2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR202 - BIG HORN

HUNT AREAS: 79

PREPARED BY: LESLIE SCHREIBER

	2009 - 2013 Average	2014	2015 Proposed
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 (± 20%) : 0 (0 - 0)

Management Strategy: Recreational

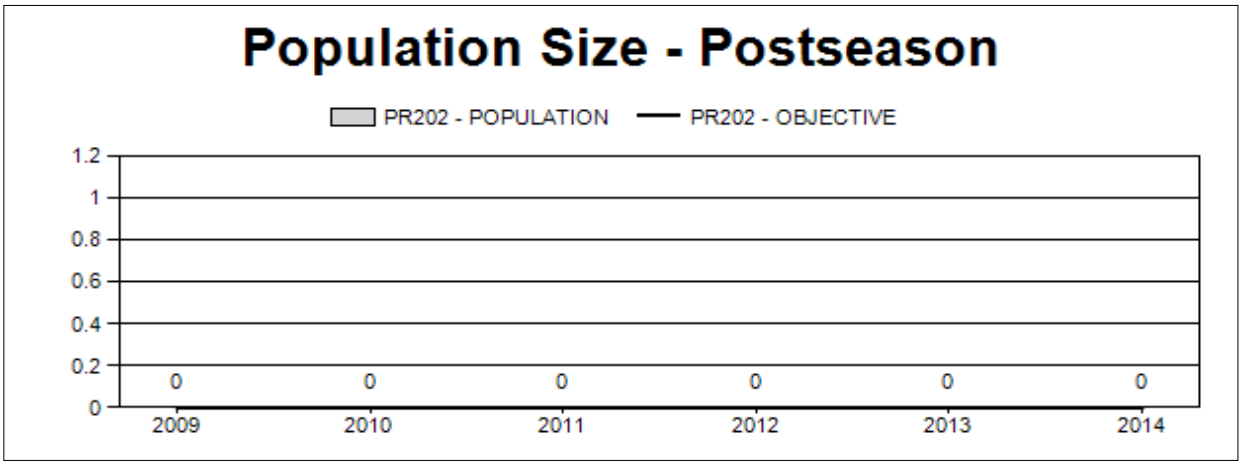
Percent population is above (+) or below (-) objective: N/A%

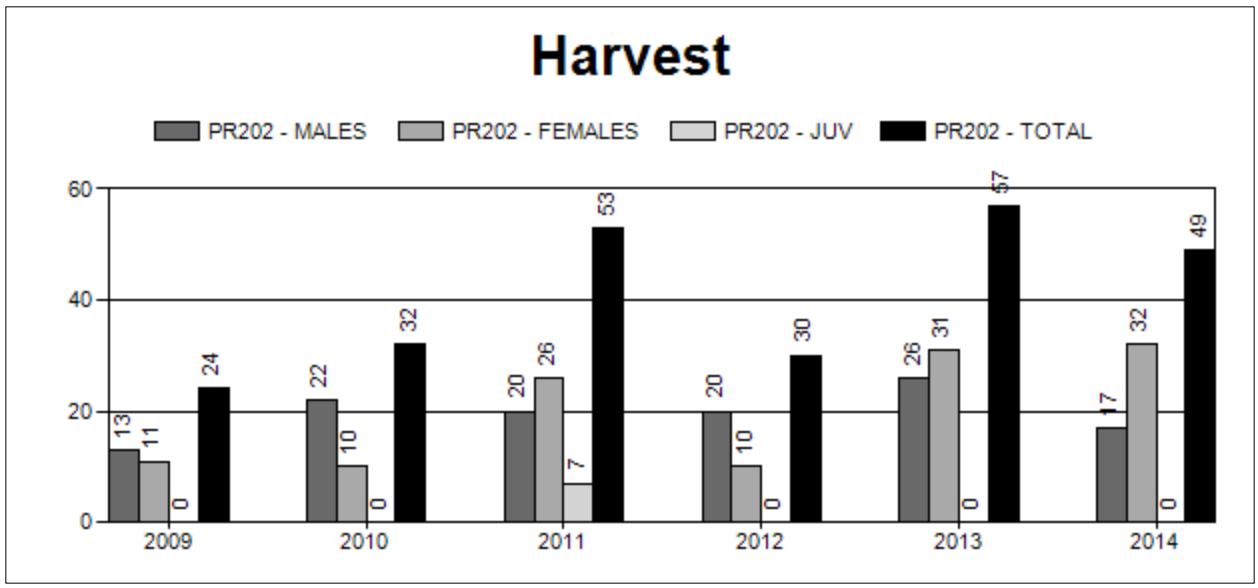
Number of years population has been + or - objective in recent trend: 0

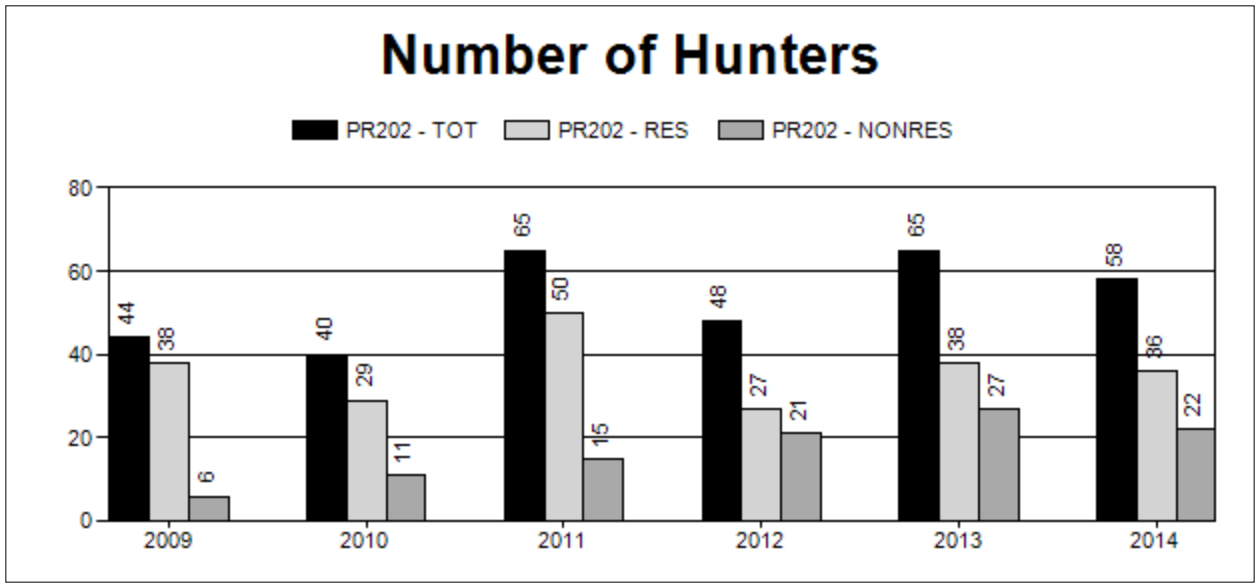
Model Date: None

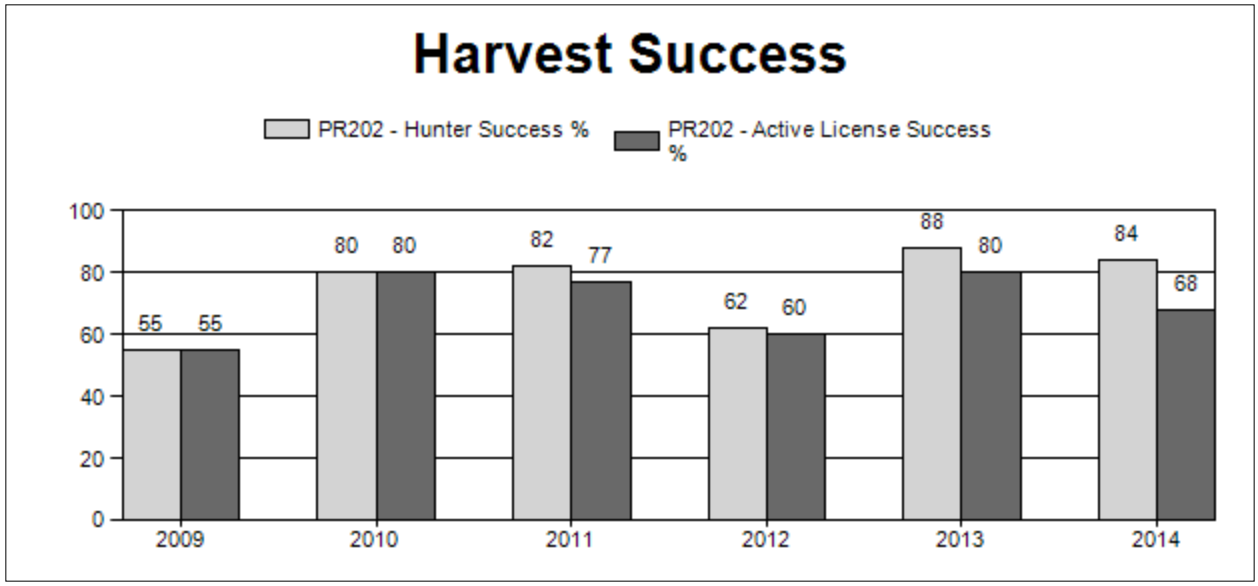
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

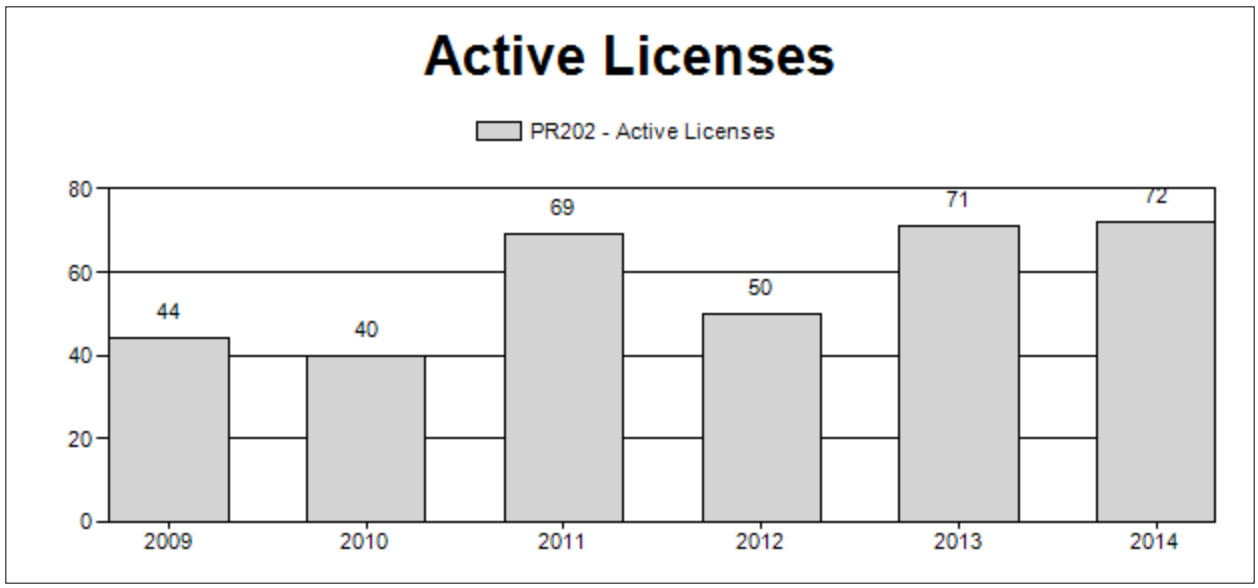
	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%

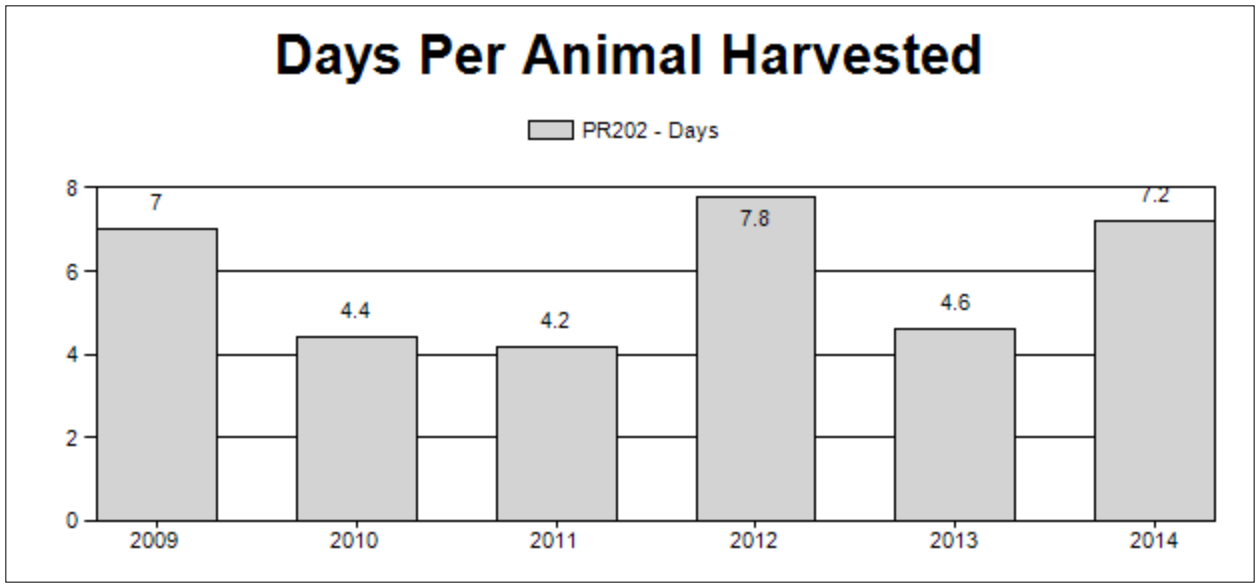


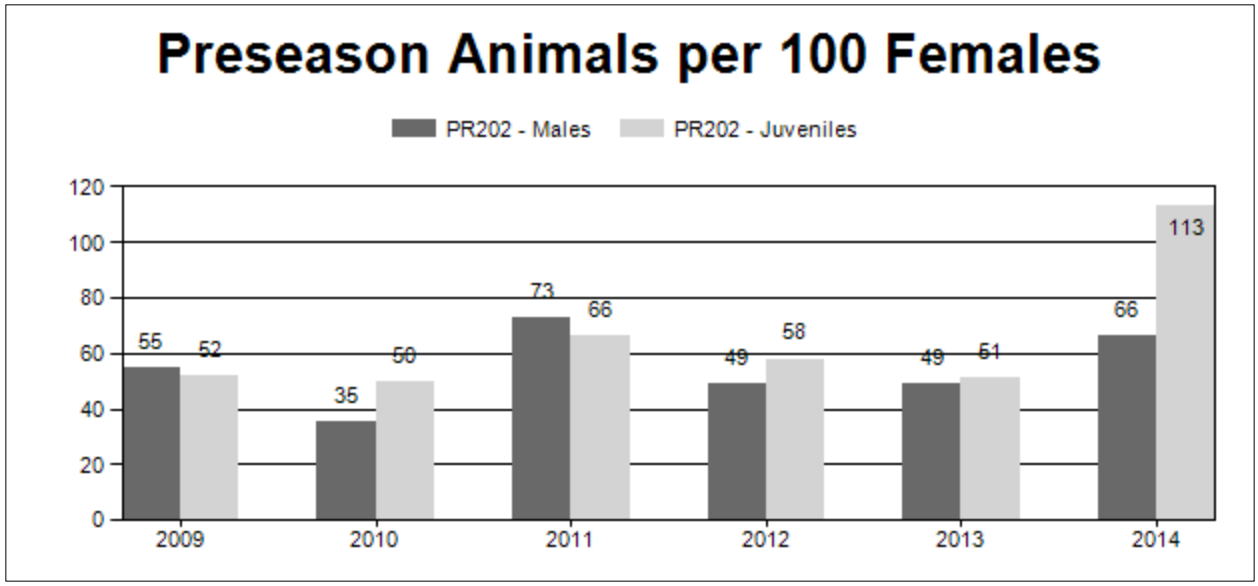

Harvest
PR202 - MALES
PR202 - FEMALES
PR202 - JUV
PR202 - TOTAL
60
40
20
0
13
11
0
24
22
10
0
32
20
26
7
53
20
10
0
30
26
31
0
57
17
32
0
49
2009
2010
2011
2012
2013
2014


