

2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR401 - SUBLETTE

HUNT AREAS: 85-93, 96, 107

PREPARED BY: PATRICK BURKE

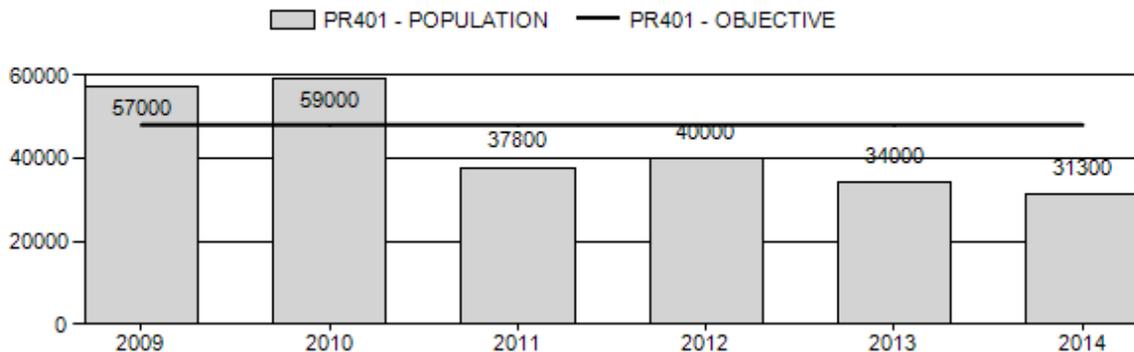
	<u>2009 - 2013</u> <u>Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	45,560	31,300	32,000
Harvest:	5,086	3,262	2,920
Hunters:	5,246	3,603	3,200
Hunter Success:	97%	91%	91 %
Active Licenses:	5,887	4,069	3,200
Active License Success:	86%	80%	91 %
Recreation Days:	18,236	13,646	12,000
Days Per Animal:	3.6	4.2	4.1
Males per 100 Females	55	52	
Juveniles per 100 Females	61	74	

Population Objective ($\pm 20\%$) : 48000 (38400 - 57600)
 Management Strategy: Recreational
 Percent population is above (+) or below (-) objective: -34.8%
 Number of years population has been + or - objective in recent trend: 4
 Model Date: 01/23/2015

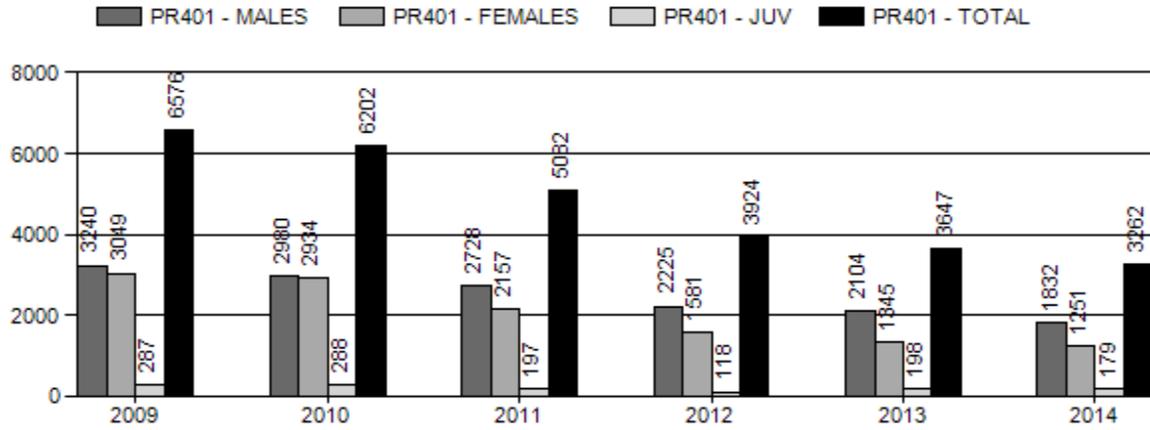
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8%	8%
Males ≥ 1 year old:	25%	25%
Juveniles (< 1 year old):	1%	1%
Total:	8%	8%
Proposed change in post-season population:	0%	0%

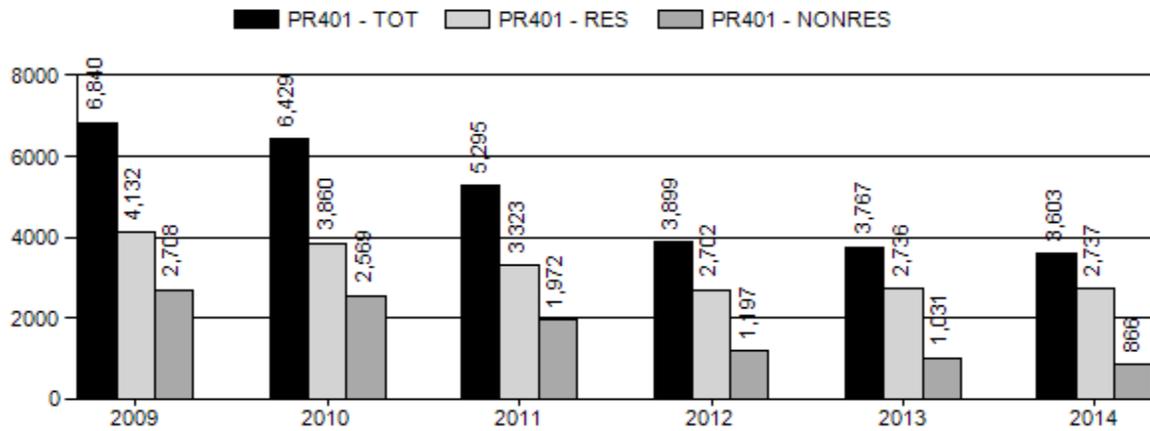
Population Size - Postseason



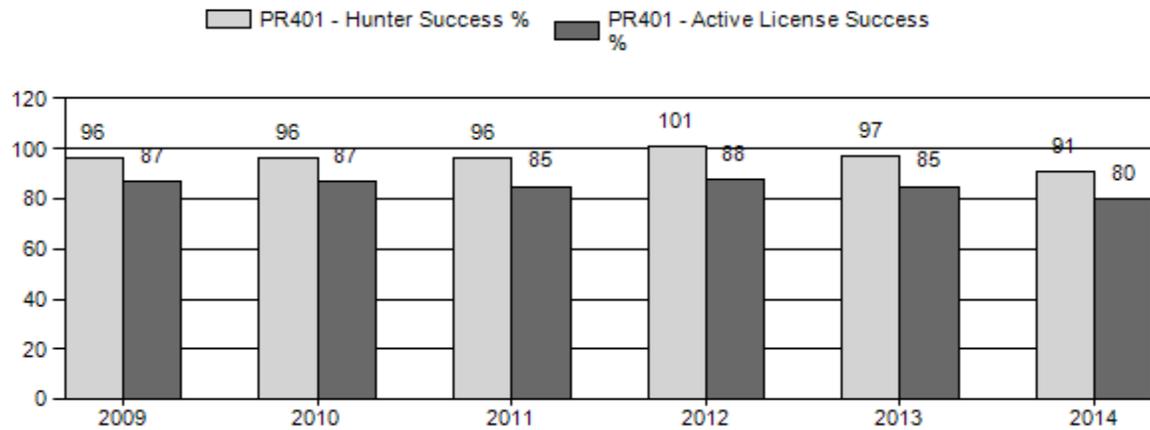
Harvest



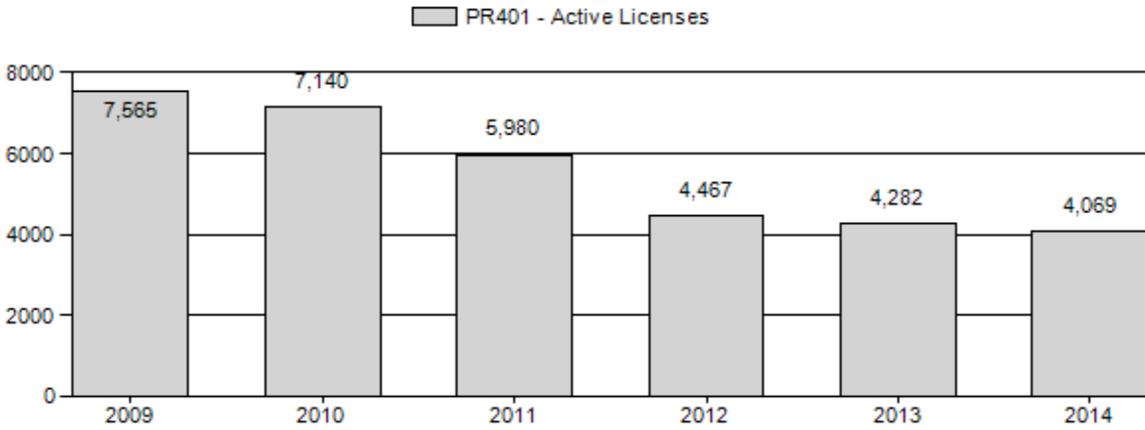
Number of Hunters



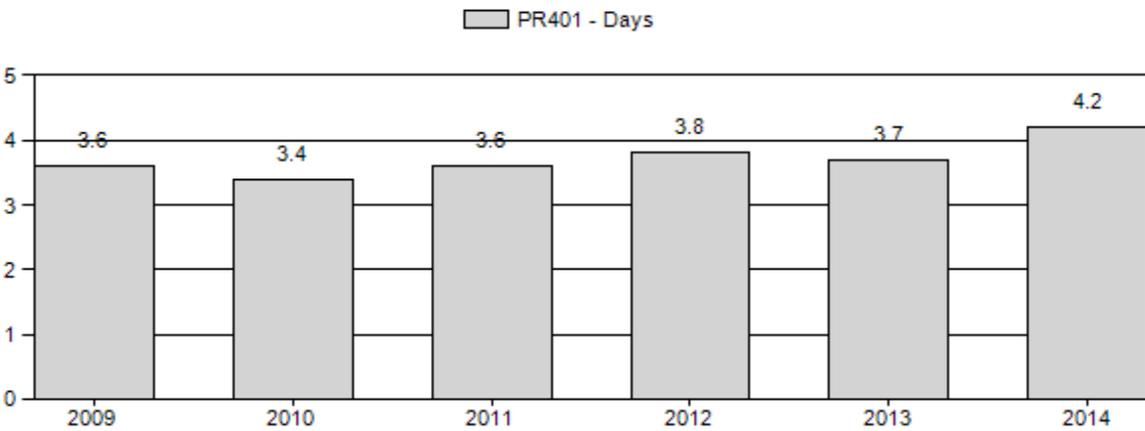
Harvest Success



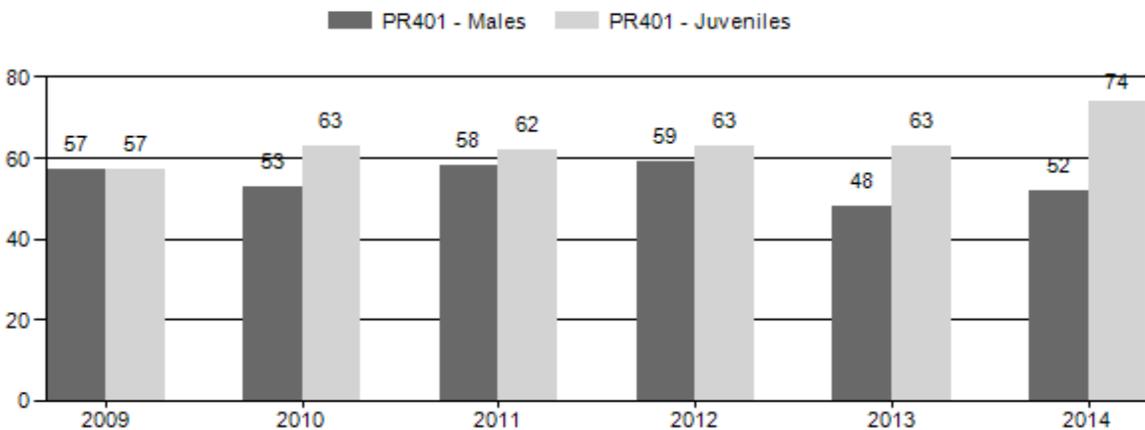
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR401 - SUBLETTE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	64,500	1,088	2,357	3,445	27%	6,036	47%	3,431	27%	12,912	2,385	18	39	57	± 0	57	± 0	36
2010	66,000	783	2,407	3,190	24%	6,035	46%	3,804	29%	13,029	2,138	13	40	53	± 2	63	± 2	41
2011	43,400	684	2,043	2,727	26%	4,713	45%	2,936	28%	10,376	2,163	15	43	58	± 2	62	± 2	39
2012	45,000	646	1,967	2,613	27%	4,439	45%	2,800	28%	9,852	1,986	15	44	59	± 2	63	± 2	40
2013	38,000	517	1,848	2,365	23%	4,975	48%	3,123	30%	10,463	2,065	10	37	48	± 2	63	± 2	43
2014	35,000	786	1,687	2,473	23%	4,791	44%	3,529	33%	10,793	2,614	16	35	52	± 2	74	± 2	49

**2015 HUNTING SEASONS
SUBLETTE PRONGHORN HERD (PR401)**

Hunt Area	Type	SEASON DATES		Quota	Limitations
		Opens	Closes		
85	1	Sept.10	Oct. 31	15	Limited quota; any antelope
86	1	Sept. 10	Oct. 31	50	Limited quota; any antelope
	6	Sept. 10	Oct. 31	25	Limited quota; doe or fawn antelope
87	1	Sept. 10	Oct. 31	200	Limited quota; any antelope, except that portion of Area 87 one (1) mile north and one (1) mile west of the junction of U.S. Highway 191 and Wyoming Highway 352 shall be closed to hunting.
	2	Sept.25	Oct. 31	150	Limited quota; any antelope, except that portion of Area 87 one (1) mile north and one (1) mile west of the junction of U.S. Highway 191 and Wyoming Highway 352 shall be closed to hunting
	6	Sept. 10	Oct. 31	150	Limited quota; doe or fawn antelope, except that portion of Area 87 within one (1) mile north and one (1) mile west of the junction of U.S. Highway 191 and Wyoming Highway 352 shall be closed to hunting
	7	Sept.25	Oct. 31	150	Limited quota; doe or fawn antelope, except that portion of Area 87 within one (1) mile north and one (1) mile west of the junction of U.S. Highway 191 and Wyoming Highway 352 shall be closed to hunting

88	1	Sept. 10	Oct. 31	300	Limited quota; any antelope, except that portion of Area 88 on BLM lands immediately west of the East Green River Road (Sublette County Road 23-110) and west of the Woods-Wardell Road (Sublette County Road 23-179) shall be closed to hunting
	6	Oct. 1	Oct. 31	325	Limited quota; doe or fawn antelope, except that portion of Area 88 on BLM lands immediately west of the East Green River Road (Sublette County Road 23-110) and west of the Woods-Wardell Road (Sublette County Road 23-179) shall be closed to hunting
89	1	Sept. 10	Oct. 31	200	Limited quota; any antelope
	2	Oct. 10	Oct. 31	125	Limited quota; any antelope
	6	Oct. 1	Oct. 31	375	Limited quota; doe or fawn antelope
		Nov. 1	Nov. 15		Unused Area 89 Type 6 licenses valid in that in that portion of Area 89 south of Middle Piney Creek, east of U.S. Hwy 189, and south of Wyoming Hwy 351
90	1	Sept. 10	Oct. 31	225	Limited quota; any antelope valid in that portion of Area 90 east of U.S. Highway 191
	2	Sept. 10	Oct. 31	150	Limited quota; any antelope valid in that portion of Area 90 west of U.S. Highway 191
	6	Sept. 10	Oct. 31	175	Limited quota; doe or fawn antelope valid in that portion of Area 90 east of U.S. Highway 191
	7	Sept. 10	Oct. 31	25	Limited quota; doe or fawn antelope valid in that portion of Area 90 west of U.S. Highway 191

	8	Aug. 15	Sept. 9	25	Limited quota; doe or fawn antelope valid on private land in that portion of Area 90 east of U.S. Highway 191
91	1	Sept. 10	Oct. 31	375	Limited quota; any antelope
	6	Sept. 10	Oct. 31	200	Limited quota; doe or fawn antelope
	7	Aug. 15	Oct. 31	125	Limited quota; doe or fawn antelope, valid in that portion of Area 91 on private and Bureau of Reclamation land within Sweetwater County
92, 96	1	Sept. 10	Oct. 31	150	Limited quota; any antelope
	7	Sept. 10	Oct. 31	25	Limited quota; doe or fawn antelope valid in that portion of Area 92 within the Farson-Eden Irrigation Project
93	1	Sept. 10	Oct. 31	400	Limited quota; any antelope
	6	Sept. 10	Oct. 31	25	Limited quota; doe or fawn antelope
	7	Sept. 10	Oct. 31	150	Limited quota; doe or fawn antelope valid in that portion of Area 93 north and west of Wyoming Highway 189
96	1	Sept. 10	Oct. 31	25	Limited quota; any antelope; also valid in Area 92
	7	Sept. 10	Oct. 31	25	Limited quota; doe or fawn antelope valid in that portion of Area 96 within the Farson-Eden Irrigation Project; also valid in that portion of Area 92 within the Farson-Eden Irrigation Project
107	1	Sept. 10	Oct. 22	50	Limited quota; any antelope
	6	Sept. 10	Oct. 22	50	Limited quota; doe or fawn antelope
	0	Aug. 20	Sept. 9	50	Limited quota; any antelope, muzzleloading firearms and handguns only

Hunt Area	Type	Quota change from 2014
89	7	-25
90	2	-25
	6	-25
	7	-50
	8	+25
91	1	-25
	6	-25
92	7	-25
96	1	-25
Herd Unit Total	1	-50
	2	-25
	6	-50
	7	-100
	8	+25

Management Evaluation

Current Management Objective: 48,000

Management Strategy: Recreational

2013 Postseason Population Estimate: ~34,000

2014 Proposed Population Estimate: ~34,000

The post-season population objective for the Sublette pronghorn herd is 48,000 pronghorn and is designated as a recreational management herd. This objective for this population was set in 1994.

Herd Unit Issues

The 2014 post-season modeled population estimate for the Sublette herd is approximately 31,000 pronghorn with a stable trend. The last two line-transect surveys conducted in this herd unit have yielded radically different estimates for where this herd is in relation to its population objective. One survey flown at the end of the 2006 bio-year year resulted in an estimated end of bio-year population size of just over 48,000 pronghorn, which placed this population significantly over objective. Because of this survey, harvest was significantly increased across

the herd unit in order to move the herd down towards its population objective. Following that survey, severe winter conditions during the 2010-2011 winter resulted in significantly higher than normal mortality for the herd. Another line-transect survey flown at the end of the 2010 bio-year resulted in a much lower population estimate of just under 27,000 animals. The discrepancy between these two estimates, even with a severe winter between them when this herd experience higher than normal mortality, raised some questions about the true size of this population. In early June 2013, another line-transect survey was flown, using a slightly modified stratified survey design from the 2010 survey. The resulting end of bio-year population estimate from this latest survey was around 31,500 pronghorn which correlated well with both the 2010 estimate and with model predictions.

Weather

Tougher than normal winter conditions during the 2010-2011 winter resulted in higher than normal over winter mortality in this herd. Winters since then have been, by comparison significantly milder than the 2012-2011 winter. The summers of 2012, 2013, and to a lesser extent the summer of 2014 were very dry with little summer precipitation, especially in the southern, lower elevation portions of this herd unit. These dry years appear to have had little effect on this herd as fawn ratios have been remarkably stable during this time period. This can probably be explained by the northern, more productive portions of the herd unit being less affected by the drought conditions than the southern, traditionally less productive, portions of the herd. The summer of 2014 saw substantially better moisture in the northern, portions of the herd unit. This improvement in climatic conditions did result in increased observed fawn to doe ratios in the herd unit in 2014. The below average precipitation levels do seem to still be having an impact in the southern portions of the herd.

Habitat

No habitat transects targeting pronghorn range were conducted in the Sublette herd unit during the period covered by this report. However, the dry summers over the last few years have had an impact on the overall habitat conditions in the southern portion of the herd. Some large sage-brush die-offs have been documented in the herd unit that could have an impact on pronghorn living in these areas. While the exact cause of die-offs has not been determined, it has been speculated that the dry conditions during the summer of 2013 and then the very wet conditions in the fall of 2013 may have drown sage-brush living in low-laying areas.

Field Data

Pre-season ground classifications conducted in August of 2014 resulted in observed ratios of 74 fawns per 100 does as well as 52 total and 14 yearling bucks per 100 does for the herd unit. A total of 10,793 pronghorn were classified across the whole herd unit, which is down from a high of 13,029 pronghorn classified in 2010 when the population was at a higher level, but up slightly from the 9,852 classified in 2012 and 10,463 classified in 2013.

Harvest Data

The 2014 hunting season saw the lowest harvest recorded in the Sublette herd since 2001. This reduction in the number of pronghorn harvested in the herd was caused by fewer licenses being issued due in part to the herd being estimated below objective and to increased numbers of licenses issued when the herd was above objective in the late 2000's. Days per animal harvested did increase slightly in 2014 to 4.2 days per animal harvested compared to average days per harvest values for the herd in the mid 3 days per harvest. The overall active license success rate in 2014 was 80%, which is generally in line, but at the lower end of success rates for the herd in recent years.

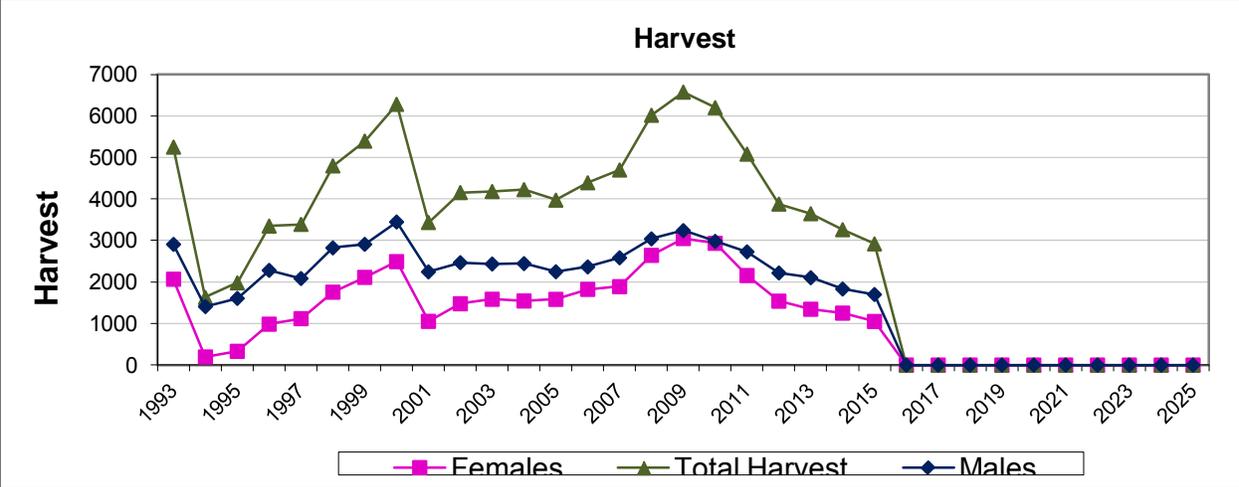
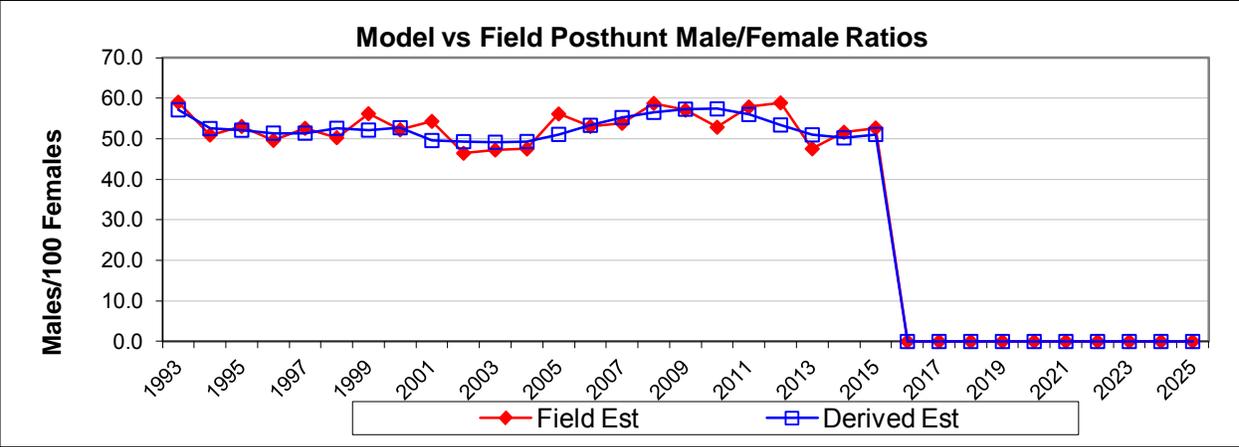
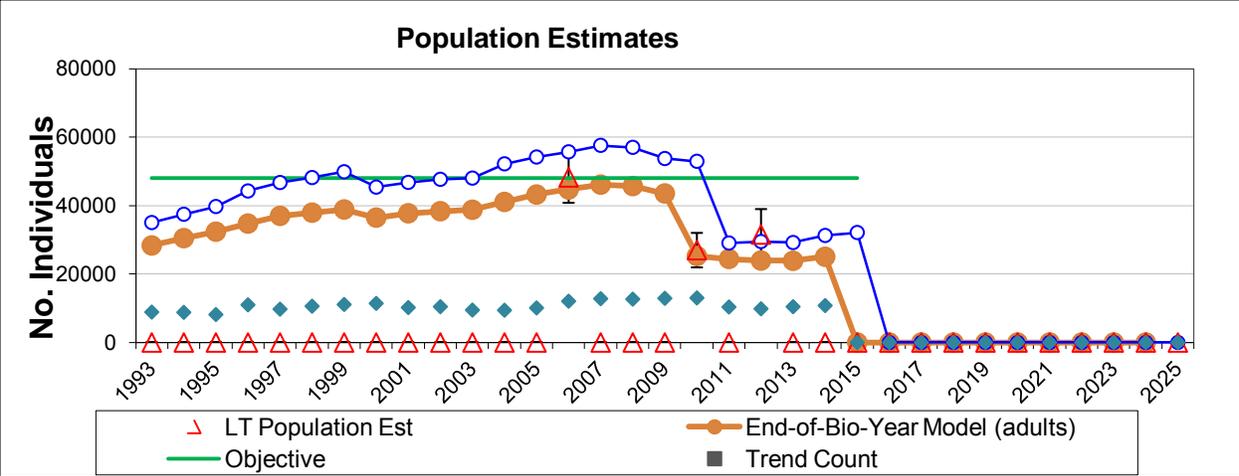
Population

