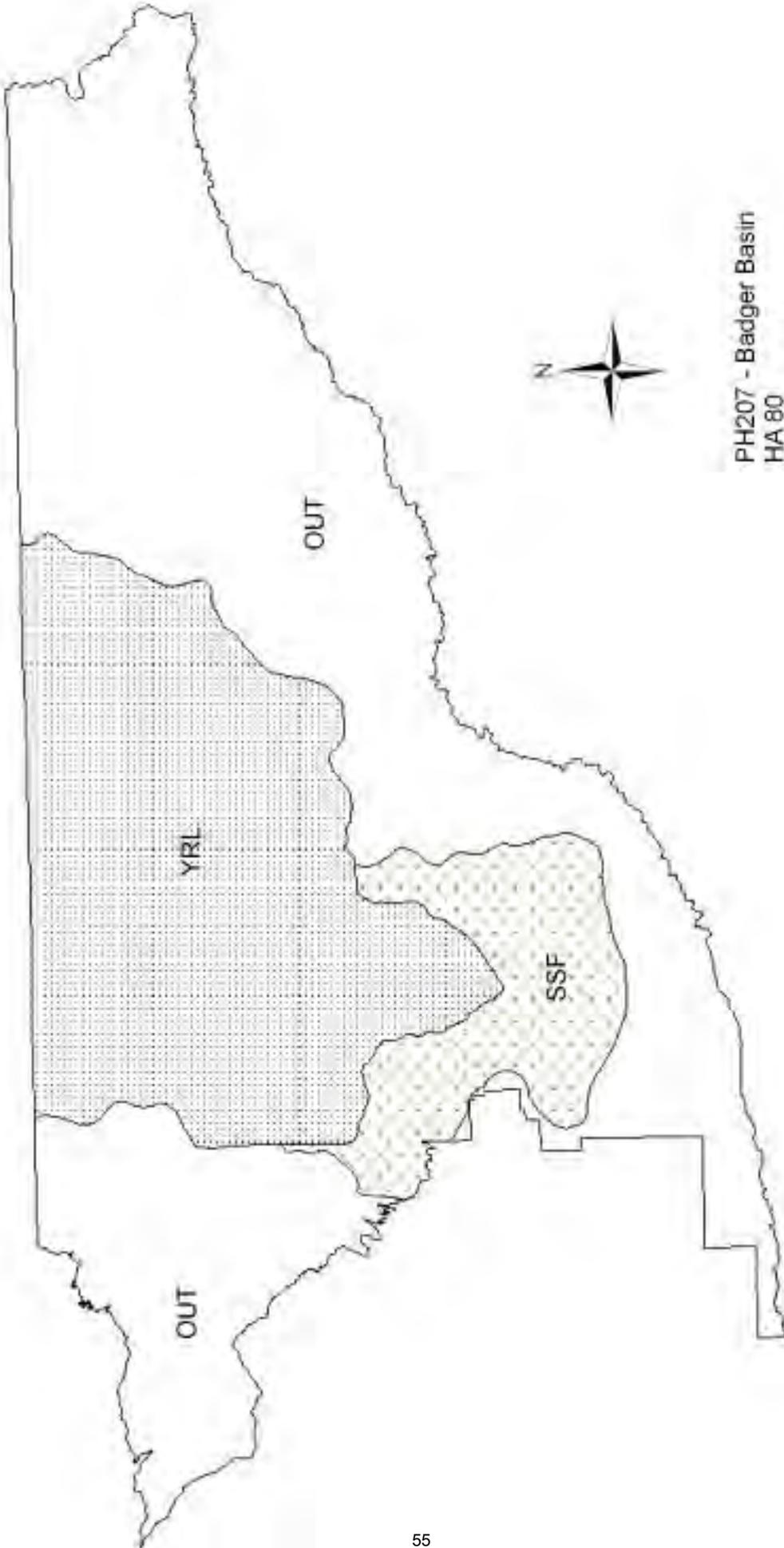
Year	Classification Counts				Total Male/Female Ratio				Harvest												
	Juvenile/Female Ratio		Field SE		Derived Est		Field Est		Field SE		Males		Females		Juvéniles		Total Harvest		Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juvéniles	Total Harvest	Total Males	Females	Total Males	Females				
1993	29.91	2.69	38.60	33.64	2.90	91	104	12	207	40.3	17.8										
1994	23.81	2.87	37.36	36.97	3.77	103	43	1	147	55.3	8.6										
1995	33.94	3.43	25.72	30.31	3.20	91	1	0	92	76.6	0.2										
1996	64.44	6.66	17.87	33.47	4.32	86	28	0	114	98.5	5.7										
1997	34.13	3.49	24.22	23.47	2.78	87	22	0	109	64.6	4.0										
1998	39.37	4.65	21.24	20.47	3.12	62	38	5	105	51.4	6.7										
1999	30.50	3.92	25.30	22.39	3.25	64	21	3	88	44.0	3.7										
2000	44.12	4.56	25.15	18.95	2.71	66	22	2	90	45.4	3.8										
2001	31.80	4.19	29.15	39.75	4.82	58	17	0	75	32.3	2.8										
2002	45.21	5.47	30.63	20.55	3.36	55	17	2	74	28.6	2.7										
2003	28.99	3.68	36.25	40.22	4.52	66	19	0	85	26.8	2.8										
2004	36.32	4.71	35.88	48.43	5.68	71	16	2	89	28.9	2.3										
2005	49.59	5.51	36.71	30.74	4.06	69	11	2	82	26.2	1.5										
2006	45.07	4.64	41.18	50.66	5.01	60	34	0	94	18.3	4.3										
2007	52.56	5.07	46.95	58.33	5.44	95	75	6	176	23.8	8.8										
2008	31.00	3.03	52.03	52.94	4.28	135	123	23	281	29.0	13.8										
2009	25.86	3.18	49.95	55.45	5.18	131	152	8	291	32.7	19.0										
2010	31.50	3.14	48.38	51.31	4.30	129	142	7	278	40.2	21.4										
2011	38.98	4.79	45.91	45.34	5.28	119	74	4	197	47.1	13.5										
2012	30.04	3.71	42.79	38.87	4.37	93	52	8	153	40.0	9.6										
2013	26.57	3.43	41.80	40.21	4.44	71	56	7	134	33.3	11.0										
2014	43.78	5.60	38.84	49.75	6.09			31	98	33.0	6.3										
2015	32.14	3.89	41.78	46.43	4.93			40	100	28.6	8.0										
2016	32.14	3.89	41.59	46.43	4.93			40	100	29.5	8.2										
2017																					
2018																					
2019																					
2020																					
2021																					
2022																					
2023																					
2024																					
2025																					

FIGURES



Comments:

END



PH207 - Badger Basin  
HA 80  
Revised - 8/94



## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD207 - PAINTROCK

HUNT AREAS: 41, 46-47

PREPARED BY: LESLIE  
SCHREIBER

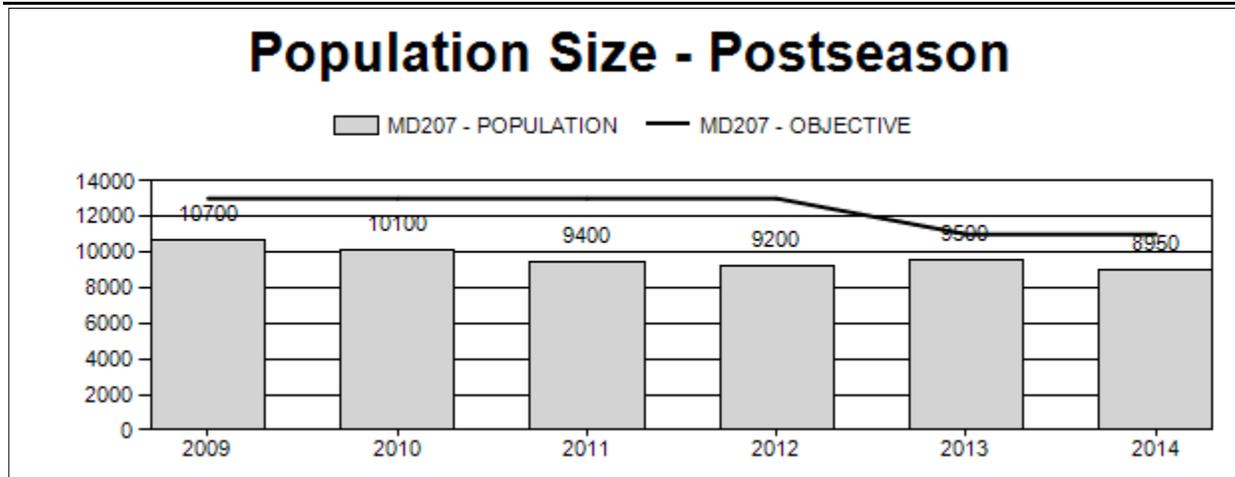
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	9,780	8,950	9,367
Harvest:	967	674	710
Hunters:	1,691	1,370	1,400
Hunter Success:	57%	49%	51 %
Active Licenses:	1,815	1,378	1,450
Active License Success:	53%	49%	49 %
Recreation Days:	7,530	5,922	6,100
Days Per Animal:	7.8	8.8	8.6
Males per 100 Females	27	25	
Juveniles per 100 Females	63	71	

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

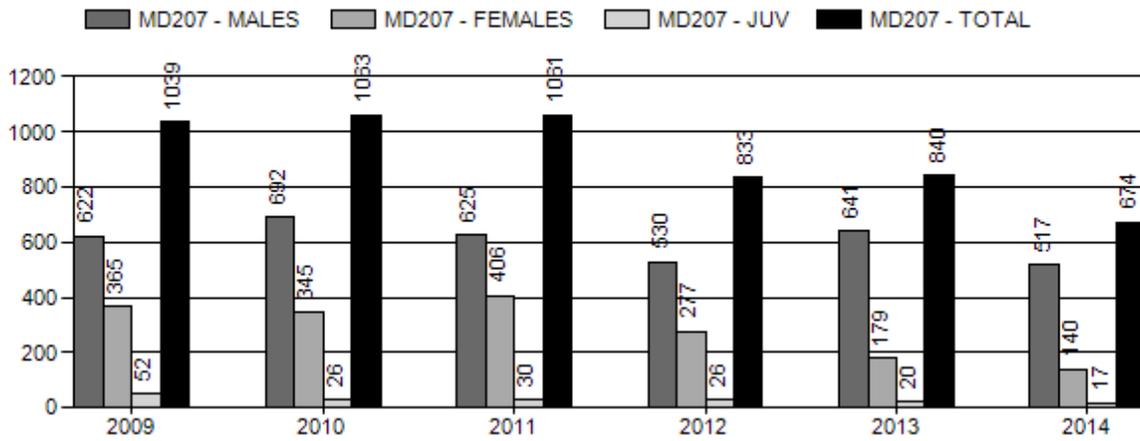
Management Strategy: Recreational  
 Percent population is above (+) or below (-) objective: -18.6%  
 Number of years population has been + or - objective in recent trend: 9  
 Model Date: 02/27/2015

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

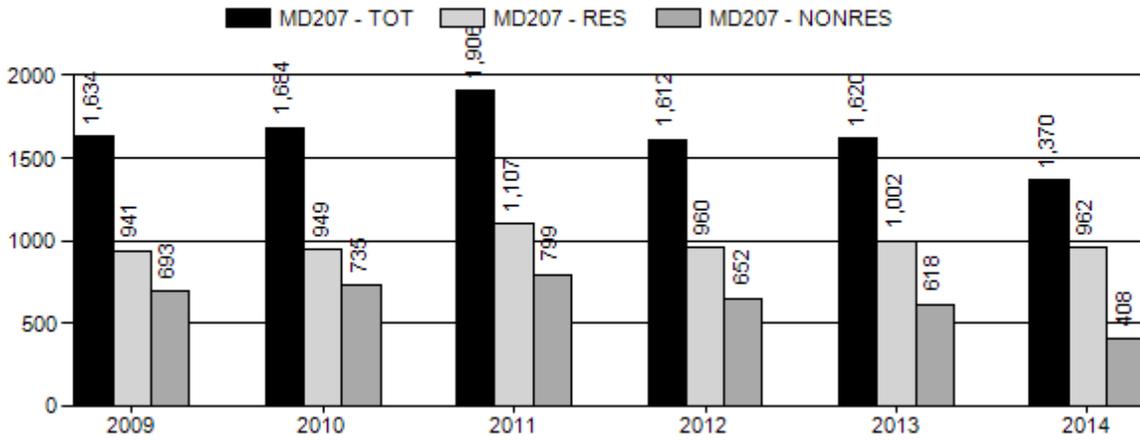
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	4%	3%
Males ≥ 1 year old:	27%	29%
Juveniles (< 1 year old):	.5%	.5%
Total:	7%	7%
Proposed change in post-season population:	-2%	+4%



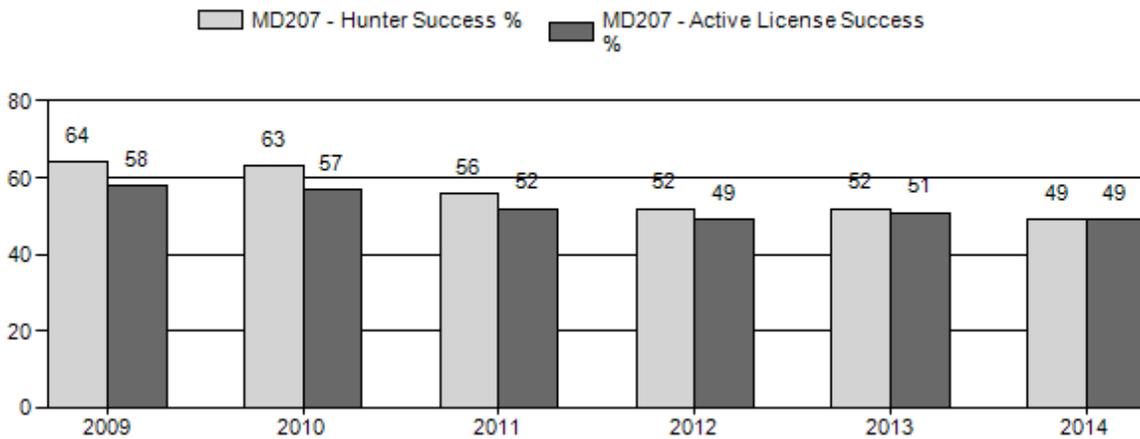
# Harvest



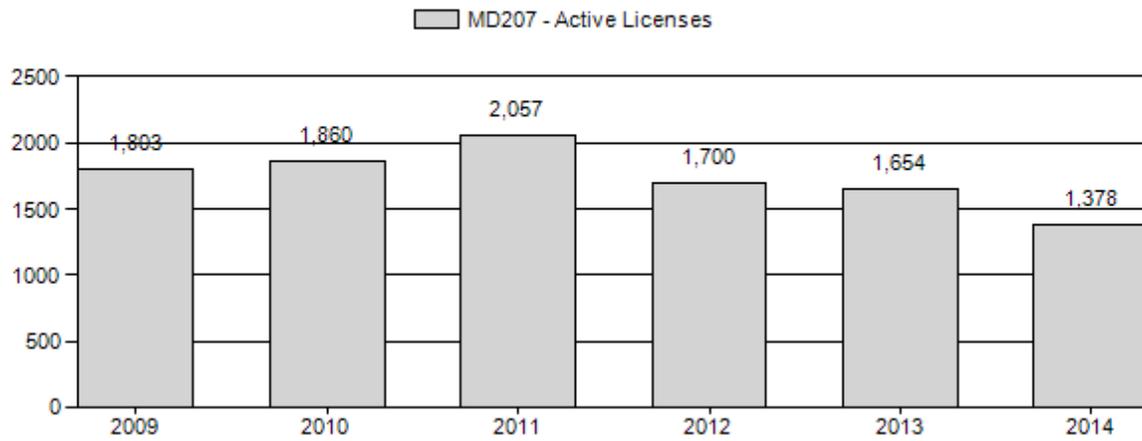
# Number of Hunters



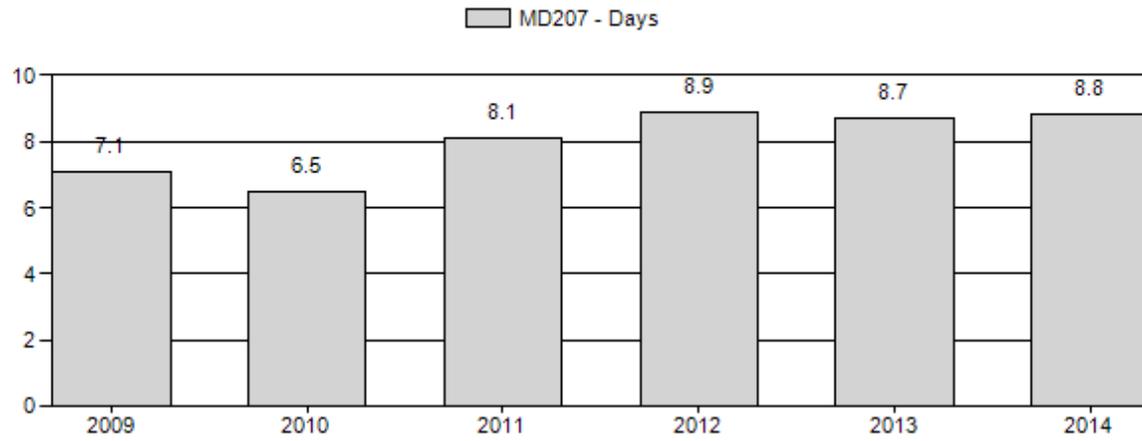
# Harvest Success



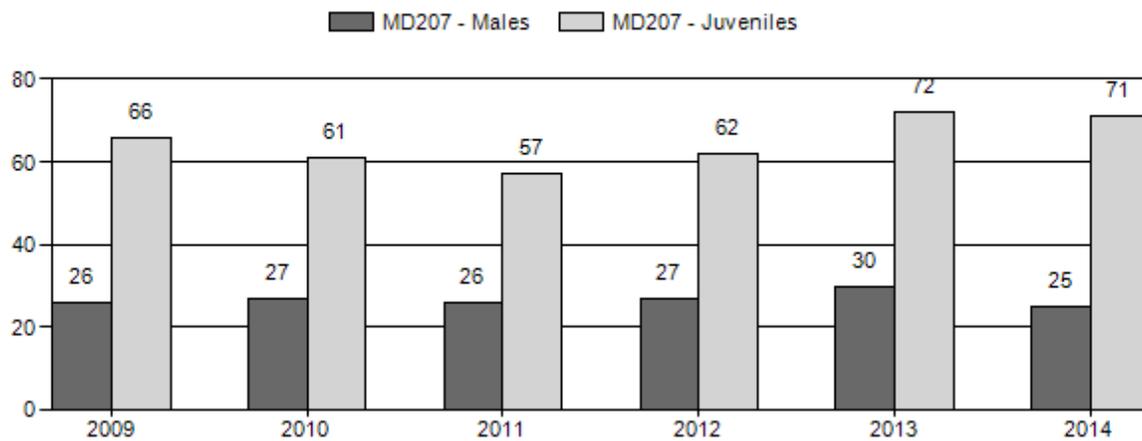
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2009 - 2014 Postseason Classification Summary**

for Mule Deer Herd MD207 - PAINTROCK

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females				Young to		
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls															
2009	10,700	91	0	0	0	176	267	13%	1,040	52%	689	35%	1,996	1,210	9	17	26	± 2	66	± 4	53
2010	10,100	121	0	0	0	180	301	14%	1,121	53%	682	32%	2,104	1,058	11	16	27	± 2	61	± 3	48
2011	9,400	84	0	0	0	193	277	14%	1,078	55%	612	31%	1,967	1,209	8	18	26	± 2	57	± 3	45
2012	9,200	87	0	0	0	147	234	14%	877	53%	542	33%	1,653	1,060	10	17	27	± 2	62	± 4	49
2013	9,500	98	0	0	0	141	239	15%	789	49%	570	36%	1,598	904	12	18	30	± 3	72	± 5	55
2014	8,950	94	0	0	0	85	179	13%	704	51%	499	36%	1,382	1,167	13	12	25	± 3	71	± 5	57

**2015 HUNTING SEASONS  
Paintrock Mule Deer Herd Unit (MD207)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
41		Oct. 15	Oct. 24		General license; antlered deer
	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
	6	Oct. 15	Oct. 31	75	Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land
41	8	Nov. 1	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
46		Oct. 15	Oct. 24		General license; antlered deer
47		Oct. 15	Oct. 24		General licenses; antlered deer
	6	Oct. 15	Oct. 31	50	Limited quota; Doe or fawn valid within one-half (1/2) mile of irrigated land
	8	Oct. 15	Nov. 30	50	Limited quota; Doe or fawn white-tailed deer
47, 51 Archery	3	Oct. 15	Nov. 30	50	Limited quota; any white-tailed deer
41, 46, 47		Sept. 1	Sept. 30		Refer to Section 2 of this Chapter

**Region R nonresident quota = 750**

Hunt Area	Type	Quota change from 2014
41	6	+25
41,47	8	-100
41	8	+50
47	6	+50
47	8	+50
HU Total		+75

**Management Evaluation**

**Current Management Objective: 11,000**

**2014 Postseason Population Estimate: 9,000**

**2015 Proposed Postseason Population Estimate: 9,400**

**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 an objective of 13,000 deer was unrealistic due to poor habitat conditions (drought) and low landowner tolerance of deer in crops. Spreadsheet models estimate the herd around 9,000 deer and the management goal for this herd unit is recreational. Bentonite mining and oil/gas development occur on the west side of the herd unit where habitat is marginal and is not a big

factor at this time. Farming has altered riparian habitat on private land and increased available forage, but landowner tolerance of deer on cropland is low so antlerless deer harvest is driven by landowner damage complaints.

**Weather.** Drought is probably the most important factor influencing survival and productivity of this deer herd with drought occurring in 2000-04 and 2012. Growing season precipitation in 2014 was slightly below average, but excellent vegetation growth was observed overall in the Bighorn Basin.

**Habitat.** There are 2 sagebrush browse transects in this herd unit and data is insufficient to draw inferences across the entire herd unit. One transect in the Brokenback drainage 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 second transect, Alkali Creek drainage is in the northern portion of the herd unit and is slightly more productive than Brokenback. Utilization averaged 10.9%, well below levels that should affect plant health. Winter severity and snow depth probably determines how many deer concentrate near this site.

**Field Data.** This population has had low fawn:doe ratios during the drought of 2000-04 averaging 54 fawns:100 does, slowing population growth. In years with normal precipitation (2005-14), the average fawn ratio was 63 fawns:100 does, a level that will barely maintain the population. Currently we have observed fawn ratios (2013-14) >70:100, which may suggest an increasing population (Unsworth et al. 1999). The total number of deer observed during classification surveys declined 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 and then during the drought of 2000-04, only about 2,000 deer were observed. Number of deer classified has rarely been over 2,000 deer since 2005 with the exception of 2007 (n=2,865). We survey farmland from the ground and use helicopter aerial surveys for higher elevation winter ranges.

Maintaining buck:doe ratios between 25-29:100 (recreational management) is the goal for 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 2009-2014, the buck ratio remained stable at about 27:100. For the 2015 hunting season, we changed from “any deer” to “antlered deer” in an effort to further reduce doe/fawn harvest.

**Harvest Data.** Harvest decreased since 2009 as a response to fewer licenses offered, a lower nonresident quota, and a decreasing deer population. Total harvest decreased, from about 1000 deer in 2009 to 675 in 2014 and hunter success was also lower in 2014 at 49% compared to 64% in 2009, and the 5-year-average of 51%. Days per animal harvested increased from about 7 days in 2009 to nearly 9 days in 2014, also indicating deer were more difficult to find in 2014. Despite fewer deer in 2014 compared to 2009, hunter satisfaction remains high with about 71% satisfied versus 14% unsatisfied.

**Population.** The time-specific juvenile constant adult survival (TSJ,CA), model estimates this population at objective (13,000 deer) through the late 1990s. Beginning with the extended drought in 2000-04, the model indicated a population decrease, except for a spike in 2007. By 2012, the population estimate dropped to a low of 8,380 deer, but rebounded to 8,950 by post-

season 2014 due to good fawn production. The TSJ,CA 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 has declined since the early 1990s, and is in agreement with the population model. Total number of deer classified, fawn:doe ratios, buck harvest, doe harvest, and number of doe/fawn licenses needed to address crop depredation have all declined. Buck:doe ratios have recently remained stable and numbers of doe/fawn licenses for the 2015 season are as low as needed to address crop depredation. 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 indicate drastic declines. In this case, buck:doe ratios have been stable for the past five years. In a minor effort to halt the declining number of deer in this herd, we are changing the general license hunting seasons from "any deer" to "antlered deer" and restricting doe/fawn licenses to areas with crop damage.

#### **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.

<b>INPUT</b>	
Species:	Deer
Biologist:	Leslie Schreiber
Herd Unit & No.:	Paintrock-MD207
Model date:	02/17/15

Clear form

MODELS SUMMARY			Relative AICc	Fit	Notes
C,J,CA	Constant Juvenile & Adult Survival	95	104	<input type="checkbox"/> C,J,CA Model	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	130	156	<input type="checkbox"/> SC,J,SCA Mod	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	12	146	<input checked="" type="checkbox"/> TS,J,CA Model	

Check best model to create report

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective	
	Field Est	Field SE		Juveniles	Total Males	Females	Juveniles	Total Males	Females		Total
1993				4362	3489	8907	16758	2052	7798	14115	13000
1994				4194	3003	7969	15166	1826	7407	13383	13000
1995				3587	2408	7231	13226	1560	6867	11993	13000
1996				4401	2466	7052	13919	1748	6855	13004	13000
1997				4736	2405	6819	13960	1741	6664	13103	13000
1998				4011	2444	6699	13154	1478	6479	11953	13000
1999				4665	3076	7397	15138	1710	7279	13638	13000
2000				3440	2486	7299	13225	1407	7092	11907	13000
2001				3011	1898	6811	11719	1062	6562	10619	13000
2002				3210	1711	6465	11385	1238	6313	10754	13000
2003				4397	1711	6096	12204	1385	5943	11690	13000
2004				3113	2069	6009	11191	1206	5888	10181	13000
2005				3971	2432	6478	12881	1554	6201	11696	13000
2006				4420	2783	6799	14001	1916	6455	12769	13000
2007				3166	2535	6458	12160	1892	6096	11118	13000
2008				3449	2277	5911	11636	1459	5592	10452	13000
2009				3493	2015	5587	11095	1331	5186	9952	13000
2010				3117	2124	5455	10696	1363	5076	9526	13000
2011				2669	1880	5089	9638	1193	4642	8471	13000
2012				2776	1770	4751	9297	1187	4446	8380	13000
2013				3368	2012	4829	10208	1307	4632	9284	11000
2014				3221	1798	4672	9691	1230	4518	8950	11000
2015				3076	2115	4957	10148	1510	4803	9367	11000
2016											11000
2017											11000
2018											11000
2019											11000
2020											11000
2021											11000
2022											11000
2023											11000
2024											11000
2025											11000

Survival and Initial Population Estimates

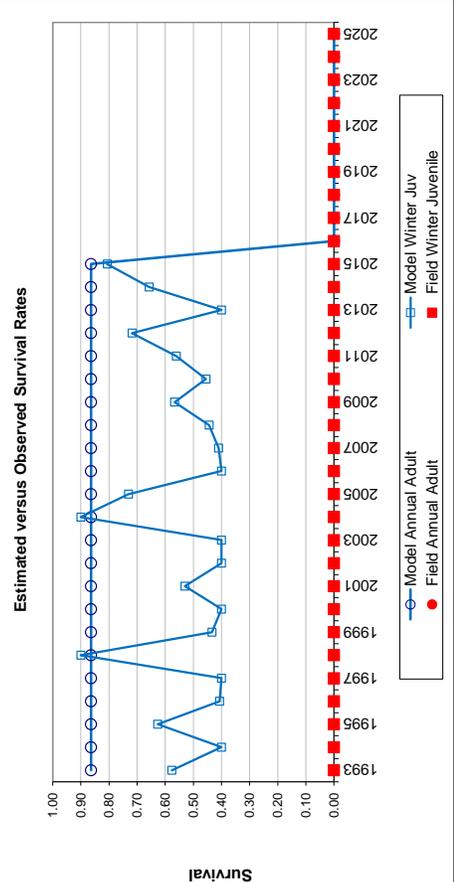
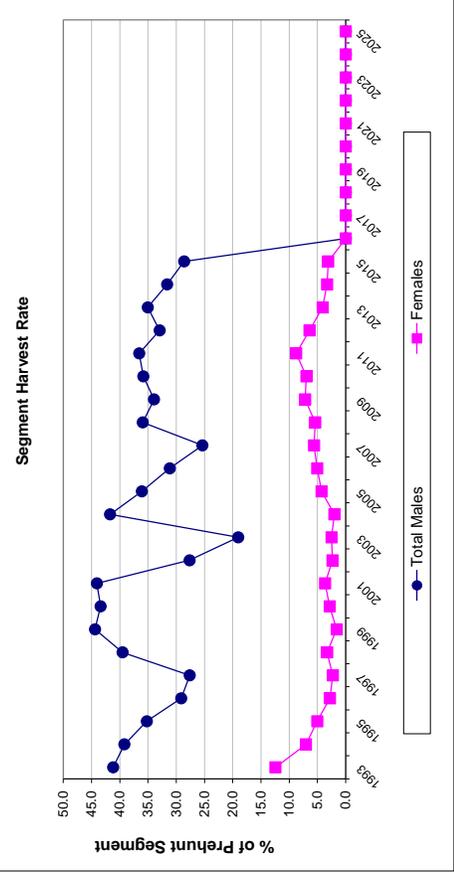
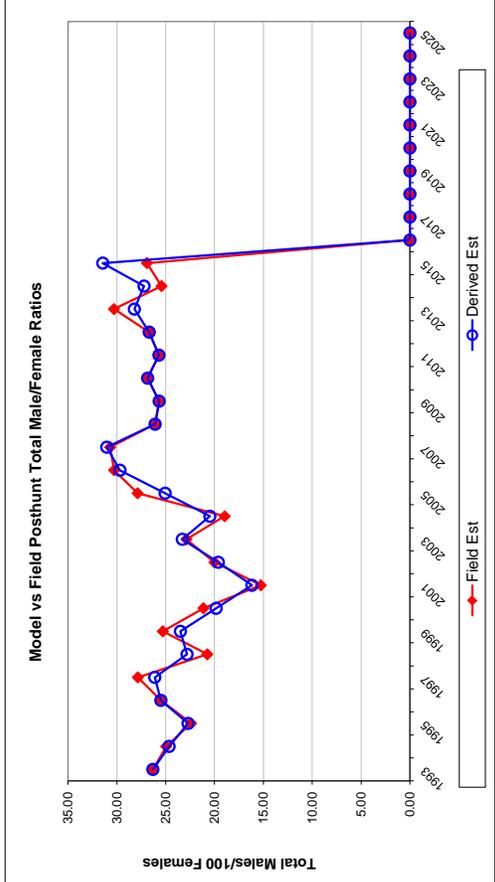
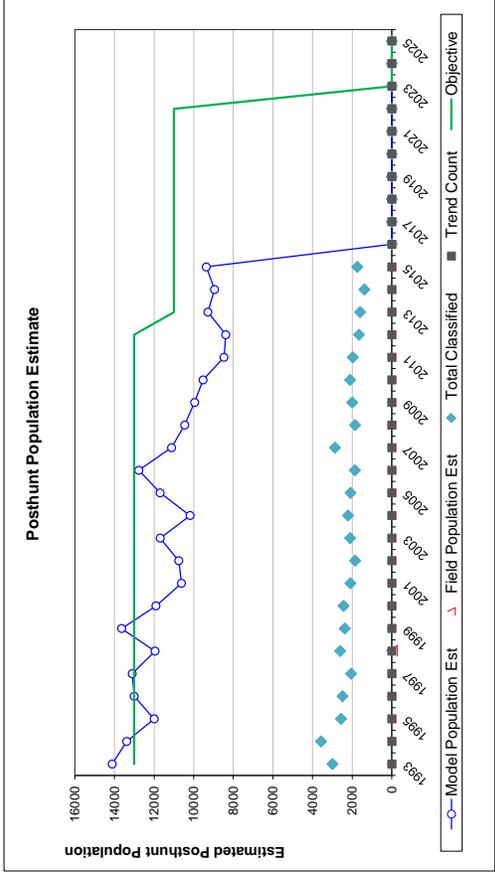
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.58		0.86	
1994	0.40		0.86	
1995	0.63		0.86	
1996	0.41		0.86	
1997	0.40		0.86	
1998	0.90		0.86	
1999	0.43		0.86	
2000	0.40		0.86	
2001	0.53		0.86	
2002	0.40		0.86	
2003	0.40		0.86	
2004	0.90		0.86	
2005	0.73		0.86	
2006	0.40		0.86	
2007	0.41		0.86	
2008	0.44		0.86	
2009	0.57		0.86	
2010	0.46		0.86	
2011	0.56		0.86	
2012	0.72		0.86	
2013	0.40		0.86	
2014	0.66		0.86	
2015	0.81		0.86	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.864
Initial Total Male Pop/10,000 =	0.205
Initial Female Pop/10,000 =	0.780

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		54.69	2.26	26.32	26.32	1.42	89	1306	1008	2403	41.2	12.4	
1994		56.03	2.11	24.85	24.95	1.26	40	1070	511	1621	39.2	7.1	
1995		51.94	2.32	22.72	22.40	1.37	19	771	331	1121	35.2	5.0	
1996		64.20	2.84	25.50	25.50	1.56	0	653	179	832	29.1	2.8	
1997		70.50	3.41	26.12	27.85	1.86	34	604	141	779	27.6	2.3	
1998		61.67	2.64	22.82	20.74	1.32	14	878	200	1092	39.5	3.3	
1999		63.85	2.89	23.50	25.30	1.59	16	1241	107	1364	44.4	1.6	
2000		48.05	2.22	19.84	21.14	1.33	29	981	188	1198	43.4	2.8	
2001		45.64	2.26	16.18	15.27	1.16	14	760	226	1000	44.1	3.7	
2002		50.74	2.66	19.61	20.02	1.49	6	430	138	574	27.6	2.3	
2003		73.39	3.45	23.30	22.88	1.62	32	296	139	467	19.0	2.5	
2004		52.45	2.49	20.48	18.96	1.32	23	785	110	918	41.7	2.0	
2005		63.57	3.09	25.06	27.87	1.81	27	798	252	1077	36.1	4.3	
2006		68.12	3.49	29.68	30.28	2.05	20	788	312	1120	31.1	5.0	
2007		51.33	2.22	31.03	30.69	1.60	33	585	329	947	25.4	5.6	
2008		60.83	3.14	26.09	26.08	1.82	43	744	290	1077	35.9	5.4	
2009		66.25	3.25	25.67	25.67	1.76	52	622	365	1039	33.9	7.2	
2010		60.84	2.95	26.85	26.85	1.74	26	692	345	1063	35.8	7.0	
2011		56.77	2.87	25.69	25.70	1.73	30	625	406	1061	36.6	8.8	
2012		61.90	3.38	26.69	26.68	1.96	26	530	277	833	32.9	6.4	
2013		72.24	3.97	28.21	30.29	2.24	20	641	179	840	35.0	4.1	
2014		70.88	4.15	27.22	25.43	2.13	17	517	140	674	31.6	3.3	
2015		63.58	3.37	31.44	26.92	1.93	20	550	140	710	28.6	3.1	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END

Date: November 30, 2014  
Observer: Schreiber, Lentsch  
Species: Mule Deer  
Survey Type: Classification  
Air Service: SKY Aviation  
Conditions: very cold, high 15°F, small patches fog, mostly calm winds  
Flight Duration: 3 hours

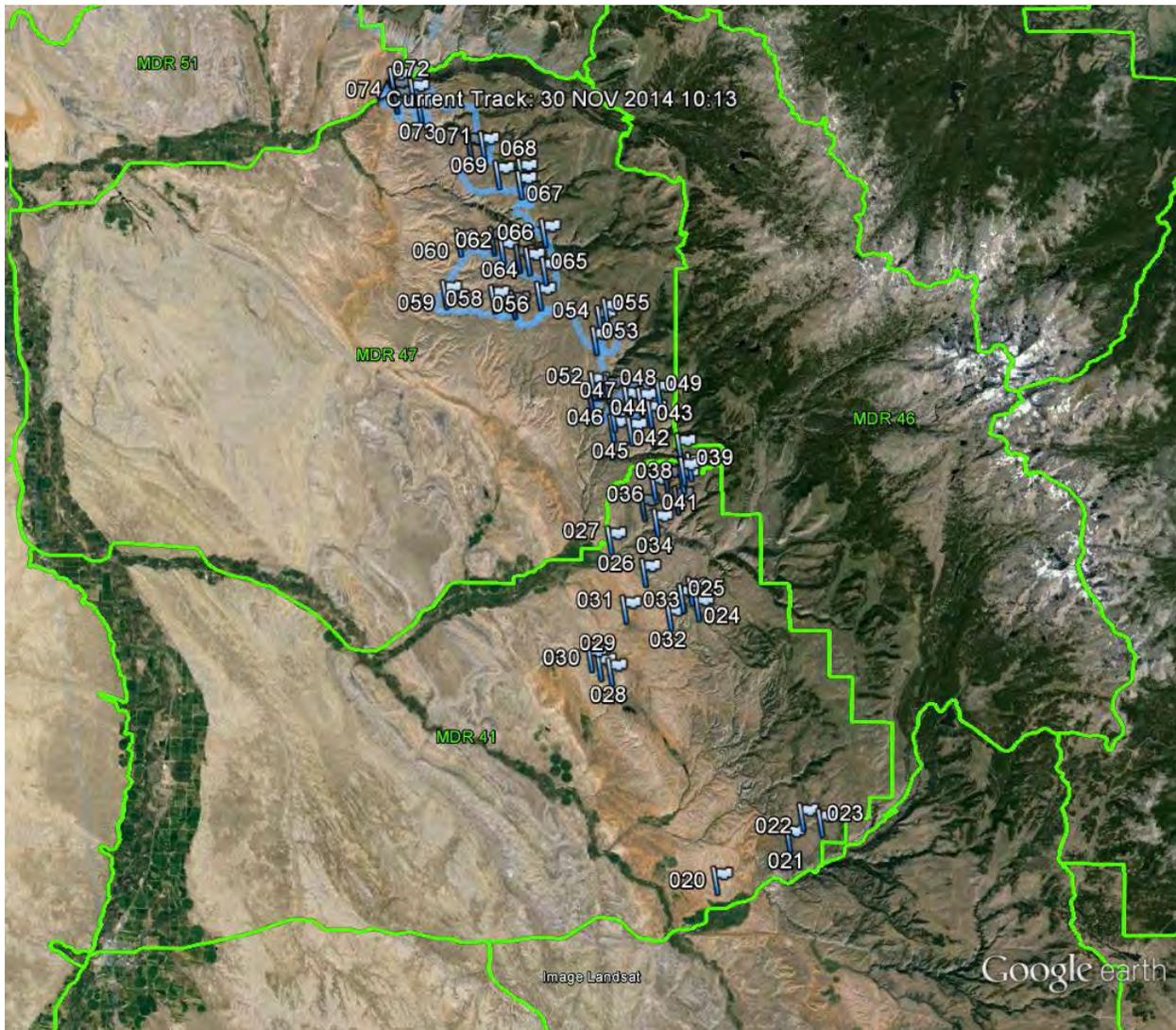
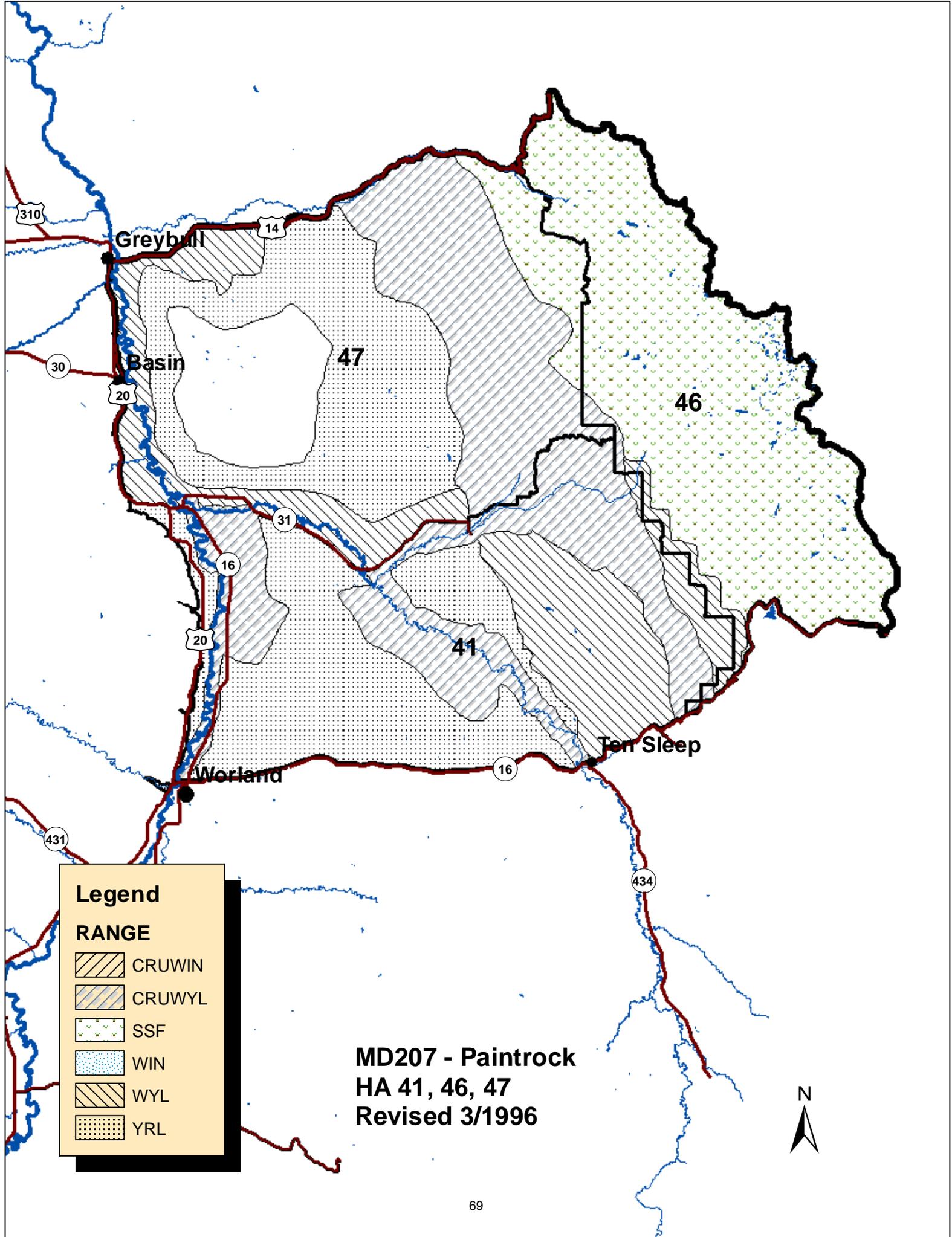


Figure 1. Deer classification flight track showing waypoint number.



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  SSF
-  WIN
-  WYL
-  YRL

**MD207 - Paintrock  
HA 41, 46, 47  
Revised 3/1996**





## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD208 - SOUTHWEST BIGHORNS

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

PREPARED BY: BART KROGER

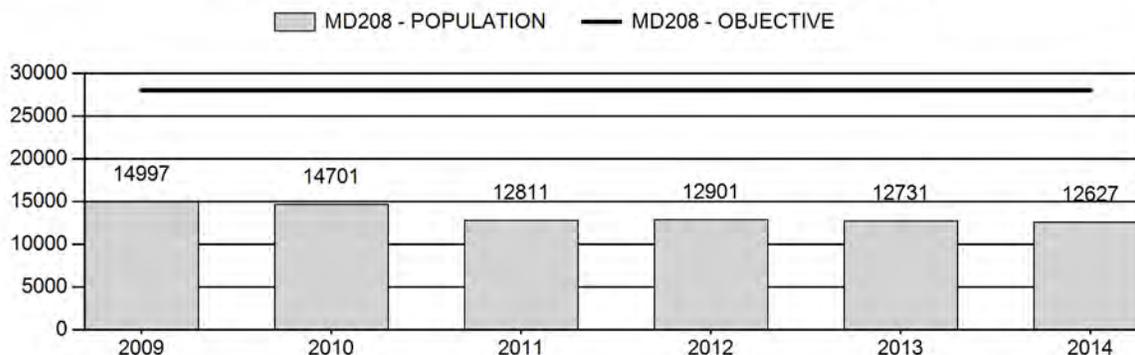
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	13,628	12,627	12,657
Harvest:	1,409	1,096	1,100
Hunters:	2,310	2,012	2,000
Hunter Success:	61%	54%	55 %
Active Licenses:	2,524	2,027	2,020
Active License Success:	56%	54%	54 %
Recreation Days:	10,341	9,867	10,000
Days Per Animal:	7.3	9.0	9.1
Males per 100 Females	30	30	
Juveniles per 100 Females	56	76	

Population Objective (± 20%) :	28000 (22400 - 33600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-54.9%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/24/2015

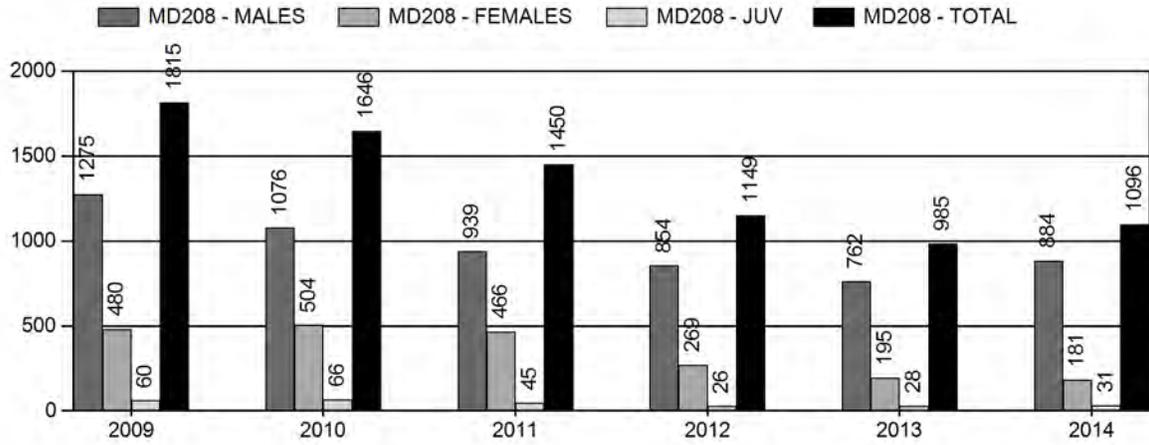
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	3%	3%
Males ≥ 1 year old:	33%	29%
Juveniles (< 1 year old):	.5%	.5%
Total:	8%	8%
Proposed change in post-season population:	0%	0%

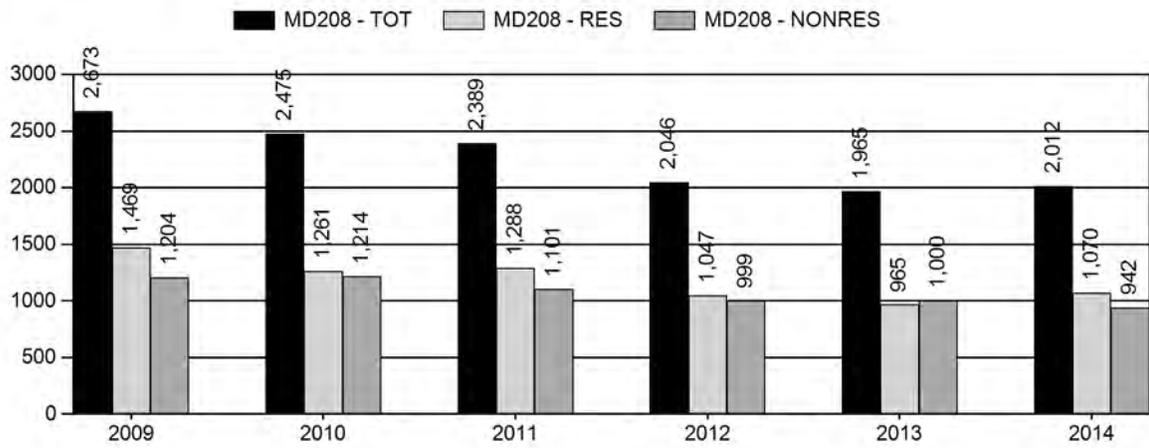
## Population Size - Postseason



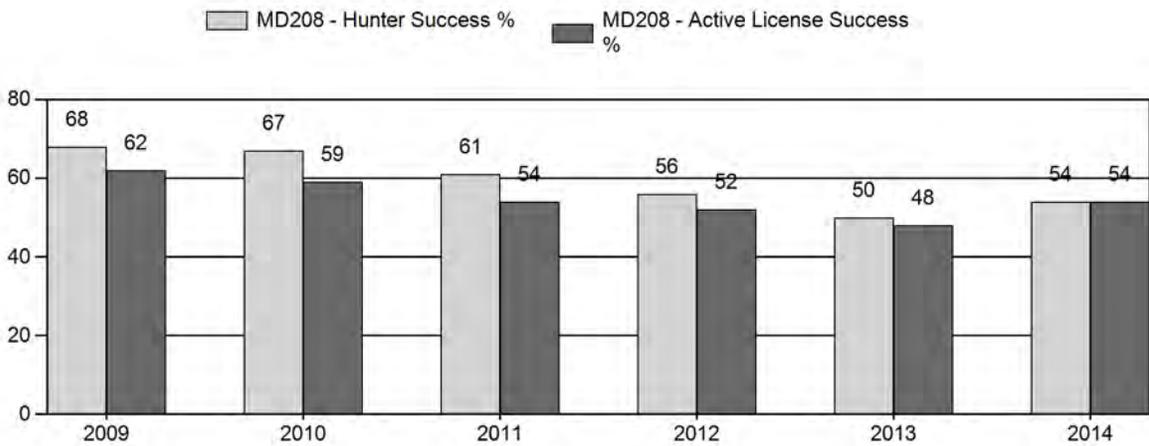
# Harvest



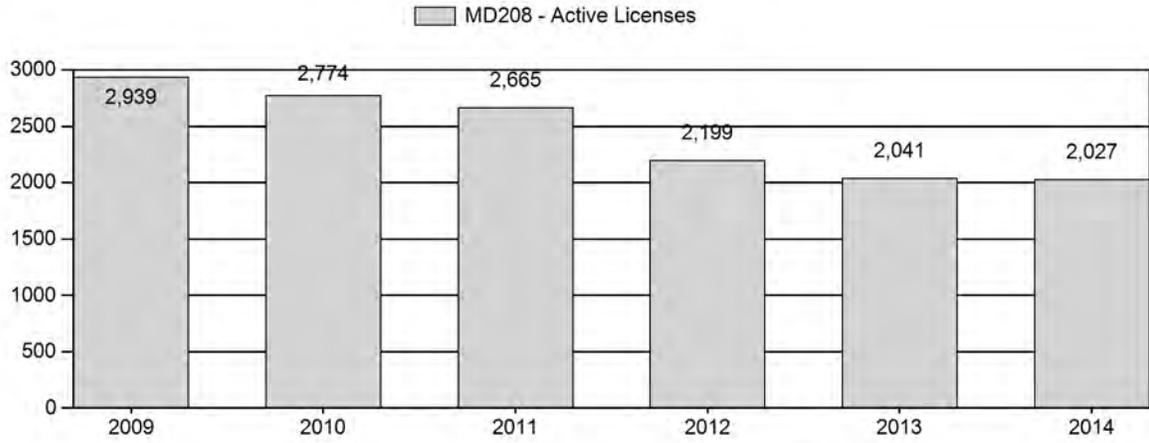
# Number of Hunters



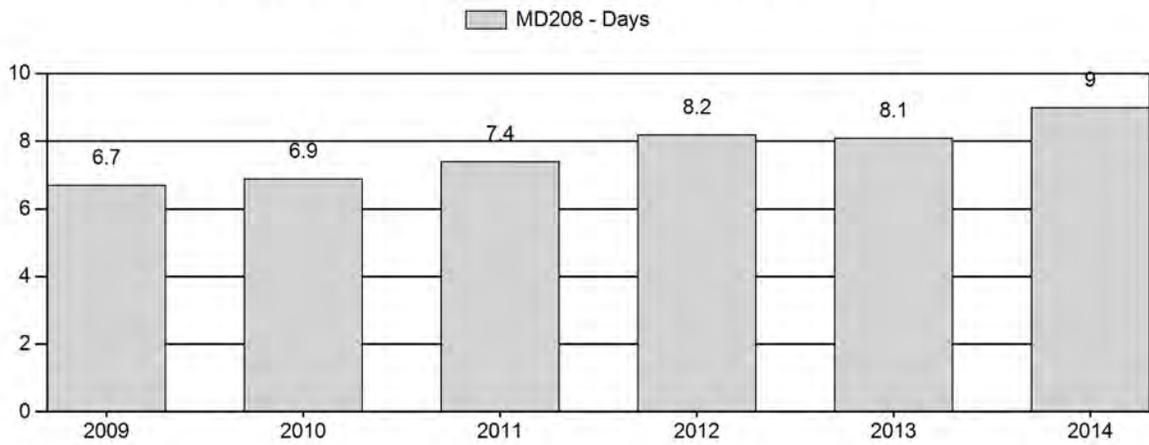
# Harvest Success



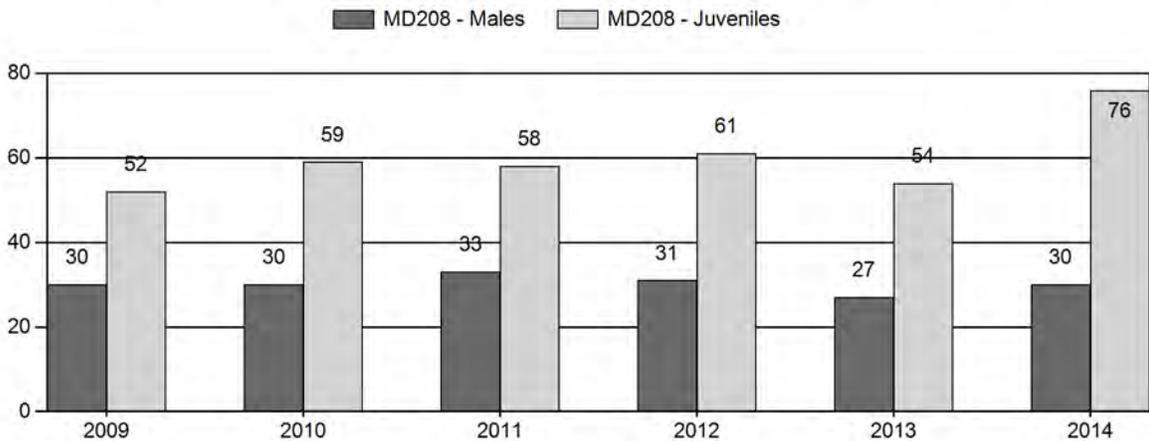
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD208 - SOUTHWEST BIGHORNS

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
2009	14,997	142	0	0	0	249	391	16%	1,315	55%	682	29%	2,388	914	11	19	30	± 2	52	± 3	40
2010	14,701	93	0	0	0	185	278	16%	930	53%	553	31%	1,761	1,111	10	20	30	± 2	59	± 4	46
2011	12,811	56	0	0	0	181	237	17%	721	52%	419	30%	1,377	1,094	8	25	33	± 3	58	± 4	44
2012	12,901	56	0	0	0	141	197	16%	633	52%	383	32%	1,213	1,152	9	22	31	± 3	61	± 5	46
2013	12,731	76	0	0	0	153	229	15%	858	55%	464	30%	1,551	918	9	18	27	± 2	54	± 4	43
2014	12,627	93	40	40	6	83	262	14%	882	49%	674	37%	1,818	1,584	11	19	30	± 2	76	± 5	59

**2015 HUNTING SEASONS  
SOUTHWEST BIGHORNS MULE DEER HERD (MD208)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
35		Oct. 15	Oct. 31		General license; any deer
36		Oct. 15	Oct. 22		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
	8	Oct. 15	Oct. 22	25	Limited quota; doe or fawn white-tailed deer
37	1	Oct. 15	Oct. 25	150	Limited quota; Antlered deer
	3	Nov. 1	Nov. 30	15	Limited quota; any white-tailed deer
	6	Sep. 15	Nov. 15	25	Limited quota; doe or fawn valid on or within one-half (1/2) mile of Buffalo Creek
39		Oct. 15	Oct. 25		General license; antlered deer
40		Oct. 15	Oct. 31		General license; antlered deer valid on national forest; any deer off national forest
	6	Oct. 15	Oct. 31	50	Limited quota; doe or fawn valid on private land
	8	Oct. 15	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
164		Oct. 1	Oct. 10		General license; any deer
	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
Archery 35, 36, 37, 39, 40, 164		Sep. 1	Sept. 30		Refer to Section 2 of this chapter

Region M Nonresident general license quota – 1000 licenses

Hunt Area	Type	Quota change from 2014
<b>HU Total</b>		

**Management Evaluation**

**Current Postseason Population Management Objective: 28,000**

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: 12,600**

**2015 Proposed Postseason Population Estimate: 12,700**

**Herd Unit Issues** - Since 2009, the population model only simulates a decline of about 16% in deer numbers. Perceptions of field personnel as well as most landowners and hunters feel this deer herd has declined as much as 30-50% in recent years. Total harvest has declined by 45% since 2009. The herd unit is about 70% public land and 30% private land. 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. 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. The herd objective and management strategy was evaluated and approved in 2014.

**Weather** - The winter of 2010/11 was severe enough to have caused significant mortality in this herd. After this winter event, reduced numbers of deer were apparent throughout the herd unit. Since then, winter conditions have continued to be above normal, with persistent snow and cold temperatures. Overall, annual drought conditions have improved, with periodic moisture events occurring during the year. Spring and summer moisture in 2010, 2011 and 2014 was above normal, but 2012 and 2013 were below normal during the growing season. These cyclic weather events for the most part appear to be having mostly negative effects on this deer herd since overall numbers continue to decline or are at very low densities.

**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. 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 1.5cm. Winter utilization remains low at about 10% for these transects. Until considerable moisture regimes return, and forage quality improves, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by these long-term drought conditions and cheatgrass invasion.

**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. The number of deer classified has declined dramatically in recent years. In 2009, nearly 2,400 deer were classified, while in 2014, 1,800 were classified; a decline of 25%. Although buck and fawn ratios have remained favorable, the declines in numbers are of significant concern. Post-season fawn and buck ratios have remained fairly consistent since 2009, with an average of 60 fawns:100 does and 30 bucks:100 does. The fawn ratio in 2014 was 76:100, the highest in the past 20 years.

**Harvest Data** - Recent harvest statistics further support declining deer numbers in this herd. Since 2009, overall harvest has decreased by 45%, while hunter numbers have declined by 25%. During this same period, harvest success has dropped by 20%. Hunter effort has increased by 2.3 days since 2009. These harvest trends, along with population trends are reflective of field personnel perceptions that deer numbers have declined significantly and hunting has gotten much tougher in recent years. Hunter satisfaction surveys also reveal this herd unit has had declining satisfaction ratings in recent years.

**Population** - The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model best represents the long-term population trend for this herd. The model had the second lowest AIC value (n=75). Although the models supports a downward trend in deer numbers, field personnel, along with declines in classification sample sizes, and worsening harvest statistics indicate this population has declined more dramatically in recent years compared to model trends. Therefore, the model is only considered a fair representation of the herd. Because

of these declining trends, and that we are below objective by 55%, we will be staying with mostly conservative seasons.

**Management Summary** - No changes to the general license seasons will be made, along with the license quota in area 37. Hunt Area 37 will have a 6 day shorter season, to coincide with Hunt Area 39. The Region M nonresident quota will remain at 1000 licenses. Damage issues in these areas have mostly subsided; therefore less harvest is warranted. The projected 2015 harvest is about 1100 deer. It's expected this deer may start showing some signs of recovery due to improved fawn ratios. However, the long-term effects of poor habitat conditions, prolonged drought, and several above normal winters will likely off-set any significant herd growth.

<b>INPUT</b>	
Species:	Mule Deer
Biologist:	Bart Kroger
Herd Unit & No.:	SW Bighorn, MD208
Model date:	02/24/15

Clear form

<b>MODELS SUMMARY</b>		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	52	43	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	75	55	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	129	3	

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective			
	Field Est	Field SE		Juveniles	Total Males	Juveniles	Total Males			Females	Total	
1993				5523	6274	14825	26623	5376	3973	12758	22107	28000
1994				4572	5112	12480	22164	4526	3345	11265	19136	28000
1995				5313	4304	10946	20564	5246	2937	10335	18518	28000
1996				5788	4201	10404	20393	5692	3106	9883	18682	28000
1997				5345	4491	10174	20009	5297	3149	9864	18309	28000
1998				6501	4395	10027	20922	6482	2766	9770	19018	28000
1999				5688	4467	10341	20495	5644	2777	9920	18341	28000
2000				4278	4198	10189	18665	4233	2633	9772	16637	28000
2001				3767	3610	9597	16973	3750	2312	9152	15214	28000
2002				4396	3181	8917	16495	4369	1984	8596	14949	28000
2003				4671	3111	8656	16438	4646	2022	8347	15015	28000
2004				5749	3235	8538	17523	5716	2059	8252	16028	28000
2005				5589	3620	8814	18023	5561	2508	8437	16506	28000
2006				5345	3945	8917	18208	5288	2712	8631	16631	28000
2007				5360	4026	8990	18376	5328	2592	8517	16437	28000
2008				5273	3938	8907	18118	5221	2591	8380	16192	28000
2009				4334	3902	8757	16993	4268	2500	8229	14997	28000
2010				4687	3510	8315	16512	4614	2327	7760	14701	28000
2011				4030	3015	7362	14406	3980	1982	6849	12811	28000
2012				4123	2981	7062	14165	4094	2041	6766	12901	28000
2013				3717	3068	7030	13815	3686	2230	6816	12731	28000
2014				4753	2705	6374	13832	4719	1733	6175	12627	28000
2015				4109	3016	6741	13867	4076	2059	6521	12657	28000
2016												28000
2017												28000
2018												28000
2019												28000
2020												28000
2021												28000
2022												28000
2023												28000
2024												28000
2025												28000

Survival and Initial Population Estimates

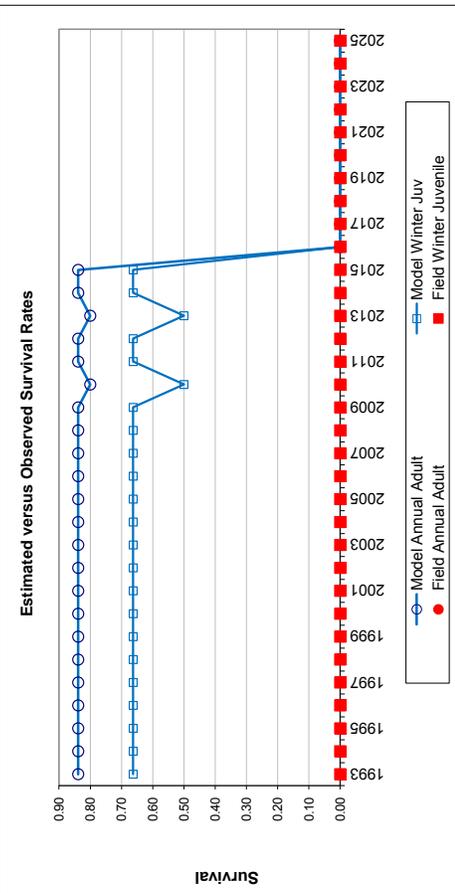
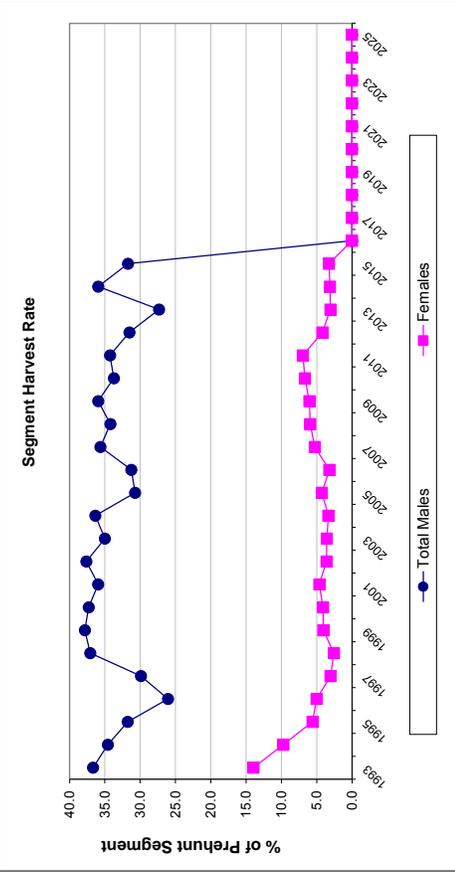
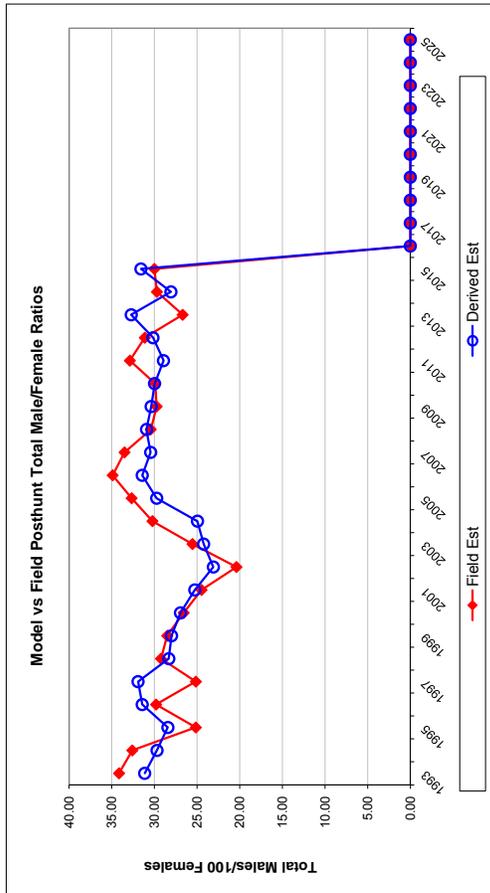
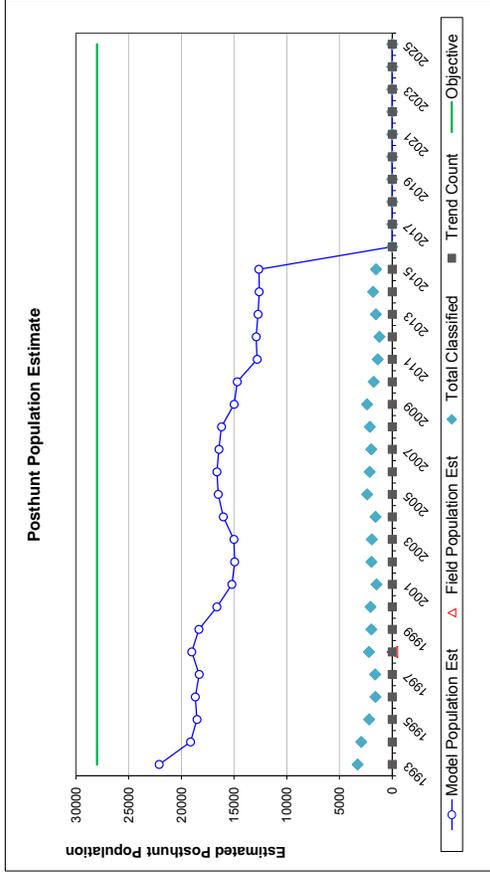
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.66		0.84	
1994	0.66		0.84	
1995	0.66		0.84	
1996	0.66		0.84	
1997	0.66		0.84	
1998	0.66		0.84	
1999	0.66		0.84	
2000	0.66		0.84	
2001	0.66		0.84	
2002	0.66		0.84	
2003	0.66		0.84	
2004	0.66		0.84	
2005	0.66		0.84	
2006	0.66		0.84	
2007	0.66		0.84	
2008	0.66		0.84	
2009	0.66		0.84	
2010	0.50		0.80	
2011	0.66		0.84	
2012	0.66		0.84	
2013	0.50		0.80	
2014	0.66		0.84	
2015	0.66		0.84	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Juvenile Survival =		0.663
Adult Survival =		0.839
Initial Total Male Pop/10,000 =		0.397
Initial Female Pop/10,000 =		1.276

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

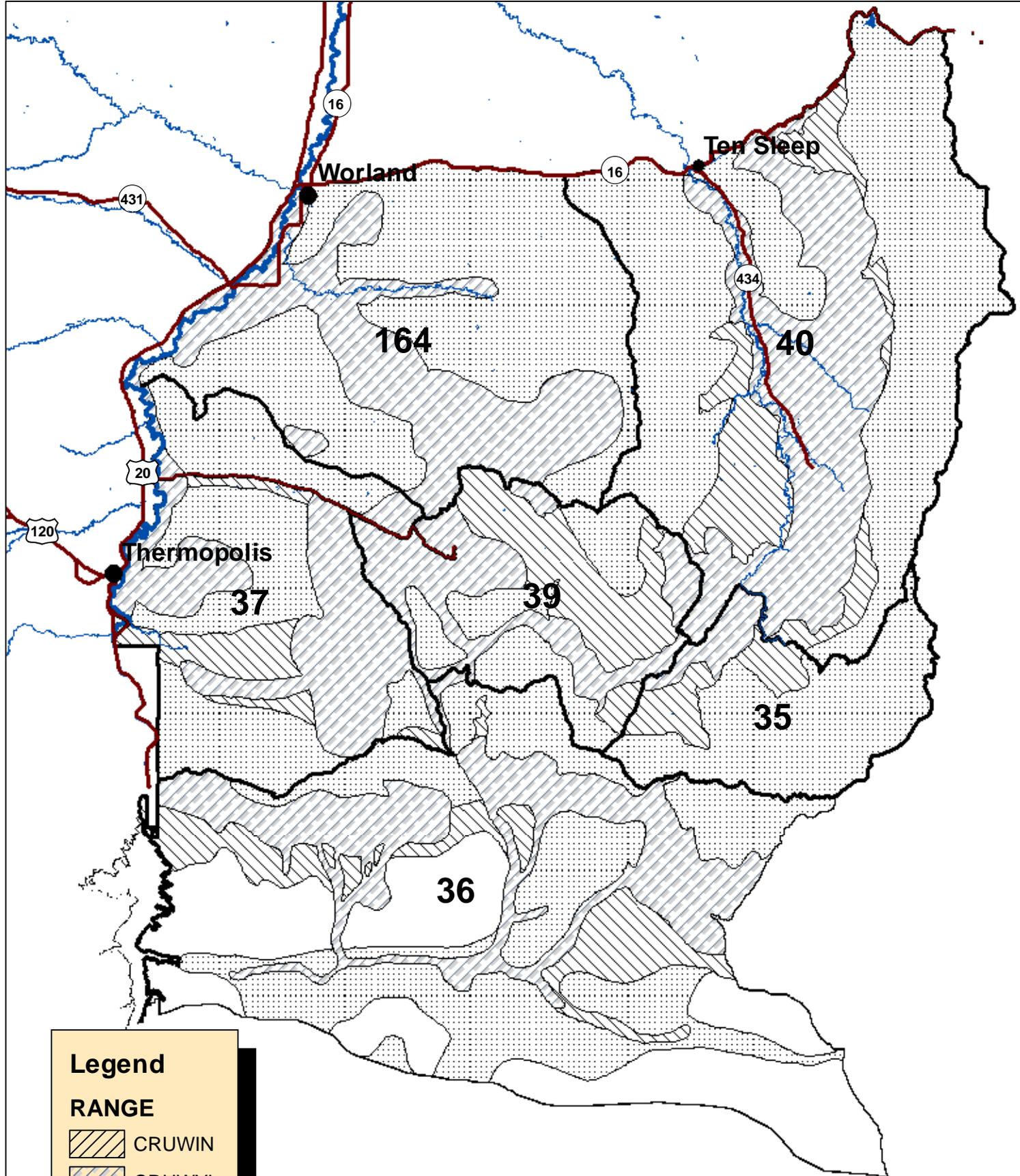
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		42.14	1.79	31.14	34.14	1.57	134	2092	1879	4105	36.7	13.9	
1994		40.18	1.82	29.69	32.59	1.59	42	1607	1104	2753	34.6	9.7	
1995		50.76	2.48	28.42	25.14	1.59	61	1243	556	1860	31.8	5.6	
1996		57.60	3.27	31.43	29.80	2.13	87	995	474	1556	26.1	5.0	
1997		53.69	3.02	31.92	25.14	1.86	44	1220	281	1545	29.9	3.0	
1998		66.34	3.13	28.31	29.23	1.83	17	1481	233	1731	37.1	2.6	
1999		56.89	2.89	27.99	28.49	1.85	40	1536	382	1958	37.8	4.1	
2000		43.32	2.26	26.94	26.57	1.67	41	1423	379	1843	37.3	4.1	
2001		40.97	2.53	25.26	24.47	1.84	15	1180	404	1599	36.0	4.6	
2002		50.82	2.58	23.08	20.38	1.46	25	1088	292	1405	37.6	3.6	
2003		55.06	2.85	24.23	25.54	1.73	23	990	281	1294	35.0	3.6	
2004		69.27	3.84	24.95	30.23	2.23	30	1069	260	1359	36.4	3.3	
2005		65.91	3.02	29.73	32.66	1.90	25	1011	343	1379	30.7	4.3	
2006		61.26	3.01	31.43	34.89	2.08	52	1121	260	1433	31.3	3.2	
2007		62.56	3.17	30.43	33.50	2.10	29	1304	430	1763	35.6	5.3	
2008		62.31	3.03	30.92	30.43	1.90	47	1225	479	1751	34.2	5.9	
2009		51.86	2.45	30.38	29.73	1.71	60	1275	480	1815	35.9	6.0	
2010		59.46	3.19	29.98	29.89	2.04	66	1076	504	1646	33.7	6.7	
2011		58.11	3.57	28.94	32.87	2.46	45	939	466	1450	34.3	7.0	
2012		60.51	3.92	30.17	31.12	2.54	26	854	269	1149	31.5	4.2	
2013		54.08	3.12	32.71	26.69	1.99	28	762	195	985	27.3	3.1	
2014		76.42	3.91	28.06	29.71	2.09	31	884	181	1096	35.9	3.1	
2015		62.50	3.56	31.58	30.00	2.21	30	870	200	1100	31.7	3.3	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  SSF
-  WIN
-  WYL
-  YRL

**MD208 - Southwest Bighorns**  
**HA 35-37, 39, 40, 164**  
**Revised 4/2006**



## 2014 - JCR Evaluation Form

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

PERIOD: 6/1/2014 - 5/31/2015  
  
 PREPARED BY: BART KROGER

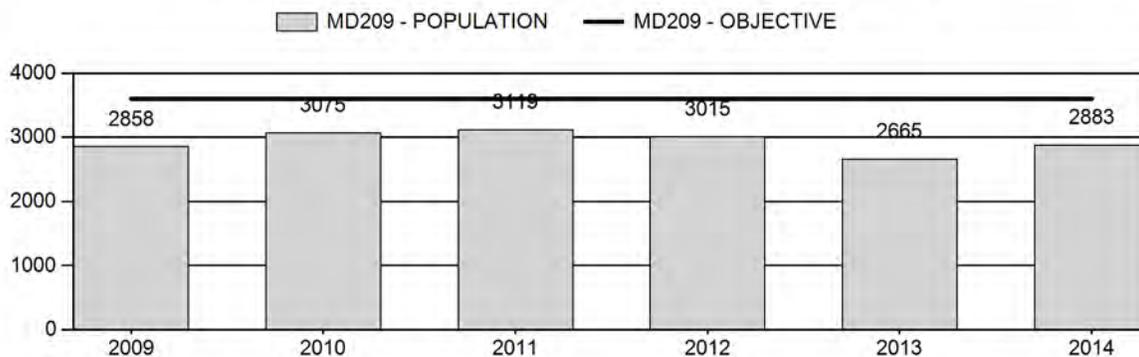
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	2,946	2,883	2,801
Harvest:	222	129	125
Hunters:	373	283	250
Hunter Success:	60%	46%	50 %
Active Licenses:	406	293	250
Active License Success:	55%	44%	50 %
Recreation Days:	1,735	1,141	1,100
Days Per Animal:	7.8	8.8	8.8
Males per 100 Females	32	25	
Juveniles per 100 Females	53	70	

Population Objective (± 20%) :	3600 (2880 - 4320)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-19.9%
Number of years population has been + or - objective in recent trend:	8
Model Date:	2/24/2015

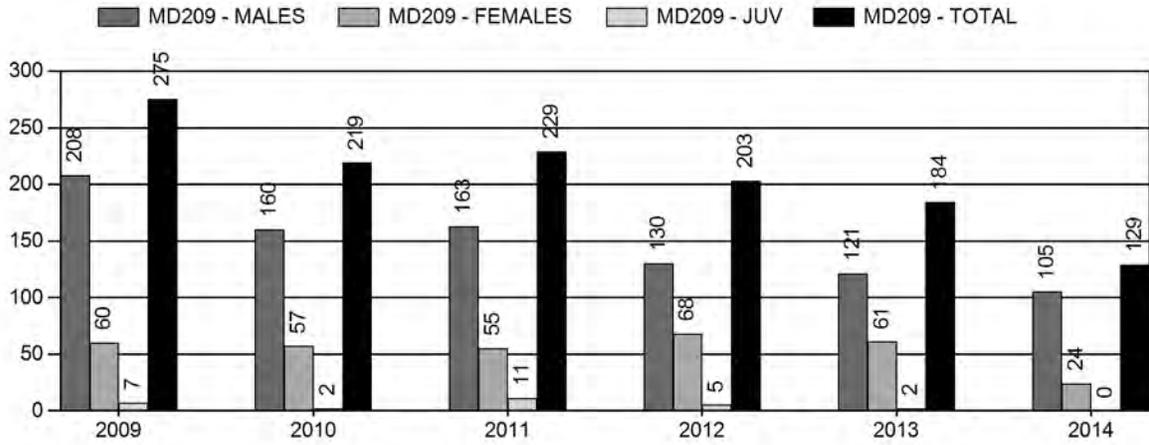
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2%	0%
Males ≥ 1 year old:	17%	19%
Juveniles (< 1 year old):	0%	0%
Total:	4%	4%
Proposed change in post-season population:	+4%	-2%

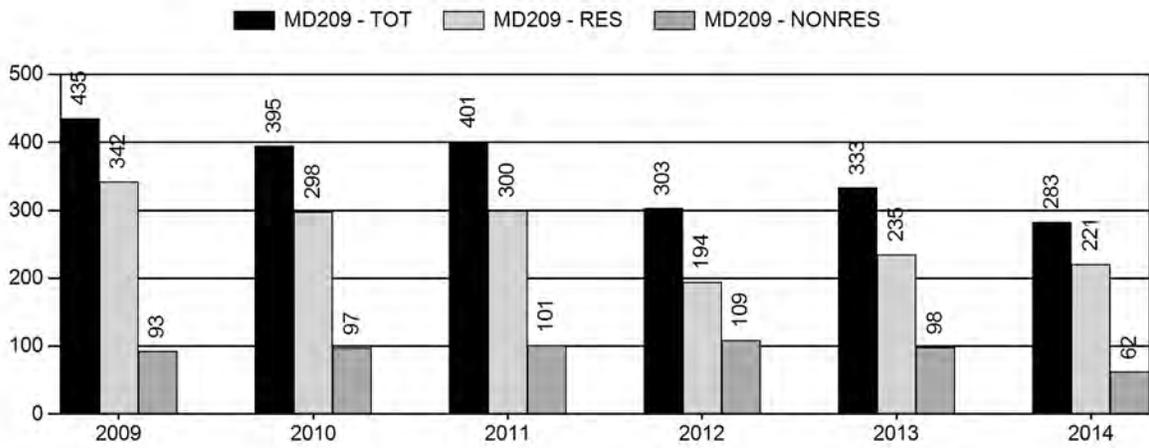
## Population Size - Postseason



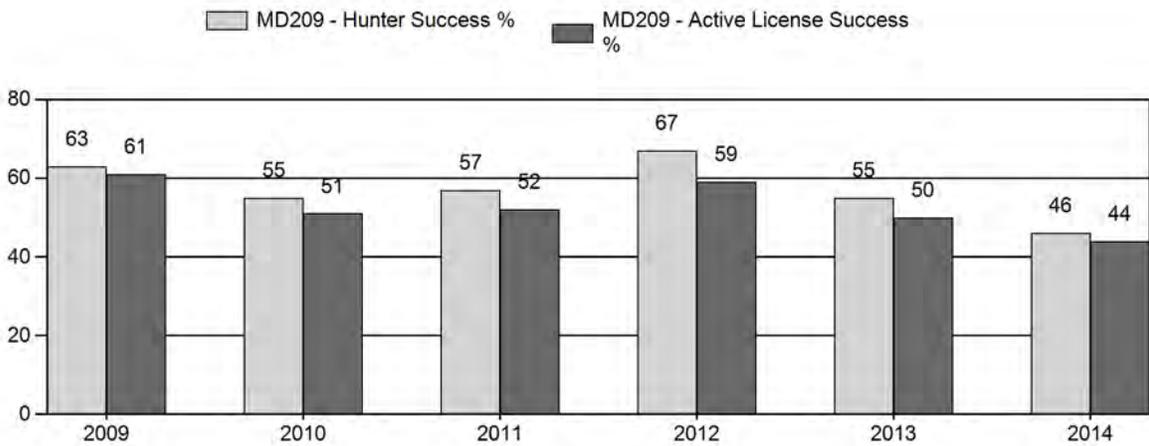
# Harvest



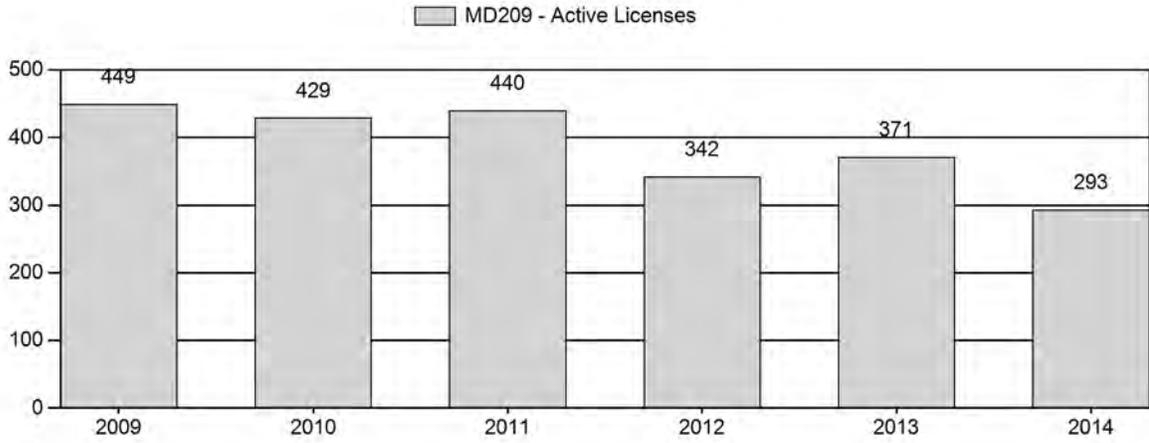
# Number of Hunters



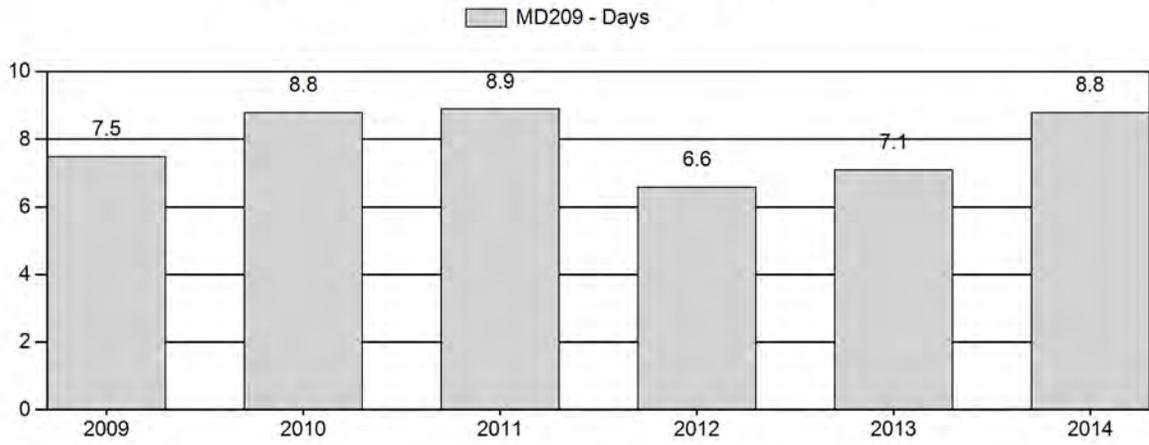
# Harvest Success



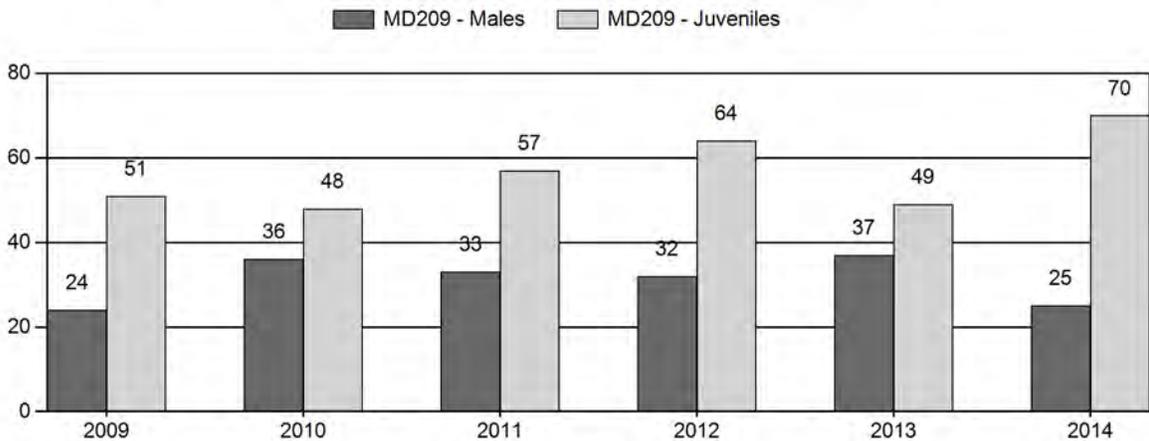
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD209 - BASIN

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls	2+ Cls 1	2+ Cls 2	2+ Cls 3	UnCls	Total	%	Total	%	Total			%	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int
2009	2,858	27	0	0	0	84	111	14%	470	57%	239	29%	820	679	6	18	24	± 3	51	± 4	41
2010	3,075	60	0	0	0	96	156	20%	435	54%	208	26%	799	635	14	22	36	± 4	48	± 4	35
2011	3,119	25	0	0	0	65	90	17%	274	53%	156	30%	520	811	9	24	33	± 5	57	± 7	43
2012	3,015	27	0	0	0	49	76	16%	236	51%	150	32%	462	878	11	21	32	± 5	64	± 8	48
2013	2,665	30	0	0	0	58	88	20%	236	54%	116	26%	440	669	13	25	37	± 5	49	± 7	36
2014	2,883	17	0	0	0	35	52	13%	210	51%	147	36%	409	998	8	17	25	± 5	70	± 9	56

**2015 HUNTING SEASONS  
BASIN MULE DEER HERD (MD209)**

Hunt Area	Type	Season Dates		Quota	Limitations
		Opens	Closes		
125	1	Nov. 1	Nov. 15	100	Limited quota; antlered deer
127	3	Oct. 15 Nov. 1	Oct. 24 Nov. 30	15	General license; antlered deer Limited quota; any white-tailed deer
Archery 125, 127		Sep. 1	Sep.30		Refer to Section 2 of this chapter

Hunt Area	Type	Quota change from 2014
127	6	-25
<b>HU Total</b>	<b>6</b>	<b>-25</b>

**Management Evaluation**

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

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: 2900**

**2015 Proposed Postseason Population Estimate: 2800**

**Herd Unit Issues** - The 2014 post-season population estimate is 20% below objective. Long-term model trends are somewhat questionable, but since the late 2000's, the model trend reflects a declining populations which mirrors that of field personnel perceptions. Deer densities in this herd unit are higher on and around private irrigated lands, whereas the dry desert areas support fewer deer. Poor habitat conditions, long-term drought, and recent EHD outbreaks continue to be major management concerns for this herd. Much of the herd unit is arid desert shrubland, thus limiting the options for vegetation treatment because of the potential for cheatgrass invasion. Since 2006, five guzzlers have been installed to provide additional water sources for deer.