Number of Hunters
PR202 - TOT
PR202 - RES
PR202 - NONRES
80
60
40
20
0
44
38
6
40
29
11
65
50
15
48
27
21
65
38
27
58
36
22
2009
2010
2011
2012
2013
2014


Harvest Success
PR202 - Hunter Success %
PR202 - Active License Success %
100
80
60
40
20
0
55
55
80
80
82
77
62
60
88
80
84
68
2009
2010
2011
2012
2013
2014


Active Licenses
PR202 - Active Licenses
80
60
40
20
0
44
40
69
50
71
72
2009
2010
2011
2012
2013
2014


Days Per Animal Harvested
PR202 - Days
8
6
4
2
0
7
4.4
4.2
7.8
4.6
7.2
2009
2010
2011
2012
2013
2014


Preseason Animals per 100 Females
PR202 - Males
PR202 - Juveniles
120
100
80
60
40
20
0
55
52
35
50
73
66
49
58
49
51
66
113
2009
2010
2011
2012
2013
2014

2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR202 - BIG HORN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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

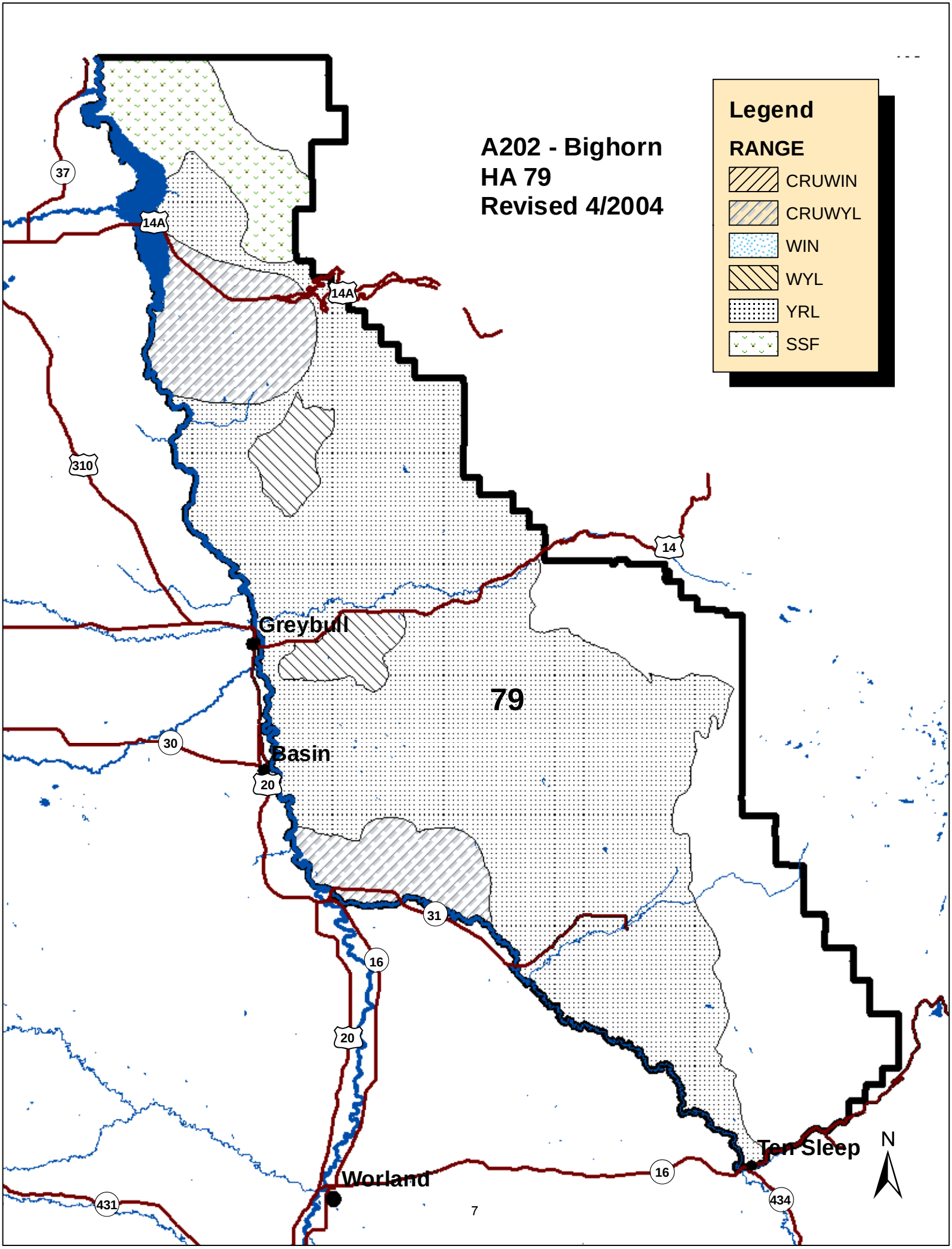
expanding toward and into the best remaining stands of sagebrush on the west side of the herd unit. The 2 shrub transects established in this herd unit (Brokenback, Alkali) were located outside of areas used extensively by pronghorn in order to monitor deer browsing.

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
79
Greybull
Basin
Worland
Ten Sleep
37
14A
14A
310
14
30
20
31
16
20
16
431
434
N

2014 - JCR Evaluation Form

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

HERD: PR203 - COPPER MOUNTAIN

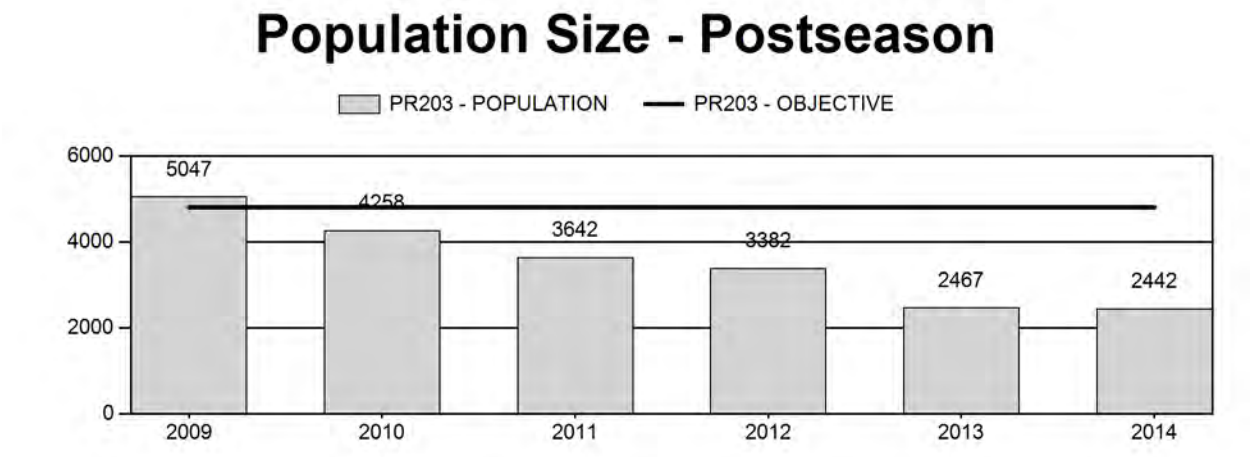
HUNT AREAS: 76, 114-115 PREPARED BY: BART KROGER

	2009 - 2013 Average	2014	2015 Proposed
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	

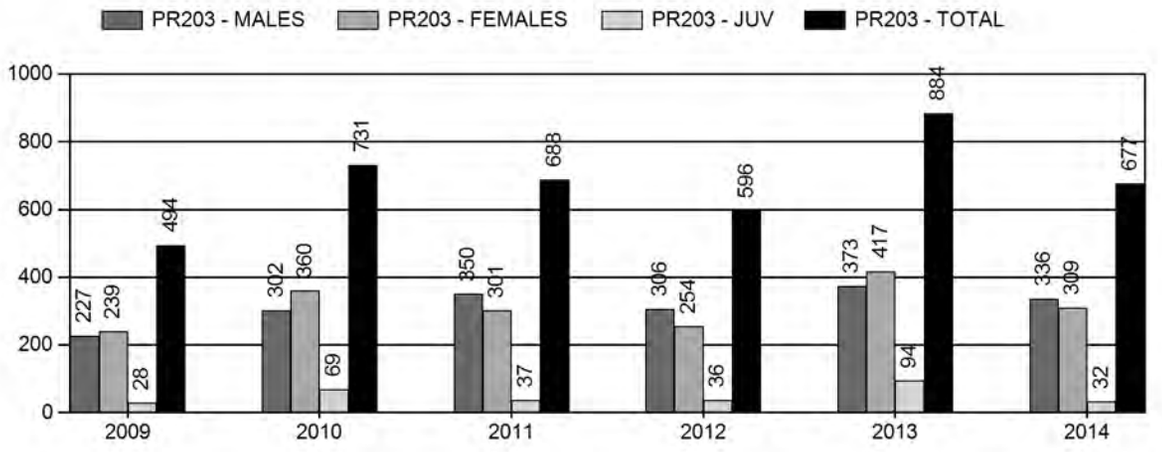
Population Objective (± 20%) :	4800 (3840 - 5760)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-49.1%
Number of years population has been + or - objective in recent trend:	13
Model Date:	2/11/2015

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

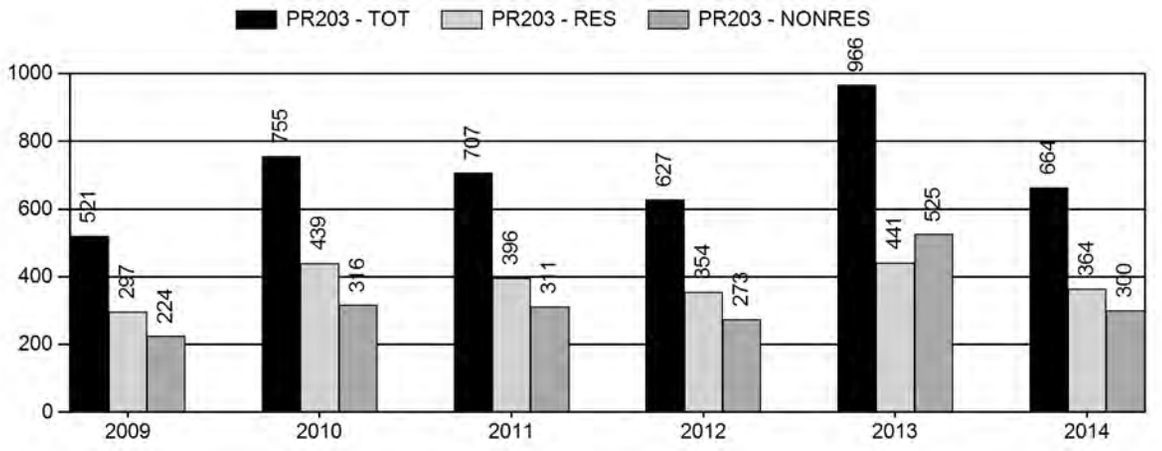
	JCR Year	Proposed
Females ≥ 1 year old:	22%	18%
Males ≥ 1 year old:	58%	59%
Juveniles (< 1 year old):	3%	2%
Total:	21%	20%
Proposed change in post-season population:	-1%	-9%