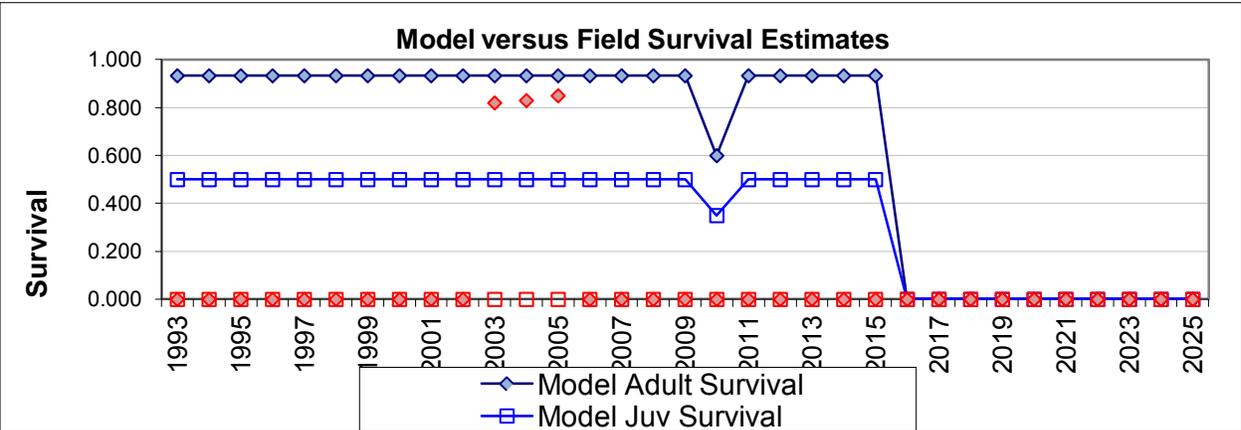
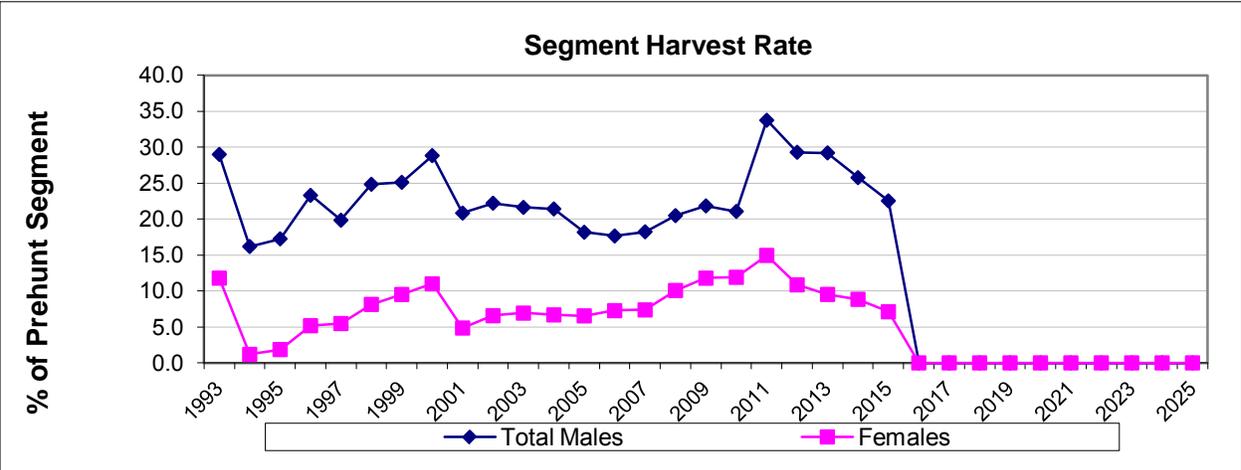
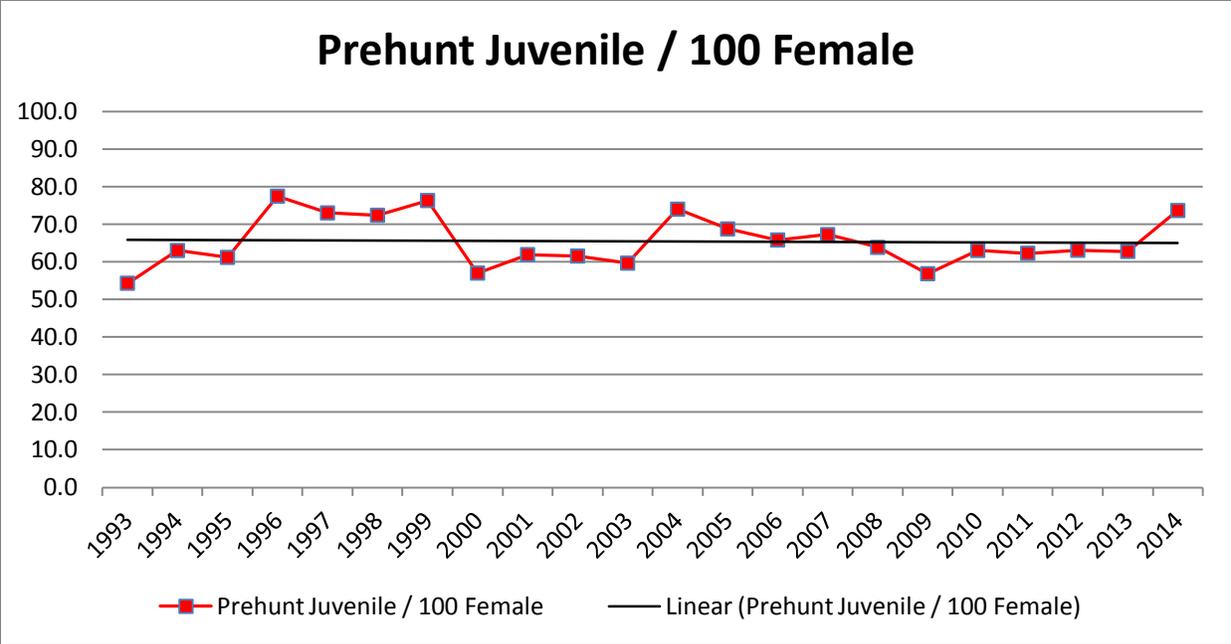
The model for the Sublette herd does a reasonable job of tracking observed ratios and line-transect estimates for this large and geographically spread out pronghorn herd. Use of the semi-constant survival model was necessary to allow the modeled population estimates to match the line-transect estimates and to allow for the population to decline sharply after the 2010-2011 winter when this herd experienced above average winter mortality. The model prediction of a significant population reduction between the 2006 bio-year and 2010 bio-year line-transect estimates match observations made by both field personnel and the general public.

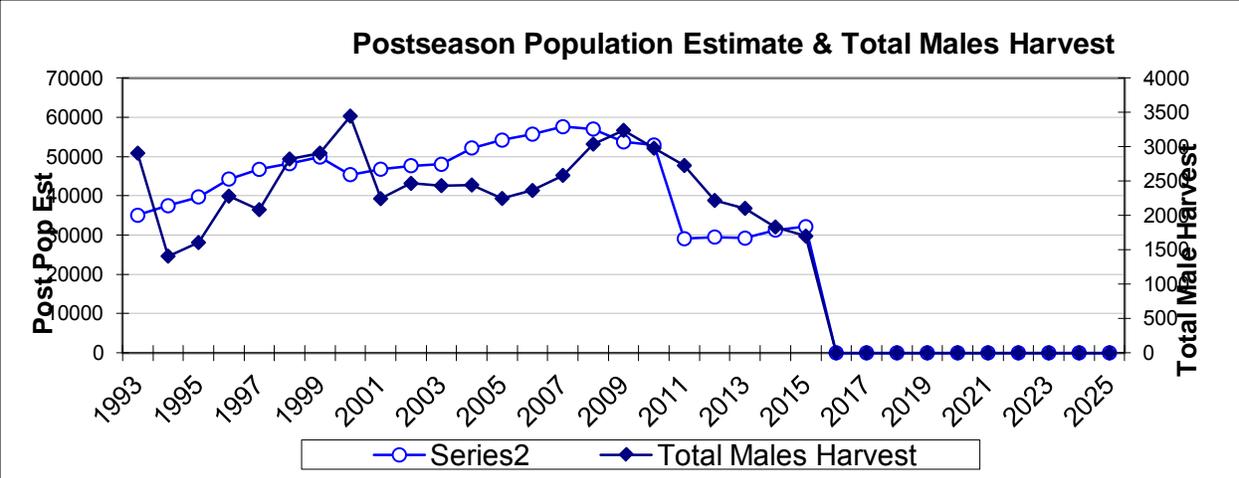
A line-transect survey was flown in the Sublette herd in June of 2013 to obtain an end of bio-year estimate for the 2012 bio-year. That survey was designed and analyzed using a stratified design to account for low, medium, and high density areas of the herd unit. The resulting end of bio-year population estimate for the herd was 31,550 (SE 7438) pronghorn. This population estimate agrees well with the previous line-transect survey flown in 2011 and with model predictions.

Management Summary

The 2015 season proposal is similar to previous seasons, but does include proposed changes in 5 of the hunt areas in the herd unit. Reductions in one or more license types are being proposed in HAs 89, 90, 91, 92, and 96; and the creation of a new license type is proposed in HA90. These are being proposed due to concerns over lower pronghorn numbers in the middle and southern portions of the herd. The 2015 season proposal also includes allowing hunters to hunt in both HA92 and 96 if they draw a license in either one of those hunt areas. This change is being proposed due to extremely low pronghorn numbers in HA96. It is hoped that if hunters are able to choose between harvesting a pronghorn in either HA92 or 96 that most will choose HA92, where pronghorn are more numerous, than HA96, which has much lower pronghorn numbers.







INPUT	
Species:	Pronghorn
Biologist:	Patrick Burke
Herd Unit & No.:	Sublette PR401
Model date:	01/23/15

Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	111	120	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	120	134	<input checked="" type="checkbox"/> SCJ,SCA Model	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	56	164	<input type="checkbox"/> TSJ,CA Model	

Year	Predicted Prehunt Population (year J)			Total	Predicted Posthunt Population (year J)			Total	Predicted adult End-of-bio-year Pop (year J)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	10486	11034	19308	40829	10184	7635	17034	35053	9767	18591	28357			48000	
1994	11480	9571	18219	39271	11454	8023	18004	37481	10451	20050	30501			48000	
1995	12022	10242	19649	41914	11974	8476	19285	39734	10995	21386	32382			48000	
1996	16236	10776	20959	47970	16146	8265	19875	44286	11798	22953	34751			48000	
1997	16425	11562	22494	50481	16219	9269	21264	46752	12758	24256	37014			48000	
1998	17208	12503	23771	53481	16966	9397	21839	48202	13006	24937	37943			48000	
1999	18651	12746	24438	55835	18239	9546	22114	49899	13424	25454	38877			48000	
2000	14221	13155	24944	52321	13844	9363	22203	45411	12096	24398	36494			48000	
2001	14808	11855	23910	50572	14657	9385	22752	46794	12472	25293	37765			48000	
2002	15255	12223	24787	52264	15021	9509	23162	47693	12646	25724	38370			48000	
2003	15039	12393	25210	52641	14862	9714	23466	48042	12817	25979	38796			48000	
2004	18842	12561	25460	56863	18579	9872	23761	52213	13893	27190	41083			48000	
2005	18320	13615	26646	58581	18162	11143	24905	54210	15039	28197	43235			48000	
2006	18190	14738	27633	60560	17964	12137	25626	55728	15909	28798	44707	48244	7423	48000	
2007	18977	15591	28222	62790	18727	12749	26144	57620	16664	29475	46139			48000	
2008	18443	16331	28885	63660	18074	12987	25978	57039	16659	29063	45722			48000	
2009	16190	16326	28482	60998	15874	12762	25128	53764	15883	27676	43558			48000	
2010	17096	15565	27122	59783	16779	12287	23895	52961	9076	16203	25279	26991	5038	48000	
2011	9892	8894	15879	34666	9675	5894	13506	29075	8505	15921	24426			48000	
2012	9842	8335	15603	33779	9709	5894	13910	29512	8088	15862	23950	31550	7438	48000	
2013	9758	7926	15545	33229	9540	5611	14066	29218	7982	15892	23874			48000	
2014	11472	7823	15574	34869	11275	5808	14198	31280	8357	16358	24715			48000	
2015	10661	8190	16031	34881	10468	6210	14656	31334						48000	
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

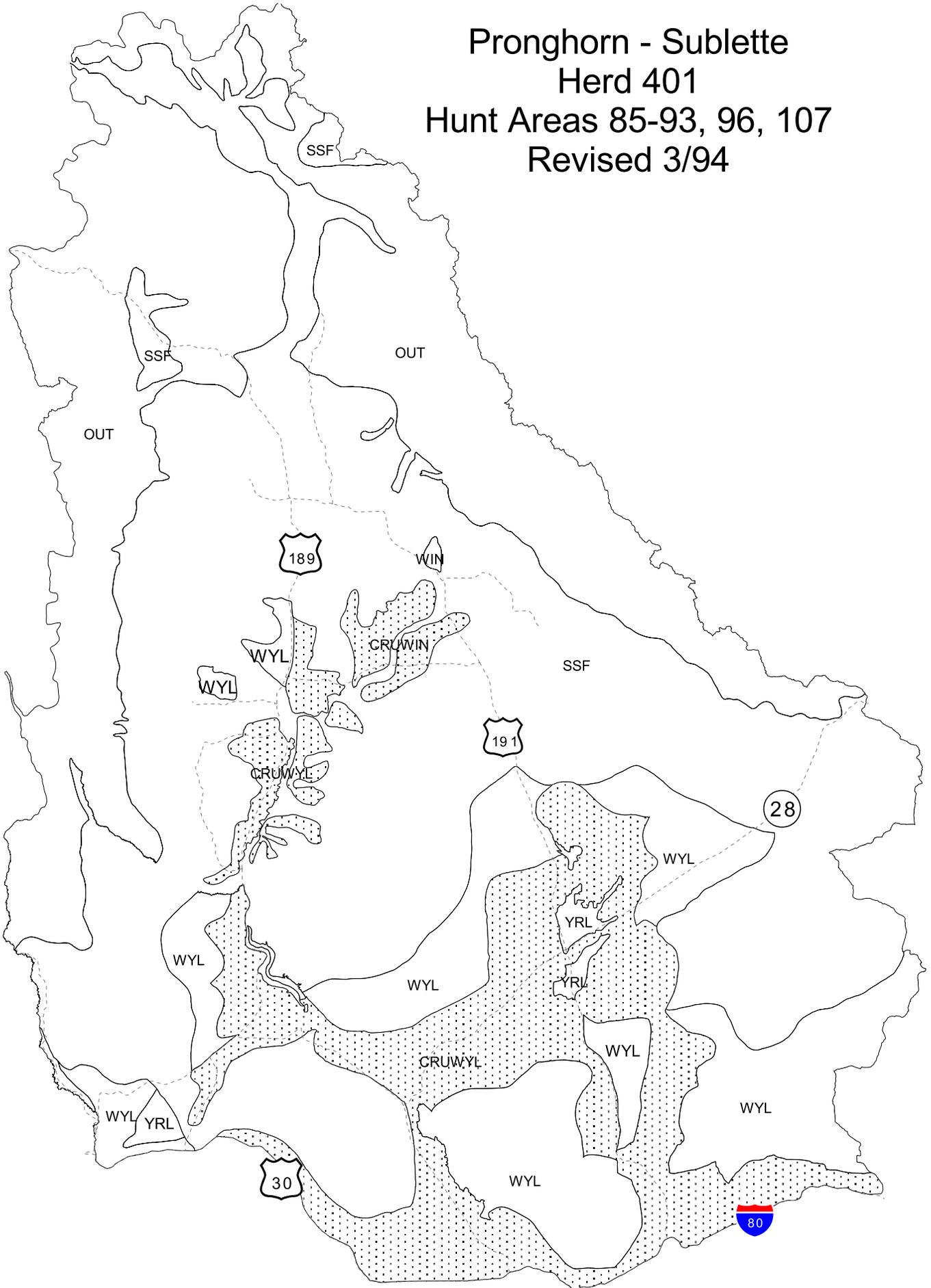
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.50			0.93		
1994	0.50			0.93		
1995	0.50			0.93		
1996	0.50			0.93		
1997	0.50			0.93		
1998	0.50			0.93		
1999	0.50			0.93		
2000	0.50			0.93		
2001	0.50			0.93		
2002	0.50			0.93		
2003	0.50			0.93	0.82	0.04
2004	0.50			0.93	0.83	0.04
2005	0.50			0.93	0.85	0.04
2006	0.50			0.93		
2007	0.50			0.93		
2008	0.50			0.93		
2009	0.50			0.93		
2010	0.35			0.60		
2011	0.50			0.93		
2012	0.50			0.93		
2013	0.50			0.93		
2014	0.50			0.93		
2015	0.50			0.93		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:		Optim cells
Juvenile Survival =		0.500
Adult Survival =		0.933
Initial Total Male Pop/10,000 =		1.103
Initial Female Pop/10,000 =		1.931

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	Juveniles	Total Harvest	Segment Harvest Rate (%)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females
1993		54.31	1.42	57.15	59.04	1.50	2908	2068	275	5251	29.0	11.8
1994		63.01	1.58	52.54	50.94	1.37	1408	195	24	1627	16.2	1.2
1995		61.19	1.61	52.13	53.06	1.46	1606	331	44	1981	17.2	1.9
1996		77.47	1.68	51.41	49.61	1.24	2282	985	82	3349	23.3	5.2
1997		73.02	1.71	51.40	52.59	1.36	2085	1118	187	3390	19.8	5.5
1998		72.39	1.62	52.60	50.28	1.26	2823	1756	220	4799	24.8	8.1
1999		76.32	1.68	52.16	56.19	1.36	2909	2113	374	5396	25.1	9.5
2000		57.01	1.28	52.74	52.22	1.21	3447	2492	343	6282	28.8	11.0
2001		61.93	1.46	49.58	54.31	1.33	2245	1053	137	3435	20.8	4.8
2002		61.54	1.41	49.31	46.45	1.16	2467	1477	212	4156	22.2	6.6
2003		59.66	1.44	49.16	47.24	1.23	2435	1585	161	4181	21.6	6.9
2004		74.01	1.74	49.34	47.50	1.28	2444	1544	239	4227	21.4	6.7
2005		68.75	1.61	51.10	56.13	1.40	2248	1583	143	3974	18.2	6.5
2006		65.83	1.41	53.33	53.06	1.21	2364	1824	205	4393	17.6	7.3
2007		67.24	1.39	55.24	53.82	1.20	2584	1889	227	4700	18.2	7.4
2008		63.85	1.36	56.54	58.74	1.28	3040	2643	336	6019	20.5	10.1
2009		56.84	1.22	57.32	57.07	1.22	3240	3049	287	6576	21.8	11.8
2010		63.03	1.30	57.39	52.86	1.16	2960	2934	268	6202	21.1	11.9
2011		62.30	1.46	56.01	57.86	1.39	2728	2157	197	5082	33.7	14.9
2012		63.08	1.52	53.42	58.86	1.45	2219	1539	1539	3879	29.3	10.9
2013		62.77	1.43	50.99	47.54	1.19	2104	1345	1345	3647	29.2	9.5
2014		73.66	1.63	50.23	51.62	1.28	1832	1251	1251	3262	25.8	8.8
2015		66.50	1.53	51.09	52.67	1.31			1050	2920	24.2	8.6
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Pronghorn - Sublette
Herd 401
Hunt Areas 85-93, 96, 107
Revised 3/94



2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR411 - UINTA-CEDAR MOUNTAIN

HUNT AREAS: 95, 99

PREPARED BY: JEFF SHORT

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	10,797	8,965	9,684
Harvest:	885	841	845
Hunters:	927	925	925
Hunter Success:	95%	91%	91 %
Active Licenses:	1,010	1,004	1,000
Active License Success:	88%	84%	84 %
Recreation Days:	3,576	3,793	3,700
Days Per Animal:	4.0	4.5	4.4
Males per 100 Females	62	55	
Juveniles per 100 Females	54	62	

Population Objective (± 20%) : 10000 (8000 - 12000)

Management Strategy: Recreational

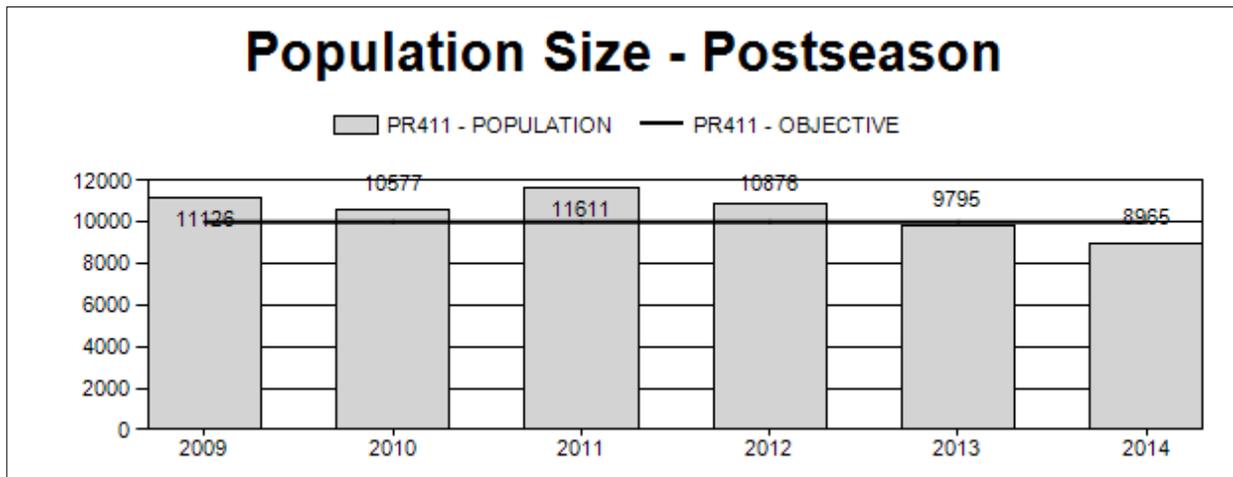
Percent population is above (+) or below (-) objective: -10.4%

Number of years population has been + or - objective in recent trend: 2

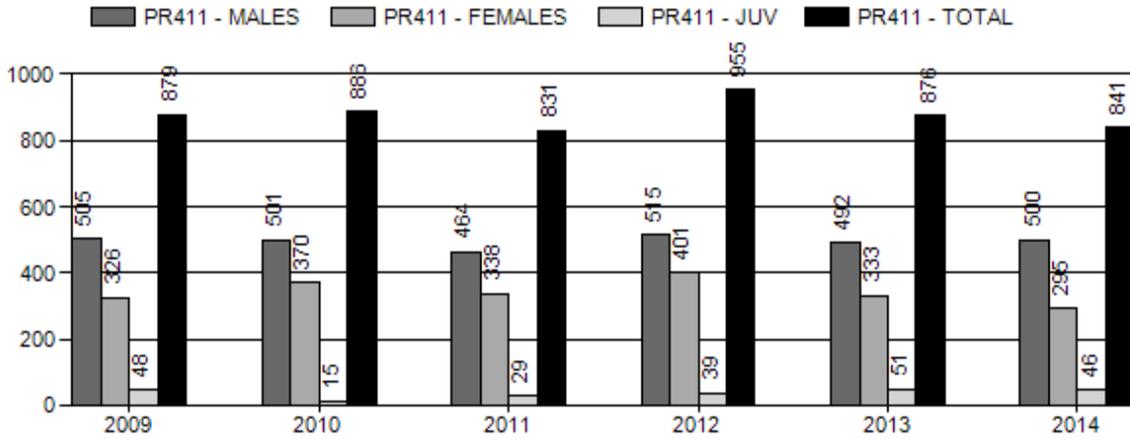
Model Date: 02/27/2015

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

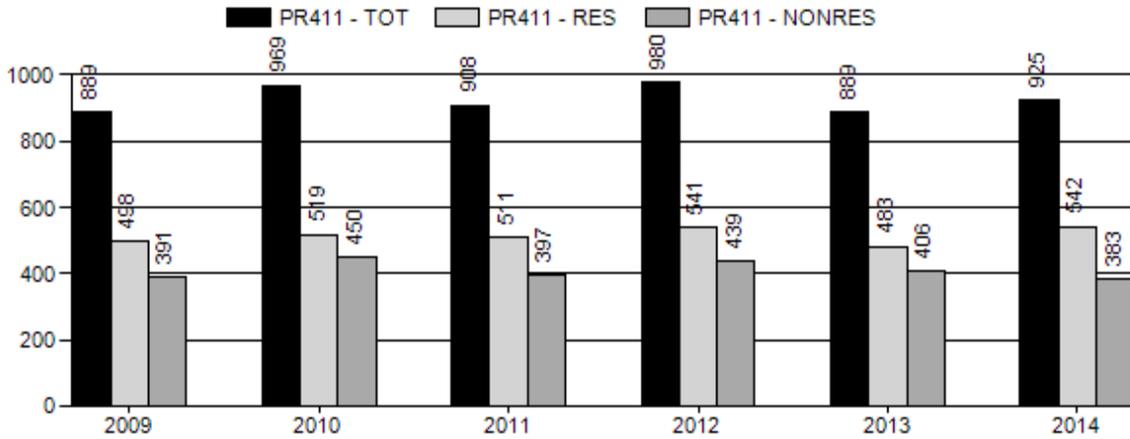
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	7.1%	6.8%
Males ≥ 1 year old:	21.8%	19.3%
Juveniles (< 1 year old):	1.6%	1.6%
Total:	8.5%	8.0%
Proposed change in post-season population:	-1.3%	8.0%