**Weather** - The winters of 2011/12 and 2012/13 were mild with low snowpack resulting in mostly good over winter survival. However, the winters of 2010/11 and 2013/14 along with the dry spring and summer of 2012 appeared to have been severe enough to cause some die-off and reduced survival. Overall, annual drought conditions continue to persist, with periodic moisture events occurring during the year. Spring and early summer moisture in 2010, 2011 and 2014 was above normal, but 2012 and 2013 was below normal. These cyclic weather events for the most part appear to be having mostly negative effects on this deer herd, since overall populations numbers continue to decline.

**Habitat** - Most of this herd unit lies within a 5-9" precipitation zone, with limited opportunity to increase forage quality and abundance of native plant communities. Both herbaceous and shrub growth has been minimal the past three years, except in 2011 and 2013, when spring precipitation was well above normal. 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** - Both aerial and ground classifications surveys are used in obtaining post-season buck and fawn ratio for this deer herd. Routine classification routes for each Hunt Area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified has declined dramatically in recent years. In 2009, nearly 820 deer were classified, while in 2014 only 409 were classified; a decline of 50%. Buck and fawn ratios have remained favorable in recent years, with a 6-year average of 30 bucks and 58 fawns per 100 does. The 2014 fawn ratio of 70:100 is the highest on record.

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

**Harvest Data** - Recent harvest statistics do support a declining deer population. Since 2009, overall buck harvest during the general season has declined by 50%, whereas hunter numbers have only dropped by 25%. Most hunters and landowners continue to report deer numbers are down and hunting is poor to fair. Based on the 2014 hunter satisfaction survey, 50% of the hunters surveyed in this herd unit indicated they were either satisfied or very satisfied with their overall hunting experience, whereas in 2013, 70% were either satisfied or very satisfied.

**Population** - The time-specific juvenile & constant adult survival (TSJ, CA) spreadsheet model was chosen to represent this herd based on its population trend. This model had the highest AIC value (n=132) of all the models, yet its trends reflect that of field personnel perceptions, along with most hunters and landowners, as well as declining classification sample sizes and harvest statistics. The model is considered to be a fair representative of herd trend and population estimate. Because of these declining trends, and that we are below objective by 20%, we will be staying with mostly conservative seasons until deer numbers appear to be increasing.

**Management Summary** - Type 6 licenses in area 127 will be eliminated due to very few deer and no damage issues occurring. Damage issues have subsided in this area in recent years, and hunter complaints are heard annually regarding the over-harvest of doe mule deer. Both areas 125 and 127 will change to antlered deer to eliminate any harvest of doe deer. The projected 2015 harvest is roughly 125 buck deer. Despite conservative hunting seasons, it's predicted this deer herd will continue to struggle because of poor habitat and prolonged drought conditions.

<b>INPUT</b>	
Species:	Mule Deer
Biologist:	Bart Kroger
Herd Unit & No.:	Basin, MD209
Model date:	02/24/15

Clear form

MODELS SUMMARY			Relative AICc	Notes
CJ,CA	Constant Juvenile & Adult Survival	Fit	63	<input type="checkbox"/> CJ,CA Model <input type="checkbox"/> SC,J,SCA IV <input checked="" type="checkbox"/> TSJ,CA Model
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	54	67	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	50	132	

Check best model to create report

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total	Total Males	Females	Juveniles	Total	Total Males	Females	
1993			635	709	1838	3181	620	397	1666	2683	3600	
1994			781	580	1675	3035	775	355	1618	2748	3600	
1995			634	480	1570	2685	631	293	1519	2443	3600	
1996			954	536	1594	3084	954	288	1572	2814	3600	
1997			892	439	1547	2879	892	305	1503	2701	3600	
1998			1156	665	1689	3519	1156	450	1699	3305	3600	
1999			961	707	1784	3452	961	452	1753	3165	3600	
2000			649	791	1914	3354	649	497	1855	3002	3600	
2001			661	631	1803	3094	661	423	1803	2886	3600	
2002			775	662	1853	3290	775	463	1851	3089	3600	
2003			829	730	1928	3486	829	552	1921	3301	3600	
2004			889	642	1824	3354	889	442	1791	3121	3600	
2005			1028	746	1910	3684	1013	582	1874	3468	3600	
2006			1214	804	1918	3936	1214	589	1899	3702	3600	
2007			795	751	1881	3428	793	581	1821	3194	3600	
2008			973	660	1730	3363	970	468	1679	3117	3600	
2009			832	642	1687	3161	824	413	1621	2858	3600	
2010			818	727	1770	3316	816	551	1707	3075	3600	
2011			951	711	1709	3371	939	532	1648	3119	3600	
2012			981	647	1610	3239	976	504	1536	3015	3600	
2013			717	630	1520	2867	714	497	1453	2665	3600	
2014			984	608	1433	3025	984	492	1406	2883	3600	
2015			808	671	1460	2939	808	533	1460	2801	3600	
2016											3600	
2017											3600	
2018											3600	
2019											3600	
2020											3600	
2021											3600	
2022											3600	
2023											3600	
2024											3600	
2025											3600	

Survival and Initial Population Estimates

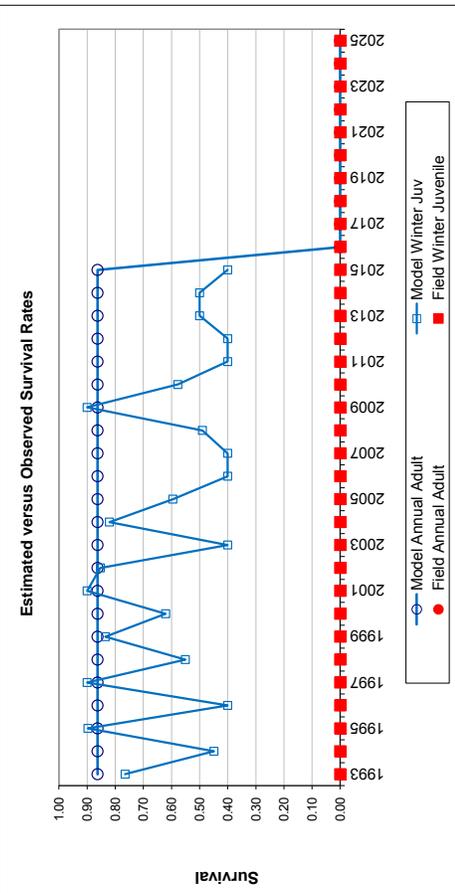
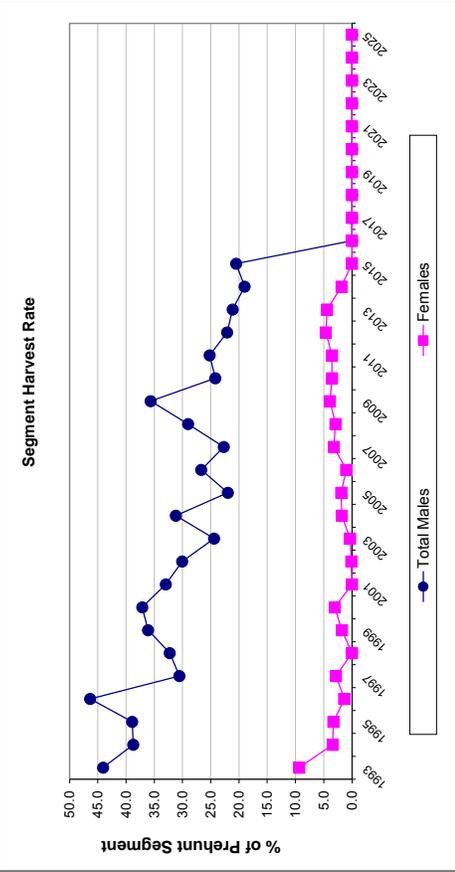
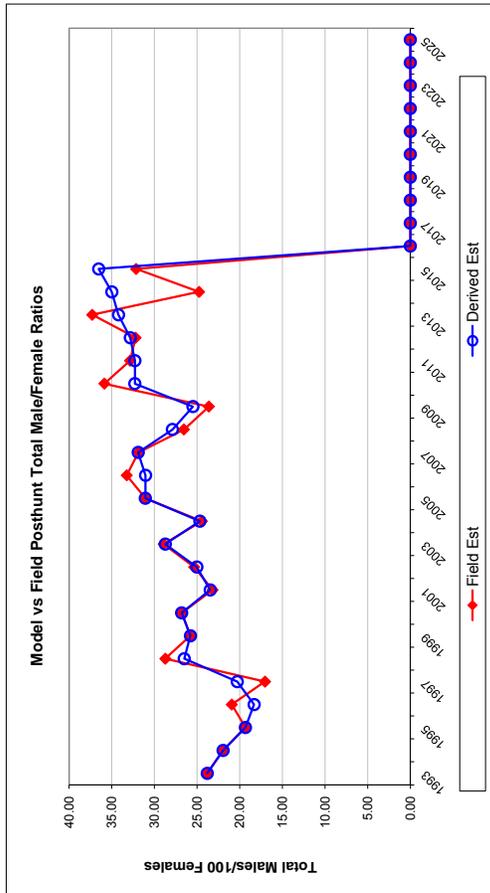
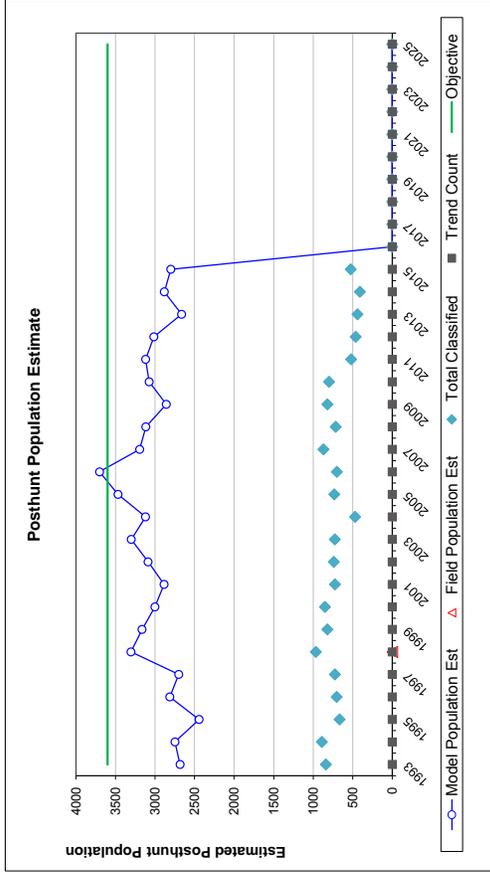
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.76		0.86	
1994	0.45		0.86	
1995	0.90		0.86	
1996	0.40		0.86	
1997	0.90		0.86	
1998	0.55		0.86	
1999	0.84		0.86	
2000	0.62		0.86	
2001	0.90		0.86	
2002	0.85		0.86	
2003	0.40		0.86	
2004	0.82		0.86	
2005	0.60		0.86	
2006	0.40		0.86	
2007	0.40		0.86	
2008	0.49		0.86	
2009	0.90		0.86	
2010	0.58		0.86	
2011	0.40		0.86	
2012	0.40		0.86	
2013	0.50		0.86	
2014	0.50		0.86	
2015	0.40		0.86	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.863
Initial Total Male Pop/10,000 =	0.040
Initial Female Pop/10,000 =	0.167

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

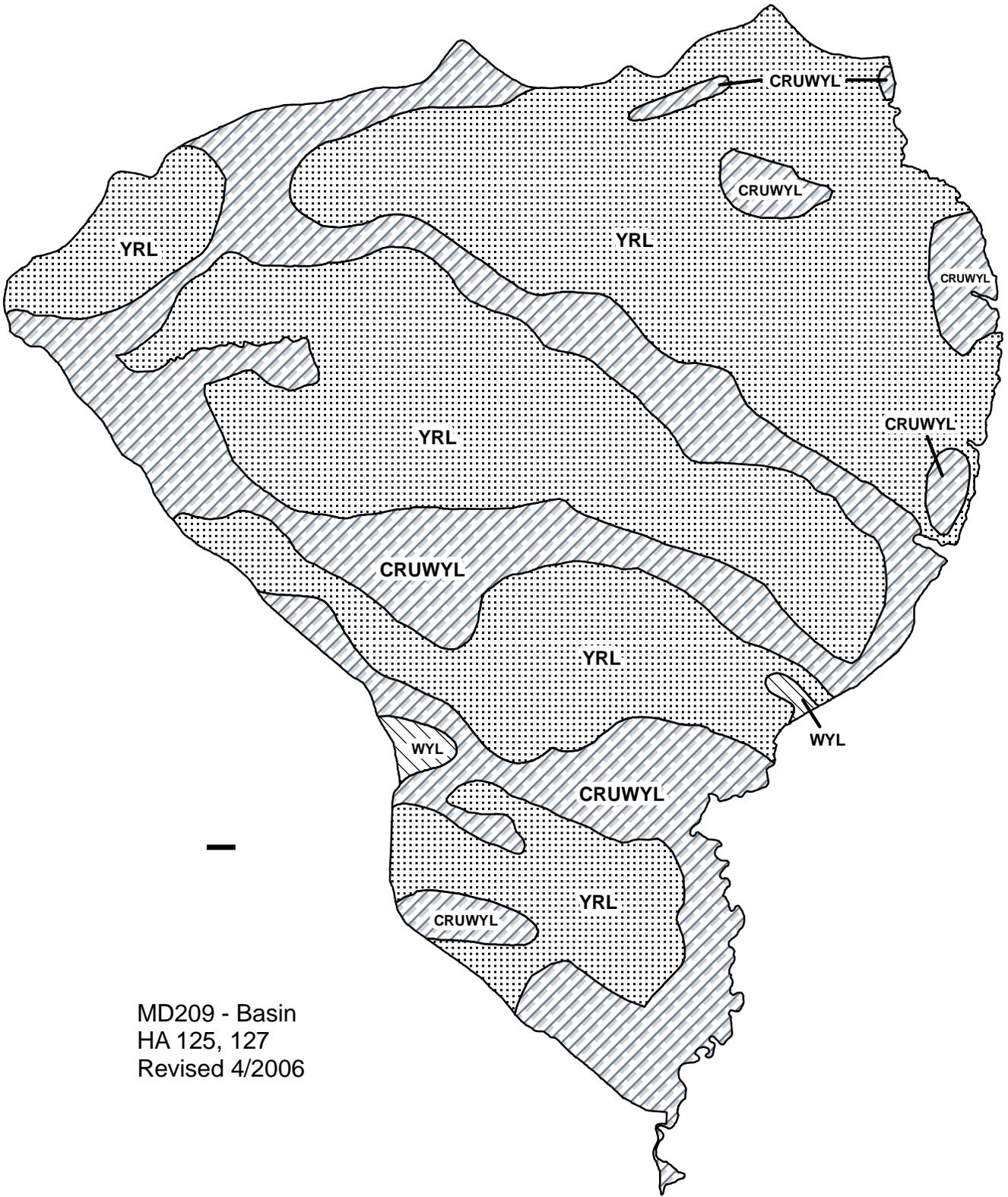
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		37.24	3.13	23.80	23.80	2.38	13	284	156	453	44.1	9.3	
1994		47.90	3.68	21.95	21.95	2.26	5	204	52	261	38.7	3.4	
1995		41.55	3.77	19.32	19.32	2.36	3	170	47	220	38.9	3.3	
1996		60.72	5.02	20.93	20.93	2.56	0	226	20	246	46.4	1.4	
1997		59.37	4.80	17.03	17.03	2.20	0	122	40	162	30.6	2.8	
1998		68.02	4.82	28.72	28.72	2.74	0	195	0	195	32.3	0.0	
1999		54.85	4.33	25.77	25.77	2.67	0	232	29	261	36.1	1.8	
2000		34.98	3.00	26.81	26.81	2.54	0	267	53	320	37.1	3.0	
2001		36.64	3.32	23.18	23.18	2.51	0	189	0	189	33.0	0.0	
2002		41.86	3.67	25.34	25.34	2.68	0	181	2	183	30.1	0.1	
2003		43.13	3.82	28.91	28.91	2.97	0	162	6	168	24.4	0.3	
2004		49.63	5.24	24.44	24.44	3.36	0	182	30	212	31.2	1.8	
2005		54.04	4.58	31.06	31.06	3.21	14	149	33	196	22.0	1.9	
2006		63.94	5.43	33.24	33.24	3.53	0	195	18	213	26.7	1.0	
2007		43.55	3.55	31.85	31.85	2.91	2	155	55	212	22.7	3.2	
2008		57.73	4.84	27.89	27.89	2.94	3	174	46	223	29.0	2.9	
2009		50.85	4.04	25.48	25.48	2.49	7	208	60	275	35.7	3.9	
2010		47.82	4.03	32.30	32.30	3.35	2	160	57	219	24.2	3.5	
2011		56.93	5.71	32.85	32.85	3.99	11	163	55	229	25.2	3.5	
2012		63.96	6.64	32.20	32.20	4.25	5	130	68	203	22.1	4.6	
2013		49.15	5.57	37.29	37.29	4.66	2	121	61	184	21.1	4.4	
2014		70.00	7.53	34.99	34.99	3.84	0	105	24	129	19.0	1.8	
2015		55.36	5.54	32.14	32.14	3.89	0	125	0	125	20.5	0.0	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



MD209 - Basin  
HA 125, 127  
Revised 4/2006



## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD210 - GREYBULL RIVER

HUNT AREAS: 124, 165

PREPARED BY: LESLIE SCHREIBER

	<u>2009 - 2013</u> <u>Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	4,700	4,023	3,632
Harvest:	809	512	530
Hunters:	1,130	841	860
Hunter Success:	72%	61%	62 %
Active Licenses:	1,332	935	940
Active License Success:	61%	55%	56 %
Recreation Days:	4,882	3,053	3,200
Days Per Animal:	6.0	6.0	6.0
Males per 100 Females	34	35	
Juveniles per 100 Females	70	112	

Population Objective ( $\pm 20\%$ ) : 4000 (3200 - 4800)

Management Strategy: Recreational

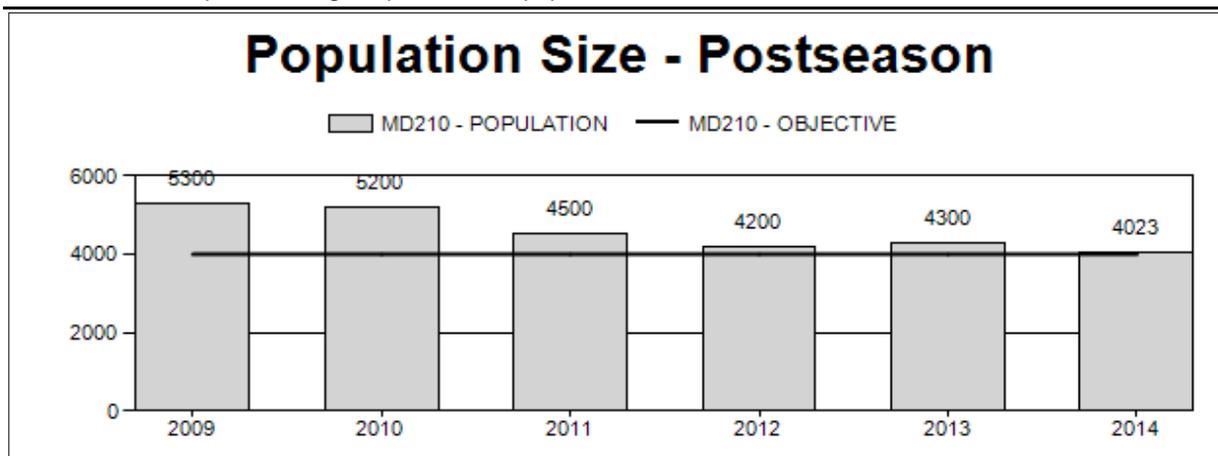
Percent population is above (+) or below (-) objective: 1%

Number of years population has been + or - objective in recent trend: 3

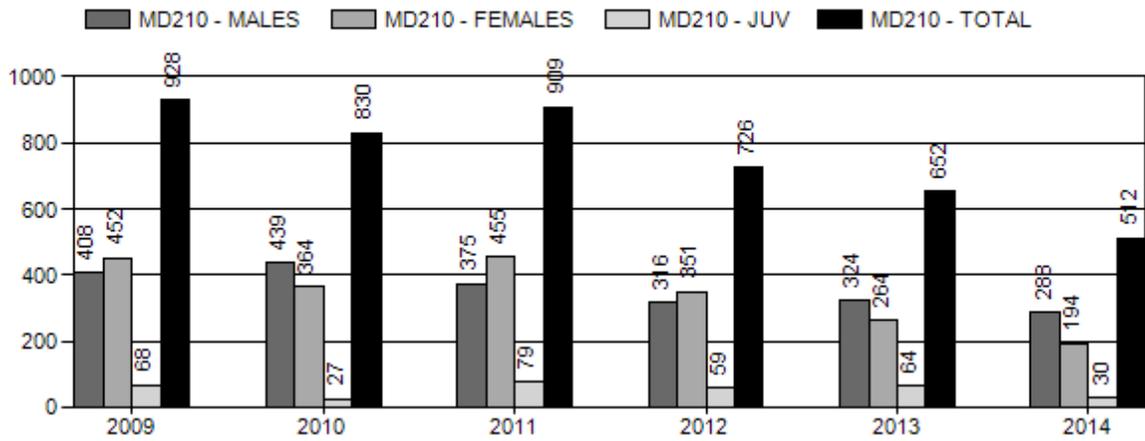
Model Date: 02/26/2015

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

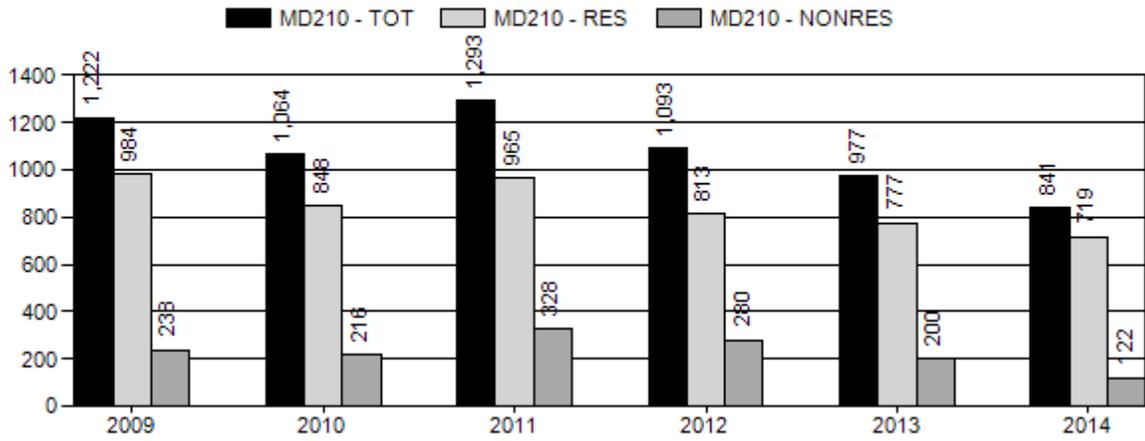
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	13%	11%
Males $\geq 1$ year old:	32%	35%
Juveniles (< 1 year old):	2%	2%
Total:	12%	13%
Proposed change in post-season population:	-1%	-10%



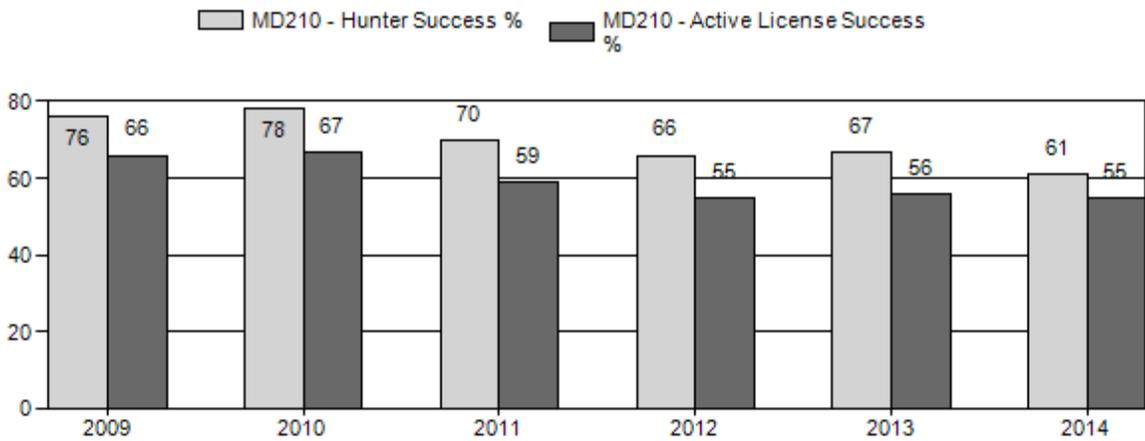
# Harvest



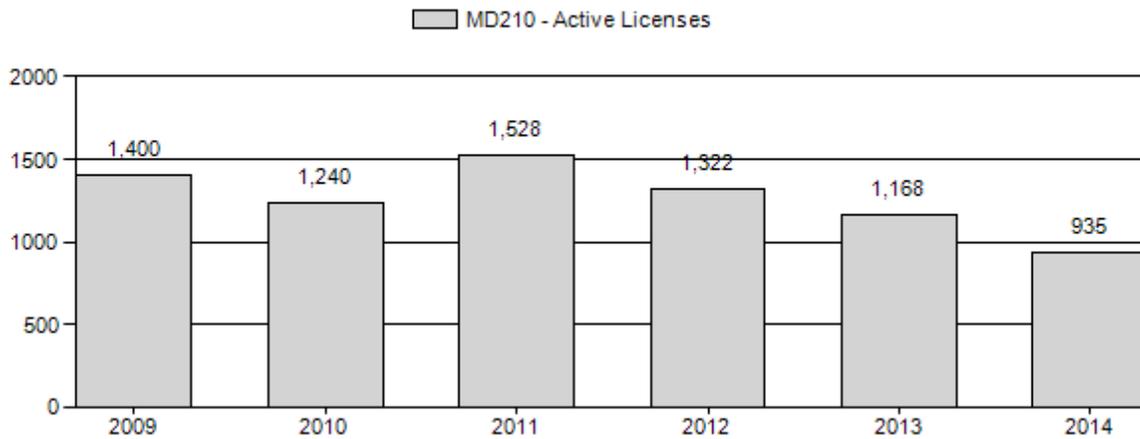
# Number of Hunters



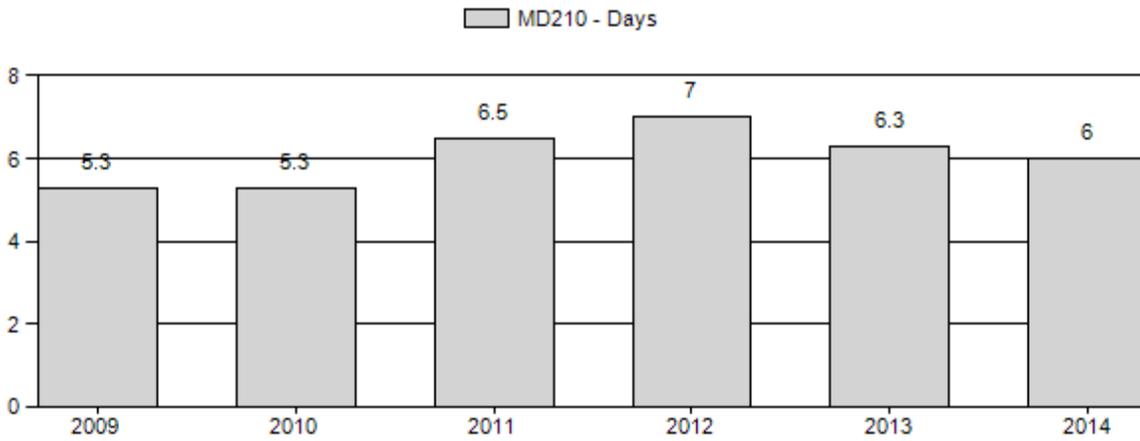
# Harvest Success



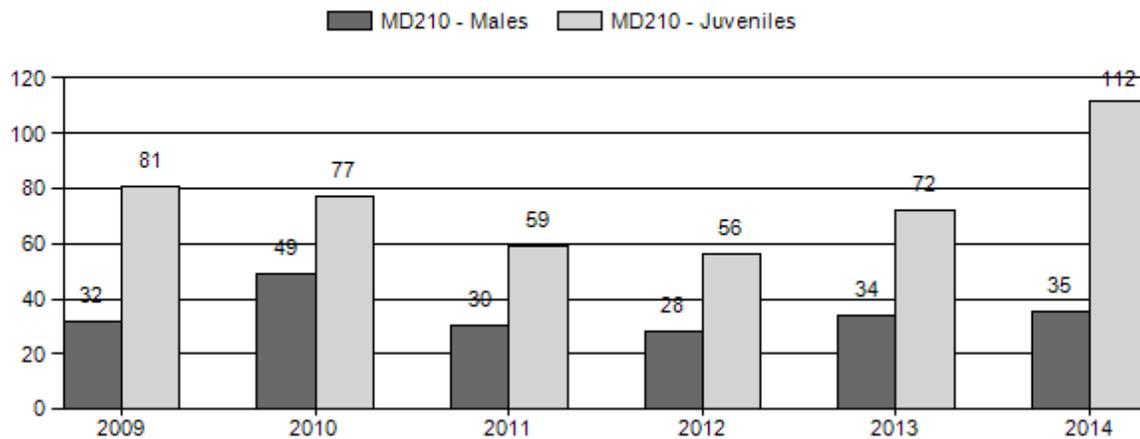
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2009 - 2014 Postseason Classification Summary**

for Mule Deer Herd MD210 - GREYBULL RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females				Young to		
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Cls	Obj	Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls															
2009	5,300	99	0	0	0	181	280	15%	873	47%	704	38%	1,857	1,080	11	21	32	± 2	81	± 4	61
2010	5,200	87	0	0	0	139	226	22%	465	44%	357	34%	1,048	985	19	30	49	± 5	77	± 6	52
2011	4,500	47	0	0	0	113	160	16%	530	53%	315	31%	1,005	1,054	9	21	30	± 3	59	± 5	46
2012	4,200	65	0	0	0	94	159	15%	571	54%	320	30%	1,050	959	11	16	28	± 3	56	± 4	44
2013	4,300	47	0	0	0	95	142	17%	416	48%	301	35%	859	915	11	23	34	± 4	72	± 6	54
2014	4,023	69	0	0	0	114	183	14%	525	40%	590	45%	1,298	1,331	13	22	35	± 3	112	± 7	83

**2015 HUNTING SEASONS**  
**Greybull River Mule Deer Herd Unit (MD210)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
124		Nov. 1	Nov. 10		General license; any deer
	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
	6	Nov. 1	Nov. 30	50	Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land
	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 (½) mile of irrigated land
	8	Nov. 1	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
165	1	Oct. 15	Oct. 31	125	Limited quota; any deer
	3	Oct. 15	Nov. 30	50	Limited quota; any white-tailed deer
	6	Oct. 1	Oct. 31	100	Limited quota; doe or fawn valid on private land
	8	Nov. 1	Nov. 30	100	Limited quota; doe or fawn white-tailed deer
<b>Archery:</b>					
124, 165		Sept. 1	Sept. 30		Refer to Section 2 of this Chapter

**Region X Non-resident deer quota: 300**

Hunt Area	Type	Quota Change from 2014
165	6	+25
165	8	+50
Total		+75

**Management Evaluation**

**Current Management Objective: 4,000**

**2014 Postseason Population Estimate: 4,000**

**2015 Proposed Postseason Population Estimate: 3,600**

**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 and 2007, and is currently under review in 2015 with a proposal for no change. The Greybull River deer herd is managed for recreational hunting. This herd has been highly productive and occupies mostly riparian and agricultural lands, and damage to crops drives management. Urban expansion has not been a major concern in the area. Although agriculture has altered riparian areas and farming has increased the amount of forage for deer. Landowner tolerance of deer on cropland is low. Even when the population is below objective, we still offer doe/fawn licenses in areas with crop

damage by deer. This herd unit is now in nonresident region X after being separated from nonresident region F. This change was primarily done to separate management of deer in the lower agricultural lands from deer in public forested lands west of Cody.

**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. Affects of drought on upland vegetation resulted in a shift of deer to agricultural fields. Growing season precipitation in 2014 was slightly below average, but excellent vegetation growth was observed overall in the Bighorn Basin.

**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, and is insufficient to draw inferences across the entire herd unit. 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.** We use number of deer classified as a general index to population level. The number of deer classified steadily increased from 800 deer in 1995 to 1,850 deer in 2009, but has since decreased to about 1,000 deer during the last few years. In 2014, we classified 1,300 deer, but caution is warranted in interpreting this metric due to the presence of 2 new observers. On the other hand, the high sample size could be accurate, because this herd is typically highly productive (Greybull River irrigated farm ground and riparian habitat). In 2014, this herd unit had the highest fawn ratio in 30 years with 112 fawns:100 does. The increase in productivity was likely due to increased spring moisture and vegetation growth. Neighboring mule deer herds also experienced record fawn ratios. Buck numbers appear to have increased in this herd over the past 20 years most likely due to the large amount of private land with limited access (provides security for bucks). Private lands and limited quota seasons in Area 165 also protect a lot of bucks (<100 bucks are harvested in Area 165), and have helped maintain high buck ratios. Between 1993 and 2005, buck:doe ratios rarely exceeded 25:100 (range=18-26). After drought conditions subsided, buck ratios increased and rarely drop below 25 bucks:100 does since 2005. On average, there were 32 bucks:100 does observed (range=26-49) between 2005-2014.

**Harvest Data.** As we reduced the population towards objective, number of active licenses (general and doe/fawn limited quota) decreased from a high of about 1500 in 2011, to 935 in 2014. Hunter numbers matched this trend with about 1293 hunters in 2011 and only 841 in 2014. Harvest decreased as well, from a high of 928 in 2009 to 512 in 2014, all the result of decreased licenses (less crop damage), fewer hunters, and fewer deer. Although fewer deer were harvested in 2014, hunter success remained acceptable at 61% down from a high of 78% in 2010. Days per harvested deer has not changed drastically among years with 5.3 days in 2009, to 7 days in 2011 and then 6 days in 2014. Hunter satisfaction remains high for this herd with about 78% satisfied, and only 6% unsatisfied with the current quality of their hunt.

**Population.** The time-specific juvenile, constant adult survival model (TSJ,CA) is the most applicable for modeling deer populations, and seems to work well for the Greybull herd. 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. The drastic increase estimated in 2014 is a result of the record fawn ratios observed. The model ranks fair as it is informed by >20 years of data and follows the trend highly likely by field personnel, but it would benefit from a sample-based population estimate with standard errors.

**Management Summary.** The season planned for 2015 should relieve some hunting pressure on bucks and simplify the regulations by standardizing the opening day. The model predicts that the 2015 post-season population estimate will be within 10% of the objective, but we will still have doe/fawn licenses again in 2015 to address landowner concerns. Hunters commented that fewer deer can be found since the 2010-11 winter and want fewer does harvested to increase the population. Many hunters also have requested more time to harvest bucks, and if buck ratios remain high, some changes may be possible. This herd unit objective is currently under review and we propose to keep the current objective of 4000 deer post season since it is a good compromise between damage concerns and hunter opportunity.

<b>INPUT</b>	
Species:	Deer
Biologist:	Leslie Schreiber
Herd Unit & No.:	Greybull R.-MD210
Model date:	02/17/15

Clear form

MODELS SUMMARY			Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	74	83		
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	143	155	<input type="checkbox"/> CJ,CA Model	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	28	163	<input type="checkbox"/> SC,J,SCA Mod <input checked="" type="checkbox"/> TS,J,CA Model	

Check best model to create report

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective	
	Field Est	Field SE		Juveniles	Total Males	Juveniles	Total Males			Females
1993			1295	973	2136	1231	440	1753	3423	4000
1994			1218	962	2178	1200	428	1949	3577	4000
1995			1263	937	2347	1235	480	2125	3841	4000
1996			1607	777	2302	1600	421	2095	4115	4000
1997			1533	710	2262	1520	445	2144	4108	4000
1998			1627	716	2291	1618	481	2152	4251	4000
1999			1521	769	2318	1469	534	2118	4121	4000
2000			1496	954	2422	1451	600	2227	4278	4000
2001			1549	891	2399	1494	506	2196	4196	4000
2002			1290	768	2334	1254	381	2040	3675	4000
2003			1366	724	2262	1324	357	2019	3700	4000
2004			1449	877	2417	1421	520	2227	4169	4000
2005			1593	811	2393	1529	465	2169	4162	4000
2006			1540	1119	2698	1498	682	2464	4643	4000
2007			1657	1035	2686	1620	683	2322	4625	4000
2008			1451	957	2476	1384	566	2089	4039	4000
2009			1694	1093	2505	1619	644	2007	4270	4000
2010			1648	1245	2508	1618	762	2108	4488	4000
2011			1143	1030	2277	1056	617	1777	3450	4000
2012			903	801	1876	836	454	1492	2782	4000
2013			1133	797	1759	1063	441	1468	2972	4000
2014			1860	887	1839	1827	570	1626	4023	4000
2015			1322	957	1936	1289	627	1716	3632	4000
2016										4000
2017										4000
2018										4000
2019										4000
2020										4000
2021										4000
2022										4000
2023										4000
2024										4000
2025										4000

Survival and Initial Population Estimates

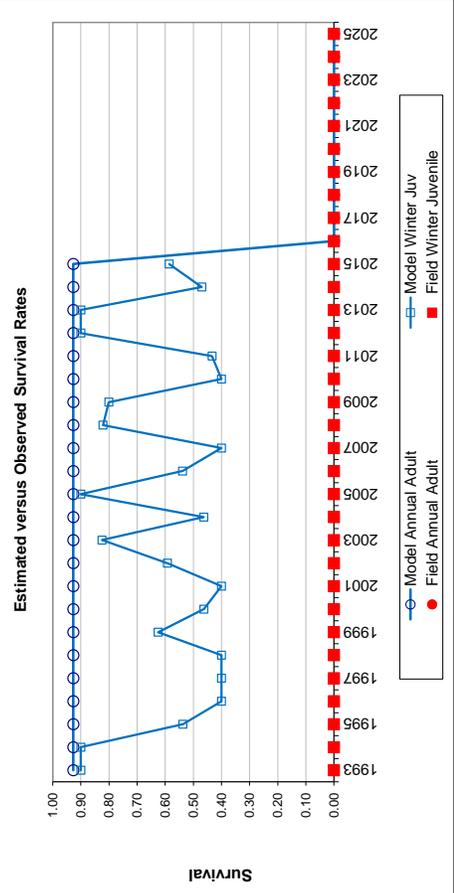
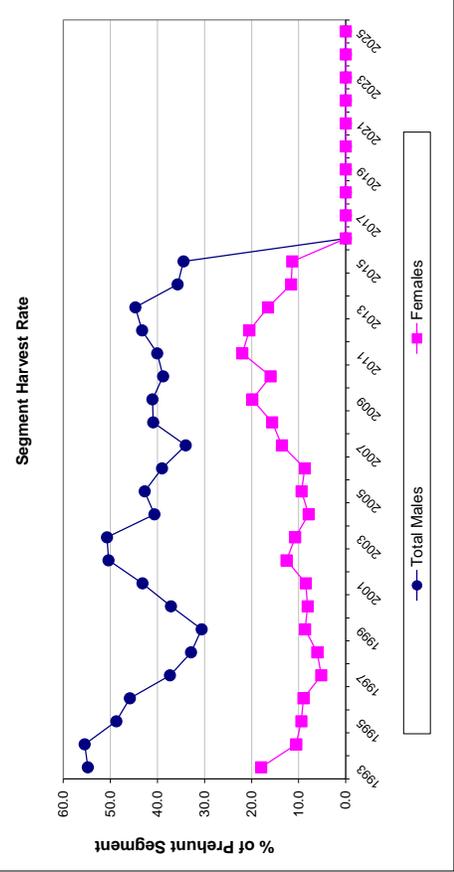
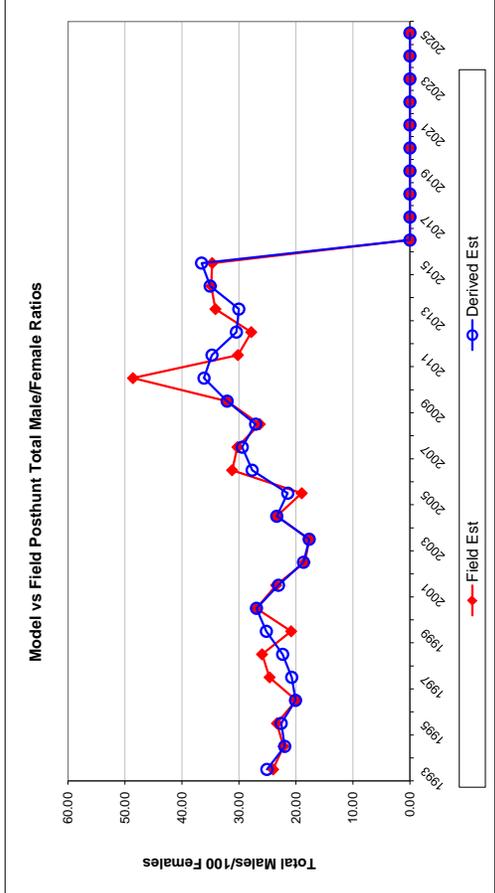
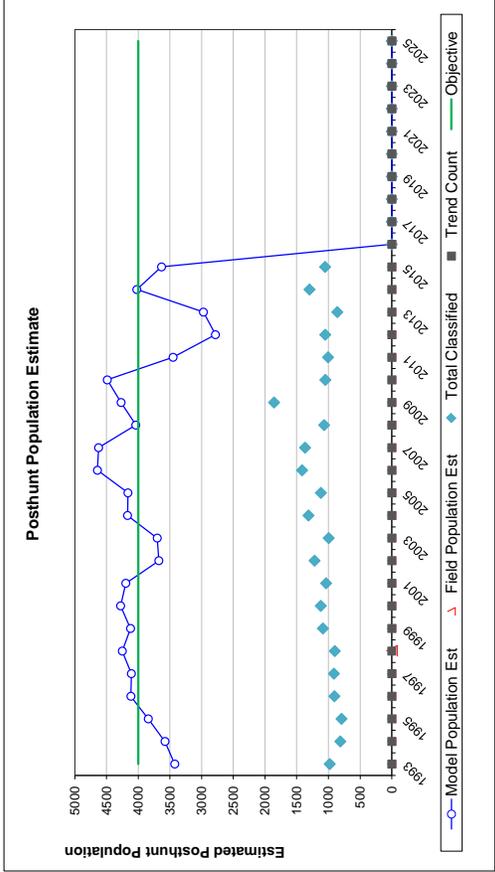
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.90		0.93	
1994	0.90		0.93	
1995	0.54		0.93	
1996	0.40		0.93	
1997	0.40		0.93	
1998	0.40		0.93	
1999	0.63		0.93	
2000	0.46		0.93	
2001	0.40		0.93	
2002	0.59		0.93	
2003	0.82		0.93	
2004	0.46		0.93	
2005	0.90		0.93	
2006	0.54		0.93	
2007	0.40		0.93	
2008	0.82		0.93	
2009	0.80		0.93	
2010	0.40		0.93	
2011	0.43		0.93	
2012	0.90		0.93	
2013	0.90		0.93	
2014	0.47		0.93	
2015	0.59		0.93	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.927
Initial Total Male Pop/10,000 =	0.044
Initial Female Pop/10,000 =	0.175

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

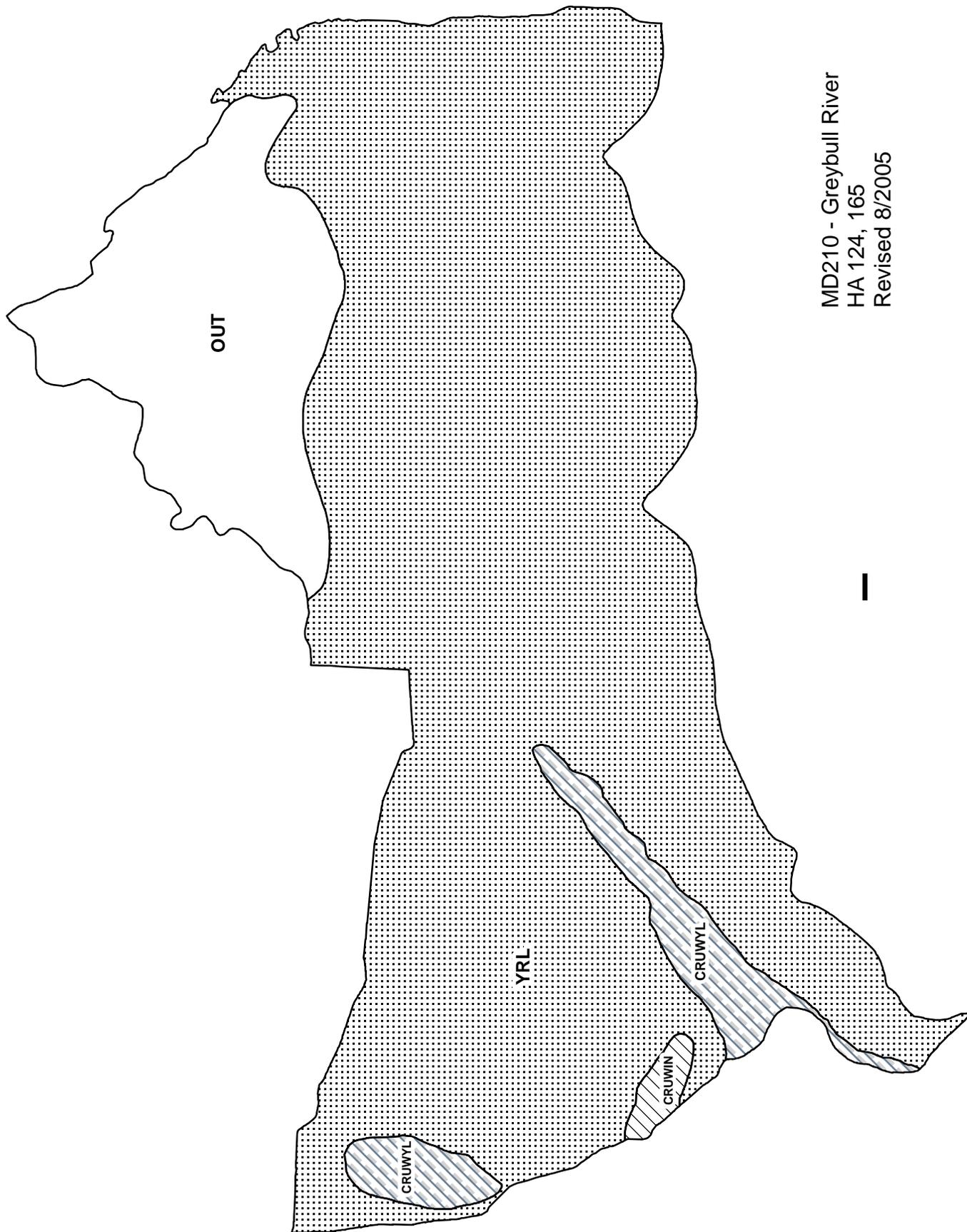
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		70.24	4.87	25.11	24.01	2.43	58		349	882	54.8	18.0	
1994		61.54	4.74	21.97	22.17	2.48	17	485	208	640	55.5	10.5	
1995		58.12	4.59	22.59	23.34	2.57	25	415	201	550	48.7	9.4	
1996		76.36	5.40	20.08	19.96	2.28	7	324	188	436	45.9	9.0	
1997		70.98	5.09	20.74	24.63	2.56	12	241	107	333	37.3	5.2	
1998		75.17	5.43	22.33	25.95	2.70	8	214	126	348	32.9	6.0	
1999		69.35	4.54	25.19	20.84	2.10	47	214	182	681	30.6	8.6	
2000		65.18	4.30	26.93	26.93	2.42	41	322	178	541	37.1	8.1	
2001		68.02	4.60	23.06	23.48	2.31	50	350	185	565	43.2	8.5	
2002		61.45	3.83	18.67	18.46	1.80	33	352	267	652	50.4	12.6	
2003		65.56	4.47	17.68	17.68	1.96	38	334	221	593	50.7	10.7	
2004		63.82	3.86	23.37	23.36	2.03	25	324	173	522	40.6	7.9	
2005		70.51	4.51	21.43	18.98	1.96	58	315	204	577	42.7	9.4	
2006		60.79	3.64	27.69	31.21	2.36	39	397	213	649	39.0	8.7	
2007		69.74	4.16	29.43	30.26	2.40	34	320	331	685	34.0	13.6	
2008		66.25	4.46	27.08	26.35	2.45	61	356	352	769	40.9	15.6	
2009		80.64	4.08	32.08	32.07	2.20	68	408	452	928	41.1	19.9	
2010		76.77	5.40	36.14	48.60	3.94	27	439	364	830	38.8	16.0	
2011		59.43	4.23	34.73	30.19	2.72	79	375	455	909	40.1	22.0	
2012		56.04	3.91	30.46	27.85	2.50	61	315	349	725	43.3	20.5	
2013		72.36	5.48	30.03	34.13	3.32	64	324	264	652	44.7	16.5	
2014		112.38	6.74	35.06	34.86	2.99	30	288	194	512	35.7	11.6	
2015		75.11	5.12	36.57	34.70	3.05	30	300	200	530	34.5	11.4	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



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

## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 122-123

PREPARED BY: LESLIE  
SCHREIBER

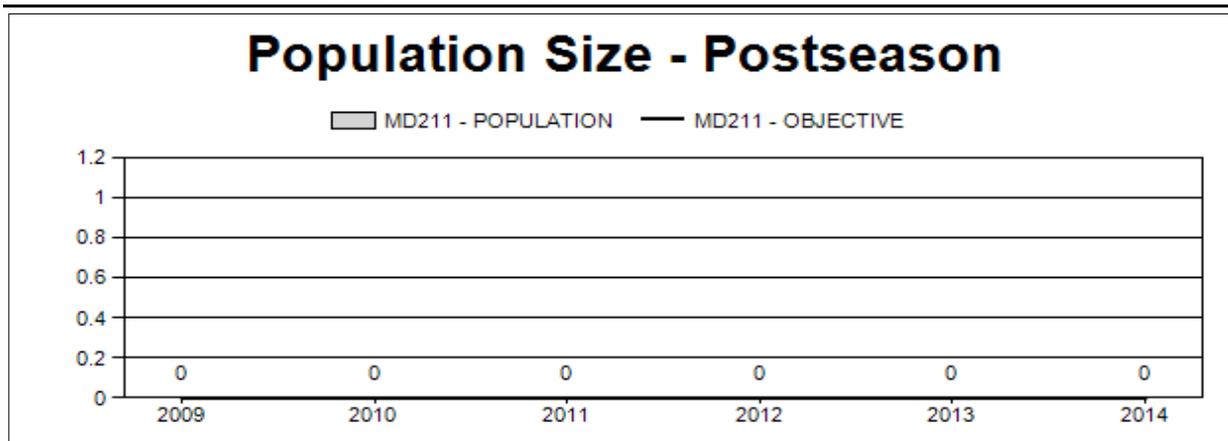
	<u>2009 - 2013</u> <u>Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	0	N/A	N/A
Harvest:	802	813	560
Hunters:	1,430	1,369	1,170
Hunter Success:	56%	59%	48 %
Active Licenses:	1,538	1,533	1,280
Active License Success:	52%	53%	44 %
Recreation Days:	5,862	6,219	6,000
Days Per Animal:	7.3	7.6	10.7
Males per 100 Females	29	33	
Juveniles per 100 Females	78	96	

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

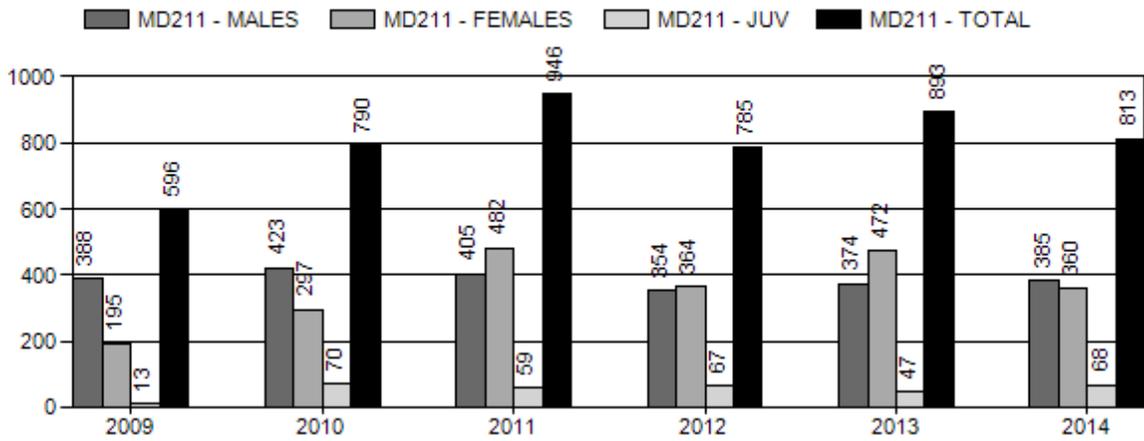
Management Strategy: Recreational  
 Percent population is above (+) or below (-) objective: N/A%  
 Number of years population has been + or - objective in recent trend: 0  
 Model Date: None

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

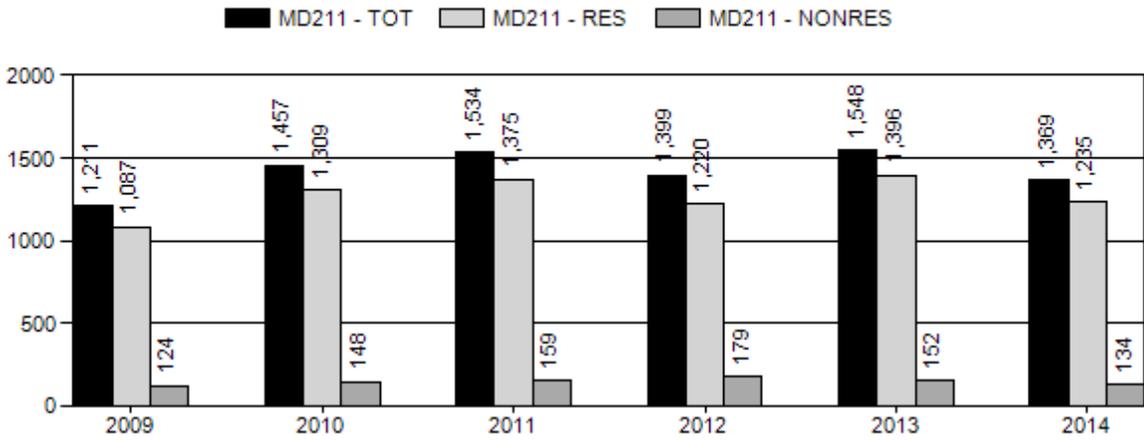
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0%	0%
Males $\geq$ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



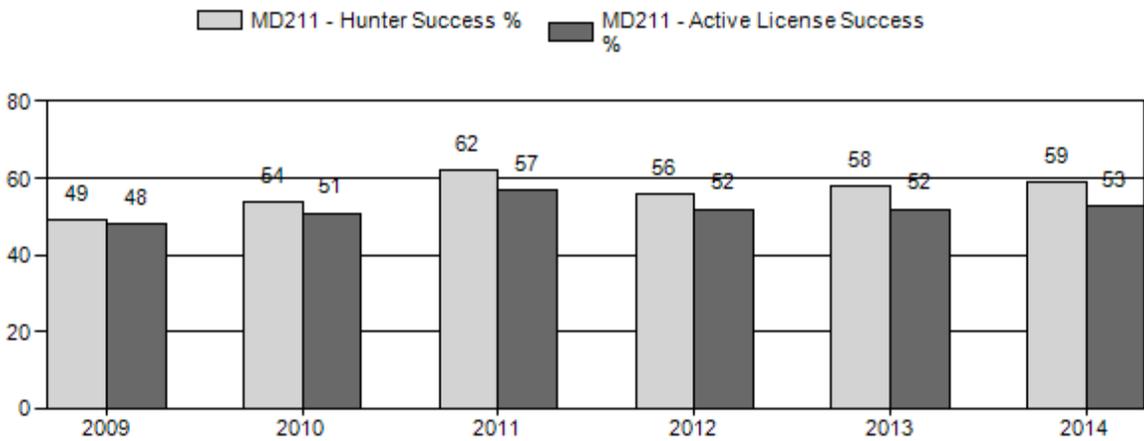
# Harvest



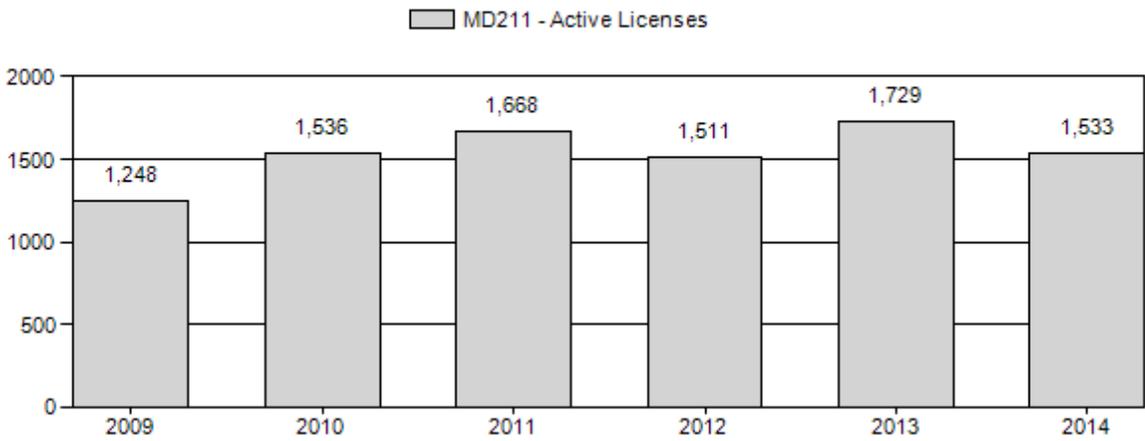
# Number of Hunters



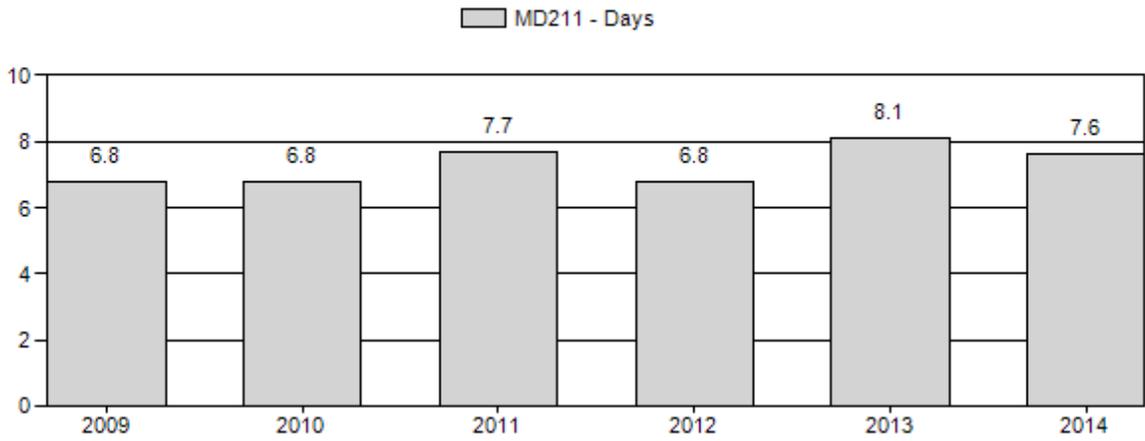
# Harvest Success



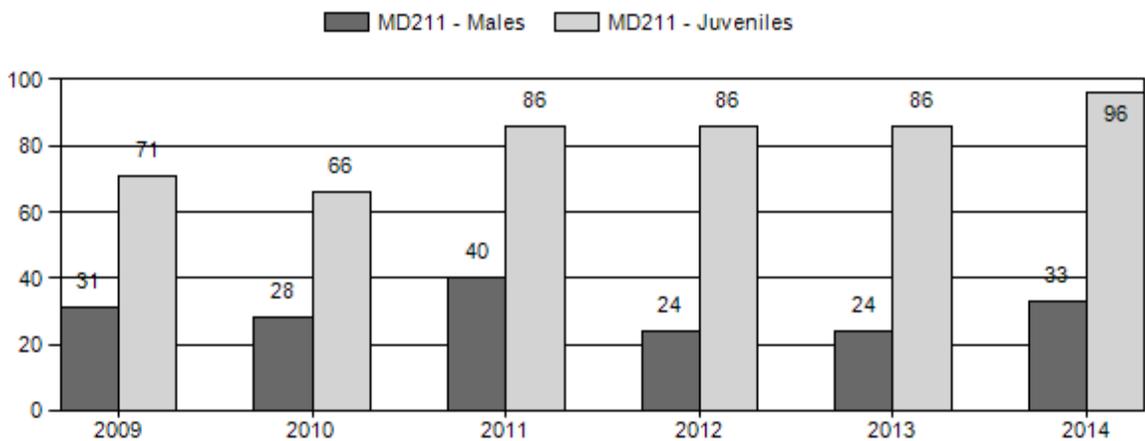
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2009 - 2014 Postseason Classification Summary**

for Mule Deer Herd MD211 - SHOSHONE RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls		Males to 100 Females			Young to			
		Ylg	2+	2+	2+	2+	Total	%	Total	%	Total	%	Cls	Obj	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	UnCls															
2009	0	38	0	0	0	33	71	15%	231	50%	163	35%	465	0	16	14	31	± 0	71	± 0	54
2010	0	30	0	0	0	33	63	15%	224	52%	147	34%	434	0	13	15	28	± 0	66	± 0	51
2011	0	37	0	0	0	31	68	18%	172	44%	148	38%	388	0	22	18	40	± 0	86	± 0	62
2012	0	34	0	0	0	37	71	12%	293	48%	251	41%	615	825	12	13	24	± 0	86	± 0	69
2013	0	18	0	0	0	14	32	12%	131	47%	113	41%	276	810	14	11	24	± 0	86	± 0	69
2014	0	46	0	0	0	42	88	14%	266	44%	255	42%	609	0	17	16	33	± 0	96	± 0	72

**2015 HUNTING SEASONS**  
**Shoshone River Mule Deer Herd Unit (MD211)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
122		Nov. 1	Nov. 10		General license; any deer
		Nov. 11	Nov. 30		General license; antlerless deer
	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
	6	Oct 15	Nov. 30	150	Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land within the Shoshone River drainage
123		Oct. 15	Oct. 31		General license; any deer
	6	Oct. 15	Dec. 31	50	Limited quota; doe or fawn valid on private land south of the Shoshone River
<b>Archery</b> 122, 123		Sept. 1	Sept. 30		Refer to Section 3 of this Chapter

**Region X Non-resident deer quota: 300**

Hunt Area	Type	Quota change from 2014
122	6	-250
122	8	-50
HU Total		-300

## **Management Evaluation**

**Current Management Objective:** none

**2014 Postseason Population Estimate:** none

**2015 Proposed Postseason Population Estimate:** none

**Herd Unit Issues.** Management of the Shoshone River mule deer herd unit using a population objective was eliminated in 2001 due to insufficient classification sample sizes since adequate sample size is a key assumption to all population models. No management goals (e.g., count objectives, buck ratios) were established for this herd due to lack of data; however, our management emphasis is to reduce crop depredation to a minimum yet provide some recreational hunting. We will review this objective in spring of 2016. Farming is the primary land use along and adjacent to riparian areas on private land and provides quality forage compared to the surrounding desert habitat; however, landowner tolerance is low. Thus, managing deer to decrease crop depredation is a focus.

**Weather.** Climate, specifically drought, has affected upland vegetation and water availability on public lands. Thus, deer have moved to agricultural areas in search of better forage. Drought during 2000-04 resulted in mortality of some sagebrush and probably affected herbaceous vegetation. Growing season precipitation in 2014 was slightly below average, but excellent vegetation growth was observed overall in the Bighorn Basin.

**Habitat.** Cheatgrass has established itself on some upland sites, but even before recent droughts, habitat quality is low due to low precipitation and poor soils in most non-agricultural portions of the herd unit. Riparian and agricultural lands make up nearly all of the occupied deer habitat. There are no transects established within the herd unit to measure production and utilization of sagebrush.

**Classification.** Classification surveys have insufficient sample sizes, which result in highly variable ratio estimates. Since few deer are observed, classification surveys in this herd unit is a lower priority among big game herds in the district. In the late 1990s we classified less than 350 deer most years, but since 2007, more than 400 have been surveyed. Recently, sample sizes have totaled over 600 in 2012 and 2014, provided better ratio data and perhaps suggesting an increasing population trend. Over the past 5 years, fawn:doe ratios have ranged between 66-96 fawns:100 does (average=84:100), which indicates this is a highly productive herd.