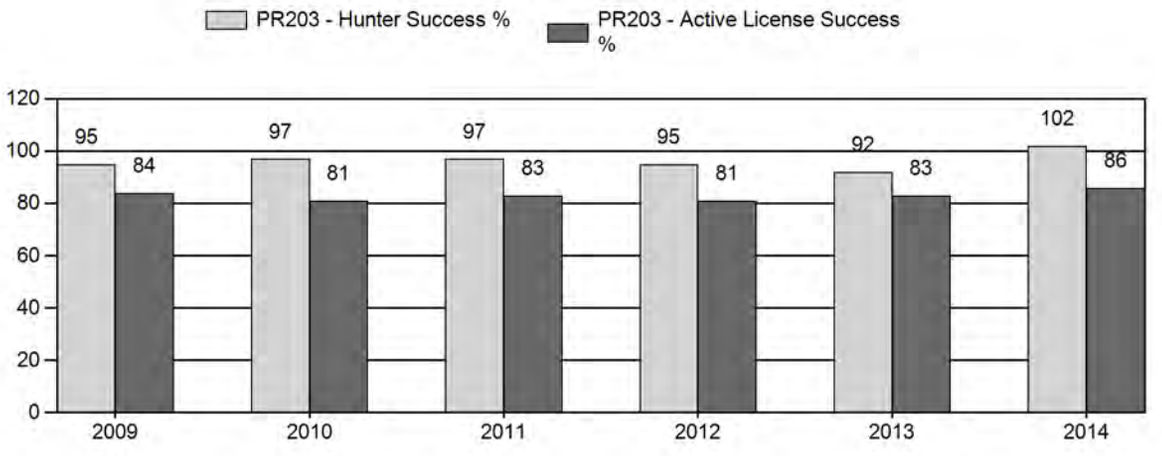
Harvest



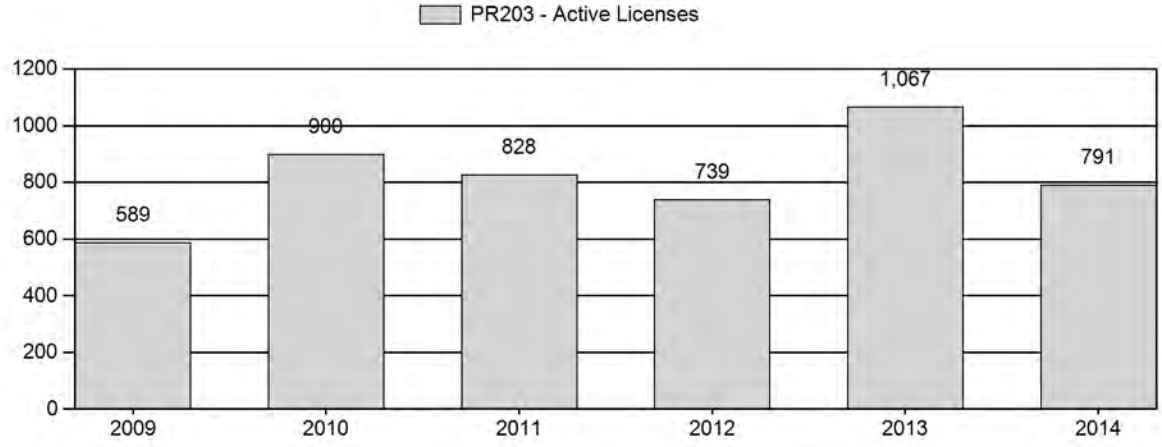
Number of Hunters



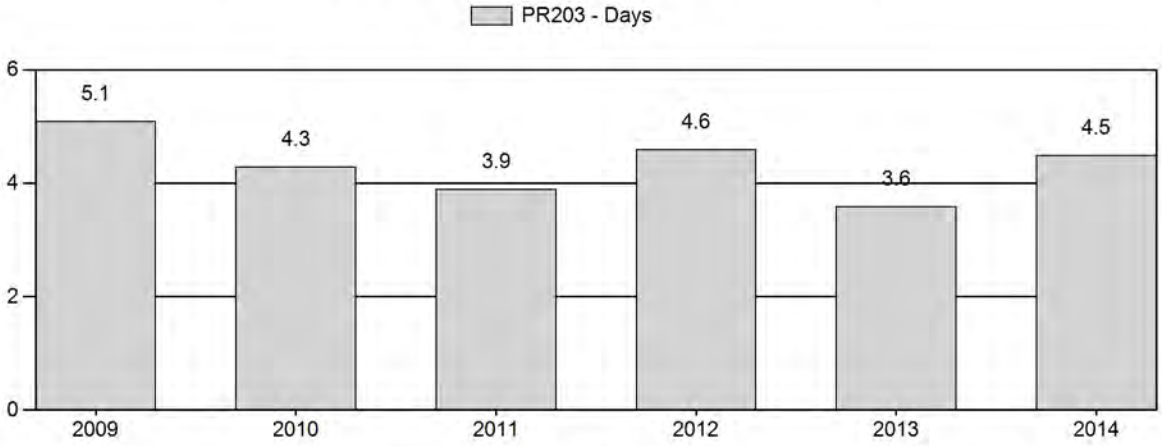
Harvest Success



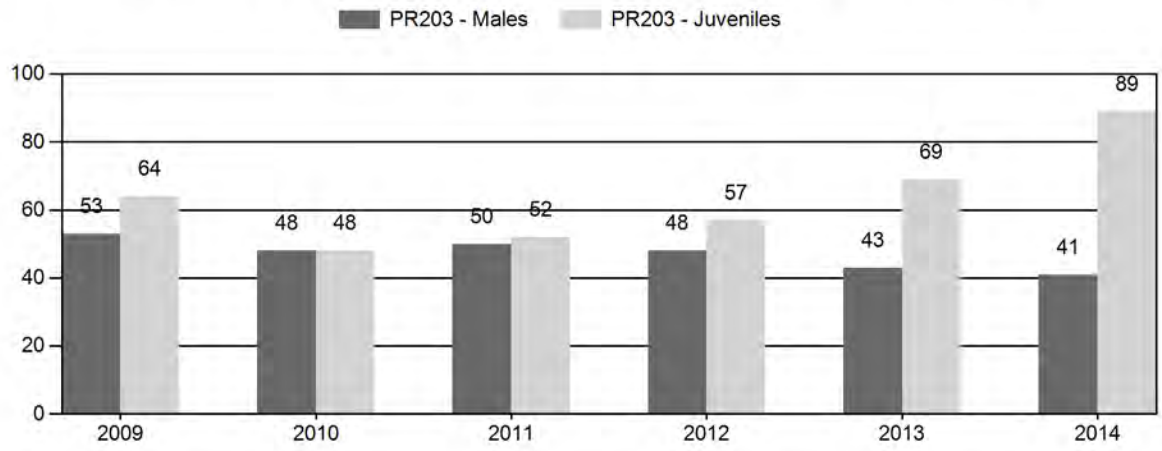
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR203 - COPPER MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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 Opens	Closes	Quota	Limitations
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
Total	**2**	**-25**
	6	**-100**

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 is 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.

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

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	61	70	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	61	70	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	28	144	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	1251	1632	3646	**6529**	1205	1162	3076	**5443**	1325	3072	**4397**				4800
1994	1269	1298	3011	**5578**	1232	973	2787	**4992**	1175	2852	**4027**				4800
1995	1119	1152	2794	**5066**	1103	866	2666	**4634**	1052	2721	**3773**				4800
1996	1836	1031	2666	**5534**	1836	797	2601	**5235**	1191	2866	**4057**				4800
1997	1300	1168	2808	**5275**	1294	913	2763	**4971**	1152	2872	**4024**				4800
1998	2035	1129	2815	**5979**	2025	847	2777	**5649**	1279	3077	**4357**				4800
1999	1852	1254	3015	**6122**	1828	968	2897	**5693**	1335	3123	**4458**				4800
2000	1482	1308	3061	**5851**	1468	1045	2893	**5406**	1316	3022	**4339**	4610	666		4800
2001	865	1290	2962	**5116**	858	1056	2877	**4791**	1170	2857	**4027**				4800
2002	918	1146	2800	**4865**	913	913	2727	**4552**	1054	2735	**3788**				4800
2003	1240	1032	2680	**4953**	1238	800	2625	**4663**	1037	2730	**3767**				4800
2004	1351	1016	2676	**5042**	1340	782	2607	**4729**	1044	2737	**3781**	3992	693		4800
2005	1516	1023	2682	**5222**	1510	782	2617	**4909**	1090	2793	**3882**				4800
2006	1608	1068	2737	**5413**	1595	851	2639	**5085**	1176	2830	**4006**				4800
2007	1677	1153	2773	**5603**	1660	933	2623	**5216**	1267	2826	**4093**	4087	657		4800
2008	1526	1241	2770	**5538**	1493	999	2549	**5042**	1278	2703	**3981**				4800
2009	1689	1253	2649	**5591**	1659	1003	2386	**5047**	1325	2593	**3918**				4800
2010	1223	1298	2541	**5062**	1147	966	2145	**4258**	1137	2212	**3349**				4800
2011	1117	1114	2168	**4399**	1076	729	1837	**3642**	973	2000	**2973**				4800
2012	1124	954	1960	**4037**	1084	617	1680	**3382**	753	1627	**2380**				4800
2013	1107	738	1595	**3440**	1004	328	1136	**2467**	592	1409	**2001**				4800
2014	1226	580	1381	**3187**	1190	211	1041	**2442**	519	1332	**1852**				4800
2015	1009	509	1306	**2824**	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

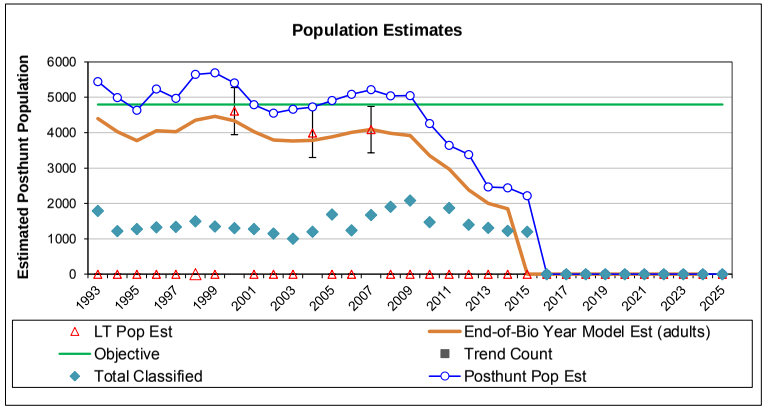
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.52			0.90		
1994	0.52			0.90		
1995	0.52			0.90		
1996	0.52			0.90		
1997	0.52			0.90		
1998	0.52			0.90		
1999	0.52			0.90		
2000	0.52			0.90		
2001	0.52			0.90		
2002	0.52			0.90		
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						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

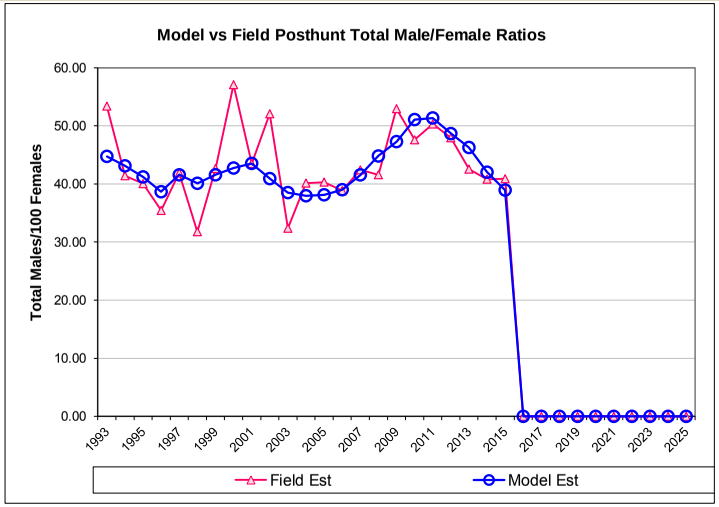
Parameters:	Optim cells
Juvenile Survival =	0.516
Adult Survival =	0.900
Initial Total Male Pop/10,000 =	0.163
Initial Female Pop/10,000 =	0.365

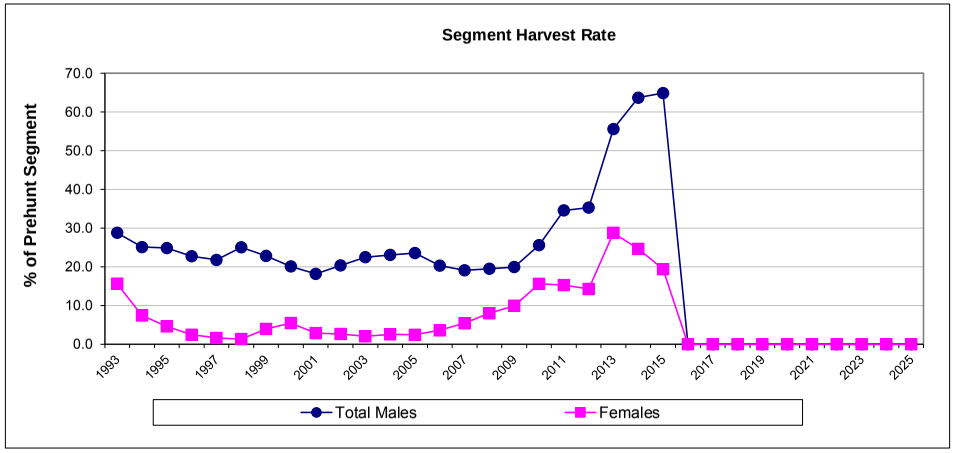
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

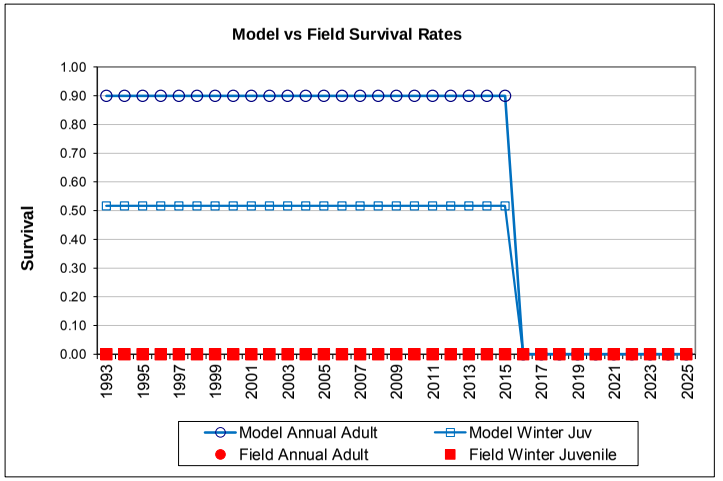
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		34.31	2.20	44.75	53.41	2.93	42	427	518	987	28.8	15.6
1994		42.17	3.00	43.13	41.42	2.97	34	296	203	533	25.1	7.4
1995		40.06	2.81	41.21	40.06	2.81	15	260	117	392	24.8	4.6
1996		68.88	4.23	38.67	35.44	2.72	0	213	59	272	22.7	2.4
1997		46.27	3.09	41.57	41.91	2.89	5	231	41	277	21.8	1.6
1998		72.31	4.12	40.12	31.79	2.39	9	257	34	300	25.0	1.3
1999		61.42	3.87	41.58	42.66	3.03	22	260	108	390	22.8	3.9
2000		48.42	3.37	42.75	57.10	3.76	13	239	152	404	20.1	5.5
2001		29.19	2.26	43.55	43.51	2.90	6	213	77	296	18.2	2.9
2002		32.80	2.65	40.93	52.09	3.57	5	212	67	284	20.3	2.6
2003		46.26	3.47	38.52	32.38	2.76	2	211	50	263	22.5	2.1
2004		50.48	3.47	37.97	40.16	2.99	10	213	62	285	23.1	2.5
2005		56.53	3.21	38.14	40.33	2.57	6	219	59	284	23.5	2.4
2006		58.76	3.85	39.02	38.85	2.93	12	197	89	298	20.3	3.6
2007		60.48	3.43	41.57	42.42	2.71	16	200	136	352	19.1	5.4
2008		55.11	2.97	44.82	41.59	2.47	30	220	201	451	19.5	8.0
2009		63.79	3.30	47.29	52.97	2.90	28	227	239	494	19.9	9.9
2010		48.14	3.08	51.09	47.61	3.06	69	302	360	731	25.6	15.6
2011		51.51	2.90	51.37	50.32	2.86	37	350	301	688	34.6	15.3
2012		57.33	3.64	48.68	47.95	3.23	36	306	254	596	35.3	14.3
2013		69.42	4.36	46.29	42.56	3.13	94	373	417	884	55.6	28.8
2014		88.76	5.60	42.03	40.82	3.28	32	336	309	677	63.7	24.6
2015		77.27	4.99	38.96	40.91	3.24	20	300	230	550	64.9	19.4
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