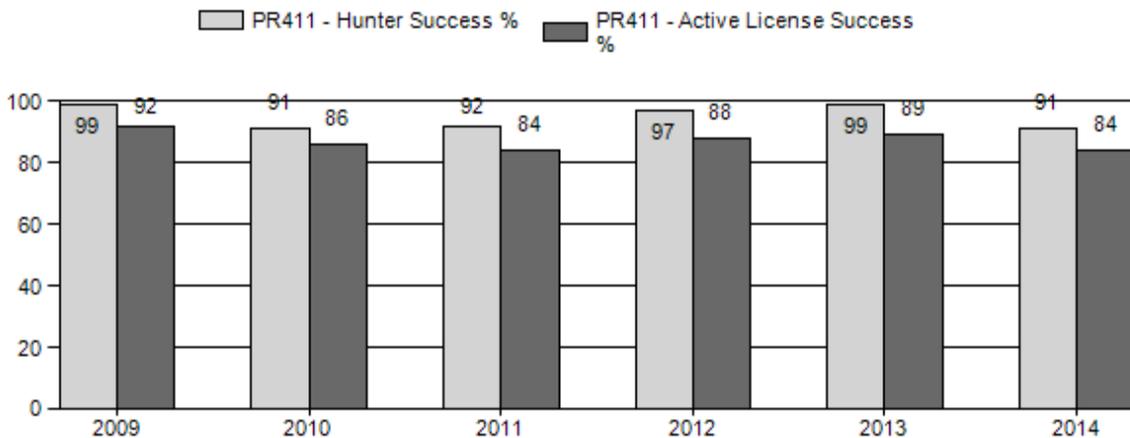
Harvest



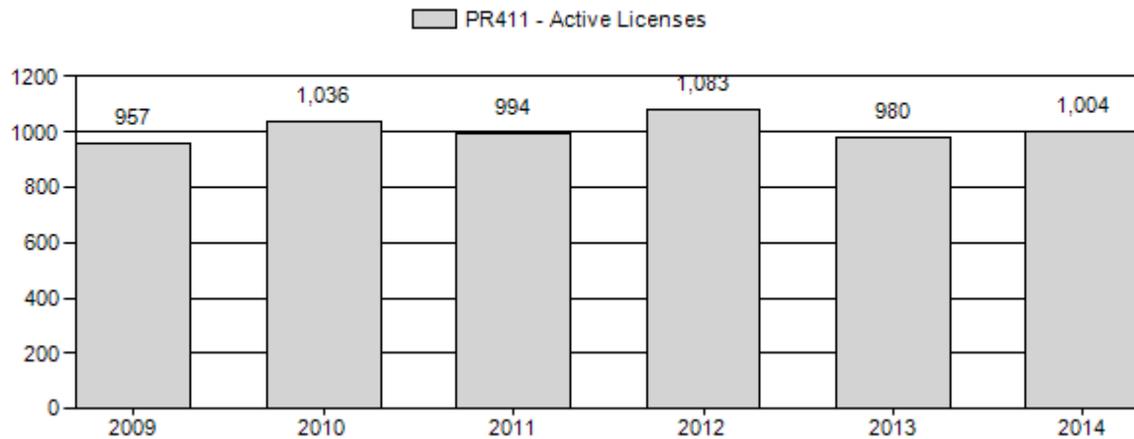
Number of Hunters



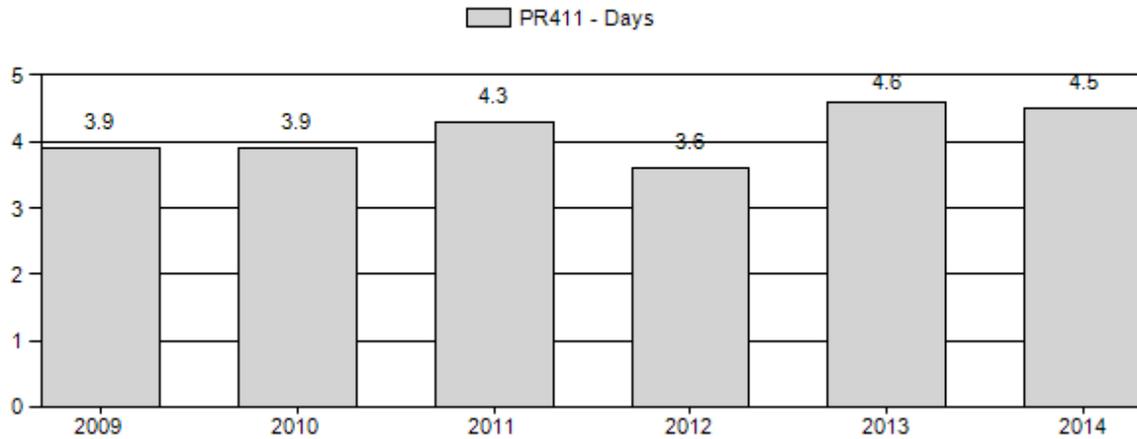
Harvest Success



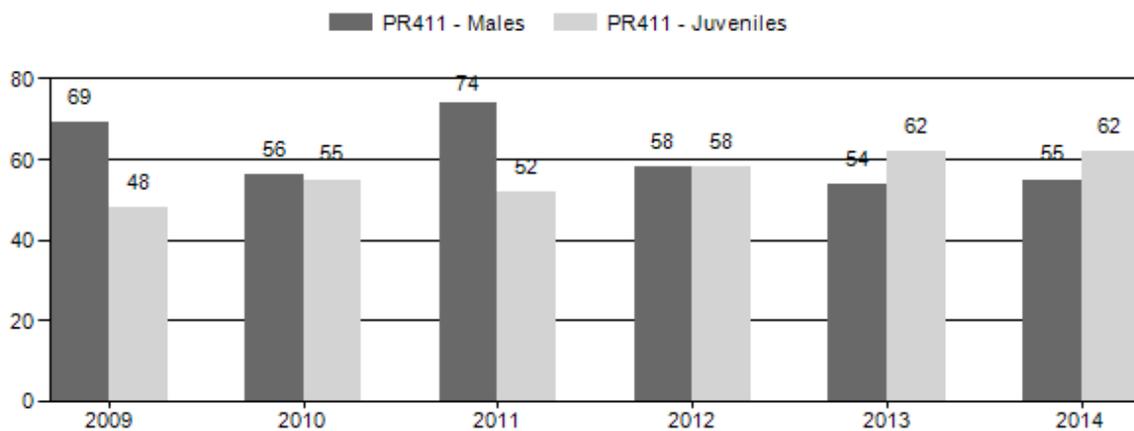
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR411 - UINTA-CEDAR MOUNTAIN

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	12,093	191	542	733	32%	1,060	46%	511	22%	2,304	0	18	51	69	± 5	48	± 4	28
2010	11,551	151	525	676	26%	1,213	47%	668	26%	2,557	0	12	43	56	± 4	55	± 4	35
2011	12,525	120	317	437	33%	589	44%	309	23%	1,335	0	20	54	74	± 7	52	± 6	30
2012	11,916	88	378	466	27%	799	46%	460	27%	1,725	0	11	47	58	± 5	58	± 5	36
2013	10,759	80	210	290	25%	536	46%	332	29%	1,158	0	15	39	54	± 6	62	± 7	40
2014	9,891	152	374	526	25%	960	46%	598	29%	2,084	0	16	39	55	± 4	62	± 5	40

2015 HUNTING SEASONS

SPECIES: Pronghorn

HERD UNIT: Uinta-Cedar Mountain (411)

HUNT AREAS: 95, 99

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
95	1	Sept. 10	Oct. 31	325	Limited quota	Any antelope
	7	Aug 15	Oct. 31	150	Limited quota	Doe or fawn valid on irrigated lands
99	1	Sept. 10	Oct. 31	225	Limited quota	Any antelope
	6	Sept. 10	Oct. 31	300	Limited quota	Doe or fawn
	7	Sept. 10	Oct. 31	150	Limited quota	Doe or fawn valid north and west of Wyoming Highway 410 and west of Uinta County Road 271
	0	Sept. 1	Oct. 31	50		Limited quota licenses; any antelope, muzzle-loading firearms only
95, 99	Archery	Aug. 15	Sept. 9			Refer to Section 3 of this chapter

Hunt Area	License Type	Quota change from 2014
95	7	+75
99	6	-100
99	7	+100
Herd Unit Total	6	-100
	7	+175

Management Evaluation

Current Postseason Population Management Objective: 10,000

Management Strategy: Recreational

2014 Postseason Population Estimate: ~8,965

2015 Proposed Postseason Population Estimate: ~9,684

Herd Unit Issues

The two hunt areas in this herd are very different in several characteristics. Hunt Area 95 is mostly public land, more xeric, and has much lower fawn ratios. Hunt Area 99 has much better conditions for fawn production and survival. Hunt Area 99 has much more private land where the majority of HA 95 is BLM land.

Throughout the herd unit there is a low tolerance for the presence of pronghorn on some of the irrigated land holdings. Conflict with agriculture producers can be an issue for this herd. Damage complaints mostly occur on irrigated lands during the summer and early fall. However, irrigated lands are uncommon relative to native ranges. Significant efforts have been made to direct harvest toward those problems. Perceived reduction in livestock forage due to pronghorn foraging is an issue that can be brought up. However, dietary overlap and pronghorn impacts are negligible in native rangelands.

Energy development on crucial habitat is a looming issue for this herd. Development is present but has yet to impact habitats on a large scale. Wyoming Highway 414 has created a significant movement barrier between the two hunt areas in this herd unit.

Weather

Weather during 2014 and into 2015 was highly variable. In the early part of 2014 the winter was very mild and dry. A moist spring and summer followed. In late August and into September precipitation continued. The winter of 2014-2015 has been very mild to this point. The winters of 2011/12, 2012/13 and 2013/14 were also mild with low snowpack resulting in good over winter survival. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production. Fawn survival suffered from the extremely dry conditions. Conditions were better at the higher elevations in hunt area 99. Pronghorn distribution was greatly affected by the drought during those times.

Habitat

Habitat data has been inconsistently collected in this herd unit and has been absent in the recent past.

Field Data

The 2014 post-season population estimate was about 8,965 with limited growth since 2007. The last line transect survey was conducted in this herd unit in June 2009. That survey resulted in an estimated population of 10,997 pronghorn for the end of bio year 2008. Survey variance was extremely high for this survey and a new survey design needs to be used to survey this herd in the future. A new line transect survey is scheduled to be flown in 2015.

Harvest Data

In 2012 in Area 99 we added a type 7 hunt with 50 permits to target specific depredation problems west of Mountain View. We will increase those permits to 150 for 2015 to address continual damage. Hopefully this will help to alleviate private land damage problems. Conservative seasons continue to be warranted in HA 95 due to low fawn ratios.

Doe/fawn harvest opportunity was increased every year for several years in area 99. The 2009, 2010 and 2011 season structures offered substantially increased doe/fawn harvest opportunity to try to control growth of that part of the herd. Those seasons allowed significant doe/fawn harvest with large increases in permits. These hunts have had good success rates. This management framework has held this population near objective. We are continuing this strategy to further reduce damage complaints and keep the herd near objective. For 2015 we will transfer

100 type 6 licenses to type 7 licenses to target antelope on private lands and relax pressure on antelope in the eastern portion of the hunt area that have been harvested very heavily for many years.

Population

The TSJ,CA model was selected due to the low Relative AICc score, its good fit with the data and the population estimate appears to be reasonable. The CJ,CA model scored slightly better but it did not fit the data as well as the TSJ,CA model. The TSJ,CA model fits very well with the variable fawn survival data common in the high elevation winter ranges in the herd unit.

In the future it will be imperative that we get a reliable population estimate periodically through line transect surveys to check the status of the herd and anchor the model. With this, it is likely we can provide a good population model and track the trend of this population. Without this anchor point, it will be unclear if our current harvest levels can be sustained or if we are on the right management track relative to objective.

Due to significant documented differences in density and productivity between hunt areas within this herd unit models generated for this herd should be used with some caution. However, at the current time the model appears to be performing well and with good line transect data it should be able to perform in the future. In 2012 the Department switched from POPII models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

Currently the model is estimating we have around 8,965 pronghorn in the herd. The model estimates a fairly stable trend since 2007. This is substantiated by consistency in classification sample sizes, harvest success and field observations. The hunt area 99 portion of this herd has the potential for rapid growth as consecutive years with high fawns ratios have occurred in the past. This can result in overloaded winter ranges on difficult years. Therefore, adequate harvest has been needed to curtail growth.

Management Summary

For 2015 season setting we will maintain similar levels of harvest in the herd unit while putting more pressure on antelope using private irrigated lands. This should continue to alleviate depredation issues and keep the population fairly stable. If we attain the projected harvest of 845 animals and near normal fawn recruitment this pronghorn population should be very close to objective. The model predicts a 2015 post-season population of about 9,684. The objective and management strategy were last revised in 2014.

Model

INPUT	
Species:	Pronghorn
Biologist:	Jeff Short
Herd Unit & No.:	Uinta CM PR411
Model date:	02/27/15

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	105	114	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	105	124	<input type="checkbox"/> SCJ,SCA IV	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	41	130	<input checked="" type="checkbox"/> TSJ,CA Model	

Population Estimates from Top Model															
Year	Predicted Prehunt Population (year)			Total	Predicted Posthunt Population (year /)			Total	Predicted adult End-of-bio-year Pop (year)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	1423	2458	4838	8720	1264	1639	4057	6960	1994	4218	6212	7347	1837		7000
1994	1838	1954	4134	7926	1813	1585	3953	7351	1799	3993	5793	5957	1489		10000
1995	1611	1763	3913	7288	1589	1479	3795	6862	1853	3997	5851				10000
1996	2377	1816	3917	8111	2362	1530	3825	7718	2107	4234	6341	6476	1619		10000
1997	1981	2065	4149	8195	1935	1679	3950	7564	1929	4033	5962				10000
1998	2162	1890	3953	8005	2157	1486	3775	7417	1762	3886	5648	4802	1201		10000
1999	2327	1727	3809	7862	2301	1354	3573	7228	1967	4019	5986				10000
2000	2047	1928	3938	7913	2018	1522	3757	7296	1759	3834	5593	7877	1969		10000
2001	2095	1723	3757	7575	2023	1375	3447	6845	1967	3874	5840				10000
2002	2010	1927	3796	7733	1981	1478	3552	7011	2021	3946	5987	6320	1580		10000
2003	2088	1980	3867	7935	2064	1509	3534	7106	1751	3624	5375				10000
2004	2881	1716	3552	8149	2870	1238	3461	7569	1671	3751	5422	4524	1131		10000
2005	2517	1637	3676	7830	2494	1212	3608	7313	2213	4450	6663				10000
2006	2317	2169	4361	8847	2297	1729	4241	8266	2596	4936	7532				10000
2007	3084	2544	4837	10465	3028	2078	4599	9705	3248	5587	8834				10000
2008	2276	3183	5475	10934	2175	2667	5112	9954	3390	5651	9041	10997	2423		10000
2009	2670	3322	5538	11529	2617	2767	5179	10563	3002	5237	8239				10000
2010	2826	2942	5132	10900	2810	2391	4725	9926	3415	5574	8989				10000
2011	2866	3347	5462	11674	2834	2836	5090	10760	3082	5146	8228				10000
2012	2903	3021	5043	10967	2873	2456	4598	9926	2814	4850	7664				10000
2013	2944	2758	4753	10454	2888	2216	4386	9491	2572	4634	7206				10000
2014	2829	2520	4541	9891	2778	1970	4217	8965	2908	4988	7896				10000
2015	2875	2850	4888	10613	2826	2300	4558	9684							10000

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			0.90		
1994	0.42			0.90		
1995	0.65			0.90		
1996	0.61			0.90		
1997	0.45			0.90		
1998	0.40			0.90		
1999	0.65			0.90		
2000	0.40			0.90		
2001	0.73			0.90		
2002	0.71			0.90		
2003	0.40			0.90		
2004	0.40			0.90		
2005	0.90			0.90		
2006	0.90			0.90		
2007	0.90			0.90		
2008	0.90			0.90		
2009	0.40			0.90		
2010	0.89			0.90		
2011	0.40			0.90		
2012	0.40			0.90		
2013	0.40			0.90		
2014	0.80			0.90		
2015	0.75			0.90		

Parameters: Optim cells

Adult Survival = 0.900

Initial Total Male Pop/10,000 = 0.246

Initial Female Pop/10,000 = 0.484

MODEL ASSUMPTIONS

Sex Ratio (% Males) = 50%

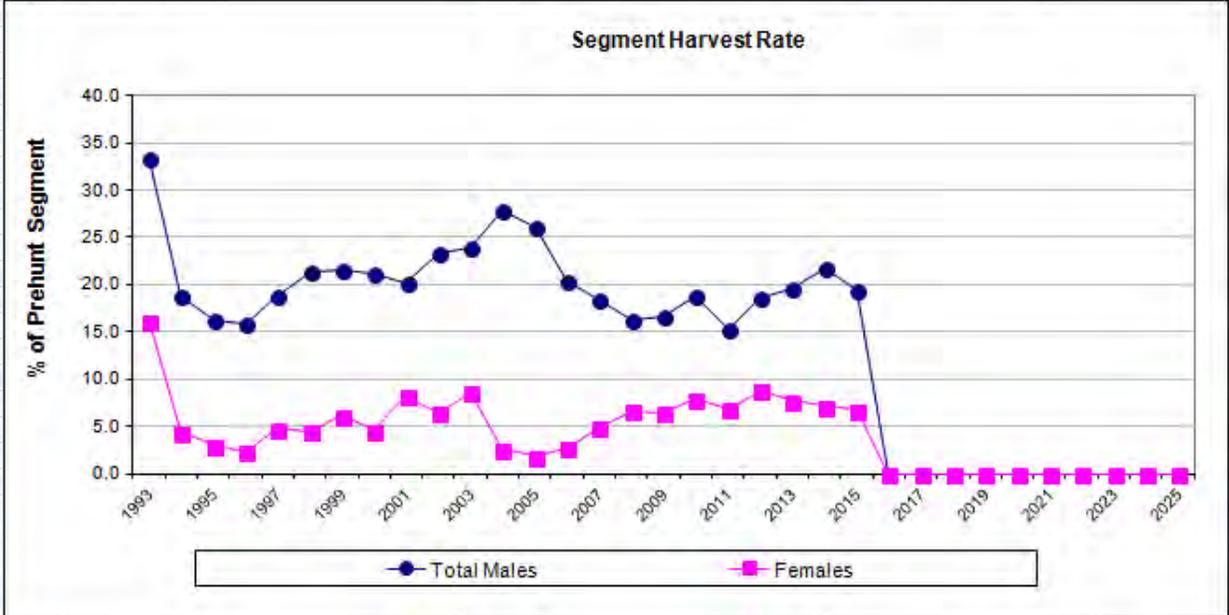
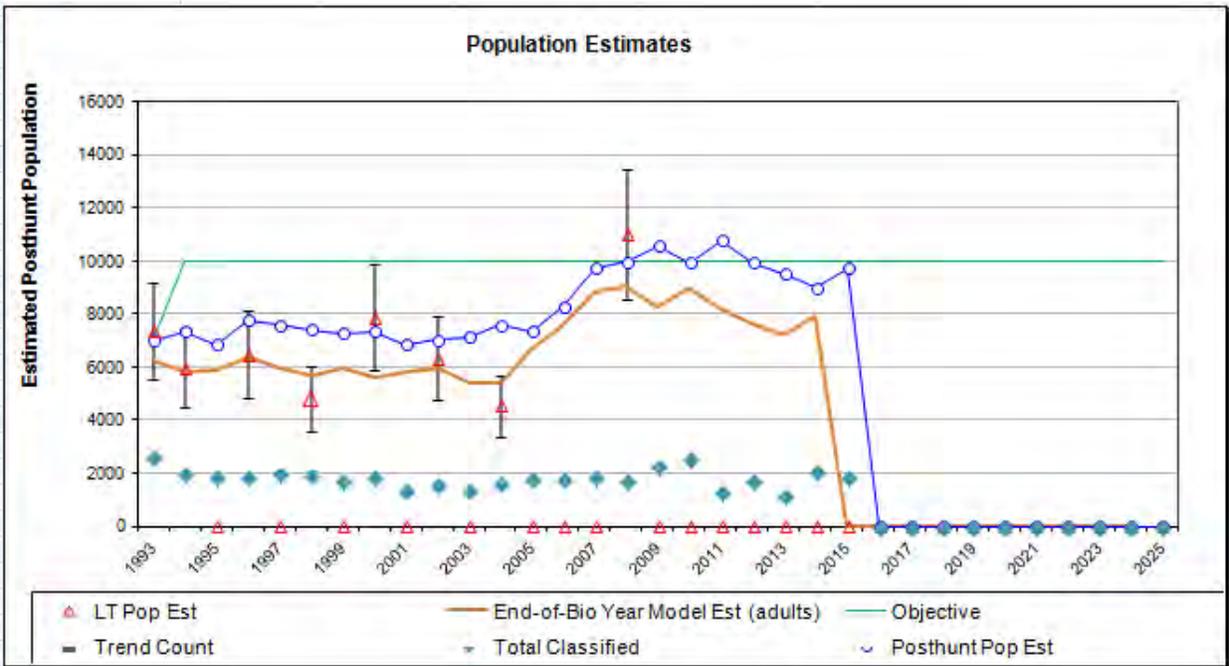
Wounding Loss (total males) = 10%

Wounding Loss (females) = 10%

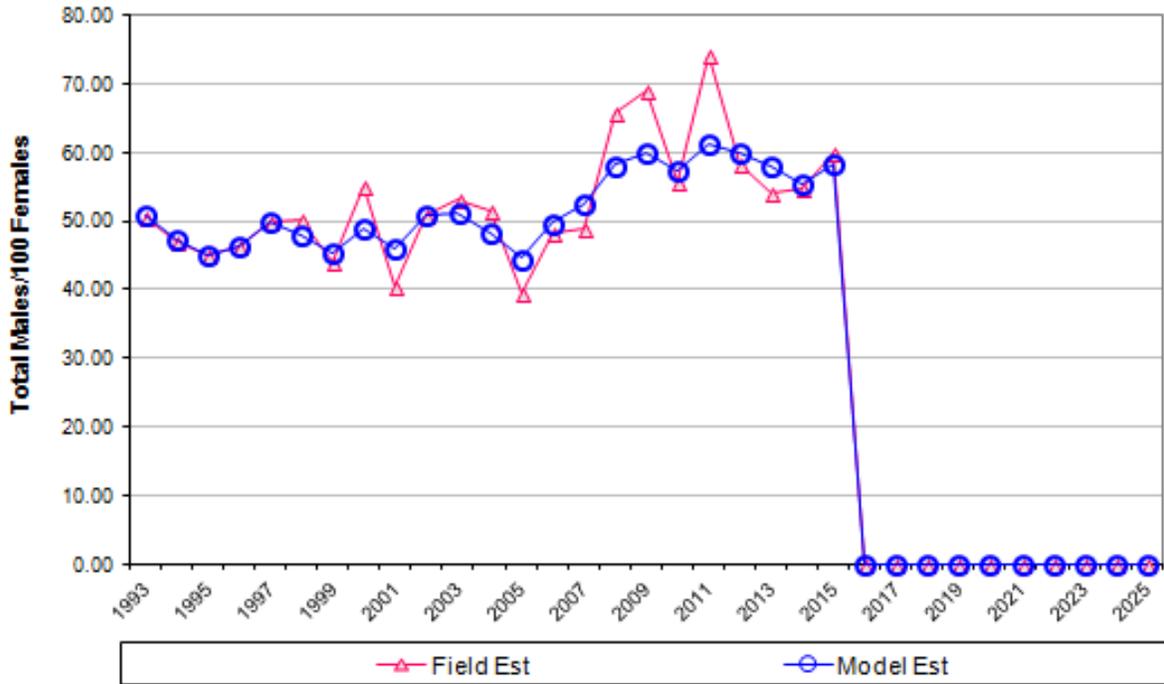
Wounding Loss (juveniles) = 10%

Over-summer adult survival = 98%

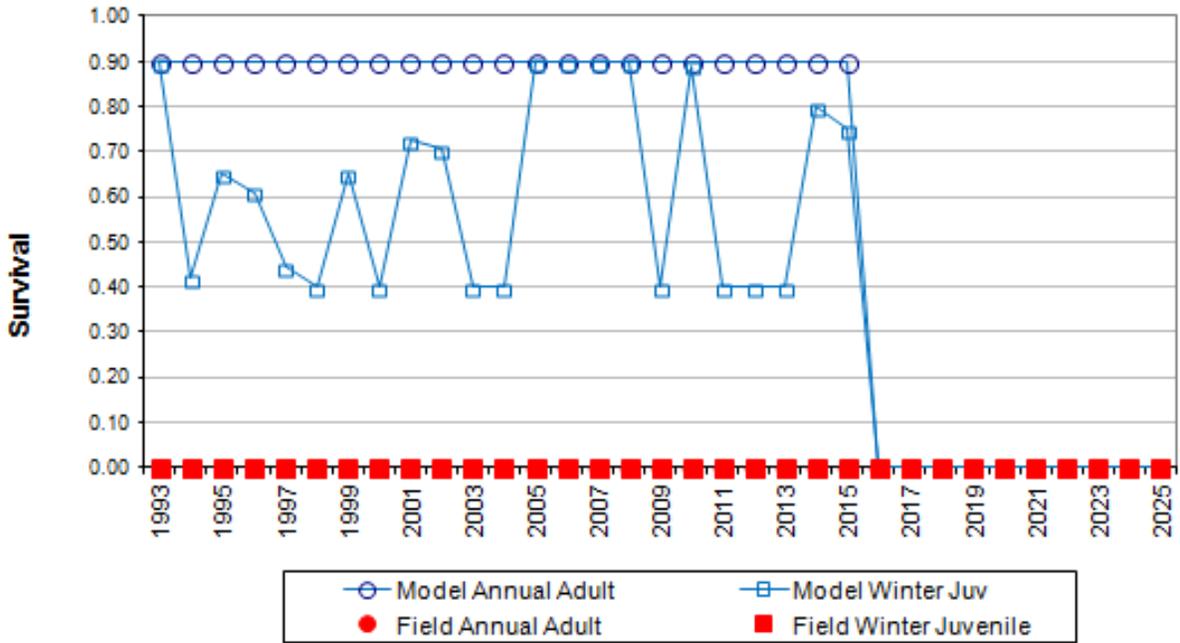
Classification Counts							Harvest						
Year	Juvenile/Female Ratio			Total Male/Female Ratio			Males	Females	Juveniles	Total Harvest	Segment Harvest Rate (%)		
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females	
1993		29.42	1.61	50.81	50.65	2.28	745	710	145	1600	33.3	16.1	
1994		44.47	2.49	47.26	47.06	2.58	335	164	23	522	18.9	4.4	
1995		41.16	2.39	45.06	44.99	2.53	259	108	20	387	16.2	3.0	
1996		60.67	3.30	46.37	46.37	2.75	260	84	13	357	15.7	2.4	
1997		47.74	2.63	49.77	49.71	2.70	351	181	42	574	18.7	4.8	
1998		54.70	2.97	47.82	50.21	2.81	367	162	5	534	21.4	4.5	
1999		61.09	3.42	45.34	43.89	2.74	339	214	23	576	21.6	6.2	
2000		51.98	2.95	48.94	55.18	3.07	369	165	27	561	21.1	4.6	
2001		55.74	3.51	45.87	40.43	2.84	317	282	65	664	20.2	8.3	
2002		52.94	3.22	50.77	50.77	3.13	408	222	26	656	23.3	6.4	
2003		53.99	3.51	51.21	52.96	3.46	429	303	22	754	23.8	8.6	
2004		81.11	4.57	48.30	51.42	3.33	434	83	10	527	27.8	2.6	
2005		68.48	3.65	44.54	39.49	2.52	387	62	21	470	26.0	1.9	
2006		53.14	3.00	49.73	48.29	2.81	400	109	19	528	20.3	2.7	
2007		63.76	3.42	52.60	48.99	2.86	424	216	51	691	18.3	4.9	
2008		41.58	2.63	58.14	65.84	3.59	469	330	92	891	16.2	6.6	
2009		48.21	2.60	59.99	69.15	3.32	505	326	48	879	16.7	6.5	
2010		55.07	2.65	57.32	55.73	2.67	501	370	15	886	18.7	7.9	
2011		52.46	3.69	61.27	74.19	4.68	464	338	29	831	15.3	6.8	
2012		57.57	3.37	59.89	58.32	3.40	513	405	28	946	18.7	8.8	
2013		61.94	4.33	58.02	54.10	3.94	492	333	51	876	19.6	7.7	
2014		62.29	3.25	55.50	54.79	2.97	500	295	46	841	21.8	7.1	
2015		58.82	3.32	58.30	60.00	3.36			300	845	19.3	6.8	
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													