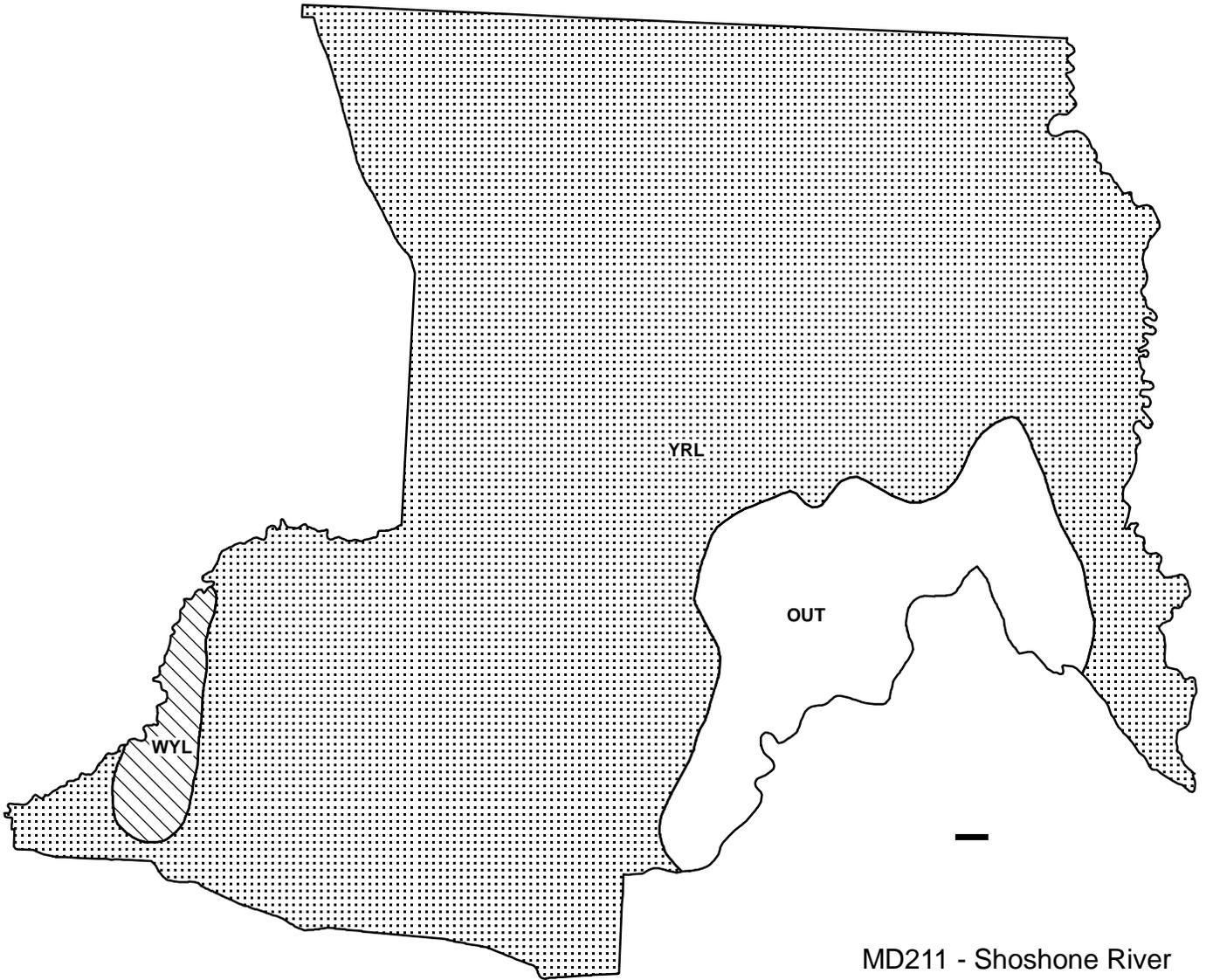
**Harvest.** Harvest statistics are probably the best data we have for this herd unit; however, no clear trends can be discerned to suggest population trends. In 2014, hunters harvested less deer (n=813) compared to 2012 (n=893), and is consistent with active license numbers. Harvest success ranged from a low of 49% in 2009 to 62% in 2011, and mirrors license numbers over the last 6 years. Hunter numbers match the fluctuation in number of doe/fawn licenses issued with 2014 hunter numbers closely matching 2012. Days per animal harvested decreased in 2014 to 7.6 days/deer compared to 8.1 days/deer in 2013, which may not be significant.

**Population.** No population model has been used for the Shoshone deer herd since 2001. However, with more deer classified and hunted in this herd unit than in the past, the time-specific juvenile, constant adult (TSJ,CA) survival model shows promise. But, with decreasing doe/fawn licenses in 2015, we may lose a large portion of our harvest data that drives the model.

**Management Summary.** Regardless of the population level, we will continue to address deer depredation on agricultural crops since private land has most of the deer and deer habitat. The 2015 hunting seasons will have fewer doe/fawn licenses, because crop damage in 2013-14 has subsided; thus, we are returning to maintenance mode. Some hunters continue to ask for more conservative hunting seasons to increase the population and quality and quantity of bucks. It seems that upland habitat has recovered from drought and deer are dispersing further from cropland; therefore, we may be able to increase the population.

### **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.



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

## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD212 - OWL CREEK/MEETEETSE

HUNT AREAS: 116-120

PREPARED BY: BART KROGER

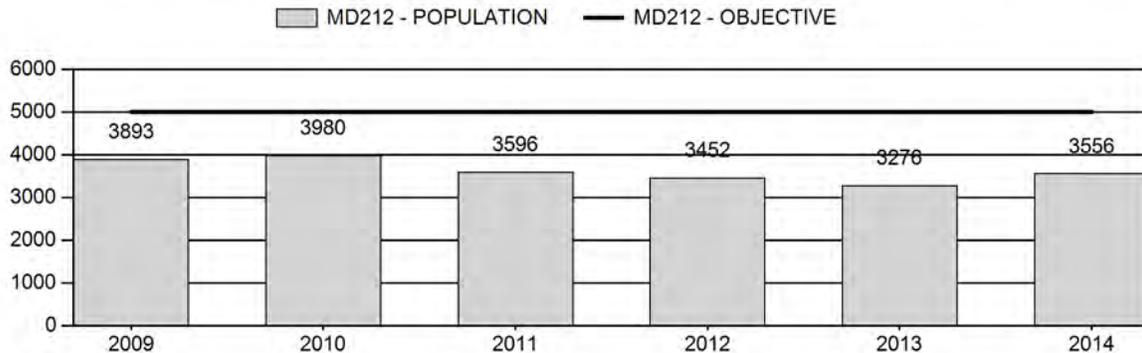
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	3,639	3,556	3,274
Harvest:	311	212	210
Hunters:	398	302	280
Hunter Success:	78%	70%	75%
Active Licenses:	453	312	290
Active License Success:	69%	68%	72%
Recreation Days:	1,740	1,376	1,300
Days Per Animal:	5.6	6.5	6.2
Males per 100 Females	39	41	
Juveniles per 100 Females	61	86	

Population Objective ( $\pm 20\%$ ) : 5000 (4000 - 6000)  
 Management Strategy: Special  
 Percent population is above (+) or below (-) objective: -28.9%  
 Number of years population has been + or - objective in recent trend: 20  
 Model Date: 2/24/2015

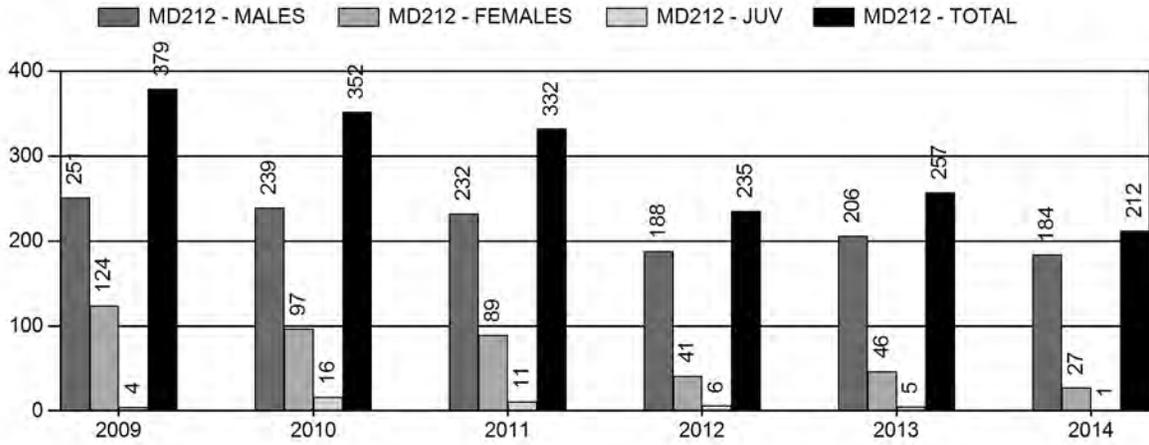
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	2%	1%
Males $\geq 1$ year old:	23%	21%
Juveniles (< 1 year old):	0%	0%
Total:	6%	6%
Proposed change in post-season population:	+8%	-8%

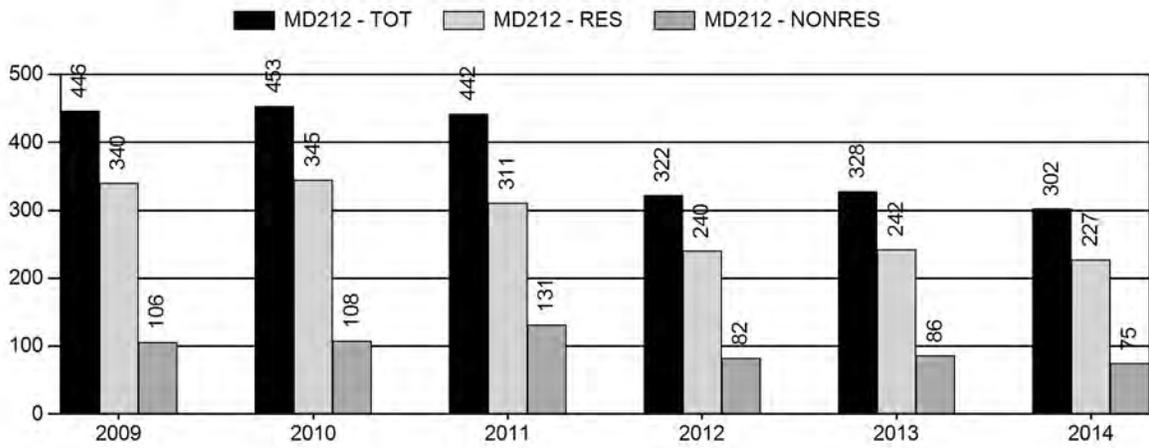
## Population Size - Postseason



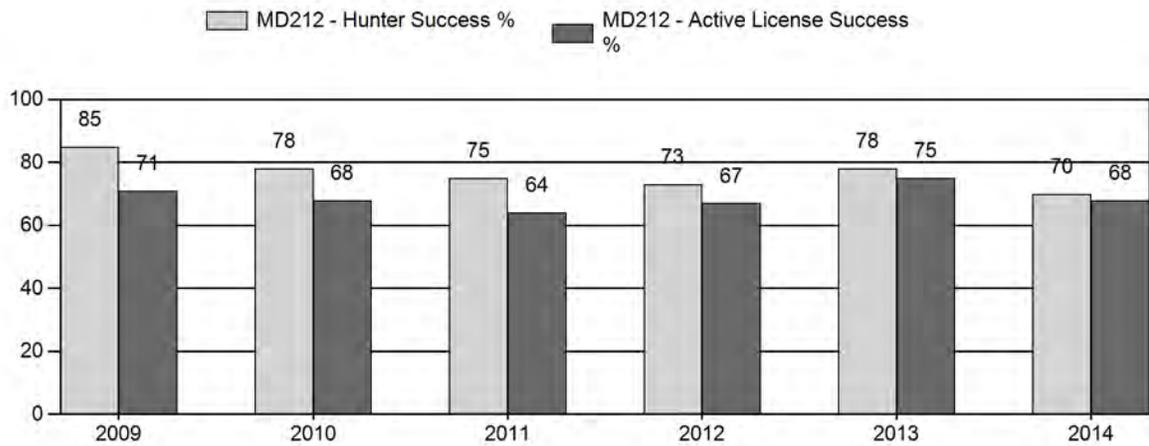
# Harvest



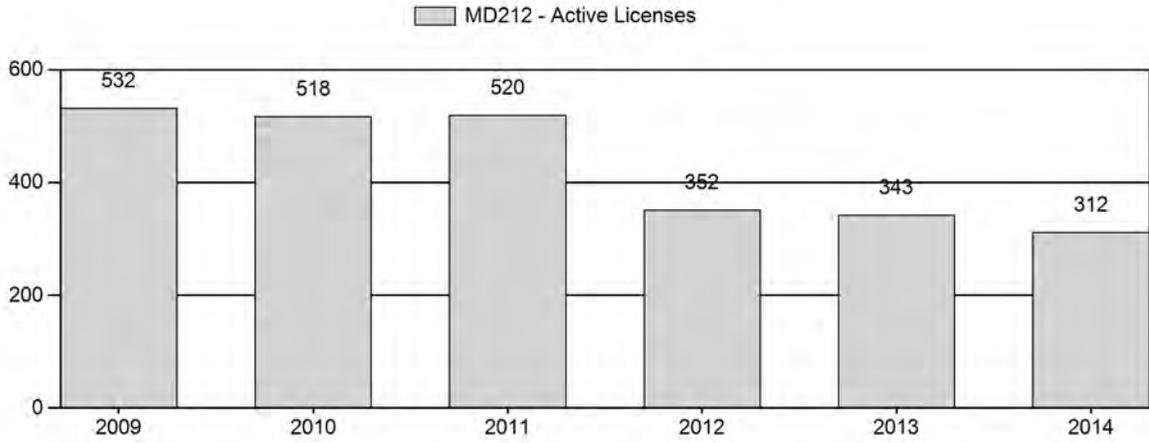
# Number of Hunters



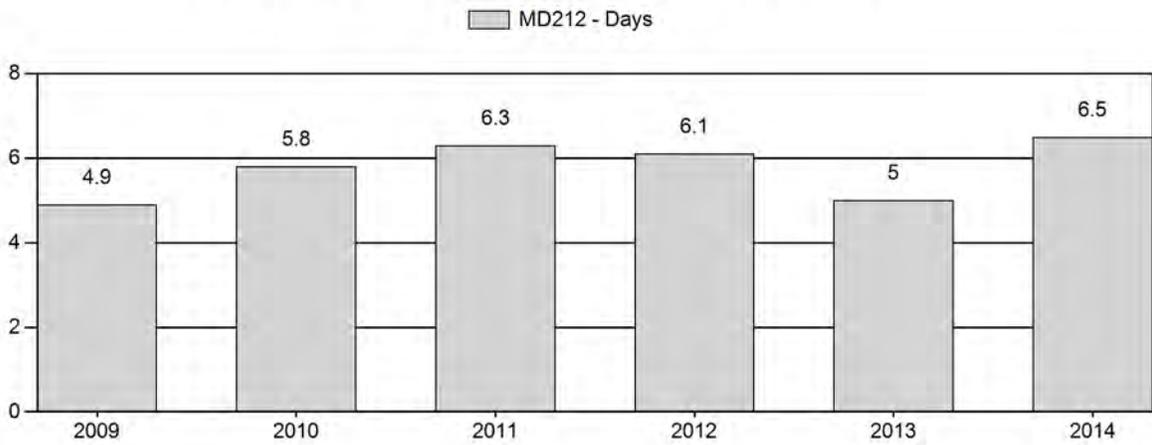
# Harvest Success



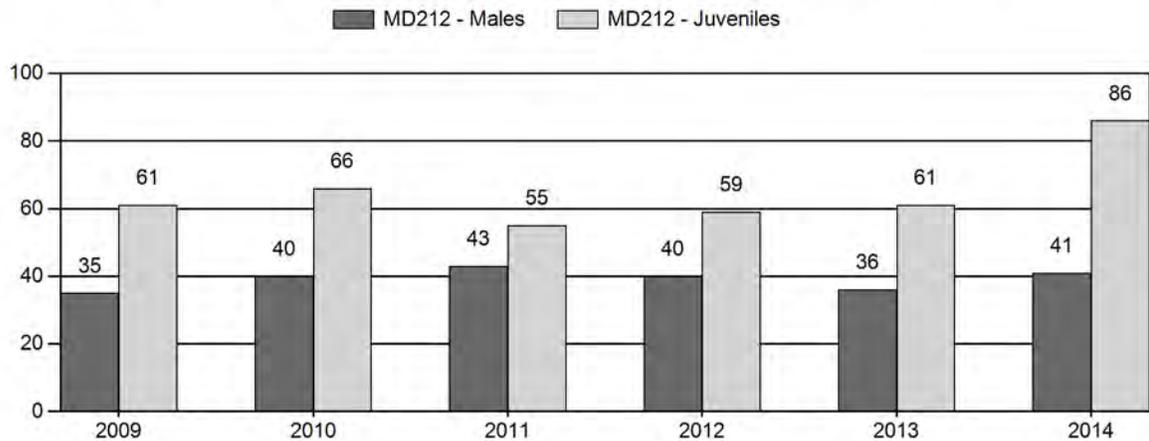
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD212 - OWL CREEK/MEETEETSE

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls	2+ Cls 1	2+ Cls 2	2+ Cls 3	UnCls	Total	%	Total	%	Total			%	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int
2009	3,893	80	0	0	0	157	237	18%	681	51%	417	31%	1,335	957	12	23	35	± 3	61	± 4	45
2010	3,980	78	0	0	0	134	212	19%	532	49%	352	32%	1,096	1,080	15	25	40	± 4	66	± 5	47
2011	3,596	56	0	0	0	175	231	22%	541	50%	300	28%	1,072	901	10	32	43	± 4	55	± 4	39
2012	3,452	34	0	0	0	130	164	20%	406	50%	241	30%	811	910	8	32	40	± 4	59	± 5	42
2013	3,276	37	0	0	0	113	150	18%	413	51%	250	31%	813	916	9	27	36	± 4	61	± 5	44
2014	3,556	27	0	0	0	81	108	18%	265	44%	228	38%	601	1,428	10	31	41	± 5	86	± 9	61

**2015 HUNTING SEASONS  
OWL CREEK/MEETEETSE MULE DEER HERD (MD212)**

Hunt Area	Type	Season Dates		Quota	Limitations
		Opens	Closes		
116	1	Oct. 15	Oct. 31	75	Limited quota; Antlered deer
116, 117, 118	3	Nov. 1	Nov. 30	100	Limited quota; any white-tailed deer
	7	Sep. 1	Oct. 14	100	Limited quota; doe or fawn white-tailed deer valid on private land in the Wood River drainage
	8	Oct. 15	Nov. 30	75	Limited quota; doe or fawn white-tailed deer Hunt Area Hunt Area
117	1	Sep. 15	Oct. 15	50	Limited quota; antlered mule deer or any white-tailed deer
118	1	Oct. 15 Nov. 1	Oct. 31 Nov. 30	25	Limited quota; Antlered deer Unused Hunt Area 118 Type 1 licenses valid for any white-tailed deer
119	1	Nov. 1	Nov. 15	100	Limited quota; Antlered deer
119, 120	3	Oct. 1	Nov. 30	50	Limited quota; any white-tailed deer
119	6	Sep. 15	Nov. 15	25	Limited quota; doe or fawn valid on irrigated land
120	1	Nov. 1	Nov. 15	50	Limited quota; Antlered deer
120	8	Sep. 15	Dec. 15	100	Limited quota; doe or fawn white-tailed deer
Archery: 116, 117, 118, 119, 120		Sep. 1	Sep. 30		Refer to Section 2 of this chapter

Hunt Area	Type	Quota change from 2014
118	1	-15
120	6	-25
<b>HU Total</b>	<b>1</b>	<b>-15</b>
	<b>6</b>	<b>-25</b>

**Management Evaluation**

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

**Management Strategy: Special**

**2014 Postseason Population Estimate: 3600**

**2015 Proposed Postseason Population Estimate: 3300**

**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. The 2014 post-season population estimate is 29% below objective. 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. Model trends currently indicate a slow decline in the population for the past 15 years, which mirrors that of field personnel and most landowners and hunters, along with classification sample sizes and harvest statistics. 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** - The winters of 2011-12 and 2012-13 were mild with low snowpack resulting in mostly good over winter survival. However, the winter of 2010-11 and 2013-14 along with the dry spring and summer of 2012 and 2013 appeared to have been severe enough to cause some die-off and reduced survival. Both herbaceous and shrub growth has been minimal the past three years, except in 2011 and 2014, when spring precipitation was well above normal. Drought conditions have also affected available water in many stock reservoirs and perennial streams.

**Habitat** - Numerous prescribed and wild fires have burned through this herd unit, particularly on winter ranges in Hunt Areas 118 and 119. Locally for this herd unit, long-term drought conditions have contributed to fewer deer occurring on native range, and have forced more deer onto private irrigated crop fields. Two sagebrush transects were established in this herd unit in 2004 (Appendix A). Transect locations include Grass Creek and Wagonhound Bench. Sagebrush leader growth in 2014 for both the Grass Creek and Wagonhound transects was 2.5cm. This growth is down slightly compared to the long-term average. Winter utilization is usually around 15%, but is shared with wintering pronghorn and some elk.

**Field Data** - Both aerial and ground classifications surveys are used in obtaining post-season buck and fawn ratio for this deer herd. Routine classification routes for each Hunt Area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified has declined dramatically in recent years. In 2009, 1,335 deer were classified, while in 2014 only 601 were classified; a decline of 55%. Buck and fawn ratios have remained favorable in recent years, with a 6-year average of 38 bucks and 65 fawns per 100 does. The 2014 fawn ratio was 86:100, the highest on record.

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

**Population** - The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd. This model supported an AIC value of 51, along with a very good fit (17) of the model vs. field male ratios. Population estimate seems reasonable, and reflect field personnel perceptions, harvest and classification sample sizes, which indicate a declining population since about 2007. Because of this, the model is considered a good

representation of the herd. Concerns over the declines in deer numbers are annually heard from hunters and landowners. In fact, the Pitchfork Ranch (HMA) has shut down mule deer hunting the past 6 years in Hunt Area 116 because of very low mule deer numbers, and the LU Ranch (Absaroka Front HMA) annually expresses concerns over declining deer numbers in Hunt Area 118. In Hunt Area 120 in 2014, a total of 71 deer were classified, compared to 340 classified in 2009.

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

**Management Summary** - The only changes for 2015 are to reduce the Type 1 quota in Hunt Area 118 and to eliminate the Type 6 season in Hunt Area 120. Overwhelming public support, during the Mule Deer Initiative public meetings, were to reduce doe/fawn harvest and provide better quality buck hunts. The number of deer classified in Hunt Area 118 has declined by over 90%. The LU Ranch would like to see the season closed in Hunt Area 118. Type 1 license quotas in Hunt Areas 116, 117, 119 and 120 appear adequate, with most of these Hunt Areas having license reductions in recent years. The projected 2014 harvest is roughly 210 deer, similar to 2014. Hopefully this deer herd will start to show improving trends, but it's likely to continue declining into the future because of poor habitat and drought conditions.

<b>INPUT</b>	
Species:	Mule Deer
Biologist:	Bart Kroger
Herd Unit & No.:	Owl Cr/Meeteetse, MD212
Model date:	02/24/15

<b>MODELS SUMMARY</b>		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	26	17	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	51	17	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	126	0	

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective	
	Field Est	Field SE		Juveniles	Total Males	Juveniles	Total Males			Females
1993			1178	1431	2963	572	901	2615	4672	8000
1994			1282	1137	2597	5017	693	2476	4433	8000
1995			1016	995	2513	4524	615	2382	3999	8000
1996			1492	845	2349	4686	585	2273	4343	8000
1997			1287	974	2411	4672	639	2323	4250	8000
1998			1602	957	2391	4950	665	2302	4562	8000
1999			1647	1077	2471	5196	695	2366	4701	8000
2000			1418	1117	2540	5075	785	2453	4648	8000
2001			1192	1120	2540	4852	798	2420	4400	8000
2002			1391	1058	2440	4888	678	2258	4318	8000
2003			1484	1020	2365	4839	663	2197	4297	8000
2004			1411	1024	2331	4766	679	2177	4259	8000
2005			1356	1028	2303	4687	701	2142	4189	8000
2006			1309	1028	2255	4591	678	2071	4051	8000
2007			1280	995	2181	4435	695	2023	3965	8000
2008			1331	991	2122	4444	693	1967	3973	8000
2009			1204	1011	2095	4310	735	1959	3893	8000
2010			1305	1010	2052	4367	747	1946	3980	8000
2011			1035	984	1943	3961	728	1845	3596	8000
2012			1038	890	1783	3710	683	1738	3452	8000
2013			1004	856	1700	3559	629	1649	3276	8000
2014			1368	803	1619	3790	600	1589	3556	5000
2015			933	890	1681	3505	681	1659	3274	5000
2016										5000
2017										5000
2018										5000
2019										5000
2020										5000
2021										5000
2022										5000
2023										5000
2024										5000
2025										5000

Survival and Initial Population Estimates

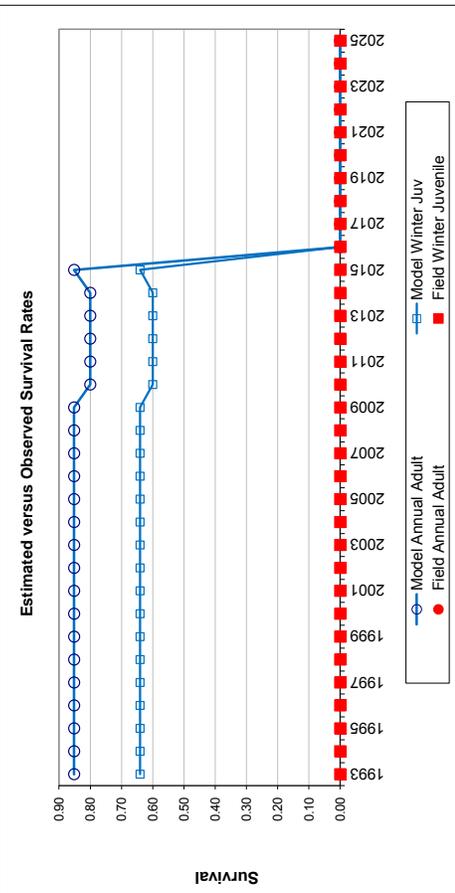
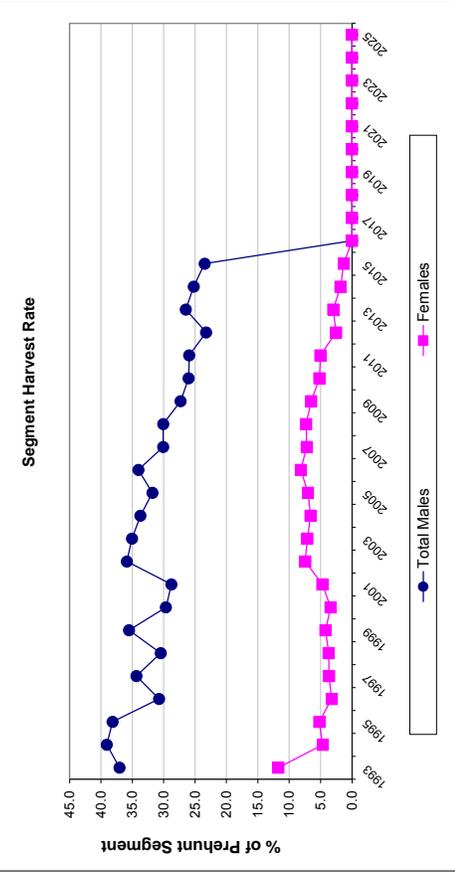
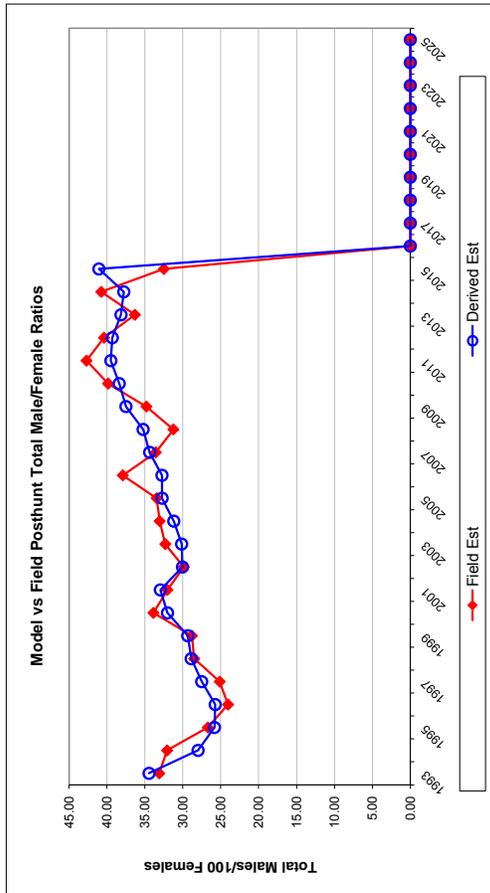
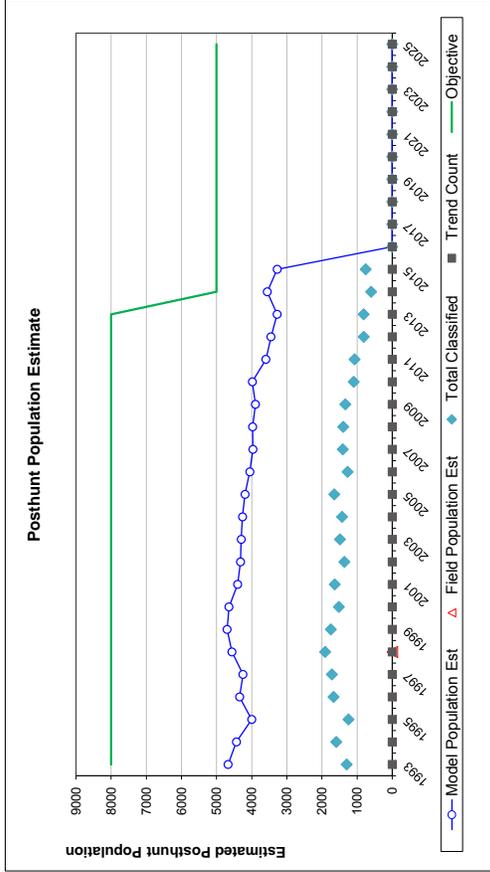
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.64		0.85	
1994	0.64		0.85	
1995	0.64		0.85	
1996	0.64		0.85	
1997	0.64		0.85	
1998	0.64		0.85	
1999	0.64		0.85	
2000	0.64		0.85	
2001	0.64		0.85	
2002	0.64		0.85	
2003	0.64		0.85	
2004	0.64		0.85	
2005	0.64		0.85	
2006	0.64		0.85	
2007	0.64		0.85	
2008	0.64		0.85	
2009	0.64		0.85	
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	0.64		0.85	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Juvenile Survival =		0.641
Adult Survival =		0.852
Initial Total Male Pop/10,000 =		0.090
Initial Female Pop/10,000 =		0.262

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

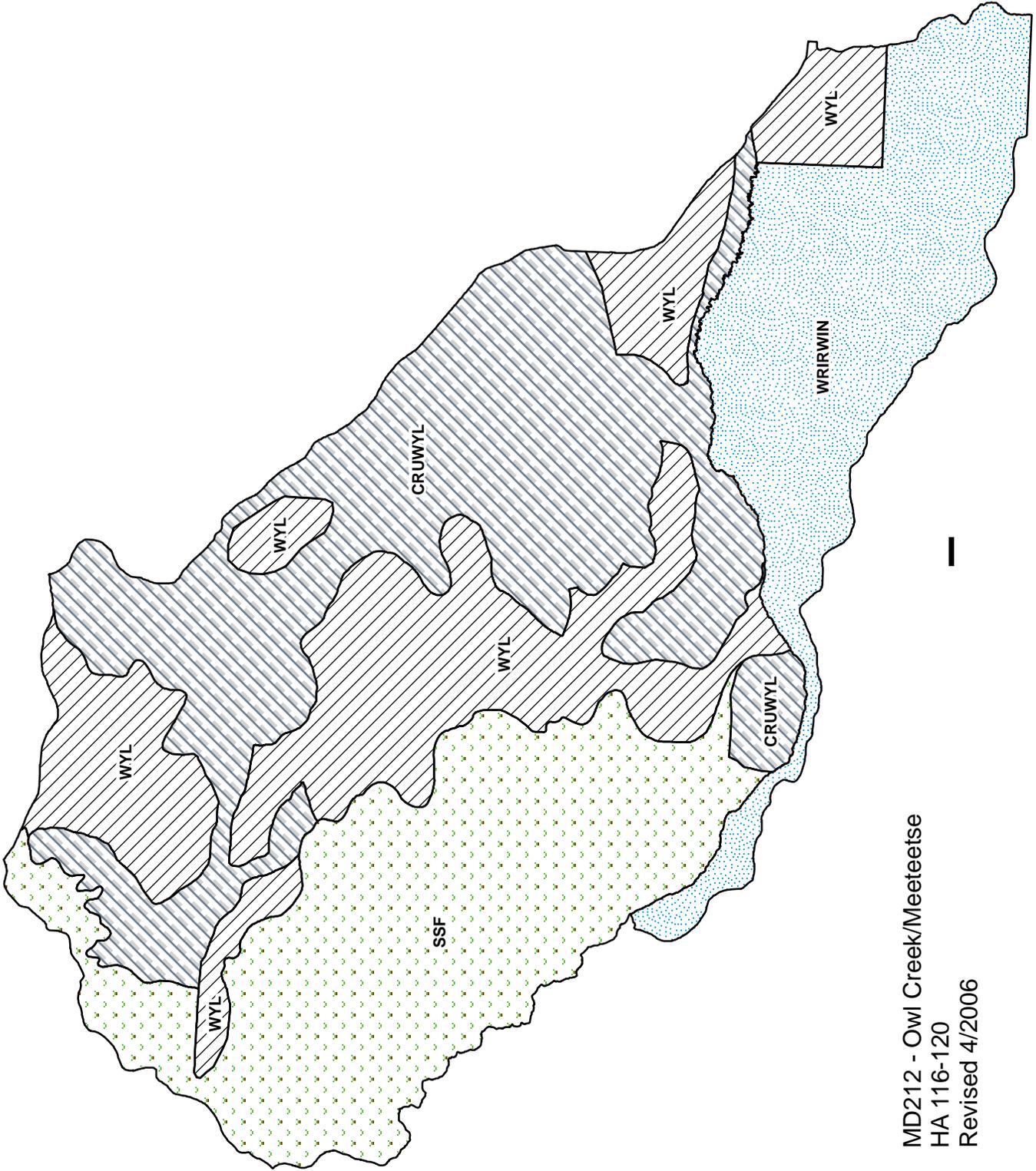
Year	Classification Counts					Harvest							
	Juvenile/Female Ratio		Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of			
	Derived Est	Field Est	Field SE	Derived Est	Field Est					Field SE	Total Males	Females	
1993													
1994	44.19	51.03	2.95	34.45	33.11	2.46	20	482	316	818	37.0	11.7	
1995	51.03	42.01	2.98	27.99	32.07	2.21	17	404	110	531	39.1	4.7	
1996	42.01	65.31	2.84	25.83	26.69	2.14	14	345	119	478	38.1	5.2	
1997	65.31	55.42	3.50	25.73	24.04	1.84	7	236	69	312	30.7	3.2	
1998	55.42	69.33	3.01	27.51	25.13	1.82	0	304	80	384	34.3	3.6	
1999	69.33	69.27	3.49	28.90	28.50	1.95	6	265	81	352	30.5	3.7	
2000	69.27	57.43	3.65	29.36	28.80	2.05	7	348	95	450	35.5	4.2	
2001	57.43	48.94	3.37	32.02	33.88	2.39	8	301	79	388	29.7	3.4	
2002	48.94	61.15	2.83	32.96	32.04	2.16	9	293	109	411	28.8	4.7	
2003	61.15	65.43	3.72	30.05	29.87	2.33	9	345	165	519	35.9	7.4	
2004	65.43	64.45	3.79	30.16	32.31	2.38	15	325	153	493	35.0	7.1	
2005	64.45	62.86	3.83	31.19	33.06	2.47	7	314	140	461	33.7	6.6	
2006	62.86	62.88	3.49	32.73	33.45	2.31	9	297	147	453	31.8	7.0	
2007	62.88	61.58	4.02	32.75	37.91	2.87	6	318	167	491	34.0	8.1	
2008	61.58	66.76	3.71	34.37	33.56	2.49	13	272	143	428	30.1	7.2	
2009	66.76	61.23	3.98	35.24	31.25	2.41	16	271	141	428	30.1	7.3	
2010	61.23	66.17	3.81	37.50	34.80	2.62	4	251	124	379	27.3	6.5	
2011	66.17	55.45	4.55	38.39	39.85	3.24	16	239	97	352	26.0	5.2	
2012	55.45	59.36	3.99	39.49	42.70	3.36	11	232	89	332	25.9	5.0	
2013	59.36	60.53	4.83	39.30	40.39	3.74	6	188	41	235	23.2	2.5	
2014	60.53	86.04	4.85	38.15	36.32	3.46	5	206	46	257	26.5	3.0	
2015	86.04	56.25	7.77	37.78	40.75	4.65	1	184	27	212	25.2	1.8	
2016	56.25		4.69	41.07	32.50	3.28	0	190	20	210	23.5	1.3	
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



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

## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD215 - UPPER SHOSHONE

HUNT AREAS: 110-115

PREPARED BY: DOUG  
MCWHIRTER

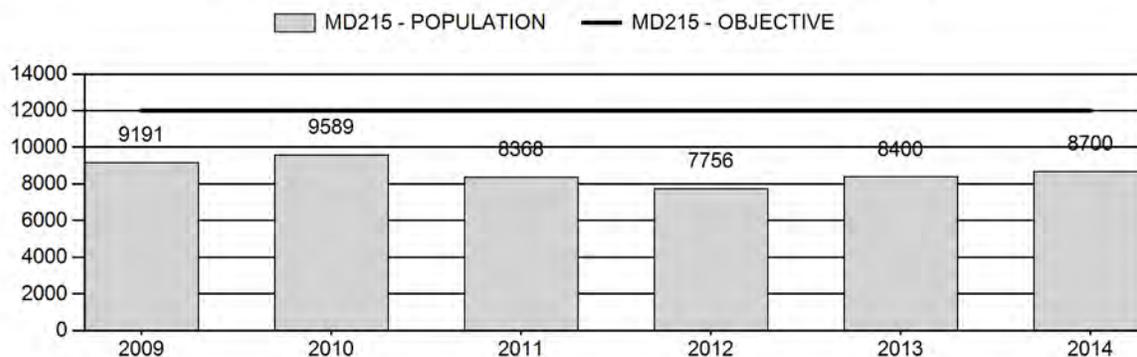
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	8,661	8,700	8,900
Harvest:	1,017	823	800
Hunters:	1,781	1,731	1,500
Hunter Success:	57%	48%	53 %
Active Licenses:	1,927	1,770	1,550
Active License Success:	53%	46%	52 %
Recreation Days:	9,288	8,469	8,000
Days Per Animal:	9.1	10.3	10
Males per 100 Females	27	24	
Juveniles per 100 Females	64	54	

Population Objective (± 20%) :	12000 (9600 - 14400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-27.5%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/26/2015

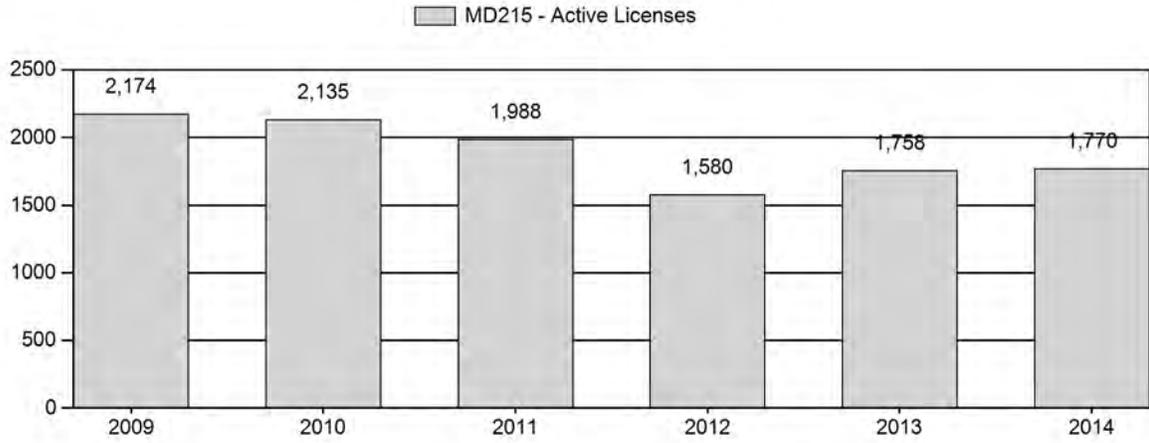
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2.4%	1.7%
Males ≥ 1 year old:	37.6%	42.3%
Juveniles (< 1 year old):	.16%	.26%
Total:	10.6%	8.2%
Proposed change in post-season population:	-10.7%	+2.3%

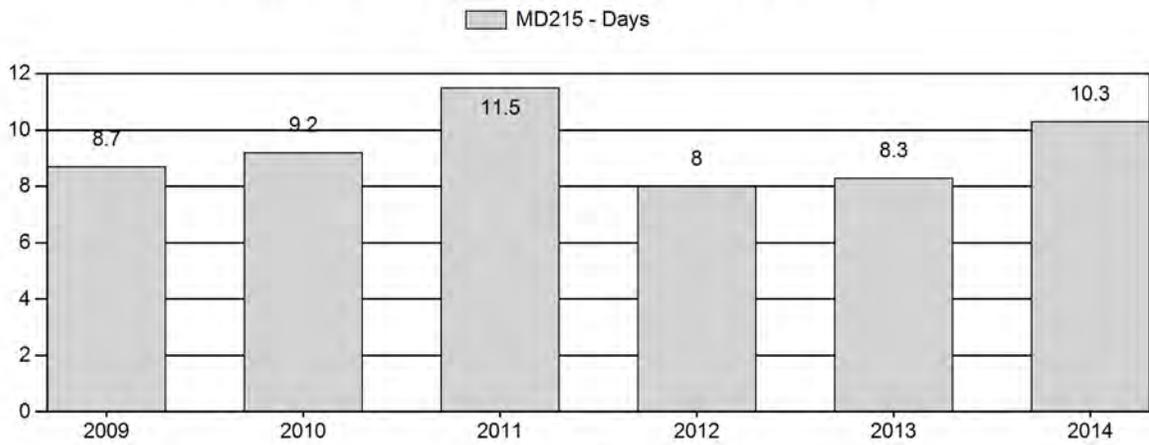
## Population Size - Postseason



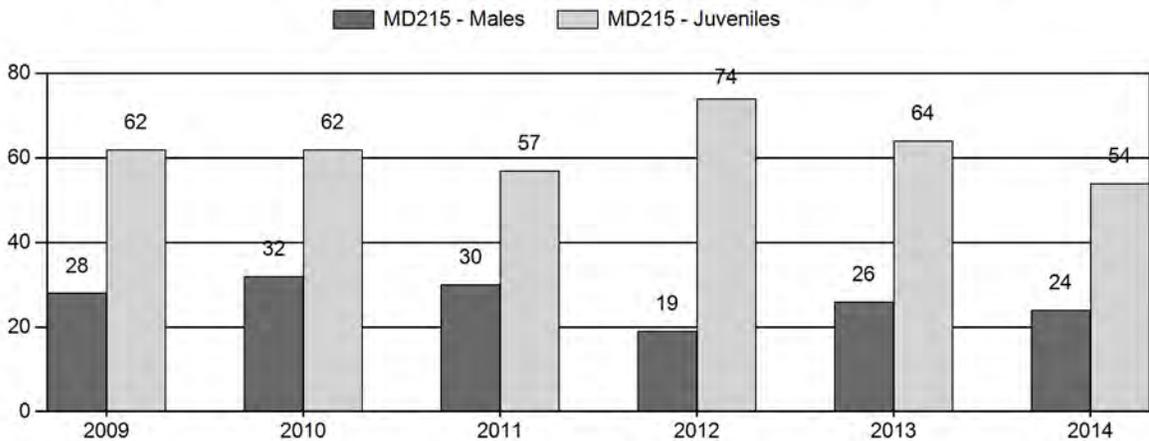
# Active Licenses



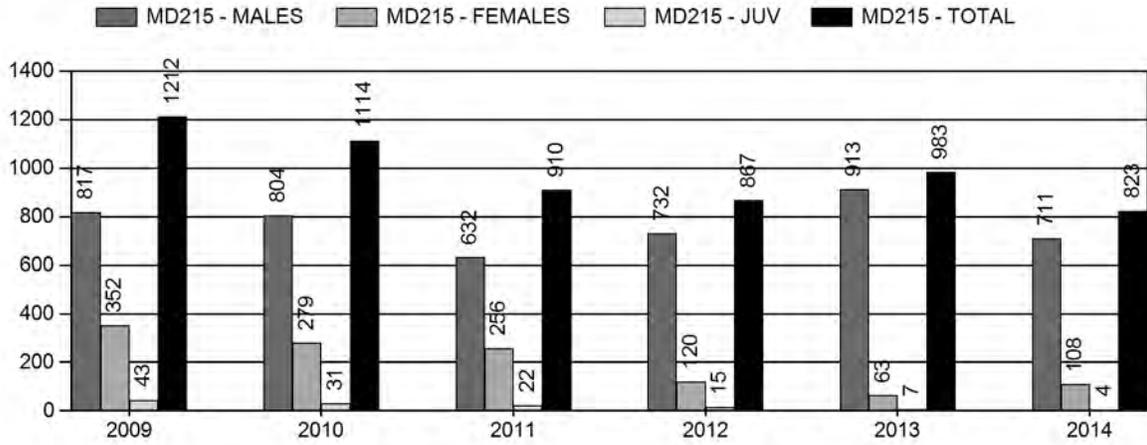
# Days per Animal Harvested



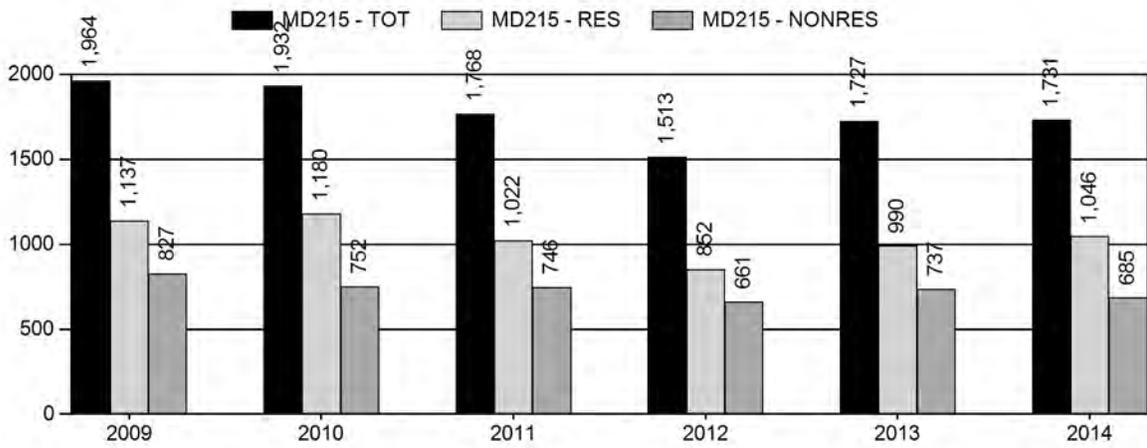
# Postseason Animals per 100 Females



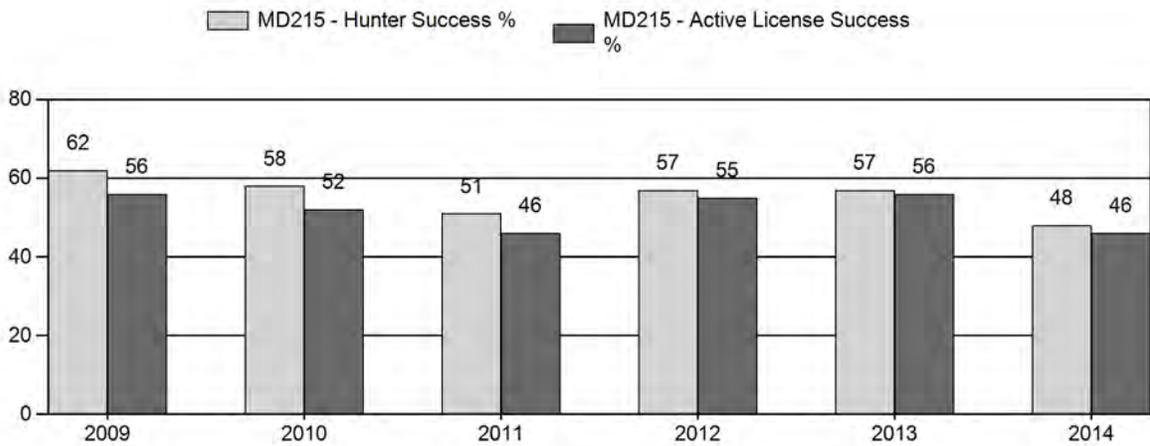
# Harvest



# Number of Hunters



# Harvest Success



### 2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD215 - UPPER SHOSHONE

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
2009	9,191	128	0	0	0	169	297	15%	1,048	53%	647	32%	1,992	1,140	12	16	28	± 2	62	± 4	48
2010	9,589	176	0	0	0	188	364	16%	1,145	52%	707	32%	2,216	1,090	15	16	32	± 2	62	± 3	47
2011	8,368	118	0	0	0	205	323	16%	1,071	53%	613	31%	2,007	1,071	11	19	30	± 2	57	± 3	44
2012	7,756	79	0	0	0	139	218	10%	1,165	52%	863	38%	2,246	1,148	7	12	19	± 1	74	± 4	62
2013	8,400	127	0	0	0	117	244	14%	946	53%	607	34%	1,797	1,148	13	12	26	± 2	64	± 4	51
2014	8,700	98	101	20	4	0	223	13%	945	56%	512	30%	1,680	1,010	10	13	24	± 2	54	± 3	44

**2015 HUNTING SEASONS  
UPPER SHOSHONE MULE DEER HERD (MD215)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
110		Oct. 15	Nov. 10		General license; 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 license; antlered mule deer or any white-tailed deer
	6	Oct. 15	Nov. 10	25	Limited quota; doe or fawn valid off national forest
112		Oct. 15	Nov. 10		General license; antlered mule deer or any white-tailed deer valid on national forest
		Nov. 1	Nov. 10		General license; any deer valid off national forest
112, 113	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
	6	Oct. 15	Nov. 10	25	Limited quota; doe or fawn valid off national forest
	8	Oct. 15	Dec. 31	100	Limited quota; doe or fawn white-tailed deer
113		Oct. 15	Nov. 10		General license; antlered mule deer or any white-tailed deer valid on national forest
		Nov. 1	Nov. 10		General license; any deer valid off national forest
114		Oct. 15	Nov. 10		General license; antlered deer
115		Sep. 10	Oct. 22		General license; antlered deer
Archery 110-114		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter
115		Sep. 1	Sep. 9		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
111	7	-25
<b>Total</b>	<b>7</b>	<b>-25</b>
<b>Reg F NR Quota</b>	<b>950</b>	<b>-300</b>

### Management Evaluation

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

**Management Strategy: Recreational**

**2014 Postseason Population Estimate: ~8,700**

**2015 Proposed Postseason Population Estimate: ~8,900**

**Herd Unit Issues.** The Upper Shoshone Herd Unit is dominated by migratory deer, although some non-migratory deer do exist in the North and South Fork Shoshone River valleys. These deer exhibit mediocre productivity, as evidenced by the 20-year (1994-2013) average fawn:doe ratio of 61.1 fawns:100 does (range 42:100 – 74:100). Buck harvest is dictated by the influence of weather upon the timing of fall migrations and whether or not they arrive on low elevation winter ranges prior to the standard closing date of November 10. This has created a situation where buck harvest and consequently buck:doe ratios vary widely. In response to this variation, periodic 4-point regulations are implemented for 2 years to protect primarily yearling bucks and assist in recovery of buck:doe ratios. This fluctuation is represented in postseason buck:doe ratios, which have averaged 26.3 bucks:100 does over the past 20 years (1994-2013), but have ranged from 14:100 to 35:100.

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

**Weather.** Weather conditions during the 2014 biological year were characterized by near normal spring-summer moisture, and severe early winter conditions that moderated dramatically after the first of the year. It is unknown what the overall impact of such a winter will be until spring classifications are conducted in April.

**Habitat.** Two sagebrush transects are monitored in this herd unit; one in the North Fork of the Shoshone River and one in the South Fork of the Shoshone River, but no data for the 2014 biological year is available.

**Field Data.** Buck:doe ratios collected in 2014 were 24:100, which is slightly below the long-term average for this herd, but definitely within the range observed over the last 20 years (1994-2013). As the population will now be allowed to grow by another 35%, the sheer abundance of bucks will increase substantially as well. Fawn ratios in 2014 were well below average for this herd unit, at only 53 fawns:100 does.

**Harvest Data.** A total of 711 bucks were harvested in 2014, which represents a drop from that seen in 2013 (913), but more closely resembles harvest achieved in 2008-2012 (632-818). Antlerless deer harvest was reduced in 2012-2014, and represents the fewest antlerless deer harvested since 1999-2001.

There were 1,731 hunters in the Upper Shoshone herd unit in 2014 and hunter numbers have remained relatively consistent over the last 10 years (2004-2013 avg. 1,887 hunters), and have traditionally harbored a large proportion of non-resident hunters, averaging 43.6% over the 2004-2013 period (range 38.9% - 49.9%). In 2014, the percentage of non-resident hunters was 39.6%.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be relatively accurate. The postseason population estimate for 2014 is 8,700 deer, or 28% below the population objective, which is much lower than previous estimates. Under previous estimates, more conservative antlerless seasons were implemented in 2012 so the new lower estimate only means the deer herd will be allowed to grow further than previously planned.

With the intent of letting the population grow as fast as possible, doe/fawn harvest was restricted as much as possible starting in 2014, and will continue for the foreseeable future. The 2015 seasons and the impacts of the 2014-2015 winter could result in a post-season 2015 population of 8,900 deer, slowly growing toward the objective of 12,000. Because the population is 30% below objective, and to prevent buck ratios from falling further, the Region F non-resident quota will be reduced by 300 (to 950). This will be offset by the creation of Region X, with a nonresident quota of 300.

<b>INPUT</b>	
Species:	Mule Deer
Biologist:	Doug McWhirter
Herd Unit & No.:	Upper Shoshone
Model date:	02/19/15

Clear form

MODELS SUMMARY			Relative AICc	Notes
	Fit			
CJ,CA	Constant Juvenile & Adult Survival	142	152	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	186110	186119	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	6	186	

**Population Estimates from Top Model**

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective	
				Juveniles	Total Males	Females	Total Males			Females
1993				3904	2775	7349	1810	6663	12309	12000
1994				4988	3193	7127	1720	6775	13446	12000
1995				3822	2684	6782	1569	6190	11533	12000
1996				2617	2027	5772	782	5093	8461	12000
1997				2579	1542	5037	1153	4701	8378	12000
1998				3045	1685	4561	1280	4394	8697	12000
1999				2765	1927	4450	1267	4359	8386	12000
2000				3760	2269	4776	1000	4691	9443	12000
2001				3598	2486	5477	1212	5389	10189	12000
2002				3016	2261	5648	1306	5459	9776	12000
2003				3139	1763	5130	1171	4950	9255	12000
2004				2967	2360	5423	1559	5233	9756	12000
2005				3400	2577	5556	1882	5382	10652	12000
2006				3578	2664	5501	1422	5337	10314	12000
2007				3737	2704	5878	1503	5582	10792	12000
2008				2218	2376	5682	1570	5235	9001	12000
2009				3038	2260	5232	1362	4844	9197	12000
2010				3100	2450	5273	1565	4966	9597	12000
2011				2592	2012	4769	1317	4487	8373	12000
2012				2995	1581	4151	766	4019	7762	12000
2013				2913	1961	4597	956	4528	8390	12000
2014				2568	2083	4977	1301	4859	8722	12000
2015				3005	1951	4835	1126	4753	8873	12000
2016				3046	1961	4901	1136	4818	8989	12000
2017										12000
2018										12000
2019										12000
2020										12000
2021										12000
2022										12000
2023										12000
2024										12000
2025										12000

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	0.90		0.81	
1994	0.52		0.81	
1995	0.40		0.81	
1996	0.70		0.81	
1997	0.59		0.81	
1998	0.59		0.81	
1999	0.90		0.81	
2000	0.89		0.81	
2001	0.71		0.81	
2002	0.47		0.81	
2003	0.90		0.81	
2004	0.89		0.81	
2005	0.67		0.81	
2006	0.87		0.81	
2007	0.62		0.81	
2008	0.90		0.81	
2009	0.90		0.81	
2010	0.49		0.81	
2011	0.40		0.81	
2012	0.90		0.81	
2013	0.90		0.81	
2014	0.70		0.81	
2015	0.70		0.81	
2016	0.70		0.81	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

**Parameters:**

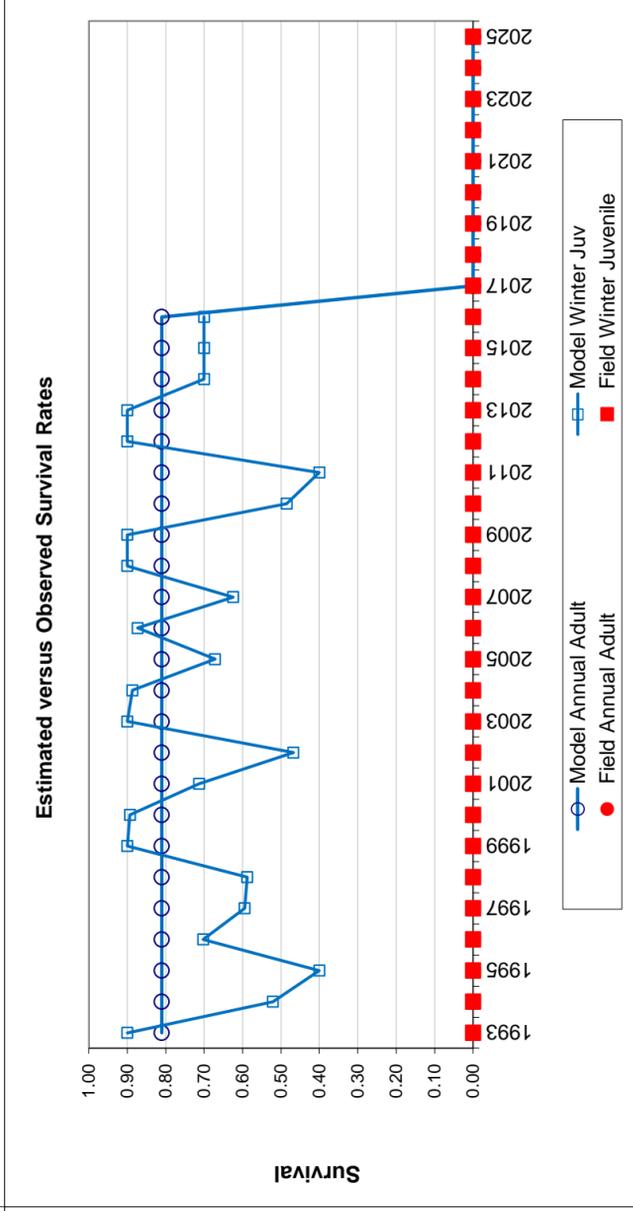
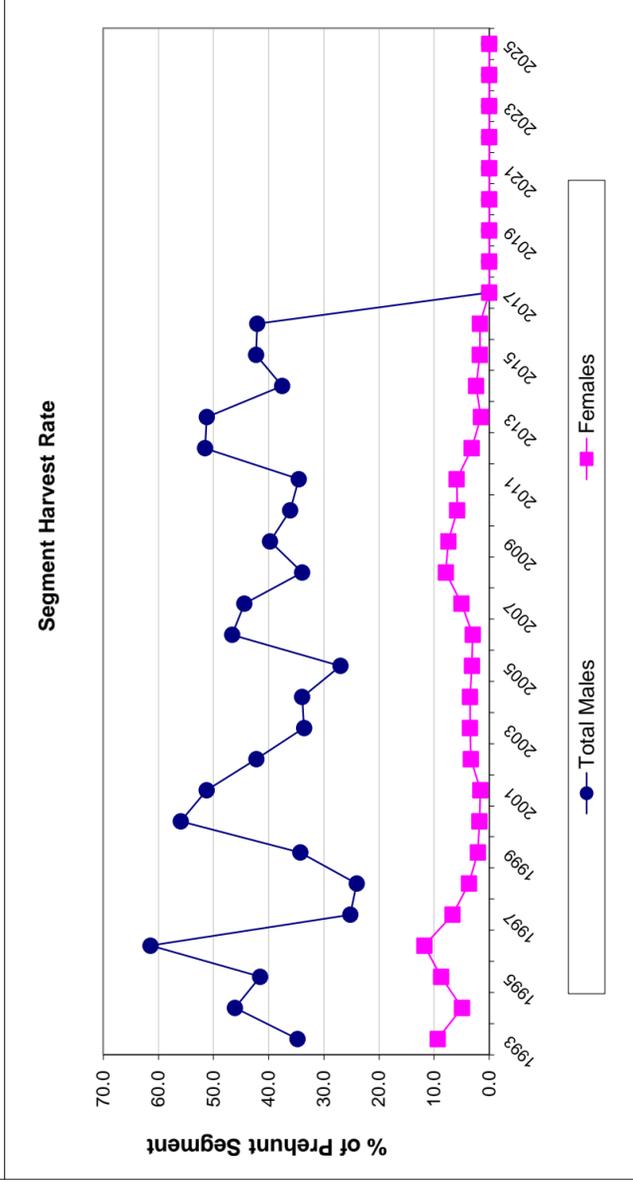
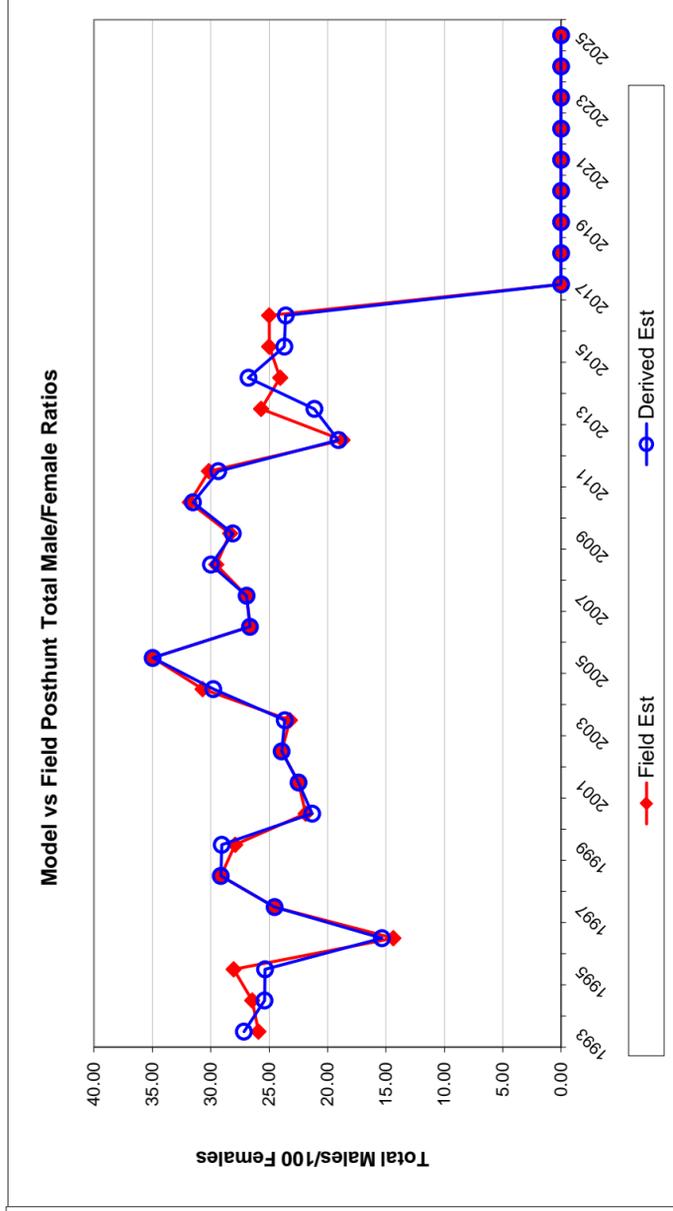
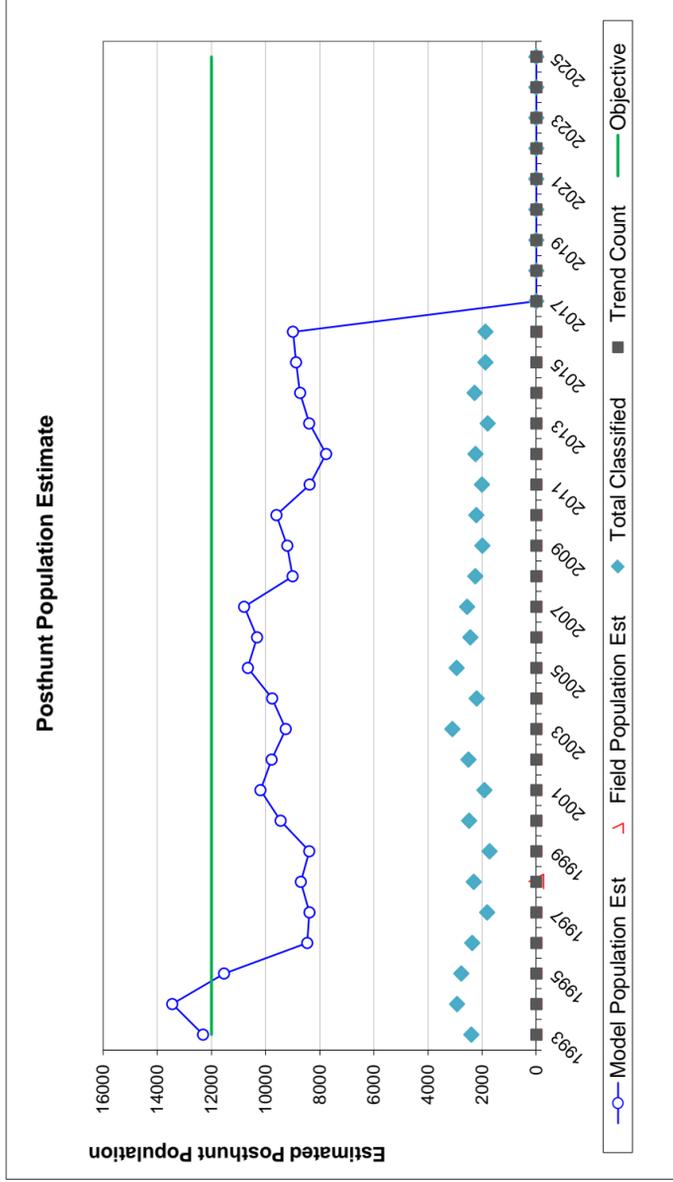
Adult Survival =	0.811
Initial Total Male Pop/10,000 =	0.181
Initial Female Pop/10,000 =	0.666

**MODEL ASSUMPTIONS**

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

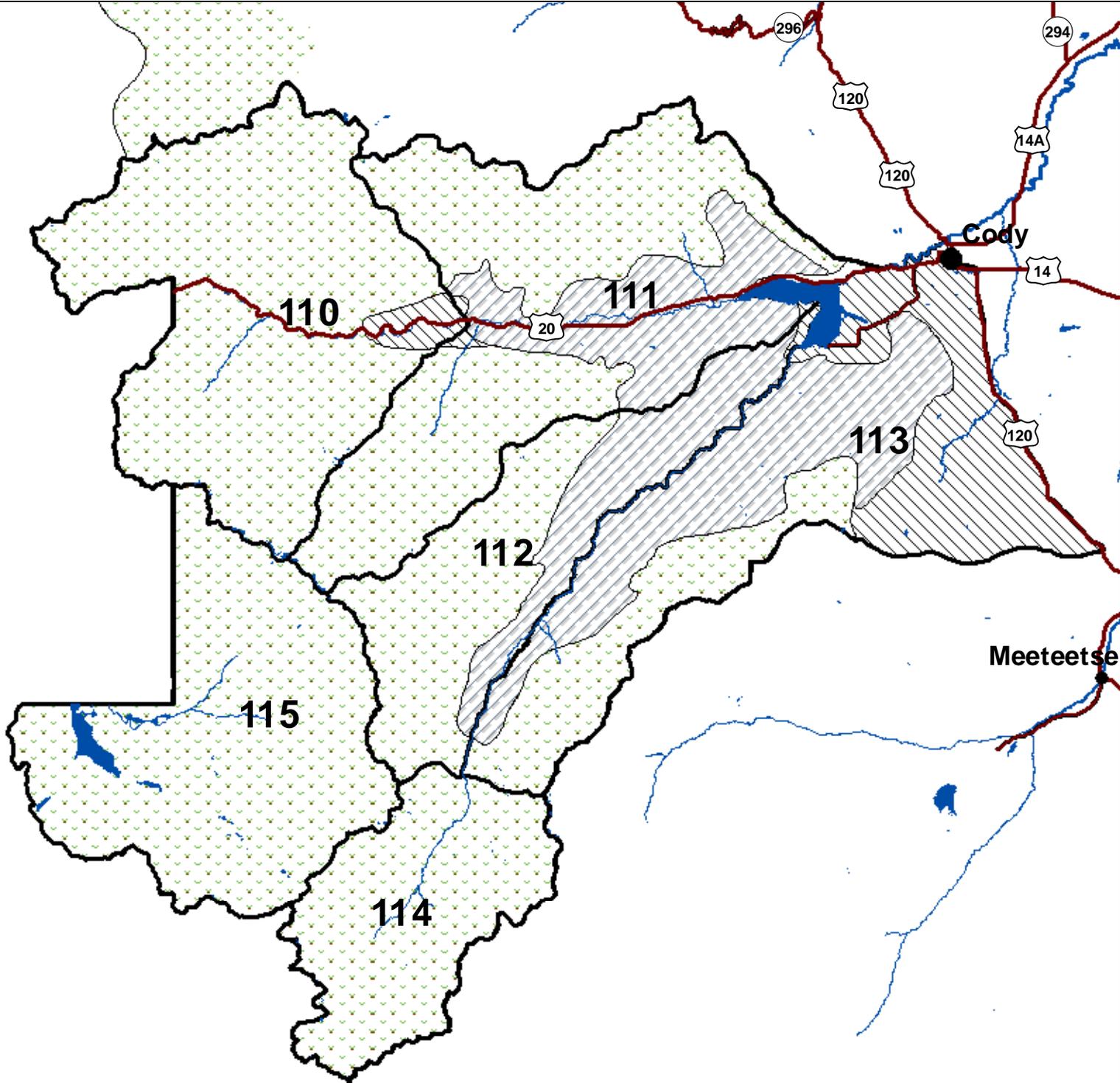
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Total Harvest			Segment Harvest Rate (% of			
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females	
1993		57.57	2.63	27.16	25.92	1.58	62	877	624	1563	34.8	9.3	
1994		73.07	2.94	25.39	26.45	1.51	34	1339	320	1693	46.1	4.9	
1995		60.98	2.59	25.35	28.04	1.56	43	1014	538	1595	41.6	8.7	
1996		50.77	2.31	15.34	14.37	1.07	28	1132	617	1777	61.4	11.8	
1997		53.68	2.85	24.53	24.53	1.73	50	353	305	708	25.2	6.7	
1998		68.81	3.15	29.14	29.13	1.80	20	368	152	540	24.0	3.7	
1999		63.34	3.39	29.06	27.91	1.99	4	600	83	687	34.3	2.1	
2000		80.00	3.42	21.31	21.87	1.47	7	1154	77	1238	55.9	1.8	
2001		66.57	3.31	22.48	22.49	1.65	9	1158	80	1247	51.2	1.6	
2002		55.14	2.47	23.93	23.93	1.46	5	868	171	1044	42.2	3.3	
2003		63.30	2.49	23.66	23.23	1.31	5	538	163	706	33.6	3.5	
2004		56.63	2.75	29.78	30.70	1.85	3	728	172	903	33.9	3.5	
2005		62.95	2.63	34.97	34.97	1.78	11	632	158	801	27.0	3.1	
2006		66.61	2.97	26.64	26.65	1.64	21	1129	149	1299	46.6	3.0	
2007		66.41	2.89	26.93	26.93	1.61	27	1092	269	1388	44.4	5.0	
2008		41.93	2.13	29.98	29.53	1.71	21	733	406	1160	33.9	7.9	
2009		61.74	3.09	28.11	28.34	1.86	43	817	352	1212	39.8	7.4	
2010		61.75	2.95	31.52	31.79	1.91	31	804	279	1114	36.1	5.8	
2011		57.24	2.90	29.35	30.16	1.91	22	632	256	910	34.5	5.9	
2012		74.08	3.33	19.07	18.71	1.38	16	741	120	877	51.5	3.2	
2013		64.16	3.34	21.12	25.69	1.85	7	913	63	983	51.2	1.5	
2014		52.75	2.50	26.77	24.05	1.52	4	711	108	823	37.6	2.4	
2015		63.00	3.20	23.70	25.00	1.77	10	750	75	835	42.3	1.7	
2016		63.00	3.20	23.58	25.00	1.77	10	750	75	835	42.1	1.7	
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  WIN
-  WYL
-  YRL
-  SSF

**MD215 - Upper Shoshone  
HA 110-115  
Revised 4/2006**



## 2014 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2014 - 5/31/2015

HERD: MD216 - CLARKS FORK

HUNT AREAS: 105-106, 109, 121

PREPARED BY: DOUG  
MCWHIRTER

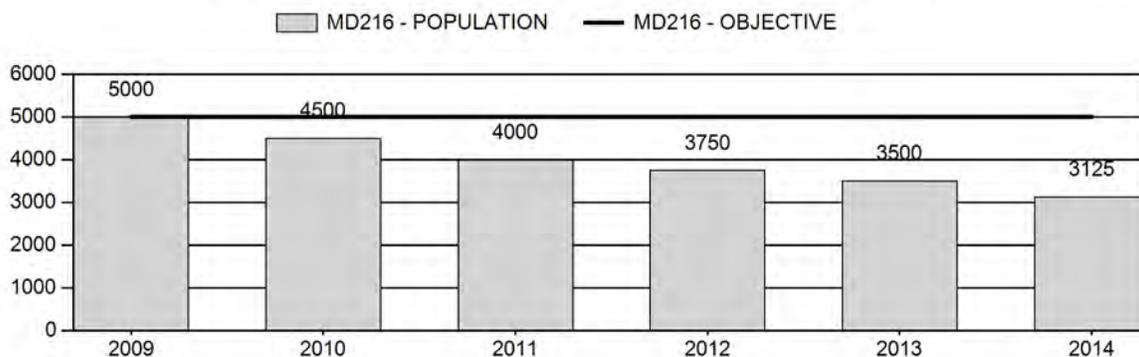
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	4,150	3,125	2,750
Harvest:	896	707	310
Hunters:	1,680	1,533	900
Hunter Success:	53%	46%	34%
Active Licenses:	1,785	1,631	950
Active License Success:	50%	43%	33%
Recreation Days:	8,012	8,139	4,500
Days Per Animal:	8.9	11.5	14.5
Males per 100 Females	28	29	
Juveniles per 100 Females	61	52	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-37.5%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/19/2015

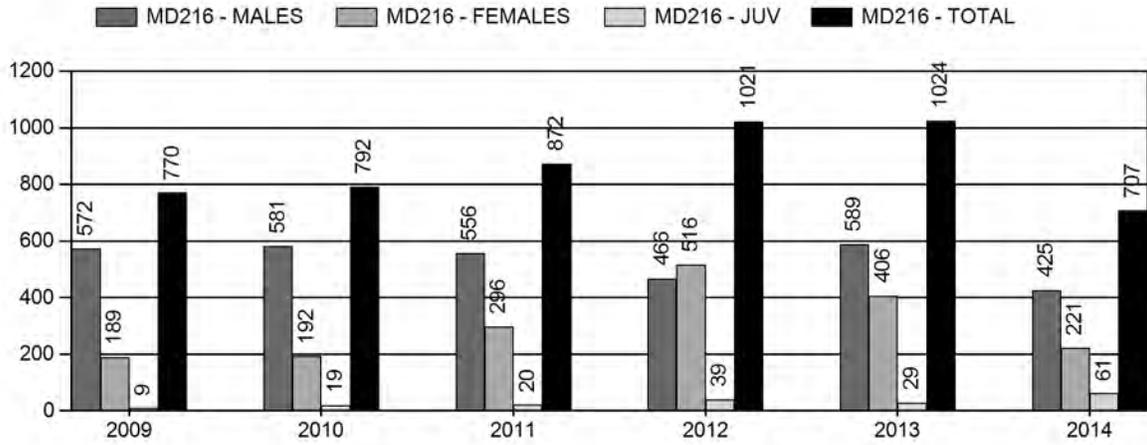
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	11.7%	3.4%
Males ≥ 1 year old:	44.9%	47.3%
Juveniles (< 1 year old):	1.0%	.3%
Total:	14.9%	9.9%
Proposed change in post-season population:	-13.2%	-12.1%

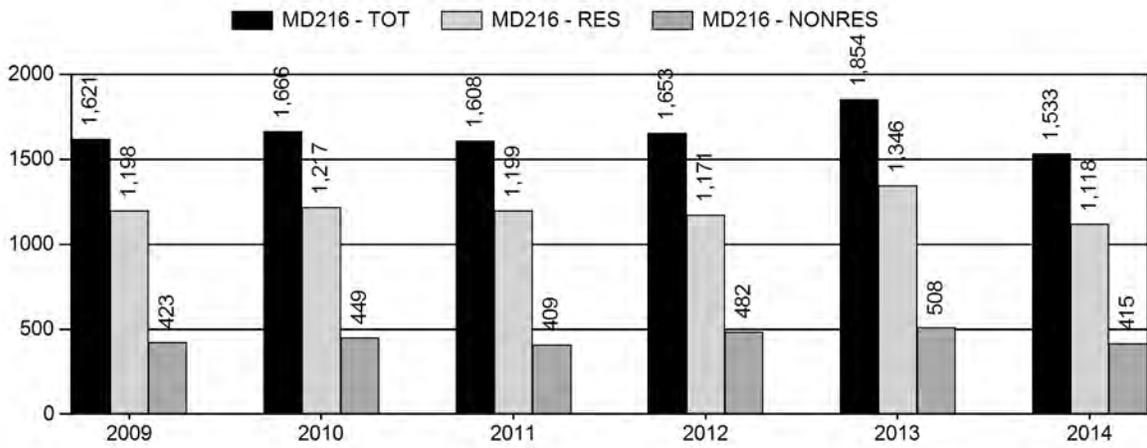
## Population Size - Postseason



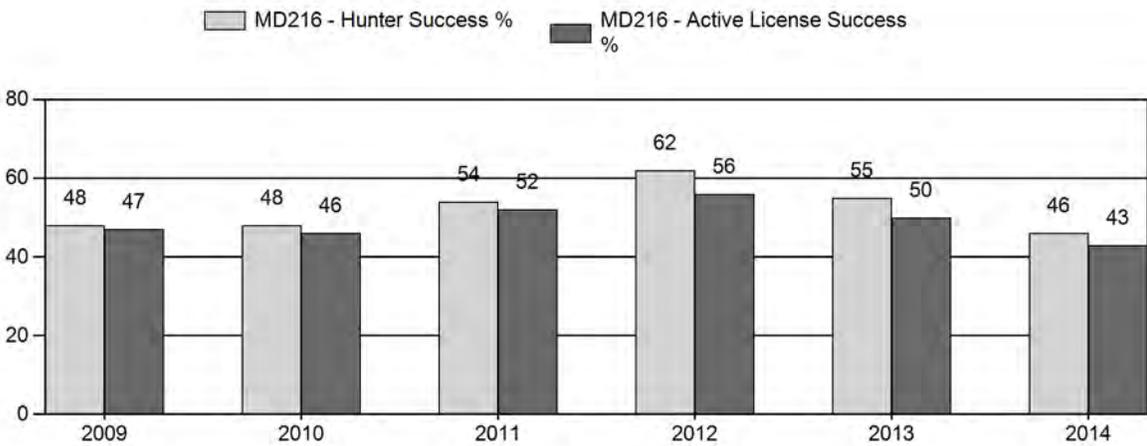
# Harvest



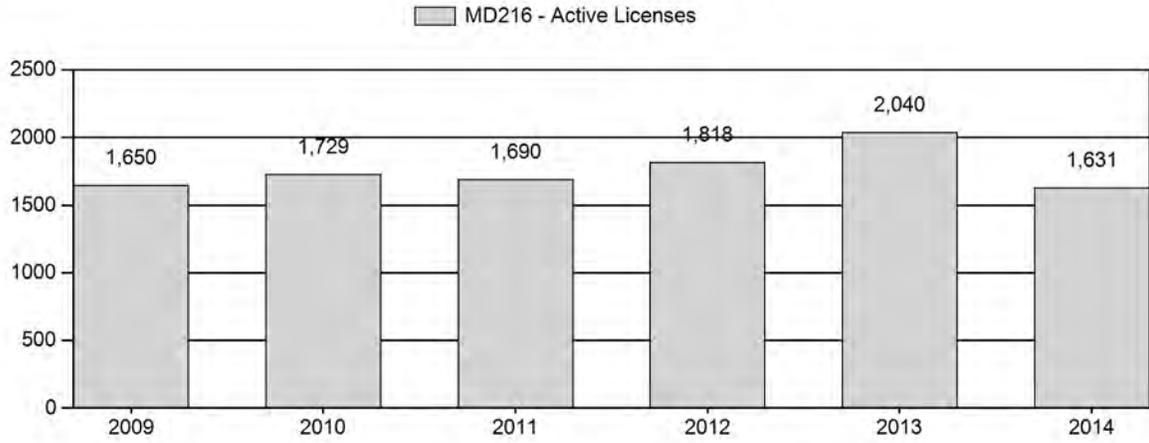
# Number of Hunters



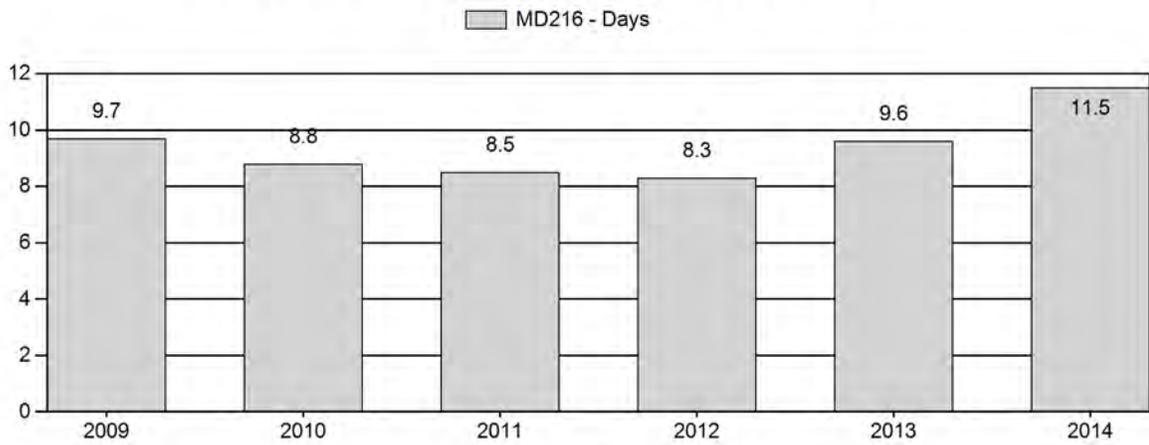
# Harvest Success



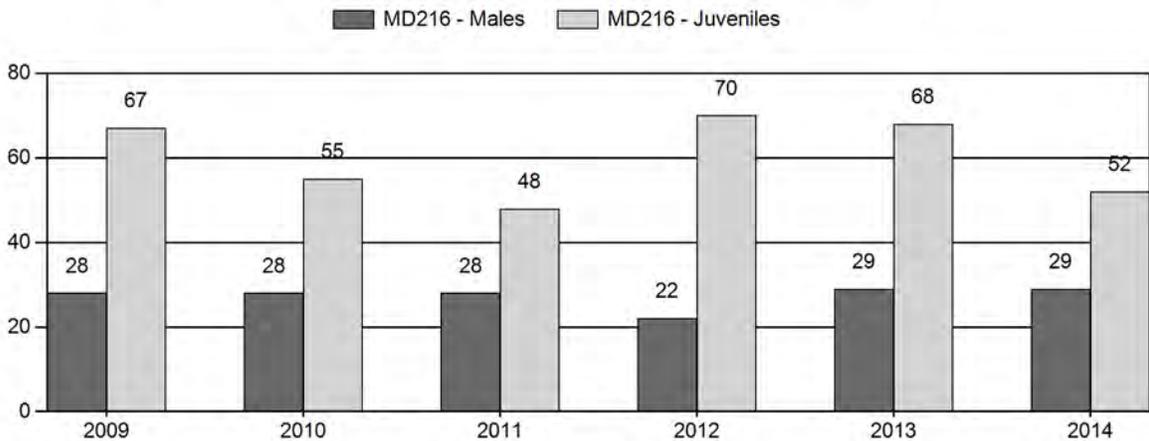
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD216 - CLARKS FORK

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
2009	5,000	76	0	0	0	146	222	14%	789	51%	527	34%	1,538	1,219	10	19	28	± 2	67	± 4	52
2010	4,500	89	0	0	0	135	224	16%	788	55%	431	30%	1,443	1,043	11	17	28	± 2	55	± 3	43
2011	4,000	52	0	0	0	133	185	16%	656	57%	315	27%	1,156	1,051	8	20	28	± 3	48	± 4	37
2012	3,750	23	0	0	0	62	85	11%	386	52%	270	36%	741	947	6	16	22	± 3	70	± 6	57
2013	3,500	71	0	0	0	95	166	15%	576	51%	390	34%	1,132	1,083	12	16	29	± 3	68	± 5	53
2014	3,125	48	63	39	11	0	161	16%	550	55%	288	29%	999	893	9	21	29	± 3	52	± 4	41

**2015 HUNTING SEASONS  
CLARKS FORK MULE DEER HERD (MD216)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
105		Oct. 1	Oct. 31		General license; antlered mule deer or any white-tailed deer valid on national forest
		Nov. 1	Nov. 5		General license; any deer valid off national forest
	6	Nov. 6	Nov. 30	25	General license; antlerless deer valid off national forest 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 license; antlered mule deer or any white-tailed deer
121		Nov. 1	Nov. 10		General license; any deer
		Nov. 11	Nov. 30		General license; antlerless deer
	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
	6	Oct. 15	Nov. 30	150	Limited quota; doe or fawn
Archery 105, 106, 109, 121		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
105	6	-75
121	6	-250
<b>Total</b>		<b>-325</b>
<b>Reg F NR Quota</b>	<b>950</b>	<b>-300</b>

## **Management Evaluation**

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

**Management Strategy: Special (HA106, 109) Recreational (HA105, 121)**

**2014 Postseason Population Estimate: ~3,100**

**2015 Proposed Postseason Population Estimate: ~2,750**

**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 portions of 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 remedied during the Herd Unit Review of the Clarks Fork Herd Unit in 2014 when Hunt Area 121 was removed and placed in the Shoshone River Herd Unit with Hunt Areas 122 and 123. The herd unit objective for the “new” Clarks Fork Herd Unit (Hunt Areas 105, 106, 109) was changed to 5,000 deer.