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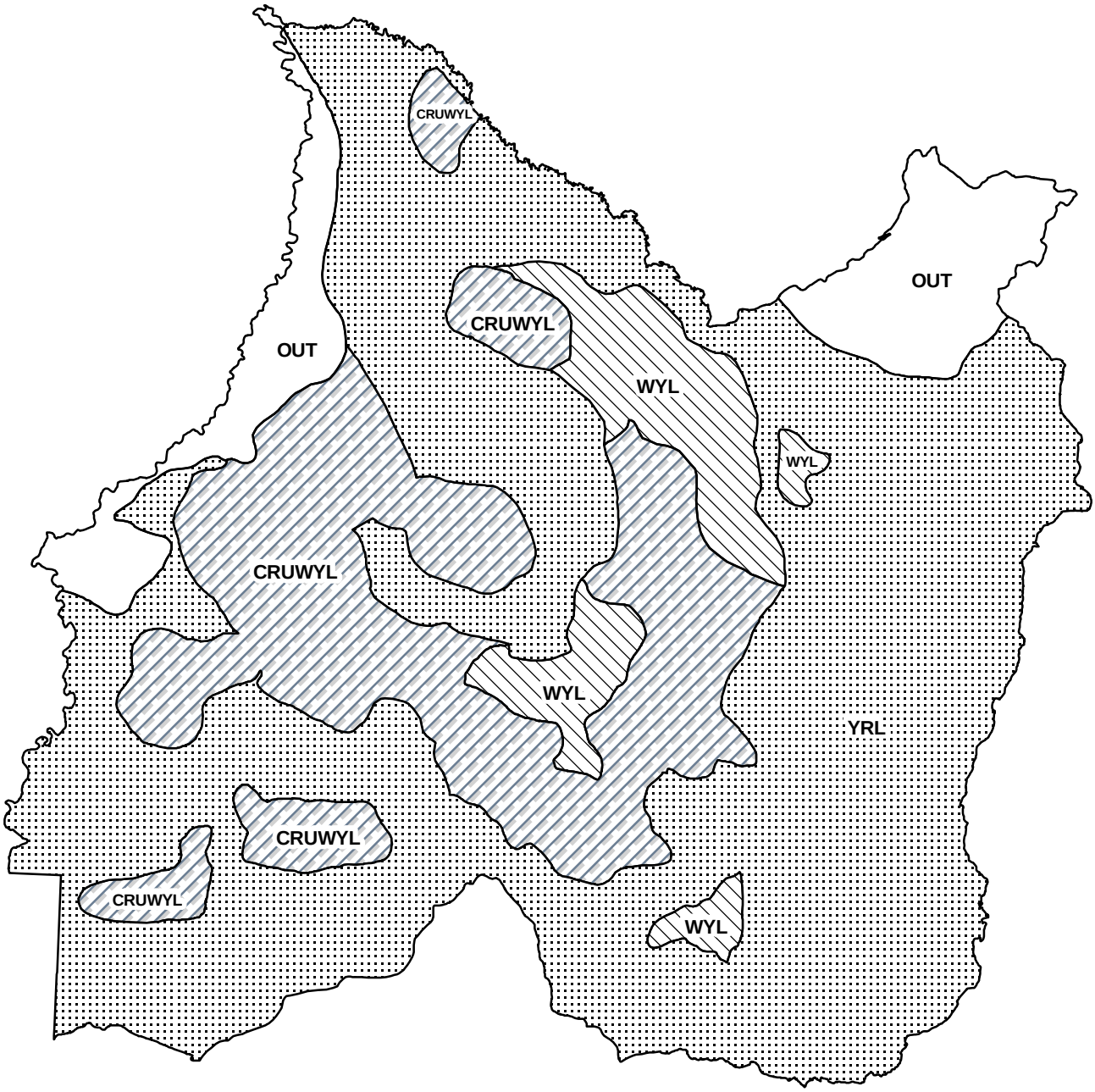


Pronghorn (A203) - Copper Mountain
HA 76, 114, 115
Revised 4/2006

2014 - JCR Evaluation Form

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

HERD: PR204 - FIFTEENMILE

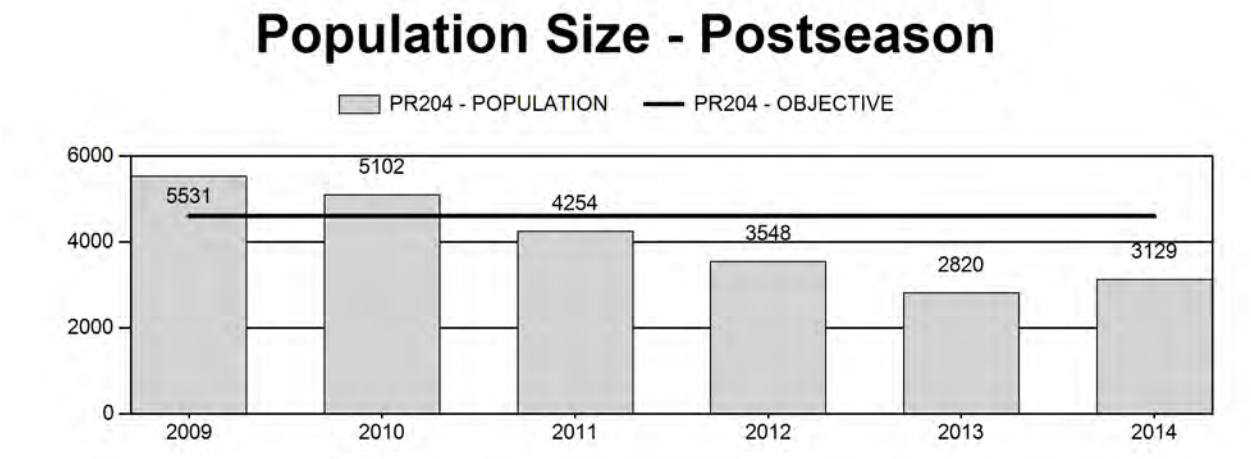
HUNT AREAS: 77, 83, 110
PREPARED BY: BART KROGER

	2009 - 2013 Average	2014	2015 Proposed
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	

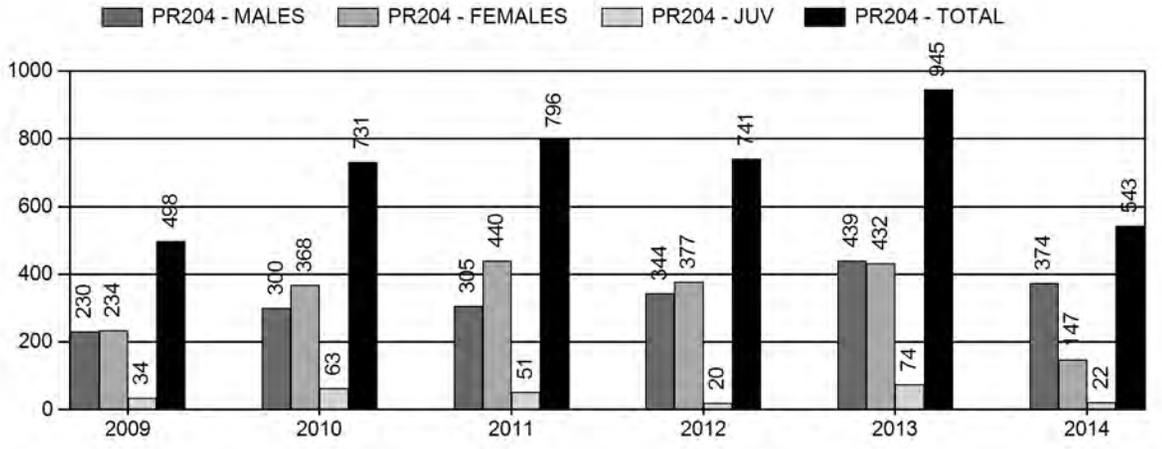
Population Objective (± 20%) :	4600 (3680 - 5520)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-32.0%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/11/2015

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

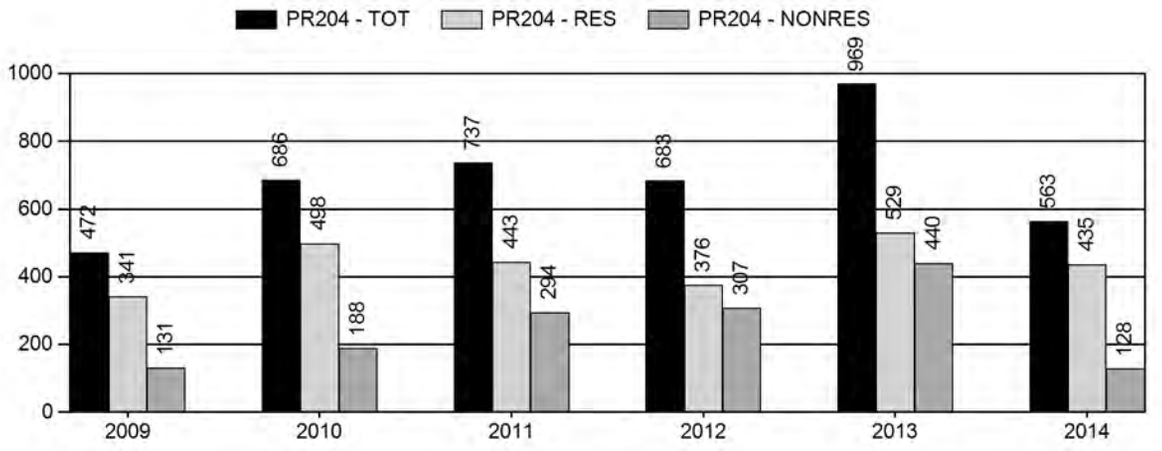
	JCR Year	Proposed
Females ≥ 1 year old:	8%	7%
Males ≥ 1 year old:	84%	100%
Juveniles (< 1 year old):	2%	2%
Total:	15%	14%
Proposed change in post-season population:	+10%	-8%



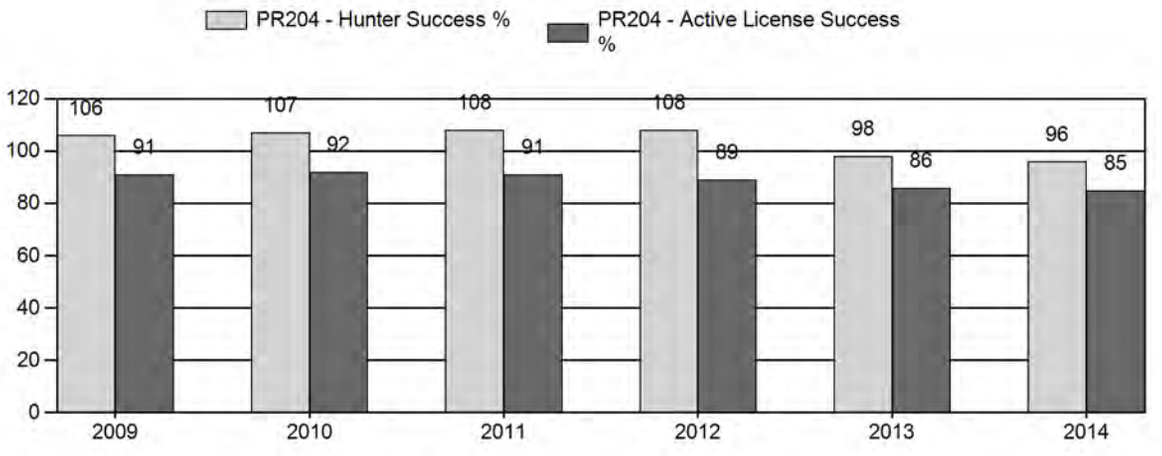
Harvest



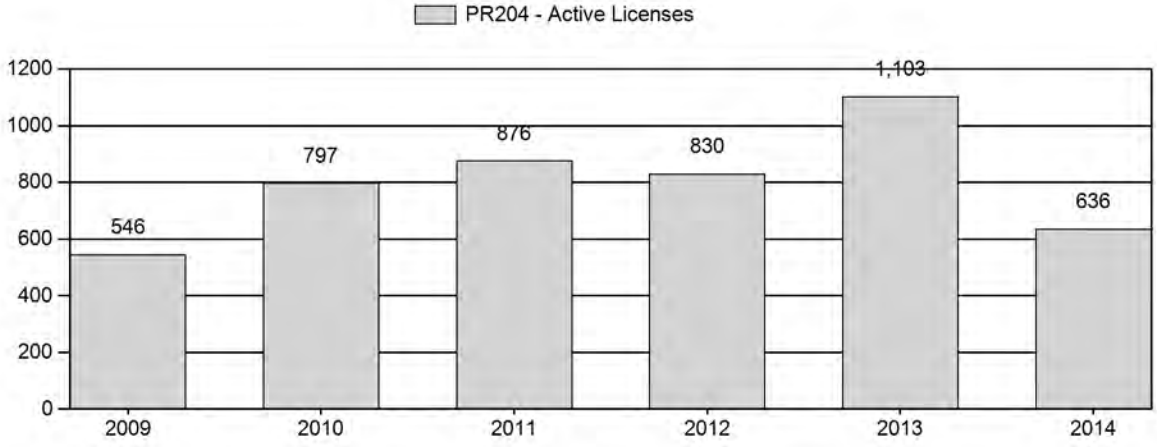
Number of Hunters



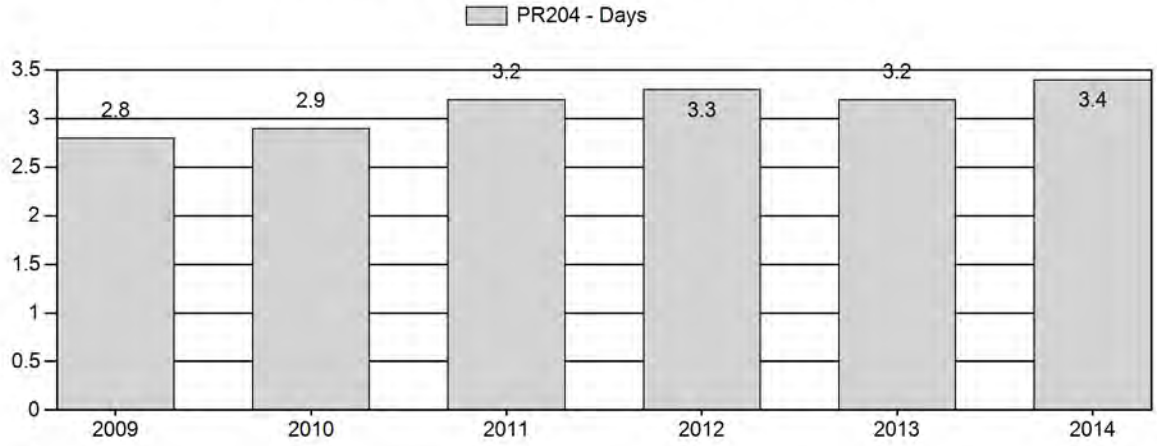
Harvest Success



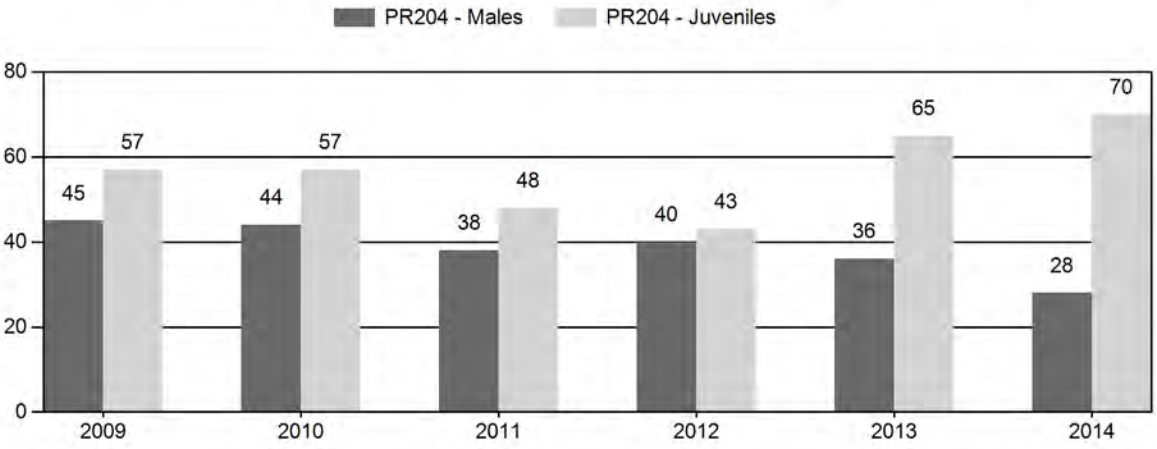
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR204 - FIFTEENMILE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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 Opens	Closes	Quota	Limitations
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
Total	**1&2**	**-35**
	6&7	**-25**

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 resulted 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 populations 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 preseason classification flights are conducted annually during the month of August in Hunt Areas 77 and 83, while Hunt Area 110 classifications are conducted from the ground. Relative trends 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.