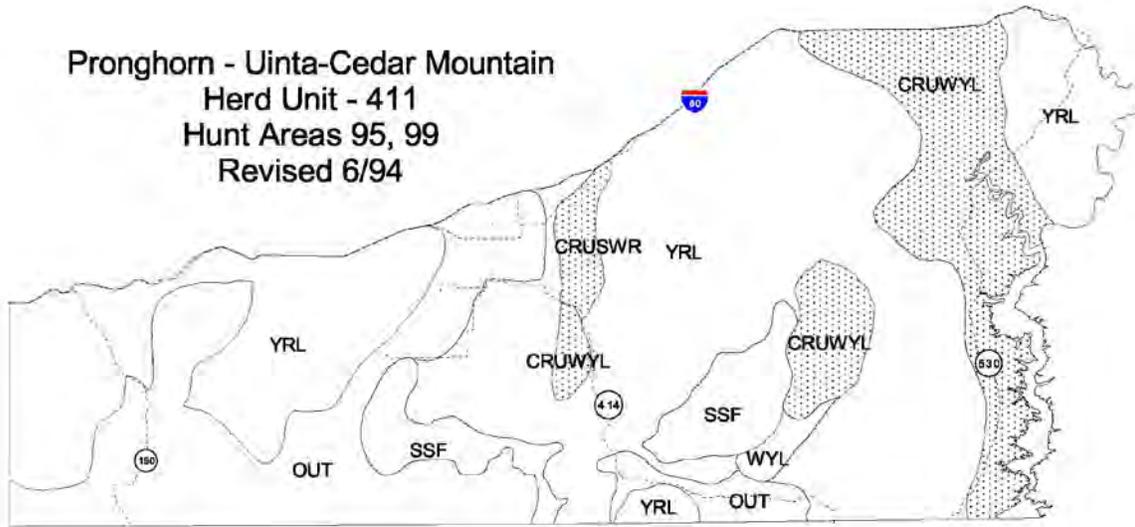
Model vs Field Posthunt Total Male/Female Ratios



Model vs Field Survival Rates



Pronghorn - Uinta-Cedar Mountain
Herd Unit - 411
Hunt Areas 95, 99
Revised 6/94



2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR412 - SOUTH ROCK SPRINGS

HUNT AREAS: 59, 112

PREPARED BY: PATRICK
BURKE

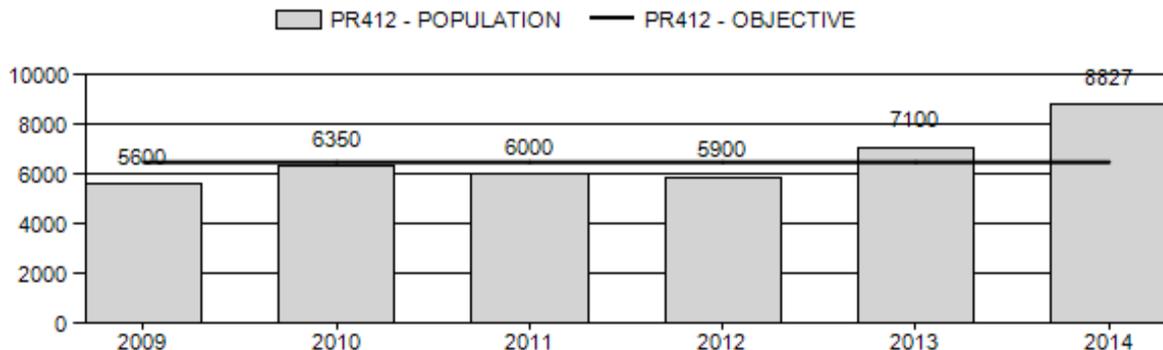
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	6,190	8,827	8,899
Harvest:	373	284	285
Hunters:	404	328	350
Hunter Success:	92%	87%	81%
Active Licenses:	424	328	350
Active License Success:	88%	87%	81%
Recreation Days:	1,426	894	1,000
Days Per Animal:	3.8	3.1	3.5
Males per 100 Females	46	47	
Juveniles per 100 Females	47	66	

Population Objective ($\pm 20\%$): 6500 (5200 - 7800)
 Management Strategy: Recreational
 Percent population is above (+) or below (-) objective: 36%
 Number of years population has been + or - objective in recent trend: 0
 Model Date: 02/11/2015

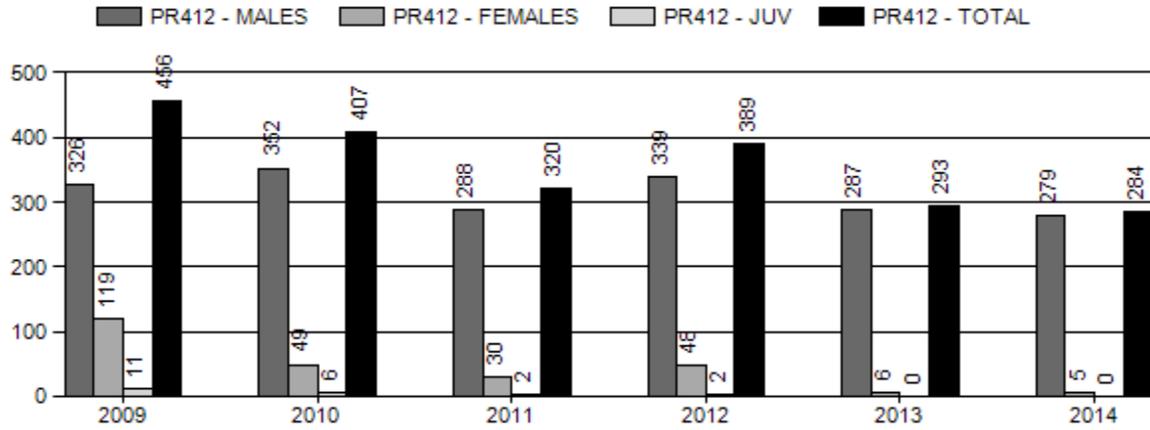
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	.1%	.1%
Males ≥ 1 year old:	20%	20%
Juveniles (< 1 year old):	0%	0%
Total:	4%	4%
Proposed change in post-season population:	2.8%	0%

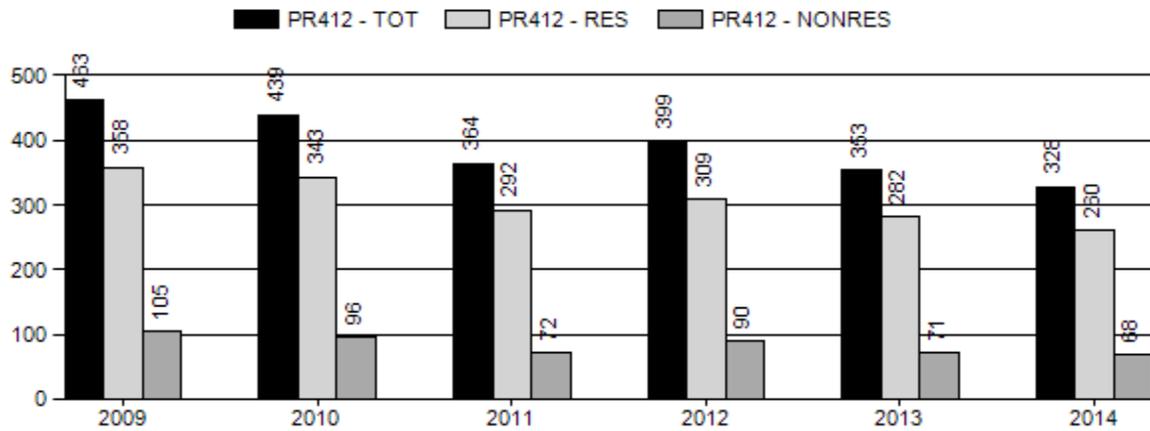
Population Size - Postseason



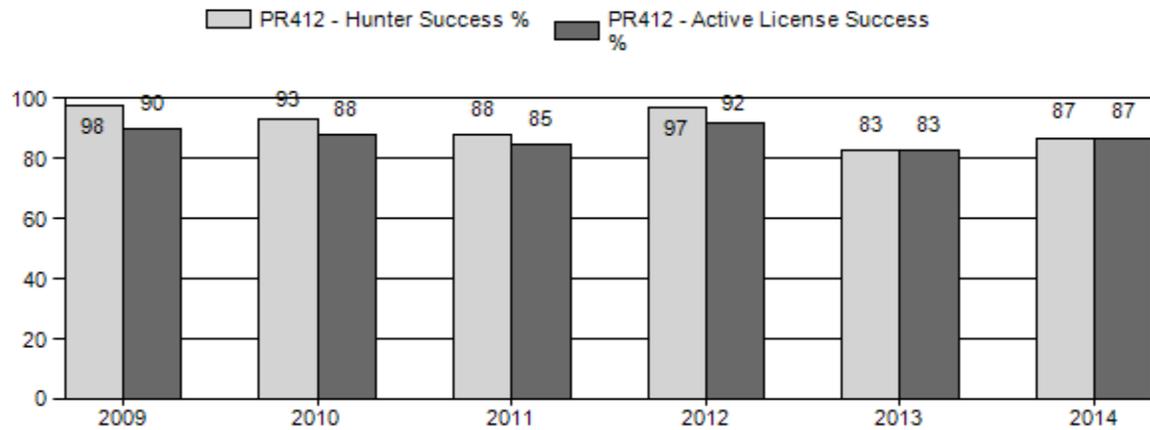
Harvest



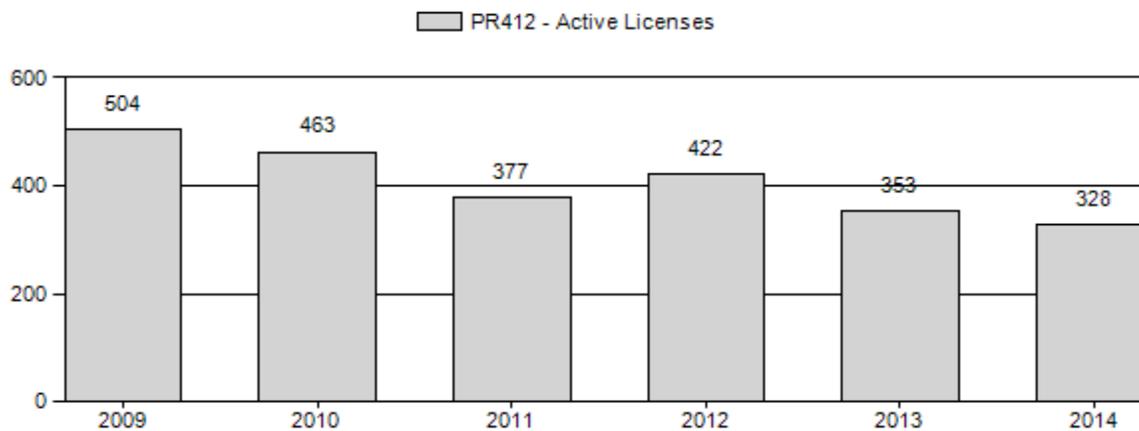
Number of Hunters



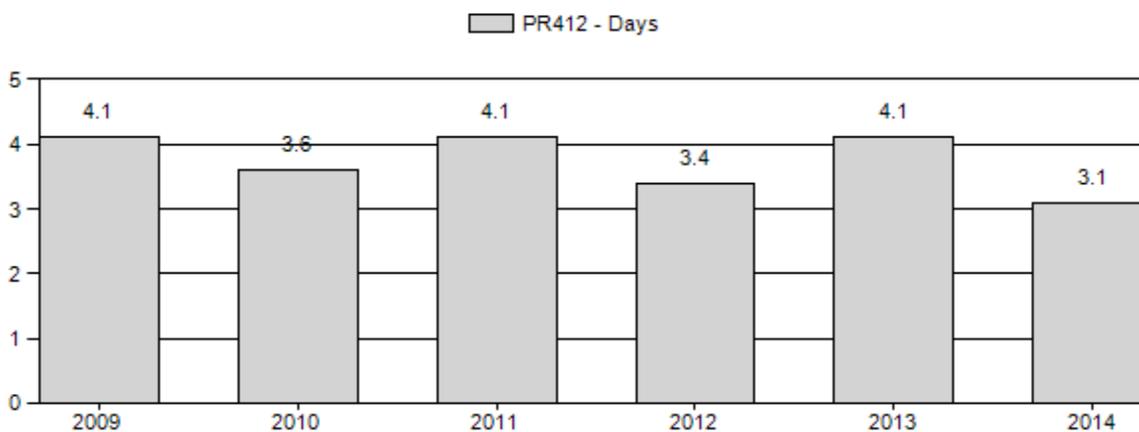
Harvest Success



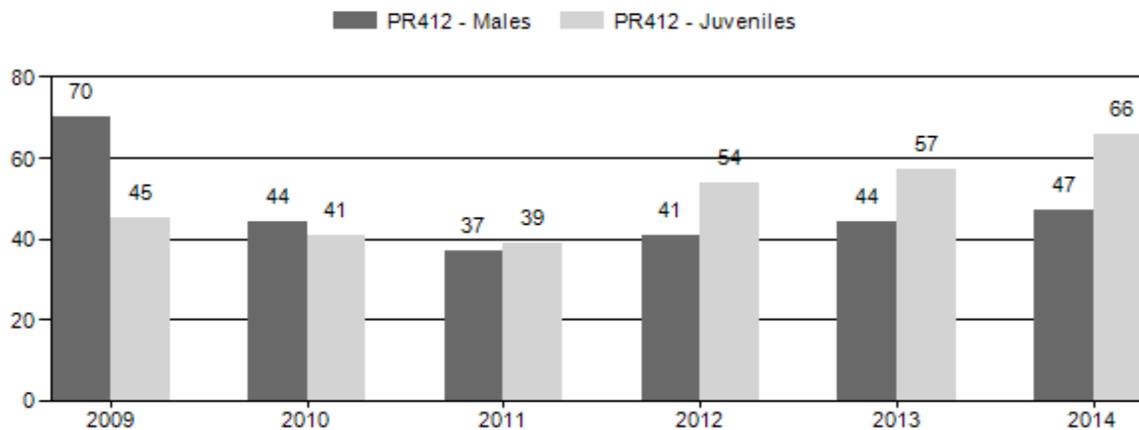
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR412 - SOUTH ROCK SPRINGS

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	6,100	134	352	486	33%	694	47%	309	21%	1,489	1,288	19	51	70	± 0	45	± 0	26
2010	6,800	113	302	415	24%	951	54%	386	22%	1,752	1,270	12	32	44	± 4	41	± 3	28
2011	6,350	114	274	388	21%	1,045	57%	404	22%	1,837	1,084	11	26	37	± 3	39	± 3	28
2012	6,300	120	268	388	21%	936	51%	505	28%	1,829	931	13	29	41	± 3	54	± 4	38
2013	7,450	119	256	375	22%	848	50%	482	28%	1,705	944	14	30	44	± 4	57	± 5	39
2014	9,139	144	195	339	22%	724	47%	480	31%	1,543	1,773	20	27	47	± 5	66	± 6	45

**2015 HUNTING SEASONS
SOUTH ROCK SPRINGS PRONGHORN HERD (PR412)**

Hunt Area	Type	SEASON DATES		Quota	Limitations
		Opens	Closes		
59	1	Sept. 20	Oct. 31	250	Limited quota; any antelope
112	1	Sept. 20	Oct. 31	100	Limited quota; any antelope
Archery :		Aug. 15	Sept. 19		Refer to license type and limitations in Section 3.

Hunt Area	Type	Quota change from 2014
Herd Unit Total		None

Management Evaluation

Current Management Objective: 6,500

Management Strategy: Recreational

2014 Postseason Population Estimate: ~8,800

2015 Proposed Postseason Population Estimate: ~8,900

The post-season population objective for the South Rock Springs pronghorn herd is 6,500 animals under recreational management. The objective for this herd was changed to its current level in 2002. The objective was reviewed in the summer of 2013, when no changes were made.

Herd Unit Issues

The population model for this herd estimates the 2014 post-season population to be a little over 8,800 pronghorn. This estimate is a significant increase from the 2013 and 2012 post-season population estimates of 7,000 and 5,900 animals respectively. This drastic increase in the model estimate does not coincide with field observations and most likely does not represent biological reality. Observations by field personnel and the hunting public suggest that the herd more likely remained stable or has decreased slightly in size over the last few years rather than increased by almost 3,000 animals in just two years. The most likely explanation for the larger population estimate is a combination of slightly increased fawn ratios along with a somewhat higher observed buck to doe ratio in the last couple of years.

Weather

The most prominent weather condition present in the South Rock Springs pronghorn herd for the last several years has been dry summer conditions with relatively mild winters. The summer of 2012 was the driest on record in Wyoming and the summer of 2013 was also very. While the summer of 2014 saw substantially better moisture in most of Wyoming, the portion of southwest Wyoming inhabited by this herd was still considered to be experiencing drought conditions by the National Weather Service. Unlike the South Rock Springs deer herd, all indications are that this pronghorn herd has dealt fairly well with these conditions. Multiple years of drought conditions have undoubtedly reduced forage quality and quantity and the severe drought conditions of 2012 and 2013 along with mild drought conditions in 2014, did result in many of the water sources in the herd unit drying up.

Habitat

No habitat transects targeting pronghorn ranges have been conducted in the South Rock Springs pronghorn herd unit. However, the dry summers of 2012 and 2013 have had a negative impact on plant growth in areas of the herd unit below 8,000 ft. where the majority of this herd winters. This lack of plant growth in the lower elevation areas of the herd unit might partially explain why significant portions of this herd have chosen to winter in areas outside of their normal winter ranges the past several winters. The dry summers may have resulted in fewer fawns dying to cold, wet conditions during the early summer and could be the cause for the slightly better fawn ratios seen in 2012 and 2013. The summer of 2014 saw better moisture than the previous two summers, but was still considered to be experiencing mild drought conditions. The amount of moisture received did appear to be enough to result in better fawn ratios than have been seen in this herd unit in many years however.

Field Data

Pre-season classifications conducted in August 2014 resulted in observed fawn to doe ratios of 66 fawns per 100 does. This observed fawn to doe ratio is the highest seen in the herd since 2004, when 66 fawns per 100 does was also seen. Pre-season classifications also resulted in observed buck ratios of 47 total bucks per 100 does for the herd unit as a whole.

Harvest Data

Harvest statistics for the 2014 hunting season were typical for this herd. Harvest success for the herd unit was 87%. Days per harvest was 3.1 days per harvest during the 2014. A total of 284 pronghorn were harvested in 2014, which is the lowest harvest level in recent years. This can be explained by fewer Type 1 licenses being offered, along with no Type 6 licenses in the herd unit.

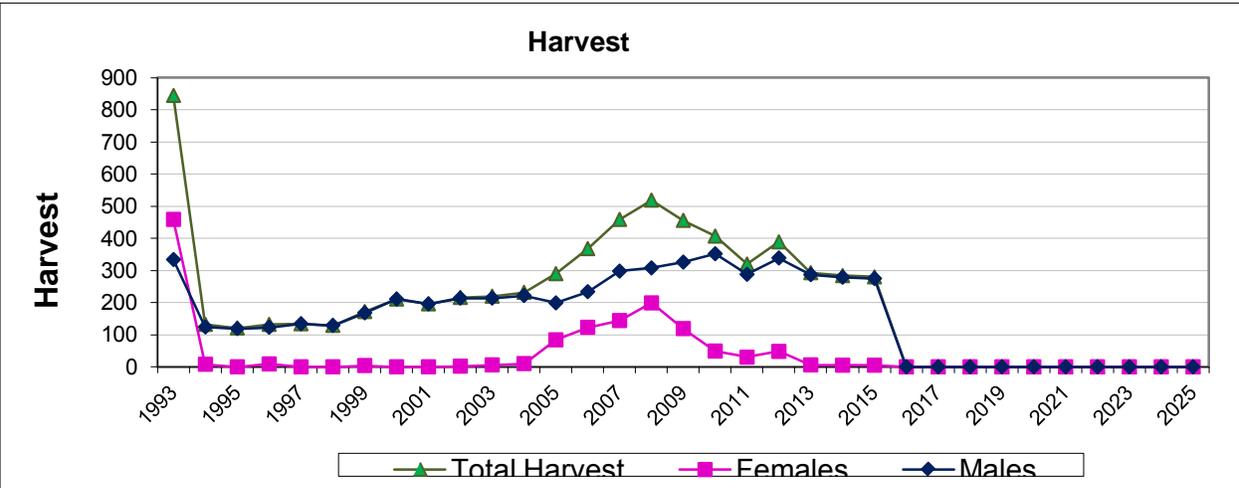
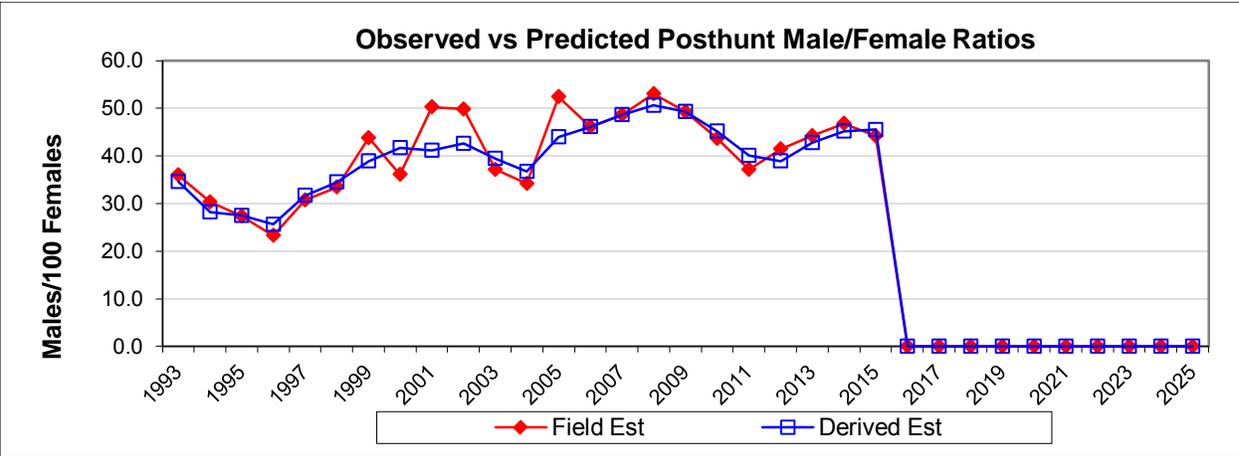
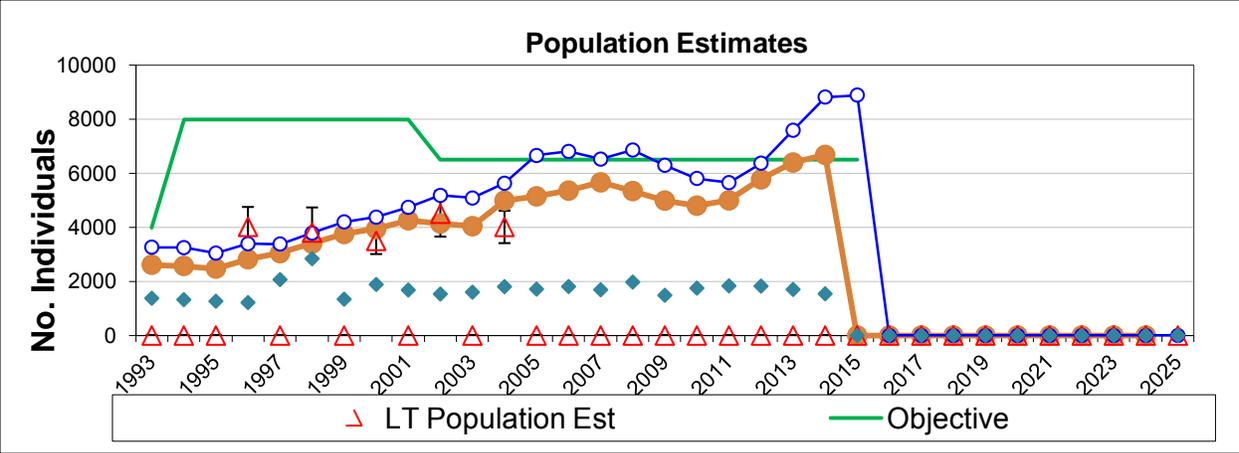
Population