**Weather.** Weather conditions during the 2014 biological year were characterized by near normal spring-summer moisture, and quite severe early winter conditions that moderated dramatically after the new year.

**Habitat.** No habitat monitoring data is collected in this herd unit.

**Field Data.** Fawn recruitment in 2014 was poor, with only 52 fawns:100 does. This compares to the most recent 10-year (1994-2013) average fawn:doe ratio of 59.9 fawns:100 does (range 48:100 – 70:100). Buck ratios were 29:100 in 2014. Buck ratios averaged 25.0 bucks:100 does over the 1994-2013 period (range 19:100 – 30:100), but recently have trended higher (27.7 bucks:100 does) since removing the General License season in November in Area 106 and portions of Area 105.

**Harvest Data.** Since removing the General License season in November in Area 106 and portions of Area 105, buck harvest has declined as intended, resulting in higher postseason buck:doe ratios and more older age class bucks in the population. This was accomplished primarily by reducing hunter numbers, especially when bucks are most vulnerable in November. For example, in Area 106, 2008-2013 hunter numbers declined from the previous 5-year (2003-2007) average of 587 hunters/year to 483 hunters/year, while hunter success remained similar (approximately 37%) over both periods. Current management in Hunt Areas 105, 106, and 109 is preserving buck:doe ratios at acceptable levels, while encouraging the population of migratory deer to grow. Antlerless deer harvest has not occurred in Hunt Area 109 for over 15 years and for over 30 years in Hunt Area 106.

The 2011-2013 hunting seasons in damage-prone agricultural areas of Areas 105 and 121 resulted in some of the highest doe/fawn harvest on record for either hunt area. Deer numbers

and damage claims have been reduced in these areas and so will antlerless harvest efforts in 2015.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be reasonable. The postseason population estimate for 2014 is 3,125 deer, or 38% below the population objective of 5,000 deer.

We will continue with the current management structure for migratory deer (which consists of conservative buck seasons, with no antlerless harvest), while continuing to target non-migratory deer in agricultural areas with lengthy general antlerless seasons and abundant doe/fawn permits (as was initiated in 2012). Additional opportunities to harvest white-tailed deer will be provided in Area 106. The 2015 seasons should result in post-season 2015 population near 2,750 deer, while maintaining improved buck ratios in Hunt Areas 105, 106, and 109.

<b>INPUT</b>	
Species:	Deer
Biologist:	Doug McWhirter
Herd Unit & No.:	Clarks Fork (No HA 121)
Model date:	02/19/15

Clear form

MODELS SUMMARY			Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	119	128		
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	206920448	206920457		
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	3	183		

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective			
				Juveniles	Total Males	Females	Total			Juveniles	Total Males	Females
1993				2279	1612	4642	8532	2263	1157	4355	7774	5000
1994				2987	1937	4477	9401	2962	1221	4268	8450	5000
1995				2950	1752	4171	8873	2948	1139	4055	8141	5000
1996				2430	1494	3810	7733	2430	942	3751	7123	5000
1997				2255	1234	3465	6954	2255	897	3386	6538	5000
1998				1717	1164	3140	6020	1714	856	3083	5653	5000
1999				1867	1102	2871	5840	1867	578	2871	5315	5000
2000				1957	1199	3020	6177	1957	645	2981	5583	5000
2001				1933	1171	3026	6129	1920	685	2981	5586	5000
2002				1544	1249	3072	5864	1536	725	2997	5258	5000
2003				1432	883	2688	5003	1429	539	2642	4610	5000
2004				1361	744	2415	4519	1361	498	2386	4244	5000
2005				1391	760	2259	4410	1391	502	2211	4104	5000
2006				1525	1025	2382	4932	1521	518	2350	4388	5000
2007				1592	1072	2527	5191	1592	510	2485	4687	5000
2008				1321	1121	2690	5133	1318	734	2636	4689	5000
2009				1709	1089	2600	5398	1706	718	2553	4977	5000
2010				1376	1085	2542	5003	1372	713	2509	4895	5000
2011				1109	912	2338	4360	1109	642	2310	4061	5000
2012				1349	731	2056	4137	1331	428	1902	3661	5000
2013				1244	785	1956	3985	1229	387	1815	3432	5000
2014				935	707	1841	3483	925	434	1766	3126	5000
2015				932	576	1634	3142	921	246	1579	2746	5000
2016				898	518	1576	2993	887	188	1521	2597	5000
2017												5000
2018												5000
2019												5000
2020												5000
2021												5000
2022												5000
2023												5000
2024												5000
2025												5000

Survival and Initial Population Estimates

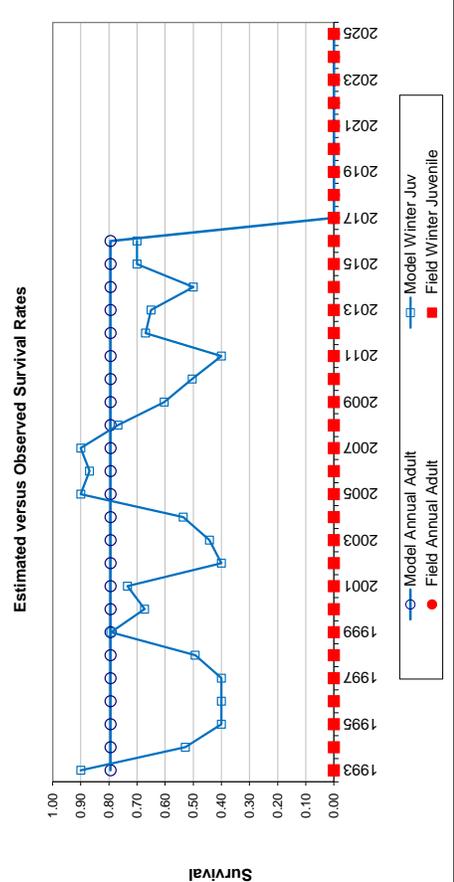
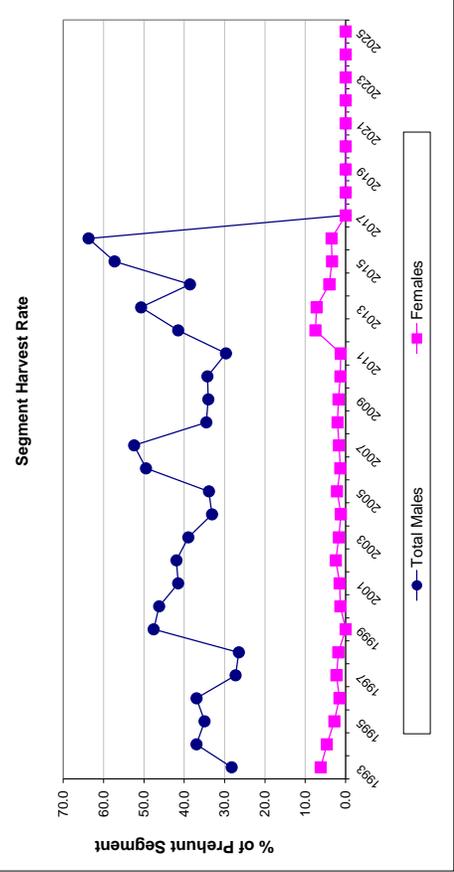
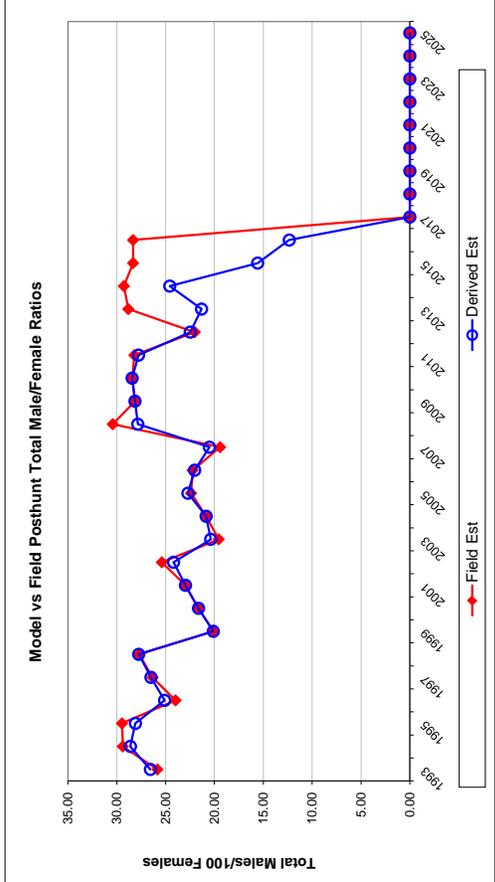
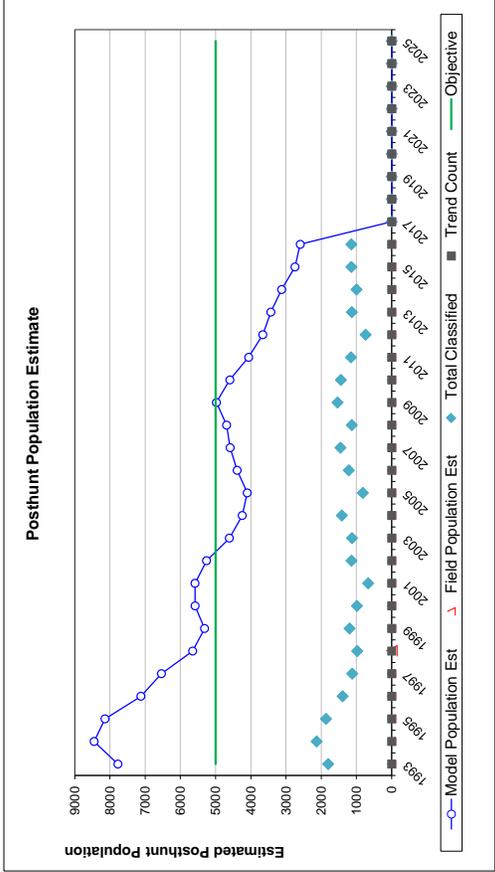
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.90		0.79	
1994	0.53		0.79	
1995	0.40		0.79	
1996	0.40		0.79	
1997	0.40		0.79	
1998	0.49		0.79	
1999	0.79		0.79	
2000	0.67		0.79	
2001	0.73		0.79	
2002	0.40		0.79	
2003	0.44		0.79	
2004	0.54		0.79	
2005	0.90		0.79	
2006	0.87		0.79	
2007	0.90		0.79	
2008	0.77		0.79	
2009	0.60		0.79	
2010	0.50		0.79	
2011	0.40		0.79	
2012	0.67		0.79	
2013	0.65		0.79	
2014	0.50		0.79	
2015	0.70		0.79	
2016	0.70		0.79	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.794
Initial Total Male Pop/10,000 =	0.116
Initial Female Pop/10,000 =	0.435

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

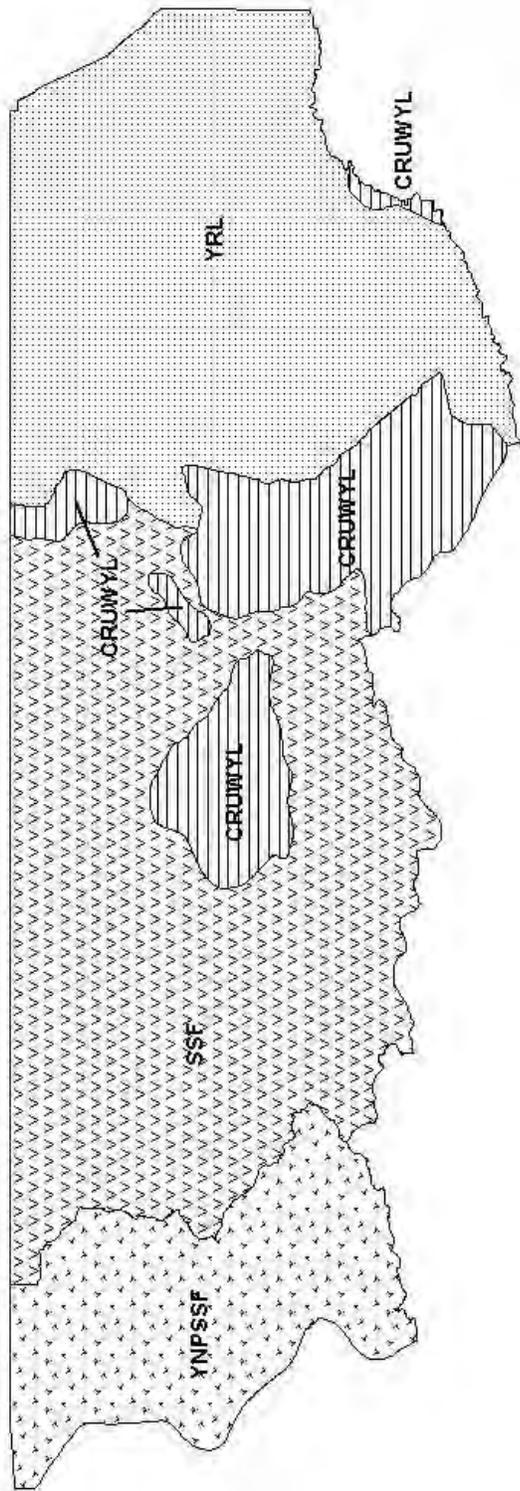
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		51.97	2.79	26.56	25.84	1.79	14	414	261	689	28.3	6.2	
1994		69.40	3.31	28.61	29.38	1.88	23	651	190	864	37.0	4.7	
1995		72.70	3.69	28.09	29.47	2.03	2	557	106	665	35.0	2.8	
1996		64.77	3.80	25.11	23.98	2.01	0	502	53	555	37.0	1.5	
1997		66.61	4.37	26.50	26.33	2.39	0	306	72	378	27.3	2.3	
1998		55.62	4.03	27.76	27.72	2.57	2	280	52	334	26.5	1.8	
1999		65.02	4.08	20.12	20.12	1.93	0	477	0	477	47.6	0.0	
2000		65.65	4.54	21.63	21.63	2.23	0	504	36	540	46.2	1.3	
2001		64.43	5.45	22.97	22.97	2.81	11	442	41	494	41.5	1.5	
2002		51.24	3.46	24.19	25.39	2.22	7	476	68	551	41.9	2.4	
2003		54.08	3.58	20.39	19.57	1.90	3	313	41	357	39.0	1.7	
2004		57.04	3.35	20.85	20.85	1.78	0	224	26	250	33.1	1.2	
2005		62.90	4.81	22.72	22.40	2.49	0	234	44	278	33.9	2.1	
2006		64.72	4.04	22.03	22.24	2.04	4	461	29	494	49.5	1.3	
2007		64.06	3.64	20.52	19.42	1.71	0	511	38	549	52.4	1.7	
2008		50.00	3.46	27.85	30.41	2.51	3	352	49	404	34.5	2.0	
2009		66.79	3.76	28.14	28.14	2.14	3	337	42	382	34.0	1.8	
2010		54.70	3.28	28.43	28.43	2.15	3	338	30	371	34.3	1.3	
2011		48.02	3.29	27.78	28.20	2.35	0	246	26	272	29.7	1.2	
2012		69.95	5.55	22.49	22.02	2.64	17	276	140	433	41.5	7.5	
2013		67.71	4.44	21.32	28.82	2.54	13	362	128	503	50.7	7.2	
2014		52.36	3.81	24.58	29.27	2.62	9	248	68	325	38.6	4.1	
2015		62.50	4.11	15.58	28.33	2.46	10	250	50	310	57.3	3.4	
2016		62.50	4.11	12.34	28.33	2.46	10	250	50	310	63.7	3.5	
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



Mule Deer (MD216) - Clark's Fork  
 HA 105, 106, 109, 121  
 Revised - 2/94

## 2014 - JCR Evaluation Form

SPECIES: White tailed Deer

PERIOD: 6/1/2014 - 5/31/2015

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>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	0	N/A	N/A
Harvest:	2,235	1,638	1,740
Hunters:	4,745	3,690	3,800
Hunter Success:	47%	44%	46 %
Active Licenses:	5,698	4,411	4,500
Active License Success:	39%	37%	39 %
Recreation Days:	21,713	17,565	17,700
Days Per Animal:	9.7	10.7	10.2
Males per 100 Females	36	33	
Juveniles per 100 Females	71	86	

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

Management Strategy: Recreational

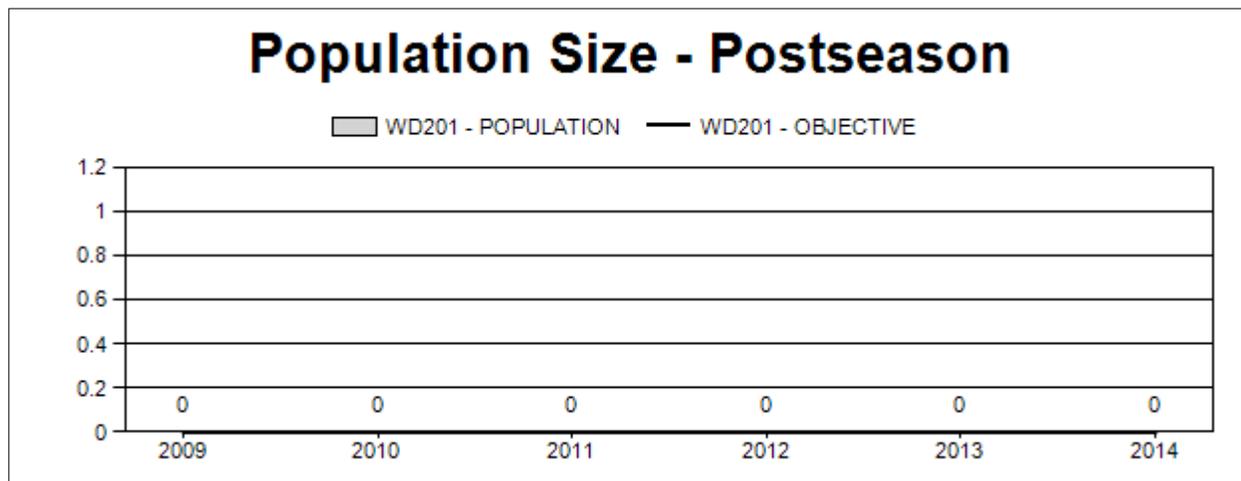
Percent population is above (+) or below (-) objective: N/A%

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

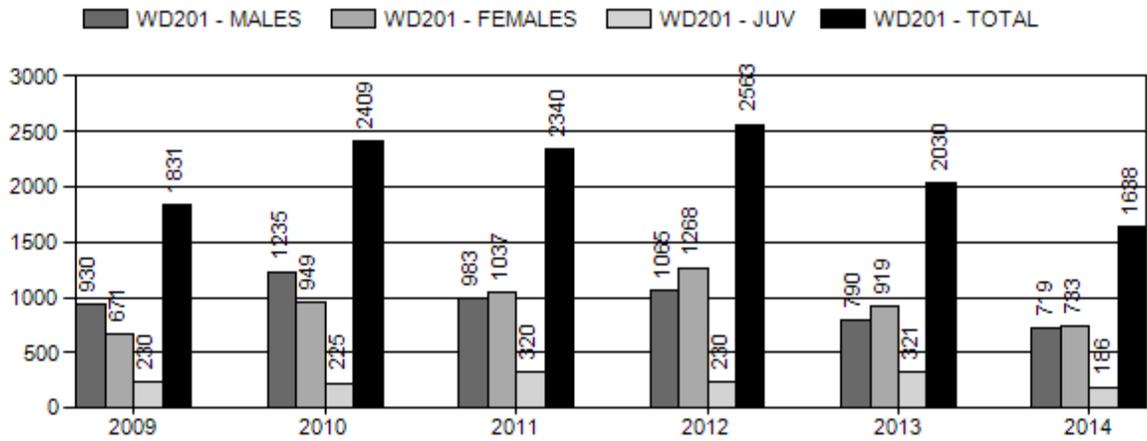
Model Date: None

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

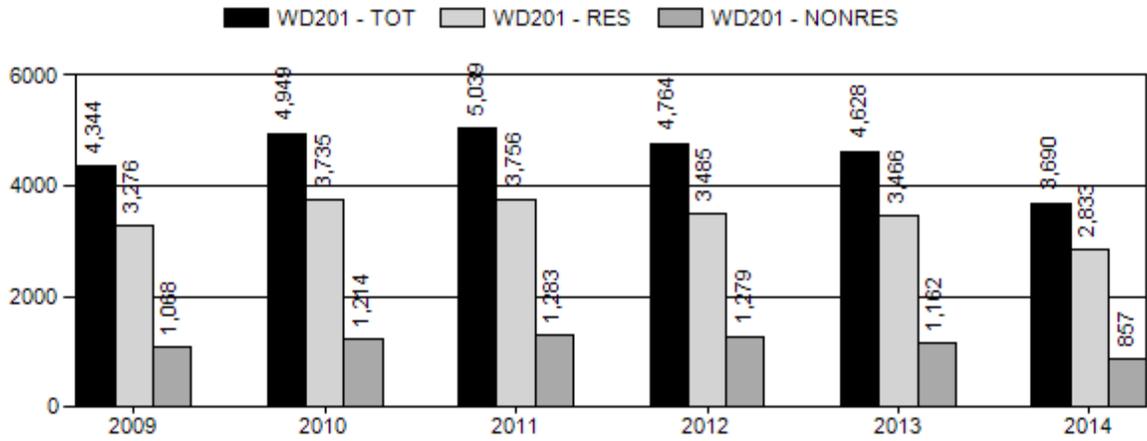
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	na%	na%
Males $\geq 1$ year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%



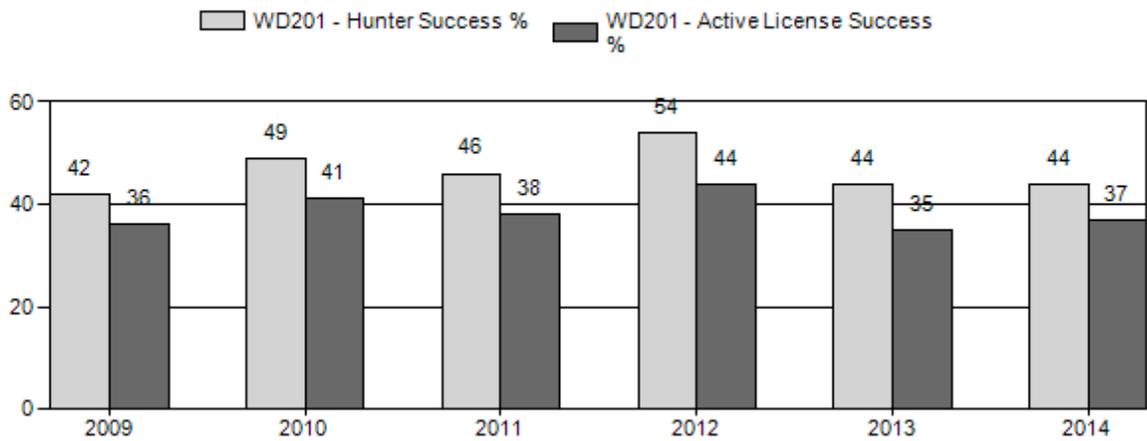
# Harvest



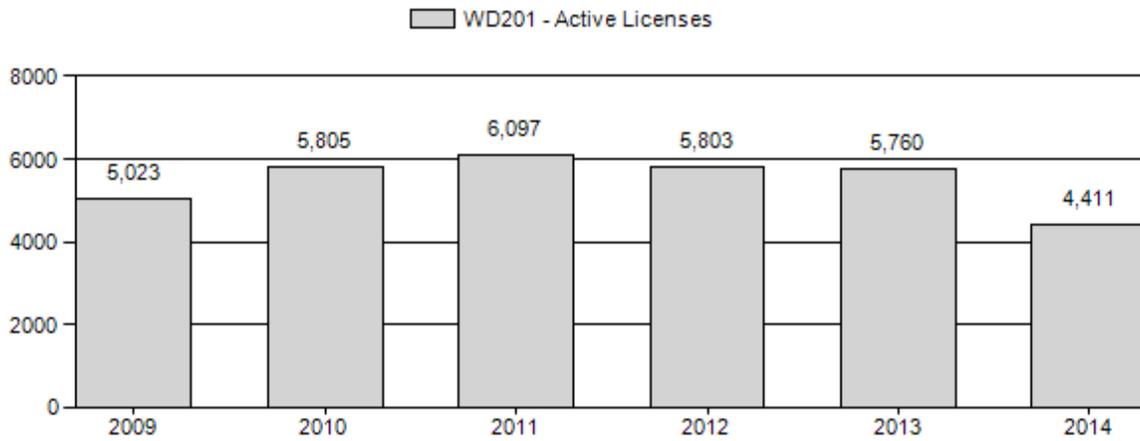
# Number of Hunters



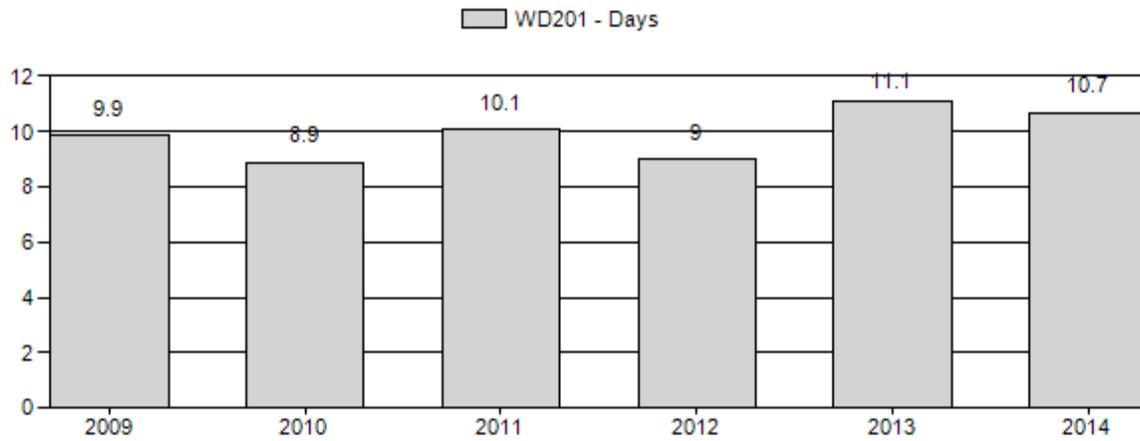
# Harvest Success



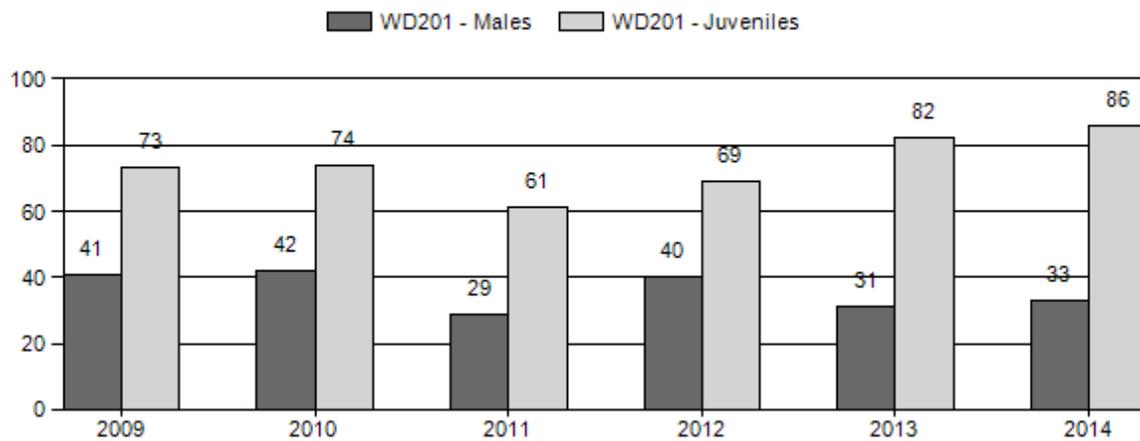
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2015 Hunting Seasons  
Bighorn Basin White-tailed Deer (WD201)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
36	8	Oct. 15	Oct. 22	25	Limited quota; doe or fawn white-tailed deer
37	3	Nov. 1	Nov. 30	15	Limited quota; any white-tailed deer
40	8	Oct. 15	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
41	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
41	8	Nov. 1	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
47, 51	3	Oct. 15	Nov. 30	50	Limited quota; any white-tailed deer
47	8	Oct. 15	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
51	8	Oct. 15	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
110, 111	8	Oct. 15	Dec. 31	100	Limited quota; doe or fawn white-tailed deer
112, 113	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
112, 113	8	Oct 15	Dec. 31	100	Limited quota; doe or fawn white-tailed deer
116, 117, 118	3	Nov. 1	Nov. 30	100	Limited quota; any white-tailed deer
116, 117, 118	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	75	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. 15	Dec. 15	100	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	50	Limited quota; any white-tailed deer
124	3	Nov. 1	Nov. 30	50	Limited quota; any white-tailed deer
	8	Nov. 1	Nov. 30	50	Limited quota; doe or fawn white-tailed deer
127	3	Nov. 1	Nov. 30	15	Limited quota; any white-tailed deer
164	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
165	3	Oct. 15	Nov. 30	50	Limited quota; any white-tailed deer
	8	Nov. 1	Nov. 30	100	Limited quota; doe or fawn white-tailed deer

Archery:

Sep. 1                      Sep. 30                      Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2014
41,47	8	-100
41	8	+50
47	8	+50
116,117,118	3	+25
116,117,118	7	+100
116,117,118	8	+25
119,120	3	+10
122	8	-50
165	8	+50
<b>Total</b>		<b>+160</b>

**Management Evaluation**

**Current Management Objective:** none

**2014 Postseason Population Estimate:** none

**2015 Proposed Postseason Population Estimate:** none

**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-tails are typically set in conjunction with mule deer hunting seasons by hunt area. Some opportunity exists for exclusive white-tail type 3 licenses, whereas most are managed to minimize crop depredation using type 8 licenses. Blue tongue and epizootic hemorrhagic disease periodically (occurred in 2001, 2007, 2011) reduces deer numbers; however, white-tail deer have 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 since 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 the EHD virus.

**Habitat.** White-tailed deer are limited to riparian and agricultural lands along major streams. Some white-tails 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-tails. They have shown to be adaptable to human activity.

**Field Data and Harvest Data.** Not enough data is collected to draw conclusions from classification data. Harvest data typically follows number of licenses issued and would 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. Licenses specific only for white-tailed deer are needed to obtain enough harvest. Harvest rates probably do not greatly affect the overall population. More licenses for bucks are being proposed for 2015, because department personnel perceive that more can be issued without impacting buck numbers. Furthermore, the Owl Creek/Meeteetse Mule Deer Initiative identified competition with white-tailed deer as a factor in mule deer declines.



## 2014 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2014 - 5/31/2015

HERD: EL211 - MEDICINE LODGE

HUNT AREAS: 41, 45

PREPARED BY: LESLIE SCHREIBER

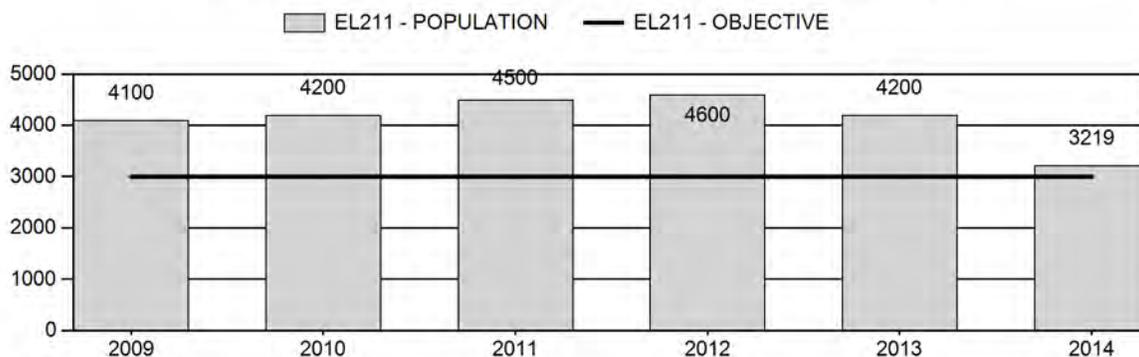
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	4,320	3,219	3,120
Harvest:	676	689	595
Hunters:	1,643	1,878	1,850
Hunter Success:	41%	37%	32 %
Active Licenses:	1,667	1,899	1,800
Active License Success:	41%	36%	33 %
Recreation Days:	12,692	13,633	13,400
Days Per Animal:	18.8	19.8	22.5
Males per 100 Females	24	28	
Juveniles per 100 Females	45	41	

Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	7%
Number of years population has been + or - objective in recent trend:	12
Model Date:	05/10/2015

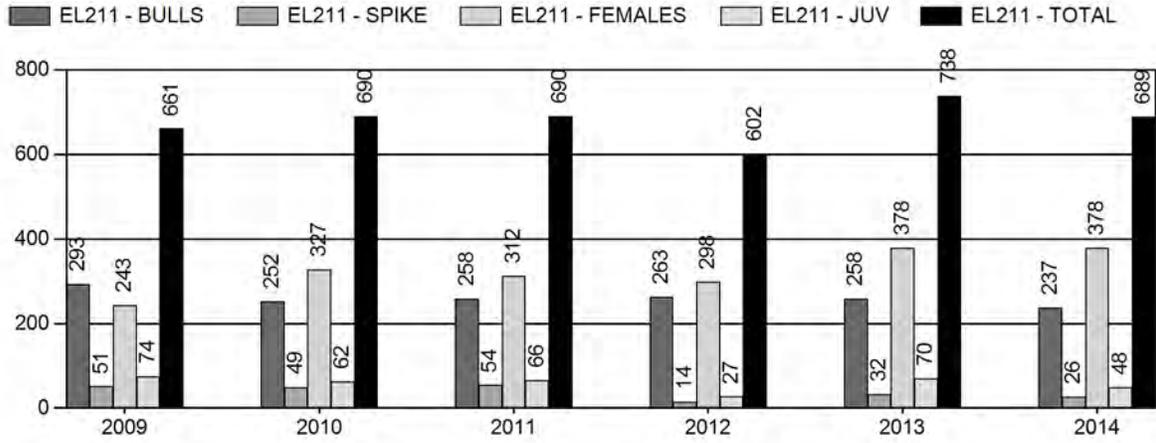
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	17%	16%
Males ≥ 1 year old:	29%	30%
Juveniles (< 1 year old):	6%	3%
Total:	17%	16%
Proposed change in post-season population:	0%	-3%

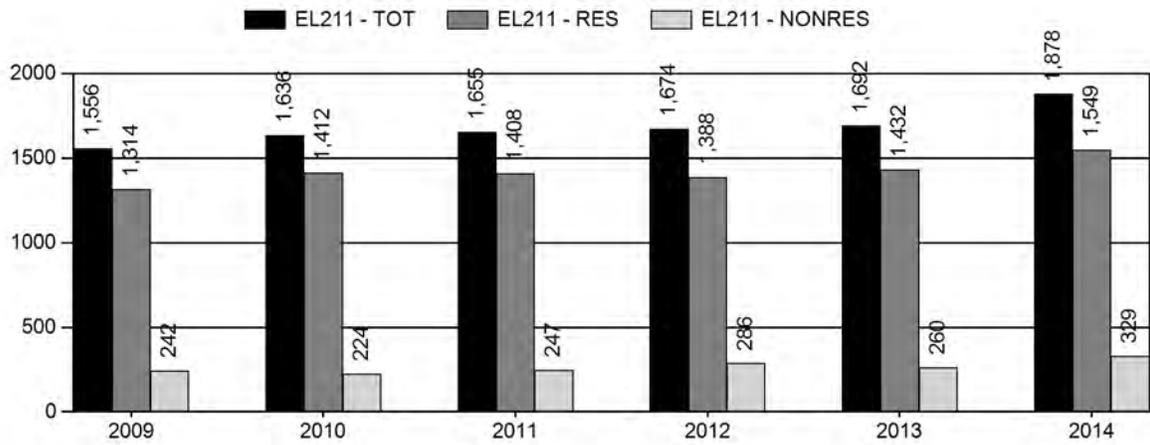
### Population Size - Postseason



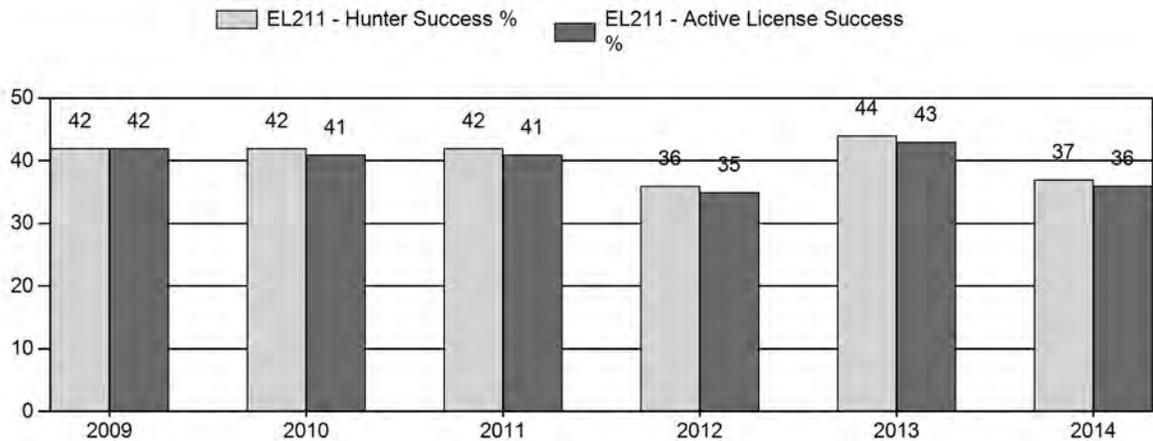
# Harvest



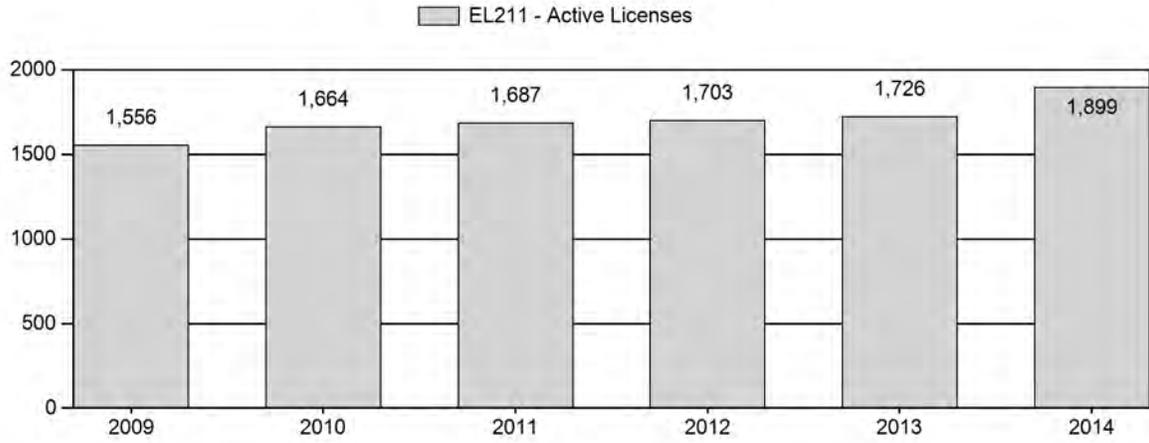
# Number of Hunters



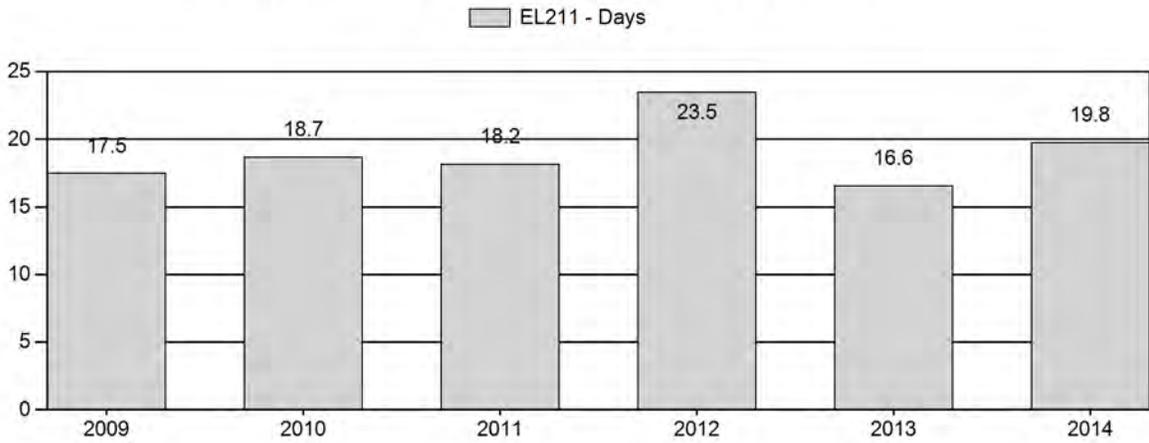
# Harvest Success



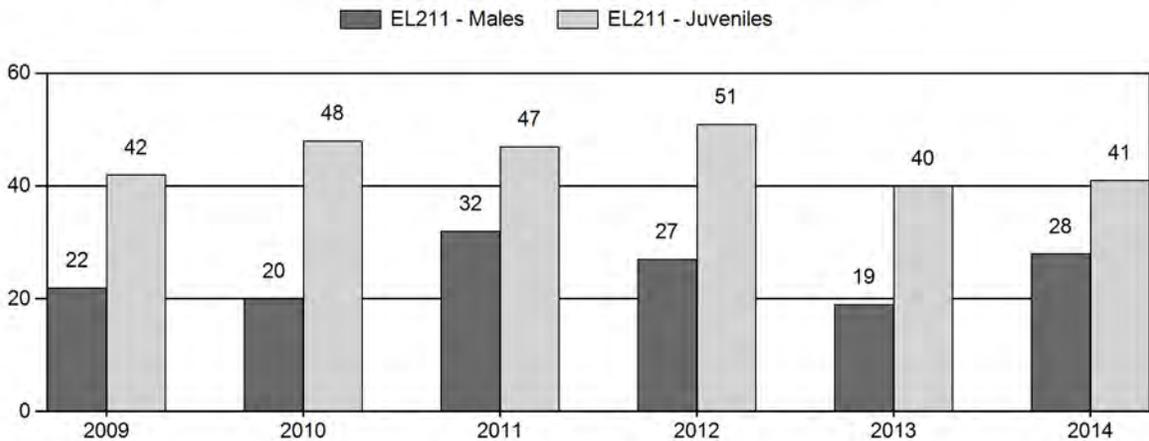
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2009 - 2014 Postseason Classification Summary**

for Elk Herd EL211 - MEDICINE LODGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Males to 100 Females				Young to				
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	Ylng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj				Int			
2009	4,100	212	207	419	13%	1,914	61%	798	25%	3,131	543	11	11	22	± 1	42	± 1	34
2010	4,200	155	134	289	12%	1,430	60%	684	28%	2,403	506	11	9	20	± 1	48	± 2	40
2011	4,500	245	215	460	18%	1,453	56%	686	26%	2,599	582	17	15	32	± 1	47	± 2	36
2012	4,600	164	177	341	15%	1,251	56%	634	28%	2,226	753	13	14	27	± 2	51	± 2	40
2013	4,200	127	186	313	12%	1,622	63%	641	25%	2,576	614	8	11	19	± 1	40	± 1	33
2014	3,311	200	242	442	17%	1,570	59%	636	24%	2,648	513	13	15	28	± 1	41	± 1	32

**2015 HUNTING SEASONS**  
**Medicine Lodge Elk Herd Unit (EL211)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
41	1	Oct. 15	Nov. 4	375	Limited quota; any elk
	4	Oct. 15	Nov. 4	400	Limited quota; antlerless elk
		Nov. 21	Nov. 29		Unused Area 41 Type 4 licenses
		Dec. 12	Dec. 20		Unused Area 41 Type 4 licenses
	6	Sep. 15	Oct. 14	250	Limited quota; cow or calf valid off national forest
		Oct. 15	Nov. 4		Unused Area 41 Type 6 licenses valid in the entire area
		Nov. 21	Nov. 29		Unused Area 41 Type 6 licenses valid in the entire area
		Dec. 12	Dec. 20		Unused Area 41 Type 6 licenses valid in the entire area
	9	Sep. 1	Sep. 30	125	Limited quota; any elk, archery only
45	1	Oct. 15	Nov. 4	350	Limited quota; any elk
	4	Oct. 15	Nov. 15	200	Limited quota; antlerless elk
	5	Oct. 10	Nov. 4	125	Limited quota; antlerless elk
	6	Sep. 15	Nov. 30	175	Limited quota; cow or calf valid off national forest
	9	Sep. 1	Sep. 30	150	Limited quota; any elk, archery only
	<b>Archery:</b> 41, 45		Sep. 15	Sep. 30	

Hunt Area	Type	Quota change from 2014
45	5	-75
45	6	+75
Total		0

**Management Evaluation**

**Current Management Objective: 3,000**

**2014 Postseason Population Estimate: 3,200**

**2015 Proposed Postseason Population Estimate: 3,100**

**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 current population objective of 3,000 elk was first adopted in 1983. Formal internal reviews of the population objective and management goals were conducted in 1997, 2001 and 2007. A public herd unit review is scheduled for 2016.

Human activities in this herd unit are rarely severe enough to affect elk survival and productivity. Bentonite mining and oil/gas development occur on the west side of the herd unit where habitats are not suitable for elk. Farming occurs near elk habitats and elk often forage on irrigated crops or pastures. Antlerless elk hunting seasons are often driven by landowner complaints. Conversely, some landowners lease hunting to outfitters and allow no public access to 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. Three hunter-harvested brucellosis seropositive elk were found in the Bighorn Mountains in 2014: a bull in Hunt Area 41 and a cow each in Hunt Areas 40 and 39. Due to the possible presence of brucellosis, management of this herd unit is focused on bringing elk numbers at or below objective. Education for hunters and field personnel collecting brucellosis blood samples has resulted in more testable samples each year. Between 2011-14, the vet lab tested 77, 68, 141, and 156 samples, respectively, from the Medicine Lodge herd.

**Weather.** Climatic factors affect this elk herd more than human-caused factors (besides hunter harvest) and good spring moisture has produced good forage in most areas of the herd unit. Survival and productivity are driven by drought and severe winters, however, high calf:cow ratios indicate climate has been moderate in the Bighorns since 2006. There has not been a severe winter in the Bighorn Basin since the early 1980s so calf survival has been high. There are no transects in this area to monitor vegetative production or utilization.

**Habitat.** The herd unit contains approximately 1,500 mi<sup>2</sup> with most high-elevation summer ranges consisting mainly of 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.D.A. 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 numbers averaged 34 calves:100 cows. In years with “normal” precipitation (2009-14), 45 calves:100 cows have been observed on average, and in 2014, calf:cow ratios were 41 calves:100. High calf:cow ratios grow this population quickly 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 demonstrating the variability in bull ratios. Annual bull ratios averaged over 3-5 years probably give a better indication in bull trends. We attempt to fly consistent surveys (~4 helicopter hours) so that bull ratios can accurately reflect actual population parameters.

Management of hunting seasons allowed bull:cow ratios to increase, and 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 during classification surveys 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 21:100 (1998-2014). Branched antlered bulls have been observed in similar proportions compared 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 35-45% hunter success and 15-23 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.

More recently, the number of total licenses offered and number of hunters have increased. The number of elk harvested and hunter effort (days/harvested elk) are dependent upon weather and hunter access to elk herds. In 2014, number of hunters and hunter effort increased, but success and total harvest declined when compared to 2013, suggesting hunters had a harder time to find and harvest an elk. Weather was warm in October causing elk to stay inaccessible at higher elevations, but late November and December were cold and snowy creating an optimal late-season cow harvest.

**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). Classification totals may not be accurate representation of the population, since flight budgets have not increased at an equal rate with cost per hour, resulting in decreased effort. On the other hand, field personnel may be more efficient at locating groups of elk using institutional knowledge. Elk wintering on the west side of the Bighorn Mountains are typically found along a band of elevation between deep snows at higher elevations and saltbush shrub desert at lower elevations.

The Medicine Lodge elk herd spreadsheet model incorporates 30 years of data, but we will consider truncating the dataset next year. The time-specific juvenile, constant adult (TSJ, CA) model shows a declining population which matches the perceptions of field personnel and harvest data, unlike the male survival coefficient (TSJ, CA, MSC) model which shows an increasing population. According to the user manual, the TSJ, CA model is appropriate when the modeler has access to a long-term dataset and adult survival is relatively constant, which is the case for this herd unit. The TSJ, CA, MSC model is appropriate for herd units that have high natural predation creating differing adult male and adult female survival, which is not the case in the Medicine Lodge herd. The TSJ, CA model estimates a 2014 post-hunt population of 3,200 elk. This model ranks as “fair” and would benefit from sample-based population estimates with standard errors.

**Management Summary.** Hunting seasons proposed for 2015 should continue moving this population toward objective. Elevated antlerless/cow license numbers and long seasons should enable hunters to harvest female elk to address brucellosis concerns. Few landowners have complained about too many elk; usually only if elk concentrate on irrigated crops or pasture. We will continue to targeted antlerless/cow elk with antlerless/cow-calf licenses to manage this herd and bring it to objective. We will continue to increase antlerless/cow-calf licenses to ensure the population does not grow and stays at objective.

<b>INPUT</b>	
Species:	Elk
Biologist:	Leslie Schreiber
Herd Unit & No.:	Med Lodge - EL211
Model date:	05/10/15

Clear form

MODELS SUMMARY			Relative AICc	Notes
CJ,CA	Constant Juvenile & Adult Survival	Fit	1196	<input type="checkbox"/> CJ,CA Model
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	1187	1153	<input type="checkbox"/> SC,J,SCA Mod
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	224	388	<input checked="" type="checkbox"/> TS,J,CA Model
TS,J,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	182	357	<input type="checkbox"/> TS,J,CA,MSC Model

**Population Estimates from Top Model**

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Total	Objective
				Juveniles	Total Males	Females	Total Males		
1985			828	1120	425	2587	132	3405	3000
1986			1136	761	389	2448	717	3174	3000
1987			1512	1029	397	2369	295	3502	3000
1988			1137	1117	534	2429	1085	3655	3000
1989			1220	1279	581	2481	1248	3858	3000
1990			1749	1485	603	2578	283	4085	3000
1991			1354	1078	639	2679	367	3869	3000
1992				1084	652	2716	405	4088	3000
1993			1730	1240	905	3049	639	4725	3000
1994				1283	929	3120	575	4767	3000
1995				1128	1001	3318	717	4939	3000
1996			2170	1221	977	3335	189	4851	3000
1997				1502	867	3317	574	5099	3000
1998				1306	929	3364	588	4706	3000
1999			2916	1282	878	3154	545	4574	3000
2000				1188	837	3065	496	4078	3000
2001				853	770	2730	772	3445	3000
2002			2044	625	652	2354	413	2999	3000
2003				781	652	2271	401	3059	3000
2004				797	741	2235	456	3109	3000
2005			2437	949	792	2233	894	3367	3000
2006			2412	899	898	2374	555	3489	3000
2007				764	946	2448	579	3437	3000
2008			2130	1004	911	2435	632	3774	3000
2009				1023	996	2525	618	3818	3000
2010				1089	886	2493	555	3709	3000
2011				1127	1028	2576	685	3971	3000
2012				1106	935	2451	1076	3830	3000
2013				841	887	2350	568	3266	3000
2014				799	919	2259	746	3219	3000
2015				795	895	2084	620	3120	3000
2016									3000
2017									3000

Survival and Initial Population Estimates

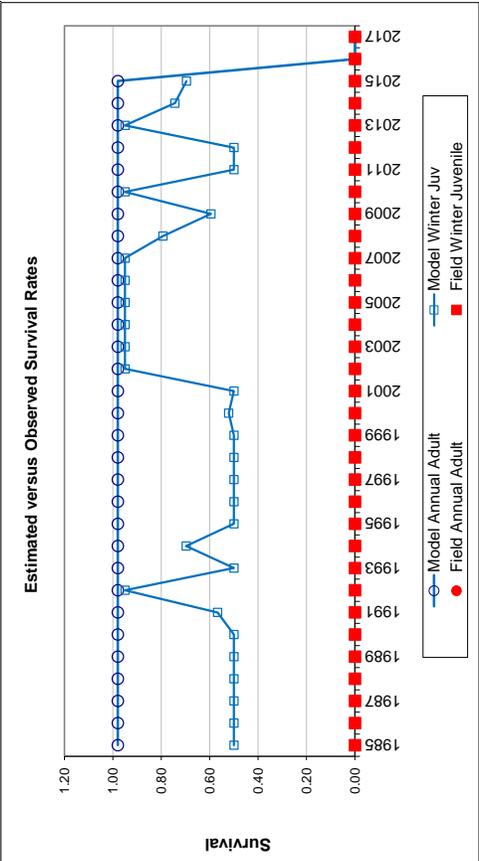
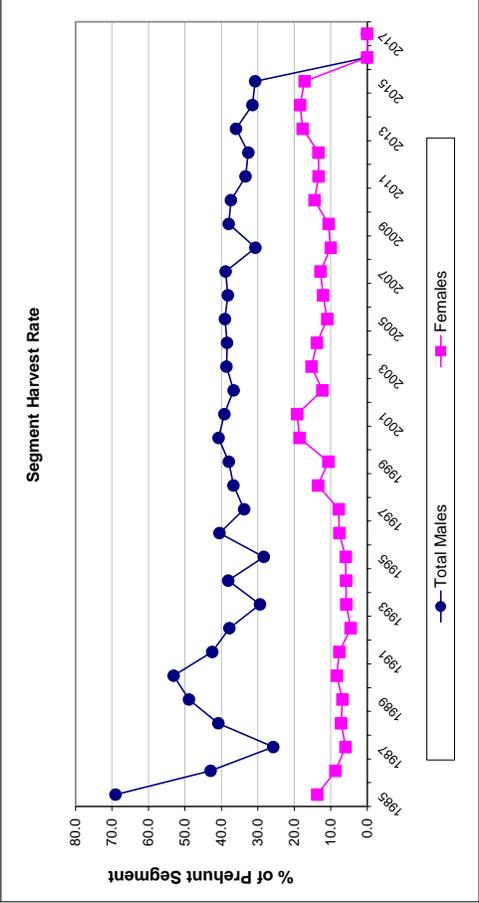
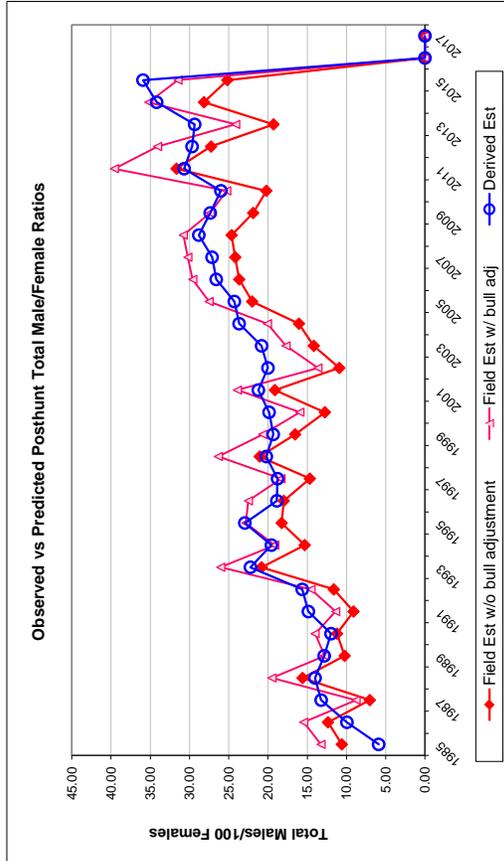
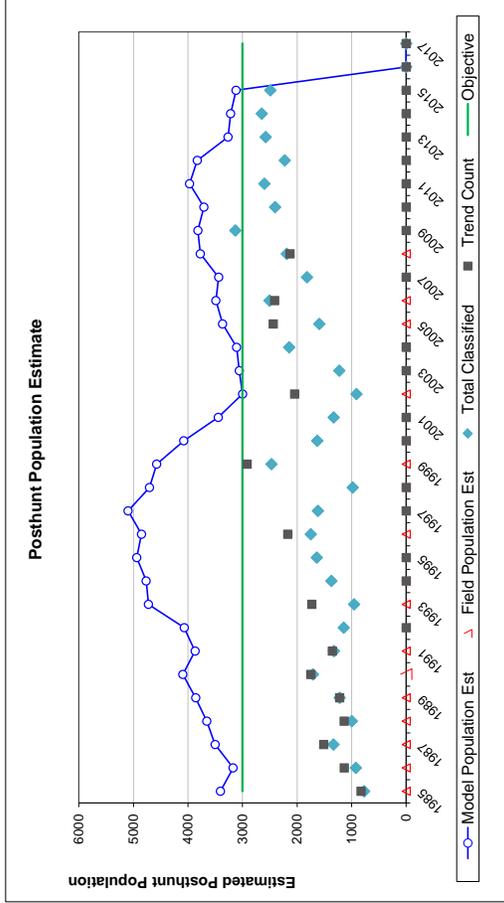
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1985	0.50		0.98	
1986	0.50		0.98	
1987	0.50		0.98	
1988	0.50		0.98	
1989	0.50		0.98	
1990	0.50		0.98	
1991	0.57		0.98	
1992	0.95		0.98	
1993	0.50		0.98	
1994	0.70		0.98	
1995	0.50		0.98	
1996	0.50		0.98	
1997	0.50		0.98	
1998	0.50		0.98	
1999	0.50		0.98	
2000	0.52		0.98	
2001	0.50		0.98	
2002	0.95		0.98	
2003	0.95		0.98	
2004	0.95		0.98	
2005	0.95		0.98	
2006	0.95		0.98	
2007	0.95		0.98	
2008	0.79		0.98	
2009	0.60		0.98	
2010	0.95		0.98	
2011	0.50		0.98	
2012	0.50		0.98	
2013	0.95		0.98	
2014	0.74		0.98	
2015	0.70		0.98	
2016				
2017				

Parameters:		Optim cells
Adult Survival =		0.980
Initial Total Male Pop/10,000 =		0.013
Initial Female Pop/10,000 =		0.223

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
<b>Total Bulls Adjustment Factor</b>	<b>80%</b>

Year	Classification Counts				Total Male/Female Ratio				Harvest				Segment Harvest Rate (% of Prehunt Segment)		
	Juvenile/Female Ratio		Total Male/Female Ratio		Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yr1 males	2+ Males	Females	Total Harvest	Total Males	Females
	Field Est	Field SE	Field Est	Field SE											
1985	46.64	3.73	13.24	10.59	5.90	13.24	10.59	1.54	72	159	108	322	661	69.0	13.7
1986	32.08	2.58	15.45	12.36	9.94	15.45	12.36	1.47	40	103	49	194	386	42.9	8.7
1987	43.94	2.68	8.78	7.02	13.22	8.78	7.02	0.92	45	37	56	128	266	25.8	5.9
1988	48.11	3.42	19.50	15.60	14.00	19.50	15.60	1.72	29	125	73	158	385	40.8	7.2
1989	53.97	3.34	12.84	10.23	11.97	12.84	10.23	1.23	28	155	103	153	439	48.9	6.8
1990	61.25	3.16	14.00	11.20	11.97	14.00	11.20	1.12	34	146	145	195	520	53.1	8.3
1991	41.52	2.59	11.38	9.10	14.85	11.38	9.10	1.06	46	134	113	186	479	42.5	7.6
1992	41.26	2.79	14.52	11.62	15.63	14.52	11.62	1.32	13	103	121	112	349	37.8	4.5
1993	42.15	3.20	26.02	20.82	22.24	26.02	20.82	2.07	26	132	110	159	427	29.4	5.7
1994	42.63	2.65	19.15	15.32	19.57	19.15	15.32	1.43	27	137	185	164	513	38.1	5.8
1995	35.21	2.11	22.82	18.26	22.95	22.82	18.26	1.42	26	119	139	177	461	28.4	5.9
1996	38.59	2.19	22.49	17.99	18.87	22.49	17.99	1.38	29	164	196	231	620	40.5	7.6
1997	47.94	2.67	18.34	14.67	18.78	18.34	14.67	1.30	33	73	193	235	534	33.8	7.8
1998	41.46	3.12	26.33	21.06	20.22	26.33	21.06	2.06	90	69	241	412	812	36.7	13.5
1999	42.96	1.99	20.67	16.54	19.34	20.67	16.54	1.12	65	86	217	305	673	37.9	10.6
2000	43.53	2.45	15.94	12.75	19.86	15.94	12.75	1.17	92	61	249	517	919	40.8	18.6
2001	34.99	2.34	21.23	19.12	21.23	21.23	19.12	1.62	74	36	238	477	825	39.2	19.2
2002	25.26	2.17	13.64	10.91	20.00	13.64	10.91	1.35	94	37	180	263	574	36.6	12.3
2003	38.14	2.56	17.70	14.16	20.81	17.70	14.16	1.42	43	69	160	315	587	38.6	15.3
2004	37.71	1.93	20.07	16.06	23.68	20.07	16.06	1.16	64	78	181	280	603	38.4	13.8
2005	44.97	2.61	27.52	22.01	24.29	27.52	22.01	1.68	50	69	212	222	553	39.0	10.9
2006	40.59	1.93	29.59	23.67	26.60	29.59	23.67	1.39	47	28	284	261	620	38.2	12.1
2007	33.91	1.99	30.22	24.17	27.13	30.22	24.17	1.62	37	41	293	285	656	38.8	12.8
2008	43.36	2.18	30.79	24.64	28.82	30.79	24.64	1.54	49	20	234	221	524	30.7	10.0
2009	41.69	1.76	27.36	21.89	27.36	27.36	21.89	1.18	74	51	293	243	661	38.0	10.6
2010	47.83	2.22	25.26	20.21	26.00	25.26	20.21	1.30	62	49	252	327	690	37.4	14.4
2011	47.21	2.19	39.57	31.66	30.69	39.57	31.66	1.69	66	54	258	312	690	33.4	13.3
2012	50.68	2.47	34.07	27.26	29.68	34.07	27.26	1.67	27	14	263	298	602	32.6	13.4
2013	39.52	1.84	24.12	19.30	29.35	24.12	19.30	1.19	70	32	258	378	738	36.0	17.7
2014	40.51	1.90	34.19	28.15	34.19	34.19	28.15	1.52	48	26	237	378	689	31.5	18.4
2015	44.79	2.10	31.48	25.18	35.93	31.48	25.18	1.47	20	20	230	325	595	30.7	17.2
2016															
2017															

FIGURES



Comments:

Date: January 2, 2015

Observer: Schreiber, DeSomber, Lentsch

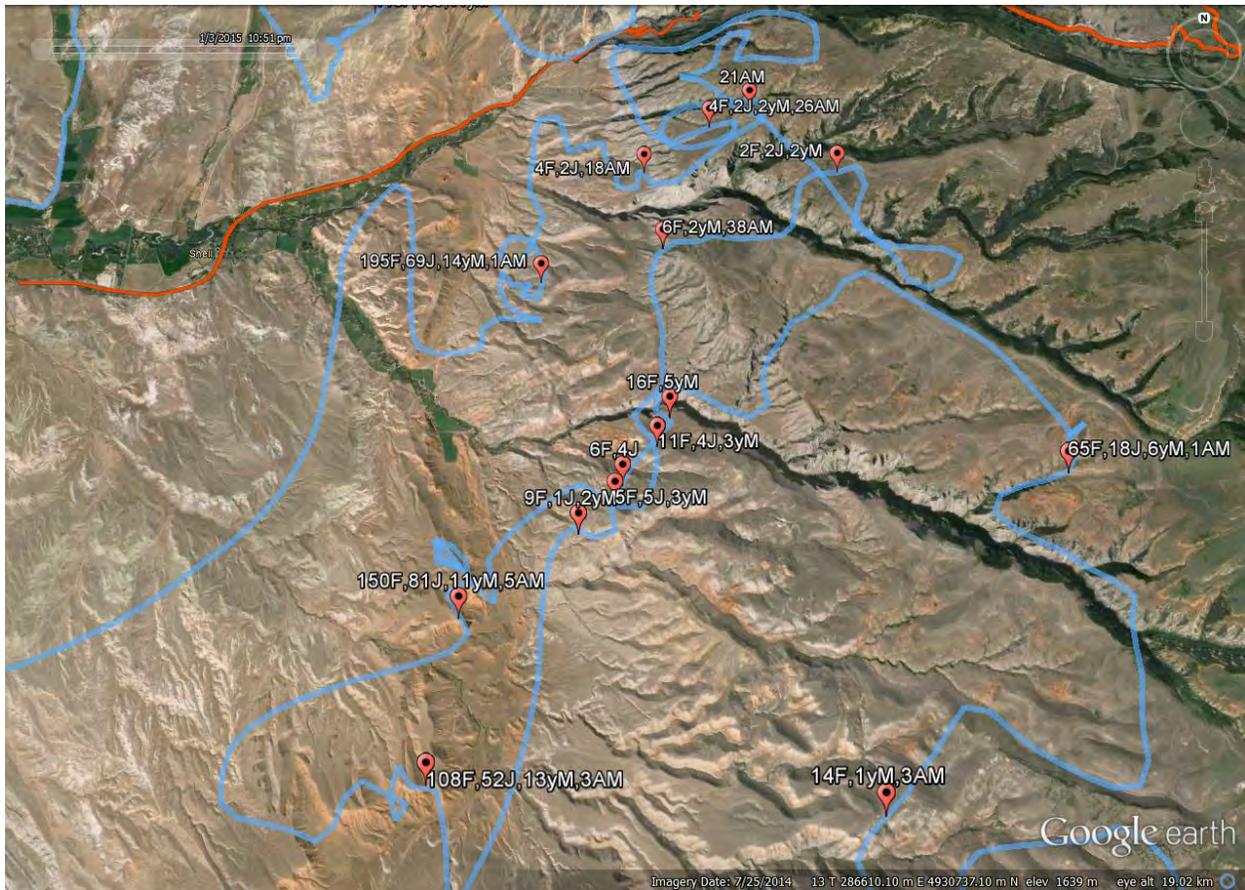
Species: Elk

Survey Type: Classification

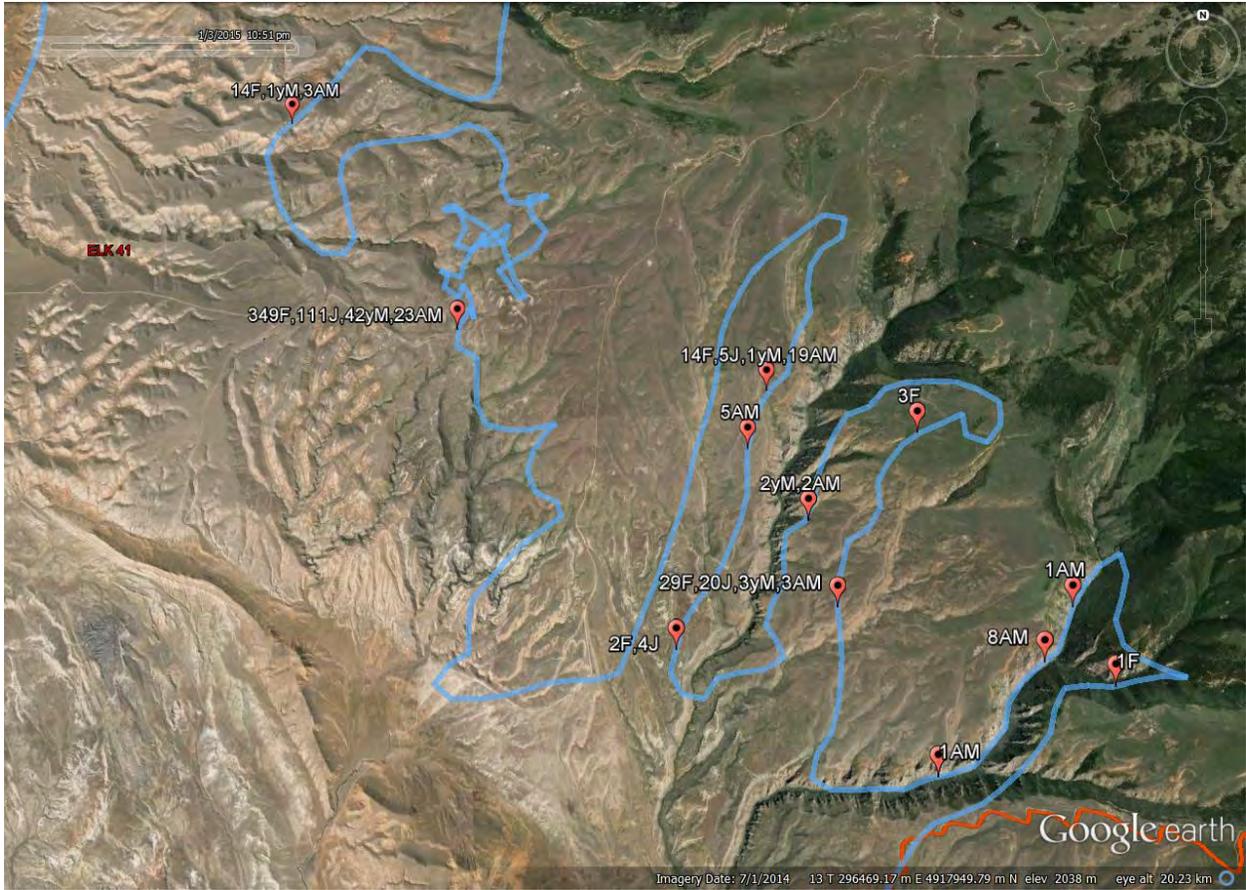
Air Service: SKY Aviation

Conditions: clear, 20-30° F, calm

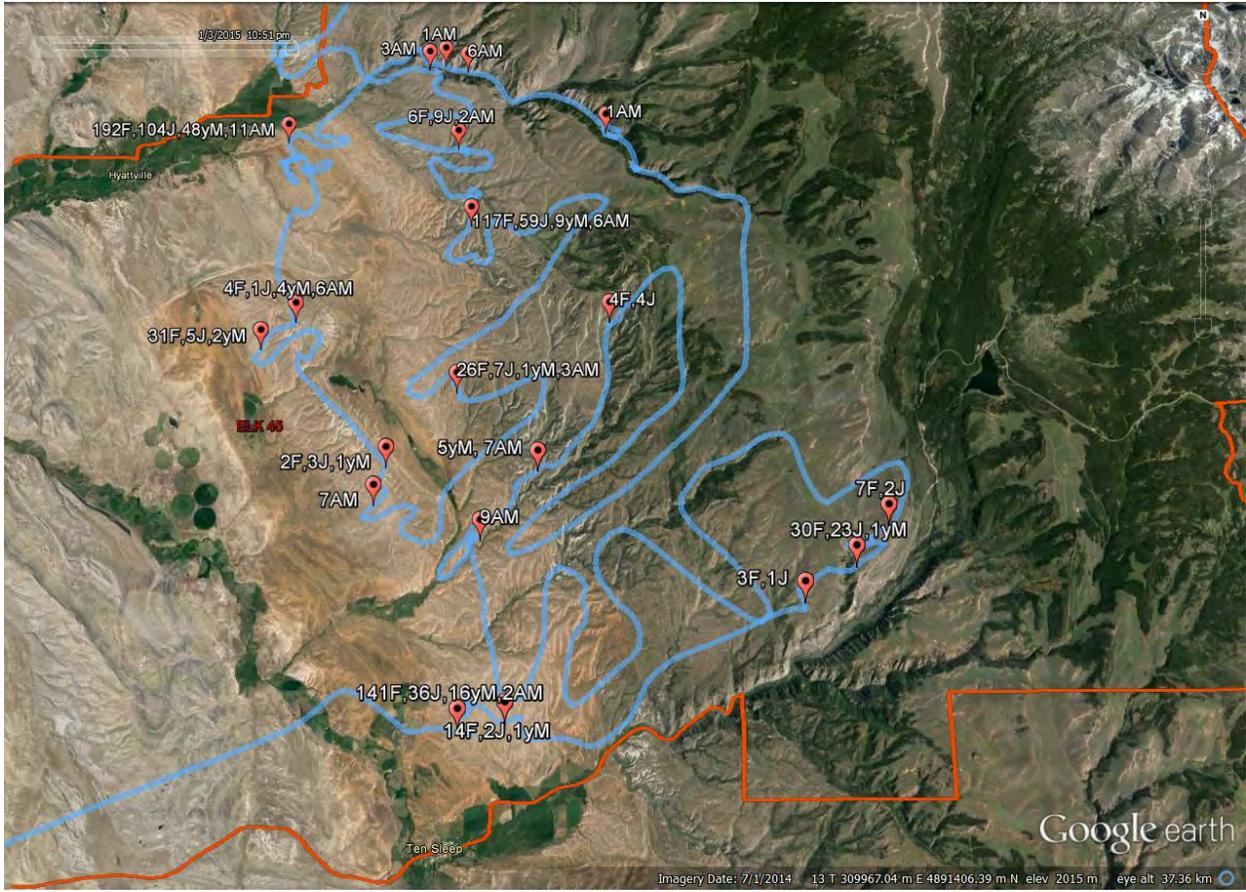
Flight Duration: 6 hours survey, 25 minutes ferry (Medicine Lodge Herd only)