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

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	63	72	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	64	73	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	18	123	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	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**	2868	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**	2800	933		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	**5293**	1103	3073	**4177**	3705	917		4600
2007	1601	1081	3012	**5694**	1581	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**	1294	3019	**4313**				4600
2010	1679	1268	2959	**5906**	1610	938	2554	**5102**	1190	2736	**3926**	4559	1232		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

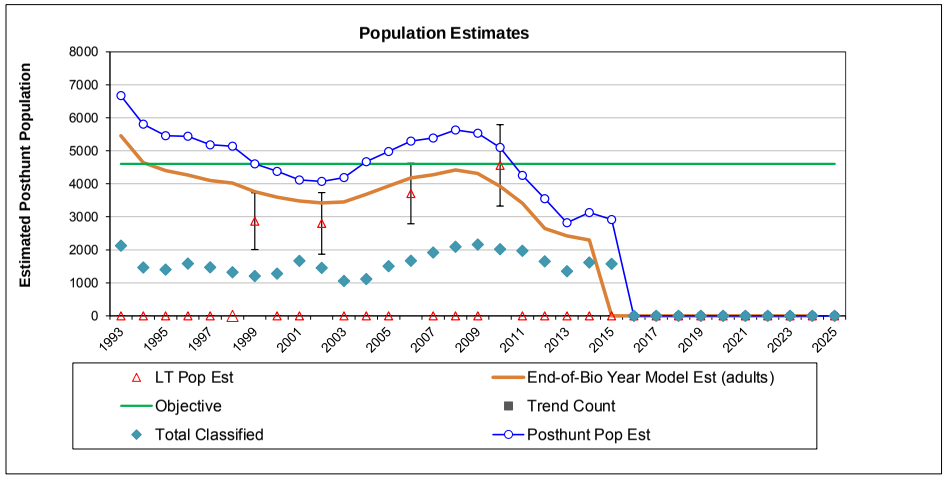
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.94		
1994	0.40			0.94		
1995	0.40			0.94		
1996	0.40			0.94		
1997	0.40			0.94		
1998	0.40			0.94		
1999	0.40			0.94		
2000	0.40			0.94		
2001	0.40			0.94		
2002	0.40			0.94		
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						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

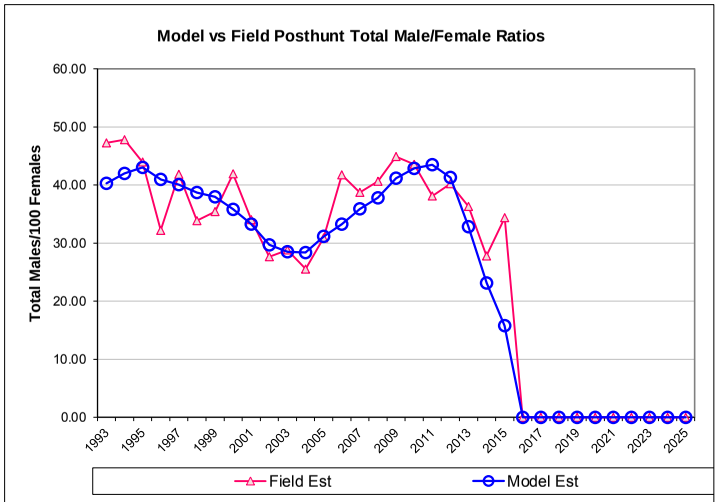
Parameters:	Optim cells
Juvenile Survival =	0.403
Adult Survival =	0.940
Initial Total Male Pop/10,000 =	0.181
Initial Female Pop/10,000 =	0.448

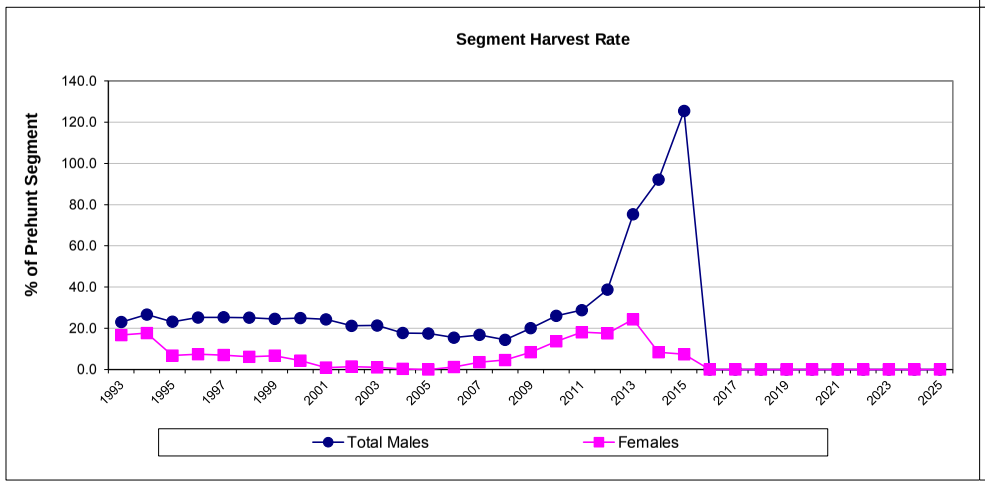
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

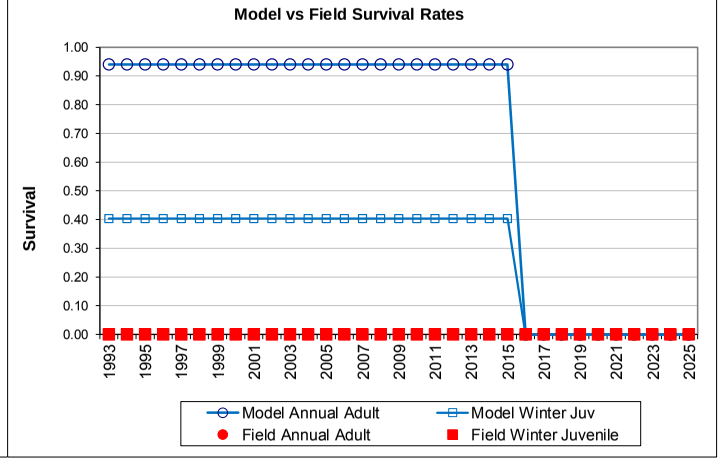
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		35.31	2.03	40.29	47.25	2.44	37	378	680	1095	23.0	16.7
1994		41.84	2.77	41.99	47.80	3.03	30	383	605	1018	26.6	17.7
1995		46.00	3.02	43.03	43.96	2.93	19	288	194	501	23.2	6.7
1996		55.15	3.18	40.97	32.19	2.24	15	287	206	508	25.2	7.4
1997		51.58	3.21	40.07	41.84	2.79	19	275	190	484	25.3	7.0
1998		55.52	3.52	38.71	33.86	2.55	20	256	161	437	25.1	6.1
1999		40.23	2.87	37.97	35.42	2.64	26	242	174	442	24.6	6.7
2000		39.24	2.78	35.80	41.93	2.90	11	220	105	336	24.9	4.3
2001		31.64	2.04	33.27	34.03	2.13	3	194	22	219	24.3	0.9
2002		33.08	2.21	29.69	27.65	1.98	0	150	34	184	21.2	1.4
2003		39.33	2.95	28.51	28.82	2.43	2	144	24	170	21.3	1.0
2004		54.44	3.69	28.37	25.53	2.28	0	120	7	127	17.7	0.3
2005		55.01	3.25	31.16	30.90	2.24	0	136	0	136	17.4	0.0
2006		56.11	3.22	33.26	41.76	2.65	5	135	31	171	15.4	1.2
2007		53.15	2.85	35.90	38.74	2.32	18	165	97	280	16.8	3.5
2008		58.02	2.95	37.79	40.65	2.33	14	150	126	290	14.4	4.6
2009		57.16	2.90	41.17	44.90	2.47	34	230	234	498	20.0	8.4
2010		56.75	2.97	42.86	43.55	2.49	63	300	368	731	26.0	13.7
2011		47.83	2.58	43.50	38.11	2.23	51	305	440	796	28.8	18.1
2012		43.22	2.62	41.30	40.22	2.50	20	344	377	741	38.7	17.5
2013		64.73	3.98	32.82	36.31	2.71	74	439	432	945	75.3	24.3
2014		69.89	3.81	23.14	27.78	2.08	22	374	147	543	92.1	8.4
2015		62.50	3.56	15.79	34.38	2.40	20	350	130	500	125.5	7.4
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

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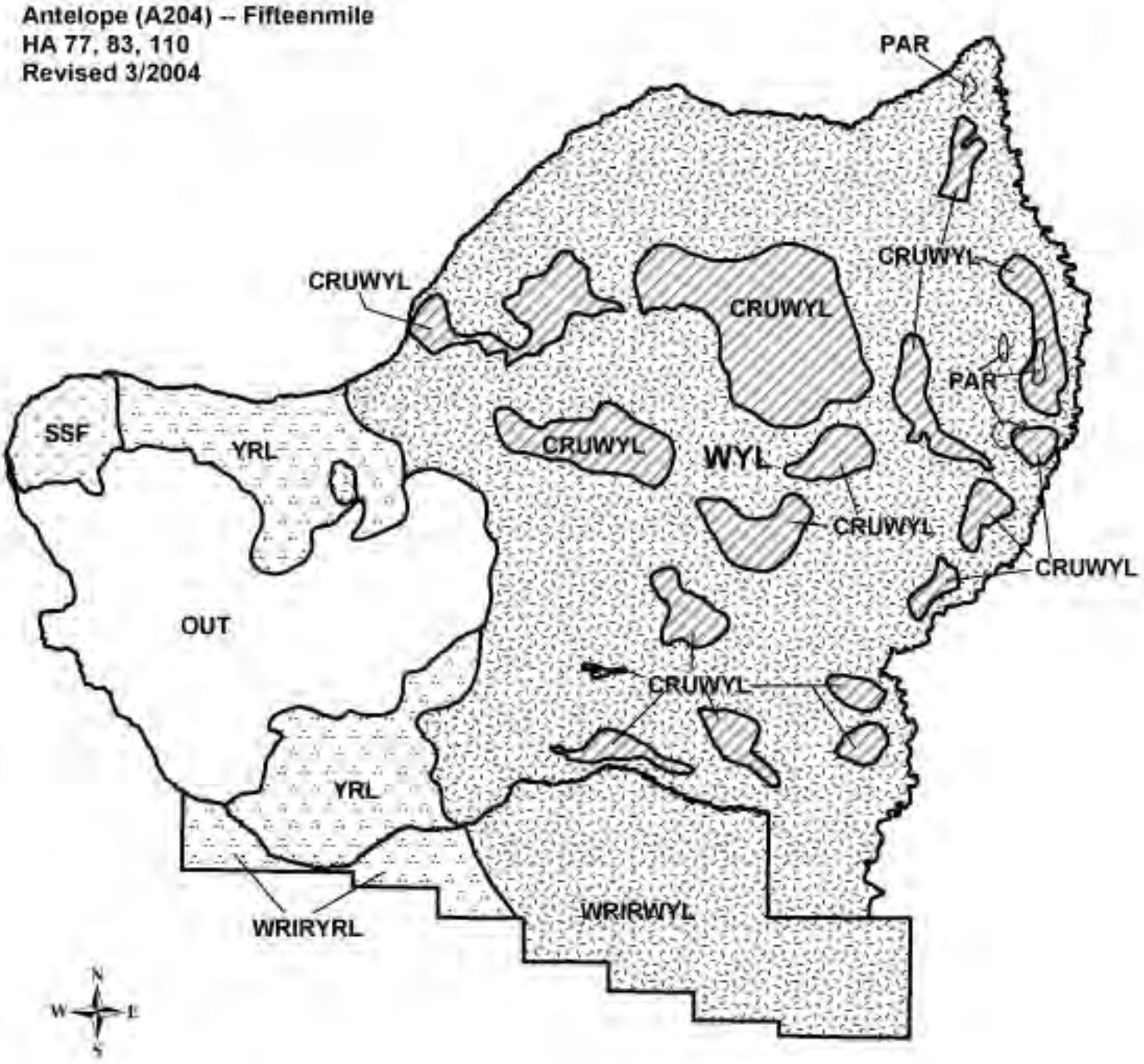
Antelope (A204) -- Fifteenmile
HA 77, 83, 110
Revised 3/2004
PAR
CRUWYL
CRUWYL
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W
E
S

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

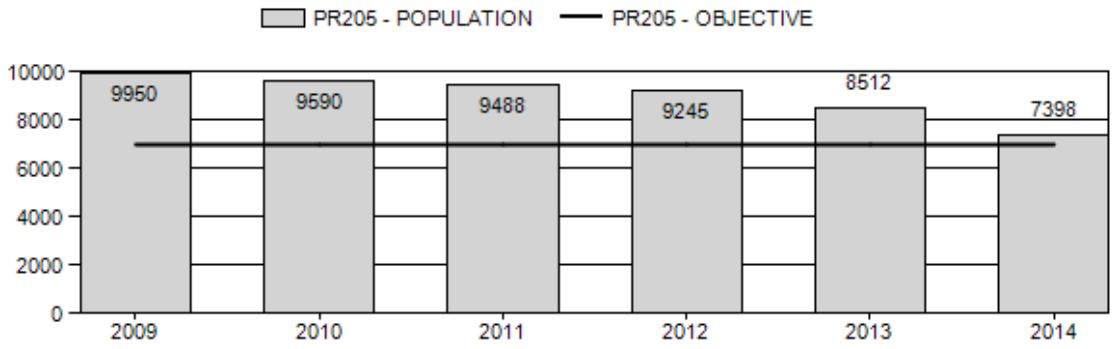
	2009 - 2013 Average	2014	2015 Proposed
Population:	9,357	7,398	7,404
Harvest:	603	618	580
Hunters:	584	645	600
Hunter Success:	103%	96%	97%
Active Licenses:	687	751	700
Active License Success:	88%	82%	83%
Recreation Days:	2,263	2,518	2,400
Days Per Animal:	3.8	4.1	4.1
Males per 100 Females	52	55	
Juveniles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

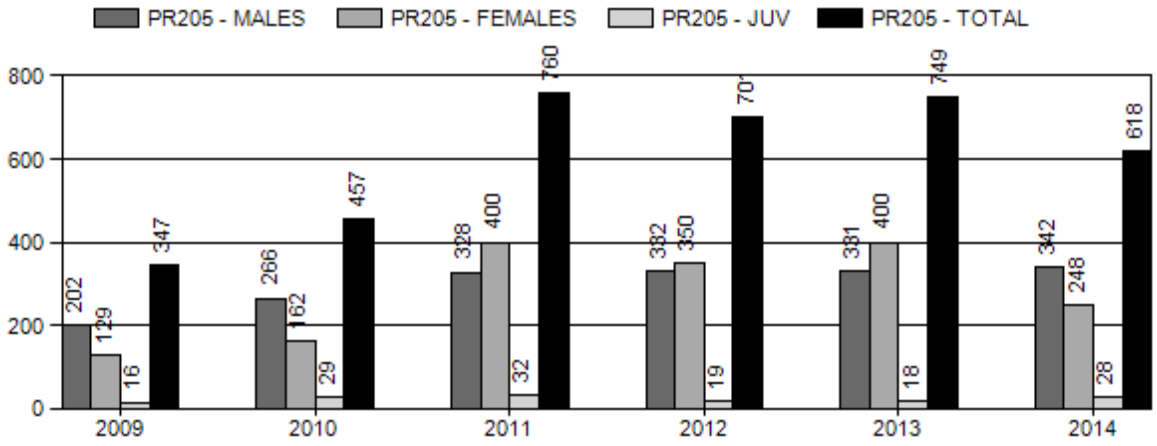
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
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%