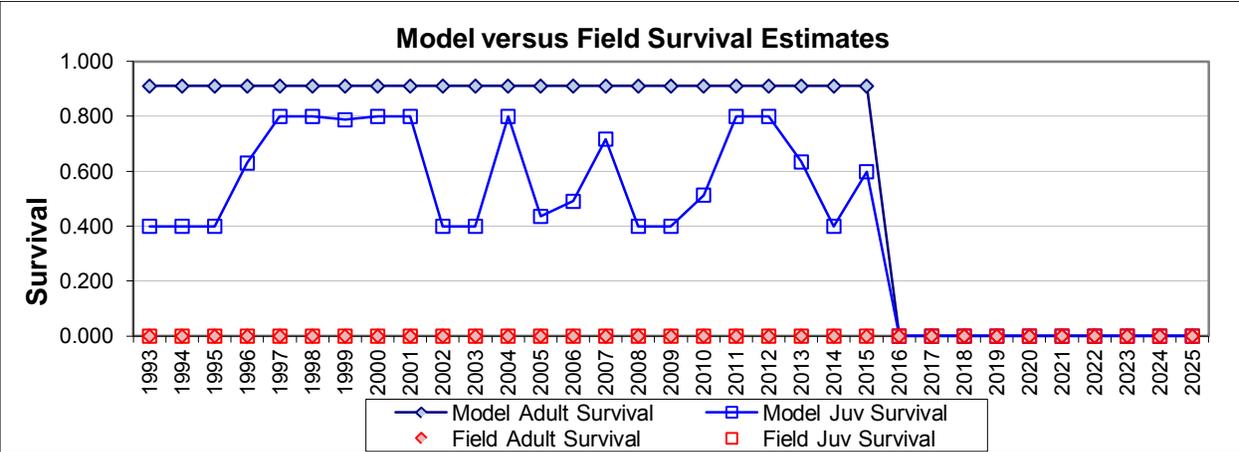
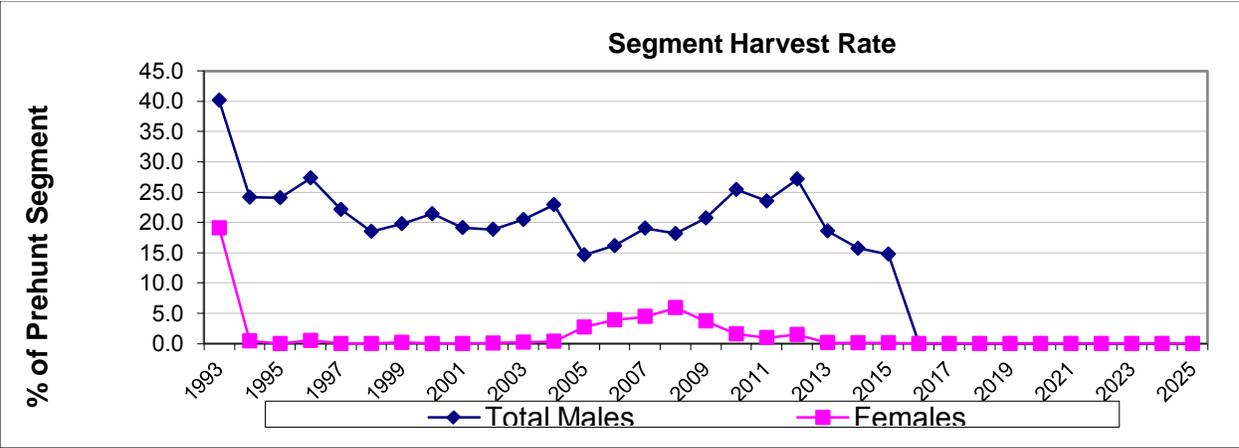
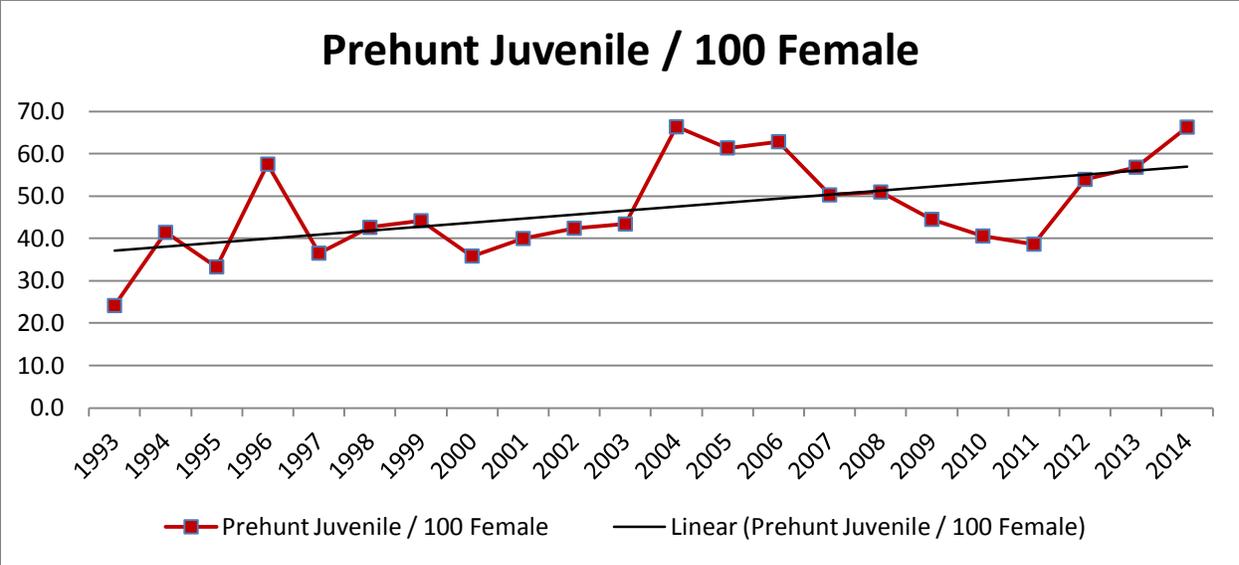
The model for this population has tracked fairly well with field observations of this herd until 2013, when the post-season population estimate moved in a direction counter to the field observations of managers and the public. The model performance in 2014 is even worse than in 2013, with the model “running away” and forecasting a simply unrealistic growth rate. The growth predicted by the model of almost 3,000 animals in just two years is simply not possible given the fawn ratios and habitat conditions in this herd unit. The unrealistic estimates given by the model in the last two years suggest that this model is no longer reliable, and should not be considered an accurate estimate of this population.

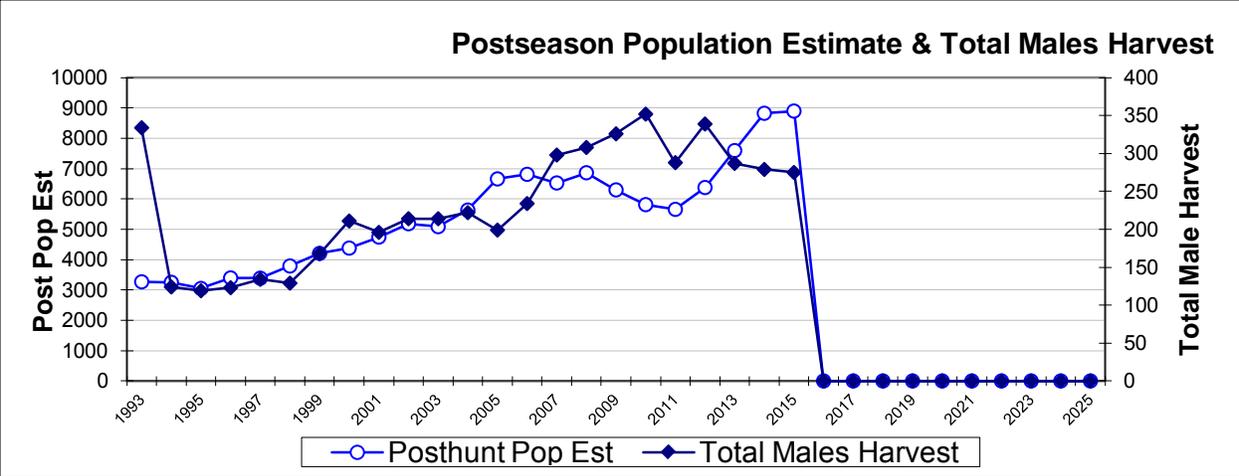
The last useable line-transect survey on this herd was conducted in 2005, and the lack of recent anchor points may partially explain why this model has allowed the population estimates for this herd to increase. A line-transect survey may be useful for estimating the size of this herd. The time-specific juvenile survival model was selected for this herd because of its relative AIC value and because that model best fit the field observations of the population and the biology of the species.

Management Summary

The proposed season for 2015 is identical to the 2014 season. The lack of reliability of the model combined with field observations of a relatively stable population suggest that the most prudent course of action would to maintain the current season structure until data suggest that a change is needed. A line transect survey is scheduled for this spring.







INPUT	
Species:	Pronghorn
Biologist:	Patrick Burke
Herd Unit & No.:	SRS PR412
Model date:	02/11/14

Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	113	122	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	112	144	<input type="checkbox"/> SCJ,SCA Model	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	49	159	<input checked="" type="checkbox"/> TSJ,CA Model	

Year	Predicted Prehunt Population (year J)			Total	Predicted Posthunt Population (year J)			Total	Predicted adult End-of-bio-year Pop (year J)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	685	956	2836	4477	628	589	2331	3548	614	2200	2814				4000
1994	894	601	2156	3651	894	465	2147	3506	596	2153	2749				8000
1995	703	584	2110	3387	700	453	2110	3263	545	2080	2625				8000
1996	1174	534	2039	3746	1174	398	2029	3601	695	2205	2901	4022	736		8000
1997	790	681	2161	3632	790	534	2161	3485	798	2307	3105				8000
1998	964	782	2261	4006	964	640	2261	3865	966	2470	3436	3812	929		8000
1999	1070	947	2420	4437	1070	762	2416	4248	1111	2648	3760				8000
2000	930	1089	2595	4615	930	857	2595	4383	1143	2763	3906	3502	487		8000
2001	1083	1120	2708	4911	1083	905	2708	4696	1251	2929	4180				8000
2002	1218	1226	2870	5314	1218	990	2868	5077	1134	2882	4017	4507	847		6500
2003	1227	1111	2825	5163	1227	876	2818	4921	1057	2864	3920				6500
2004	1863	1036	2806	5704	1863	791	2795	5449	1462	3326	4788	4020	600		6500
2005	2001	1433	3260	6694	1994	1214	3167	6375	1548	3355	4902				6500
2006	2066	1517	3287	6871	2054	1259	3152	6466	1659	3409	5068				6500
2007	1690	1625	3341	6647	1692	1298	3183	6142	1831	3580	5411				6500
2008	1788	1795	3508	7091	1775	1456	3289	6520	1661	3357	5017				6500
2009	1495	1627	3290	6382	1453	1289	3159	5880	1421	3180	4601				6500
2010	1265	1393	3117	5774	1258	1006	3063	5327	1316	3239	4555				6500
2011	1227	1290	3174	5691	1225	973	3141	5339	1305	3362	4667				6500
2012	1778	1279	3295	6351	1775	906	3242	5923	1578	3745	5322				6500
2013	2086	1546	3670	7302	2086	1230	3663	6979	1581	3863	5444				6500
2014	1886	1550	3785	7221	1886	1220	3780	6885							6500
2015															6500
2016															6500
2017															6500
2018															6500
2019															6500
2020															6500
2021															6500
2022															6500
2023															6500
2024															6500
2025															6500

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	0.57			0.90		
1997	0.80			0.90		
1998	0.80			0.90		
1999	0.79			0.90		
2000	0.80			0.90		
2001	0.80			0.90		
2002	0.40			0.90		
2003	0.44			0.90		
2004	0.80			0.90		
2005	0.45			0.90		
2006	0.51			0.90		
2007	0.80			0.90		
2008	0.40			0.90		
2009	0.40			0.90		
2010	0.67			0.90		
2011	0.80			0.90		
2012	0.80			0.90		
2013	0.47			0.90		
2014	0.40			0.90		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters: Optim cells

Adult Survival = 0.900

Initial Total Male Pop/10,000 = 0.096

Initial Female Pop/10,000 = 0.284

MODEL ASSUMPTIONS

Sex Ratio (% Males) = 50%

Wounding Loss (total males) = 10%

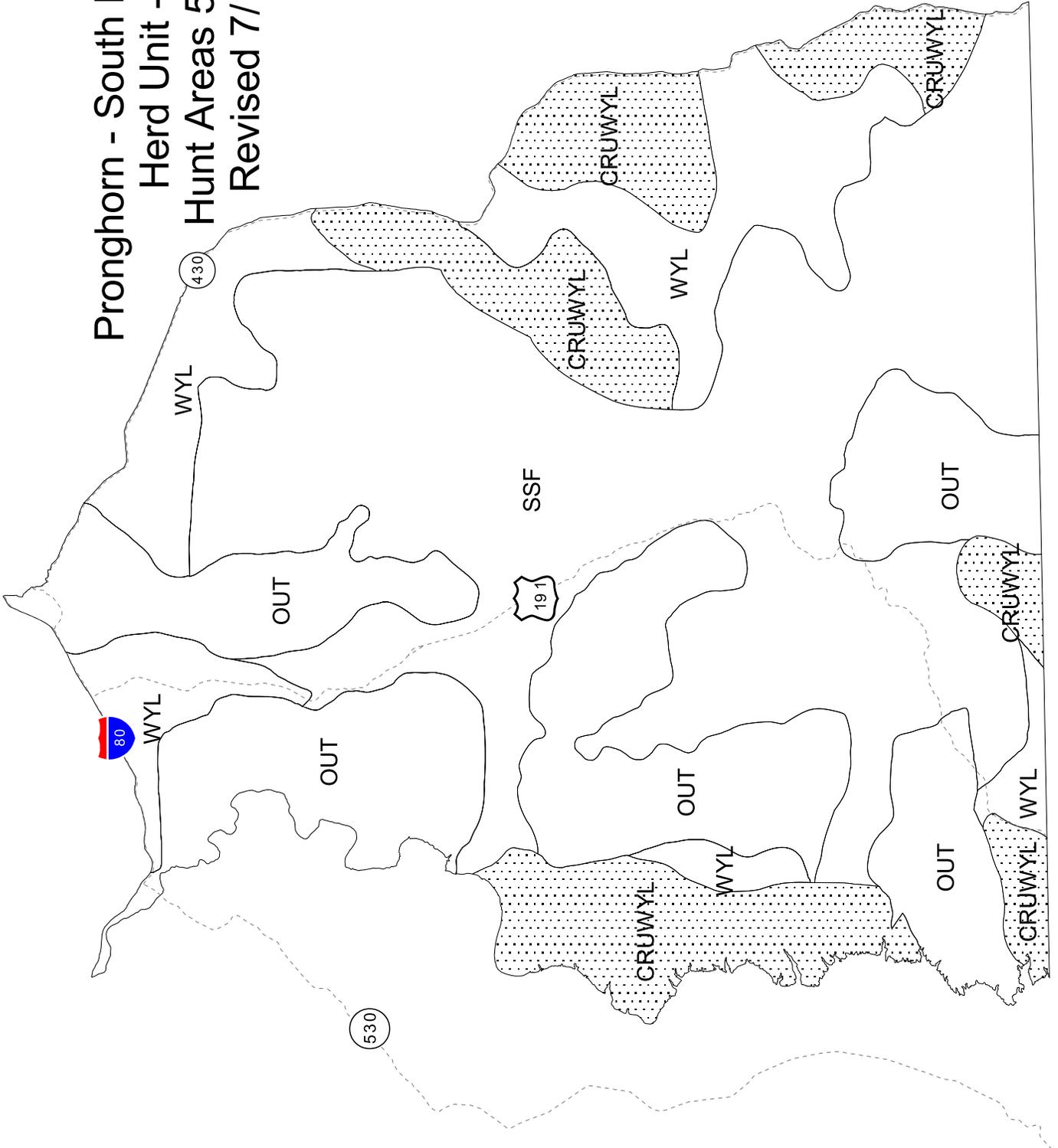
Wounding Loss (females) = 10%

Wounding Loss (juveniles) = 10%

Over-summer adult survival = 98%

Year	Classification Counts						Harvest					
	Juvenile/Female Ratio			Total Male/Female Ratio			Males	Females	Juveniles	Total Harvest	Segment Harvest Rate (%)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females
1993		24.16	1.87	33.71	36.00	2.38	334	459	52	845	38.4	17.8
1994		41.45	2.76	27.90	30.31	2.26	124	8	0	132	22.7	0.4
1995		33.29	2.37	27.66	27.34	2.10	119	0	2	121	22.4	0.0
1996		57.57	3.67	26.18	23.29	2.06	123	9	0	132	25.3	0.5
1997		36.54	2.01	31.53	30.72	1.80	134	0	0	134	21.6	0.0
1998		42.63	1.94	34.57	33.46	1.66	129	0	0	129	18.2	0.0
1999		44.20	2.99	39.13	43.78	2.97	168	4	0	172	19.5	0.2
2000		35.85	2.11	41.96	36.12	2.12	211	0	0	211	21.3	0.0
2001		40.00	2.52	41.37	50.28	2.92	196	0	0	196	19.2	0.0
2002		42.43	2.75	42.71	49.81	3.06	214	2	0	216	19.2	0.1
2003		43.42	2.65	39.35	37.12	2.39	214	6	0	220	21.2	0.2
2004		66.37	3.50	36.90	34.18	2.26	222	10	0	232	23.6	0.4
2005		61.39	3.51	43.95	52.43	3.15	199	84	7	290	15.3	2.8
2006		62.86	3.44	46.14	46.14	2.79	234	123	11	368	17.0	4.1
2007		50.29	2.98	48.65	48.65	2.92	298	144	17	459	20.2	4.7
2008		50.98	2.82	51.15	53.04	2.89	308	199	12	519	18.9	6.2
2009		44.52	3.05	49.47	49.28	3.05	326	119	11	456	22.0	4.0
2010		40.59	2.45	44.69	43.64	2.57	352	49	6	407	27.8	1.7
2011		38.66	2.26	40.63	37.13	2.21	288	30	2	320	24.6	1.0
2012		53.95	2.98	38.81	41.45	2.50	339	48	48	389	29.2	1.6
2013		56.84	3.24	42.13	44.22	2.74	287	6	6	293	20.4	0.2
2014		66.30	3.90	40.94	46.82	3.08	279	5	5	284	21.3	0.1
2015		59.03	3.37		44.17	2.78				280		
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Pronghorn - South Rock Springs
Herd Unit - 412
Hunt Areas 59, 112
Revised 7/1999



2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR414 - BITTER CREEK

HUNT AREAS: 57-58

PREPARED BY: TONY MONG

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	9,469	8,517	9,272
Harvest:	254	250	270
Hunters:	273	244	273
Hunter Success:	93%	102%	99%
Active Licenses:	278	261	278
Active License Success:	91%	96%	97%
Recreation Days:	874	756	800
Days Per Animal:	3.4	3.0	3.0
Males per 100 Females	54	55	
Juveniles per 100 Females	39	59	

Population Objective ($\pm 20\%$) : 25000 (20000 - 30000)

Management Strategy: Special

Percent population is above (+) or below (-) objective: -65.9%

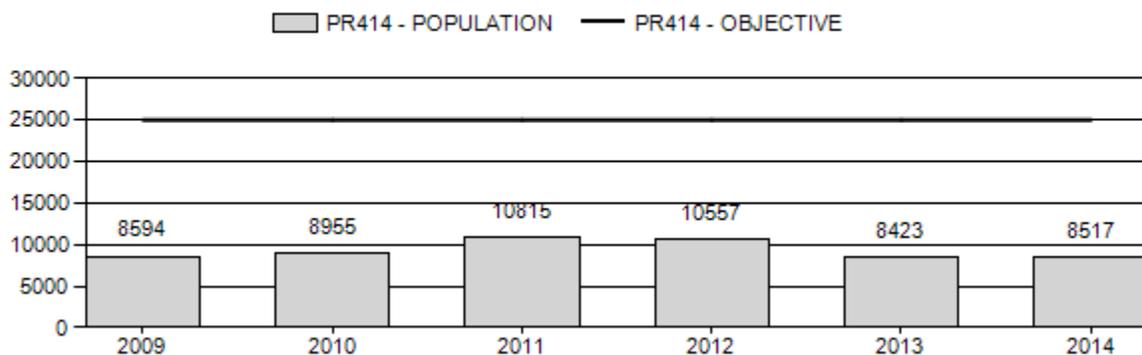
Number of years population has been + or - objective in recent trend: 20

Model Date: 03/02/2015

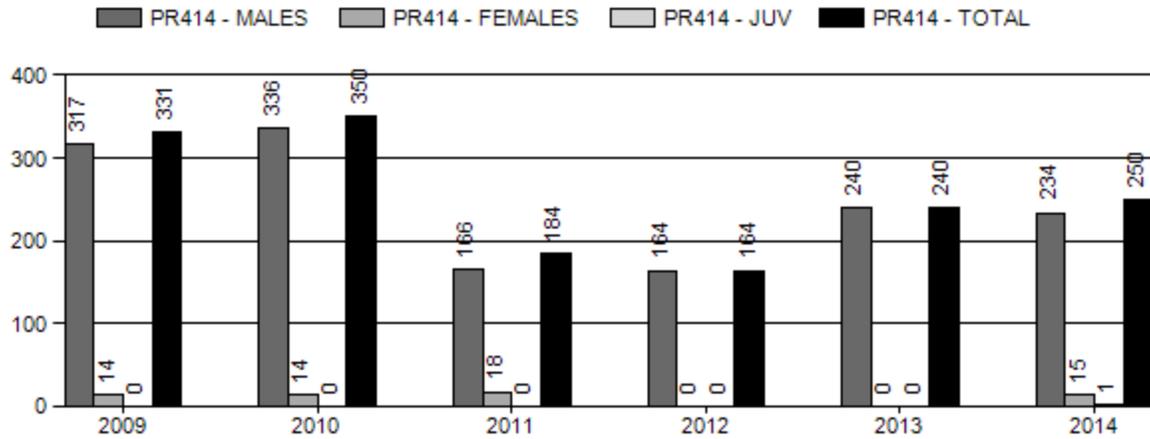
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0.4%
Males ≥ 1 year old:	6.5%	11.7%
Juveniles (< 1 year old):	0%	0%
Total:	2.0%	3%
Proposed change in post-season population:	1.0%	10%

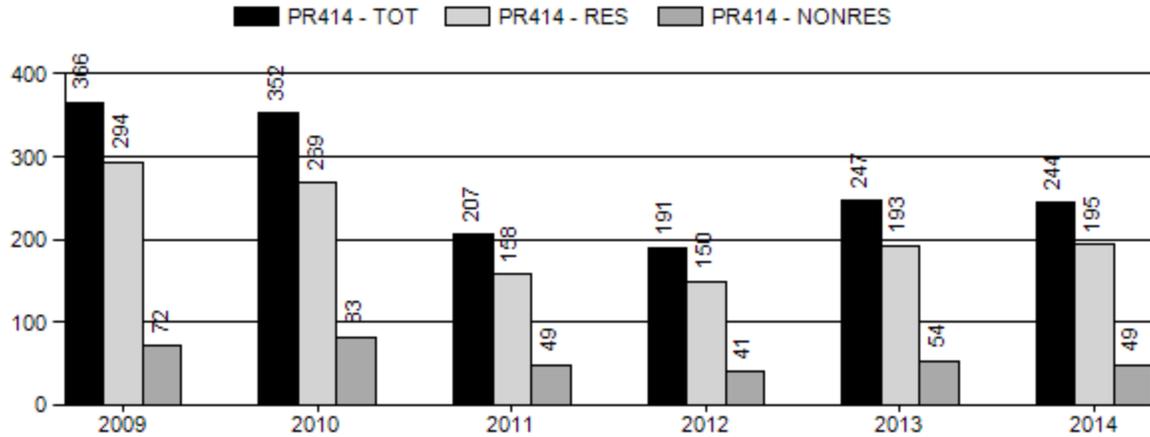
Population Size - Postseason



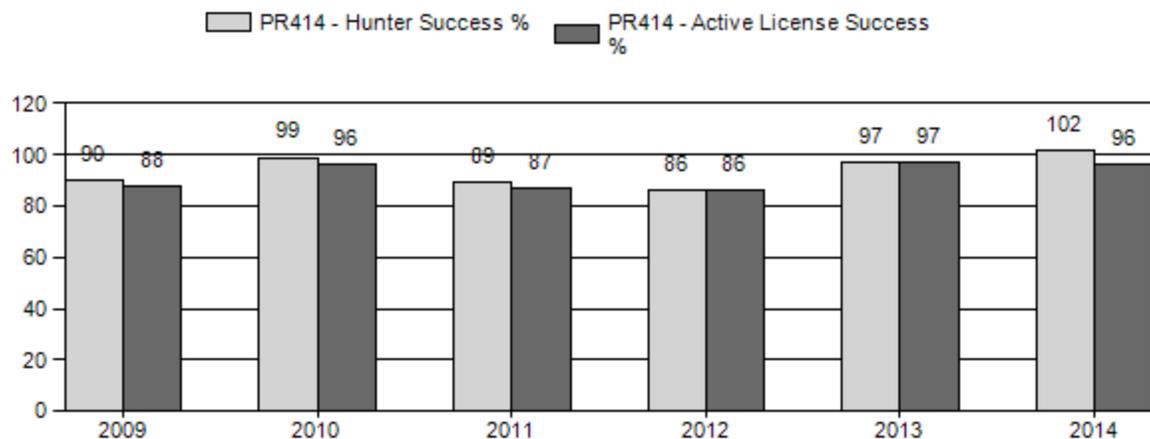
Harvest



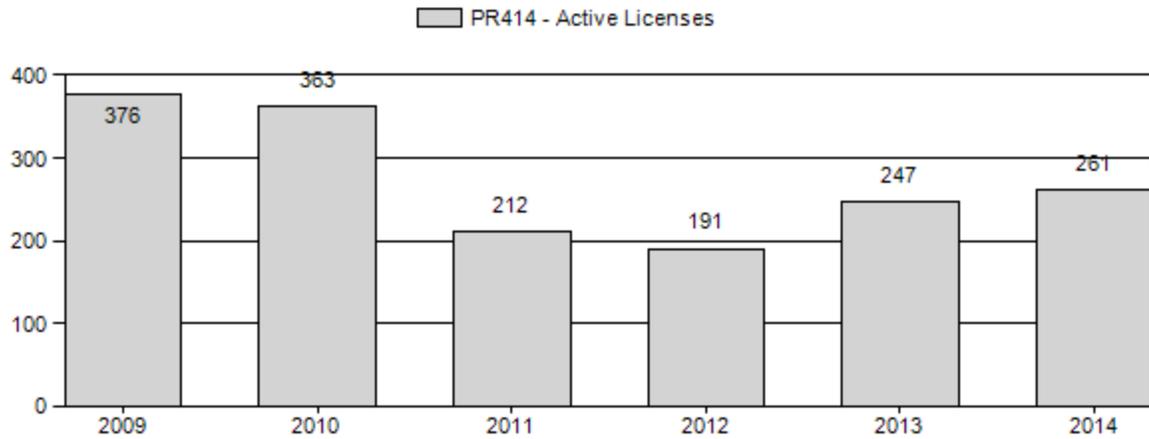
Number of Hunters



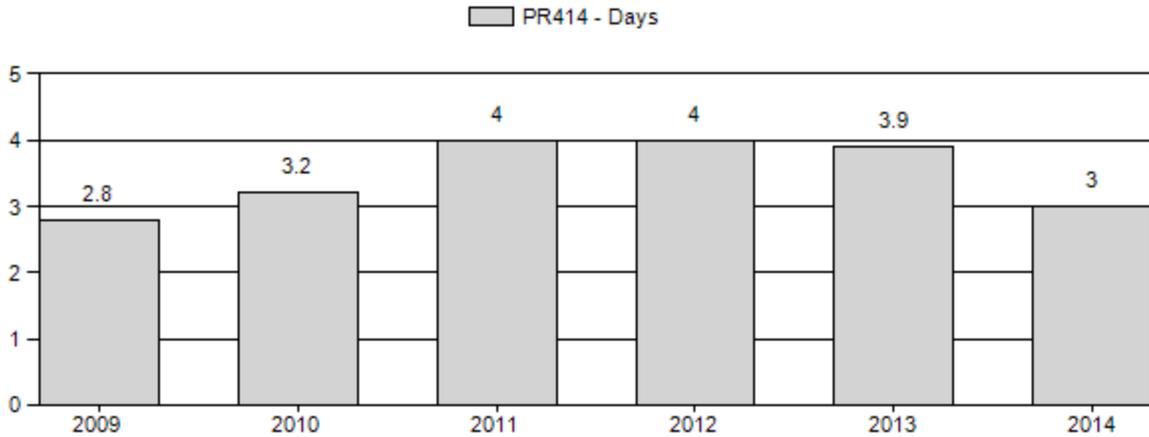
Harvest Success



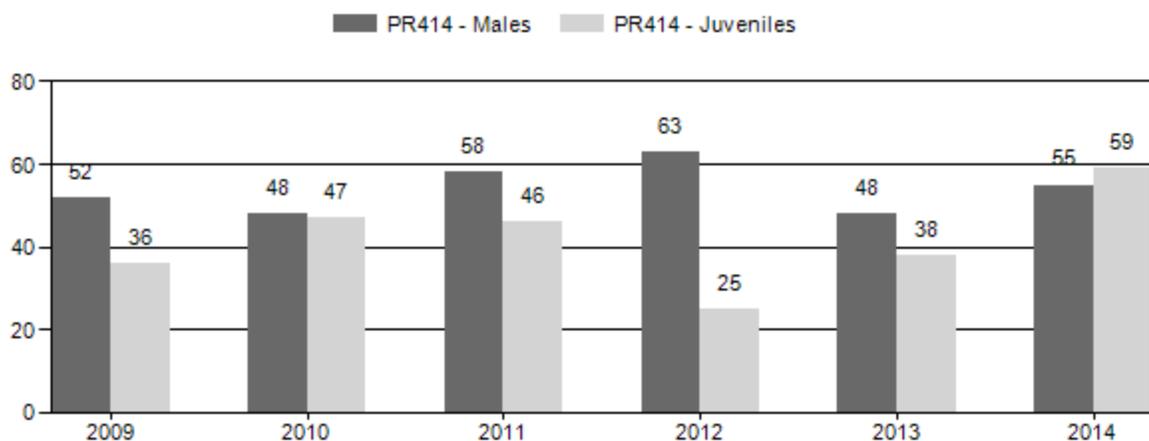
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2015 HUNTING SEASON