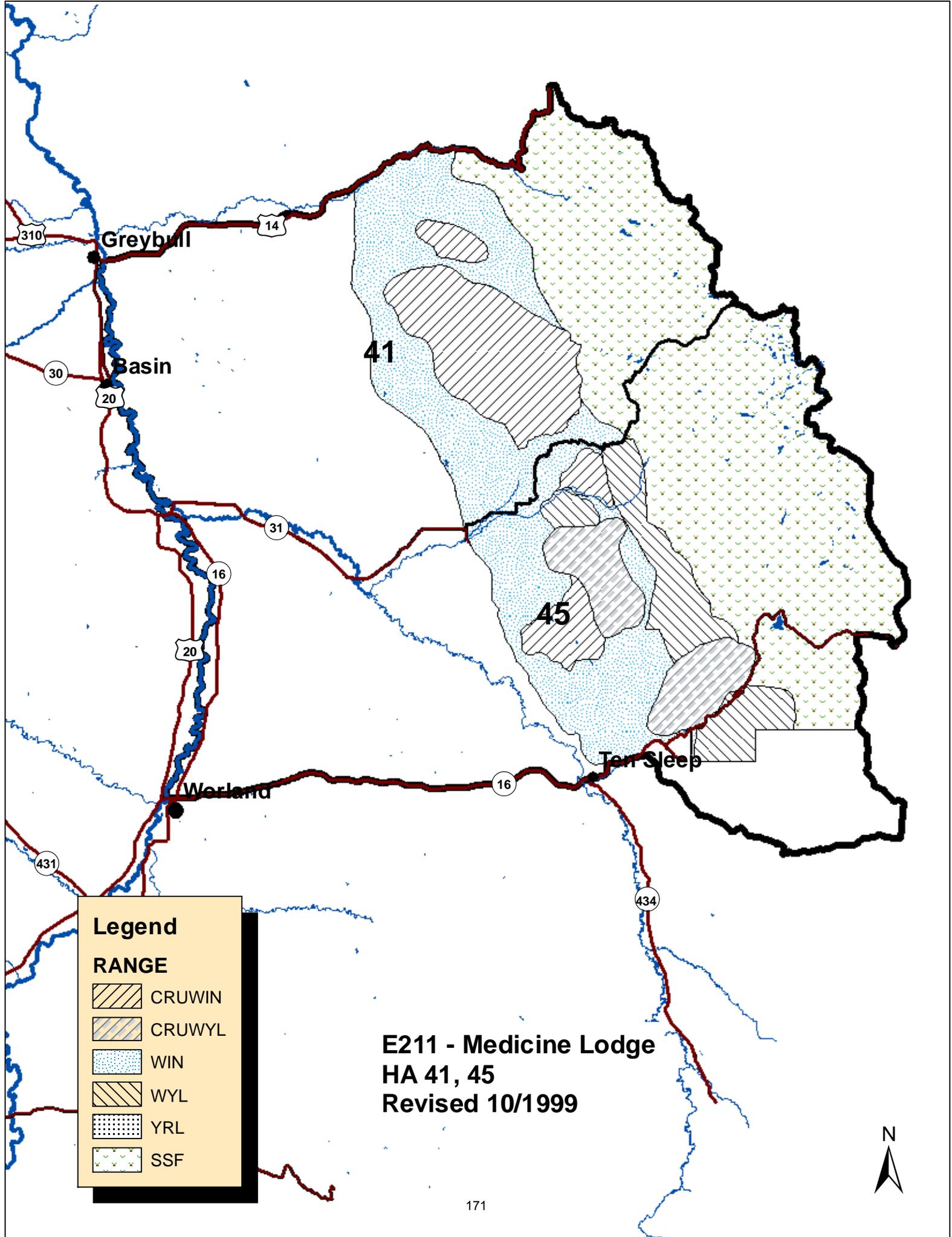
Hunt Area 41 north



Hunt Area 41 south



Hunt Area 45



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  WIN
-  WYL
-  YRL
-  SSF

**E211 - Medicine Lodge  
HA 41, 45  
Revised 10/1999**





## 2014 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2014 - 5/31/2015

HERD: EL214 - GOOSEBERRY

HUNT AREAS: 62-64

PREPARED BY: BART KROGER

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Trend Count:	2,760	2,481	2,300
Harvest:	702	922	950
Hunters:	1,233	1,556	1,500
Hunter Success:	57%	59%	63%
Active Licenses:	1,277	1,627	1,600
Active License Success	55%	57%	59%
Recreation Days:	7,560	10,176	10,000
Days Per Animal:	10.8	11.0	10.5
Males per 100 Females:	21	15	
Juveniles per 100 Females	28	26	

Trend Based Objective (± 20%)

2,000 (1600 - 2400)

Management Strategy:

Special

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

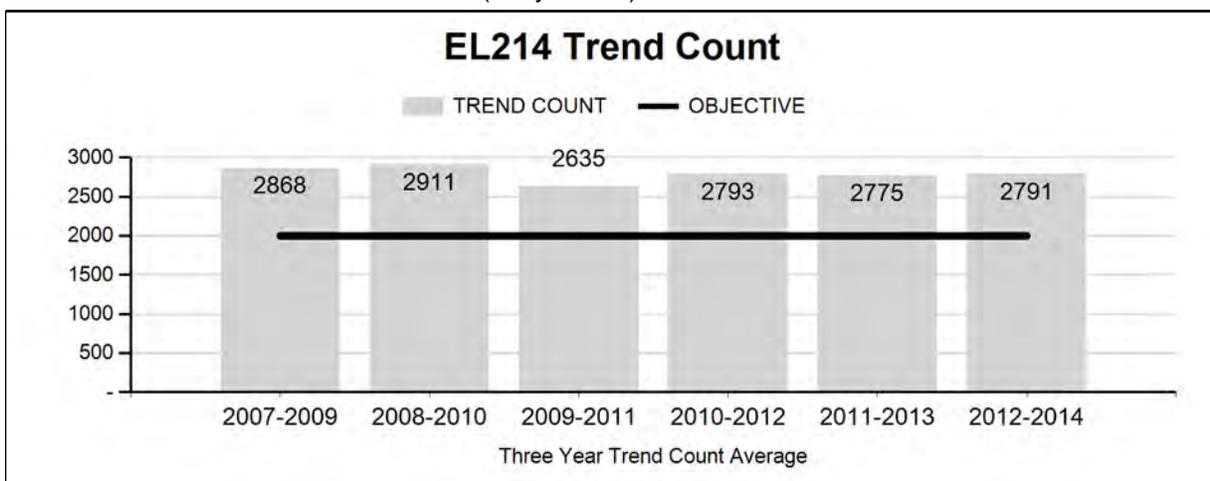
24%

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

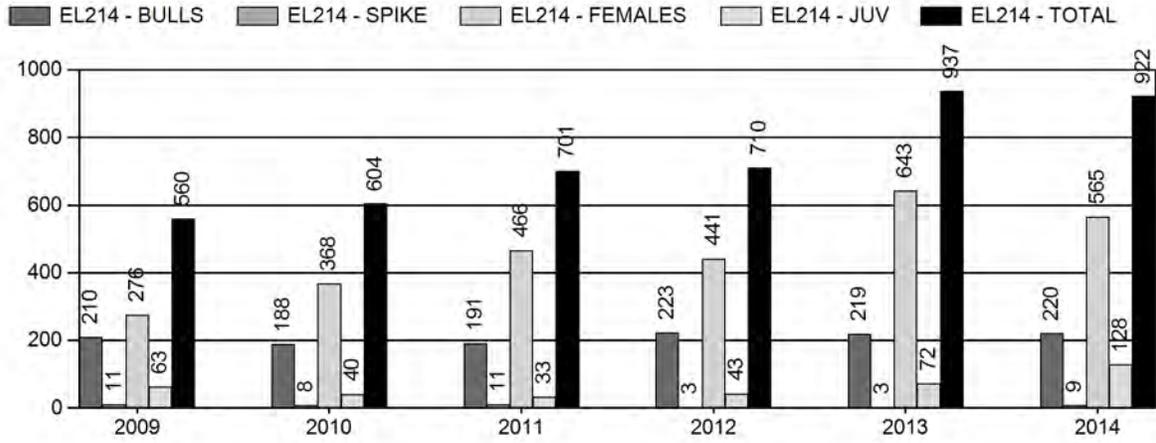
15

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

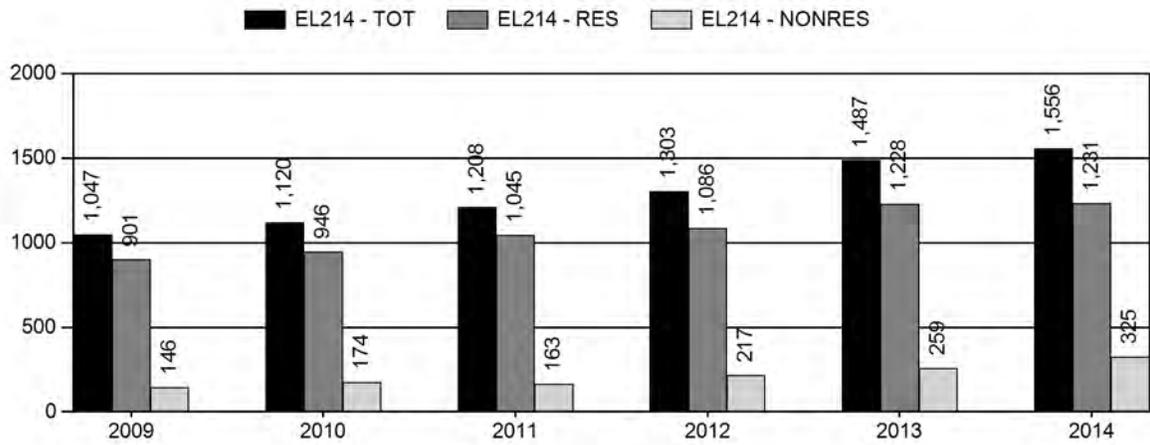
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%



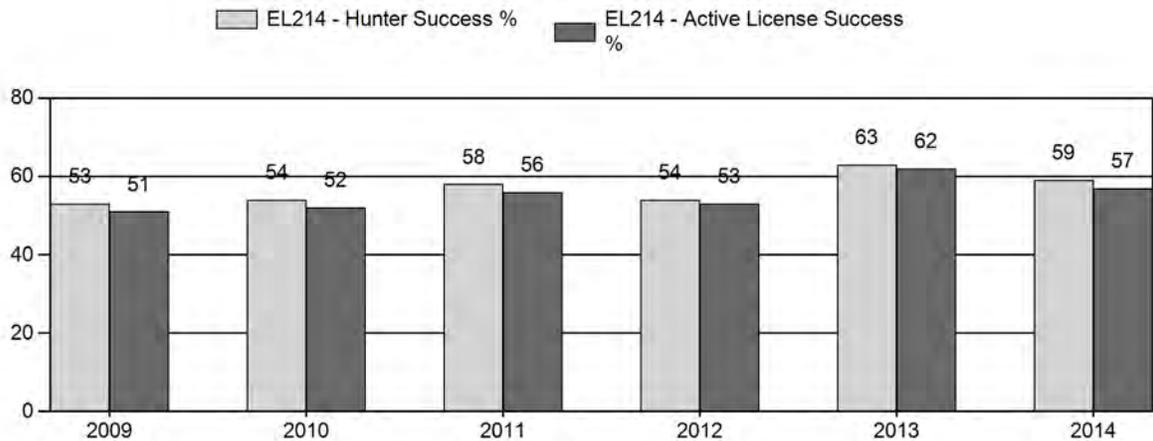
# Harvest



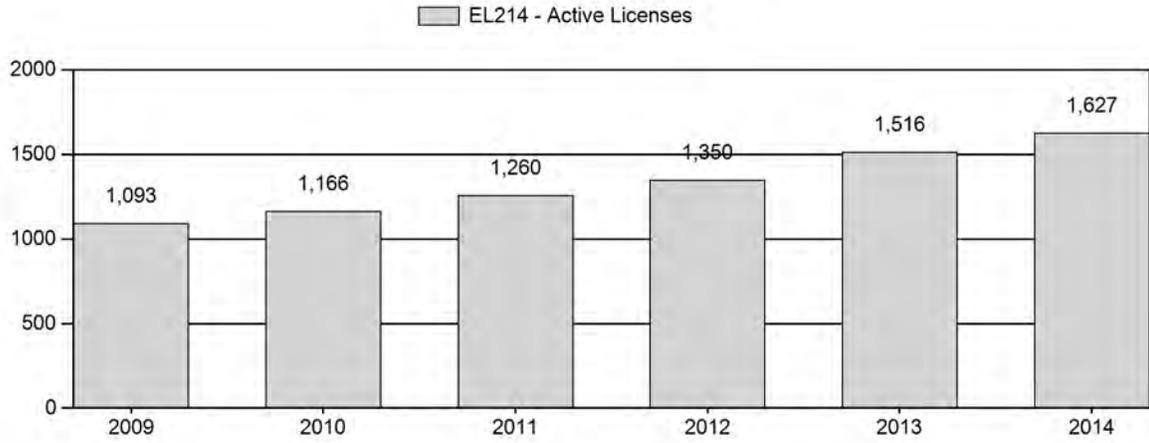
# Number of Hunters



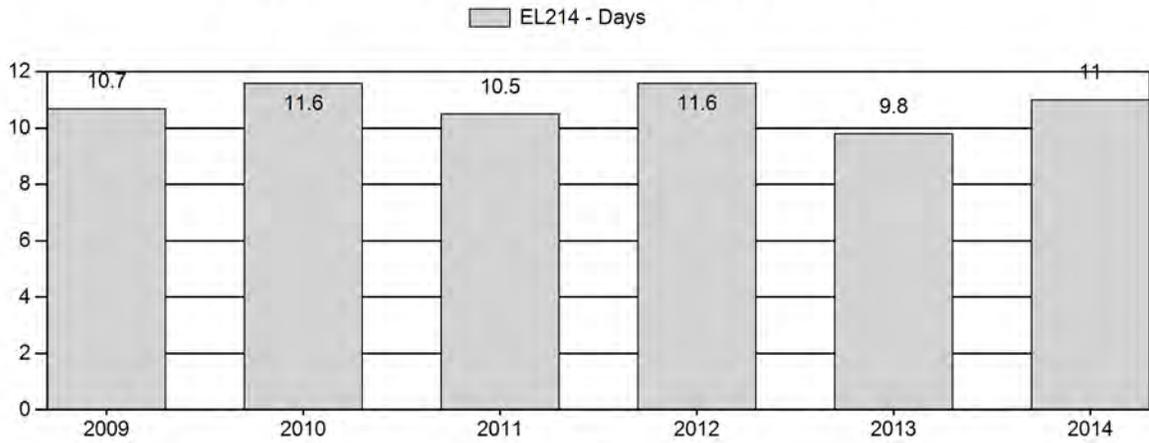
# Harvest Success



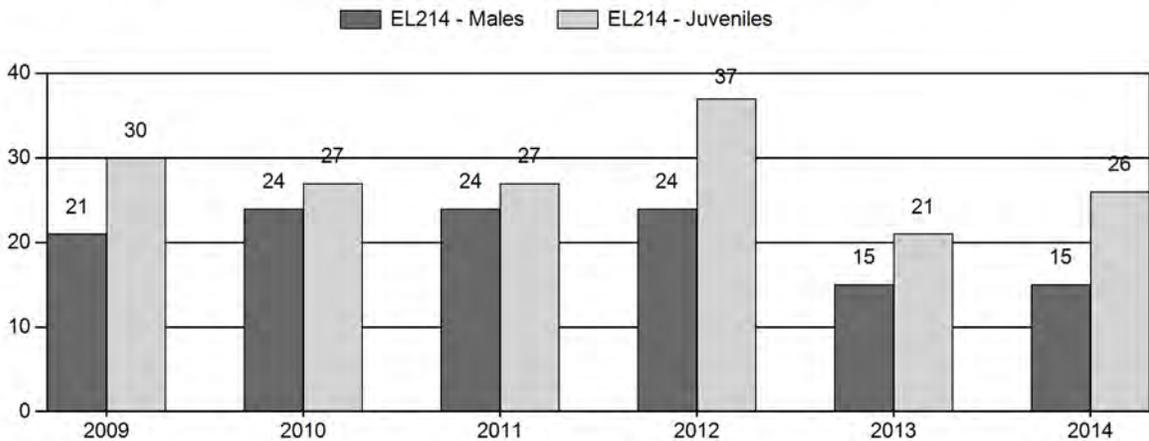
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 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
2009	4,100	176	120	296	14%	1,404	66%	421	20%	2,121	357	13	9	21	± 1	30	± 1	25
2010	3,900	184	160	344	16%	1,461	67%	388	18%	2,193	315	13	11	24	± 1	27	± 1	21
2011	3,400	187	196	383	16%	1,611	66%	440	18%	2,434	309	12	12	24	± 1	27	± 1	22
2012	0	221	255	476	15%	1,944	62%	724	23%	3,144	468	11	13	24	± 0	37	± 0	30
2013	0	177	127	304	11%	2,022	74%	422	15%	2,748	0	9	6	15	± 0	21	± 0	18
2014	0	138	124	262	11%	1,758	71%	461	19%	2,481	0	8	7	15	± 0	26	± 0	23

**2009 - 2014 Trend Count Summary**  
for Elk Herd EL214 - GOOSEBERRY

<b>Year</b>	<b>Count Dates</b>	<b>Flight Time</b>		<b>Number Counted</b>
		<b>Hours</b>	<b>Minutes</b>	
2009	JANUARY 2010	3	30	2,671
2010	FEBRUARY 2011	4	35	2,801
2011	JANUARY 2012	4	0	2,434
2012	JANUARY 2013	4	50	3,144
2013	JANUARY 2014	6	40	2,748
2014	JANUARY 2015	5	50	2,481

**2015 HUNTING SEASONS  
GOOSEBERRY ELK HERD (EL214)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
62	1	Oct. 1	Oct. 21	125	Limited quota; any elk
	4	Oct. 1	Oct. 21	75	Limited quota; antlerless elk
62, 63	5	Oct. 22	Dec. 21	200	Limited quota; antlerless elk Unused Area 62 Type 1 and Type 4 licenses valid for antlerless elk
		Dec. 1	Dec. 21		
63, 64	1	Oct. 1	Oct. 21	200	Limited quota; any elk Unused Area 63, 64 Type 1 licenses valid for antlerless elk
		Nov. 1	Dec. 21		
63	4	Oct. 1	Dec. 21	200	Limited quota; antlerless elk
	6	Aug. 15	Oct. 31	400	Limited quota; cow or calf valid off national forest north of Gooseberry Creek Unused Area 63 Type 6 licenses valid off national forest
		Nov. 1	Dec. 21		
64	2	Nov. 1	Nov. 15	100	Limited quota; any elk Unused Area 64 Type 2 licenses valid for antlerless elk
		Nov. 16	Dec. 21		
	6	Sep. 1	Nov. 14	500	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 Unused Area 64 Type 6 licenses valid in the entire area
		Nov. 15	Dec. 21		
7	Nov. 1	Dec. 21	100	Limited quota; Cow or calf valid south of and including the Cottonwood Creek Drainage	
Archery		Sep. 1	Sept. 30		Refer to Section 2 of this chapter

Hunt Area	Type	Quota change from 2014
64	6	+300
64	7	-300
<b>Total</b>	<b>6&amp;7</b>	<b>0</b>

**Management Evaluation**

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

**Management Strategy: Special**

**2014 Mid-Winter Count: 2481**

**Most Recent 3-year Running Average Trend Count: 2791**

**Herd Unit Issues** - This population appears to have remained fairly stable the past 8 years, with only a slight upward trend in the late 2000's. This trend reflects field personnel and landowner perceptions of elk densities and trends, as well as when calf ratios began to increase. Hunter access to private lands, potential damage issues, brucellosis and large predator influences will continue to be major issues in managing this elk herd. The herd objective and management strategy were last revised in 2012. Efforts to develop and implement management ideas that result in more harvest and improved hunter success have and will continue to be major concerns with this elk herd. Currently, this herd unit supports three Hunter Management Areas (Pitchfork, Absaroka Front & Owl Creek HMA's), and one large Walk-in-Area. The Pitchfork and Absaroka Front HMA's have been in place for over 15 years, and continue to provide hunter access in areas 62, 63 and 64. Hunting season structures, particularly antlerless and cow/calf seasons have become very liberal over the past 10 years. License quotas and season lengths have increased dramatically, with most antlerless and cow/calf hunting seasons being 3-4 months long. Because this herd is being managed under special management, Type 1 & 2 seasons are managed conservatively to maintain good bull quality and hunter satisfaction.

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

**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. However, with long-term drought conditions persisting, more elk are being forced to private irrigated crop fields. Two sagebrush transects were established in this herd unit in 2004 (Appendix A). Transect locations include Grass Creek and Wagonhound Bench. Sagebrush leader growth in 2014 for both the Grass Creek and Wagonhound transects was about 2.5cm. This growth is down about 10% compared to the long-term average. Winter utilization is usually around 16%, but is shared with wintering pronghorn and deer.

**Field Data** - Based on mid-winter trend counts, this elk herd increased from about 2400 elk to 2800 elk between the years 2005 and 2010. Since 2010, this trend has remained mostly stable with a 2014 3-year average of 2791 elk. The previous 3-year annual trend counts have shown a dramatic decline in elk; with 3100 counted in 2012 down to 2500 in 2014. If this trend continues, we will be reaching our winter count goal by 2016. Calf ratios have fluctuated in recent years, but on average have remained at about 28:100 cows.

**Harvest Data** - Overall, total harvest of elk in this herd unit has increased by 100% since 2009, with 2013 and 2014 the highest harvest on record. For the most part, hunter success has improved slightly and is averaging about 57%. Hunter numbers have increased by 50% since 2009. Hunter effort (10-11 days/harvest) has remained mostly stable despite increased hunter numbers. These improving harvest trends along with winter counts also reflect field personnel and landowner perceptions of declining elk densities.

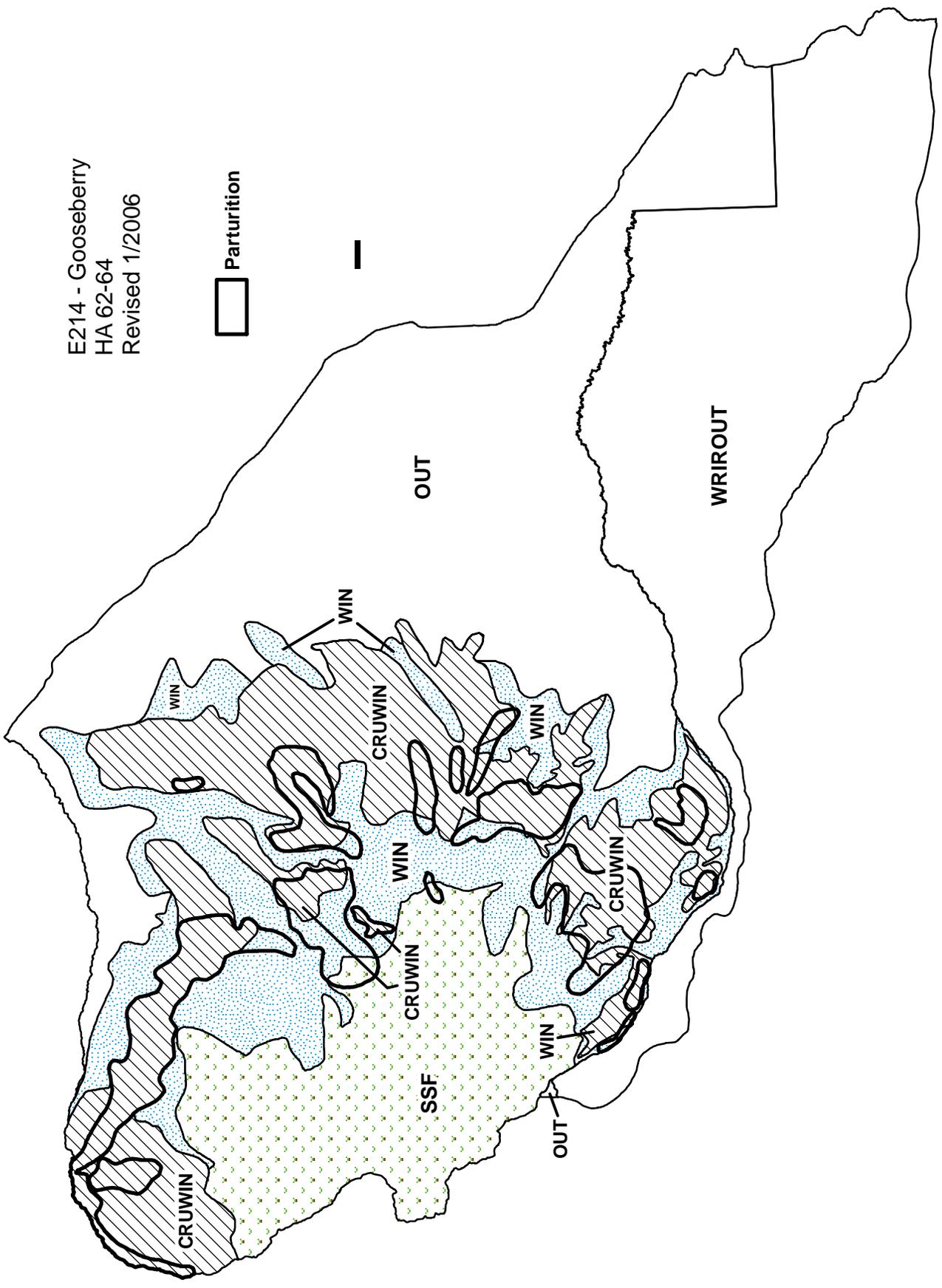
**Population** - Current trends for this elk herd appear to be declining. Mid-winter trend counts have varied in recent years, from a high of 3100 elk in 2012 to a low of 2500 elk in 2014, with a 3-year running average of 2800 elk for 2014. For the most part, field personnel feel elk numbers

are starting to show some decline, given harvest has increased by nearly 100% in recent years. With current declining trend counts, it's predicted the herd may be reaching objective levels by 2016.

**Management Summary** – Currently for the herd unit, hunter densities appear adequate, and landowner tolerance for hunter densities is mostly acceptable. Bull harvest and quality, along with hunter satisfaction remains favorable. Season lengths will continue to run until late December in all hunt areas to allow for optimum hunter opportunity. The early Type 6 season in area 64 will address potential damage concerns on hay meadows and native rangeland along Grass Creek if needed. With a 2015 projected harvest of about 900-1000 elk, we expect further declines in this population to occur, which should help push this elk herd further toward objective.

E214 - Gooseberry  
HA 62-64  
Revised 1/2006

Parturition





## 2014 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2014 - 5/31/2015

HERD: EL216 - CODY

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

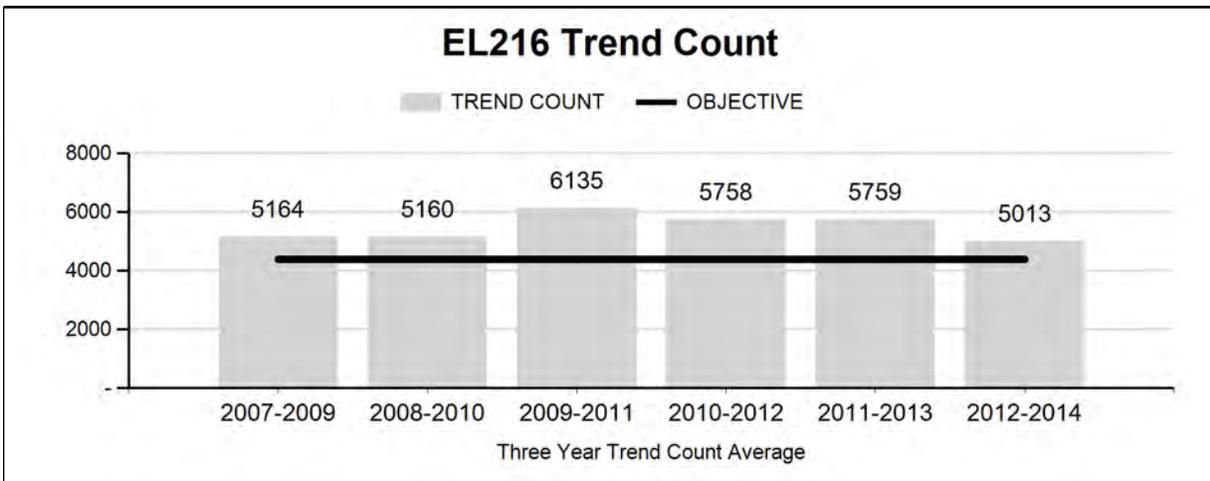
PREPARED BY: DOUG MCWHIRTER

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Trend Count:	5,667	5,110	5,000
Harvest:	1,467	1,663	1,500
Hunters:	2,833	3,215	3,000
Hunter Success:	52%	52%	50%
Active Licenses:	2,983	3,362	3,100
Active License Success	49%	49%	48%
Recreation Days:	18,117	21,247	20,000
Days Per Animal:	12.3	12.8	13.3
Males per 100 Females:	27	21	
Juveniles per 100 Females	30	24	

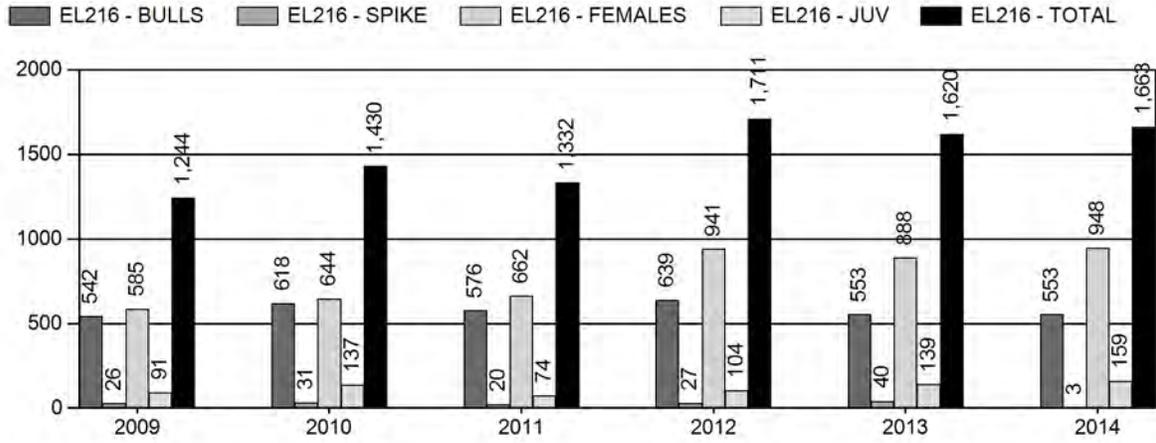
Trend Based Objective ( $\pm 20\%$ ) 4,400 (3520 - 5280)  
 Management Strategy: Special  
 Percent population is above (+) or (-) objective: 16%  
 Number of years population has been + or - objective in recent trend: 1

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

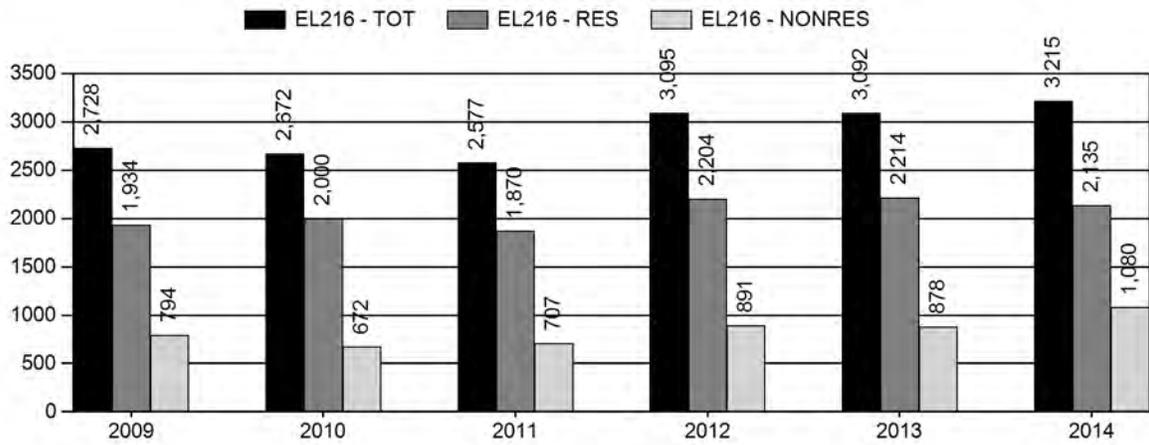
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq 1$ year old:	N/A%	N/A%
Males $\geq 1$ year old:	N/A%	N/A%
Juveniles ( $< 1$ year old):	N/A%	N/A%



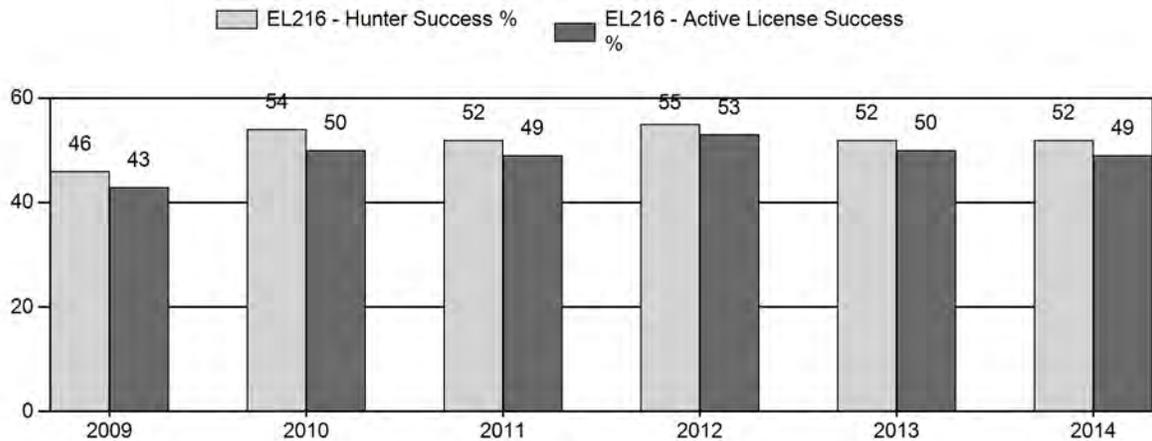
# Harvest



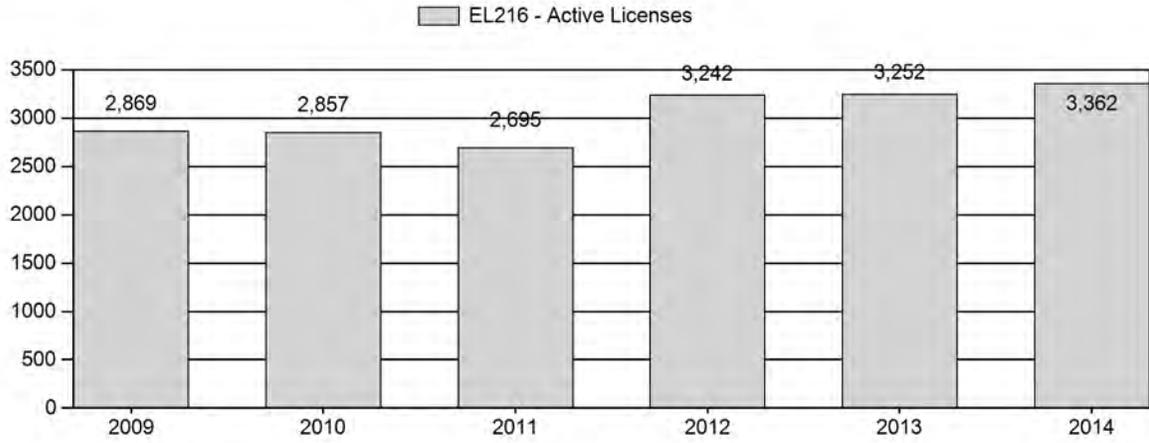
# Number of Hunters



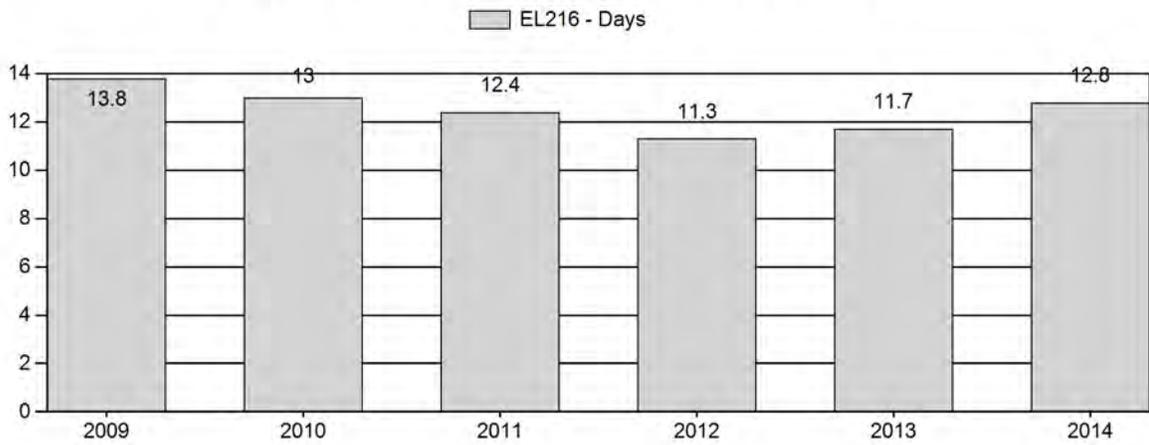
# Harvest Success



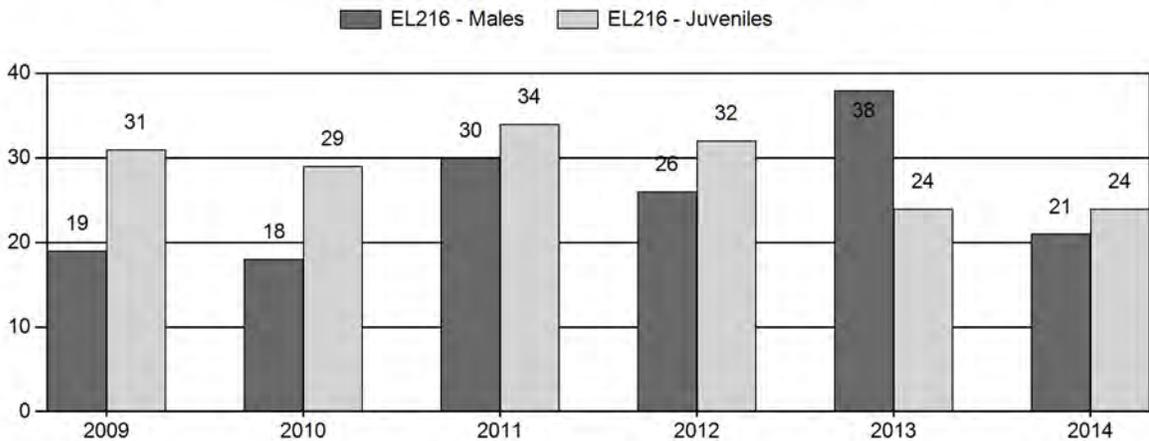
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2009 - 2014 Postseason Classification Summary

for Elk Herd EL216 - CODY

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	8,100	213	253	466	13%	2,400	66%	749	21%	3,615	284	9	11	19	± 1	31	± 1	26
2010	8,000	375	335	710	12%	3,878	68%	1,135	20%	5,723	372	10	9	18	± 1	29	± 1	25
2011	8,000	582	755	1,337	18%	4,490	61%	1,519	21%	7,346	370	13	17	30	± 0	34	± 0	26
2012	0	262	397	659	16%	2,561	63%	815	20%	4,035	388	10	16	26	± 0	32	± 0	25
2013	0	333	860	1,193	24%	3,130	62%	740	15%	5,063	377	11	27	38	± 0	24	± 0	17
2014	0	176	155	331	14%	1,604	69%	384	17%	2,319	293	11	10	21	± 0	24	± 0	20

**2015 HUNTING SEASONS  
CODY ELK HERD (EL216)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
55	1	Oct. 1	Oct. 21	50	Limited quota; any elk, spikes excluded
	9	Sep. 1	Sep. 30	25	Limited quota; any elk, archery only, spikes excluded
56		Oct. 1	Oct. 14		General license; antlered elk, spikes excluded
		Oct. 15	Oct. 21		General license; antlered elk valid within the Washakie Wilderness and North Absaroka Wilderness, spikes excluded
	1	Dec. 1	Dec. 20	10	Limited quota; any elk
	4	Nov. 1	Nov. 15	100	Limited quota; antlerless elk valid in the South Fork of the Shoshone River drainage
		Nov. 16	Dec. 21		Unused Area 56 Type 4 licenses valid in the entire area
	5	Nov. 1	Dec. 21	50	Limited quota; antlerless elk valid off national forest
	6	Nov. 16	Dec. 21	100	Limited quota; cow or calf valid in the South Fork of the Shoshone River drainage
9	Sep. 1	Sep. 30	30	Limited quota; any elk, archery only, spikes excluded	
58	1	Oct. 1	Nov. 30	35	Limited quota; any elk
	4	Oct. 1	Dec. 21	100	Limited quota; antlerless elk
	6	Oct. 1	Dec. 21	300	Limited quota; cow or calf
59		Oct. 1	Oct. 14		General license; any elk, spikes excluded
		Oct. 15	Oct. 21		General licenses; any elk within the Washakie Wilderness, spikes excluded
	1	Nov. 1	Nov. 15	10	Limited quota; any elk
	6	Nov. 1	Dec. 21	375	Limited quota; cow or calf
	7	Oct. 1	Oct. 31	25	Limited quota; cow or calf valid in the Boulder Creek drainage upstream from and including the Castle

					Creek drainage
	9	Sep. 1	Sep. 30	25	Limited quota; any elk, archery only, spikes excluded
60		Sep. 20	Oct. 22		General license; any elk, spikes excluded
	9	Sep. 1	Sep. 30	20	Limited quota; any elk, archery only, spikes excluded
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.
	2	Oct. 15	Nov. 15	50	Limited quota; any elk
	4	Oct. 15	Dec. 21	100	Limited quota; antlerless elk
	6	Sep. 1	Nov. 14	600	Limited quota; cow or calf valid north of and including the Rawhide Creek drainage
		Nov. 1	Nov. 14		Unused Area 61 Type 6 licenses also valid within the Washakie Wilderness
		Nov. 15	Dec. 21		Unused Area 61 Type 6 licenses valid in the entire area, also valid in Area 66, and that portion of Area 58 within the Dry Creek drainage
66		Aug 15.	Sept. 30		General license; any elk
		Oct. 1	Dec. 21		General license; antlerless elk
	6	Aug. 15	Dec. 21	250	Limited quota; cow or calf elk
		Dec. 22	Jan. 31		Unused Area 66 Type 6 licenses valid on private land south of Park County Road 3LE

Archery

55, 58, 61	Sep. 1	Sep. 30	Refer to Section 3 of this Chapter
56, 59	Sep. 1	Sep. 30	General license; any elk, spikes excluded, limited quota license refer to Section 3 of this Chapter
60	Sep. 1	Sep. 19	General license; any elk, spikes excluded, limited quota licenses refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
61	6	-400
<b>Total</b>	<b>6</b>	<b>-400</b>

**Management Evaluation**

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

**Management Strategy: Special**

**2014 Mid-Winter Trend Count: 5,110**

**Most Recent 3-year Running Average Trend Count: 5,013**

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

**Weather.** Weather conditions during the 2014 biological year were characterized by good spring-summer moisture, severe early-winter conditions, and very mild mid-late winter conditions.

**Habitat.** One herbaceous vegetation transect is monitored on Carter Mountain. Herbaceous production in 2013 at this site on the southeast face of Carter Mountain was near the long-term average of 363 lbs/acre. Herbaceous utilization at this site during the 2012/2013 winter was slightly higher than average at 57%.

**Field Data.** Classification surveys in 2014 yielded a calf:cow ratio of 24:100 (range 13:100 – 76:100), while the most recent 10-year (1994-2013) average calf:cow ratio is 25.5 calves:100 cows (range 15:100 – 34:100). The 2014 surveys produced a yearling bull:cow ratio of 11:100 (range 2:100 – 16:100), while the average yearling bull ratio is 9.2 yearling bulls:100 cows over the 1994-2013 period (range 7:100 - 13:100).

**Harvest.** Bull harvest in 2014 (556) was down slightly from the previous 10-year average of 615 bulls per year, and largely a result of season alterations. Antlerless elk harvest in 2014 (1,107) was the second highest recorded in this herd unit behind that achieved in 2013 (1,115). Antlerless harvest in 2012 (1,071) was the fourth highest recorded.

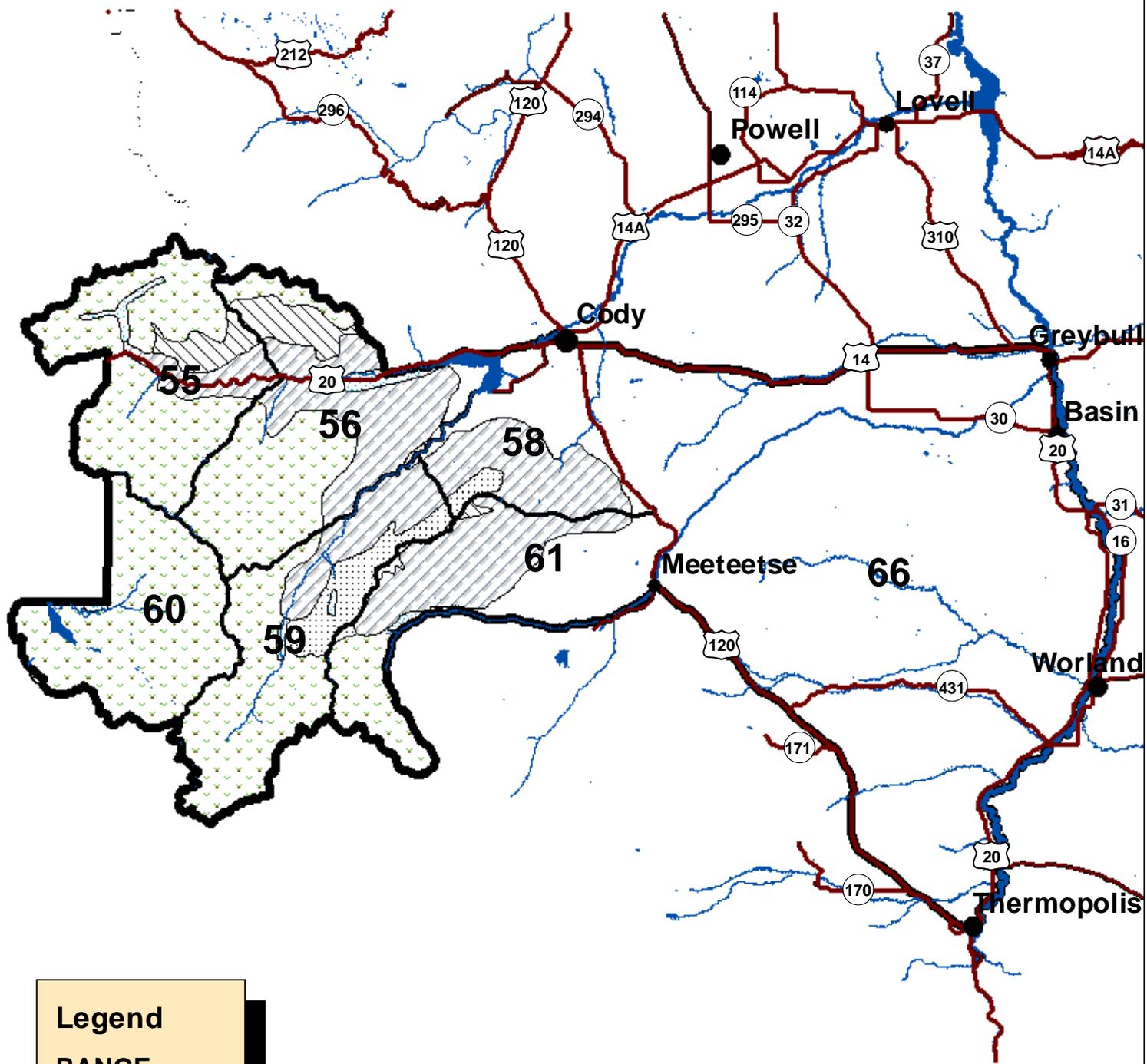
**Population.** Because past efforts to create population reliable simulation models have not proved successful, in 2012 the Cody Elk Herd Unit switched to a Mid-Winter Trend Count based population objective. Trend count objectives are based on 3-year running averages on a hunt area, multiple hunt area basis (Table 1). The Trend

Count Objective for Hunt Areas 55 & 56 is 1,150 elk, while the actual trend count average in this area is 1,282. Management efforts will be directed at maintaining or slightly reducing elk numbers. The Trend Count Objective for Hunt Areas 58 & 59 is also 1,150 elk, while the actual average trend count here is 1,355 elk. Management direction for this area is to continue to reduce elk numbers. The Trend Count Objective for Hunt Area 61 is 2,100 elk, while the actual average trend count here is 2,249 elk. Management direction for this area is to maintain elk numbers. Hunt Area 66 has no Trend Count Objective and management efforts here are to minimize elk numbers as much as possible. In total, the Trend Count Objective for the entire Cody Elk Herd Unit is 4,400 elk, while the average 3-year trend count average is 5,013. Management efforts will continue to slightly reduce elk numbers to meet this objective, with the exception of Hunt Area 66 where emphasis will continue to be placed on minimizing elk numbers.

## Cody Elk Winter Range Hunt Area Count Goals - 2014

Year	HA 55/HA 56 (1,150)	HA 58/HA 59 (1,150)	HA 61 (2,100)	HA 66 (0)	Total (4,400)
1974		-	1,066		
1978		-	-		
1980		-	-		
1982		668	1,367		
1985		775	1,350		
1986		754	-		
1987		-	1,075		
1988		848	1,459		
1991		-	-		
1992		-	1,446		
1994	1,877	971	1,990		4,838
1996	2,236	970	1,953		5,159
1997		1,103	2,800		
1999	1,303	1,027	3,000		5,330
2001	800	934	2,631		4,365
2003	1,300	1,094	2,391		4,785
2004	1,363	955	1,973		4,291
2005	1,804	1,377	2,034		5,215
2006	1,509	1,144	1,606		4,259
2007	1,158	1,714	2,862		5,734
2008	1,039	1,281	2,101		4,421
2009	1,045	1,490	2,675	127	5,337
2010	857	1,273	3,431	162	5,723
2011	1,242	2,094	4,010		7,346
2012	1,235	760	2,093	116	4,204
2013	1,401	1,726	2,431	168	5,726
2014	1,211	1,580	2,223	96	5,110

3-yr Avg	HA 55/HA 56 (1,150)	HA 58/HA 59 (1,150)	HA 61 (2,100)	HA 66 (0)	Total (4,400)
12-14	1,282	1,355	2,249	127	5,013



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  WIN
-  WYL
-  YRL
-  SSF

**E216 - Cody**  
**HA 55, 56, 58-61, 66**  
**Revised 4/2006**



## 2014 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2014 - 5/31/2015

HERD: EL217 - CLARKS FORK

HUNT AREAS: 50-54, 65, 121

PREPARED BY: DOUG MCWHIRTER

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Trend Count:	3,503	4,058	3,700
Harvest:	502	540	550
Hunters:	1,158	974	1,000
Hunter Success:	43%	55%	55%
Active Licenses:	1,236	1,020	1,025
Active License Success	41%	53%	54%
Recreation Days:	8,976	7,013	7,000
Days Per Animal:	17.9	13.0	12.7
Males per 100 Females:	19	20	
Juveniles per 100 Females	25	23	

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

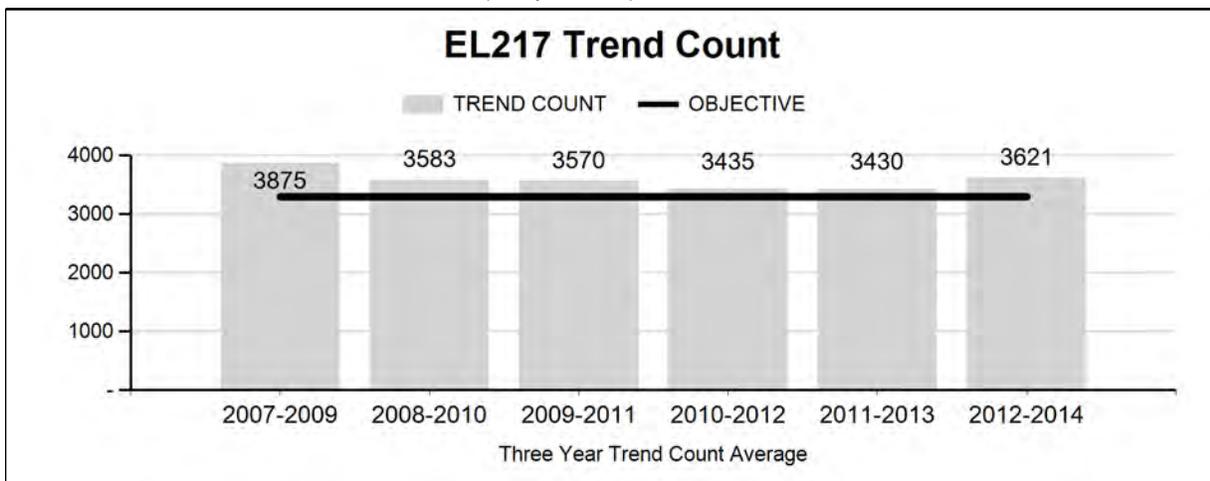
Management Strategy: Special

Percent population is above (+) or (-) objective: 23%

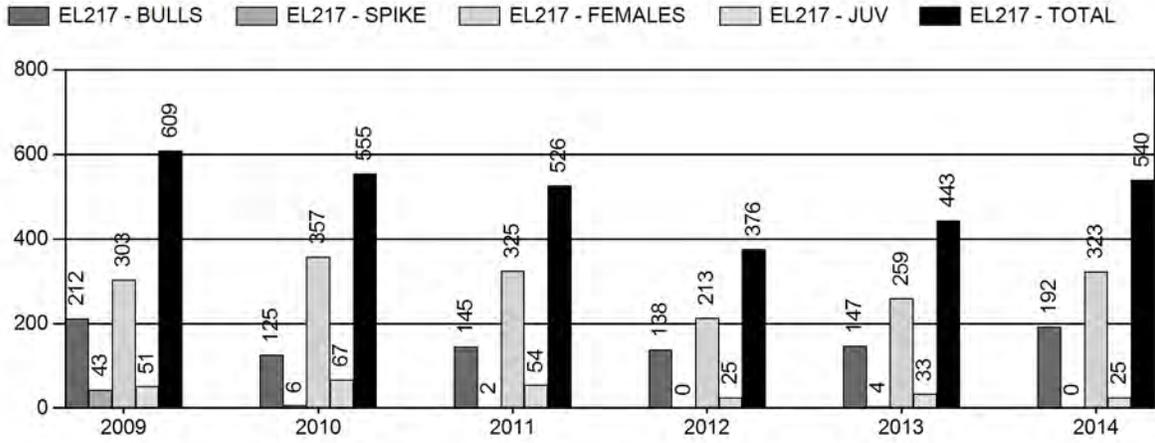
Number of years population has been + or - objective in recent trend: 7

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

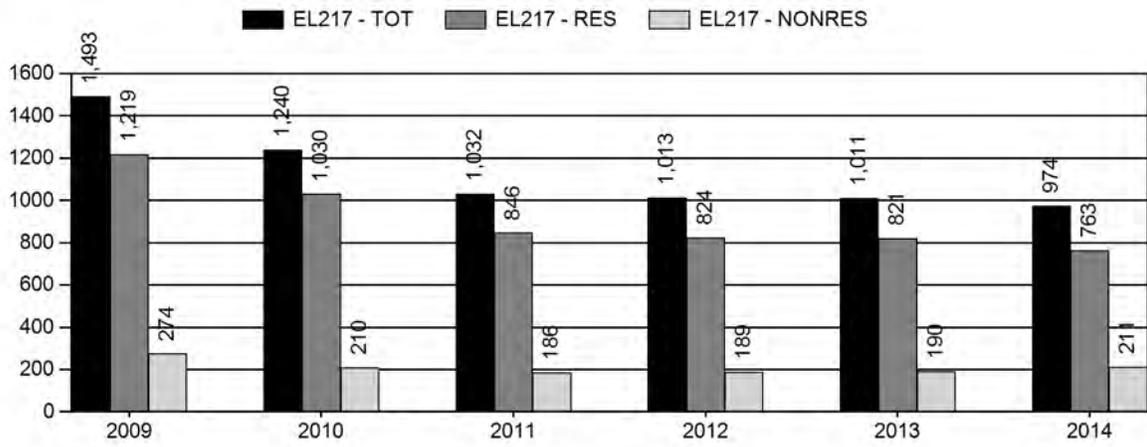
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	N/A%	N/A%
Males ≥ 1 year old:	N/A%	N/A%
Juveniles (< 1 year old):	N/A%	N/A%



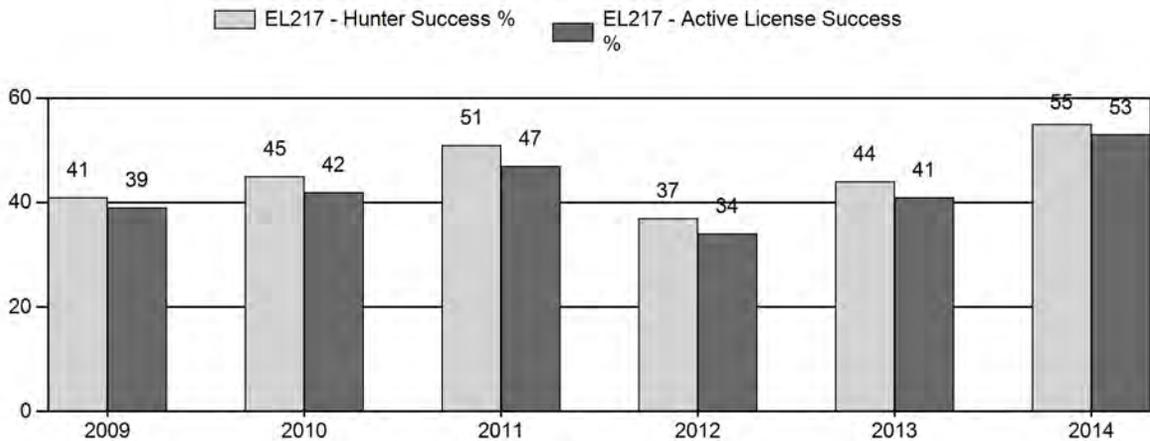
# Harvest



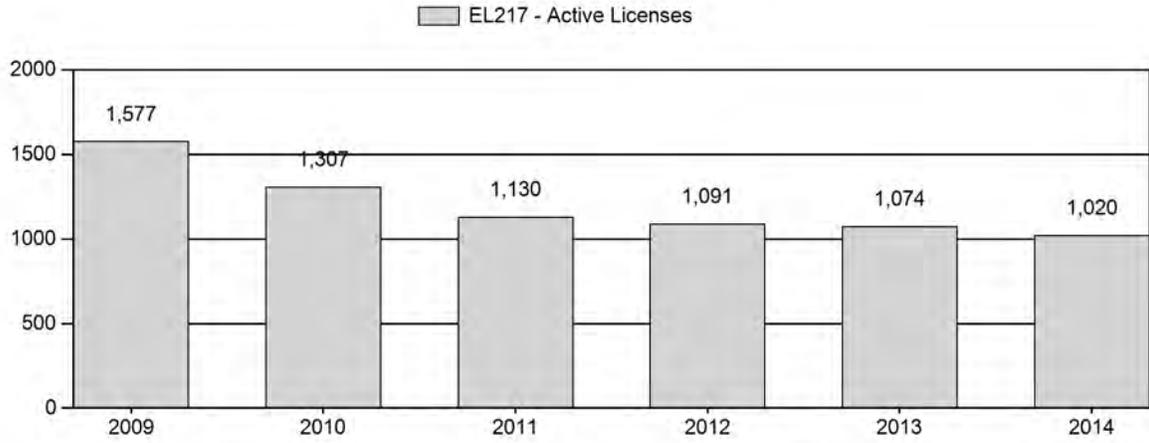
# Number of Hunters



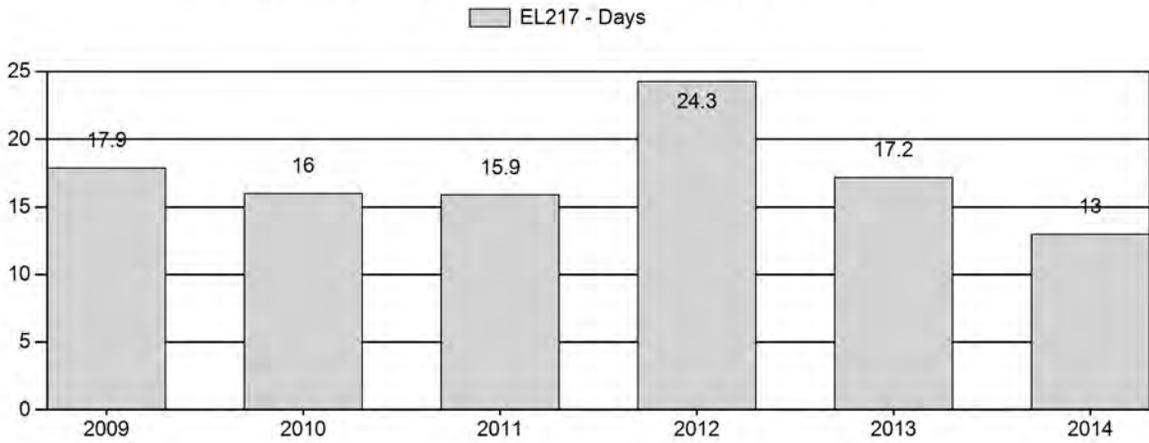
# Harvest Success



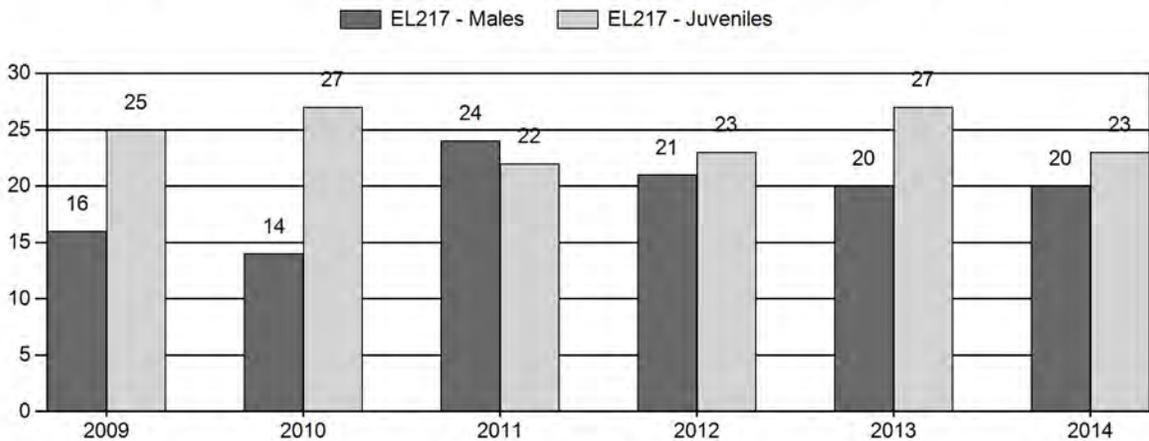
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 Postseason Classification Summary

for Elk Herd EL217 - CLARKS FORK

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	4,388	205	224	429	11%	2,738	71%	673	18%	3,840	283	7	8	16	± 0	25	± 0	21
2010	4,238	153	97	250	10%	1,782	71%	476	19%	2,508	369	9	5	14	± 1	27	± 1	23
2011	3,931	204	376	580	17%	2,379	68%	524	15%	3,483	283	9	16	24	± 0	22	± 0	18
2012	3,896	127	355	482	14%	2,331	69%	541	16%	3,354	287	5	15	21	± 0	23	± 1	19
2013	0	149	307	456	14%	2,252	68%	607	18%	3,315	366	7	14	20	± 0	27	± 0	22
2014	0	188	358	546	14%	2,670	70%	603	16%	3,819	288	7	13	20	± 0	23	± 0	19

**2015 HUNTING SEASONS  
CLARKS FORK ELK HERD (EL217)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
51	1	Oct. 1	Oct. 31	140	Limited quota; any elk
	4	Nov. 16	Dec. 15	150	Limited quota; antlerless elk
	9	Sept. 1	Sept. 30	70	Limited quota; any elk, archery only
53	1	Oct. 1	Oct. 31	10	Limited quota; any elk
	2	Nov. 1	Nov. 30	75	Limited quota; any elk valid in the Shoshone River drainage
	4	Oct. 1	Dec. 15	50	Limited quota; antlerless elk
	6	Nov. 1	Dec. 21	200	Limited quota; cow or calf elk valid in the North Fork Shoshone drainage
	9	Sept. 1	Sept. 30	10	Limited quota; any elk, archery only
54	1	Oct. 1	Nov. 30	50	Limited quota; any elk south of the Clarks Fork River
	2	Oct. 1	Oct. 31	25	Limited quota; any elk north of the Clarks Fork River
	6	Sep. 1	Oct 31	100	Limited quota; cow or calf elk
	7	Nov 1	Dec. 21	250	Limited quota; cow or calf elk
	9	Aug. 15	Sept. 30	35	Limited quota; any elk; archery only
Archery 54		Sept. 1	Sept. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
	1	-15
	4	-25
	6	-100
	7	+50
	9	-15
<b>Total</b>	<b>1-2</b>	<b>-15</b>
	<b>4-5</b>	<b>-25</b>
	<b>6-7</b>	<b>-100</b>
	<b>9</b>	<b>-15</b>

### Management Evaluation

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

**Management Strategy: Special**

**2014 Mid-Winter Trend Count: 4,058**

**Most Recent 3-year Running Average Trend Count: 3,709**

**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 2014 biological year were characterized by good spring-summer moisture, severe early winter conditions, and very mild mid-late winter conditions.

**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 U.S. Forest Service lands. Herbaceous production on most sites during 2013 in Sunlight Basin was generally near the most recent 8-year average, although two of five sites were substantially below average (range 175 lbs/ac – 500 lbs/ac). Herbaceous utilization at these sites during the 2012-2013 winter was variable, with Little Bald Ridge receiving lighter use than normal (only 50% utilization) and Sunlight Basin receiving more or less average use. Use levels continue to be high on Riddle Flat and Teepee Gulch, with utilization exceeding 80%.

**Field Data.** Classifications in 2014 yielded a calf:cow ratios of 14:100 for migratory elk and 33:100 for non-migratory elk. The most recent 10-year (1994-2013) average calf:cow ratio of migratory elk is 14.5 calves:100 cows (range 11:100 – 21:100), while the average calf:cow ratio of non-migratory elk is 35.0 calves:100 cows (range 26:100 – 43:100). Yearling bull:cow ratios in 2014 were 5:100 for migratory elk, and 9:100 for non-migratory elk. The most recent 10-year (1994-2013) average yearling bull:cow ratios were 4.4 yearling bulls:100 cows for migratory elk (range 3:100 - 6:100), while non-migratory elk averaged 11.1 yearling bulls:100 cows (range 7:100 – 14:100). Hence the need for conservative management of migratory elk and liberal management of non-migratory elk.

**Harvest Data.** Bull harvest in 2014 (192) was the highest seen since 2009 and the highest since the herd unit has been entirely limited quota. Much of this increase is a result of a higher harvest of non-migratory bulls (121), similar to that seen in 2003 (130), 2005 (111), and 2009 (112). The average harvest of non-migratory bulls from 2003-2013 was 92. All of the bulls killed in 2014 were branch-antlered, continuing a trend seen since 2011.

Harvest of antlerless elk increased herd unit wide, primarily in response to very high success rate (82%) of antlerless elk hunters in Hunt Area 51 compared to the preceding two years. The harvest of antlerless elk in Hunt Areas 53 and 54 was steady from 2013 to 2104 due to increased harvest in Hunt Area 54 and decreased antlerless harvest in Hunt Area 53. Leftover cow-calf licenses in Hunt Area 53 were at the bottom of the on-line leftover list and not in numerical order, leaving many people to think there were no leftover licenses.

**Population.** Hunt Area 51 has a Mid-Winter Trend Count Objective of 1,800 elk. The 3-year running average trend count for this area is 1,789 (Table 1.). An incomplete count in 2013, and movement of elk out of Hunt Area 51 and into Hunt Area 54 in both 2013 and 2014 lead to the assessment there are probably more than the objective of 1,800 elk currently in Hunt Area 51. Hence, this segment of the herd unit is at or slightly over the management objective.

Hunt Area 53 has a Mid-Winter Trend Count Objective of 600 elk, while the 3-year running average trend count is 660 elk. Similar to Hunt Area 51, this segment of the herd unit is also at or slightly over the management objective.

Hunt Area 54 has a Mid-Winter Trend Count Objective of 900 elk, while the 3-year running average trend count is 1,260 elk. This figure may be slightly inflated due to movement of elk out of Hunt Area 51 and into Hunt Area 54 prior to completion of trend count surveys. Still, current elk numbers exceed management objectives by perhaps 15%. With high levels of productivity, management of this segment of the herd unit requires continued hunting pressure.

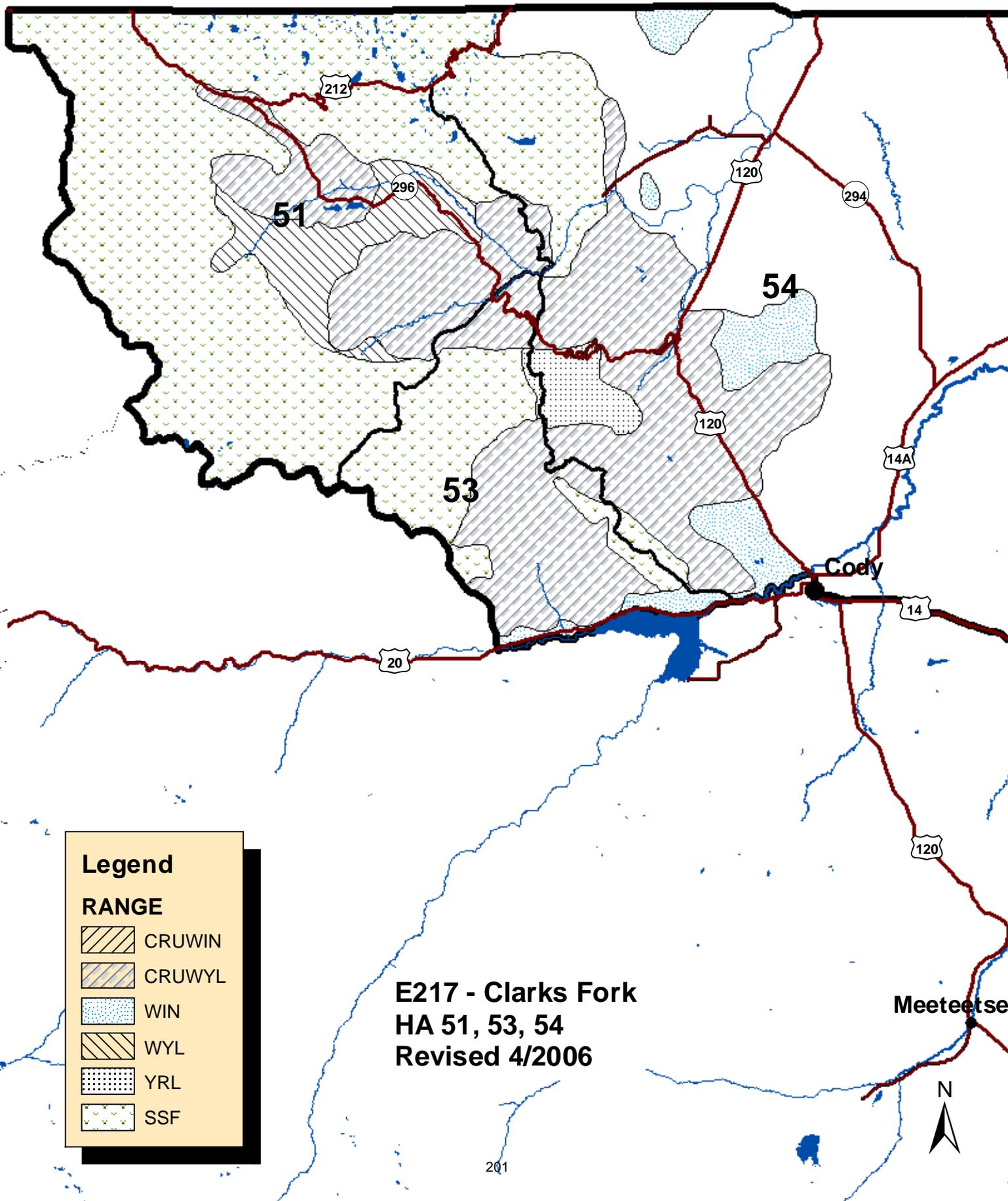
Overall, elk numbers in this herd unit exceed management objectives by 12%. We will continue with the current management structure for migratory elk (which consists of conservative bull seasons, with little antlerless harvest), while continuing to target non-migratory elk with abundant and lengthy antlerless licenses. The 2015 seasons should result in post-season 2015 population closer to the objective of 3,300 observed elk on winter range.