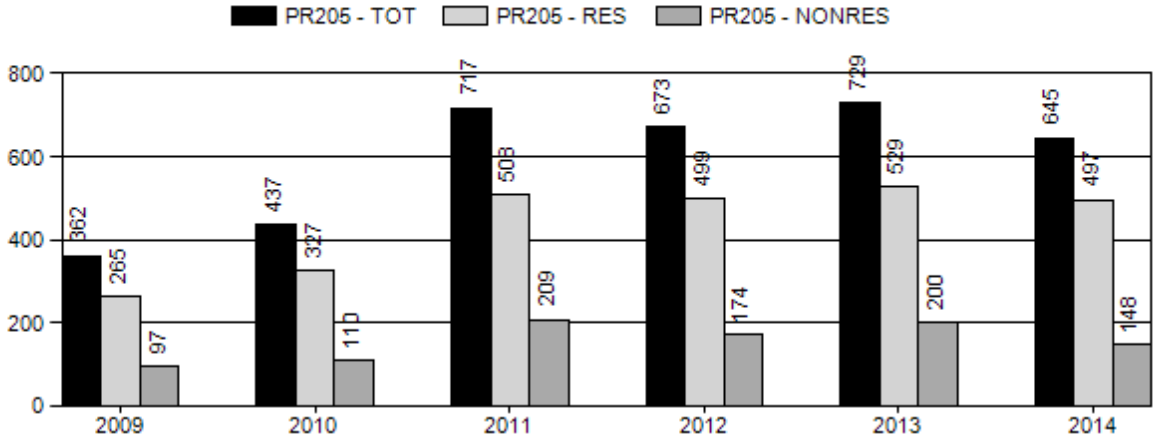
Population Size - Postseason



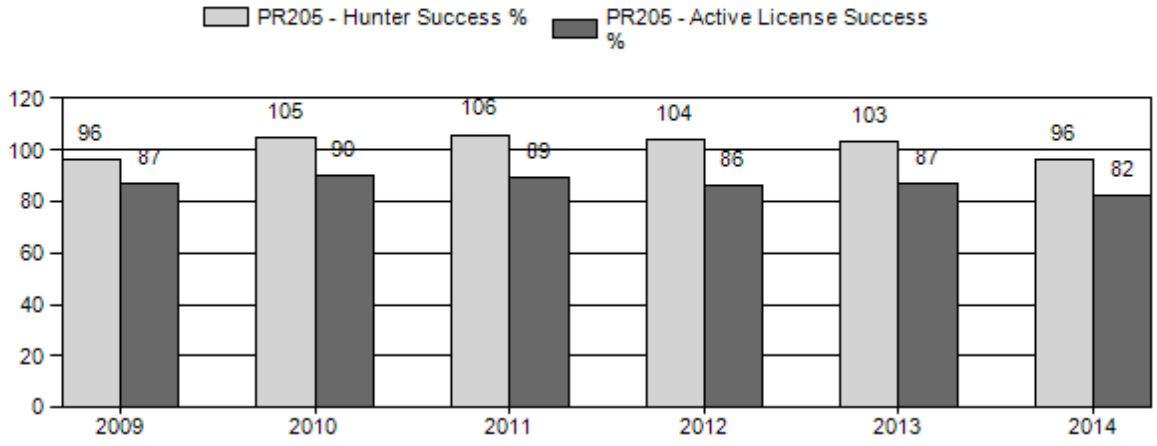
Harvest



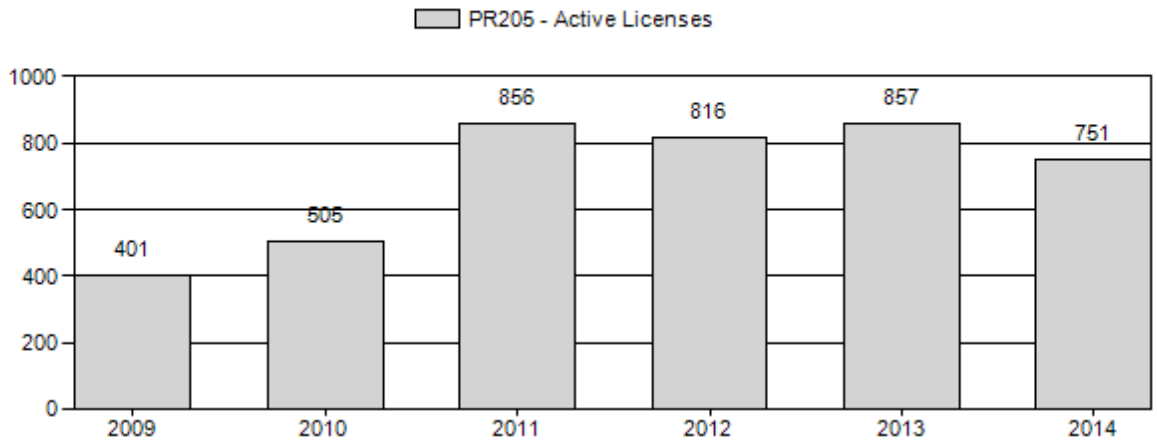
Number of Hunters



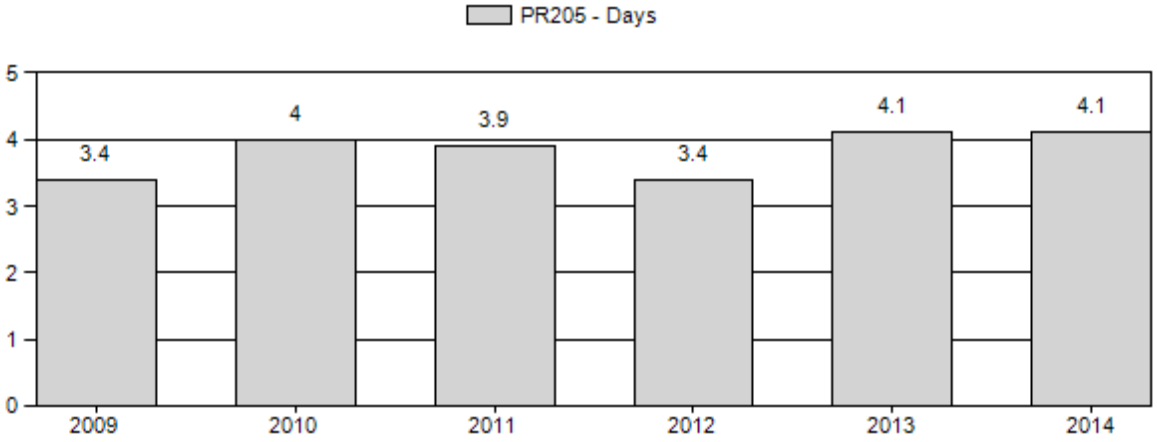
Harvest Success



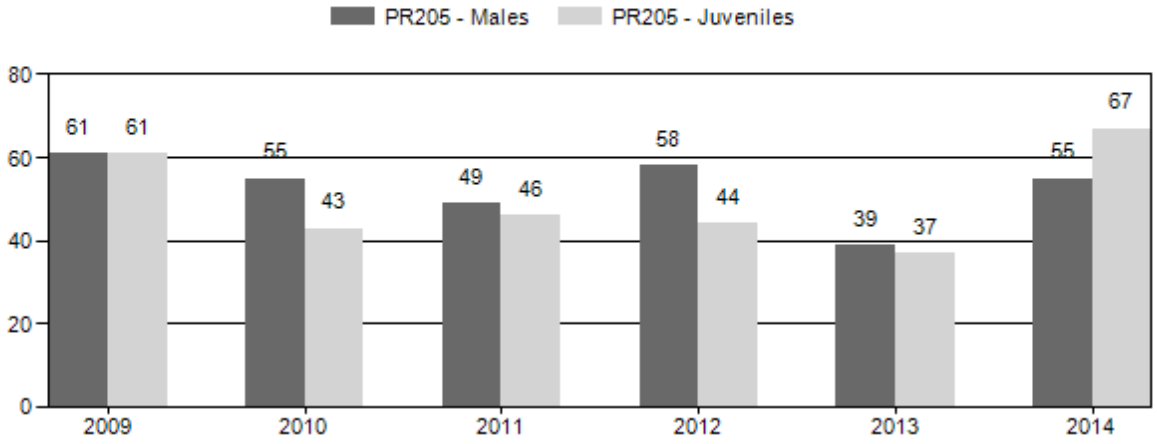
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary																		
for Pronghorn Herd PR205 - CARTER MOUNTAIN																		
		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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 Opens	Closes	Quota	Limitations
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
Archery:					
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 estimated 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 (±877) pronghorn, which seems reasonable. We plan to redesigned 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 Mtn-PR205
Model date:	02/17/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	179	188	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	171	200	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	159	275	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	926	1712	3119	**5758**	912	1230	2784	**4927**	1362	2847	**4209**				7000
1994	1256	1335	2790	**5381**	1238	884	2590	**4712**	1118	2755	**3873**				7000
1995	1190	1096	2699	**4986**	1179	640	2541	**4361**	873	2698	**3571**				7000
1996	1808	856	2644	**5308**	1808	510	2465	**4783**	1198	3064	**4262**				7000
1997	1397	1174	3003	**5573**	1364	859	2766	**4989**	1140	2956	**4097**				7000
1998	1508	1118	2897	**5522**	1480	768	2642	**4890**	1305	3090	**4395**				7000
1999	1420	1279	3028	**5727**	1381	915	2743	**5040**	1402	3143	**4545**				7000
2000	1263	1374	3080	**5717**	1241	1014	2905	**5160**	1248	3055	**4303**	4906	1090		7000
2001	827	1223	2994	**5044**	827	886	2965	**4679**	1028	3023	**4051**				7000
2002	940	1007	2963	**4910**	940	641	2932	**4513**	822	3020	**3842**				7000
2003	1169	805	2959	**4934**	1161	508	2946	**4616**	756	3089	**3844**	2554	681		7000
2004	1171	740	3027	**4939**	1171	548	3021	**4740**	805	3165	**3970**				7000
2005	1528	789	3101	**5418**	1528	645	3097	**5270**	1182	3519	**4700**				7000
2006	2058	1158	3448	**6664**	2055	1004	3409	**6467**	1465	3755	**5220**	9433	1889		7000
2007	1953	1436	3680	**7069**	1949	1254	3576	**6779**	1673	3881	**5555**				7000
2008	2096	1640	3804	**7540**	2091	1455	3719	**7265**	1900	4055	**5955**				7000
2009	2440	1862	3974	**8276**	2423	1639	3832	**7894**	2153	4240	**6393**	12008	2500		7000
2010	1790	2110	4155	**8055**	1758	1818	3977	**7553**	2144	4201	**6346**				7000
2011	1901	2101	4117	**8120**	1866	1741	3677	**7284**	2107	3996	**6103**				7000
2012	1717	2065	3916	**7698**	1693	1701	3528	**6921**	2026	3705	**5731**	6918	877		7000
2013	1336	1986	3631	**6953**	1316	1622	3191	**6129**	2046	3712	**5758**				7000
2014	2435	2005	3638	**8078**	2404	1629	3365	**7398**	2317	4035	**6352**				7000
2015	1817	2271	3955	**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:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.171
Initial Female Pop/10,000 =	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: Juvenile/Female Ratio: Derived Est	Juvenile/Female Ratio: Field Est	Juvenile/Female Ratio: Field SE	Total Male/Female Ratio: Derived Est	Total Male/Female Ratio: Field Est	Total Male/Female Ratio: Field SE	Males	Females	Juv	Total Harvest	Harvest: Segment Harvest Rate (% of Total Males	Segment Harvest Rate (% of 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												
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2020												
2021												
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2023												
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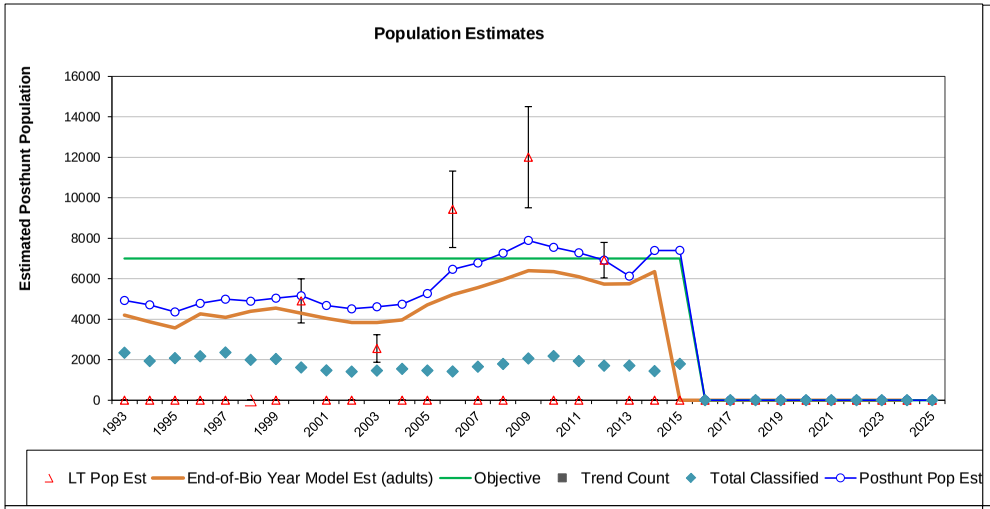
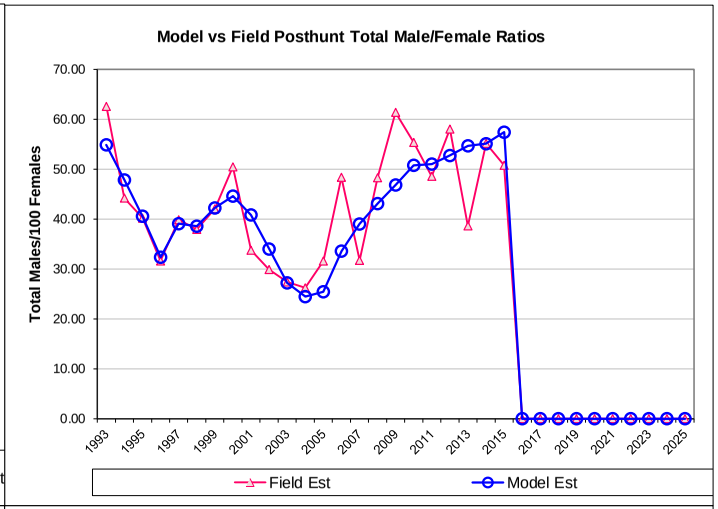
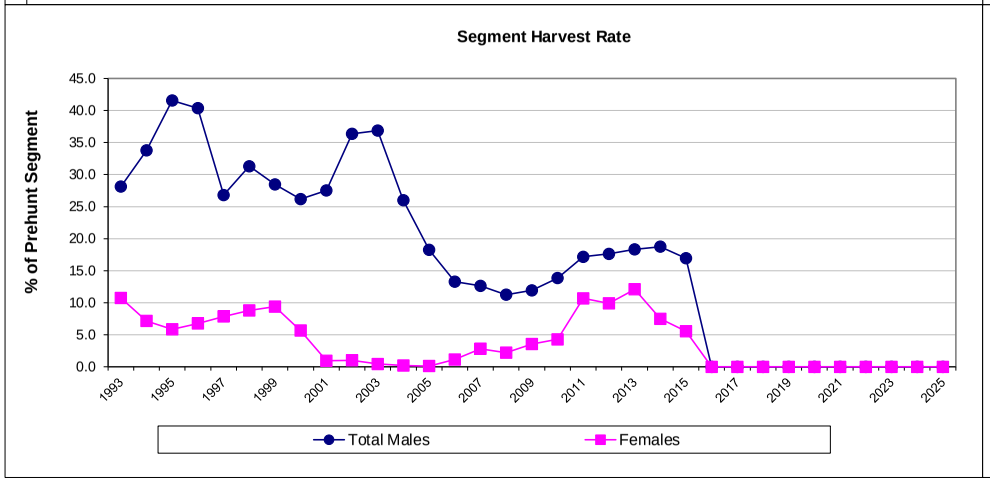
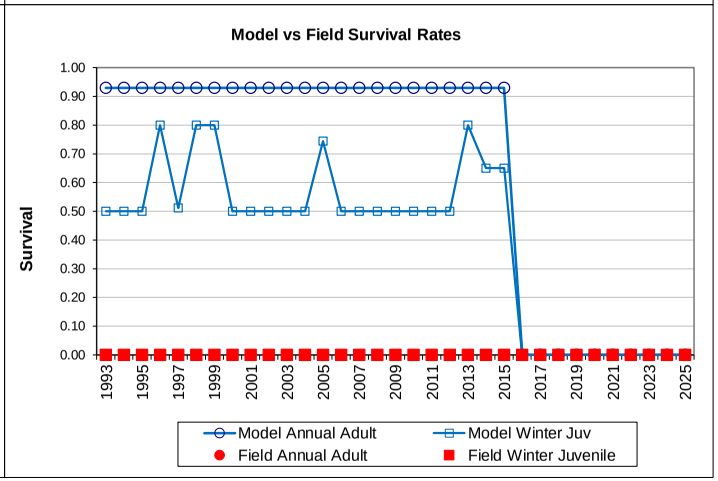
FIGURES