SPECIES : **Pronghorn**

HERD UNIT : **Bitter Creek (414)**

HUNT AREAS: **57, 58**

Hunt Area	Type	Dates of Season		Quota	License	Limitations
		Opens	Closes			
57	1	Sep. 20	Oct. 31	250	Limited Quota	Any antelope
	7	Sep. 1	Oct. 31	25	Limited Quota	Doe or fawn valid on or within one (1) mile of private land south of Carbon County Road 700 and east of Carbon County Road 730
58	1	Sep. 20	Oct. 31	30	Limited Quota	Any antelope
57, 58	Archery	Aug. 15	Sep. 19			Refer to Section 3

<i>Hunt Area</i>	<i>Type</i>	<i>Quota change from 2014</i>
57	1	+25
	7	0
58	1	0
<i>Herd Unit Total</i>	<i>1</i>	<i>+25</i>

Management Evaluation

Current Management Objective: 25,000

Management Strategy: Special

2014 End-of-bio-year Estimate: 6,900

2015 Proposed postseason Estimate: 9,200

The Bitter Creek pronghorn herd is significantly below the objective of 25,000 (set in 1993), with a 2014 post-season estimate of 8,500. Our current management strategy continues to focus on increasing herd size. Since we continue to observe higher buck ratios in area 57, some additional buck harvest opportunity is possible in this area. Therefore, we are increasing type 1 licenses in this area to allow for more opportunity, and will maintain current license levels in hunt area 58 due to lower buck ratios and much lower pronghorn densities. The private land type 7 licenses were successful in curbing minor damage issues on irrigated meadows in the southeastern portion of hunt area 57, and will be continued.

Herd Unit Issues

The Bitter Creek herd is facing many challenges through the expansion of the Continental Divide-Creston Junction (CDC), Desolation Flats, and Hiawatha gas fields. Currently there are nearly 9,000 wells in the CDC and an EIS for an additional 8,950 infill wells. A majority of

these wells occur on summer and winter ranges as well as migration routes for the Bitter Creek herd. New developments are continuing to occur in relation to the Desolation Flats development, most notably along the Bitter Creek Rd and the Willow Creek Rim area. A new large pipeline has been built to connect two new compressor stations that will be placed on and near Willow Creek Rim. In addition a new road has been built to facilitate traffic from Wamsutter to Willow Creek Rim, bisecting current winter range and migration routes. This new road has significantly increased the amount of traffic and speeds in areas that had previously seen minimal. The number of proposals to conduct oil and gas development activities on a year-round basis throughout the herd unit is increasing. These landscape level impacts are proving to be a challenge for the pronghorn in the Bitter Creek herd.

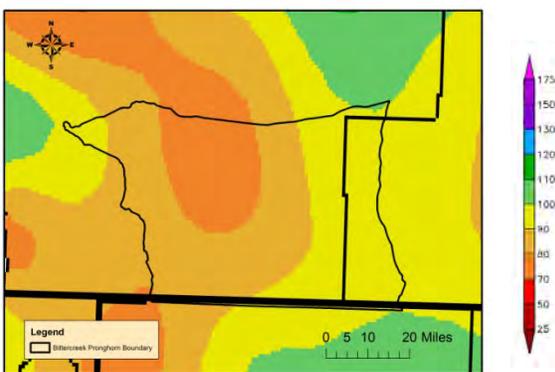
Feral horse numbers in this area have impacted wild native ungulates through competition for resources in this exceptionally dry and unproductive landscape. A recent decision to reduce numbers by the Bureau of Land Management due to a legal settlement with private landowners in the checkerboard ownership area will result in less competition and additional habitats for this and other native species using this area.

Weather

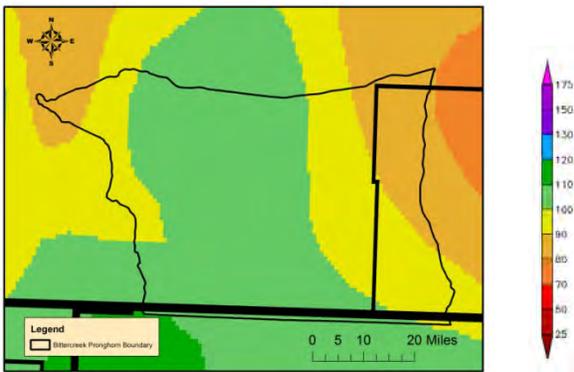
Weather conditions have been quite variable over the last several years. Overall the herd unit has seen above average precipitation in 2014 when compared to 2013 (Figure 1). This increased precipitation should equate to better vegetation in 2015. The 2014-15 winter was an extremely easy winter with low levels of snow fall and higher than average temperatures. Although initially concerning because of the low moisture levels throughout the winter, spring moisture levels have made up for lower winter moisture levels.

Figure 1. A) Percent of normal precipitation for the herd unit from January 2013 to December 2013, B) Percent of normal precipitation for the herd unit from January 2014 to December 2013.

A)



B)



Habitat

Moisture levels going into and coming out of the winter of 2014-15 has allowed for improved habitat conditions. Increased precipitation during the fall months of 2014 resulted in a late growth opportunity for most vegetation in the herd unit. Animals took advantage of this late growth and went into winter in better than average body condition. An early warming trend following the winter, coupled with improved moisture during the 2015 spring months has resulted in an early green up that persists to this day. Some areas in the herd unit have received precipitation in quantities not observed in many years. Shrub and herbaceous growth is expected to dramatically increase in 2015, which will result in continued improvements in pronghorn production, survival, and herd size.

Field Data

The last 4 years has seen an average population of around 9,000 pronghorn, significantly below the objective for this herd unit. Very low fawn survival and production (average pre-season fawn:doe ratio since 2010 = 43:100) has played the primary role in the inability of this population to recover. Inclimate weather conditions including severe winters and drought are hampering a quick positive population response to low harvest rates in this herd unit. We did see a significant increase in fawn ratios in 2014 (59:100 in 2014 compared to 38:100 in 2013) due to improved precipitation and habitat. Disparity in fawn production and buck ratios between hunt areas 57 and 58 also results in management challenges for the herd. Hunt area 58 has shown extremely low buck ratios in both 2013 and 2014 (30 and 42 bucks:100 does, respectively) compared to hunt area 57 (61 and 67 bucks:100 does, respectively) further illustrating the difference in potential between the two hunt areas. Area 58 tends to pull the overall buck ratio for the herd downward, and makes achieving special management criteria (≥ 60 bucks:100 does) difficult. This disparity is also evident regarding fawn production. In 2014, hunt area 58 had a much lower fawn ratio (53:100 does) compared to the more productive hunt area 57 (65 fawns:100 does).

Harvest Data

Despite lower population levels hunters are still able to find pronghorn to harvest. Overall harvest success is 102%, with a slight difference between hunt areas 57 (102%) and 58 (100%). The population has been slow to respond to the low harvest and little to no doe harvest. Over the last 5 years we have harvested less than 50 doe pronghorn out of the entire herd unit yet we continue to see limited population growth due to limited fawn production.

Population

The current population model estimates the 2014 end-of-bio-year population to be 6,900 animals. Both the CJ, CA and the SCJ, SCA models have almost identical AICc values and very similar population estimates and trend. We chose the SCJ, SCA model based on what we believe to be a better representation of the actual population trend and size based on the line transect estimates obtained in 2003 and 2010 (2009 bio-year) and also on model fit (CJ, CA = 72; SCJ, SCA = 71). It is clear from the spreadsheet model and line transects estimates that this population is well below the population objective. The current post-season estimate for this herd unit is 8,500, 66% below the current objective. This herd unit objective is out for review this spring, and personnel will be recommending a reduction (to reflect reality) from 25,000 to 13,000. This will allow some growth to levels achieved in the recent past, and is more in line with current habitat potential in this herd.

Management Summary

Given better habitat conditions and continued conservative seasons, the 2015 hunting season will allow for maximum opportunity to increase this population, while increasing buck harvest in a modest manner.. We are increasing type 1 licenses in hunt area 57 to allow more opportunity because of higher buck ratios. Due to continuing concern with potential damage situations in the SE portion of hunt area 57, we will continue issuing a minimal number of doe-fawn licenses to address landowner concerns. Despite the low number of licenses available in hunt area 58, it appears pronghorn in this area continue to struggle, and we proposed no change to the hunt area 58 quota. The 2015 harvest strategy should lead to the largest growth potential for the herd, barring major impacts from the landscape level challenges mentioned above.

INPUT	
Species:	Pronghorn
Biologist:	Tony Mong
Herd Unit & No.:	Bittercreek, 414
Model date:	03/02/15

MODELS SUMMARY		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	71	62	
SCJ,SJA	Semi-Constant Juvenile & Semi-Constant Adult Survival	72	53	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	170	48	

Year	Predicted Prehunt Population (year <i>t</i>)				Predicted Posthunt Population (year <i>t</i>)				Population Estimates from Top Model				LT Population Estimate		Trend Count
	Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total Adults	Field Est	Field SE	
1993	4770	4022	8503	17295	4555	3064	6698	14318	3978	7156	11134				
1994	3444	3899	7013	14355	3444	3417	7013	13874	4063	7363	11426				
1995	3270	3981	7216	14467	3270	3514	7210	13994	4099	7488	11587				
1996	4010	4017	7338	15366	4010	3450	7302	14762	4253	7790	12043				
1997	3212	4168	7634	15015	3212	3607	7593	14412	4155	7811	11966				
1998	3728	4072	7655	15455	3728	3494	7632	14854	4207	8004	12211				
1999	3792	4123	7844	15759	3789	3506	7809	15104	4230	8180	12410				
2000	3297	4145	8017	15459	3297	3595	8001	14894	4171	8209	12380				
2001	3961	4088	8044	16093	3955	3667	8019	15641	4448	8421	12869				
2002	2639	4359	8252	15250	2637	3912	8236	14785	4270	8220	12490				
2003	2865	4185	8056	15105	2862	3760	8016	14639	4203	8088	12291				
2004	4066	4119	7926	16111	4064	3699	7906	15669	4511	8353	12864				
2005	4358	4421	8186	16964	4356	4019	8154	16529	4890	8663	13553				
2006	3265	4792	8490	16547	3262	4403	8465	16130	4907	8615	13522				
2007	3483	4809	8443	16735	3476	4427	8419	16322	3223	6187	9410				
2008	1640	3158	6063	10862	1637	2882	6048	10567	3060	5946	9005				
2009	2099	2998	5827	10924	2099	2650	5811	10560	2981	5872	8853				
2010	2704	2922	5755	11380	2704	2552	5739	10995	2308	4404	6713				
2011	1967	2262	4316	8545	1967	2080	4296	8343	2449	4486	6935				
2012	1112	2400	4396	7908	1112	2220	4396	7728	2230	4300	6531				
2013	1588	2186	4214	7988	1588	1922	4214	7724	2187	4263	6450				
2014	2471	2144	4177	8792	2470	1886	4161	8517	2398	4496	6893				
2015	2809	2350	4406	9564	2808	2075	4389	9272	2703	4803	7507				
2016	3002	2649	4707	10358	3001	2392	4691	10083				10500	2481		
												7337	999		

Survival and Initial Population Estimates

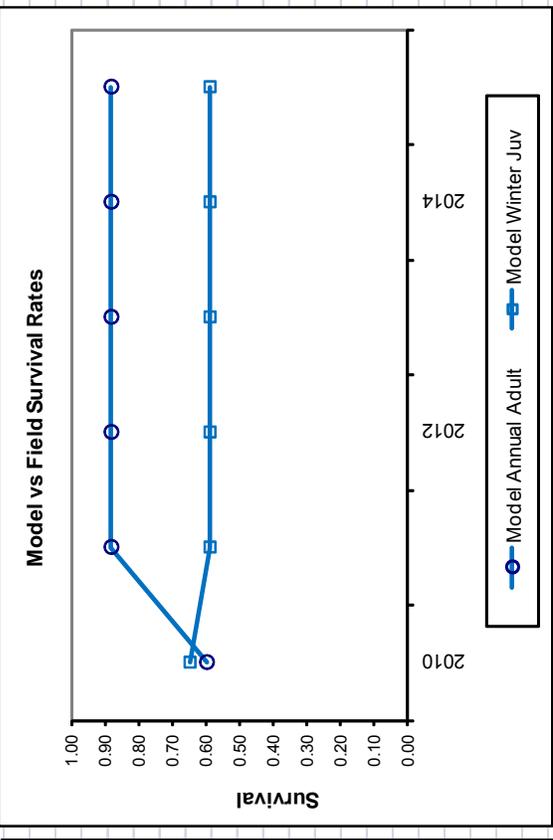
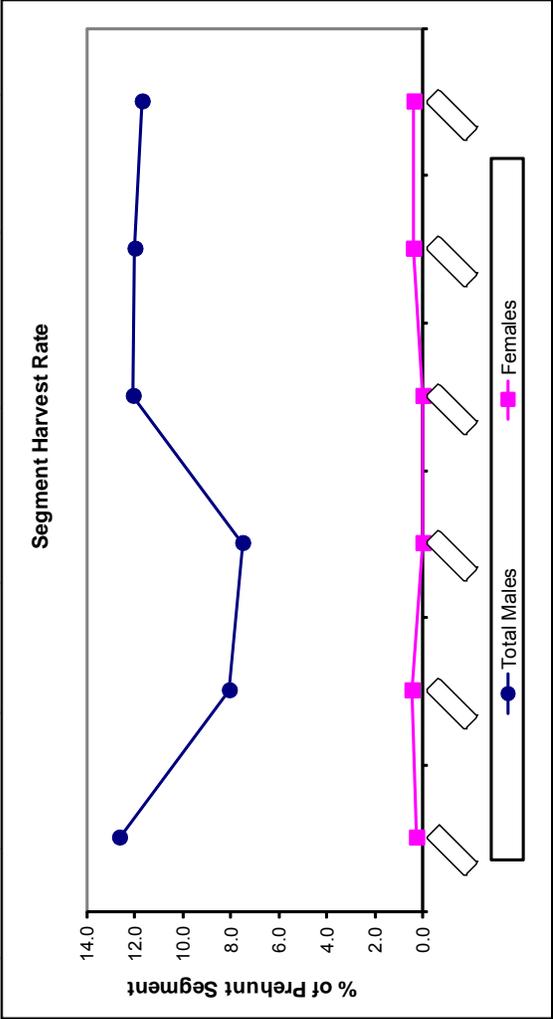
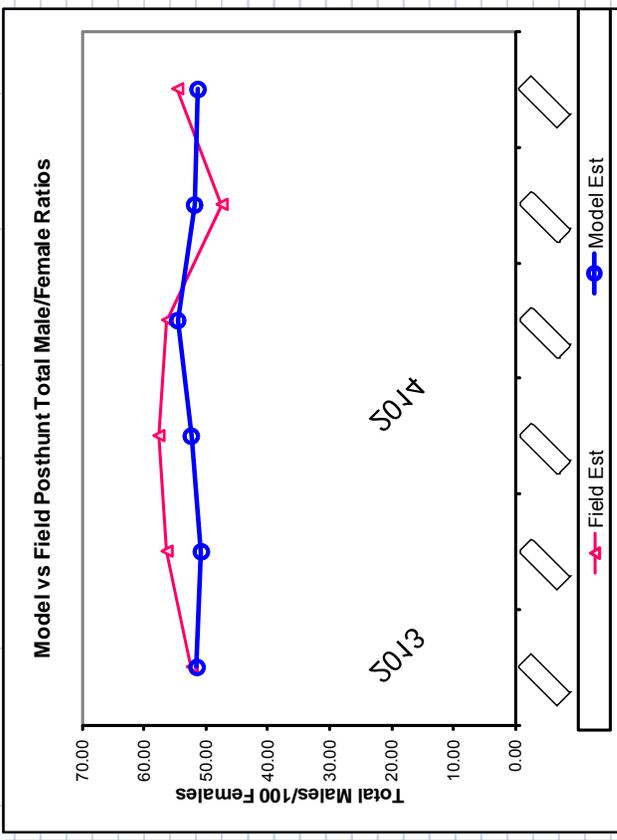
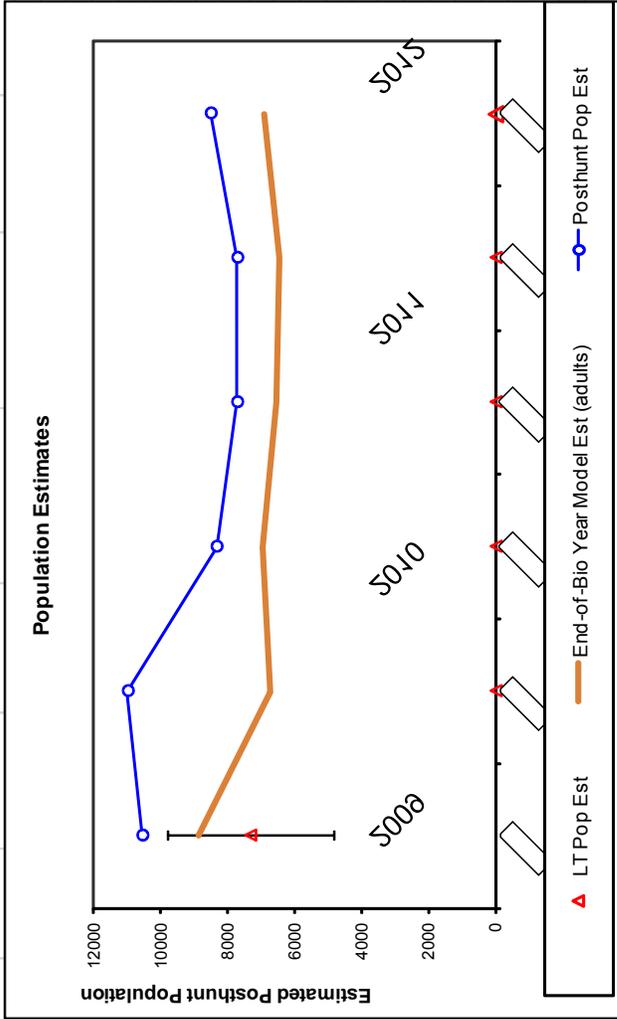
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.59		0.88	
1994	0.59		0.88	
1995	0.59		0.88	
1996	0.59		0.88	
1997	0.59		0.88	
1998	0.59		0.88	
1999	0.59		0.88	
2000	0.59		0.88	
2001	0.59		0.88	
2002	0.59		0.88	
2003	0.59		0.88	
2004	0.59		0.88	
2005	0.59		0.88	
2006	0.59		0.88	
2007	0.10		0.70	
2008	0.59		0.88	
2009	0.59		0.88	
2010	0.65		0.60	
2011	0.59		0.88	
2012	0.59		0.88	
2013	0.59		0.88	
2014	0.59		0.88	
2015	0.59		0.88	
2016	0.59		0.88	

Parameters:		Optim cells
Juvenile Survival =		0.591
Adult Survival =		0.884
Initial Total Male Pop/10,000 =		0.402
Initial Female Pop/10,000 =		0.850

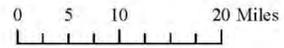
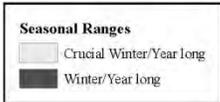
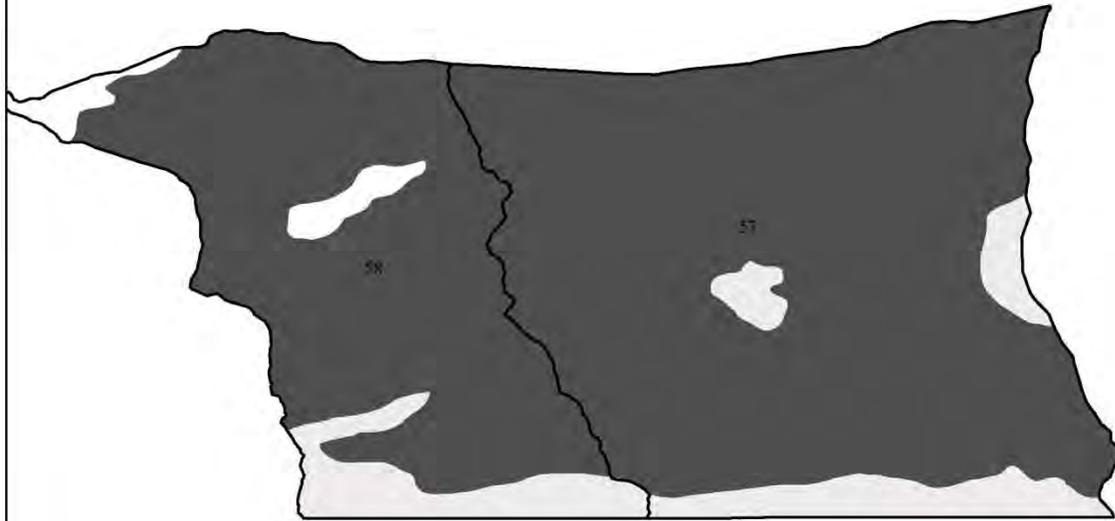
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

Year	Classification Counts										Harvest		
	Juvenile/Female Ratio					Total Male/Female Ratio					Total Harvest	Total Males	Females
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE				
1993		56.09	2.26	47.30	52.94	2.17	871	1641	195	2707	23.8	21.2	
1994		49.11	2.38	55.59	56.52	2.61	438	0	0	438	12.4	0.0	
1995		45.31	1.95	55.18	51.01	2.10	425	5	0	430	11.7	0.1	
1996		54.64	2.57	54.75	50.59	2.44	516	33	0	549	14.1	0.5	
1997		42.08	2.11	54.59	56.80	2.58	510	38	0	548	13.5	0.5	
1998		48.70	2.26	53.19	47.36	2.21	525	21	0	546	14.2	0.3	
1999		48.35	2.16	52.56	55.29	2.36	561	32	3	596	15.0	0.4	
2000		41.12	2.01	51.71	50.62	2.30	500	14	0	514	13.3	0.2	
2001		49.24	2.50	50.82	51.44	2.57	383	23	5	411	10.3	0.3	
2002		31.98	1.91	52.82	58.41	2.83	406	15	2	423	10.2	0.2	
2003		35.56	2.19	51.94	58.47	3.04	386	36	2	424	10.1	0.5	
2004		51.30	2.55	51.97	53.15	2.61	382	18	2	402	10.2	0.2	
2005		53.24	2.55	54.00	54.12	2.58	365	29	2	396	9.1	0.4	
2006		38.46	2.18	56.44	56.80	2.82	354	22	3	379	8.1	0.3	
2007		41.26	2.13	56.96	52.60	2.50	347	21	7	375	7.9	0.3	
2008		27.06	1.53	52.09	47.38	2.18	251	14	3	268	8.7	0.3	
2009		36.02	2.27	51.46	52.36	2.89	317	14	0	331	11.6	0.3	
2010		46.99	2.49	50.77	56.42	2.82	336	14	0	350	12.7	0.3	
2011		45.57	2.66	52.41	57.74	3.12	166	18	0	184	8.1	0.5	
2012		25.29	1.91	54.60	56.35	3.19	164	0	0	164	7.5	0.0	
2013		37.68	2.63	51.87	47.54	3.06	240	0	0	240	12.1	0.0	
2014		59.15	4.09	51.32	54.71	3.88	234	15	15	250	12.0	0.4	
2015		63.77	4.31	53.33	54.71	3.88	250	15	15	266	11.7	0.4	
2016		63.77	4.31	56.28	54.71	3.88	234	15	15	250	9.7	0.4	