## Clarks Fork Elk Winter Range Hunt Area Count Goals – 2014

	NEW HA51	NEW HA53	NEW HA54	HERD UNIT TOTAL
1987	1254	7	1316	2577
1988	1394	149	1055	2598
1989	0		0	0
1990	0		0	0
1991	0		0	0
1992	1767	300	1158	3225
1993	0		0	0
1994	1729	366	1314	3409
1995	0		0	0
1996	0		0	0
1997	0		0	0
1998	2405	218	1498	4121
1999	1902	388	1510	3800
2000	0		0	0
2001	0		0	0
2002	1514	330	1366	3210
2003	0		0	0
2004	1570	379	1546	3495
2005	1533	496	1785	3814
2006	1953	616	1853	4422
2007	1839	525	1897	4261
2008	1770	474	1279	3523
2009	2079	553	1210	3842
2010	1741	647	999	3387
2011	1746	772	1140	3658
2012	2041	731	926	3698
2013*	1,414	610	1348	3372
2014	1,914	638	1506	4058

3-yr Avg	HA51 (1800)	HA53 (600)	HA54 (900)	Total (3300)
12-14	1789	660	1260	3709

\* partial count of Area 51 in 2013



**Legend**

**RANGE**

-  CRUWIN
-  CRUWYL
-  WIN
-  WYL
-  YRL
-  SSF

**E217 - Clarks Fork  
HA 51, 53, 54  
Revised 4/2006**

**Meeteetse**





## 2014 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2014 - 5/31/2015

HERD: MO201 - ABSAROKA

HUNT AREAS: 8-9, 11

PREPARED BY: DOUG  
MCWHIRTER

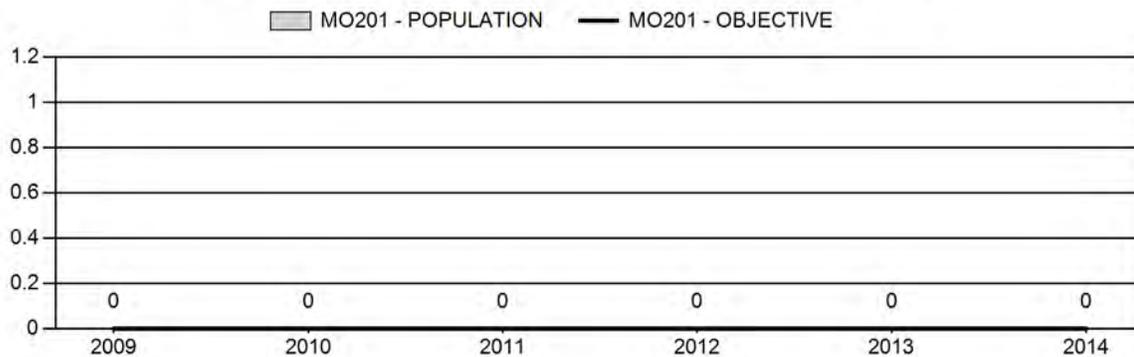
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	0	N/A	N/A
Harvest:	9	10	10
Hunters:	10	11	10
Hunter Success:	90%	91%	100 %
Active Licenses:	10	11	10
Active License Success:	90%	91%	100 %
Recreation Days:	75	102	90
Days Per Animal:	8.3	10.2	9
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

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

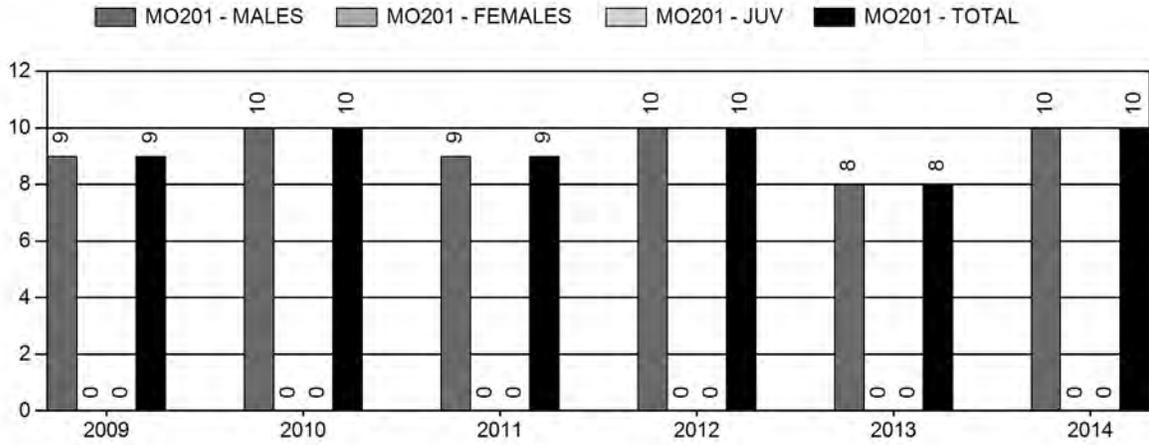
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

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

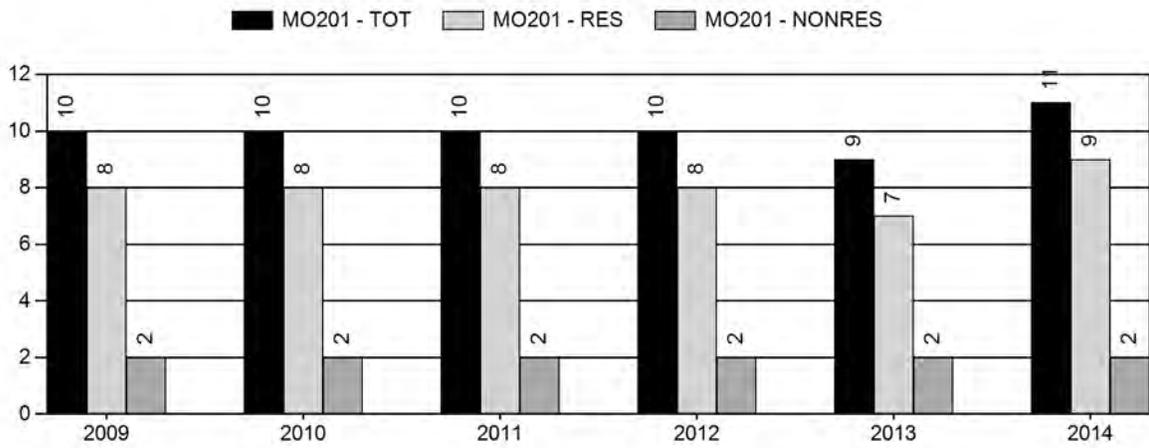
## Population Size - Postseason



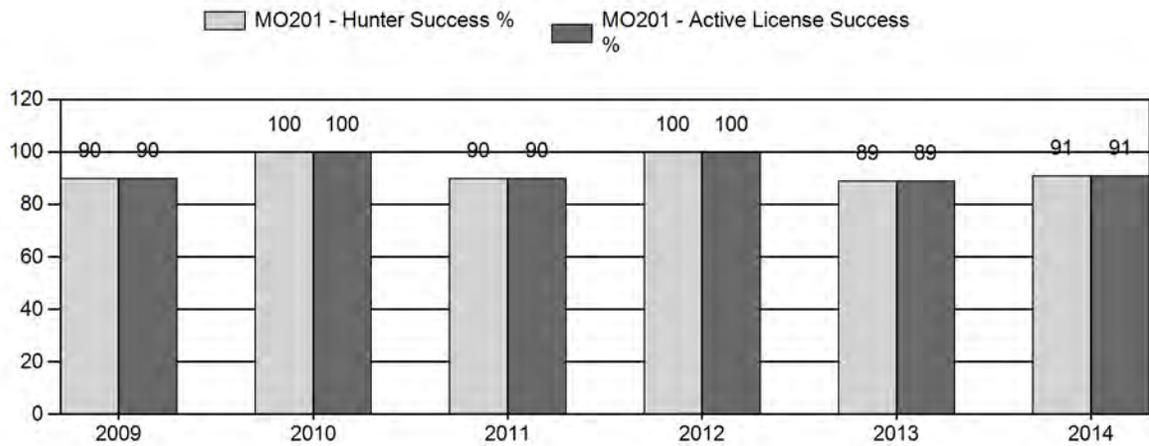
# Harvest



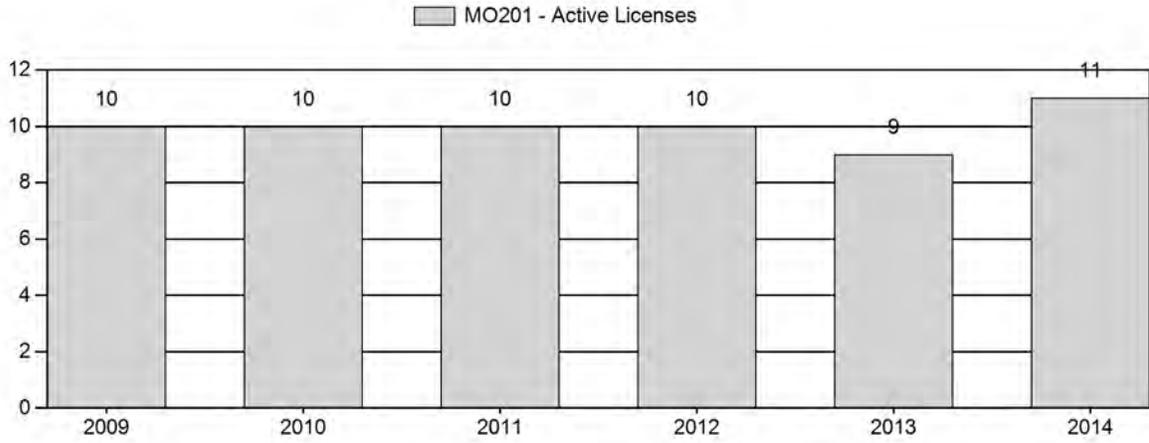
# Number of Hunters



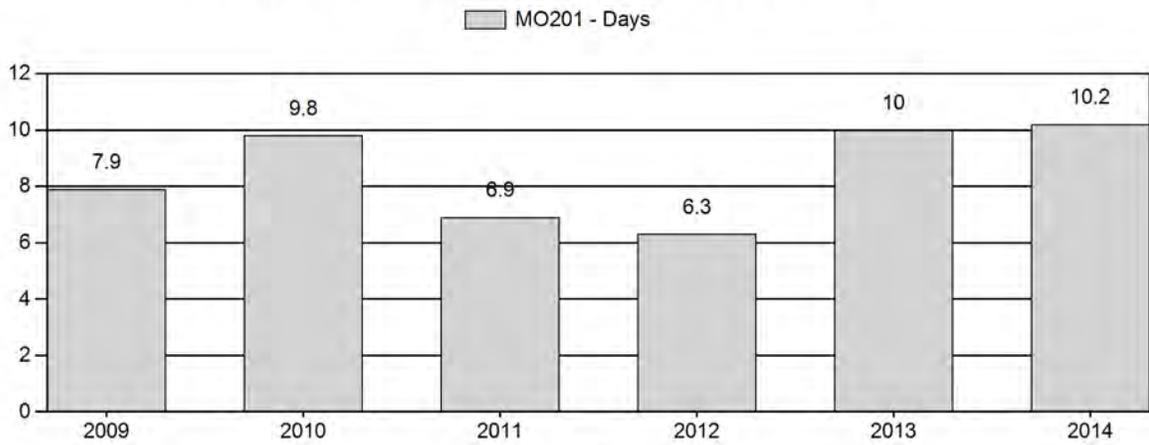
# Harvest Success



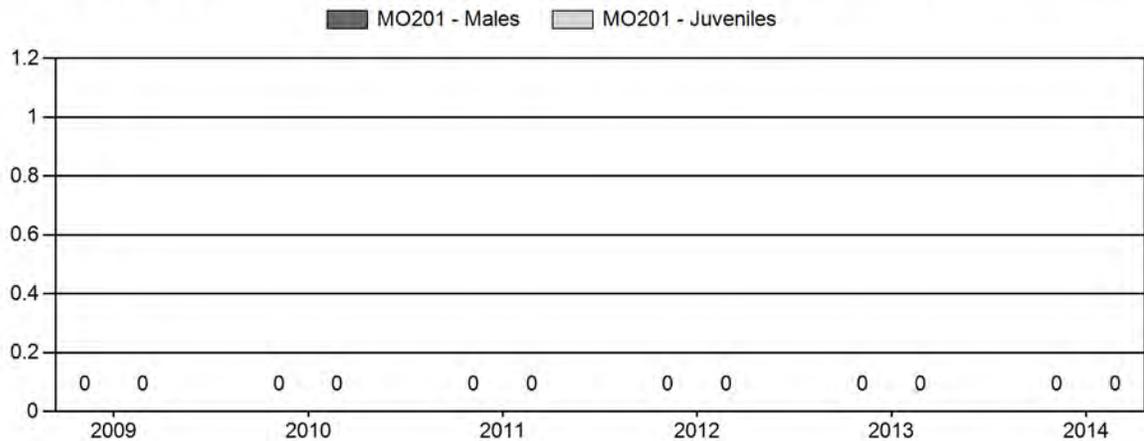
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



**2015 HUNTING SEASONS  
ABSAROKA MOOSE HERD (MO201)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
8		CLOSED			
9	1	Oct. 1	Oct. 31	5	Limited quota; antlered moose
11	1	Sep. 10	Nov. 10	5	Limited quota; antlered moose
Archery 9		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter
11		Sep. 1	Sep. 9		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
		No Change
<b>Total</b>		<b>No Change</b>

**Management Evaluation**

**Current Median Age Objective:  $\geq 4.5$  years**

**Current Hunter Effort Objective:  $\leq 12$  days**

**Current Secondary Median Age Objective:  $40\% \geq 5$  years**

**Management Strategy: Special**

**Most Recent 5-Year Running Average Median Age: 5.5 years**

**Most Recent 5-Year Running Average Hunter Effort: 10.2 days**

**Most Recent 5-Year Running Average  $\% \geq 5$  Years: 60%**

**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.

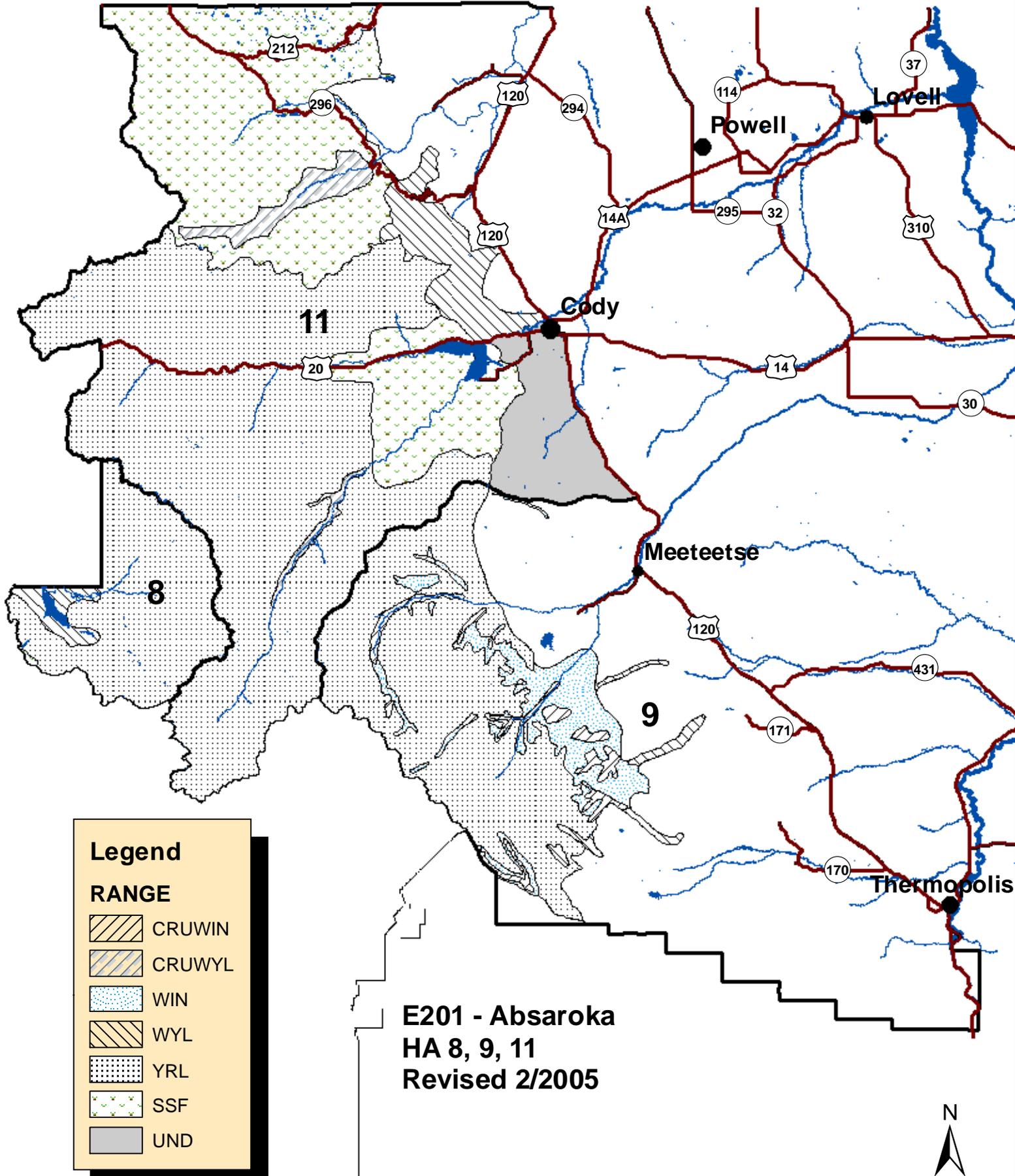
**Field Data.** None exists for this herd unit. Because moose exist at such low densities in this herd unit, collection of classification and trend information is essentially impossible. The last comprehensive effort was in 2004, when 9.3 hours of helicopter survey time was spent to survey the entire 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 2014, hunter success was 83% (5/6) in Area 9 and 100% (5/5) in Area 11. There were 6 hunters in Area 9 due to a medical carry-over from 2013. Aged animals from Area 9 included a 6.5 bull and a 7.5 year bull, while aged animals from Area 11 included a 3.5, a 4.5, and a 5.5 year old bull. Hunter effort was 11.2 days/moose harvested in Area 9 and 9.2 days/harvested moose in Area 11. Hunter in 2014 saw an average of 11.0 moose during their hunt.

**Population.** Because the collection of survey data is difficult, if not impossible to collect, both population estimate and trend count based objectives are not possible. Therefore, herd unit objectives based on median age of harvested bulls and a running average of hunter effort were adopted in 2014. The objective for median age of harvested bulls is  $\geq 4.5$  years, while the 5-year running average (2009-2014) is 5.5 years of age. A secondary median age objective is to have  $\geq 40\%$  of harvested bulls be at least 5 year old, while the 5-year running average (2009-2014) is 60%. The hunter effort objective is to have less than 12 days per moose harvested, while the 5-year running average (2009-2014) is 10.2 days.

The current season structures in Hunt Areas 9 and 11 are addressing moose management goals. Therefore, 5 permits will be issued for Hunt Area 9 and 5 permits for Hunt Area 11 for 2015, which should result in the harvest of 9-10 bull moose.



## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS201 - CLARKS FORK

HUNT AREAS: 1

PREPARED BY: DOUG  
MCWHIRTER

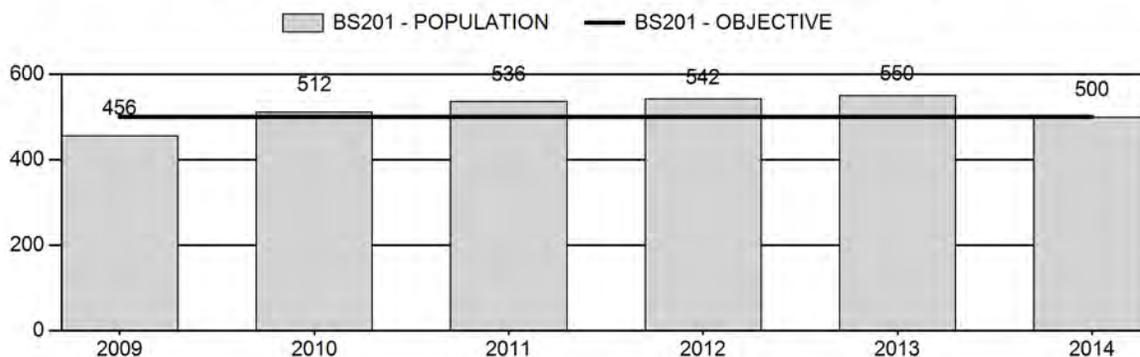
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	519	500	500
Harvest:	14	18	16
Hunters:	20	21	20
Hunter Success:	70%	86%	80 %
Active Licenses:	20	21	20
Active License Success:	70%	86%	80 %
Recreation Days:	204	156	150
Days Per Animal:	14.6	8.7	9.4
Males per 100 Females	27	27	
Juveniles per 100 Females	40	22	

Population Objective (± 20%) :	500 (400 - 600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	8
Model Date:	2/19/2015

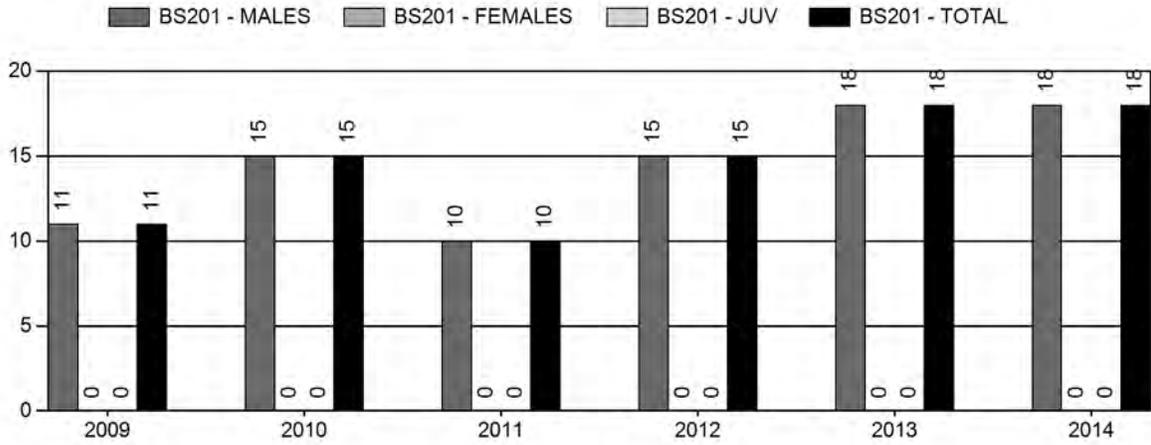
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	17.8%	24.5%
Juveniles (< 1 year old):	0%	0%
Total:	3.1%	3.5%
Proposed change in post-season population:	-10.2%	-10.0%

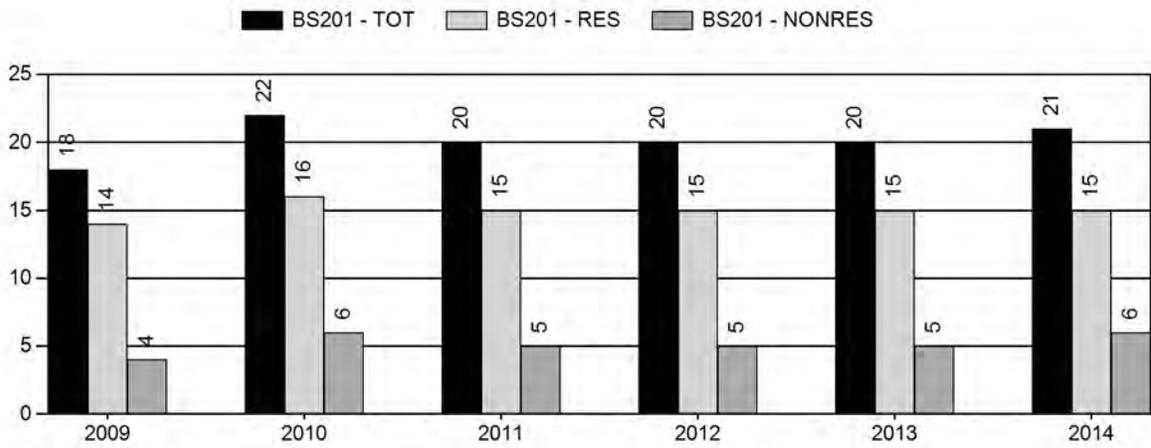
## Population Size - Postseason



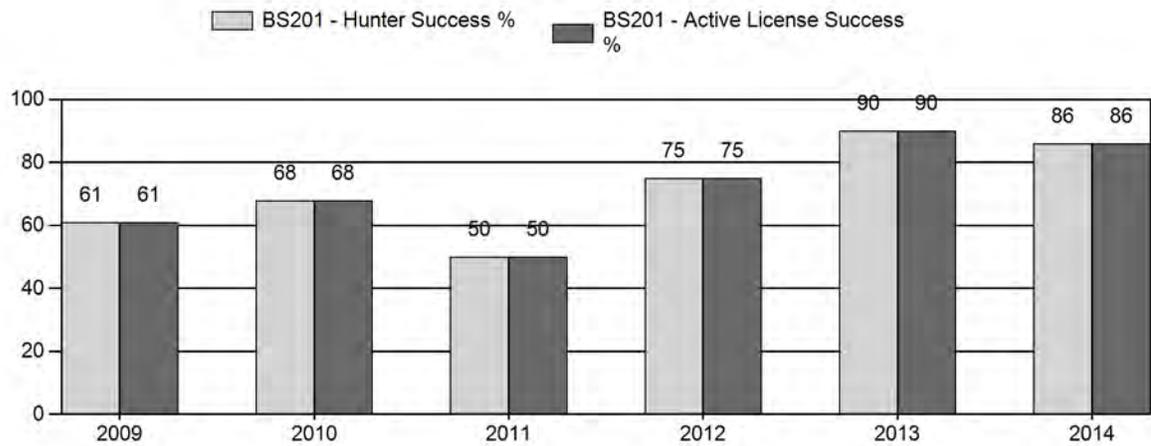
# Harvest



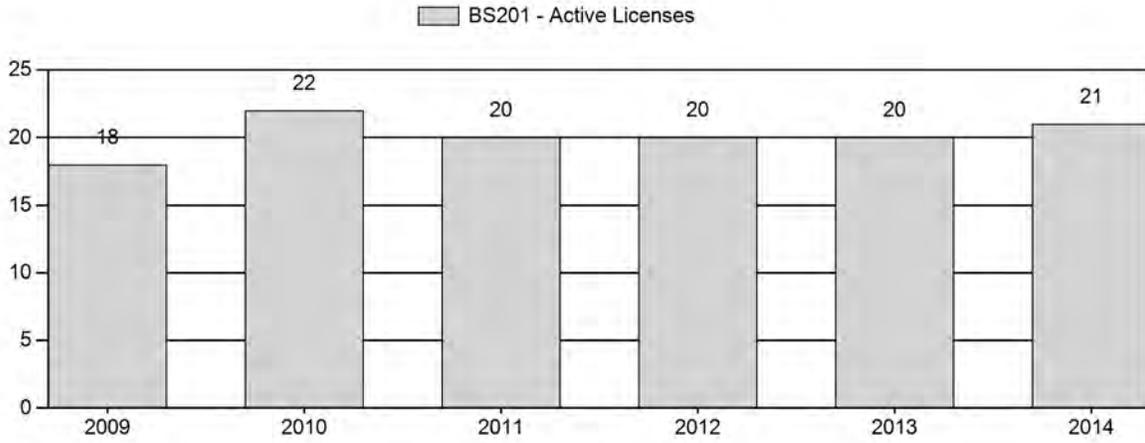
# Number of Hunters



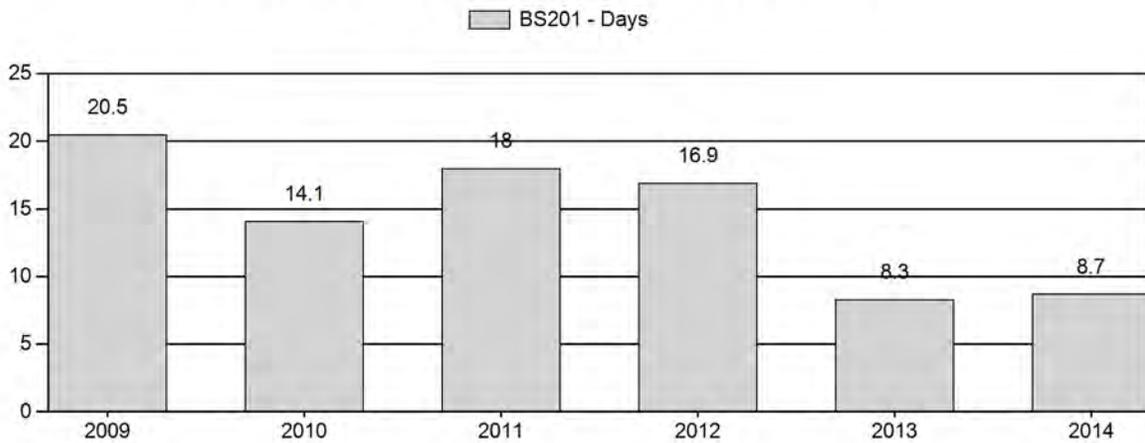
# Harvest Success



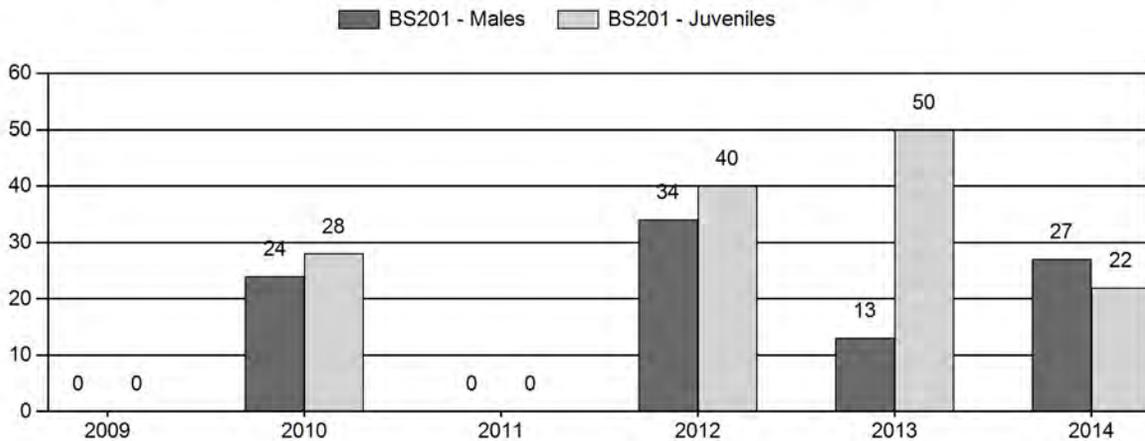
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2009 - 2014 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
2009	456	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	512	0	7	7	16%	29	66%	8	18%	44	274	0	24	24	± 12	28	± 14	22
2011	536	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	542	0	26	26	19%	77	57%	31	23%	134	274	0	34	34	± 9	40	± 10	30
2013	550	0	4	4	8%	30	61%	15	31%	49	289	0	13	13	± 9	50	± 19	44
2014	500	0	25	25	18%	91	67%	20	15%	136	274	0	27	27	± 7	22	± 6	17

**2015 HUNTING SEASONS  
CLARKS FORK BIGHORN SHEEP SUB-HERD**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
1	1	Sep. 1	Oct. 31	20	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
		No Change
<b>Total</b>		<b>No Change</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 500**

**Management Strategy: Special**

**2014 Postseason Population Estimate: ~500**

**2015 Proposed Postseason Population Estimate: ~450**

**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 summer of 2014 were favorable throughout the Absaroka Mountains, with good precipitation to promote forage growth. However, lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

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

**Field Data.** Attempts to classify sheep on summer range while conducting mountain goat surveys in 2013 were not successful. Preseason classification samples from recent surveys however reflect good lamb:ewe (51:100 – 65:100) and ram:ewe (42:100 – 56:100) ratios in most years surveyed (6 surveys over the last 10 years). Poor lamb:ewe ratios as seen in 2009 (32:100) do occasionally occur and can affect ram

recruitment. Recent trend counts (401 sheep in 2006, 409 in 2009, 390 in 2011) also provide support that this herd is probably near the objective of 500 sheep.

**Harvest Data.** In 2014, 21 hunters took 18 rams for a success rate of 86.6%, which is among the better years seen since permits were increased to 20 in 2007. The average age of rams killed in 2014 was 7.7 years old, with 55.6% of the rams killed being 8 years old and older. One ram less than  $\frac{3}{4}$  curl was killed in 2014, representing 5.5% of the harvested rams.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate 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 2014 population is estimated to be approximately 500 sheep. Efforts will continue to improve this model and improve reliability.

All indicators show good population performance, and an acceptable presence of mature rams. Therefore license numbers will remain at 20 for the 2015 season. This should result in a postseason 2015 population of approximately 450-500 sheep.

Harvest parameters for the Clarks Fork Bighorn Sheep Herd Unit, 1968-2014 (Wyoming portion only).

	1968-72	1973-91	1992-97	1998-2002	2003-2006*	2007-2013*	2014*
Permits	20	24	20	16	16	20	21
Harvest	7.4	11.9	10.7	10.6	14.3	13.4	18
% Success	49.0%	53.5%	52.9%	67.7%	90.3%	67.6%	85.6 %
Effort (days/ram)	6.8	16.7	17.7	16.7	10.3	18.2	8.7
Avg. Age	-	6.6	6.9	7.0	6.4	7.0	7.7
% Rams $\geq$ 8 Yrs	-	31.7%	26.7%	32.0%	21.1%	35.2%	55.6%
% Rams $\leq$ $\frac{3}{4}$ Curl	-	-	-	-	15.9%	6.4%	5.5%

\* “any ram” regulation in place

<b>INPUT</b>	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Clarks Fork
Model date:	02/19/15

Clear form

<b>MODELS SUMMARY</b>		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	71	62	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	1735	1726	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	223	43	

**Population Estimates from Top Model**

Year	Predicted Prehunt Population (year <i>t</i> )		Total	Predicted Posthunt Population (year <i>t</i> )		Total	Predicted adult End-of-bio-year Pop (year <i>t</i> )		Total Adults	LT Population Estimate Field Est	Trend Count	Objective
	Juveniles	Total Males		Females	Juveniles		Total Males	Females				
1993	37	42	111	37	32	111	181	113	151			
1994	57	37	111	57	23	111	192	123	162			
1995	51	38	121	51	26	121	198	130	170			
1996	54	39	127	54	25	127	207	132	166			
1997	61	34	129	61	23	129	213	135	168			
1998	66	32	132	66	22	132	221	139	173			
1999	66	33	136	66	21	136	224	143	176			
2000	68	32	140	68	22	140	230	147	181			
2001	87	34	144	87	23	144	254	163	211			
2002	81	46	160	81	31	160	272	177	230			
2003	113	52	173	113	35	173	321	199	265			
2004	105	65	195	105	49	195	349	217	295			
2005	124	76	213	124	63	213	400	240	337			
2006	119	95	235	119	79	235	433	252	354			
2007	138	100	247	138	83	247	468	263	368			
2008	144	103	257	144	93	257	494	273	391			
2009	86	115	268	86	103	268	456	278	399			
2010	138	118	273	138	102	273	512	287	410			
2011	145	121	281	145	110	281	536	296	424			
2012	143	125	291	143	109	291	542	305	432			
2013	147	125	299	147	105	299	551	284	382			
2014	137	96	278	137	77	278	491	264	337			
2015	127	72	258	127	55	258	440	245	296			
2016	118	49	240	118	32	240	390					
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

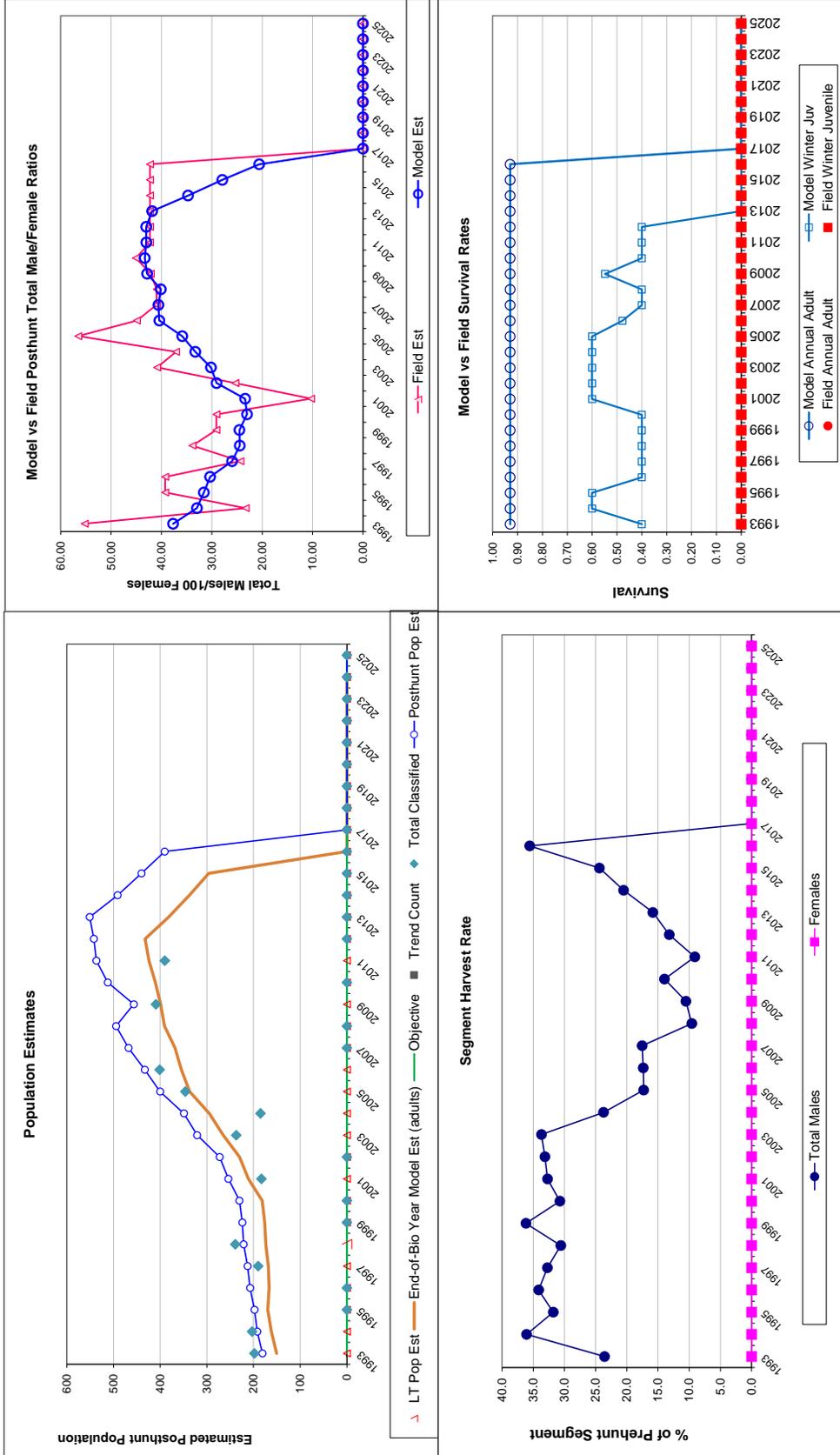
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est.	SE	Model Est.	SE
1993	0.40		0.93	
1994	0.60		0.93	
1995	0.60		0.93	
1996	0.40		0.93	
1997	0.40		0.93	
1998	0.40		0.93	
1999	0.40		0.93	
2000	0.40		0.93	
2001	0.60		0.93	
2002	0.60		0.93	
2003	0.60		0.93	
2004	0.60		0.93	
2005	0.60		0.93	
2006	0.48		0.93	
2007	0.40		0.93	
2008	0.40		0.93	
2009	0.55		0.93	
2010	0.40		0.93	
2011	0.40		0.93	
2012	0.40		0.93	
2013	0.00		0.93	
2014	0.00		0.93	
2015	0.00		0.93	
2016	0.00		0.93	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Adult Survival =		0.930
Initial Total Male Pop/10,000 =		0.004
Initial Female Pop/10,000 =		0.011

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

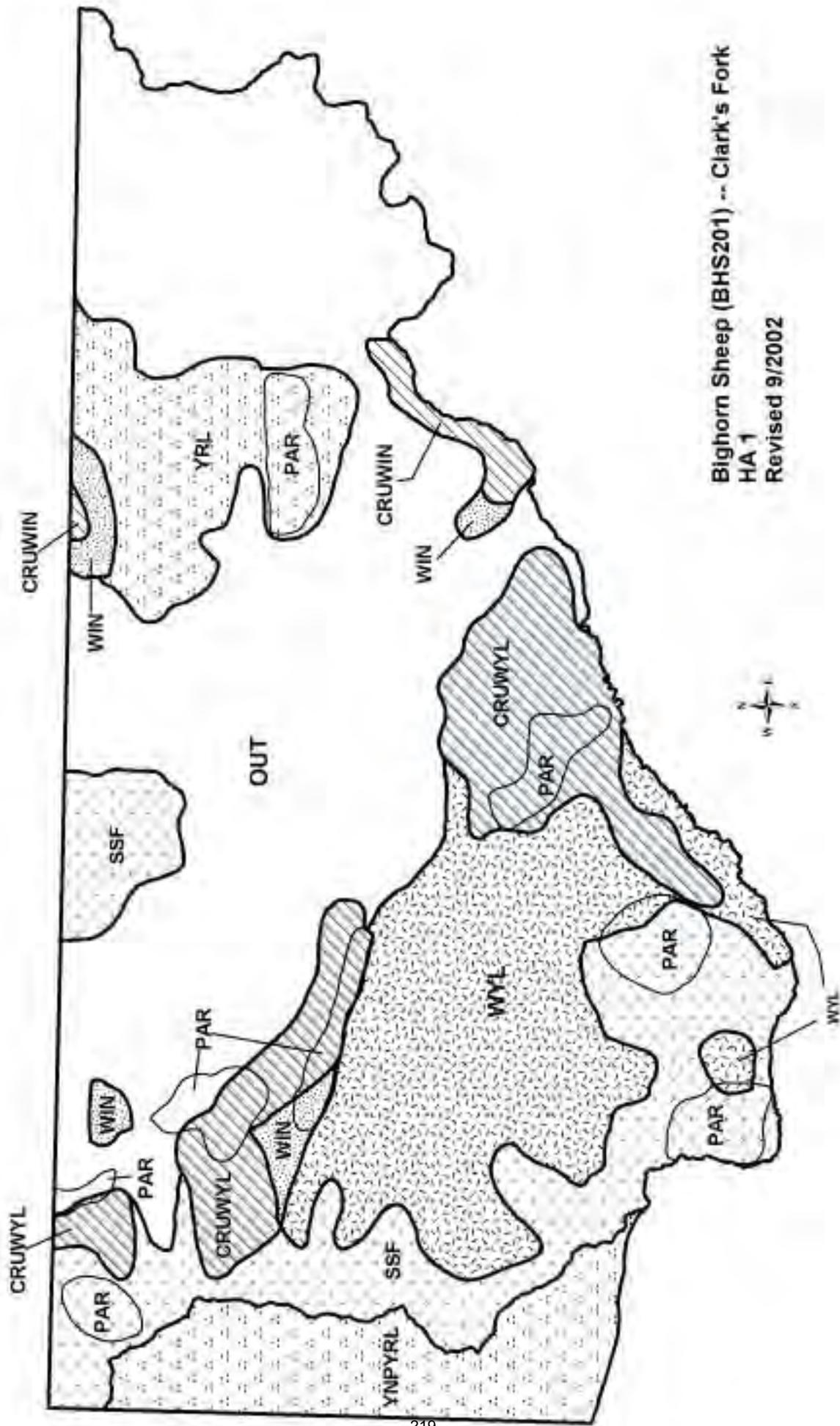
Year	Classification Counts						Harvest					
	Juvenile/Female Ratio			Total Male/Female Ratio			Total Harvest			Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993	33.33	6.51	9.04	37.70	55.24	9.04	9	0	0	9	23.6	0.0
1994	51.72	8.23	4.97	32.95	23.28	4.97	12	0	0	12	36.1	0.0
1995	42.53	7.37	7.01	31.59	39.26	7.01	11	0	0	11	31.8	0.0
1996	42.53	7.37	7.01	30.35	39.26	7.01	12	0	0	12	34.1	0.0
1997	46.85	7.87	5.22	25.98	24.32	5.22	10	0	0	10	32.7	0.0
1998	50.00	7.60	5.90	24.45	33.85	5.90	9	0	0	9	30.6	0.0
1999	48.42	7.73	5.56	24.52	29.09	5.56	11	0	0	11	36.2	0.0
2000	48.42	7.73	5.56	23.00	29.09	5.56	9	0	0	9	30.7	0.0
2001	60.75	9.55	3.26	23.38	10.28	3.26	10	0	0	10	32.7	0.0
2002	50.89	8.10	5.10	29.06	25.33	5.10	14	0	0	14	33.1	0.0
2003	65.22	9.68	7.08	30.17	40.87	7.08	16	0	0	16	33.7	0.0
2004	53.61	9.21	7.24	33.28	37.11	7.24	14	0	0	14	23.7	0.0
2005	58.39	7.58	7.41	35.88	56.52	7.41	12	0	0	12	17.3	0.0
2006	50.73	6.11	5.63	40.42	44.88	5.63	15	0	0	15	17.4	0.0
2007	55.77	8.14	6.49	40.61	40.94	6.49	16	0	0	16	17.5	0.0
2008	55.77	8.14	6.49	40.13	40.94	6.49	9	0	0	9	9.6	0.0
2009	31.91	4.23	5.05	42.85	42.13	5.05	11	0	0	11	10.5	0.0
2010	50.51	6.84	6.21	43.32	45.08	6.21	15	0	0	15	14.0	0.0
2011	51.74	6.25	5.47	43.01	42.29	5.47	10	0	0	10	9.1	0.0
2012	49.14	6.72	5.94	43.03	42.28	5.94	15	0	0	15	13.2	0.0
2013	49.14	6.72	5.94	41.85	42.28	5.94	18	0	0	18	15.8	0.0
2014	49.14	6.72	5.94	34.72	42.28	5.94	16	0	0	16	20.5	0.0
2015	49.14	6.72	5.94	27.91	42.28	5.94	16	0	0	16	24.4	0.0
2016	49.14	6.72	5.94	20.59	42.28	5.94	16	0	0	16	35.6	0.0
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



Comments:

END



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



## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS202 - TROUT PEAK

HUNT AREAS: 2

PREPARED BY: DOUG  
MCWHIRTER

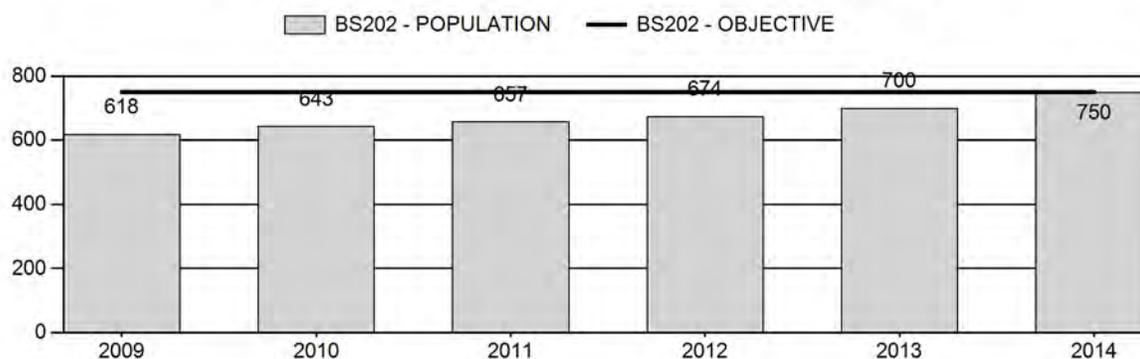
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	658	750	750
Harvest:	20	21	20
Hunters:	25	27	24
Hunter Success:	80%	78%	83 %
Active Licenses:	25	27	24
Active License Success:	80%	78%	83 %
Recreation Days:	243	252	250
Days Per Animal:	12.2	12	12.5
Males per 100 Females	39	31	
Juveniles per 100 Females	27	31	

Population Objective (± 20%) :	750 (600 - 900)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/19/2015

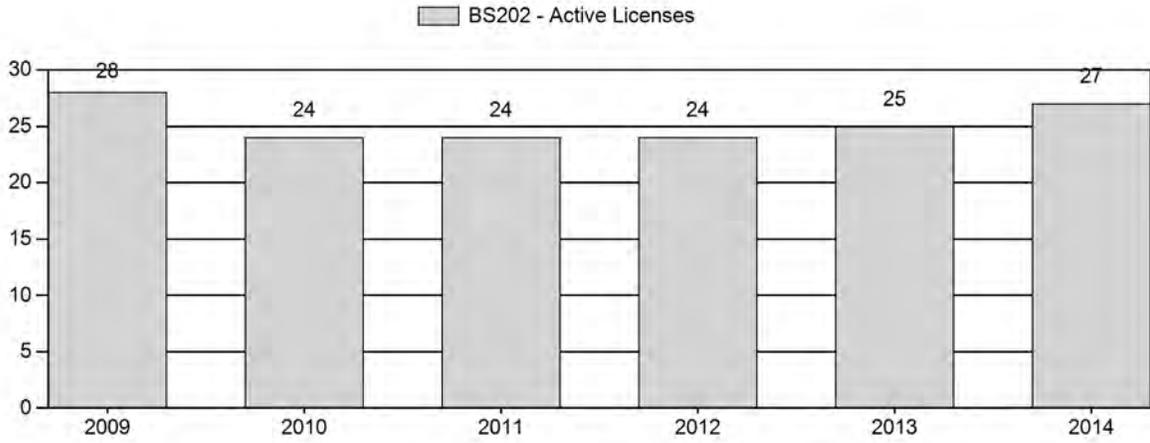
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	11.3%	10.7%
Juveniles (< 1 year old):	0%	0%
Total:	2.7%	2.6%
Proposed change in post-season population:	+2.6%	0.0%

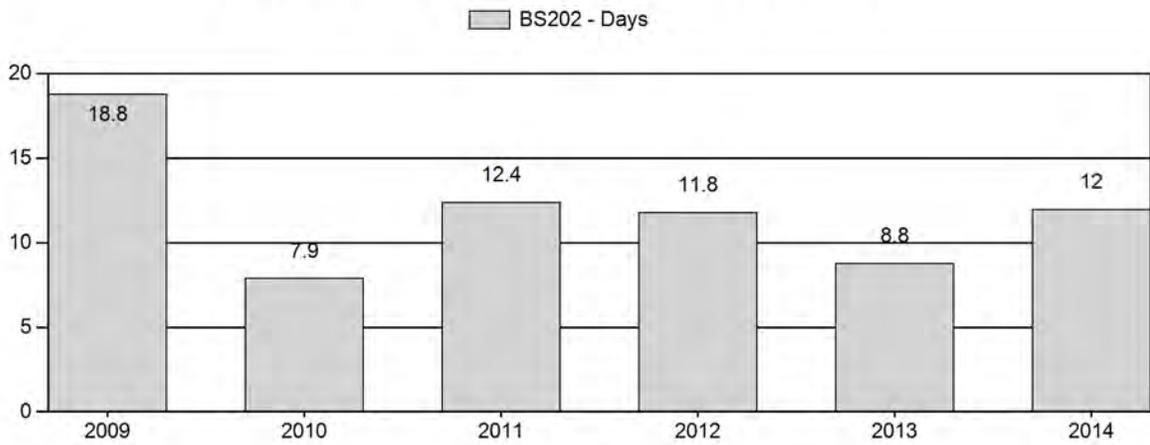
## Population Size - Postseason



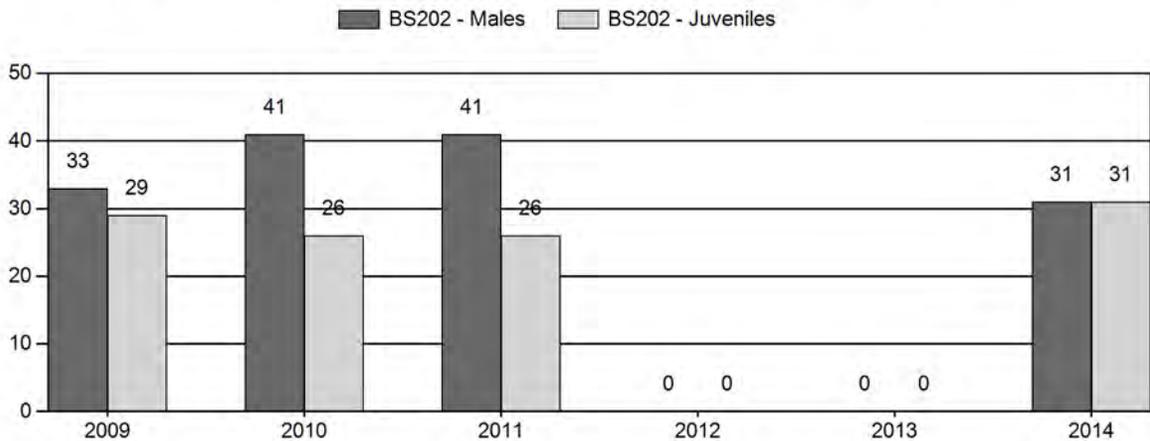
# Active Licenses



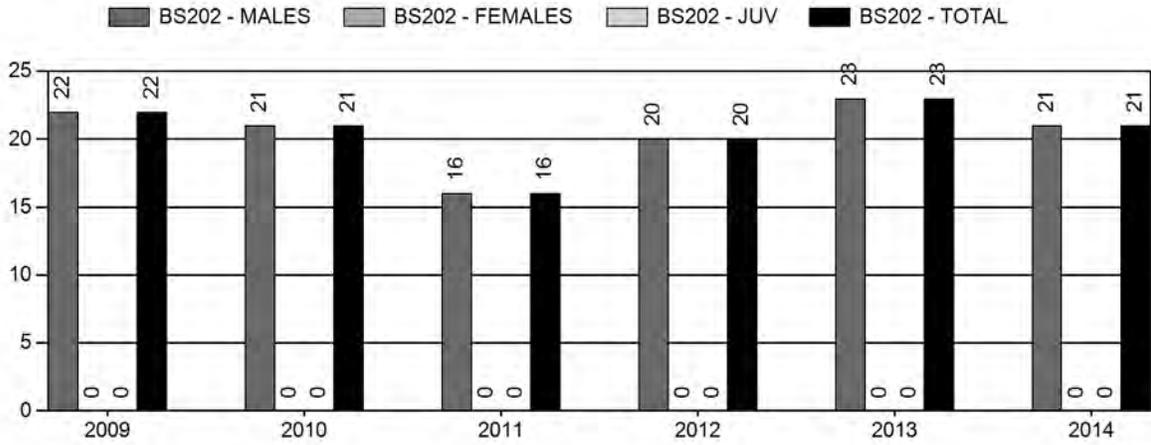
# Days per Animal Harvested



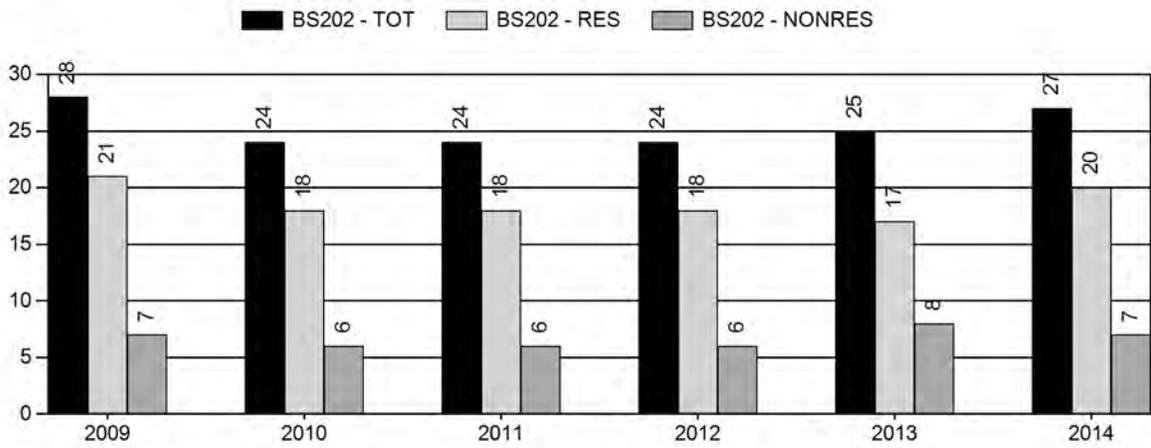
# Postseason Animals per 100 Females



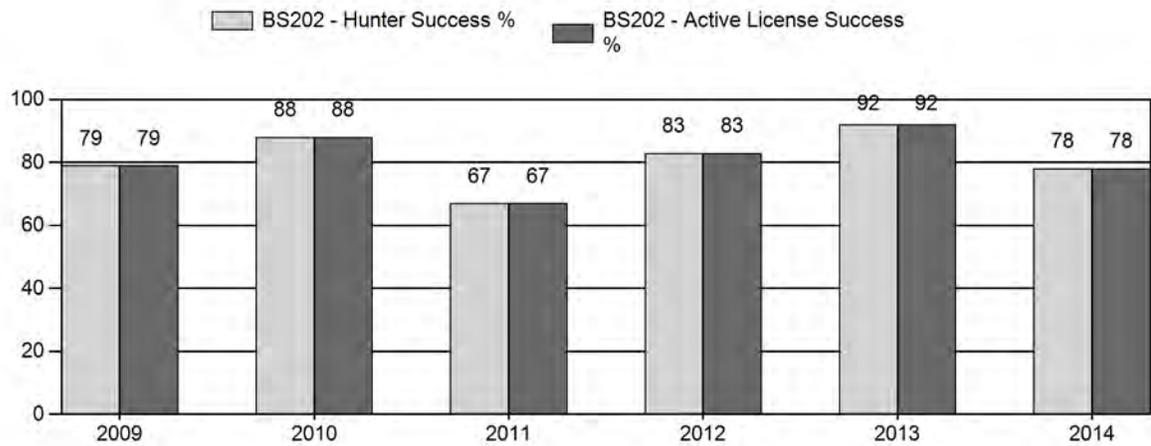
# Harvest



# Number of Hunters



# Harvest Success



### 2009 - 2014 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
2009	618	9	54	63	20%	192	62%	55	18%	310	311	5	28	33	± 4	29	± 4	22
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 HUNTING SEASONS  
TROUT PEAK BIGHORN SHEEP SUB-HERD**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
2	1	Sep. 1	Oct. 31	24	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
2	1	-1
<b>Total</b>		<b>-1</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 750**

**Management Strategy: Special**

**2014 Postseason Population Estimate: ~750**

**2015 Proposed Postseason Population Estimate: ~750**

**Herd Unit Issues.** The Trout Peak Herd Unit possesses some of the most rugged 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 summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

**Habitat.** No habitat monitoring data is collected in this herd unit.

**Field Data.** Eight 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 2014 resulted in 348 sheep observed, even though the western portion of the hunt area was not surveyed. The lamb:ewe ratio for this sample was 31:100, which is above average for this sub-herd (25.8:100), and the ram:ewe ratio was 31:100, which is below the previous seven survey average of 43.5:100.

**Harvest Data.** In 2014, 27 hunters took 21 rams for a success rate of 78%, which is not unusual for this sub-herd. The average age of rams killed in 2014 was 7.9 years old, with 52.0% of the rams killed being 8 years old and older. No rams less than ¾ curl was killed in 2014. All of these indicators, plus good lamb:ewe and ram:ewe ratios from recent surveys, indicate good population performance, and an acceptable presence of mature rams.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate and trend appears to be very reasonable. The postseason 2014 population is estimated to be 750 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 2015 season. With average reproduction and survival, the postseason 2015 population is estimated to remain at approximately 750 sheep.

Harvest parameters for the Trout Peak Bighorn Sheep Herd, 1978-2014.

	1978-96	1997-2002	2003	2004-2013*	2014*
Permits	32	24	28	24	27
Harvest	18.8	15.2	16	18.9	21
% Success	61.0%	63.8%	61.5%	78.7%	78%
Effort (days/ram)	18.2	16.0	25.1	12.7	12.0
Avg. Age	5.9	6.7	6.6	7.0	7.9
% Rams $\geq$ 8 Yrs	19.5%	25.6%	18.8%	33.1%	52.0%
% Rams $\leq$ $\frac{3}{4}$ Curl	-	-	-	4.0%	0.0%

\*any ram regulation in place

**INPUT**  
 Species: Bighorn Sheep  
 Biologist: Doug McWhirter  
 Herd Unit & No.: Trout Peak  
 Model date: 02/19/15

Clear form

MODELS SUMMARY			Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	48	57		
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	806	815	<input type="checkbox"/> CJ,CA Model <input type="checkbox"/> SC,J,SCA Mod	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	41	201	<input checked="" type="checkbox"/> TS,J,CA Model	

Check best model to create report

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective
				Juveniles	Total Males	Females	Total Males	Females	Total	
1994				97	123	274	101	274	471	750
1995				103	113	274	96	274	472	750
1996				79	110	275	91	275	445	750
1997				83	100	272	84	272	438	750
1998				84	94	269	77	269	430	750
1999				134	101	280	88	280	501	750
2000				124	128	307	113	307	544	750
2001				135	149	329	129	329	593	750
2002				85	167	353	150	353	588	750
2003				88	156	346	139	346	572	750
2004				92	159	352	137	352	582	750
2005				109	147	347	129	347	584	750
2006				151	158	361	132	361	645	750
2007				110	153	366	110	366	611	750
2008				72	164	379	153	379	603	750
2009				108	167	377	143	377	629	750
2010				117	171	389	148	389	654	750
2011				105	179	403	161	403	668	750
2012				110	186	411	164	411	686	750
2013				113	191	421	166	421	700	750
2014				132	194	431	171	431	733	750
2015				120	205	447	183	447	750	750
2016										750
2017										750
2018										750
2019										750
2020										750
2021										750
2022										750
2023										750
2024										750
2025										750
2026										750

Survival and Initial Population Estimates

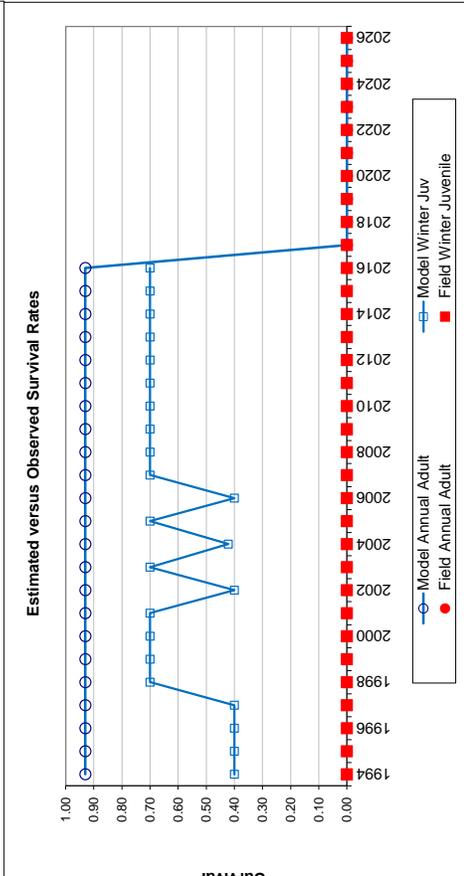
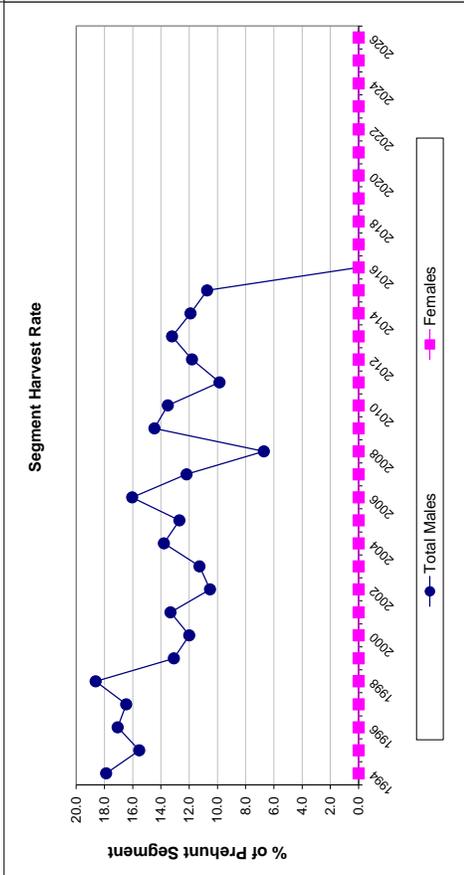
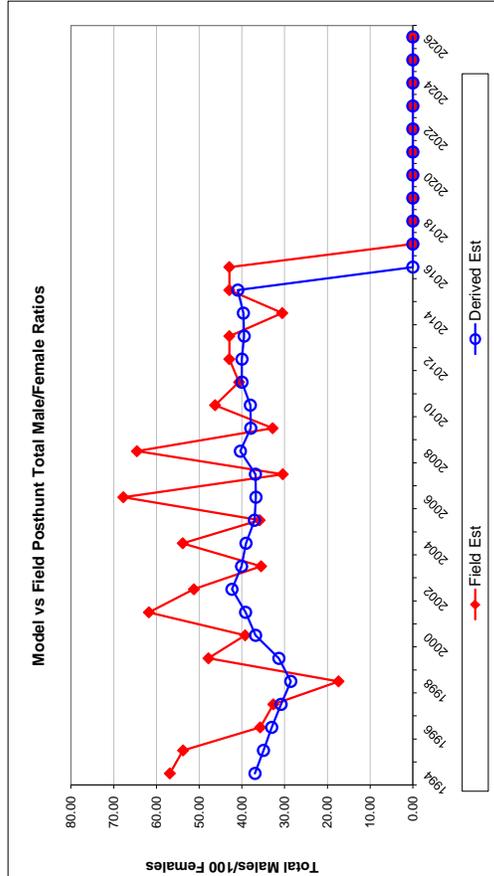
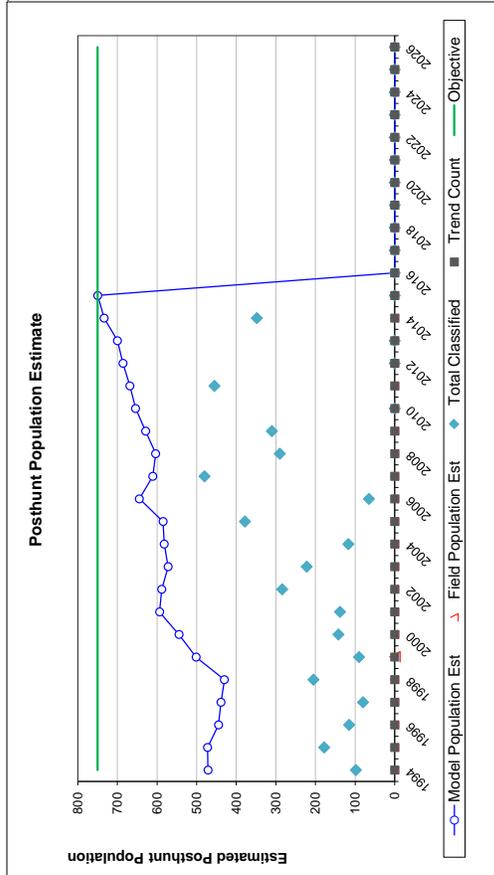
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1994	0.40		0.93	
1995	0.40		0.93	
1996	0.40		0.93	
1997	0.40		0.93	
1998	0.70		0.93	
1999	0.70		0.93	
2000	0.70		0.93	
2001	0.70		0.93	
2002	0.40		0.93	
2003	0.70		0.93	
2004	0.42		0.93	
2005	0.70		0.93	
2006	0.40		0.93	
2007	0.70		0.93	
2008	0.70		0.93	
2009	0.70		0.93	
2010	0.70		0.93	
2011	0.70		0.93	
2012	0.70		0.93	
2013	0.70		0.93	
2014	0.70		0.93	
2015	0.70		0.93	
2016	0.70		0.93	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				

Parameters:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.010
Initial Female Pop/10,000 =	0.027

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
1994												
1995		35.29	9.68	36.93	56.86	13.22	0	20	0	20	17.9	0.0
1996		37.63	7.46	34.95	53.76	9.43	0	16	0	16	15.5	0.0
1997		28.57	7.24	33.02	35.71	8.32	0	17	0	17	17.1	0.0
1998		30.61	9.03	30.83	32.65	9.40	0	15	0	15	16.5	0.0
1999		31.16	5.44	28.56	17.39	3.85	0	16	0	16	18.6	0.0
2000		47.83	12.40	31.34	47.83	12.40	0	12	0	12	13.1	0.0
2001		40.51	8.49	36.80	39.24	8.32	0	14	0	14	12.0	0.0
2002		41.18	9.25	39.14	61.76	12.12	0	18	0	18	13.3	0.0
2003		24.07	4.29	42.32	51.23	6.92	0	16	0	16	10.5	0.0
2004		25.36	4.80	40.07	35.51	5.90	0	16	0	16	11.3	0.0
2005		26.15	7.12	39.04	53.85	11.29	0	20	0	20	13.8	0.0
2006		31.42	4.27	37.07	35.84	4.64	0	17	0	17	12.7	0.0
2007		41.94	13.86	36.71	67.74	19.15	0	23	0	23	16.0	0.0
2008		30.10	3.62	36.83	30.43	3.64	0	17	0	17	12.2	0.0
2009		18.99	3.78	40.36	64.56	8.20	0	10	0	10	6.7	0.0
2010		28.65	4.38	37.92	32.81	4.76	0	22	0	22	14.5	0.0
2011		30.22	5.98	38.02	46.28	8.08	0	21	0	21	13.5	0.0
2012		26.01	3.46	39.98	40.66	4.58	0	16	0	16	9.9	0.0
2013		26.79	4.25	39.98	42.95	5.85	0	20	0	20	11.8	0.0
2014		26.79	4.25	39.47	42.95	5.85	0	23	0	23	13.2	0.0
2015		30.56	4.30	39.65	30.56	4.30	0	21	0	21	11.9	0.0
2016		26.79	4.25	40.95	42.95	5.85	0	20	0	20	10.7	0.0
2017		26.79	4.25		42.95	5.85						
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												

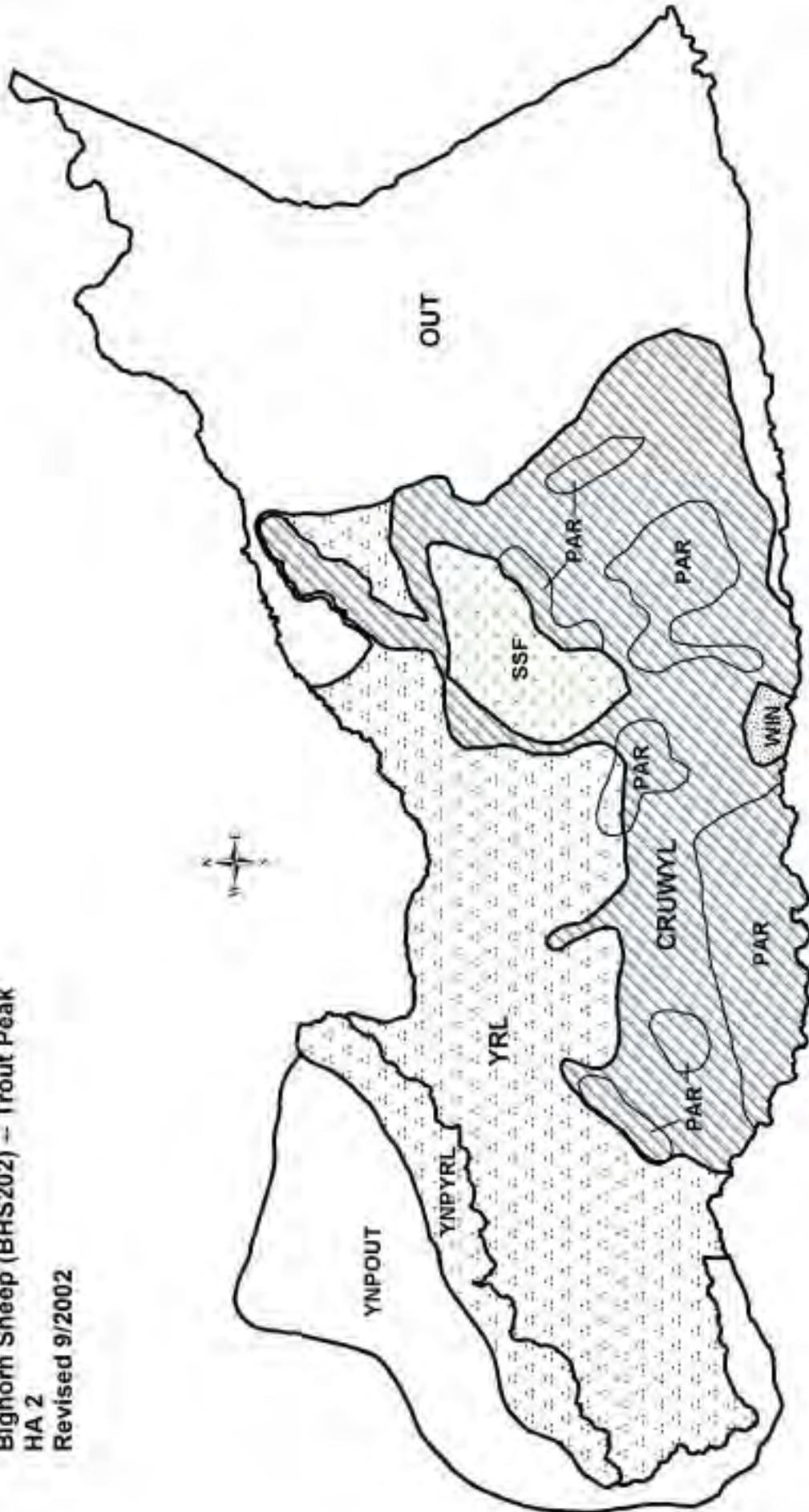
FIGURES



Comments:

END

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





## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS203 - WAPITI RIDGE

HUNT AREAS: 3

PREPARED BY: DOUG  
MCWHIRTER

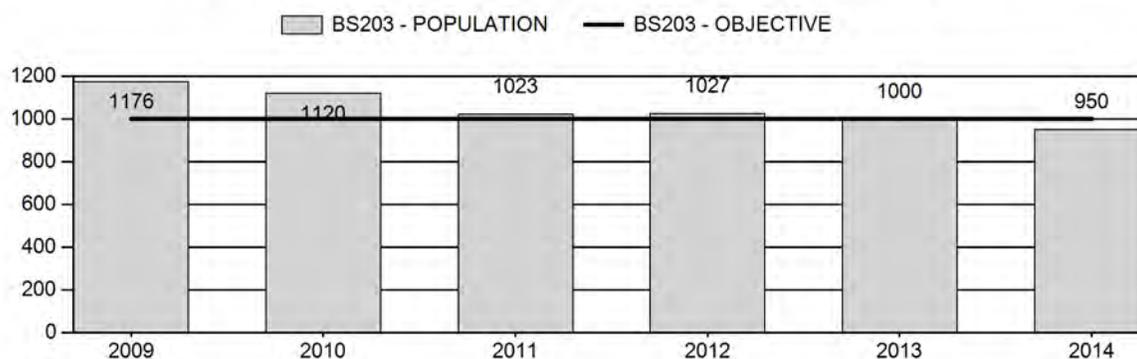
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	1,069	950	900
Harvest:	37	33	35
Hunters:	44	38	40
Hunter Success:	84%	87%	88 %
Active Licenses:	44	38	40
Active License Success:	84%	87%	88 %
Recreation Days:	354	304	325
Days Per Animal:	9.6	9.2	9.3
Males per 100 Females	31	24	
Juveniles per 100 Females	25	25	

Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-5%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/19/2014

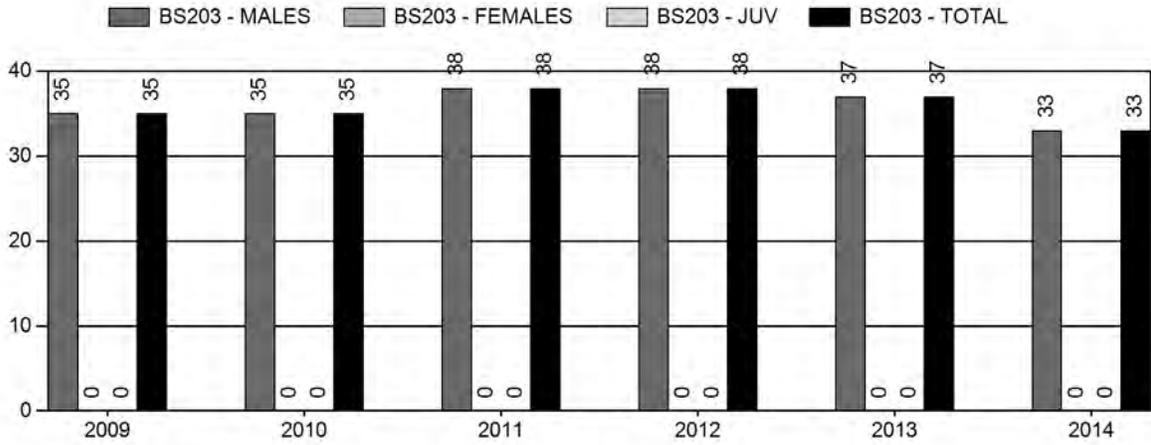
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	23.8%	18.1%
Juveniles (< 1 year old):	0%	0%
Total:	4.2%	3.7%
Proposed change in post-season population:	-14.0%	-5.6%

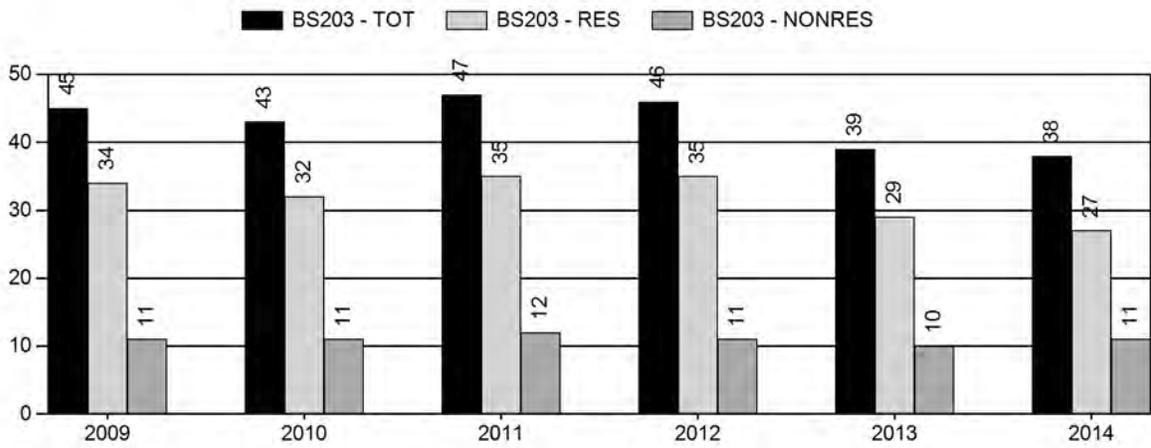
## Population Size - Postseason



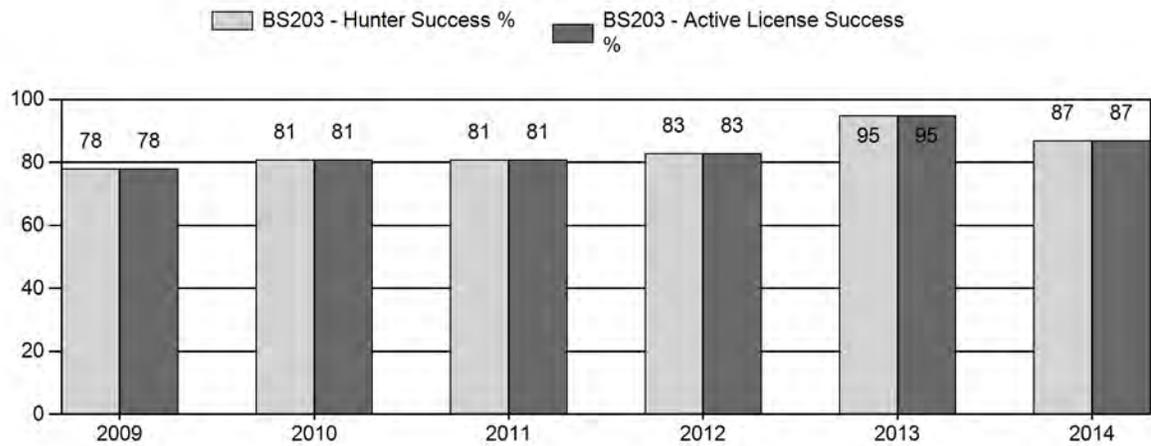
# Harvest



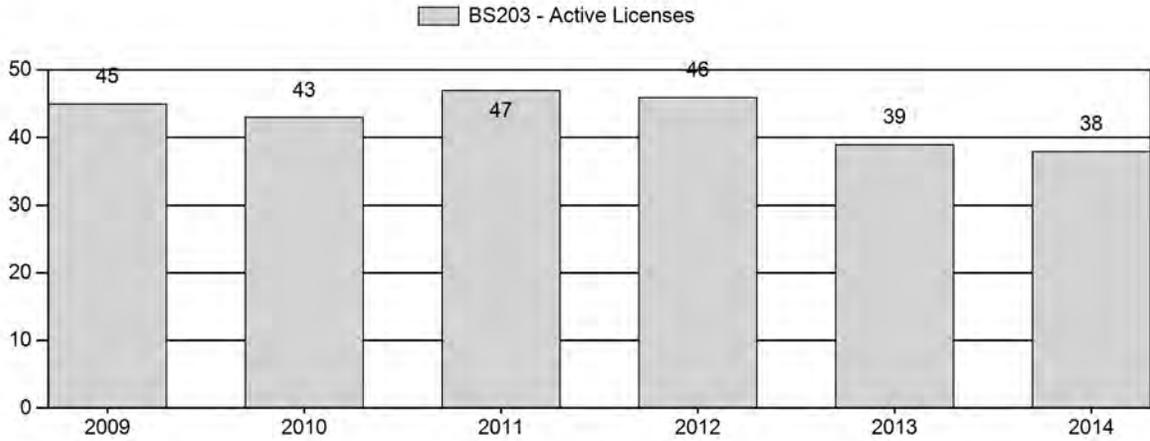
# Number of Hunters



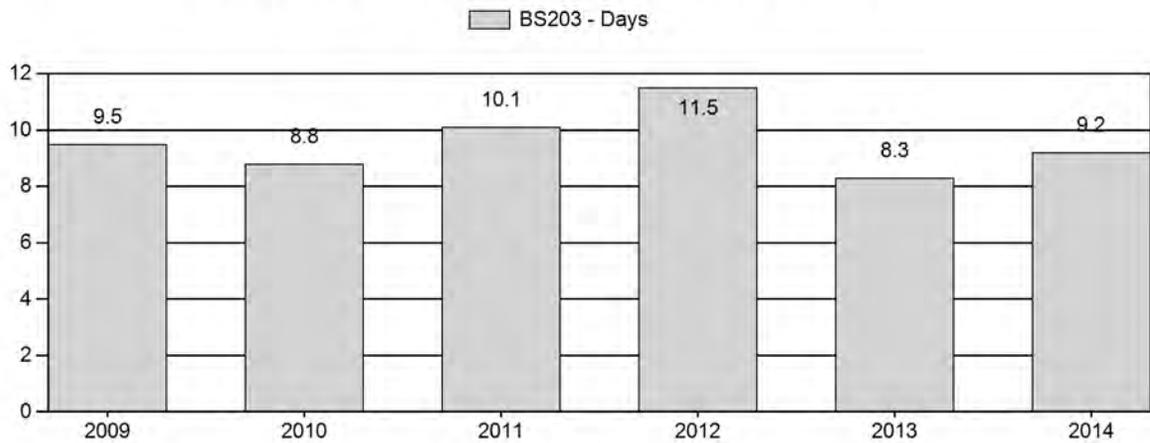
# Harvest Success



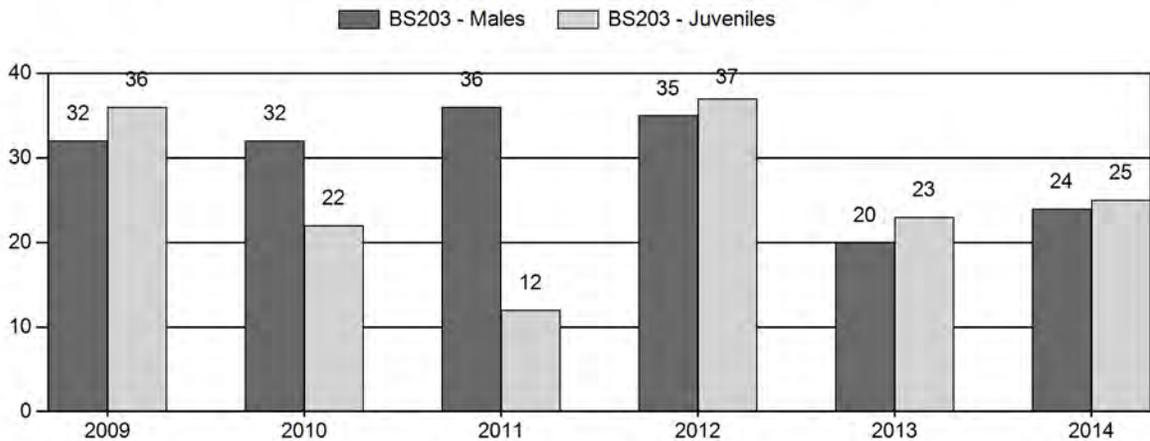
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2009 - 2014 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
2009	1,176	49	126	175	19%	544	60%	195	21%	914	392	9	23	32	± 2	36	± 2	27
2010	1,120	8	33	41	21%	130	65%	28	14%	199	392	6	25	32	± 7	22	± 5	16
2011	1,023	12	148	160	24%	446	67%	55	8%	661	415	3	33	36	± 3	12	± 1	9
2012	1,027	7	32	39	20%	111	58%	41	21%	191	392	6	29	35	± 8	37	± 8	27
2013	1,000	9	41	50	14%	246	70%	56	16%	352	378	4	17	20	± 3	23	± 3	19
2014	950	6	109	115	16%	487	67%	124	17%	726	363	1	22	24	± 2	25	± 2	21

**2015 HUNTING SEASONS  
WAPITI RIDGE BIGHORN SHEEP SUB-HERD**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
3	1	Sep. 1	Oct. 31	40	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
3	1	-1
<b>Total</b>	<b>1</b>	<b>-1</b>

**Management Evaluation**

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

**Management Strategy: Special**

**2014 Postseason Population Estimate: ~950**

**2015 Proposed Postseason Population Estimate: ~900**

**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 summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, lamb survival could have been adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

**Habitat.** No habitat monitoring data is collected in this herd unit.

**Field Data.** Nine surveys have been conducted over the last 11 years, resulted in samples ranging from 315 to 914 classified sheep. Lamb:ewe ratios have ranged from 12:100 to 37:100 over this time, while ram:ewe ratios have varied from 24:100 to 46:100. The most recent survey in 2014 resulted in 737 sheep observed, a lamb:ewe ratio of 26:100 (which is below the recent average), and a ram:ewe ratio of 24:100, which is below average for this herd unit.

**Harvest Data.** In 2014, 38 hunters took 33 rams for a success rate of 87%, which is above average for this sub-herd. The average age of rams killed in 2014 was 7.8 years old, with 55% of the rams killed being 8 years old and older. Two rams less than ¾ curl were killed in 2014, representing 6% of the total harvest. Hunter effort was 9.2 days per ram harvested in 2014, which is near normal for this sub-herd.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be reasonable. The rather steep decline produced by the model however, is not believed to entirely realistic. The postseason 2014 population is

estimated to be approximately 950 sheep. Efforts will continue to improve this model and improve reliability.

A worrisome factor is the number of pickup heads registered in 2011 (n=21) and 2012 (n=24). These numbers represent an increase of 69% and 94% over the previous 10-year average number of pickup heads per year. The 2010-2011 winter obviously had impacts on this population, as evidenced by the lamb:ewe ratio of 12:100 seen in postseason 2011 surveys. A total of 16 pick-up heads were registered from Area 3 in 2013, and 14 were registered in 2014.

With the extremely poor lamb production experienced recently, it is likely that the availability of rams will decline in this herd unit in coming years as lambs from these cohorts enter mature ram age classes. Impacts from the 2010-2011 winter had localized impacts on this population as well. Further permit reductions may be necessary in the near future to preserve or improve ram hunting opportunities. Harvest statistics should be monitored closely to determine if such a situation is developing. License numbers were reduced to 40 for the 2013 and 2014 seasons, and should remain so for the 2015 season. The postseason 2015 population is estimated to be approximately 900 sheep.

Harvest parameters for the Wapiti Ridge Bighorn Sheep Herd Unit, 1978-2014.

	1978-83	1984-85	1986-92	1993-1999	2000-04*	2005-13*	2014*
Permits	32	36	40	44	48	43.8	38
Harvest	22.5	29.5	36.1	36.9	38.0	36.6	33
% Success	69.3%	81.2%	83.0%	79.0%	77.6%	82.9%	86.8%
Effort (days/ram)	11.3	9.3	8.6	9.0	9.8	9.9	9.2
Avg. Age	5.9	7.1	6.9	7.1	6.8	6.7	7.8
% Rams $\geq$ 8 Yrs	12.8%	49.2%	41.5%	35.1%	31.0%	33.5%	54.5%
% Rams $\leq$ $\frac{3}{4}$ Curl	-	-	-	-	8.4%	8.3%	6.0%

\* “any ram” regulation in place

<b>INPUT</b>	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Wapiti Ridge
Model date:	02/14/14

Clear form

MODELS SUMMARY			Relative AICc	Notes
CJ,CA	Constant Juvenile & Adult Survival	Fit	27	<input type="checkbox"/> CJ,CA Model <input type="checkbox"/> SCJ,SCA Model <input checked="" type="checkbox"/> TSJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	18	20101	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	20092	188	

**Population Estimates from Top Model**

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective		
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males		Females	
1993				309	425	961	1695	309	386	961	1656	1000
1994				355	409	927	1690	355	367	927	1649	1000
1995				178	401	905	1485	178	363	905	1446	1000
1996				104	362	850	1317	104	321	850	1276	1000
1997				228	310	786	1324	228	267	786	1281	1000
1998				265	320	787	1372	265	281	787	1333	1000
1999				306	345	801	1453	306	305	801	1412	1000
2000				270	381	828	1480	270	338	828	1437	1000
2001				296	399	840	1535	296	358	840	1495	1000
2002				151	426	860	1437	151	385	860	1395	1000
2003				225	399	826	1450	225	358	826	1409	1000
2004				240	401	822	1464	240	358	822	1421	1000
2005				137	370	788	1295	137	332	788	1257	1000
2006				283	346	757	1387	283	305	757	1345	1000
2007				216	331	738	1285	216	290	738	1244	1000
2008				188	304	707	1199	188	265	707	1160	1000
2009				242	276	674	1192	242	237	674	1153	1000
2010				147	287	681	1115	147	249	681	1076	1000
2011				82	275	664	1021	82	234	664	979	1000
2012				231	239	626	1096	231	197	626	1054	1000
2013				139	224	610	972	139	183	610	931	1000
2014				152	213	597	963	152	177	597	926	1000
2015				148	212	591	952	148	174	591	913	1000
2016				146	208	584	938	146	170	584	900	1000
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

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	0.40		0.90	
1994	0.40		0.90	
1995	0.40		0.90	
1996	0.40		0.90	
1997	0.70		0.90	
1998	0.70		0.90	
1999	0.70		0.90	
2000	0.70		0.90	
2001	0.70		0.90	
2002	0.70		0.90	
2003	0.70		0.90	
2004	0.40		0.90	
2005	0.70		0.90	
2006	0.40		0.90	
2007	0.40		0.90	
2008	0.40		0.90	
2009	0.61		0.90	
2010	0.70		0.90	
2011	0.70		0.90	
2012	0.40		0.90	
2013	0.70		0.90	
2014	0.70		0.90	
2015	0.70		0.90	
2016	0.70		0.90	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

**Parameters:**

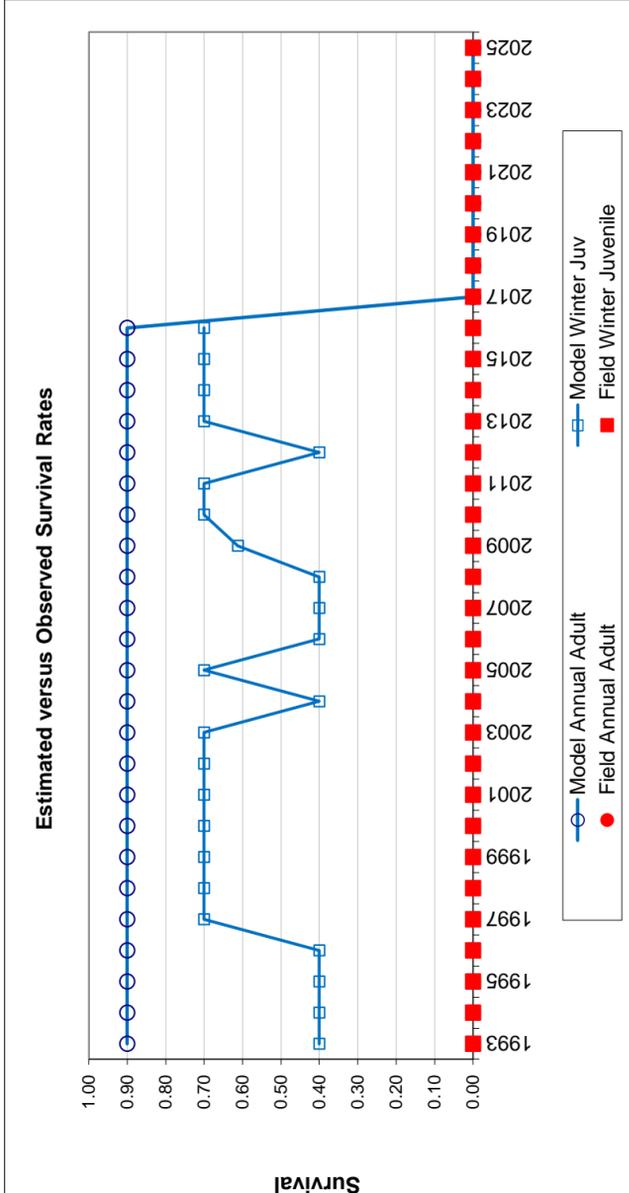
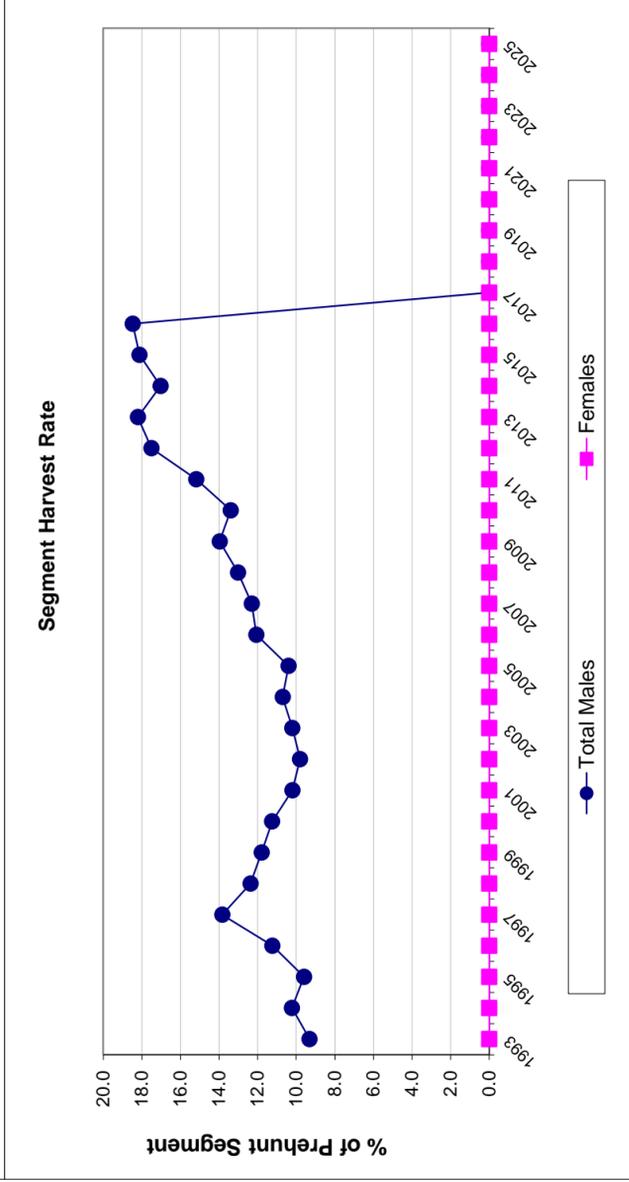
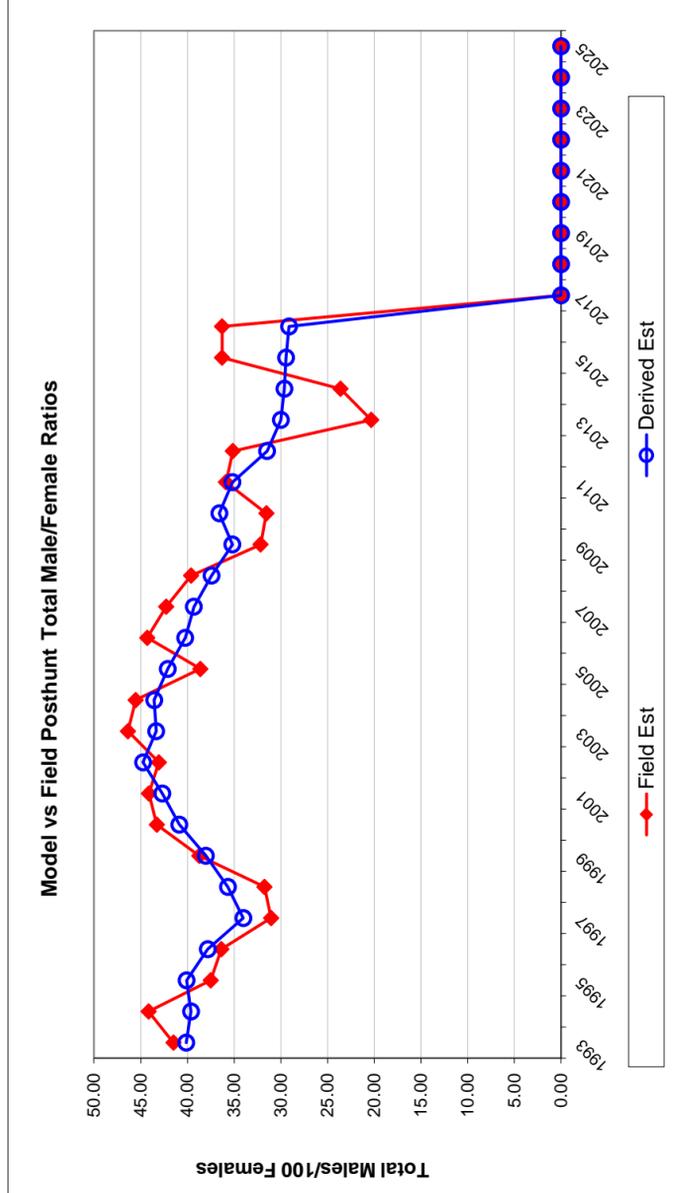
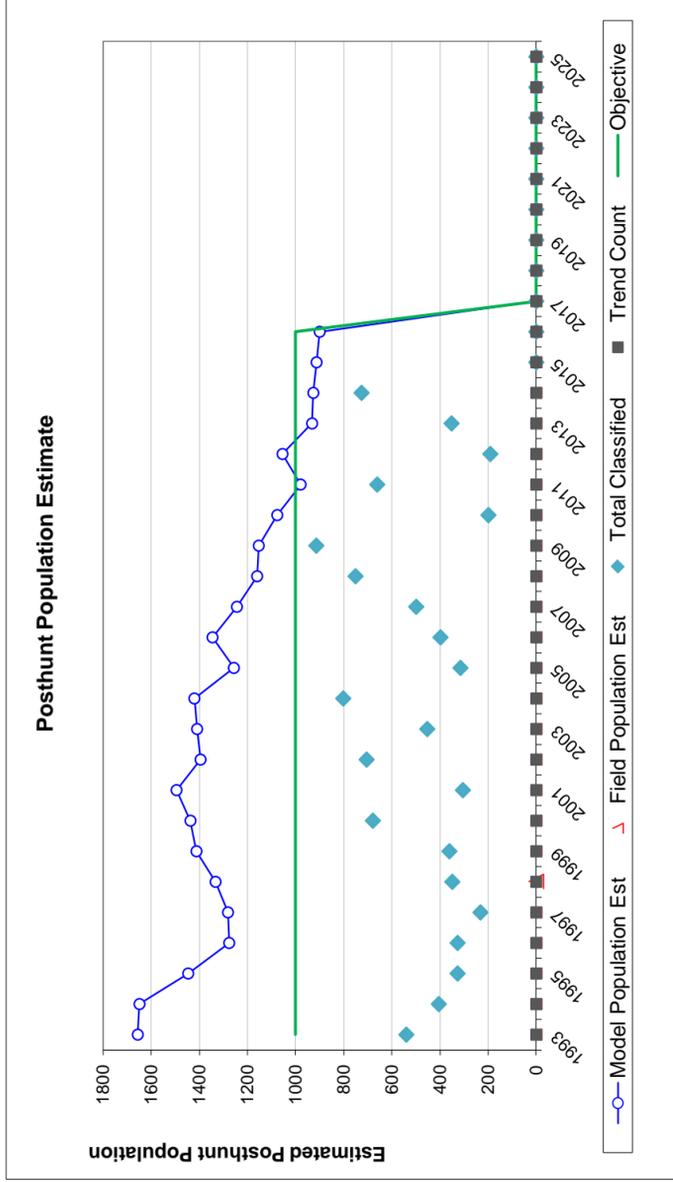
Adult Survival =	Optim cells
Initial Total Male Pop/10,000 =	0.900
Initial Female Pop/10,000 =	0.039
	0.096

**MODEL ASSUMPTIONS**

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

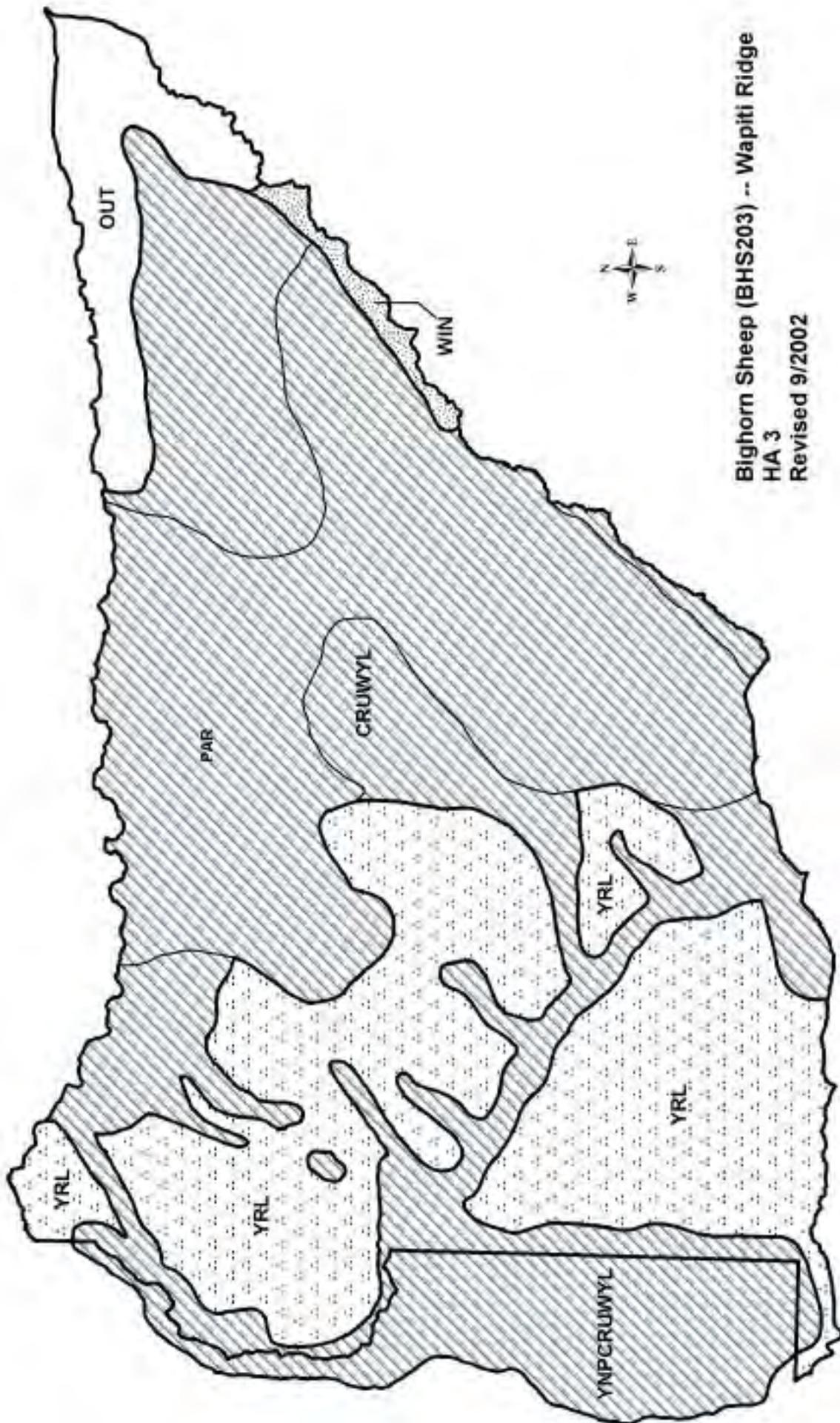
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Total Harvest			Segment Harvest Rate (% of			
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females	
1993		32.15	3.70	40.12	41.48	4.34	0	36	0	36	9.3	0.0	
1994		38.29	4.88	39.60	44.14	5.35	0	38	0	38	10.2	0.0	
1995		19.71	3.37	40.08	37.50	4.98	0	35	0	35	9.6	0.0	
1996		12.27	2.50	37.81	36.36	4.75	0	37	0	37	11.2	0.0	
1997		28.97	5.08	34.01	31.03	5.30	0	39	0	39	13.8	0.0	
1998		33.65	4.62	35.66	31.75	4.45	0	36	0	36	12.4	0.0	
1999		38.24	5.09	38.02	38.73	5.13	0	37	0	37	11.8	0.0	
2000		32.64	3.35	40.86	43.26	4.01	0	39	0	39	11.3	0.0	
2001		35.29	5.30	42.68	44.12	6.12	0	37	0	37	10.2	0.0	
2002		17.54	2.17	44.73	43.05	3.75	0	38	0	38	9.8	0.0	
2003		27.20	3.64	43.34	46.36	5.10	0	37	0	37	10.2	0.0	
2004		29.19	2.87	43.54	45.53	3.80	0	39	0	39	10.7	0.0	
2005		17.33	3.17	42.10	38.61	5.15	0	35	0	35	10.4	0.0	
2006		37.44	4.85	40.23	44.29	5.40	0	38	0	38	12.1	0.0	
2007		29.21	3.60	39.31	42.27	4.55	0	37	0	37	12.3	0.0	
2008		26.55	2.73	37.41	39.60	3.50	0	36	0	36	13.0	0.0	
2009		35.85	2.99	35.19	32.17	2.80	0	35	0	35	14.0	0.0	
2010		21.54	4.49	36.57	31.54	5.65	0	35	0	35	13.4	0.0	
2011		12.33	1.76	35.18	35.87	3.31	0	38	0	38	15.2	0.0	
2012		36.94	6.75	31.47	35.14	6.54	0	38	0	38	17.5	0.0	
2013		22.76	3.37	29.99	20.33	3.15	0	37	0	37	18.2	0.0	
2014		25.46	2.56	29.61	23.61	2.45	0	33	0	33	17.0	0.0	
2015		25.09	3.11	29.44	36.29	3.96	0	35	0	35	18.1	0.0	
2016		25.09	3.11	29.11	36.29	3.96	0	35	0	35	18.5	0.0	
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END





## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS204 - YOUNTS PEAK

HUNT AREAS: 4

PREPARED BY: DOUG  
MCWHIRTER

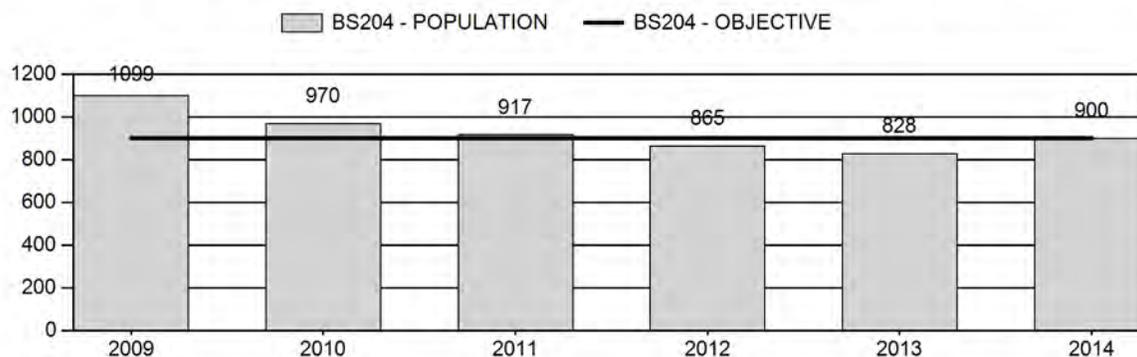
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	936	900	900
Harvest:	25	15	15
Hunters:	34	22	20
Hunter Success:	74%	68%	75 %
Active Licenses:	34	22	20
Active License Success:	74%	68%	75 %
Recreation Days:	258	183	175
Days Per Animal:	10.3	12.2	11.7
Males per 100 Females	40	44	
Juveniles per 100 Females	20	36	

Population Objective (± 20%) :	900 (720 - 1080)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/19/2015

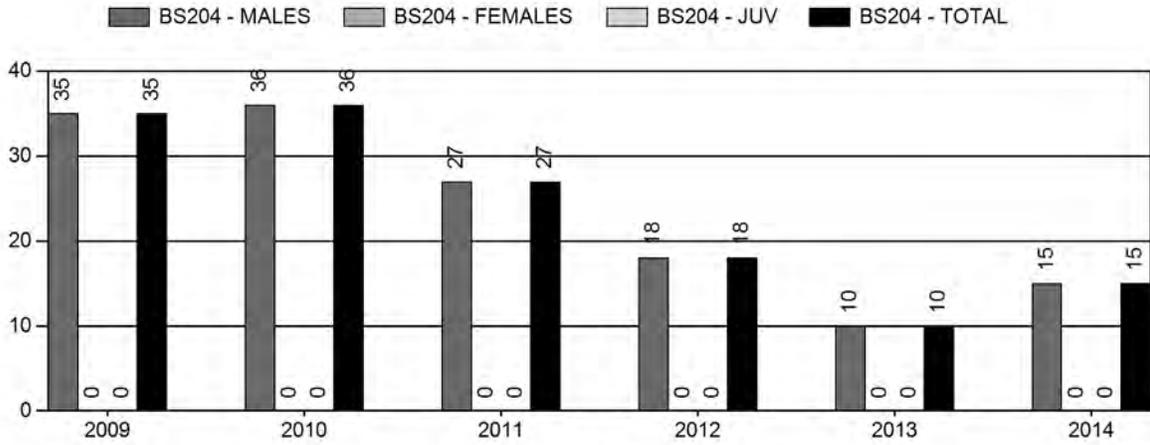
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	9.4%	6.7%
Juveniles (< 1 year old):	0%	0%
Total:	2.0%	1.7%
Proposed change in post-season population:	-12.3%	0.0%

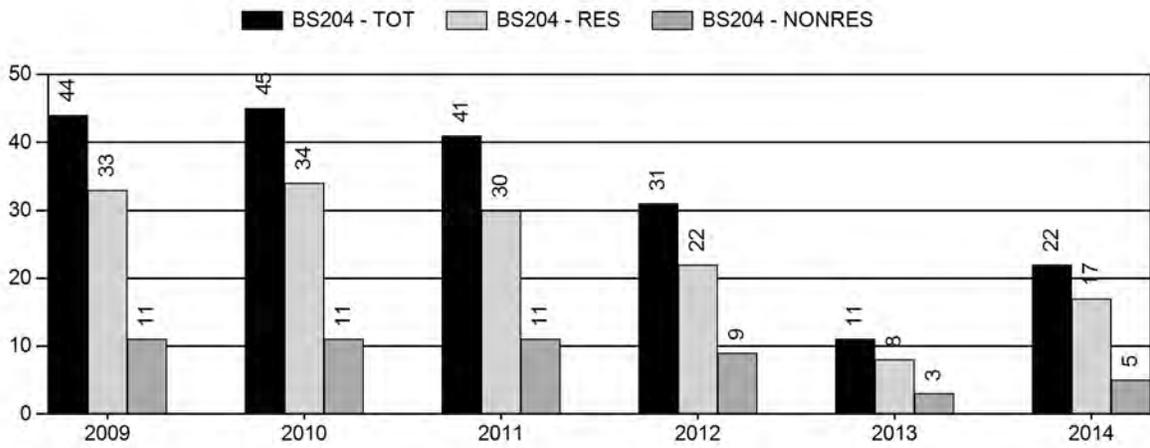
## Population Size - Postseason



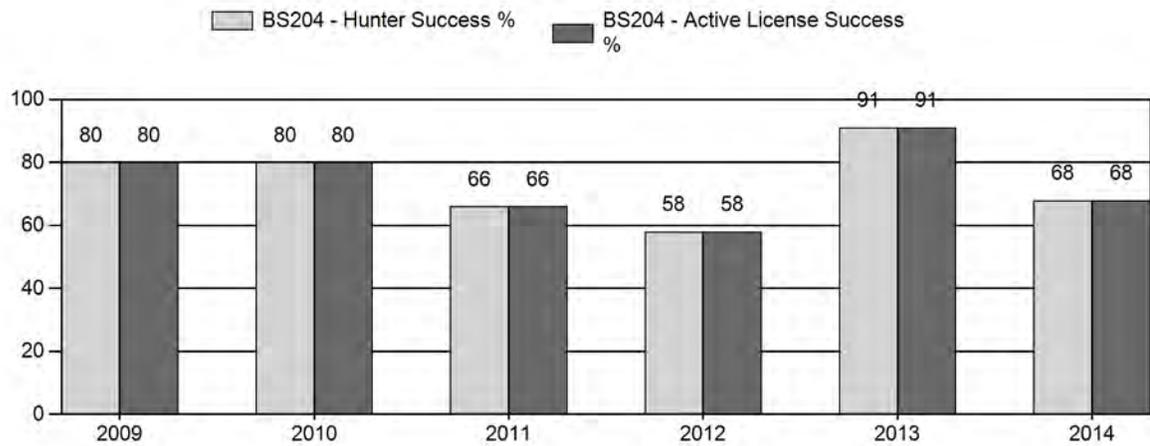
# Harvest



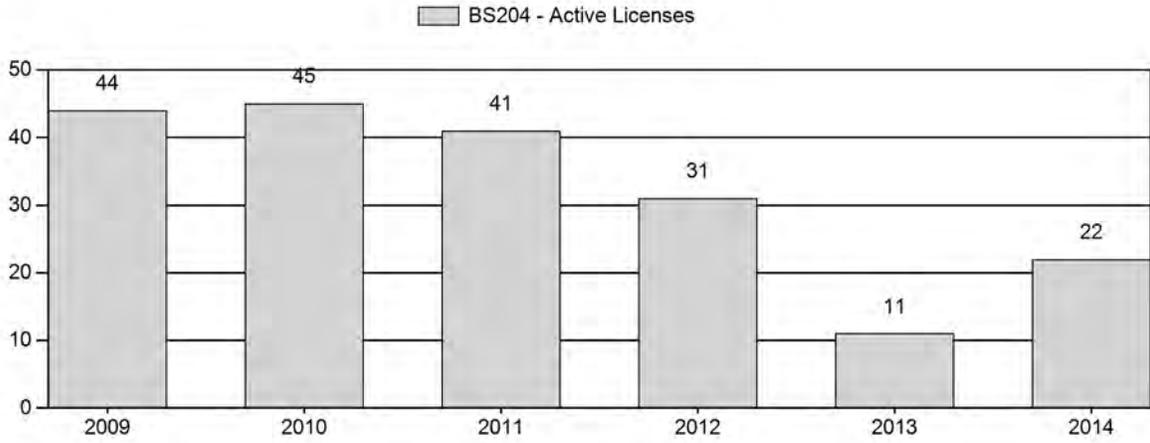
# Number of Hunters



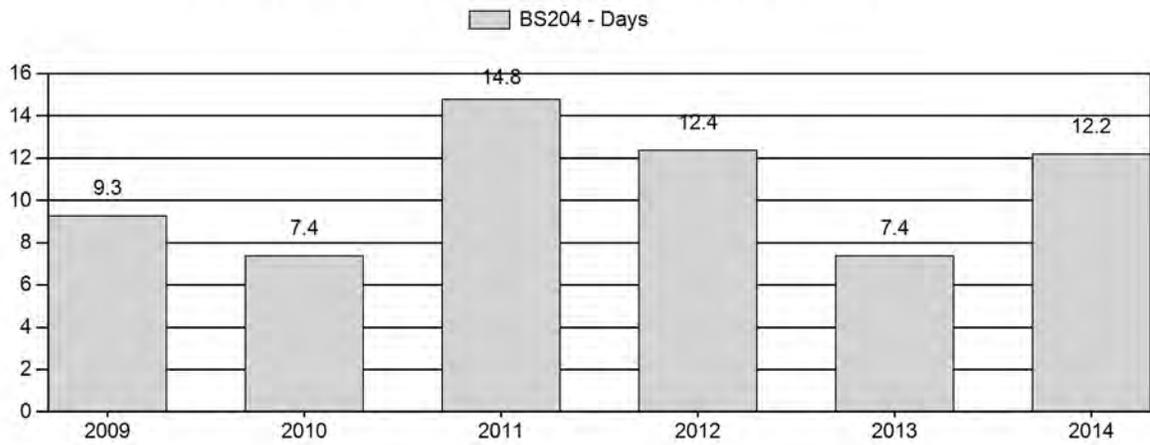
# Harvest Success



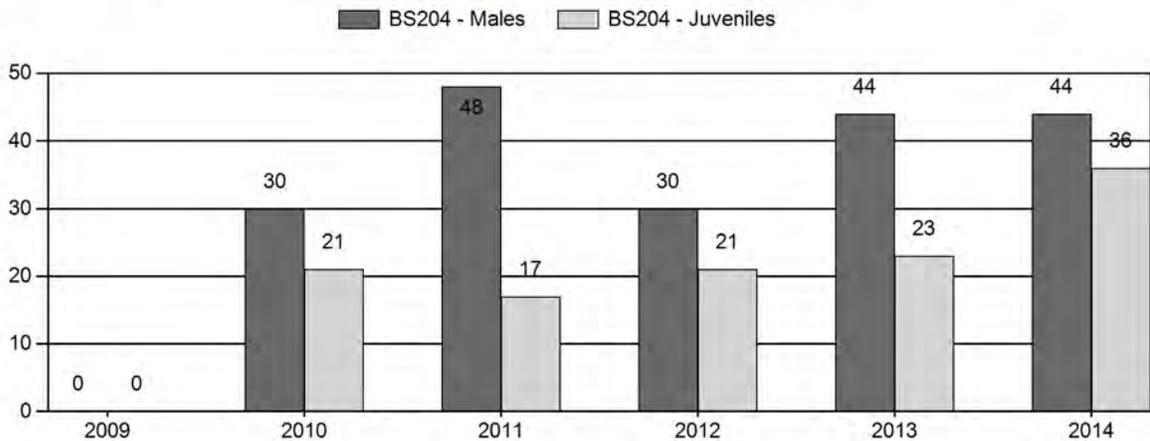
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



### 2009 - 2014 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
2009	1,099	0	0	0	0%	0	0%	0	0%	0	376	0	0	0	± 0	0	± 0	0
2010	970	0	46	46	20%	155	67%	32	14%	233	409	0	30	30	± 6	21	± 4	16
2011	917	21	126	147	29%	305	60%	53	10%	505	386	7	41	48	± 4	17	± 2	12
2012	865	0	46	46	20%	155	67%	32	14%	233	345	0	30	30	± 5	21	± 4	16
2013	828	4	115	119	26%	269	60%	63	14%	451	345	1	43	44	± 4	23	± 3	16
2014	900	10	100	110	24%	252	56%	91	20%	453	355	4	40	44	± 5	36	± 4	25

**2015 HUNTING SEASONS  
YOUNTS PEAK BIGHORN SHEEP SUB-HERD (BS204)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
4	1	Sep. 1	Oct. 31	20	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
4	1	+8
<b>Total</b>	<b>1</b>	<b>+8</b>

**Management Evaluation**

**Current Postseason Population Management Objective: 900**

**Management Strategy: Special**

**2014 Postseason Population Estimate: ~900**

**2015 Proposed Postseason Population Estimate: ~900**

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

**Weather.** Weather conditions during the summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, adult and lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter.

**Habitat.** No habitat monitoring data is collected in this herd unit.

**Field Data.** Eleven surveys have been conducted over the last 15 years, resulted in samples ranging from 132 to 567 classified sheep. Lamb:ewe ratios have ranged from 17:100 to 36:100 over this time, and averaged 27.6 lambs:100 ewes. Ram:ewe ratios have varied from 28:100 to 54:100, and averaged 44.1 rams:100 ewes. The most recent complete survey in 2014 resulted in 461 sheep observed, a lamb:ewe ratio of 36:100 (which is much higher than it has been recently), and a ram:ewe ratio of 44:100, which is slightly below average for this herd unit.

**Harvest Data.** Due to the Hardluck Fire in the South Fork of the Shoshone River, the opportunity to carry-over sheep licenses to the 2014 was given to hunters in 2013. Nine hunters took advantage of this, and with 2 medical carry-overs from 2013 to 2014, there were only 11 hunters in 2013. These 11 hunters hunted in 2014 (although 1 took a medical carry-over), and with the 12 licenses issued in 2014 there were a total of 22 hunters in 2014. These 22 hunters took 15 rams for a success rate of 68%. The average age of rams killed in 2014 was 7.6 years old, with 53.3% of the rams killed being 8 years old and older. Two rams less than ¾ curl were killed in 2014, representing 13.3% of the total harvest. Hunter effort was 12.2 days per ram harvested in 2014. With the exception of the age of harvested rams, these figures represent difficult hunting conditions and a return to levels previously seen in this sub-herd in 2011-2012, immediately following a population decline.

**Population.** The “Time Specific Juvenile – Constant Adult Mortality Rate” (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population trend is much more reasonable than other models. The postseason 2014 population is estimated to be 900 sheep. Efforts will continue to improve this model.

The 2010-2011 winter was essentially normal for most of the winter, but quickly began to accumulate and retain above far above average levels of snow in April, May, and June. Snow (snow depth only measured since 1998) is usually gone by June, but in June 2011 there was still 20 inches at the Younts Peak SnoTel site. The 2010-2011 winter obviously had impacts on this population, as evidenced by the lamb:ewe ratio of 12:100 seen in postseason 2011 surveys.

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 and 2014 seasons and will remain there for the 2015 season. The postseason 2015 population is estimated to remain at approximately 900 sheep.

Harvest parameters for the Younts Peak Bighorn Sheep Herd Unit, 1984-2014.

	1984-91	1992-95	1996-00*	2001-04*	2005-08*	2009-11*	2012*	2013*	2014*
Permits	60	48	32	36	40	44 <sup>+</sup>	28	20	22
Harvest	33.1	28.3	22.6	32.3	34.0	32.7	18	10	15
% Success	59%	62%	74%	87%	83.3%	75.4%	58.1%	91%	68%
Effort (days/ram)	18.6	15.0	8.4	7.9	8.2	10.5	12.4	7.4	12.2
Avg. Age	6.6	6.5	6.7	7.3	7.3	7.5	7.2	8.0	7.6
% Rams $\geq$ 8 Yrs	24.1%	17.5%	33.3%	44.1%	32.7%	47.6%	22.2%	70%	53.3
% Rams $\leq$ $\frac{3}{4}$ Curl	-	-	11.9%	15.0%	7.2%	5.9%	5.6%	10.0%	13.3%

\* “any ram” regulation in place

<b>INPUT</b>	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Younts Peak
Model date:	02/19/15

Clear form

MODELS SUMMARY			Relative AICc	Notes
	Fit			
CJ,CA	43	Constant Juvenile & Adult Survival	52	
SCJ,SCA	53	Semi-Constant Juvenile & Semi-Constant Adult Survival	67	
TSJ,CA	37	Time-Specific Juvenile & Constant Adult Survival	217	

**Population Estimates from Top Model**

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective	
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males		Females
1993				358	266	774	1398	237	774	1369	900
1994				325	338	819	1482	307	819	1451	900
1995				211	389	848	1448	361	848	1420	900
1996				196	366	802	1364	341	802	1339	900
1997				185	345	758	1288	320	758	1263	900
1998				252	324	716	1293	300	716	1269	900
1999				261	319	692	1273	292	692	1245	900
2000				212	314	673	1198	291	673	1175	900
2001				222	335	677	1234	296	677	1195	900
2002				160	310	651	1121	278	651	1089	900
2003				261	305	640	1205	270	640	1170	900
2004				232	333	665	1229	297	665	1193	900
2005				223	347	677	1246	311	677	1210	900
2006				245	356	684	1286	317	684	1246	900
2007				231	356	685	1272	321	685	1238	900
2008				150	345	671	1167	306	671	1127	900
2009				202	304	632	1137	266	632	1099	900
2010				125	278	606	1010	239	606	970	900
2011				102	258	587	947	228	587	917	900
2012				113	225	547	884	205	547	865	900
2013				120	206	512	839	195	512	828	900
2014				192	217	501	911	201	501	894	900
2015				131	247	517	895	231	517	878	900
2016				129	253	509	891	236	509	874	900
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

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	0.70		0.90	
1994	0.70		0.90	
1995	0.40		0.90	
1996	0.40		0.90	
1997	0.40		0.90	
1998	0.40		0.90	
1999	0.40		0.90	
2000	0.70		0.90	
2001	0.40		0.90	
2002	0.70		0.90	
2003	0.70		0.90	
2004	0.70		0.90	
2005	0.70		0.90	
2006	0.58		0.90	
2007	0.50		0.90	
2008	0.40		0.90	
2009	0.40		0.90	
2010	0.70		0.90	
2011	0.40		0.90	
2012	0.40		0.90	
2013	0.70		0.90	
2014	0.70		0.90	
2015	0.70		0.90	
2016	0.70		0.90	
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

**Parameters:**

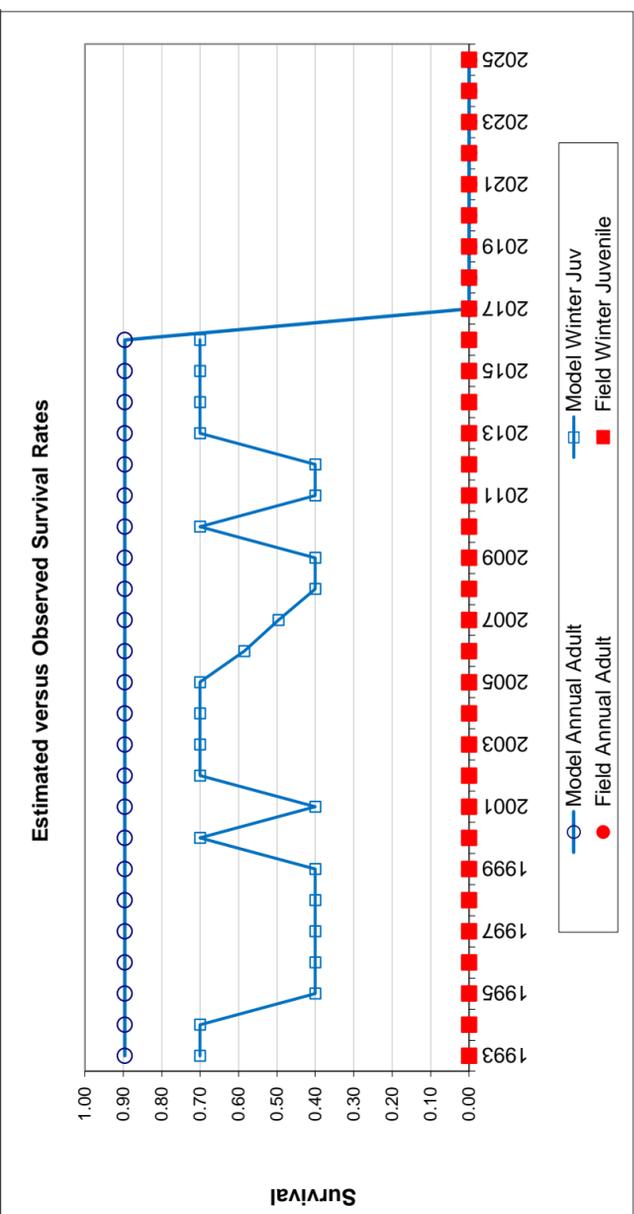
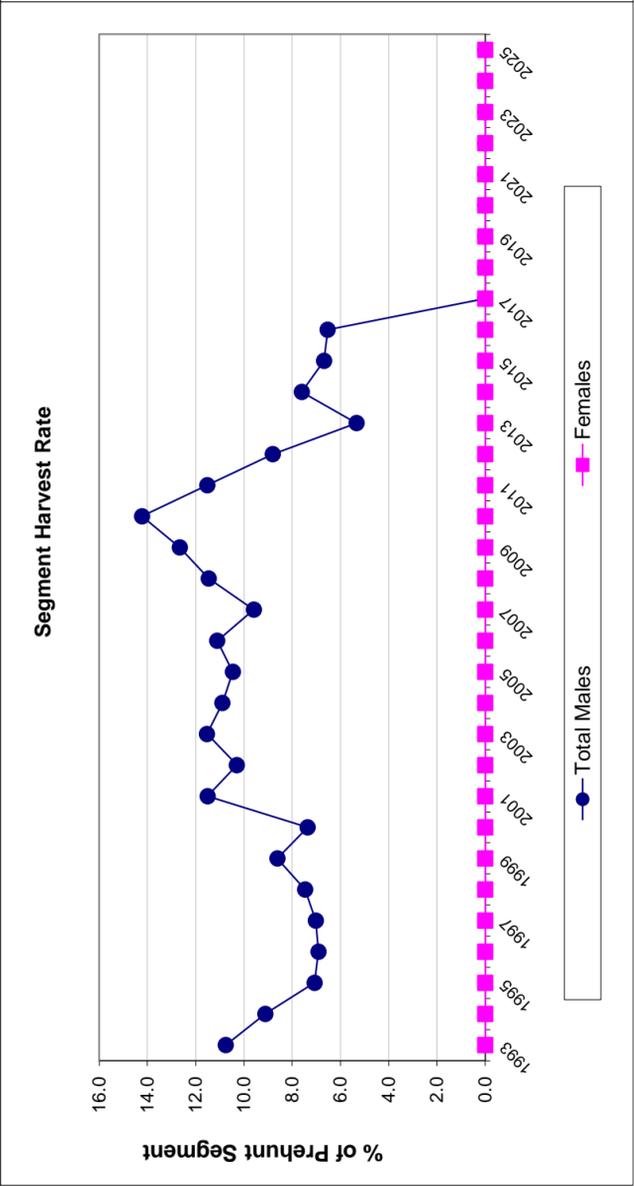
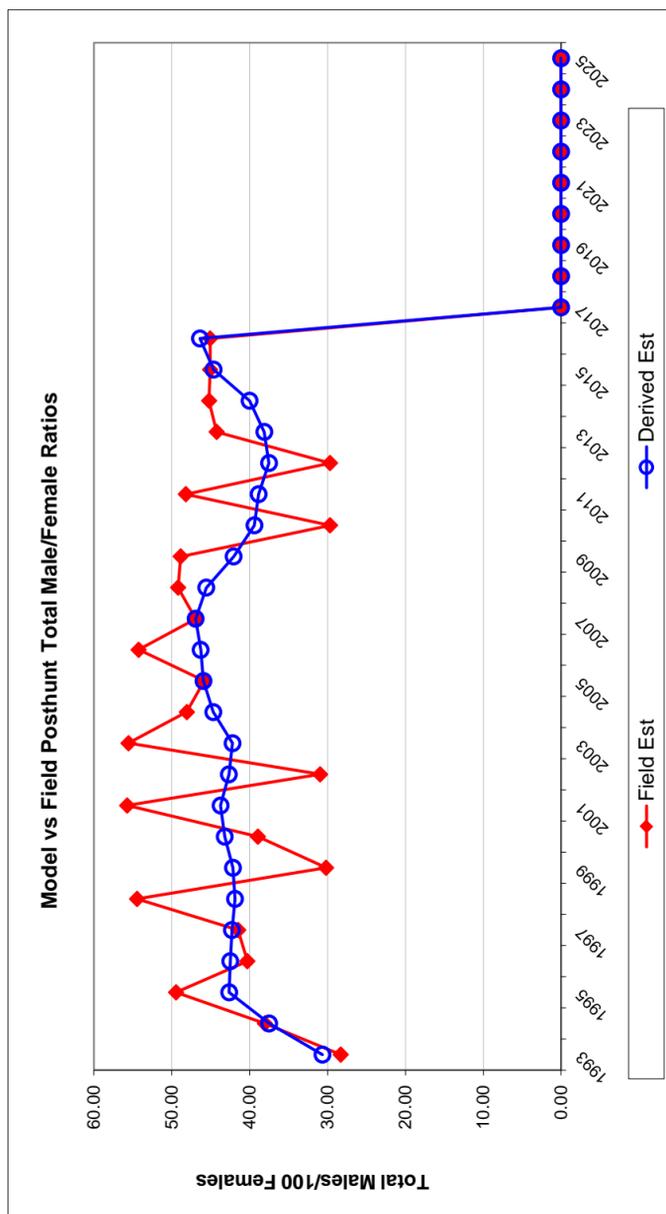
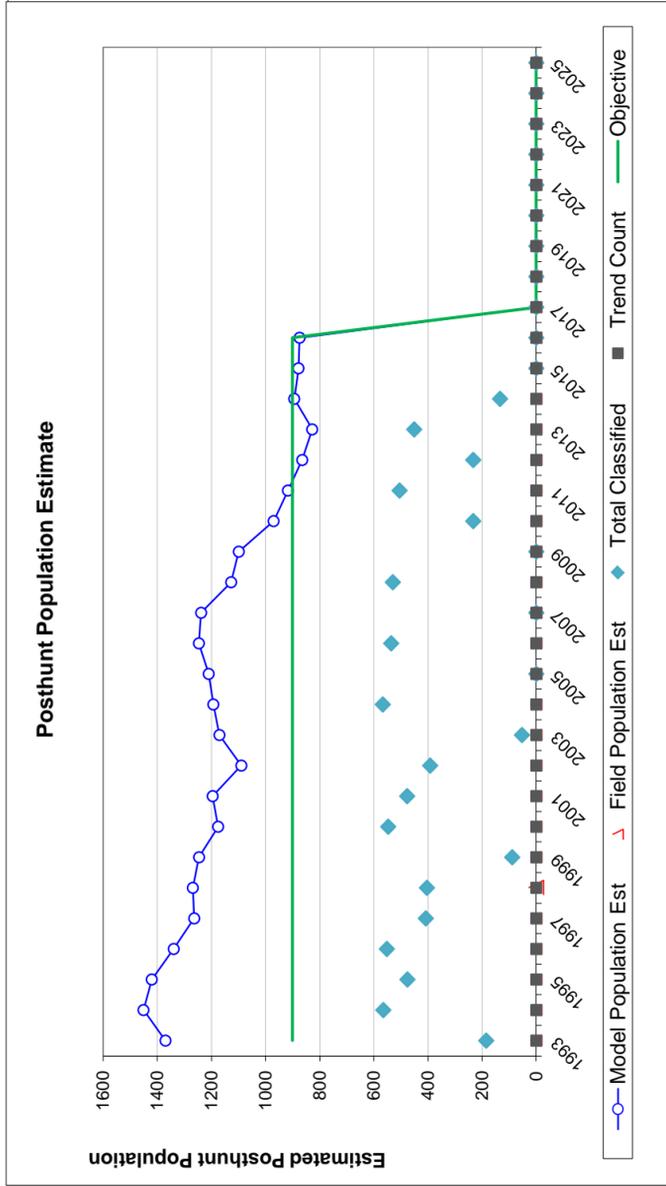
Adult Survival =	Optim cells
Initial Total Male Pop/10,000 =	0.896
Initial Female Pop/10,000 =	0.024
	0.077

**MODEL ASSUMPTIONS**

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

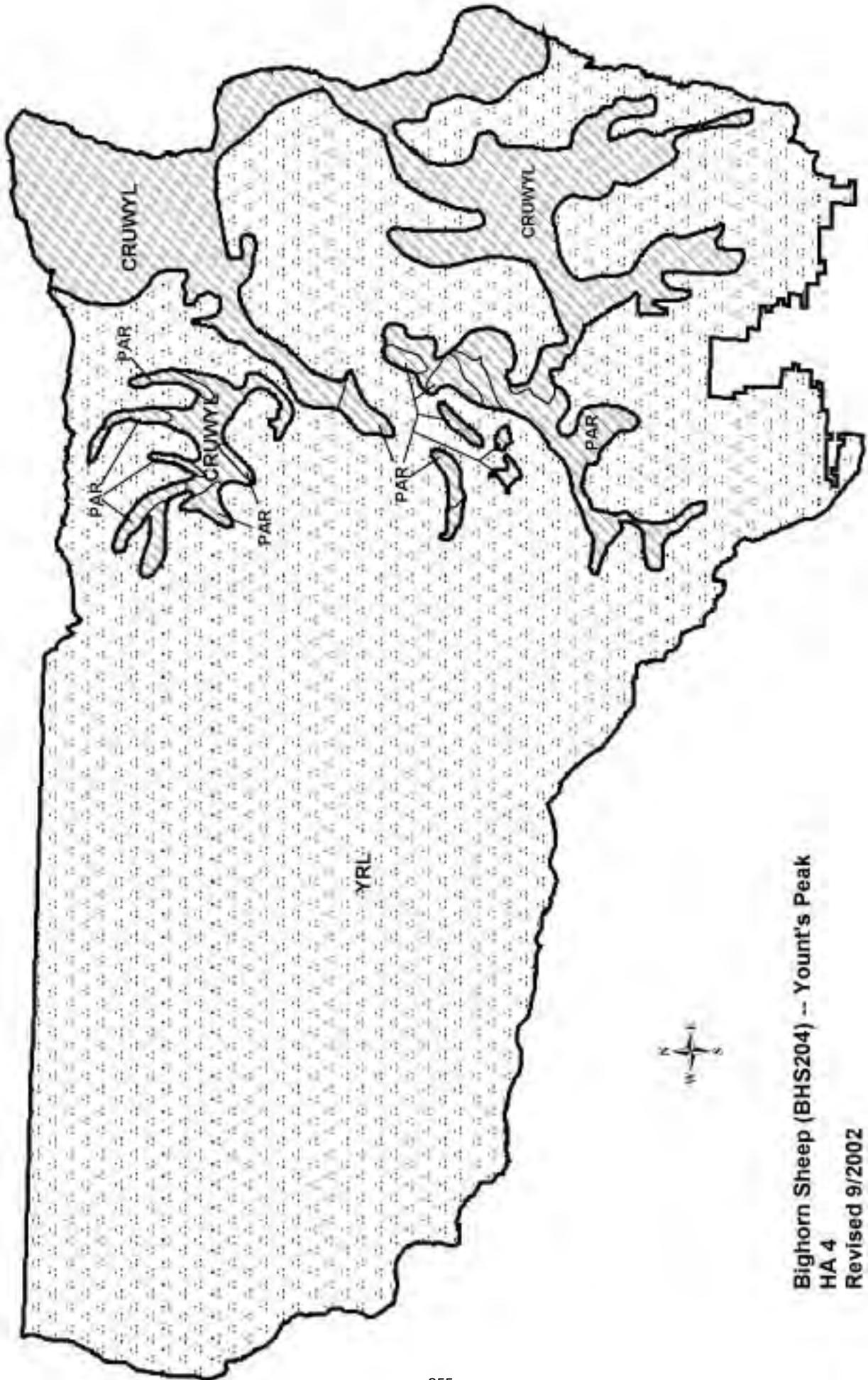
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Males	Females	Total Harvest	Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE					Total Males	Females	
1993		46.23	7.99	30.65	28.30	5.85	0	26	0	26	10.8	0.0	
1994		39.62	4.17	37.50	38.05	4.06	0	28	0	28	9.1	0.0	
1995		24.91	3.38	42.63	49.45	5.20	0	25	0	25	7.1	0.0	
1996		24.48	3.02	42.49	40.30	4.11	0	23	0	23	6.9	0.0	
1997		24.39	3.51	42.28	41.46	4.88	0	22	0	22	7.0	0.0	
1998		35.21	4.73	41.88	54.46	6.28	0	22	0	22	7.5	0.0	
1999		37.74	9.90	42.14	30.19	8.61	0	25	0	25	8.6	0.0	
2000		31.46	3.59	43.20	38.94	4.11	0	21	0	21	7.4	0.0	
2001		32.81	4.15	43.73	55.73	5.86	0	35	0	35	11.5	0.0	
2002		24.60	3.49	42.67	30.95	4.01	0	29	0	29	10.3	0.0	
2003		40.74	14.57	42.20	55.56	17.89	0	32	0	32	11.5	0.0	
2004		34.84	3.89	44.67	48.06	4.79	0	33	0	33	10.9	0.0	
2005		32.90	5.94	45.93	45.85	7.33	0	33	0	33	10.5	0.0	
2006		35.82	4.15	46.30	54.26	5.45	0	36	0	36	11.1	0.0	
2007		33.78	6.41	46.94	46.94	7.89	0	31	0	31	9.6	0.0	
2008		22.33	2.97	45.57	49.19	4.87	0	36	0	36	11.5	0.0	
2009		31.93	4.67	42.06	48.86	6.07	0	35	0	35	12.7	0.0	
2010		20.65	4.01	39.38	29.68	4.98	0	36	0	36	14.2	0.0	
2011		17.38	2.59	38.85	48.20	4.84	0	27	0	27	11.5	0.0	
2012		20.65	4.01	37.51	29.68	4.98	0	18	0	18	8.8	0.0	
2013		23.42	3.28	38.11	44.24	4.87	0	10	0	10	5.3	0.0	
2014		38.36	8.53	40.01	45.21	9.48	0	15	0	15	7.6	0.0	
2015		25.41	5.11	44.63	45.08	7.32	0	15	0	15	6.7	0.0	
2016		25.41	5.11	46.39	45.08	7.32	0	15	0	15	6.5	0.0	
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



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



## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS205 - FRANCS PEAK

HUNT AREAS: 5, 22, 999

PREPARED BY: BART KROGER

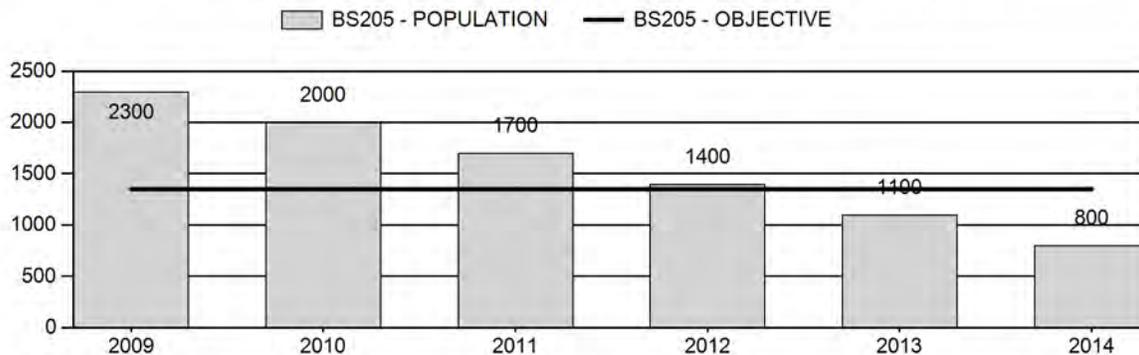
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	1,700	800	600
Harvest:	76	44	40
Hunters:	90	61	45
Hunter Success:	84%	72%	89 %
Active Licenses:	90	61	45
Active License Success:	84%	72%	89 %
Recreation Days:	546	601	500
Days Per Animal:	7.2	13.7	12.5
Males per 100 Females	55	68	
Juveniles per 100 Females	27	20	

Population Objective ( $\pm$ 20%) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-40.7%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/23/2015

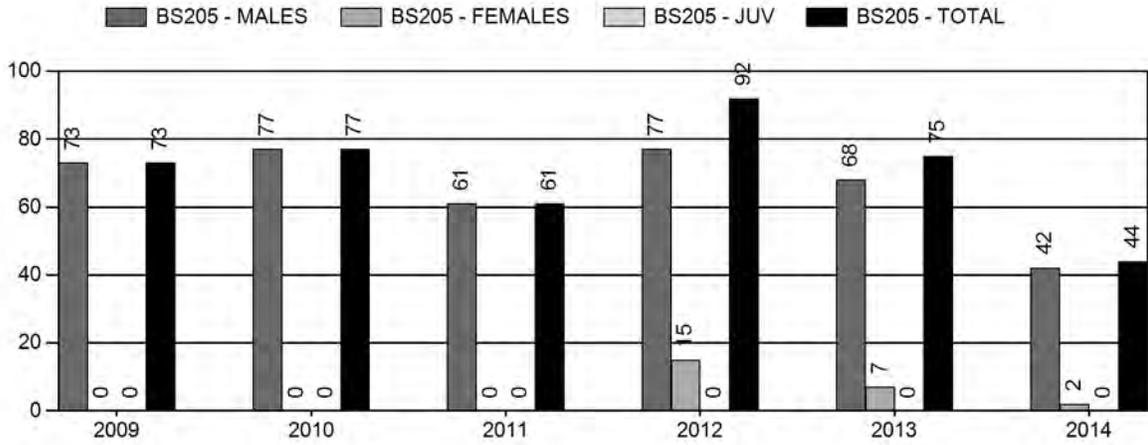
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0.4%	0%
Males $\geq$ 1 year old:	21%	29%
Juveniles (< 1 year old):	0%	0%
Total:	5%	7%
Proposed change in post-season population:	-29%	-16%

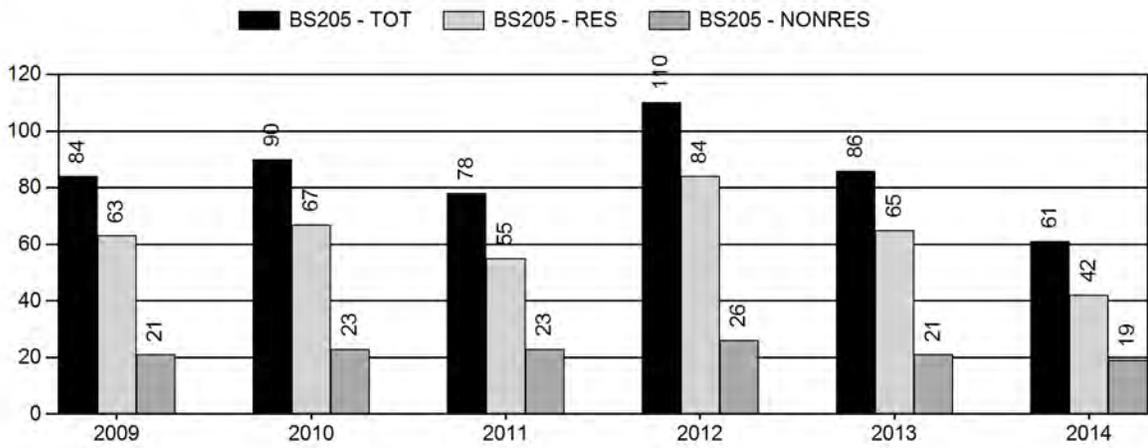
## Population Size - Postseason



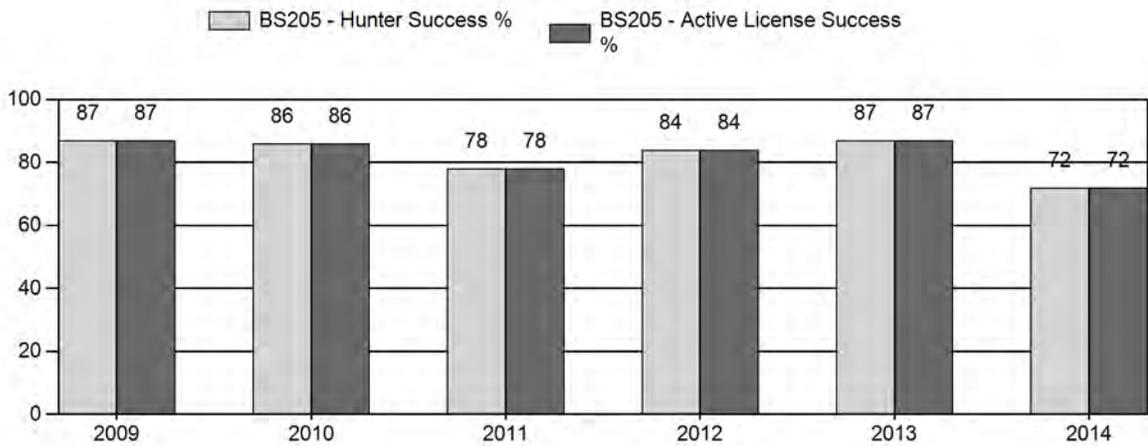
# Harvest



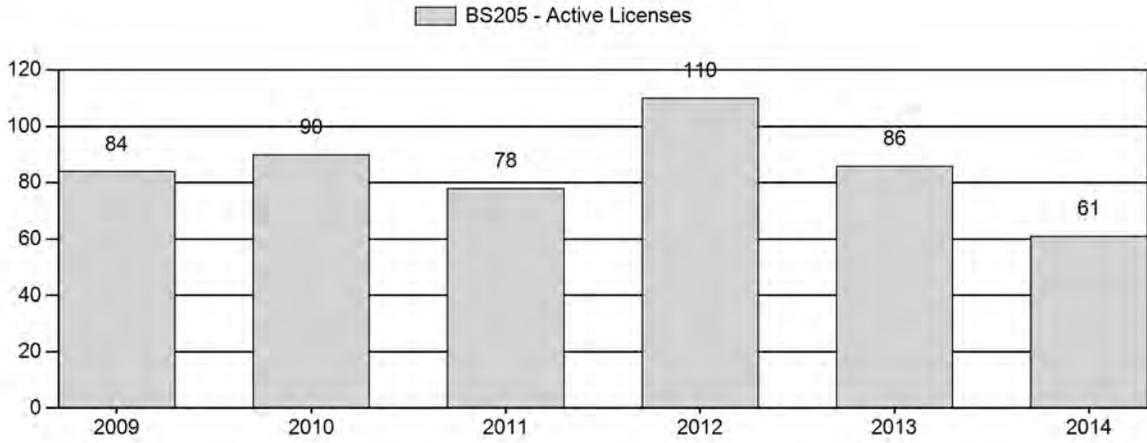
# Number of Hunters



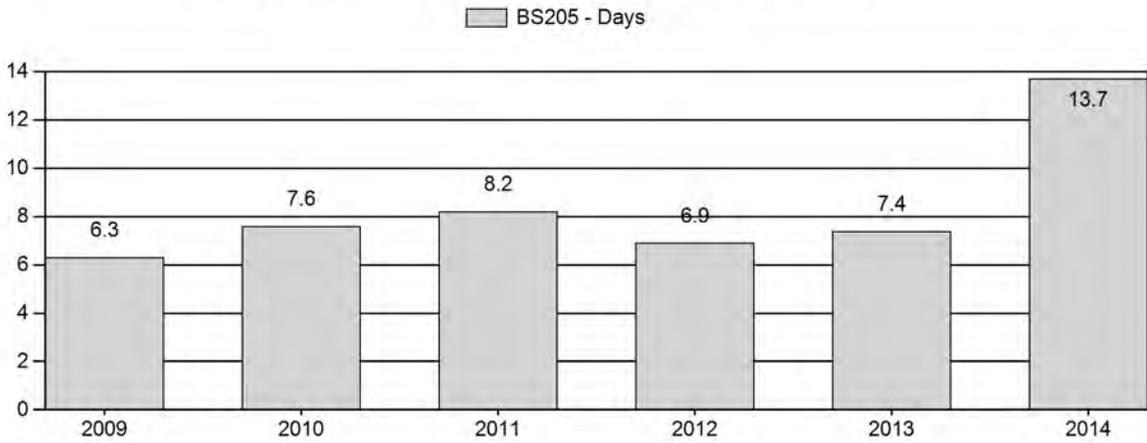
# Harvest Success



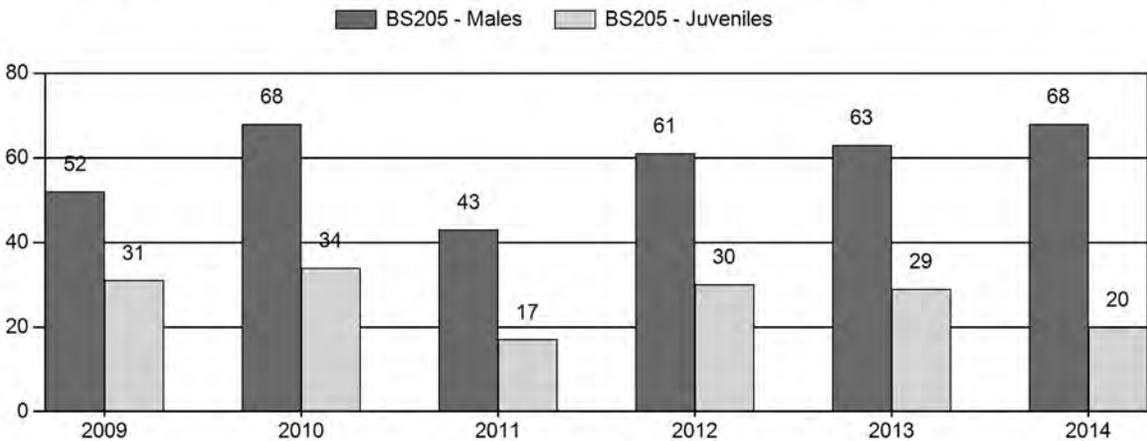
# Active Licenses



# Days per Animal Harvested



# Postseason Animals per 100 Females



## 2009 - 2014 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
2009	2,300	0	0	221	28%	425	55%	131	17%	777	566	0	0	52	± 4	31	± 3	20
2010	2,000	0	153	153	34%	225	50%	76	17%	454	727	0	68	68	± 8	34	± 5	20
2011	1,700	0	0	172	27%	400	62%	68	11%	640	445	0	0	43	± 4	17	± 2	12
2012	1,400	0	140	140	32%	228	52%	68	16%	436	802	0	61	61	± 7	30	± 4	18
2013	1,100	0	144	144	33%	230	52%	66	15%	440	584	0	63	63	± 7	29	± 4	18
2014	800	0	135	135	36%	200	53%	41	11%	376	490	0	68	68	± 7	20	± 3	12

**2015 HUNTING SEASONS  
FRANCS PEAK BIGHORN SHEEP HERD (BS205)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
5	1	Sep. 1	Oct. 31	32	Limited quota; any ram (24 residents, 8 nonresidents)
22	1	Sep. 1 Oct. 1	Oct. 31 Oct. 31	4	Limited quota; any ram Unused Area 22 Type 1 licenses also valid in Area 5
Archery		Aug. 15	Aug. 31		Refer to Section 3

Hunt Area	Type	Quota change from 2014
5	1	-17
	6	-4
<b>HU Total</b>	<b>1</b>	<b>-17</b>
	<b>6</b>	<b>-4</b>

**Management Evaluation**

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

**Management Strategy: Special**

**2014 Postseason Population Estimate: 800**

**2015 Proposed Postseason Population Estimate: 600**

**Herd Unit Issues** - The management strategy for this sheep herd is to maintain an average age of harvested rams between 6-8 years old, along with a hunter success of >80%. The herd objective and management strategy was revised and approved in 2013. Lamb ratios are also monitored closely to anticipate potential changes in age classes of rams. In Hunt Area 5, much of the occupied habitat occurs at alpine elevations, whereas in Hunt Area 22 a number of sheep occupy the badlands north of the Wind River, with some sheep spending time on irrigated meadows on the Fish Ranch. In the Owl Creek Mountain's of the Wind River Reservation (WRR), bighorn sheep are found year round above 9,500'. After the 2010/11 winter, this population started showing declines, and has continued to decline the past four years. It's likely disease issues have caused these declines. Since January 2011, 163 ram pickup heads have been registered from area 5. Hunter success dropped to 72% in 2014, the lowest since 2000. As of May 2015, no final harvest results had been received from the WRR.