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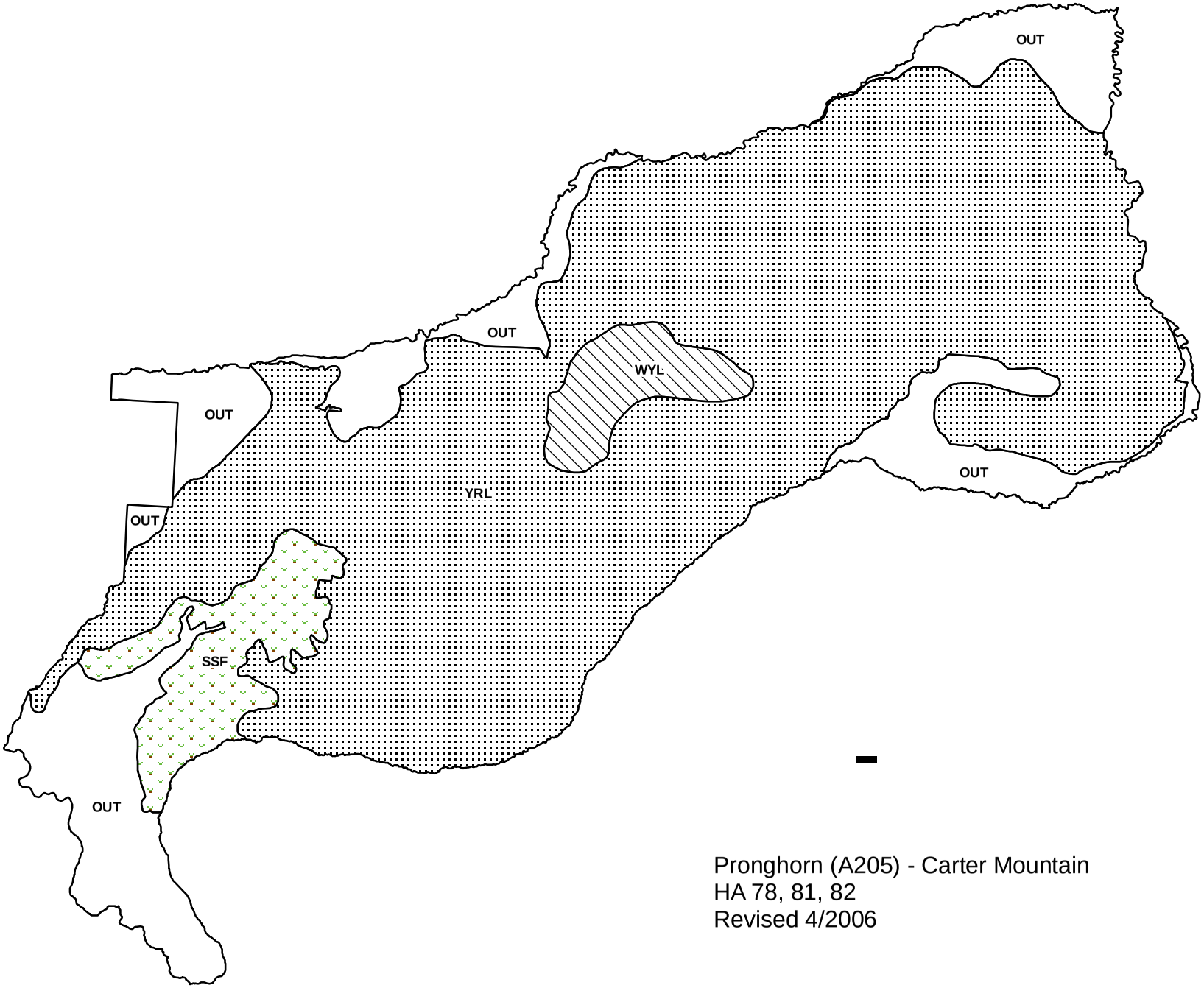


Pronghorn (A205) - Carter Mountain
HA 78, 81, 82
Revised 4/2006

2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR207 - BADGER BASIN

HUNT AREAS: 80

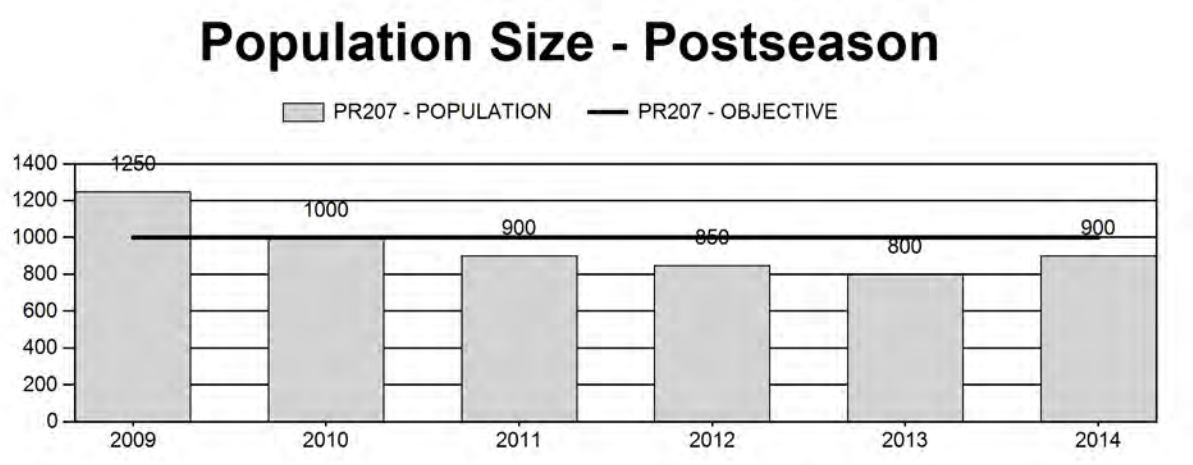
PREPARED BY: DOUG MCWHIRTER

	2009 - 2013 Average	2014	2015 Proposed
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	

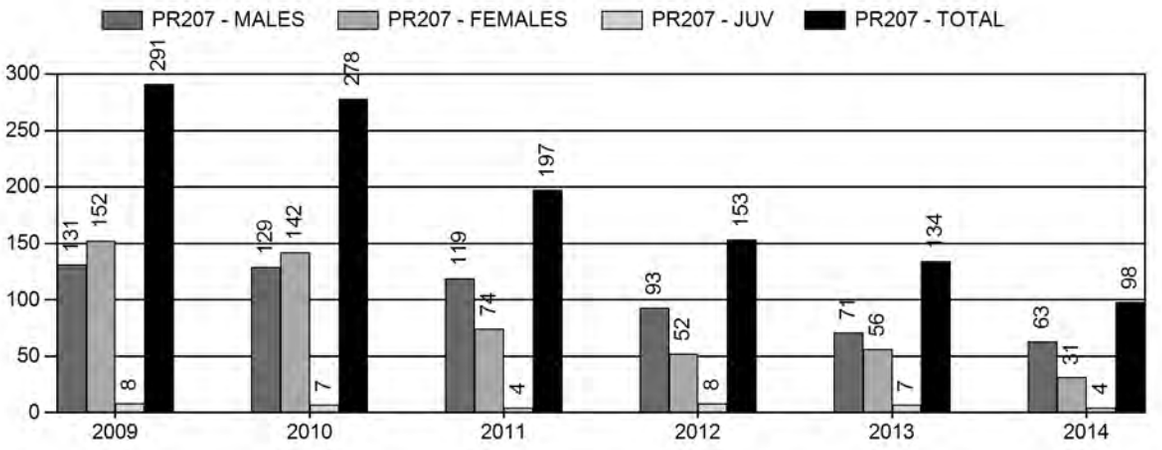
Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10%
Number of years population has been + or - objective in recent trend:	6
Model Date:	2/19/2015

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

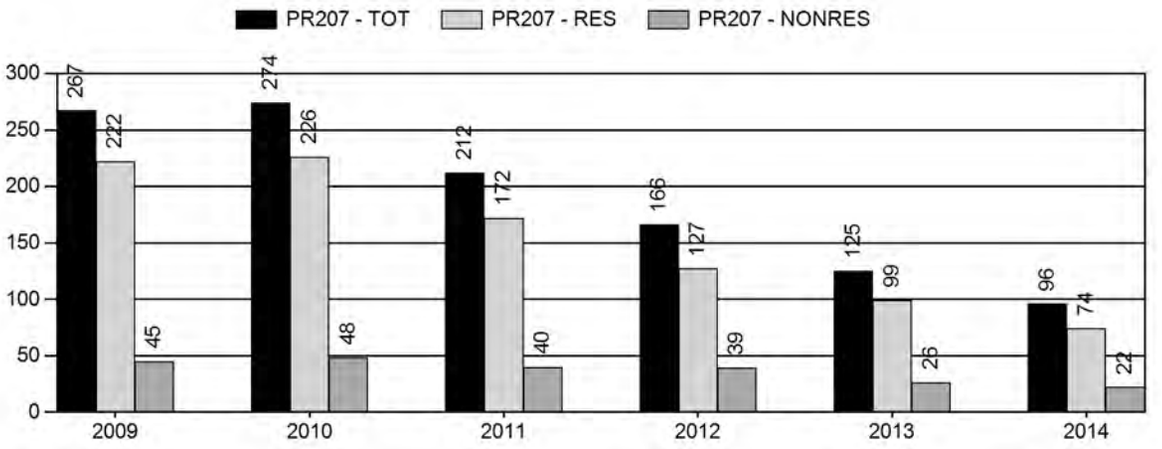
	JCR Year	Proposed
Females ≥ 1 year old:	9.2%	8.0%
Males ≥ 1 year old:	30.9%	28.6%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	11.5%	10.4%
Proposed change in post-season population:	0.0%	5.5%