FIGURES



Bitter Creek PR414 Herd Seasonal Ranges



2014 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR419 - CARTER LEASE

HUNT AREAS: 94, 98, 100

PREPARED BY: JEFF SHORT

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	6,818	6,192	6,098
Harvest:	1,557	1,501	1,500
Hunters:	1,609	1,551	1,500
Hunter Success:	97%	97%	100 %
Active Licenses:	1,799	1,731	1,750
Active License Success:	87%	87%	86 %
Recreation Days:	5,470	6,340	6,200
Days Per Animal:	3.5	4.2	4.1
Males per 100 Females	66	63	
Juveniles per 100 Females	62	79	

Population Objective (± 20%) : 6000 (4800 - 7200)

Management Strategy: Recreational

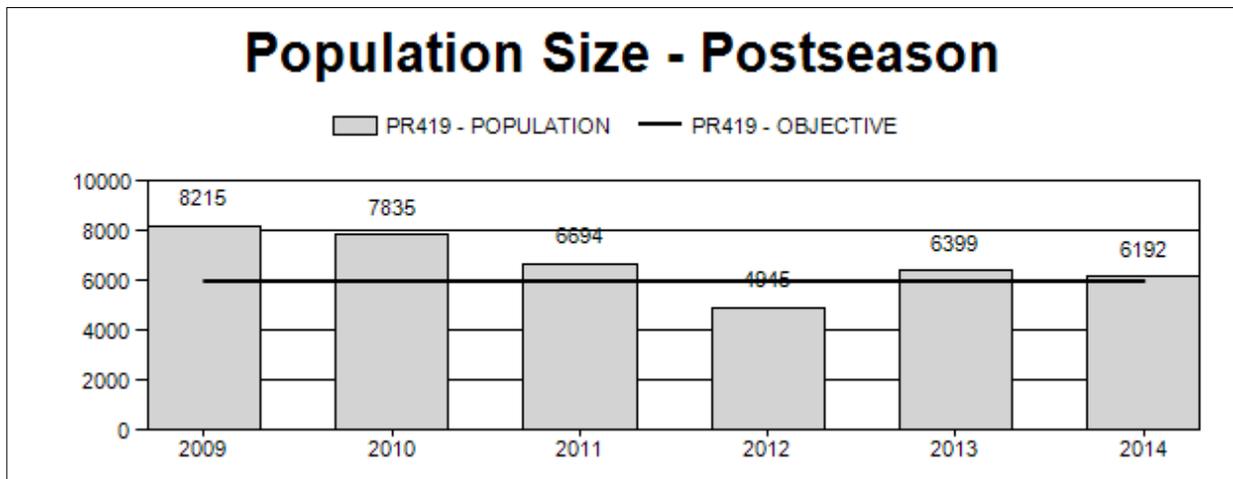
Percent population is above (+) or below (-) objective: 3%

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

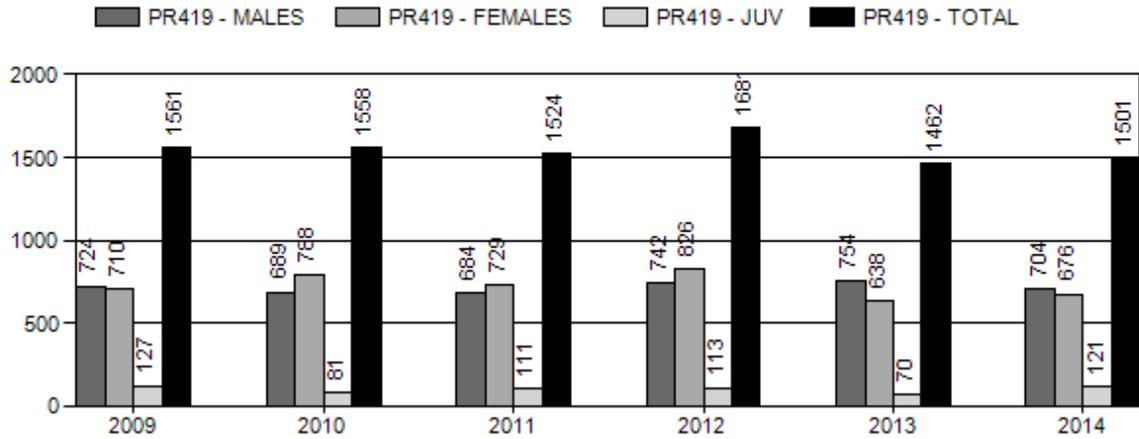
Model Date: 02/27/2015

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

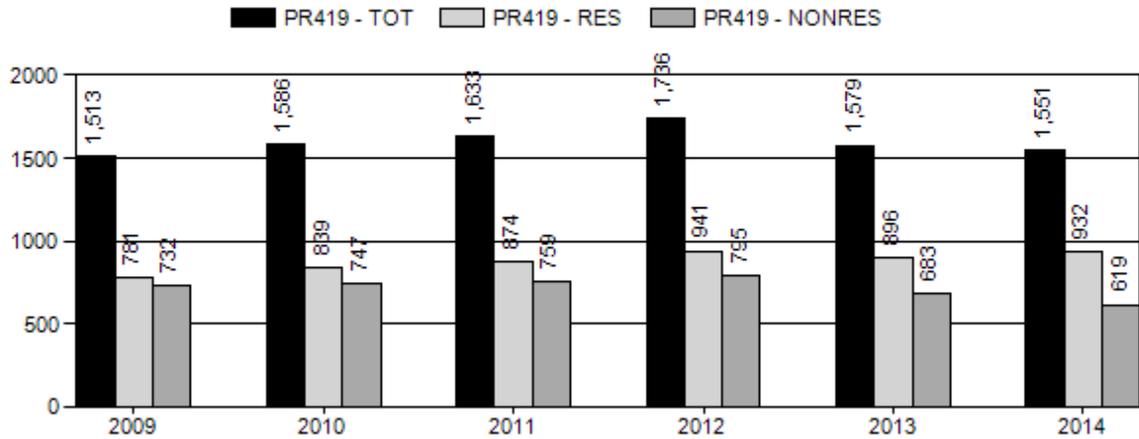
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	14.3%	13.7%
Males ≥ 1 year old:	28.7%	28.5%
Juveniles (< 1 year old):	3.2%	2.5%
Total:	13.2%	13.0%
Proposed change in post-season population:	-7.1%	-1.5%



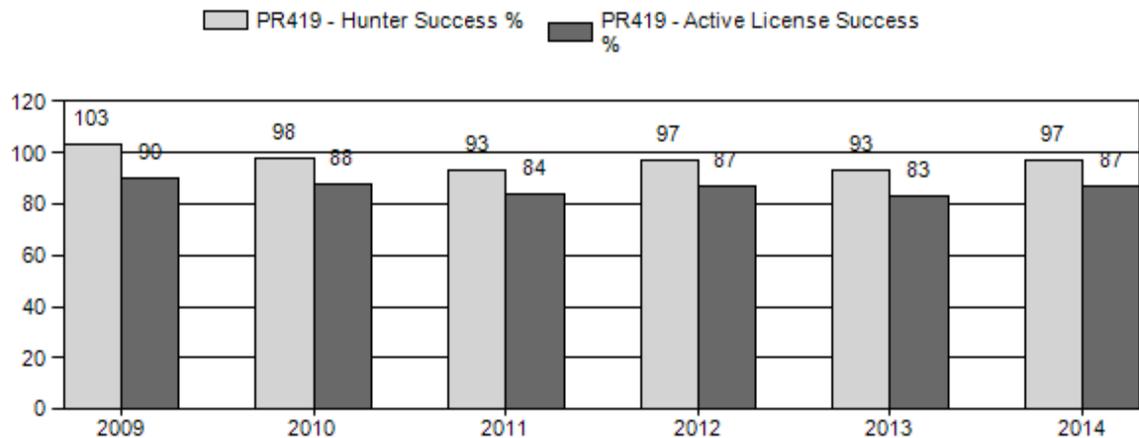
Harvest



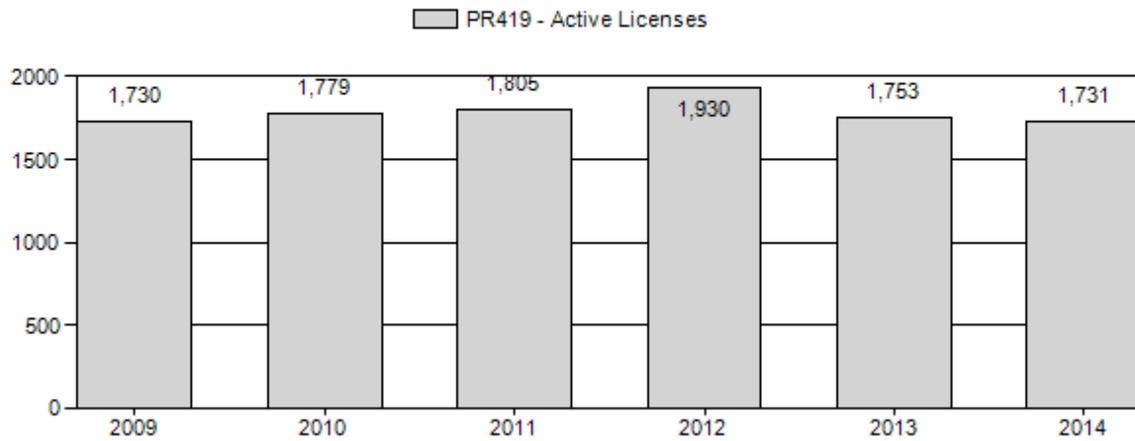
Number of Hunters



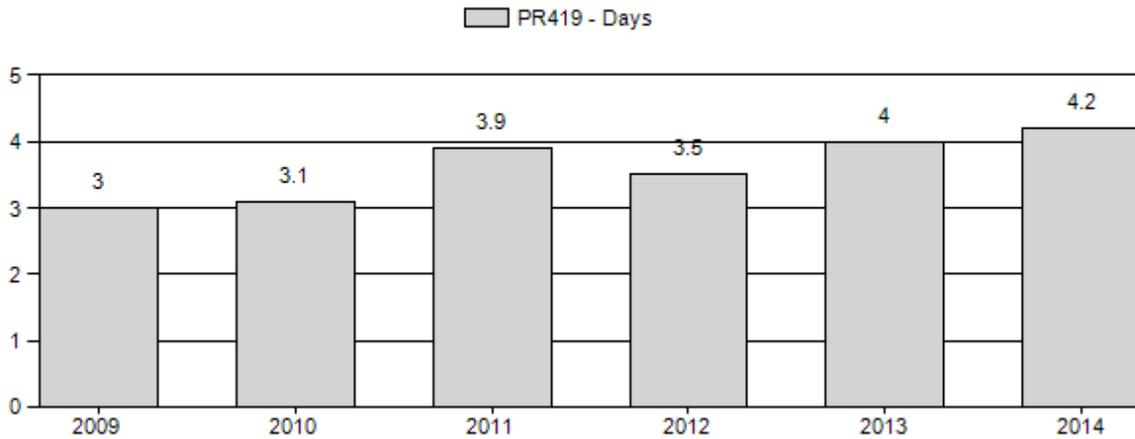
Harvest Success



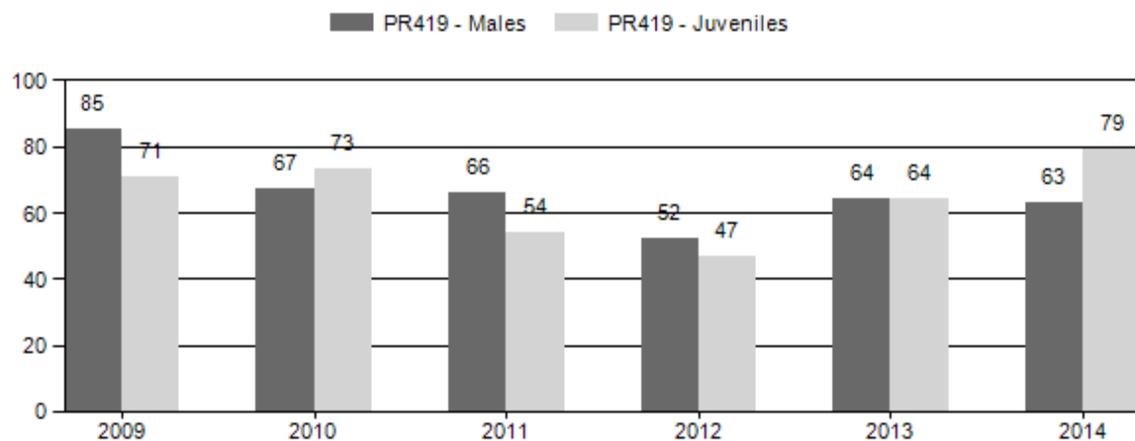
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR419 - CARTER LEASE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	9,136	217	453	670	33%	790	39%	564	28%	2,024	0	27	57	85	± 6	71	± 6	39
2010	8,697	237	593	830	28%	1,234	42%	905	30%	2,969	0	19	48	67	± 4	73	± 4	44
2011	7,614	174	537	711	30%	1,071	45%	582	25%	2,364	0	16	50	66	± 4	54	± 4	33
2012	6,060	114	430	544	26%	1,051	50%	498	24%	2,093	0	11	41	52	± 4	47	± 3	31
2013	7,273	106	475	581	28%	904	44%	576	28%	2,061	0	12	53	64	± 5	64	± 5	39
2014	7,073	152	511	663	26%	1,058	41%	838	33%	2,559	0	14	48	63	± 4	79	± 5	49

2015 HUNTING SEASONS

SPECIES: Pronghorn

HERD UNIT: Carter Lease (419)

HUNT AREAS: 94, 98, 100

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
94	1	Sept. 10	Oct. 31	450	Limited quota	Any antelope
	6	Sept. 10	Oct. 31	250	Limited quota	Doe or fawn
	7	Sept. 10	Oct. 31	200	Limited quota	Doe or fawn valid on or within one (1) mile of irrigated lands.
98	1	Sept. 10	Oct. 31	200	Limited quota	Any antelope
	6	Sept. 10	Oct. 31	300	Limited quota	Doe or fawn
100	1	Sept. 10	Oct. 31	200	Limited quota	Any antelope
	6	Sept. 10	Oct. 31	150	Limited quota	Doe or fawn
	7	Sept. 10	Oct. 31	100	Limited quota	Doe or fawn valid west of the Bear River Divide
94, 98, 100	Archery	Aug. 15	Sept. 9			Refer to Section 3 of this chapter

Hunt Area	License Type	Quota change from 2014
Herd Unit Total		

Management Evaluation

Current Postseason Population Management Objective: 6,000

Management Strategy: Recreation

2014 Postseason Population Estimate: ~6,192

2015 Proposed Postseason Population Estimate: ~6,098

Herd Unit Issues

Energy development on crucial habitat is a looming issue for this herd. Development is present and has had impacts to habitats in the eastern portion of the herd unit. The hunt areas in this herd are very different in several characteristics. Hunt Area 94 is more xeric and has classic pronghorn habitat. Hunt Areas 98 and 100 have more hilly terrain, are slightly wetter and are very important winter range for the Wyoming Range mule deer herd. A large number of mule deer migrate into that area to winter on shrub browse. Therefore, we manage for low pronghorn numbers in 98 and 100 to reduce browse competition for mule deer. The herd unit has a split objective of 5,000 antelope in Hunt Area 94 and 1,000 antelope in Hunt Areas 98 and 100 combined.

In some years, high recruitment rates can make it difficult to maintain this population at a low level. This is especially true in Hunt Areas 98 and 100 where the desired population is approximately 1,000 antelope, which is less than 1 antelope per square mile. In recent years licenses were increased substantially. However, due to low antelope densities hunter success is usually lower than adjacent areas.

Throughout the herd unit there is a low tolerance for the presence of pronghorn on some of the private land holdings. Conflict with agriculture producers can be a primary issue for this herd. Damage complaints primarily occur on irrigated lands during the summer and early fall. However, irrigated lands are uncommon relative to native ranges. Significant efforts have been made by field personnel to target harvest toward those problems. Perceived reduction in livestock forage due to pronghorn foraging is an issue commonly brought up. However dietary overlap and pronghorn use is often negligible in native rangelands.

Weather

Weather during 2014 and into 2015 was highly variable. In the early part of 2014 the winter was very mild and dry. A moist spring and summer followed. In late August and into September precipitation continued. The winter of 2014-2015 has been very mild to this point. The winters of 2011/12, 2012/13 and 2013/14 were also mild with low snowpack resulting in good over winter survival. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production. Fawn survival suffered from the extremely dry conditions. Conditions were better at the higher elevations in hunt areas 98 and 100. Pronghorn distribution was greatly affected by the drought during those times.

Habitat

Habitat data collection has been inconsistently collected in this herd unit and has been absent in the recent past. A new effort is underway to resume data collection.

Field Data

Fawn ratios in this Herd Unit have been very good in the past, averaging over 75:100 from 2007-2010. During that time observed ratios ranged from 73:100 in 2010 to 83:100 in 2007. This population had been suppressed by harvest due to a low overall objective for the herd unit when compared to carrying capacity. This explained the productive nature of the herd. However, the 2011 herd unit fawn:doe ratio data was significantly lower at 54:100 and even lower in 2012 at 47:100. These are the lowest fawn:doe ratios in over 12 years. The harsh winter conditions in the winter of 2010/11 decreased doe condition enough to cause poor fawn production in 2011 and the extremely dry conditions in 2012 caused significant observed preseason fawn mortality. In 2013 and 2014 Herd Unit fawn ratios rebounded greatly to 64:100 in 2013 and 79:100 in 2014.

Line transect survey data was most recently conducted in 2014 in Hunt Area 94. Hunt areas 98 and 100 are not conducive to this type of survey due to low antelope densities and broken terrain. Hunt Area 94 is difficult to attain minimum sample sizes with this type of survey. An increased effort was made in 2011 and 2014 to survey HA 94 with high enough intensity to develop a better estimate. The Hunt area 94 population had been declining for several years due to aggressive harvest strategies. That harvest has been reduced slightly and we have now leveled off at or near objective.

Harvest Data

Doe/fawn harvest opportunity was increased every year for several years in area 94. The 2009, 2010 and 2011 season structures offered substantially increased doe/fawn harvest opportunity to try to reduce that part of the herd and reduce damage problems on irrigated lands. Those seasons allowed significant doe/fawn harvest. These hunts have had very good success rates. This management framework along with two years of poor fawn production has brought this population near to objective.

In 2010 we altered the area 100 type 7 licenses. They are valid for doe/fawn antelope in the portion of area 100 west of the Bear River Divide. This was to address concentrations of antelope on private land near Evanston and to focus more harvest on animals in potential competition with mule deer. Since increasing doe/fawn harvest substantially over the years in area 100 the antelope population in area 100 has significantly declined, as was intended. Success rates in HA 100 are lower than adjacent hunt areas including area 98, which is also managed for low antelope densities.

Population

A total Herd Unit 419 (Carter Lease) model is very unreliable due to much different population parameters in Hunt Areas 98 and 100 compared to Hunt Area 94. Additionally the line transect survey method does not fit with hunt areas 98 and 100. It makes sense to model Hunt Area 94 only. The HA 94 population model is presented. Efforts have been made to tighten line transect estimates and we now have two estimates with tight confidence intervals. The current model tracks very well and we have fairly good confidence in the estimates. Model results are presented for hunt area 94 only. Herd unit population estimates are reported as the HA94 model plus 1,000 animals to account for the populations we are unable to model in HA 98 and 100. The TSJ,CA model was selected due to its excellent fit with the data, a reasonably low relative AICc score, proper population dynamics fit with the nature of this herd and the population estimate appears to be reasonable. Another reason we have good confidence in the strength of this model is that all three model variations produce a very similar population estimate.

In the future it will be imperative that we obtain a reliable population estimate periodically through line transect surveys to check the status of the herd and anchor the model. With this it is likely that we can continue to provide a good population model and track the trend of this population. Without this it will be unclear if our current harvest levels can be sustained or if we are on the right management track relative to objective. In 2012 the Department switched from POPII models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

Currently the model is estimating we have around 5,192 pronghorn following the 2014 season in hunt area 94. This is very near the population objective of 5,000 animals for that area. The model estimates that we were on a steep downward trend from 2009 to 2012. This was due to a severe winter in 2010/11, very poor fawn production in 2011/2012 and harvest designed to

reduce the population. The population reduction was substantiated by reductions in classification sample sizes and field observations. Since 2012 we have relaxed harvest slightly and had very mild winters. This has rebounded the population to objective levels. This herd has the potential for rapid growth as consecutive years with high fawns ratios have occurred in the past. Therefore, adequate female harvest has been needed to curtail growth.

Management Summary

For 2015 we will leave the Herd Unit at the same license numbers and season structure as 2014. All areas in the Herd Unit have ample hunting opportunity. We are now right at the objective in Hunt Area 94 according to the model and striving to maintain very low antelope densities in Areas 98 and 100. We will maintain levels of type 7 harvest in hunt area 94 to alleviate damage concerns on irrigated lands. The Objective and management strategy were last revised in 2000 and are scheduled to be revised again in 2015.

Model

INPUT					
Species:	Pronghorn				
Biologist:	Jeff Short				
Herd Unit & No.:	Carter Lease PR419				
Model date:	02/27/15				
<input type="button" value="Clear form"/>					
MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	117	126	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	123	137	<input type="checkbox"/> SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	95	193	<input checked="" type="checkbox"/> TSJ,CA Model	

Population Estimates from Top Model														
Year	Predicted Prehunt Population (year <i>i</i>)			Total	Predicted Posthunt Population (year <i>i</i>)			Total	Predicted adult End-of-bio-year Pop (year <i>i</i>)			LT Population Estimate	Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults			
1993	267	1584	2418	4268	255	821	2151	3227	831	2124	2955			5000
1994	1318	815	2081	4214	1318	705	2079	4102	1052	2356	3409			5000
1995	1948	1031	2309	5288	1948	919	2298	5165	1255	2563	3819			5000
1996	1860	1230	2512	5602	1860	1104	2507	5470	1772	3104	4876			5000
1997	2511	1737	3042	7289	2499	1596	2999	7094	2000	3331	5330			5000
1998	2688	1960	3254	7892	2650	1754	3190	7595	2238	3602	5841			5000
1999	2735	2193	3530	8459	2718	1927	3347	7992	2346	3691	6037			5000
2000	1566	2299	3617	7482	1528	1903	3195	6625	2064	3279	5343			5000
2001	2308	2022	3214	7544	2292	1785	3069	7146	2127	3345	5472			5000
2002	1357	2084	3279	6720	1330	1768	3052	6149	1905	3123	5028			5000
2003	2110	1867	3060	7037	2080	1546	2954	6579	2198	3543	5741			5000
2004	2993	2154	3472	8619	2967	1828	3324	8119	2295	3720	6015			5000
2005	3071	2249	3646	8966	3026	1865	3365	8256	2333	3755	6087			5000
2006	1843	2286	3680	7809	1797	1842	3199	6837	2054	3331	5386			5000
2007	2705	2013	3265	7983	2661	1593	2905	7129	1969	3241	5209			5000
2008	2312	1929	3176	7417	2245	1454	2841	6541	2362	3680	6042	7400	1837	5000
2009	2353	2314	3607	8274	2298	1837	3218	7353	2147	3456	5603			5000
2010	2351	2104	3387	7842	2319	1667	2993	6979	2001	3255	5257	5789	627	5000
2011	1610	1961	3190	6762	1540	1548	2754	5842	1654	2781	4434			5000
2012	863	1621	2725	5208	805	1107	2181	4093	1435	2599	4034			5000
2013	1470	1406	2547	5423	1435	926	2189	4550	1555	2693	4247	4092	571	5000
2014	1911	1524	2639	6073	1843	1087	2263	5192	1573	2702	4275			5000
2015	1761	1541	2648	5951	1712	1101	2285	5098						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			0.92		
1994	0.59			0.92		
1995	0.40			0.92		
1996	0.78			0.92		
1997	0.40			0.92		
1998	0.45			0.92		
1999	0.40			0.92		
2000	0.40			0.92		
2001	0.40			0.92		
2002	0.40			0.92		
2003	0.73			0.92		
2004	0.40			0.92		
2005	0.40			0.92		
2006	0.40			0.92		
2007	0.40			0.92		
2008	0.90			0.92		
2009	0.40			0.92		
2010	0.40			0.92		
2011	0.40			0.92		
2012	0.90			0.92		
2013	0.90			0.92		
2014	0.60			0.92		
2015	0.60			0.92		