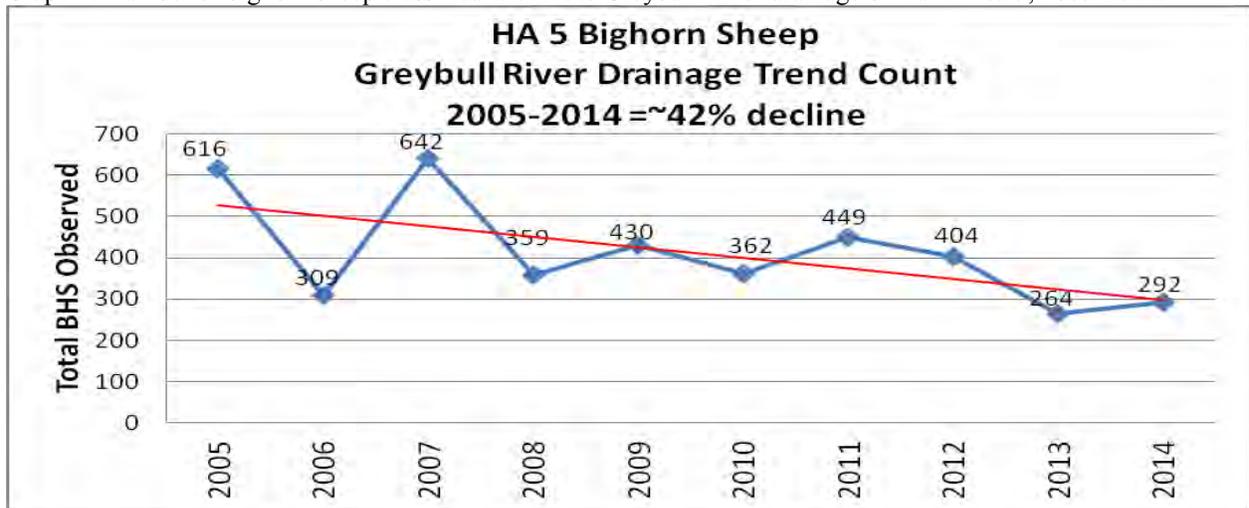
**Weather** - The winter of 2010/11 appeared to have been severe enough to cause some die-off as well as reduced lamb production. The extreme dry conditions of 2012 resulted in some changes to the distribution of sheep on their summer range, likely because of reduced forage production and condition. The winter of 2013/14 was more severe than normal, with mainly deep snow at higher elevations. The summer of 2014 was exceptional for moisture, and so far the 2014/15 winter is appearing to be mostly normal.

**Habitat** - Habitat conditions for the most part are considered good to excellent in this herd unit. The Little Venus fire in 2006 and the Norton Point fire in 2011 improved overall forage

availability and production in Hunt Area 5. The drought conditions in 2012 did cause lower than normal forage production. Higher than normal precipitation in 2013 and 2014 were favorable for spring green up and winter forage.

**Field Data** - Aerial classifications surveys are used in obtaining post-season lamb and ram ratio for this sheep herd. On average about 600-700 sheep are classified annually, except for the past two years where the average has been about 400 sheep. Lamb:ewe ratios for the herd have remained favorable, with an average ratio of 27:100. Ram:ewe ratios typically exceed 50:100. An early spring flight in May 2014 resulted in 380 sheep being observed. Since 2005, a commonly flown flight path has been used during classification surveys within the Greybull River drainage. The number of sheep observed on these annual flights has been used to track population trends. Over the past 10 years the number of sheep observed on average has declined by 42% (Graph 1).

Graph 1. Number of bighorn sheep classified within the Greybull River drainage of Hunt Area 5, 2005-2014.



**Harvest Data** - Annual harvest since 2008 has been about 70 rams for the herd unit, with roughly 60 from area 5, 1-2 from area 22, and about 6-8 from the WRIR. Hunter success is typically about 85-90%, with hunter effort at about 6-8 days/animal harvested. However, in 2014 hunter success dropped to 72% and hunter days increased to 13.7. In Hunt Area 5 since 2008, the age of harvested rams has averaged about 7.8 years. The percent of harvested rams  $\geq$  8 years of age has averaged about 45%. The 2014 ewe harvest in area 5 showed 2 ewes being harvested for a hunter success of 50%. Of 12 hunters on the WRIR in 2014, only 4 rams were reported harvested.

**Population** - The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd because it reflects a good recent year trend (2010-2014) in the population. The model supports the lowest AIC value at 134. Because of this, the overall model is considered mostly reliable, at least for the last 4 year trend. The model also reflects trends in past year observations of sheep numbers during classification surveys. On average for the herd unit, the number of sheep classified has declined by about 40% in recent years.

**Management Summary** - The low lamb ratios in 2011 (17:100) and 2014 (20:100), the number of ram pickup heads ( $n > 200$ ) since 2009, a drop in hunter success, an increase in days/animal, and the overall declines in observed sheep during classification flights ( $> 40\%$ ) warrants some

concern for this sheep herd. We feel there has been a significant mortality event in Hunt Area 5, specifically on the northern portion of the herd unit, based on these data as well as hunter and field personnel observations. Because of these declines the Type 1 quota in Area 5 will be reduced by 17 licenses, and the Type 6 season in Area 5 will be closed. The Type 6 hunters in 2014 only experienced a 50% hunter success. No season change will occur in Hunt Area 22. As of May 2015, no season proposal had been received from the WRR. The projected 2015 harvest for the herd unit is roughly 40 rams. The 2015 post-season population estimate will be around 600 sheep.

<b>INPUT</b>	
Species:	Bighorn Sheep
Biologist:	Bart Kroger
Herd Unit & No.:	Frances Peak, BS205
Model date:	02/23/15

Clear form

<b>MODELS SUMMARY</b>		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	155	146	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	134	125	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	239	113	

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective		
	Field Est	Field SE		Juveniles	Total Males	Females	Juveniles	Total Males	Females		Total	
1993				422	538	1275	2234	422	485	1275	2181	1360
1994				337	584	1295	2216	337	527	1295	2159	1360
1995				376	592	1283	2252	376	536	1283	2196	1360
1996				375	614	1287	2275	375	548	1287	2209	1360
1997				379	624	1289	2293	379	565	1289	2234	1360
1998				330	641	1293	2284	330	576	1293	2199	1360
1999				458	634	1279	2371	458	587	1279	2324	1360
2000				427	689	1311	2427	427	631	1311	2370	1360
2001				300	718	1330	2347	300	657	1330	2287	1360
2002				312	696	1302	2311	312	635	1302	2249	1360
2003				308	681	1281	2270	308	619	1281	2208	1360
2004				401	665	1261	2327	401	594	1261	2255	1360
2005				333	674	1275	2282	333	606	1275	2214	1360
2006				462	662	1264	2368	462	603	1264	2329	1360
2007				364	704	1299	2367	364	616	1299	2279	1360
2008				365	682	1297	2343	365	594	1297	2255	1360
2009				399	662	1295	2356	399	582	1295	2275	1360
2010				390	585	1155	2131	390	500	1155	2046	1360
2011				177	517	1041	1736	177	450	1041	1669	1360
2012				256	405	877	1538	256	322	860	1438	1360
2013				189	290	666	1144	189	215	658	1062	1360
2014				104	198	508	809	104	143	506	752	1360
2015				86	140	431	657	86	112	431	629	1360
2016												1360
2017												1360
2018												1360
2019												1360
2020												1360
2021												1360
2022												1360
2023												1360
2024												1360
2025												1360

Survival and Initial Population Estimates

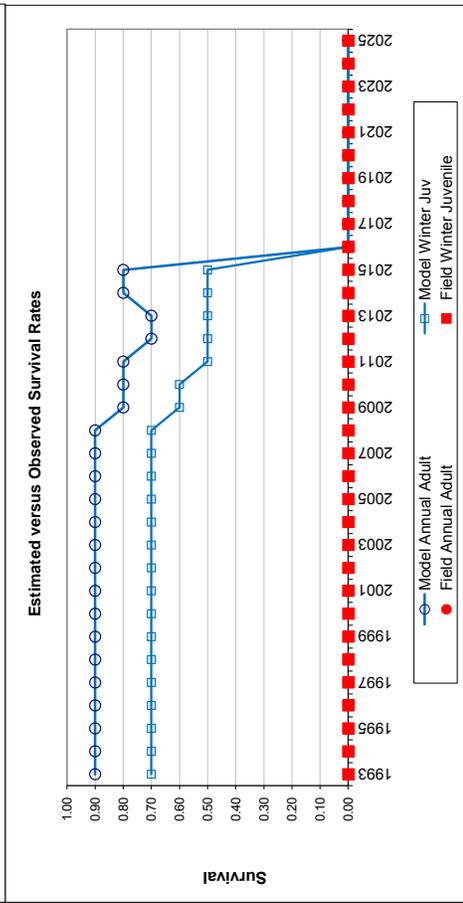
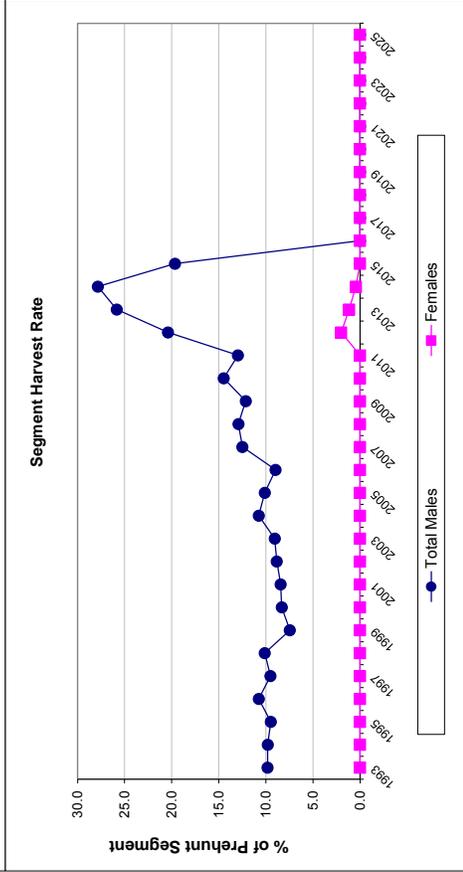
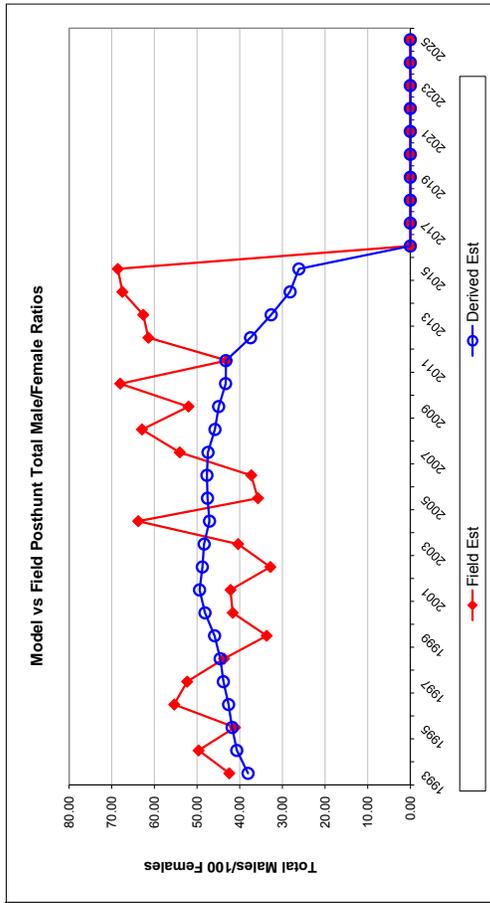
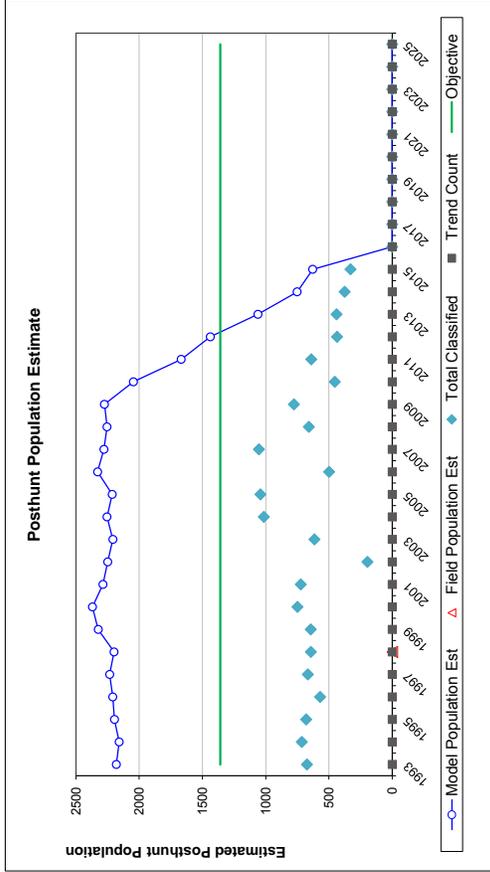
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.70		0.90	
1994	0.70		0.90	
1995	0.70		0.90	
1996	0.70		0.90	
1997	0.70		0.90	
1998	0.70		0.90	
1999	0.70		0.90	
2000	0.70		0.90	
2001	0.70		0.90	
2002	0.70		0.90	
2003	0.70		0.90	
2004	0.70		0.90	
2005	0.70		0.90	
2006	0.70		0.90	
2007	0.70		0.90	
2008	0.70		0.90	
2009	0.60		0.80	
2010	0.60		0.80	
2011	0.50		0.80	
2012	0.50		0.70	
2013	0.50		0.70	
2014	0.50		0.80	
2015	0.50		0.80	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Juvenile Survival =		0.650
Adult Survival =		0.800
Initial Total Male Pop/10,000 =		0.048
Initial Female Pop/10,000 =		0.127

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total mates) =	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		33.07	3.39	38.05	42.45	3.97	0	48	0	48	9.8	0.0	
1994		26.04	2.84	40.69	49.63	4.27	0	52	0	52	9.8	0.0	
1995		29.32	3.08	41.77	41.10	3.81	0	51	0	51	9.5	0.0	
1996		29.13	3.49	42.60	55.34	5.27	0	60	0	60	10.7	0.0	
1997		29.43	3.22	43.84	52.32	4.66	0	54	0	54	9.5	0.0	
1998		25.53	2.90	44.56	43.68	4.06	0	59	0	59	10.1	0.0	
1999		35.79	3.58	45.89	33.68	3.44	0	43	0	43	7.5	0.0	
2000		32.56	3.17	48.14	41.63	3.70	0	52	0	52	8.3	0.0	
2001		22.55	2.51	49.42	42.14	3.69	0	55	0	55	8.4	0.0	
2002		24.00	4.88	48.76	32.80	5.90	0	56	0	56	8.8	0.0	
2003		24.06	2.83	48.33	40.37	3.89	0	56	0	56	9.0	0.0	
2004		31.79	2.84	47.08	63.78	4.49	0	65	0	65	10.8	0.0	
2005		26.09	2.26	47.55	35.71	2.74	0	62	0	62	10.1	0.0	
2006		36.59	4.17	47.68	37.28	4.22	0	54	0	54	9.0	0.0	
2007		27.98	2.49	47.43	54.06	3.79	0	80	0	80	12.5	0.0	
2008		28.12	3.23	45.80	62.90	5.45	0	80	0	80	12.9	0.0	
2009		30.82	3.08	44.94	52.00	4.31	0	73	0	73	12.1	0.0	
2010		33.78	4.48	43.31	68.00	7.13	0	77	0	77	14.5	0.0	
2011		17.00	2.23	43.24	43.00	3.92	0	61	0	61	13.0	0.0	
2012		29.82	4.12	37.45	61.40	6.59	0	75	16	91	20.4	2.0	
2013		28.70	4.01	32.62	62.61	6.65	0	68	7	75	25.8	1.2	
2014		20.50	3.51	28.18	67.50	7.52	0	50	2	52	27.8	0.4	
2015		20.00	3.70	26.11	68.57	8.13	0	25	0	25	19.7	0.0	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



## 2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS212 - DEVIL'S CANYON

HUNT AREAS: 12

PREPARED BY: LESLIE  
SCHREIBER

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	0	N/A	N/A
Harvest:	2	2	4
Hunters:	2	2	4
Hunter Success:	100%	100%	100%
Active Licenses:	2	2	4
Active License Success:	100%	100%	100%
Recreation Days:	12	8	10
Days Per Animal:	6	4	2.5
Males per 100 Females	44	83	
Juveniles per 100 Females	63	48	

Population Objective ( $\pm 20\%$ ) : 200 (160 - 240)

Management Strategy: Special

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

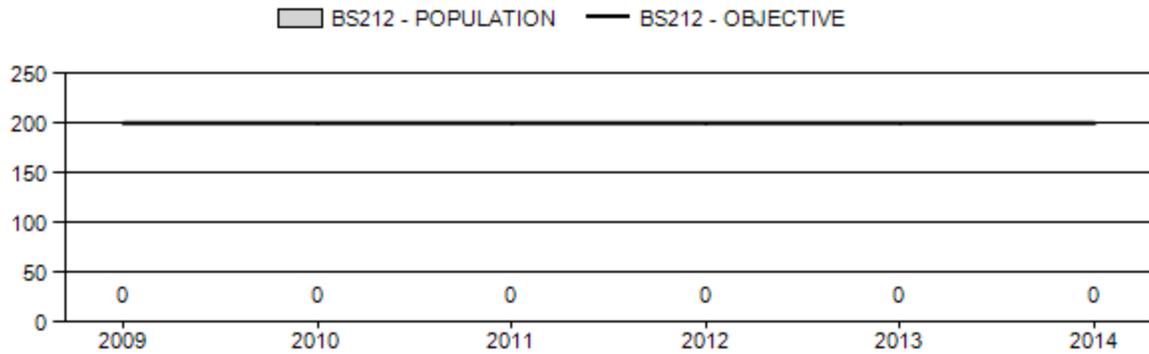
Number of years population has been + or - objective in recent trend: 0

Model Date: None

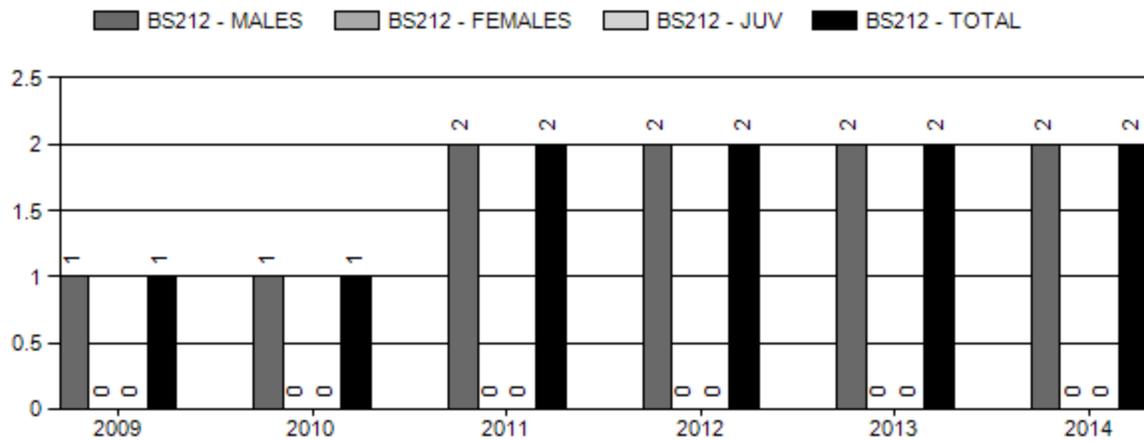
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

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

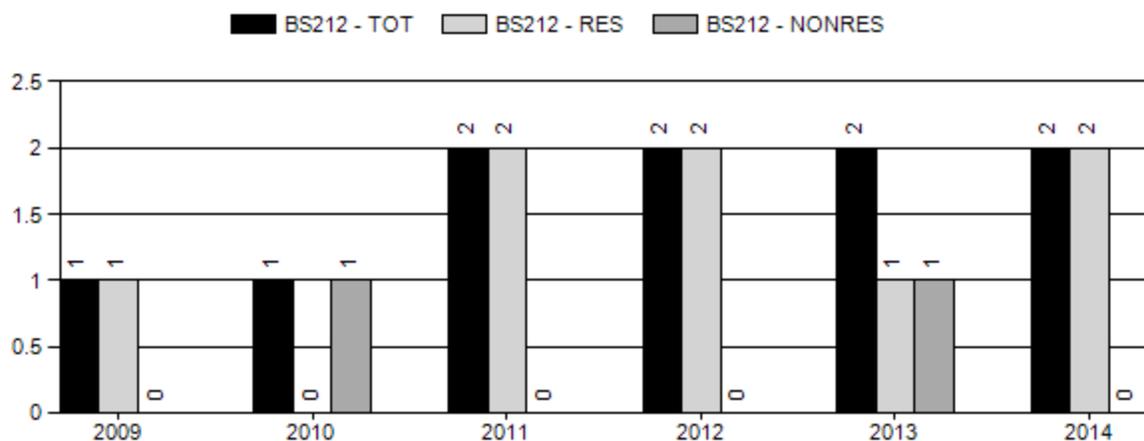
## Population Size - Postseason



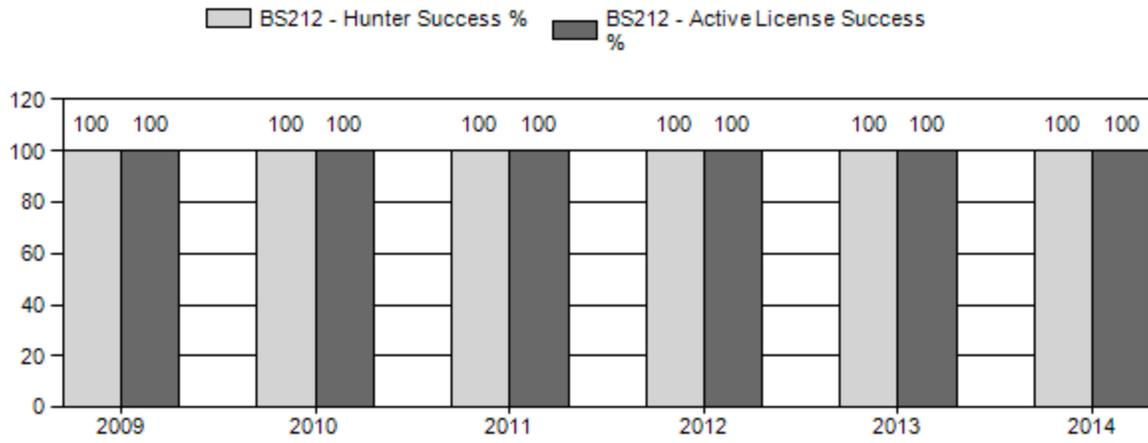
## Harvest



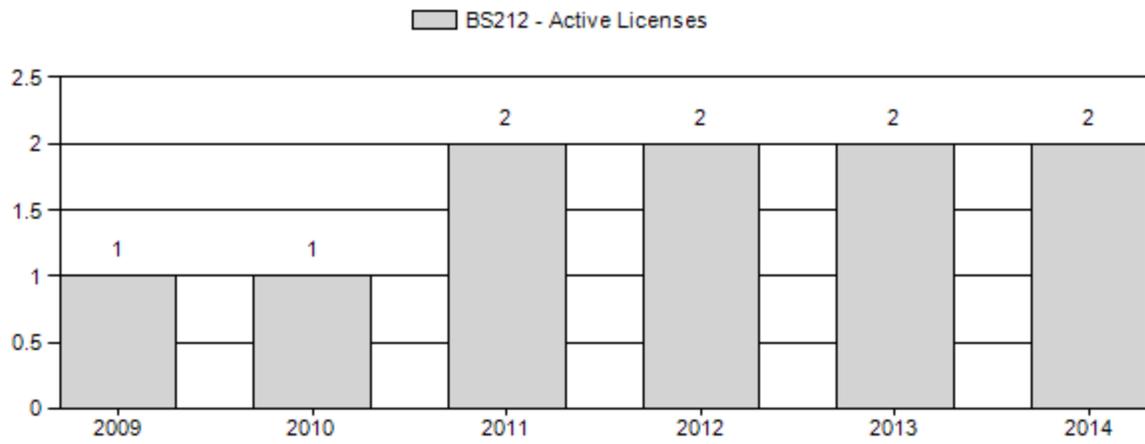
## Number of Hunters



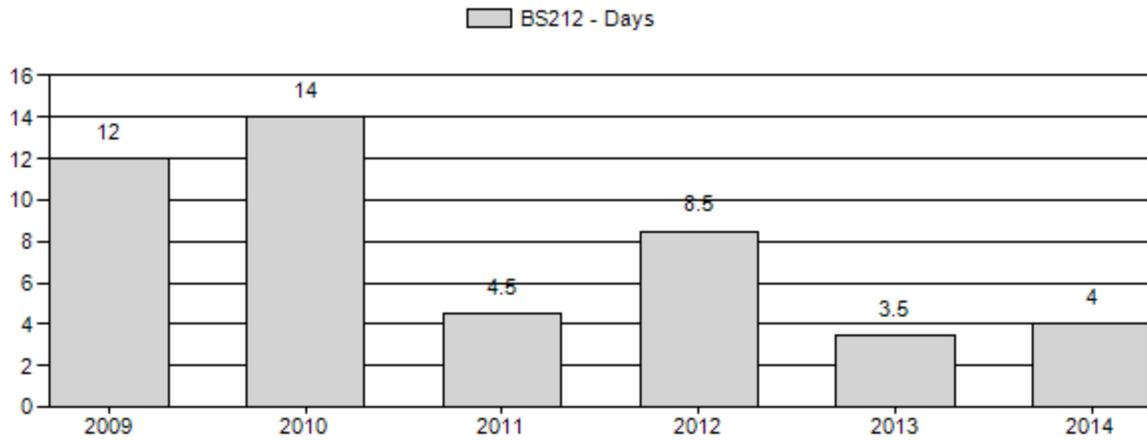
# Harvest Success



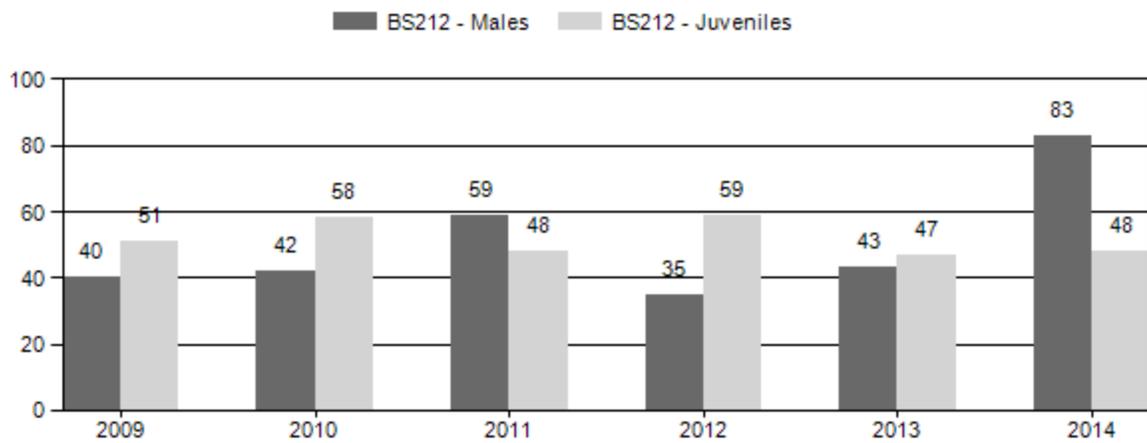
# Active Licenses



## Days Per Animal Harvested



## Preseason Animals per 100 Females



**2009 - 2014 Preseason Classification Summary**  
for Bighorn Sheep Herd BS212 - DEVIL'S CANYON

Year	Pre Pop	MALES				FEMALES		JUVENILES				Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%	Tot	Cls	YIng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
										Cls	Obj				Int			
2009	0	0	0	27	21%	67	52%	34	27%	128	0	0	0	40	± 0	51	± 0	36
2010	0	6	18	27	21%	64	50%	37	29%	128	142	9	28	42	± 0	58	± 0	41
2011	0	0	41	41	29%	69	48%	33	23%	143	141	0	59	59	± 0	48	± 0	30
2012	0	0	12	17	18%	49	52%	29	31%	95	142	0	24	35	± 0	59	± 0	44
2013	0	0	32	32	23%	74	52%	35	25%	141	0	0	43	43	± 0	47	± 0	33
2014	0	0	76	76	36%	92	43%	44	21%	212	0	0	83	83	± 0	48	± 0	26

**2015 Hunting Seasons  
Devil's Canyon Bighorn Sheep Herd Unit (BS212)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
12	1	Sept. 1	Oct. 15	4	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
12	1	+2
Total		+2

**Management Evaluation**

**Current Management Objective: 200 (trend)**

**2014 Postseason Population Estimate: none**

**2015 Proposed Postseason Population Estimate: 175**

**Herd Unit Issues.** Prior to the first transplant (1973) into the Devil's Canyon area, a goal of 200 bighorn sheep was informally established. That population objective was carried over following the most recent transplants in 2004 and 2006 and no population model/estimate has been developed for this small herd. This herd is currently undergoing a public herd unit review where we are proposing an aerial summer trend count objective of 175 sheep based on a 3 year running average.

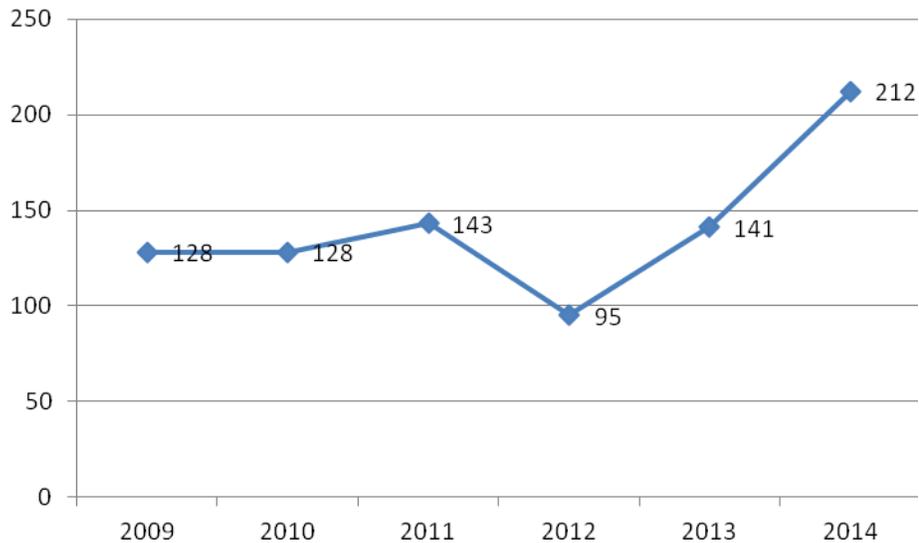
**Weather.** Climatic conditions probably have the most influence on productivity and survival of this population. Cheatgrass has become established on some sites. There is limited farming (irrigated pastures) on a small portion of private land and bighorn sheep are attracted to those pastures especially during drought years. Although drought conditions were documented during summer 2012 and 2013 across most of Wyoming, effects on this bighorn sheep herd appear to have been minimal. Distribution of ewes to irrigated pastures probably negated any adverse effects.

**Habitat.** There are no habitat transects in this herd unit for monitoring bighorn habitat. In conjunction with the BLM, a prescribed burn, water development and pipeline was completed south of Devil's Canyon for bighorns.

**Field Data/Population.** Total number of sheep observed during pre-season classification surveys provides the most consistent estimate of the trend in the population (Figure 1); however, some surveys were not conducted across all areas used by bighorns and effort (flight time, aerial vs. ground) has not been consistent across years. During the July 2014 classification survey, personnel counted a total of 212 bighorn sheep; the highest count ever recorded for this herd. We observed 76 rams (22 class I rams, 28 class II rams, 19 class III rams, and 7 class IV rams)

for a ratio of 83 rams:100 ewes. We observed 44 lambs for a ratio of 48 lambs:100 ewes. Flight time and area surveyed did not differ greatly from previous years.

Figure 1. Total number of bighorn sheep observed during pre-season classification surveys of the Devil's Canyon herd unit, 2009-2014.



**Harvest Data.** Harvest statistics provide little information about this population's trend. Only 1-2 licenses were issued each year since 2008 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 1-2 rams were harvested each year. It is possible that the ram harvested in 2010 was incorrectly aged to 10 years, based on the hunter's comments and the count of annual rings shown in photos. Also, ram genetics from the recent transplants allowed for more growth of young rams. For example, one ram from Missouri River breaks (Montana) was harvested as a 6-year old (scored >180). Thus, average age of harvested rams could decrease even though larger rams are being harvested.

One landowner, a family corporation, controls access to the area where most bighorn sheep are observed, but own only ~10% of the area. Typically, the landowner did not want to deal with more than two bighorn sheep hunters each year. The landowner felt that more hunters would result in conflicts between hunters, because these rams are highly visible and apparently not afraid of human activity, making them quite vulnerable. Department personnel met with the landowner and explained the high number of sheep observed during the pre-season classification survey. The landowner agreed to 4 bighorn sheep hunters, with the stipulation that all 4 hunters are not in the area at the same time. Department personnel are calling the 4 hunters who drew a license for the 2015 hunt to explain the timing situation. For the 2016 hunt, we are tentatively planning on having a split season with 2 licenses per license type.

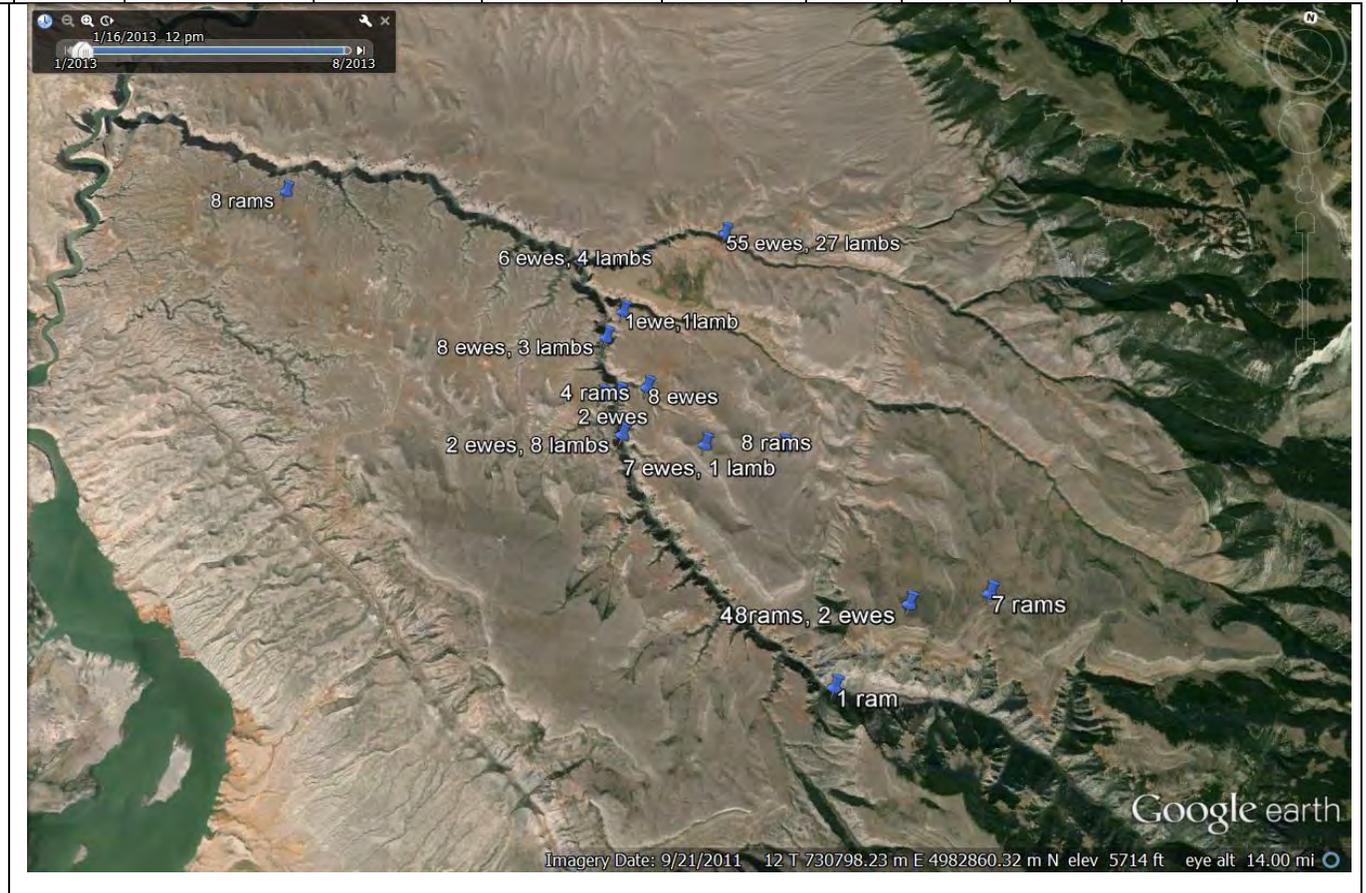
**Management Summary.** Through previous disease surveillance efforts, this herd has been found to be free of known disease pathogens, making them the best source for in-state transplant efforts. In March 2015, 25 bighorn sheep (3 rams, 1 ram lamb, 21 ewes) were captured,

sampled, fitted with radio-collars and released in the Seminole Mountains. This transplant will assist in bringing the Devil's Canyon herd back down to objective. Depending on the number of sheep observed during the 2015 summer classification survey, another transplant may take place in spring 2016.

Date: July 15, 2014  
 Observer: Hobbs, Kroger  
 Species: Bighorn Sheep  
 Survey Type: Classification/trend  
 Air Service: SKY Aviation  
 Aircraft: Jet Ranger Helicopter  
 Conditions: High thin clouds, mostly calm, 45-65°  
 Flight duration: 1.3 hours ferry, 4.0 hours survey

Below are the classification/trend survey results flown for bighorn sheep hunt area 12, on July 15, 2014. Total number of sheep observed and classified was 212. Locations of these observations can be viewed on the attached Google Earth map. There were a total of 14 groups of sheep that were found. Of these 14 groups, 10 were located on BLM, 2 on private and 2 across the border in Montana. The highest concentrations of ewe/lamb groups were found along the first ledges below the canyon edge in both Trout Creek and Porcupine Creek. The majority of rams were found on the benches between Deer Creek and Porcupine Creek, with the largest group of 48 rams at the very head of Spring Creek. Rams were classified based on horn curl/mass. There were some very impressive rams seen, with at least a few pushing the 180 class.

ewes	lambs	C1 ram Yrl - ½ curl	C2 ram ½ - ¾ curl	C3 ram ¾ - full curl	C4 rams ≥ full	Total rams	Total sheep	Lamb ratio	Ram ratio
92	44	22	28	19	7	76	212	48:100	83:100





## 2014 - JCR Evaluation Form

SPECIES: Mountain Goat

PERIOD: 6/1/2014 - 5/31/2015

HERD: MG201 - BEARTOOTH

HUNT AREAS: 1, 3, 514

PREPARED BY: DOUG  
MCWHIRTER

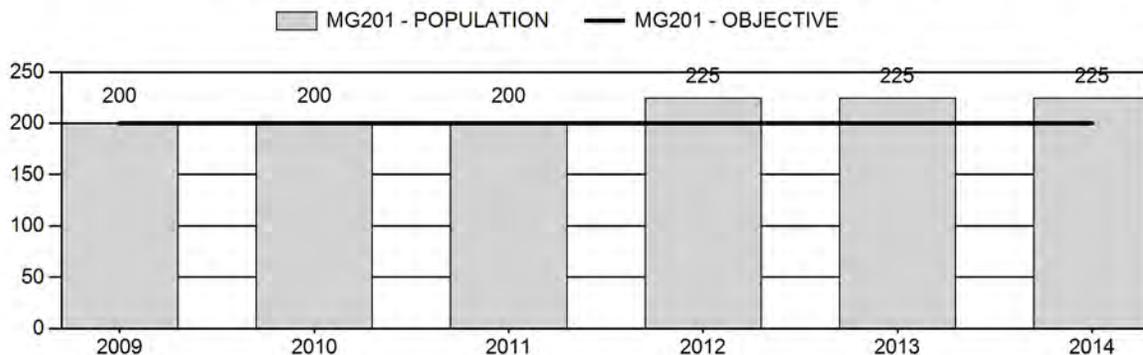
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	210	225	225
Harvest:	15	19	19
Hunters:	16	20	20
Hunter Success:	94%	95%	95 %
Active Licenses:	16	20	20
Active License Success:	94%	95%	95 %
Recreation Days:	87	116	110
Days Per Animal:	5.8	6.1	5.8
Males per 100 Females	0	0	
Juveniles per 100 Females	34	29	

Population Objective (± 20%) :	200 (160 - 240)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	12%
Number of years population has been + or - objective in recent trend:	5
Model Date:	None

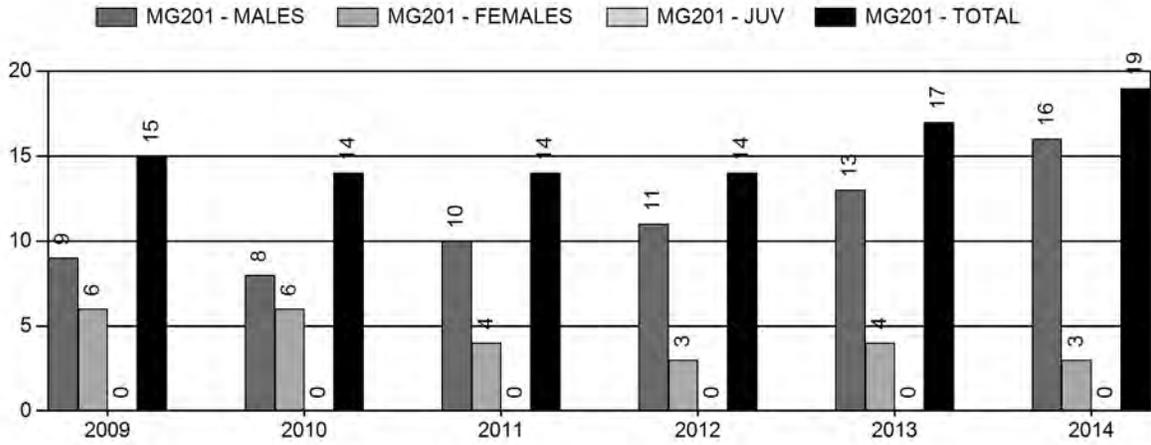
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

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

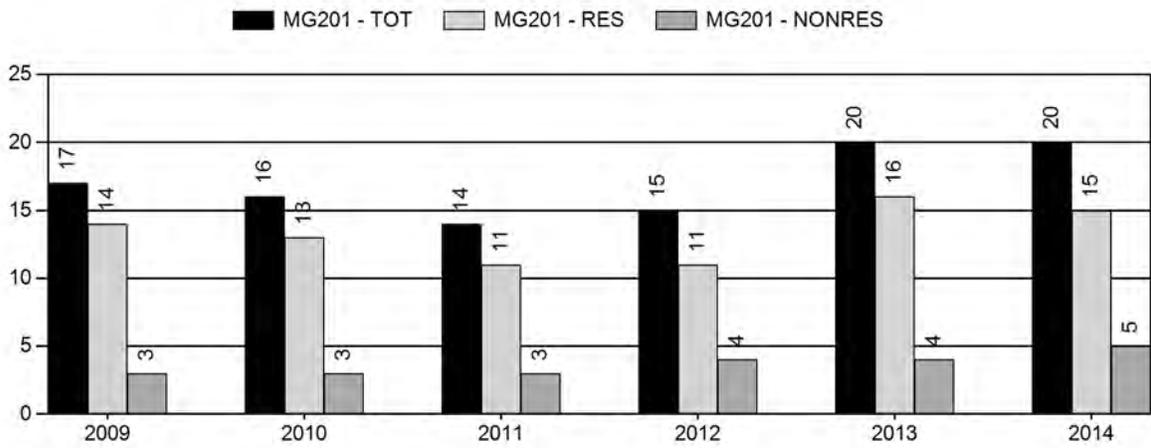
## Population Size - Postseason



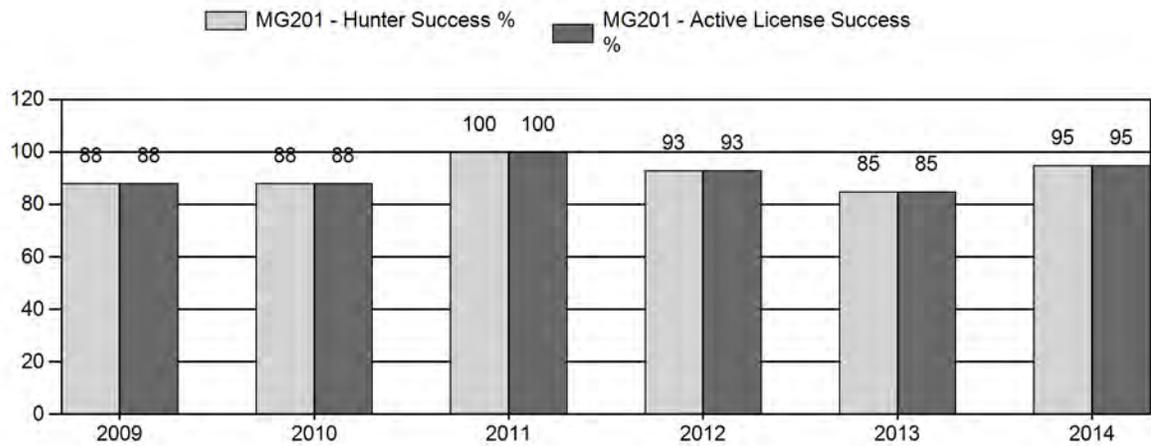
# Harvest



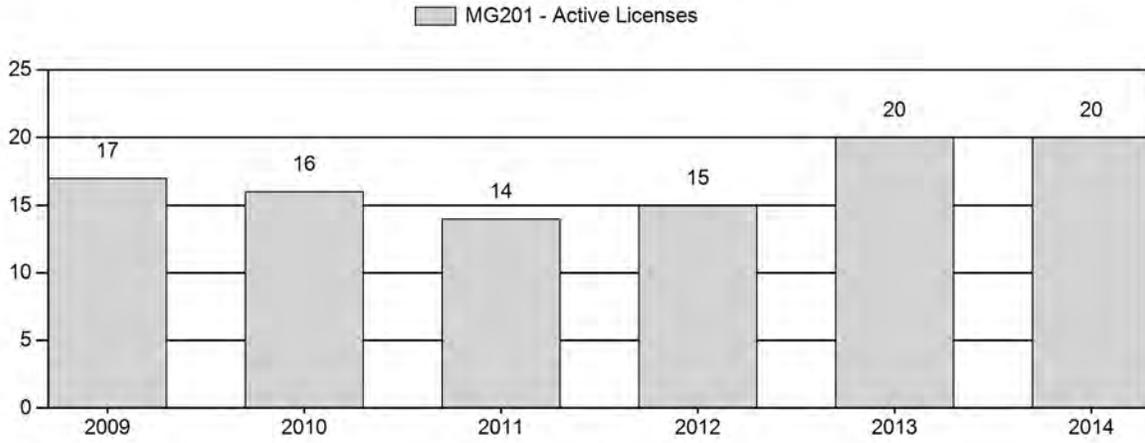
# Number of Hunters



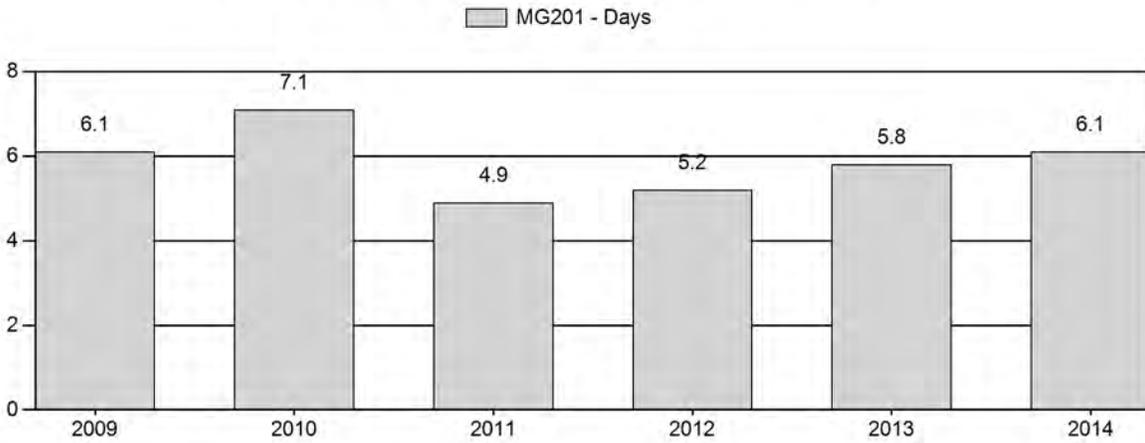
# Harvest Success



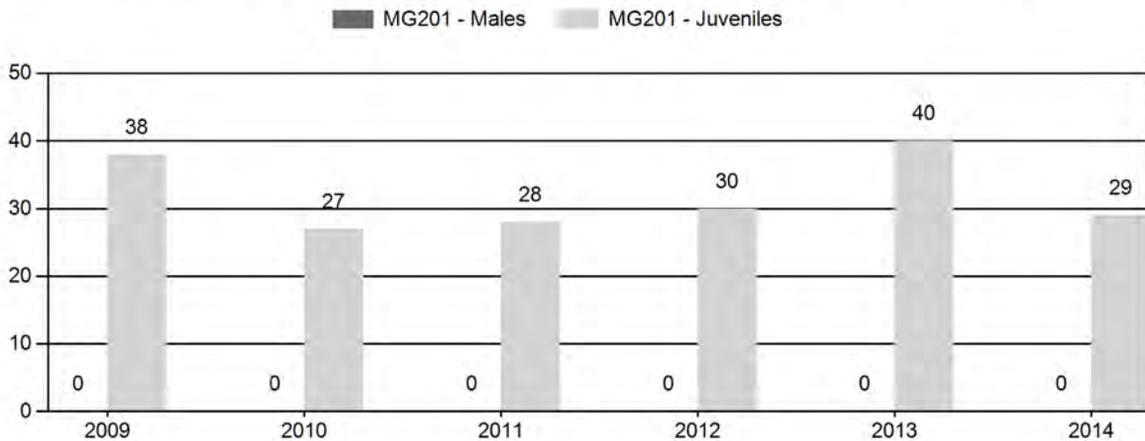
# Active Licenses



# Days Per Animal Harvested



# Preseason Animals per 100 Females



## 2009 - 2014 Preseason Classification Summary

for Mountain Goat Herd MG201 - BEARTOOTH

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	225	0	0	0	0%	86	72%	33	28%	119	159	0	0	0	± 0	38	± 0	38
2010	225	0	0	0	0%	37	79%	10	21%	47	165	0	0	0	± 0	27	± 0	27
2011	225	0	0	0	0%	76	78%	21	22%	97	179	0	0	0	± 0	28	± 0	28
2012	250	0	0	0	0%	60	77%	18	23%	78	179	0	0	0	± 0	30	± 0	30
2013	250	0	0	0	0%	125	71%	50	29%	175	167	0	0	0	± 0	40	± 0	40
2014	250	0	0	0	0%	56	78%	16	22%	72	155	0	0	0	± 0	29	± 0	29

**2015 HUNTING SEASONS  
BEARTOOTH MOUNTAIN GOAT HERD (MG201)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
1	1	Sep. 1	Oct. 31	12	Limited quota; any goat
3	1	Sep. 1	Oct. 31	8	Limited quota; any goat
Archery		Aug. 15	Aug. 31		Refer to Section 8 of this Chapter

Hunt Area	Type	Quota change from 2014
1	1	-2
3	1	+2
<b>Total</b>		<b>No Change</b>

**Management Evaluation**

**Current Management Objective: 200**

**2014 Postseason Population Estimate: ~225**

**2015 Proposed Postseason Population Estimate: ~225**

**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, some expansion has taken place in Yellowstone National Park, where currently about 10% of the goats in this herd unit 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 summer of 2014 were favorable throughout the Absaroka and Beartooth Mountains, with normal to near normal precipitation to promote forage growth. However, kid survival could have been adversely affected by the above average snow accumulations of the 2013-2014 winter. Winter conditions during the 2014-2015 winter have been considerably more mild.

**Habitat.** No habitat monitoring data is collected in this herd unit. More severe winter conditions during the 2013-2014 winter may have resulted in higher than normal mortality of both kids and adults, but this is not expected to have happened in response to the 2014-2015 winter.

**Field Data.** Incidental observations of mountain goats seen while conducting aerial grizzly bear observation flights in summer 2014 yielded 56 adults and 16 kids (29 kids:100 adults). A National Park Service classification/trend survey flown on August 18, 2014 along the eastern boundary of Yellowstone National Park, produced 67 goats (50 adults, 17 kids), and a kid:adult ratio of 34:100.

The most recent comprehensive aerial survey in Hunt Areas 1 and 3 was conducted in August 2013 and yielded a total of 175 mountain goats. A total of 124 (71%) of these were seen in Area 1, while 34 (19%) were seen in Area 3. Another 10 were seen in Yellowstone National Park, and 1 goat was seen in Montana Hunt District 514. The kid:adult ratio was 40:100, which is higher than the long-term (1986-2013) average of 34.9 kids:100 adults.

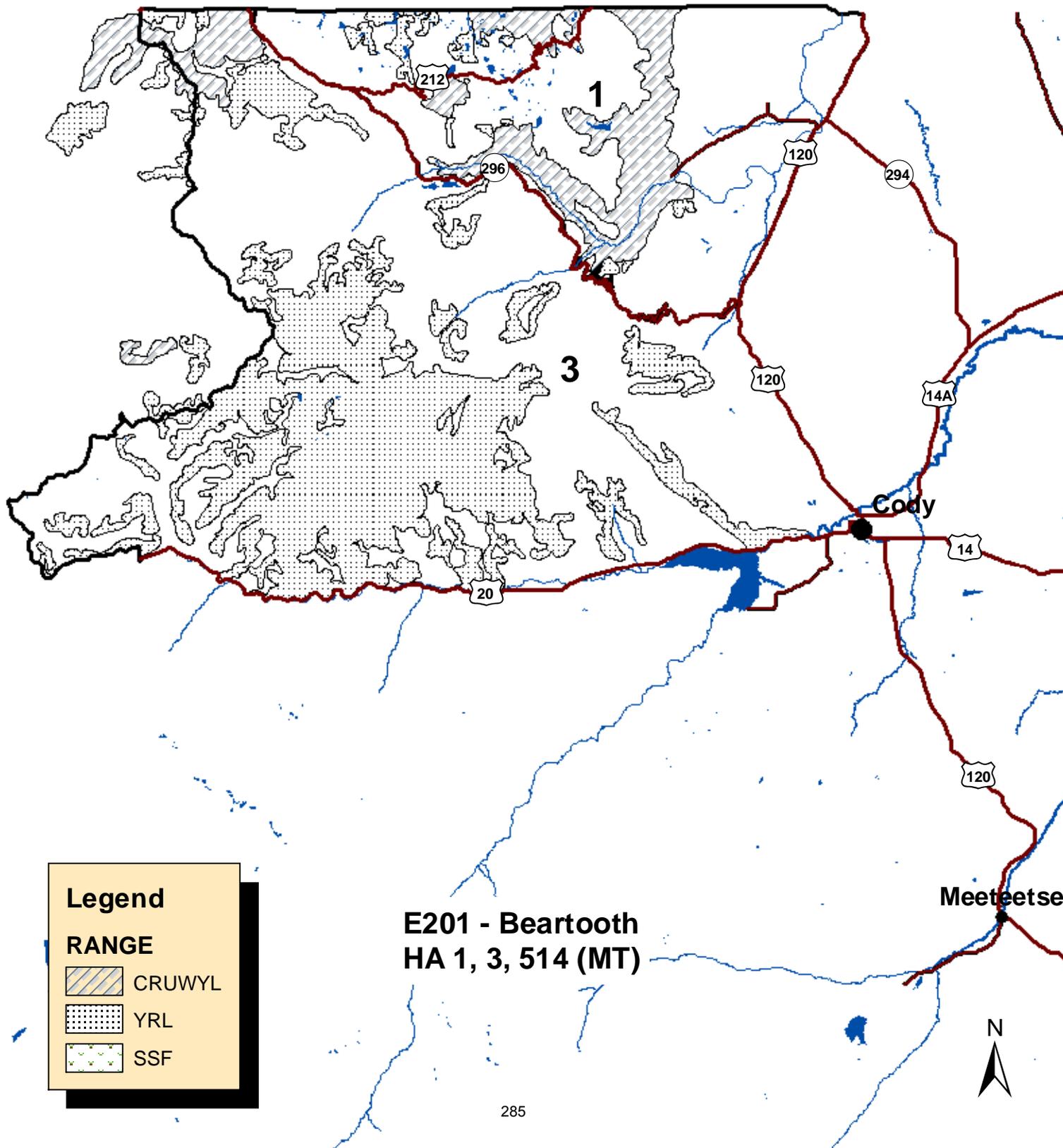
**Harvest Data.** A total of 19 goats were harvested by 20 hunters in the Beartooth Goat Herd Unit in 2014, including 16 males and 3 females (95% success). One hunter in Area 3 was not successful. Hunter effort for Wyoming goat hunters in 2014 was 6.1 days per goat harvested, which is slightly greater than the average for goat hunters in this area, as the long-term average (1970-2013) average is 4.5 days per goat taken.

The average age of all harvested goats in 2014 was 5.7 years for billies and 4.5 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 2014 (avg – 23.5) was less than the most recent 10-year average of 31.1 goats seen.

Various studies have shown that goat populations are sensitive to female harvest. Although nannie harvest was substantial in 2008 (55%), 2009 (38.5%), 2010 (45.5%), 2011 (36.4%), and 2013 (35%), it was only 15.8% in 2014.

**Population.** Based on an evaluation of recent trend counts and productivity estimates, the Beartooth Mountain Goat Herd is currently estimated to be near or slightly above the postseason population objective of 200 goats. Hunt Area 1 has been relatively stable since managed with 12 licenses and it is felt that additional hunting pressure can be directed to Hunt Area 3. Therefore, 12 licenses will be issued in Area 1 and 8 licenses issued in Area 3 for the 2015 season, which should result in the harvest of 18 goats.

514



**Legend**

**RANGE**

- CRUWYL
- YRL
- SSF

**E201 - Beartooth  
HA 1, 3, 514 (MT)**



**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	2010	2011	2012	2013	2014	Long-term Average
Breteche	1.46	3.58			3.56	2.48
Aldrich	0.46	0.27			2.75	1.23
Grass Creek	3.70	3.42	0.29	1.94	2.57	2.67
Wagonhound	1.68	3.71	1.75	2.72	2.72	2.27
Dry Creek Basin	2.20	4.83	0.55	2.42	4.37	2.57
Five-mile	1.93	5.71	0.74	2.46	3.57	3.10
Denver Jake	3.18	1.95	0.84	1.40	1.36	1.62
Lightning Ridge	1.60	1.90	0.76	1.00	1.56	1.39
Alkali	3.43	4.13	2.10	2.10	1.80	2.57
Renner				2.73	2.76	2.19
Average of Transects	2.26	3.25	1.08	1.93	2.70	2.24

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

Transect	2011	2012	2013	2014	2015	Long-term Average
Breteche		9.4	24.5	7.4		21.86
Aldrich	2.00	5.80	4.60	0.60	0.00	5.67
Grass Creek	0.00	0.60	0.40	0.00	0.00	1.91
Wagonhound	31.40	26.20	25.40	17.60	8.20	16.09
Dry Creek Basin	37.80	44.20	37.40	20.60	35.20	23.64
Five-mile	9.50	0.20	23.50	20.20	21.20	17.07
Denver Jake	13.30	26.20	18.80	1.60	2.40	13.23
Lightning Ridge	2.00	5.00	3.80	0.00	2.00	4.20
Alkali	4.60	17.60	21.60	4.80	10.20	11.29
Renner				13.40	1.00	13.40
Average of Transects	11.29	13.54	16.12	8.62	8.91	11.81

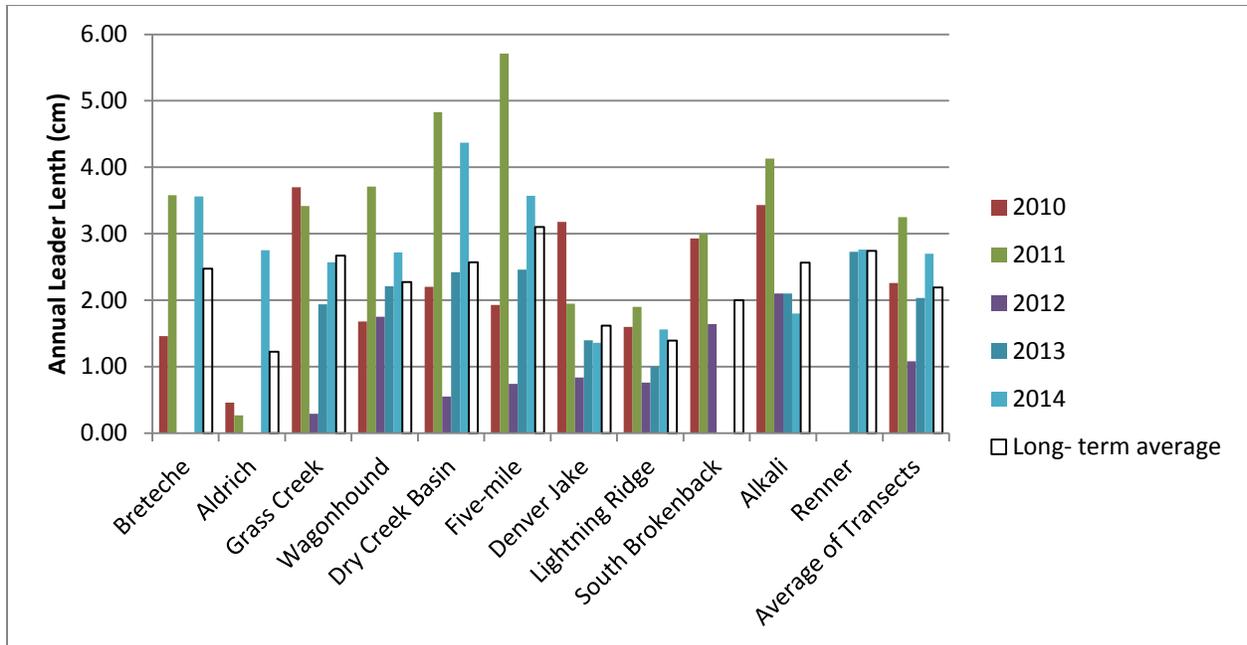


Figure 1. Average annual leader length for sagebrush transects in the Cody Region

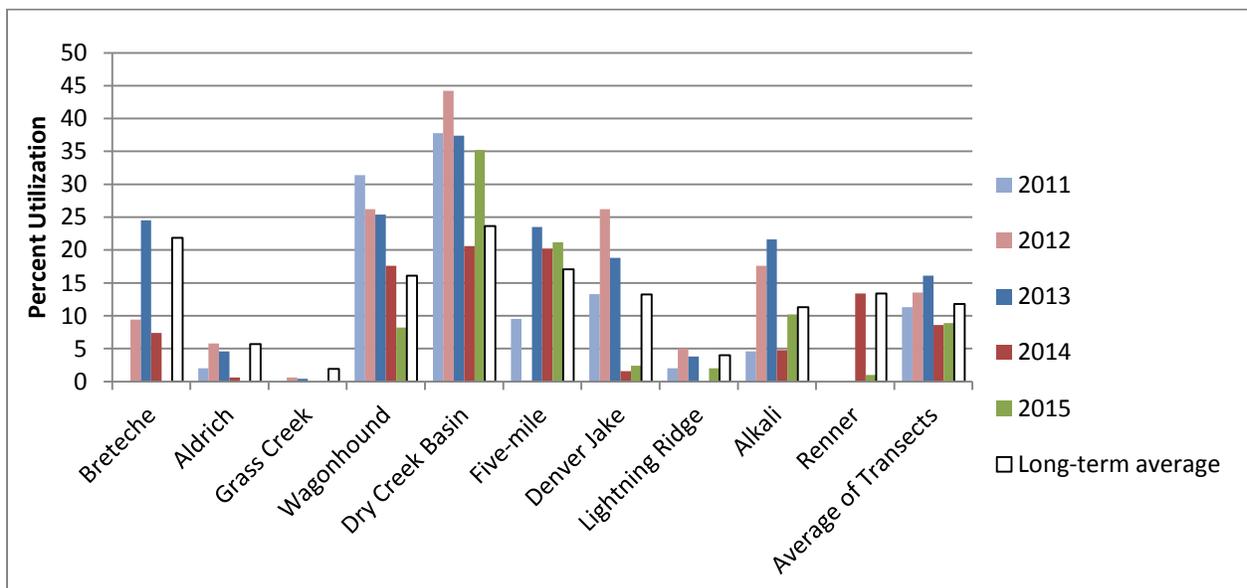


Figure 2. Percent utilization for sagebrush transects in the Cody Region

### 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

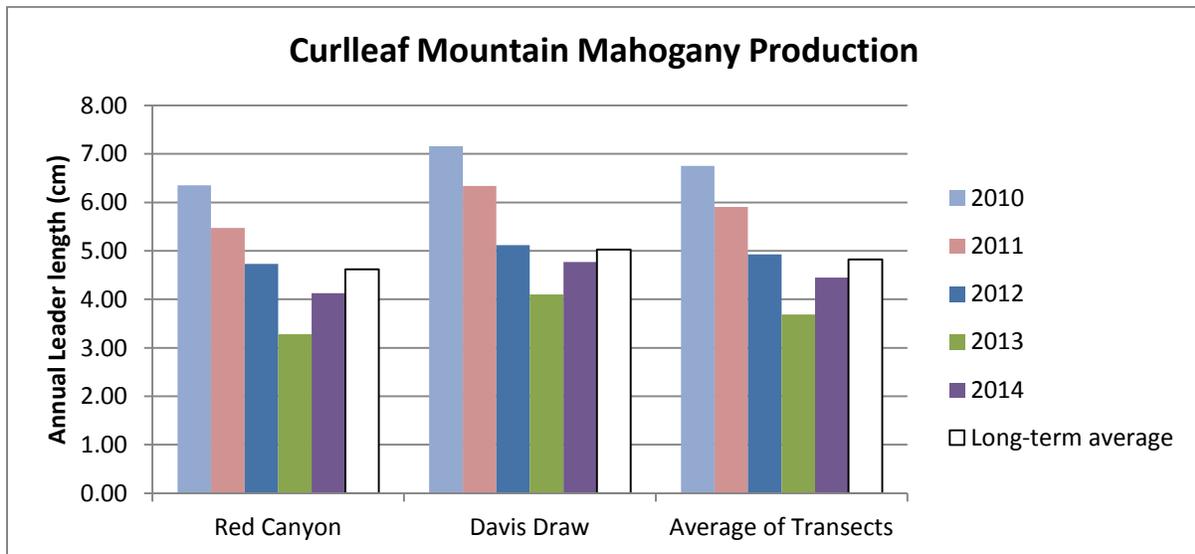
are measured in September/October and April/May, respectively, using the twig length measurement method described in Utilization Studies and Residual Measurements, BLM Technical Reference 1734-3 (1996).

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

Transect	2010	2011	2012	2013	2014	Long-term Average
Red Canyon	6.35	5.47	4.73	3.28	4.13	4.62
Davis Draw	7.16	6.43	5.12	4.10	4.77	5.02
Average of Transects	5.84	5.84	5.84	3.69	4.45	4.82

**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	2011	2012	2013	2014	2015	Long-term Average
Red Canyon	48	63	66	44	61	45
Davis Draw	59	43	63	70	63	59
Average of Transects	54	53	65	57	62	53



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

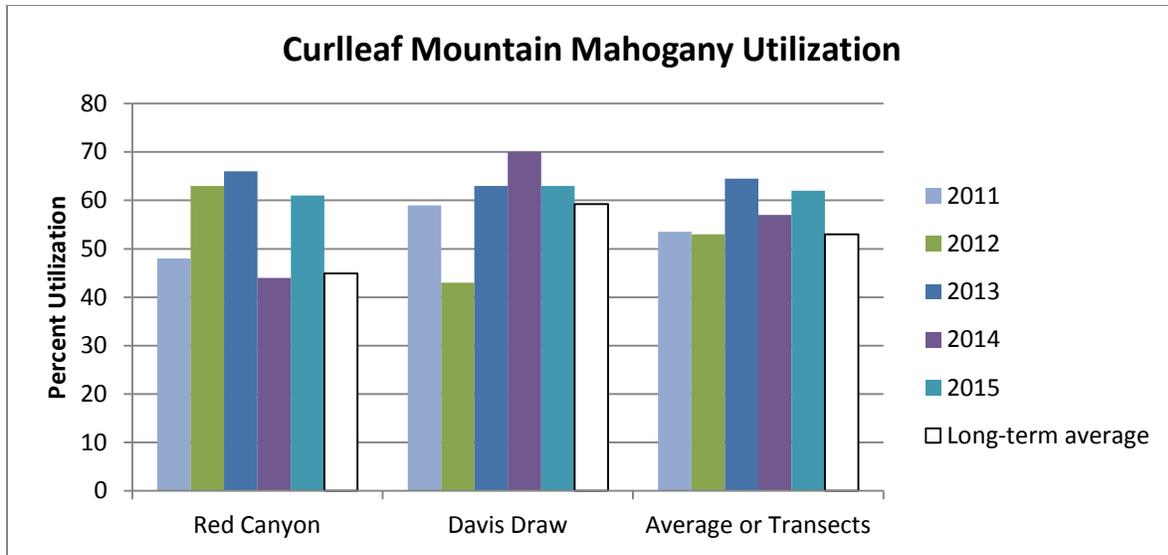


Figure 4. Average percent utilization for curleaf mountain mahogany transects in the Cody Region.

#### Herbaceous Production and Utilization

Production and utilization data for herbaceous forage (grasses and forbs) are collected at seven 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).

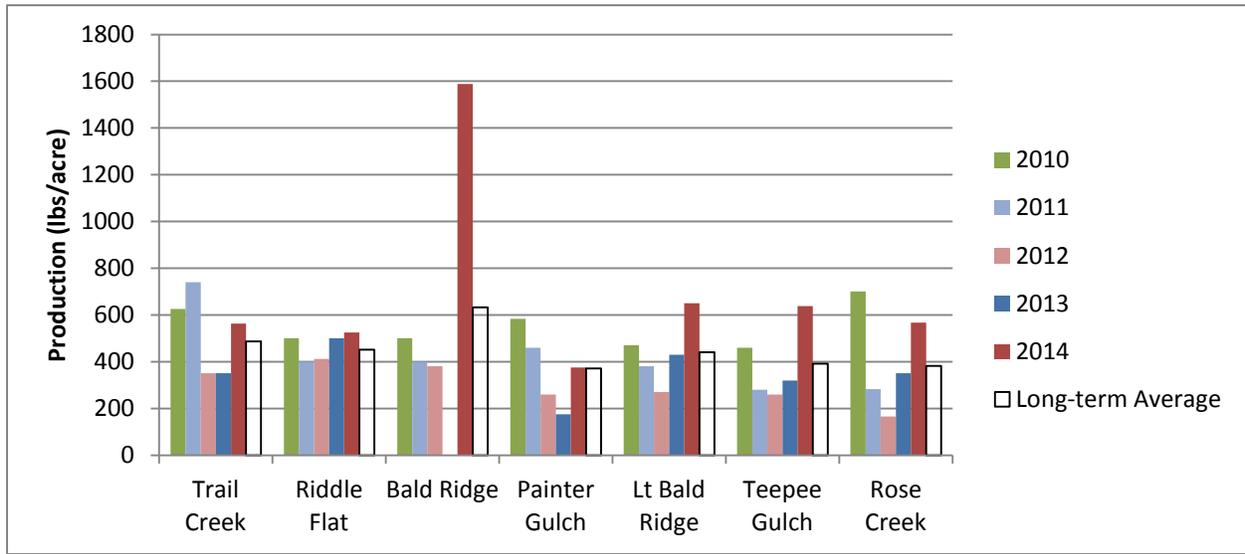
Table 5. Production in pounds per acre for herbaceous transects in the Cody Region.

Transect	2010	2011	2012	2013	2014	Long-term Average
Trail Creek	625	740	350	350	563	486
Riddle Flat	500	400	412	500	525	451
Bald Ridge	500	400	380		1588	632
Painter Gulch	583	460	260	175	375	371
Little Bald Ridge	470	380	270	430	650	440
Teepee Gulch	460	280	260	320	638	392
Rose Creek	700	383	166	350	567	382

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

Transect	2011	2012	2013	2014	2015	Long-term Average
Trail Creek	47	23	61			42
Riddle Flat	78	91	82	75	81	73
Bald Ridge	43	4				33
Painter Gulch	31	49	65	0	47	38
Lt Bald Ridge	89	81	50	67	58	69
Teepee Gulch	85	82	81	79	73	80
Rose Creek	64	50	57		0	35

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



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