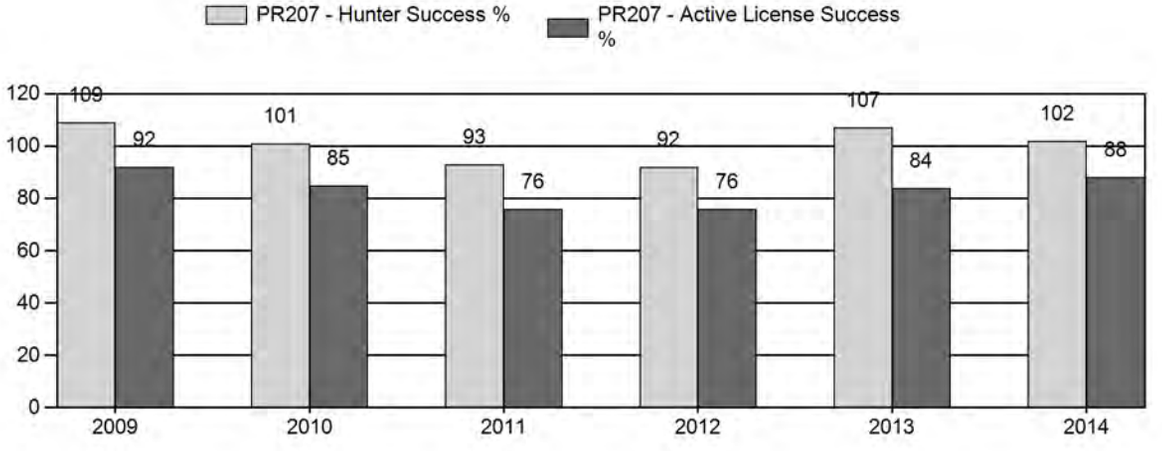
Harvest



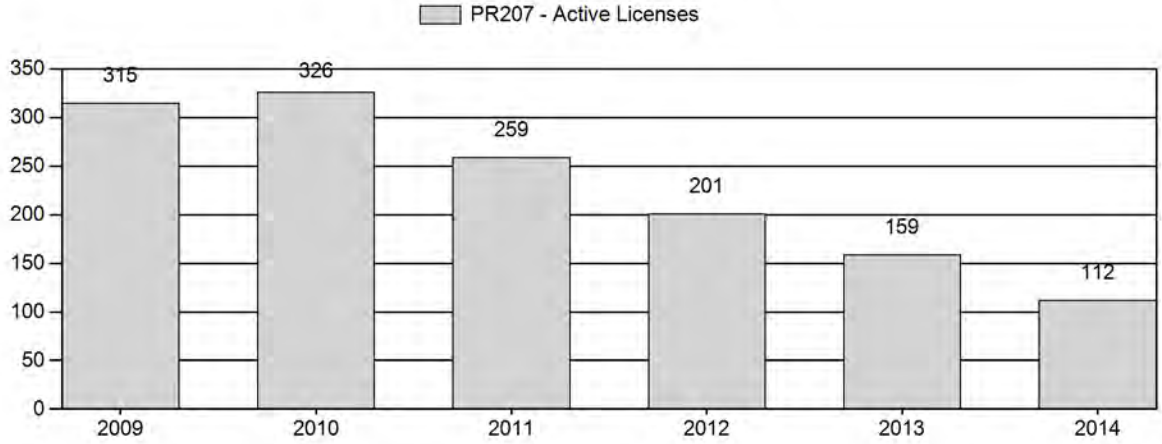
Number of Hunters



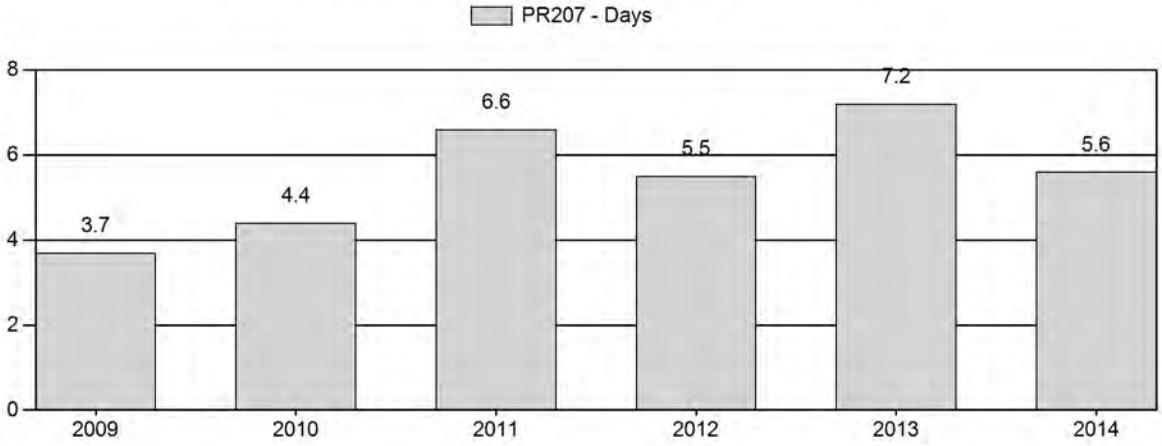
Harvest Success



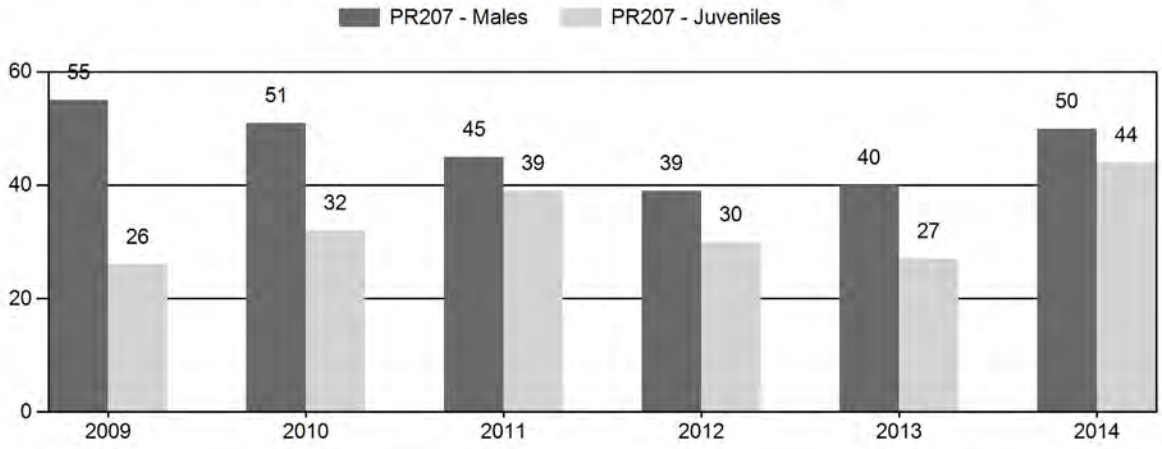
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR207 - BADGER BASIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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 Opens	Closes	Quota	Limitations
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
Total	**1**	No Changes
	6	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.

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

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	56	65	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	2011	2020	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	27	207	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	192	248	643	**1084**	179	148	529	**856**	209	560	**769**				1000
1994	131	205	549	**884**	130	92	501	**723**	133	519	**652**				1000
1995	173	131	508	**812**	173	31	507	**710**	98	548	**646**				1000
1996	346	96	537	**980**	346	1	506	**854**	151	625	**776**				1000
1997	209	148	612	**969**	209	53	588	**849**	135	637	**773**				1000
1998	246	133	625	**1003**	240	64	583	**888**	163	645	**808**				1000
1999	193	160	632	**985**	190	90	609	**888**	163	648	**811**				1000
2000	280	160	635	**1075**	278	87	611	**976**	201	690	**892**				1000
2001	215	197	677	**1089**	215	133	658	**1007**	216	706	**922**				1000
2002	313	212	691	**1216**	310	151	673	**1134**	277	763	**1040**				1000
2003	217	271	748	**1235**	217	198	727	**1142**	276	770	**1046**				1000
2004	274	271	754	**1299**	272	193	737	**1201**	295	805	**1100**				1000
2005	391	289	788	**1469**	389	214	776	**1379**	369	895	**1264**				1000
2006	395	361	877	**1634**	395	295	840	**1531**	448	955	**1403**				1000
2007	492	439	936	**1867**	485	335	853	**1674**	522	1004	**1526**				1000
2008	305	512	984	**1801**	280	363	849	**1492**	449	899	**1348**				1000
2009	228	440	881	**1549**	219	296	714	**1229**	360	745	**1105**				1000
2010	230	353	730	**1313**	222	211	574	**1007**	283	617	**901**				1000
2011	236	278	605	**1119**	231	147	524	**902**	261	609	**870**				1000
2012	179	256	597	**1032**	171	153	540	**864**	239	572	**811**				1000
2013	149	234	561	**944**	141	156	499	**796**	214	552	**767**				1000
2014	237	210	541	**988**	232	141	507	**880**	236	564	**800**				1000
2015	178	231	553	**962**	178	165	509	**852**	228	548	**776**				1000
2016	173	223	537	**934**	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	SE	Model Est	Field Est	SE
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 =	0.900
Adult Survival =	0.906
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%

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	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												
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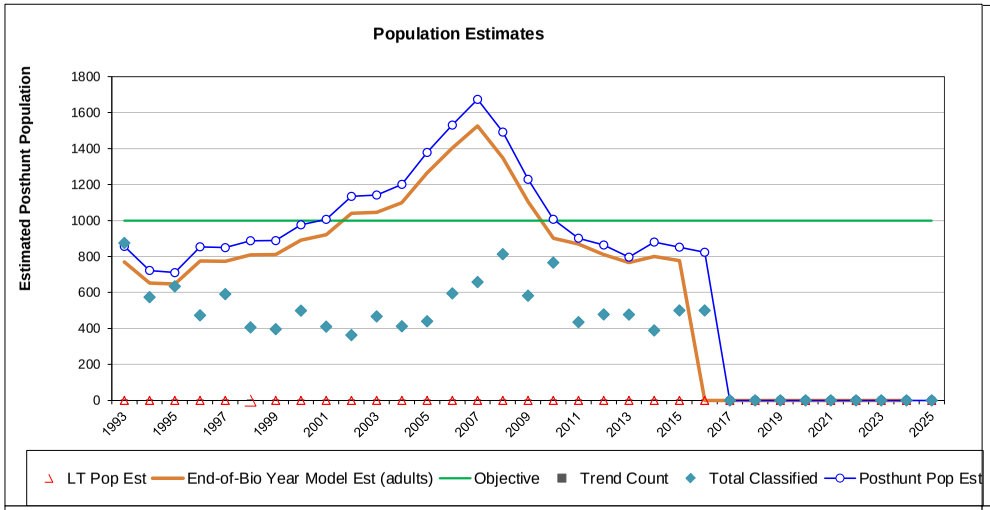
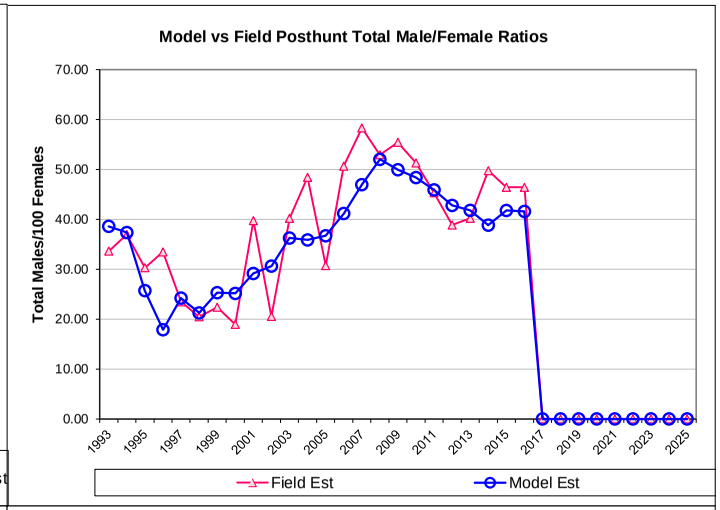
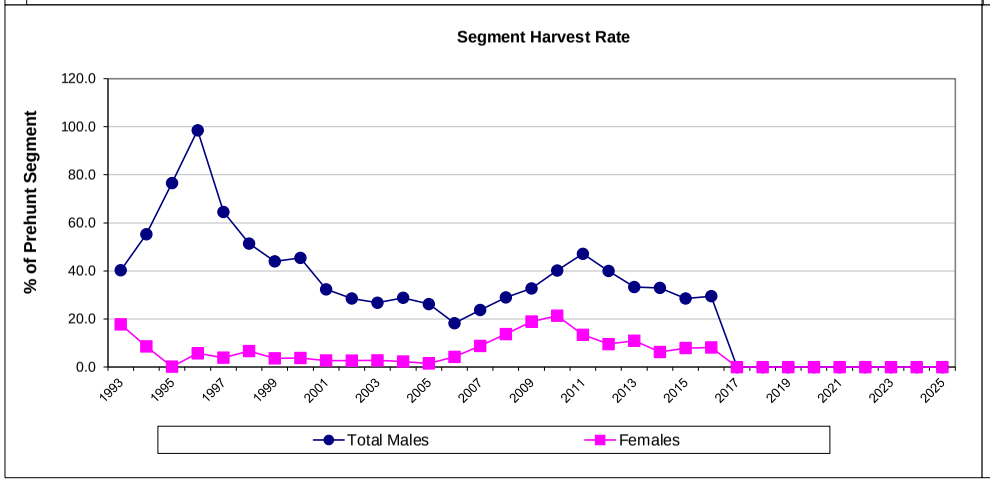
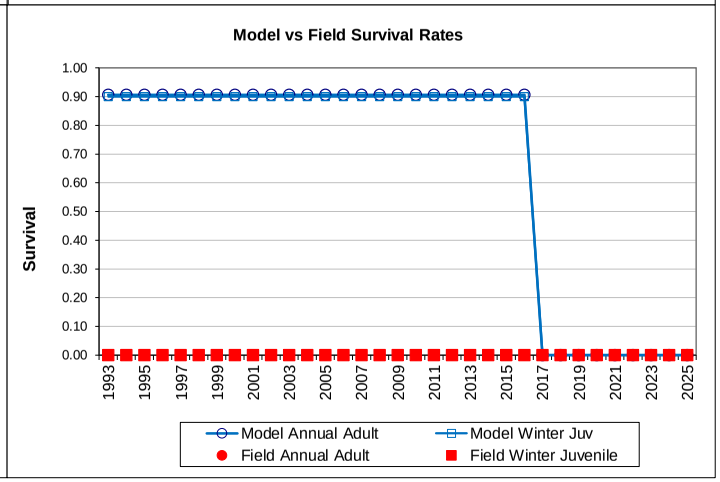
FIGURES









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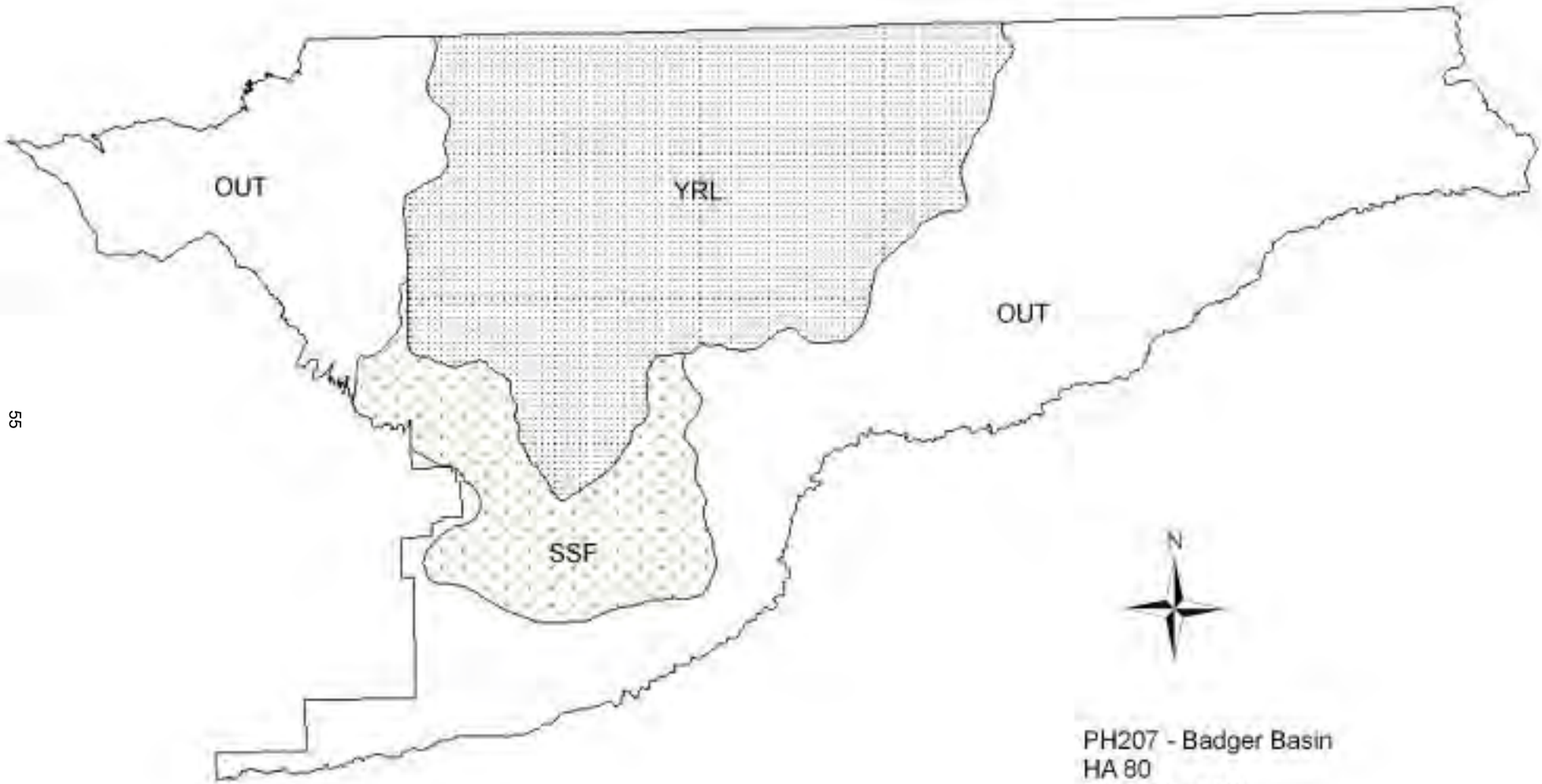
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