Parameters: Optim cells

Adult Survival = 0.924

Initial Total Male Pop/10,000 = 0.158

Initial Female Pop/10,000 = 0.242

MODEL ASSUMPTIONS

Sex Ratio (% Males) = 50%

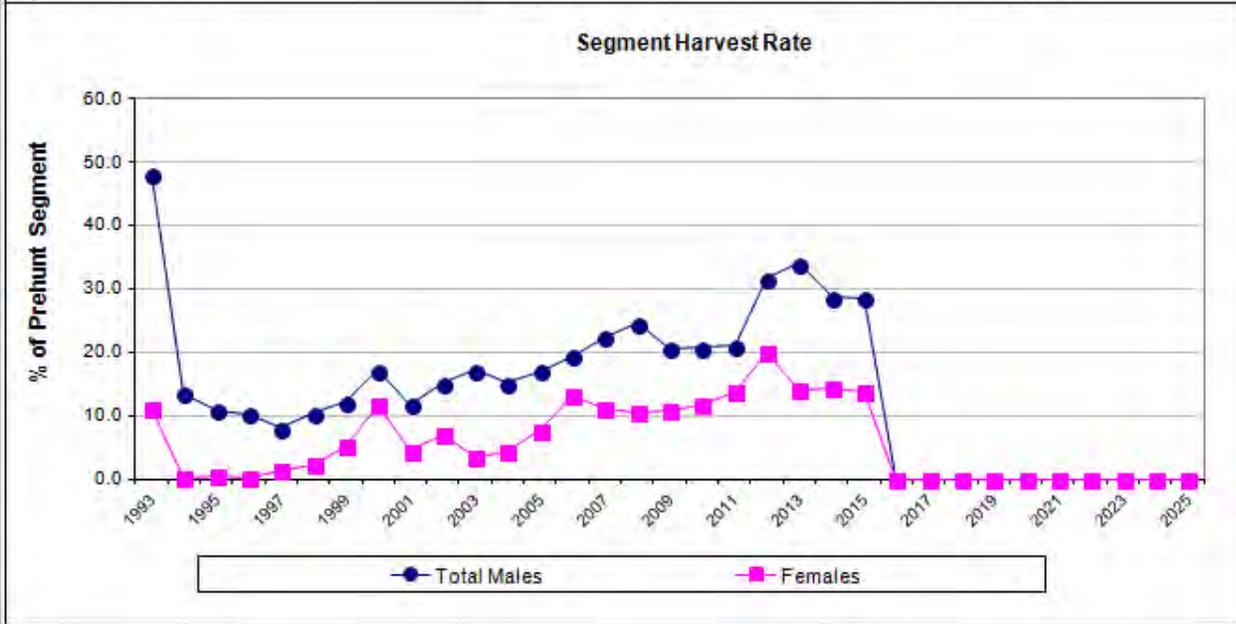
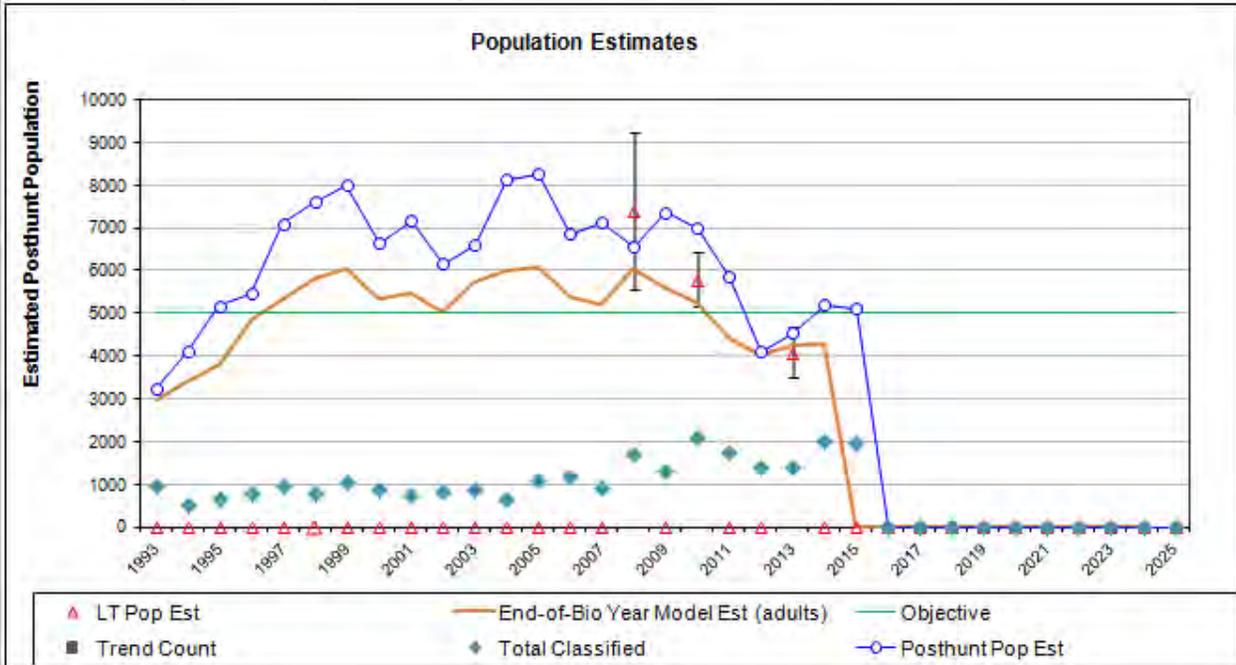
Wounding Loss (total males) = 10%

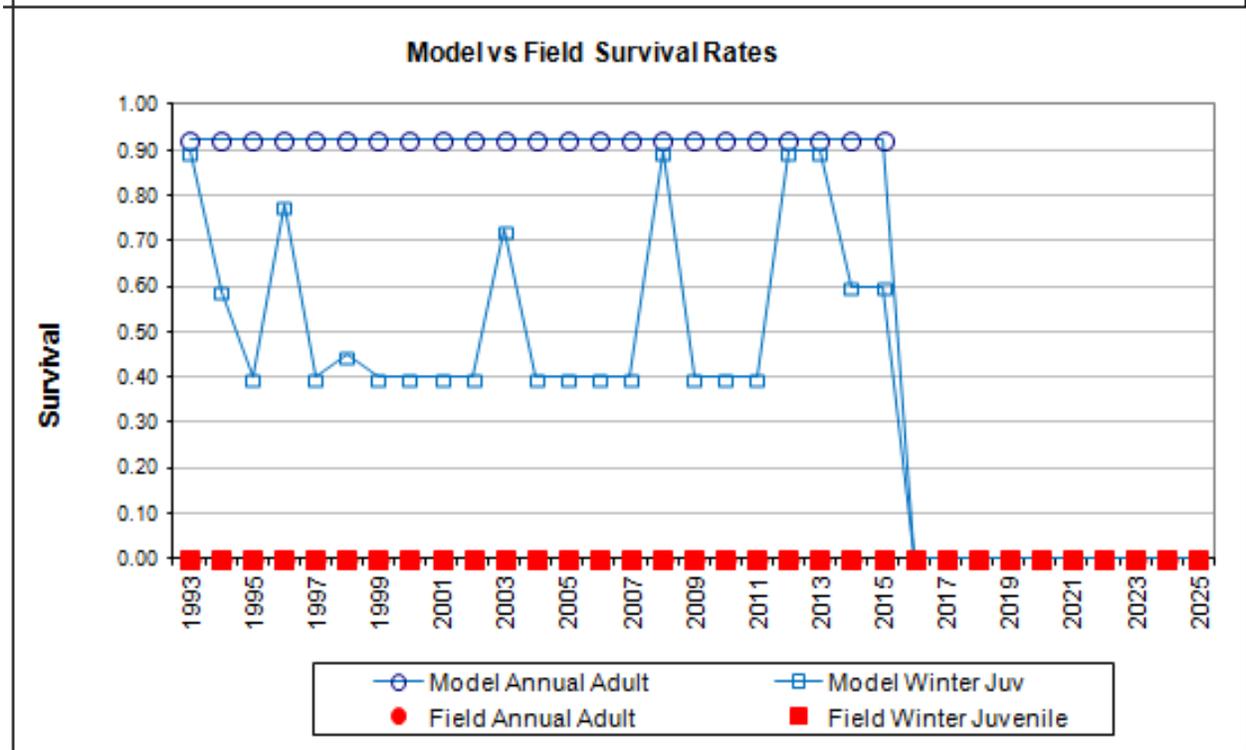
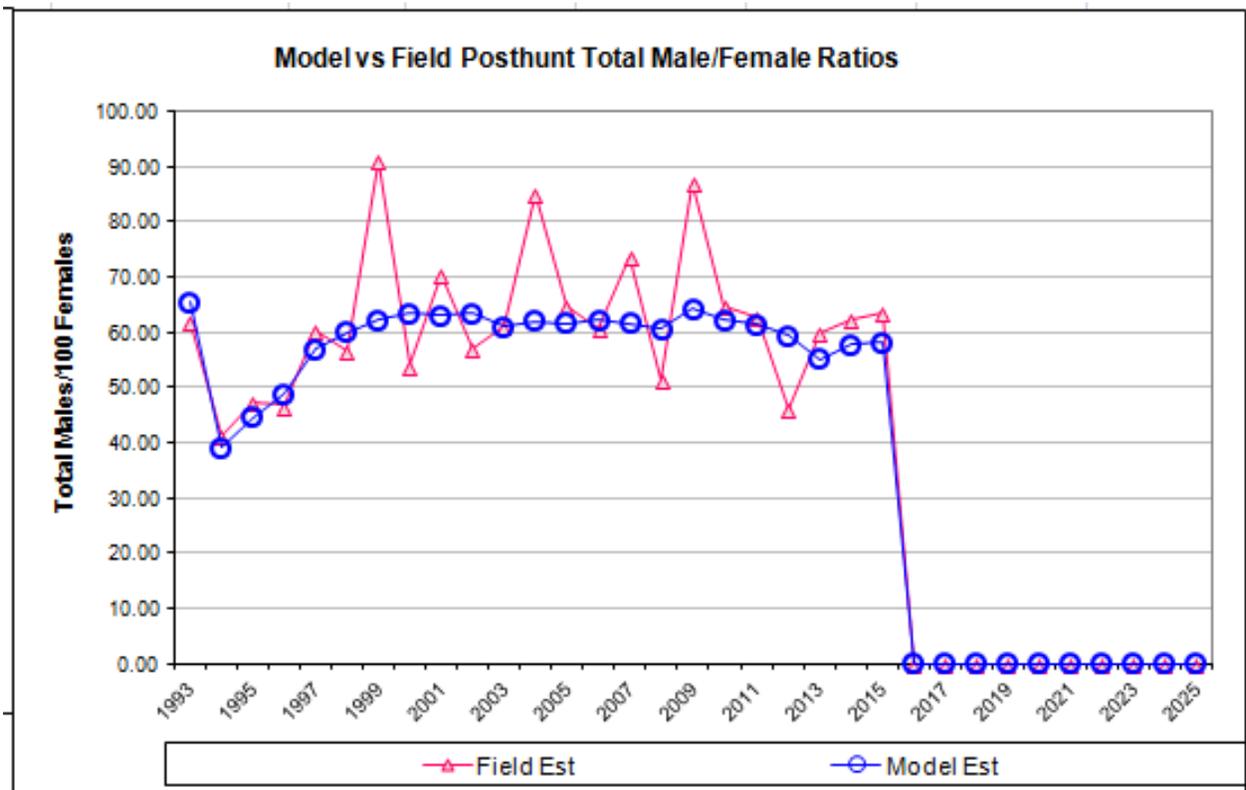
Wounding Loss (females) = 10%

Wounding Loss (juveniles) = 10%

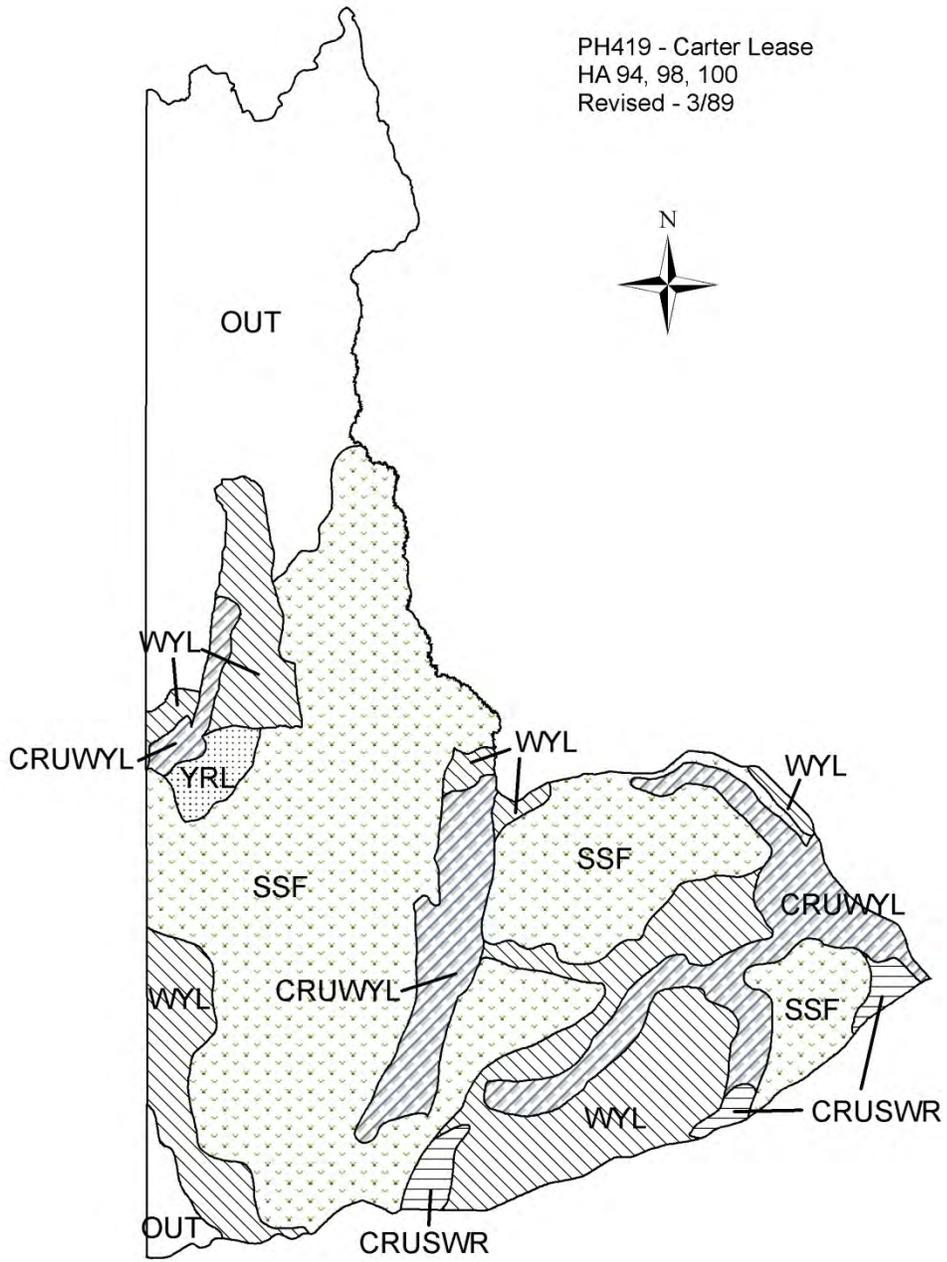
Over-summer adult survival = 96%

Year	Classification Counts						Harvest					
	Juvenile/Female Ratio			Total Male/Female Ratio			Males	Females	Juveniles	Total Harvest	Segment Harvest Rate (%)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females
1993		11.03	1.49	65.50	62.03	4.26	693	242	11	946	48.1	11.0
1994		63.32	6.32	39.15	41.31	4.75	100	2	0	102	13.5	0.1
1995		84.35	7.27	44.65	47.28	4.87	102	10	0	112	10.9	0.5
1996		74.04	5.93	48.96	46.72	4.33	115	5	0	120	10.3	0.2
1997		82.53	6.18	57.08	60.25	4.94	128	39	11	178	8.1	1.4
1998		81.74	6.56	60.04	56.52	5.06	187	67	16	270	10.5	2.3
1999		77.47	5.90	62.13	91.14	6.64	242	167	15	424	12.1	5.2
2000		43.30	3.72	63.56	54.02	4.31	360	384	35	779	17.2	11.7
2001		71.84	6.25	62.93	70.25	6.15	216	131	15	362	11.7	4.5
2002		41.40	3.69	63.58	57.21	4.57	288	206	25	519	15.2	6.9
2003		68.95	5.54	61.00	61.05	5.09	292	97	27	416	17.2	3.5
2004		86.22	7.95	62.06	85.04	7.87	297	134	24	455	15.2	4.2
2005		84.23	5.91	61.70	64.64	4.90	349	255	41	645	17.1	7.7
2006		50.09	3.64	62.13	60.67	4.15	404	437	42	883	19.4	13.1
2007		82.87	6.52	61.67	73.88	6.01	409	327	40	776	22.3	11.0
2008		72.81	4.06	60.75	51.24	3.18	432	304	61	797	24.6	10.5
2009		65.23	4.50	64.17	87.03	5.53	434	353	50	837	20.6	10.8
2010		69.40	3.61	62.11	64.86	3.44	397	358	29	784	20.8	11.6
2011		50.48	3.02	61.49	62.86	3.51	376	396	64	836	21.1	13.7
2012		31.65	2.29	59.47	46.28	2.92	467	495	495	1014	31.7	20.0
2013		57.70	3.76	55.19	59.88	3.86	436	326	326	794	34.1	14.1
2014		72.41	3.81	57.74	62.40	3.43	397	342	342	801	28.7	14.3
2015		66.51	3.59	58.19	63.37	3.47			330	775	28.6	13.7





PH419 - Carter Lease
HA 94, 98, 100
Revised - 3/89



2014 - JCR Evaluation Form

SPECIES: Pronghorn
 HERD: PR438 - BAGGS
 HUNT AREAS: 53, 55

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

 PREPARED BY: TONY MONG

	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	7,505	8,566	8,797
Harvest:	193	192	225
Hunters:	206	207	235
Hunter Success:	94%	93%	96%
Active Licenses:	218	219	245
Active License Success:	89%	88%	92%
Recreation Days:	607	684	750
Days Per Animal:	3.1	3.6	3.3
Males per 100 Females	55	45	
Juveniles per 100 Females	60	56	

Population Objective (± 20%) : 9000 (7200 - 10800)

Management Strategy: Recreational

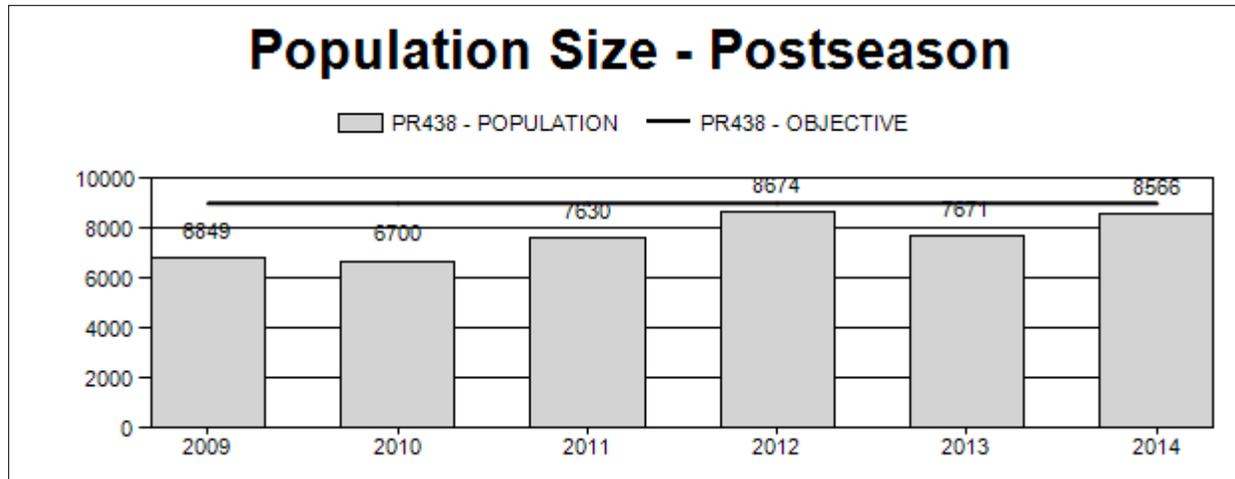
Percent population is above (+) or below (-) objective: -4.8%

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

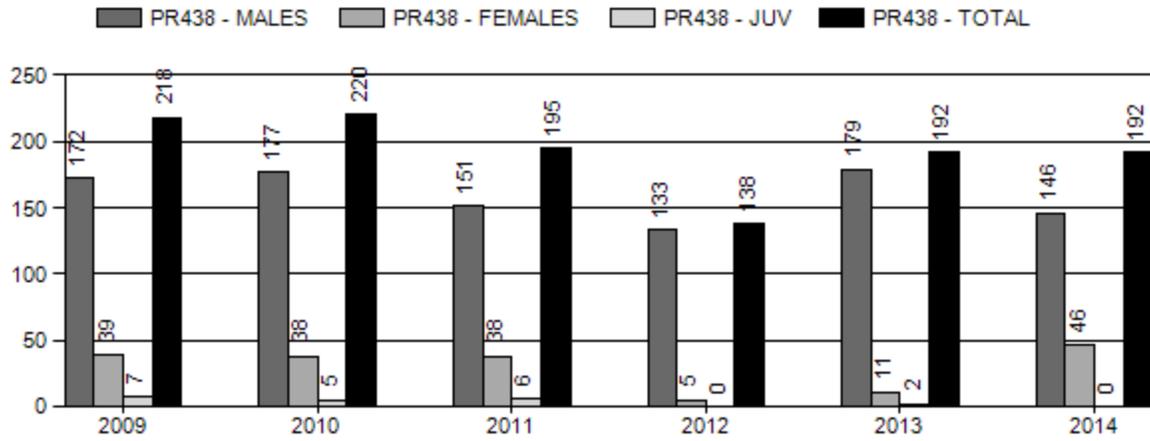
Model Date: 03/02/2015

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

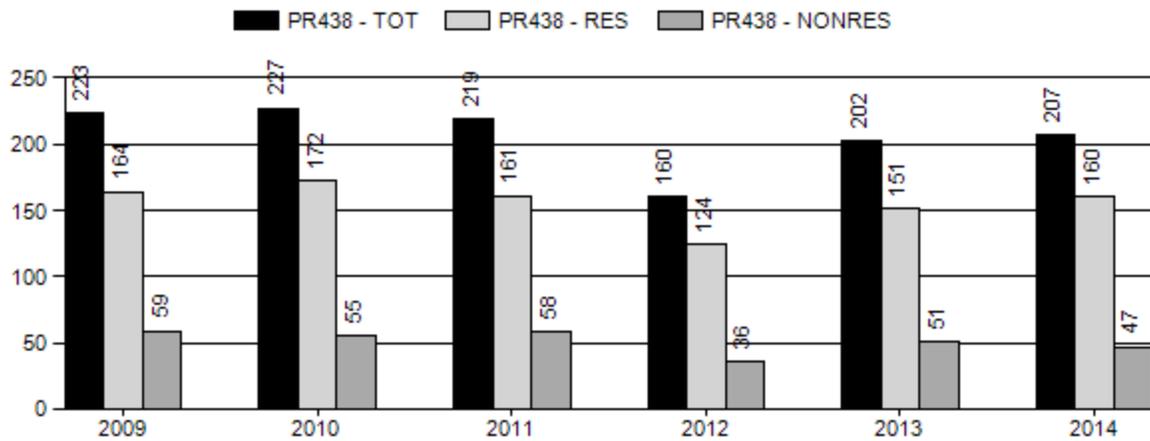
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.9%	2.0%
Males ≥ 1 year old:	7.5%	7.5%
Juveniles (< 1 year old):	0%	0.5%
Total:	2.15%	2.7%
Proposed change in post-season population:	2.0%	2.0%



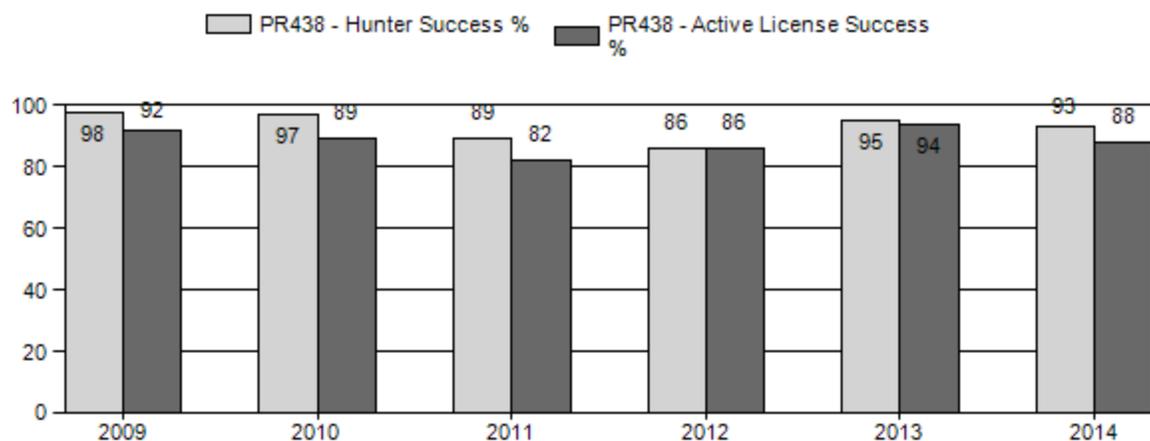
Harvest



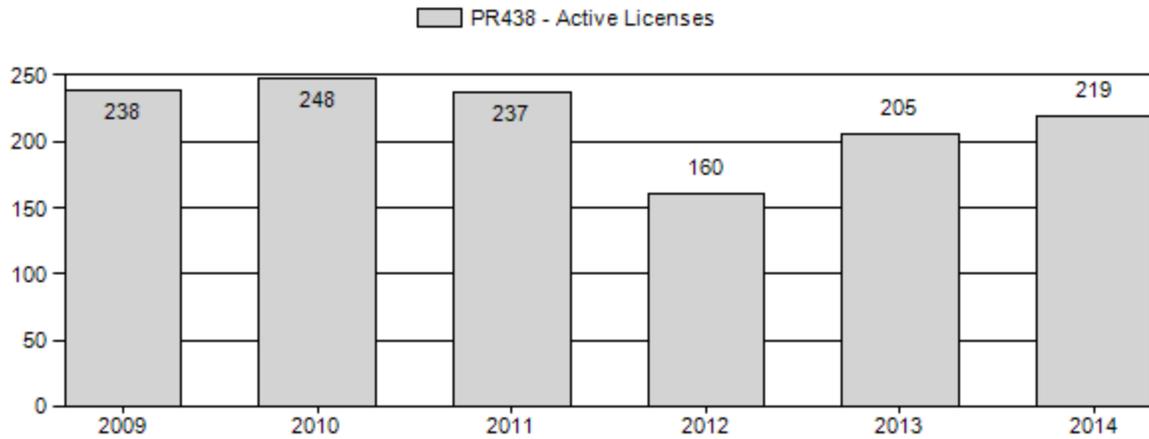
Number of Hunters



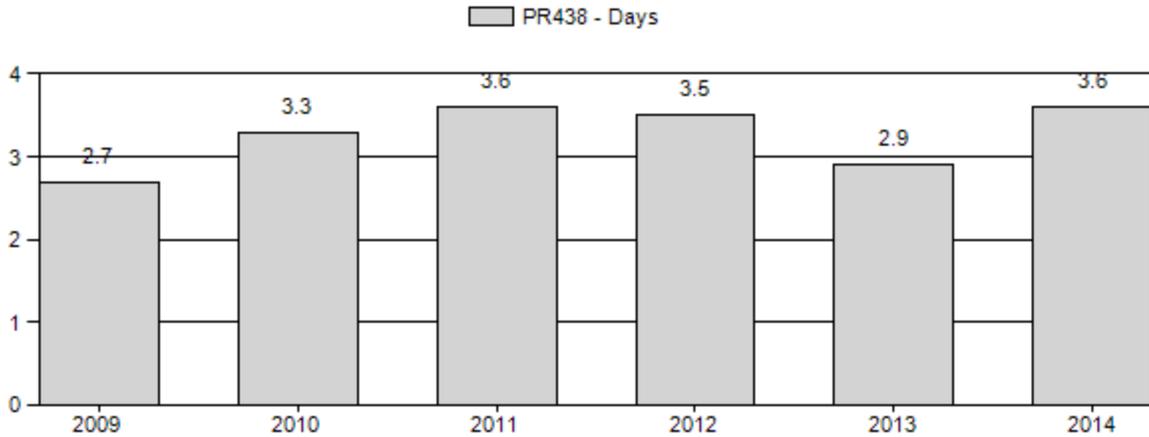
Harvest Success



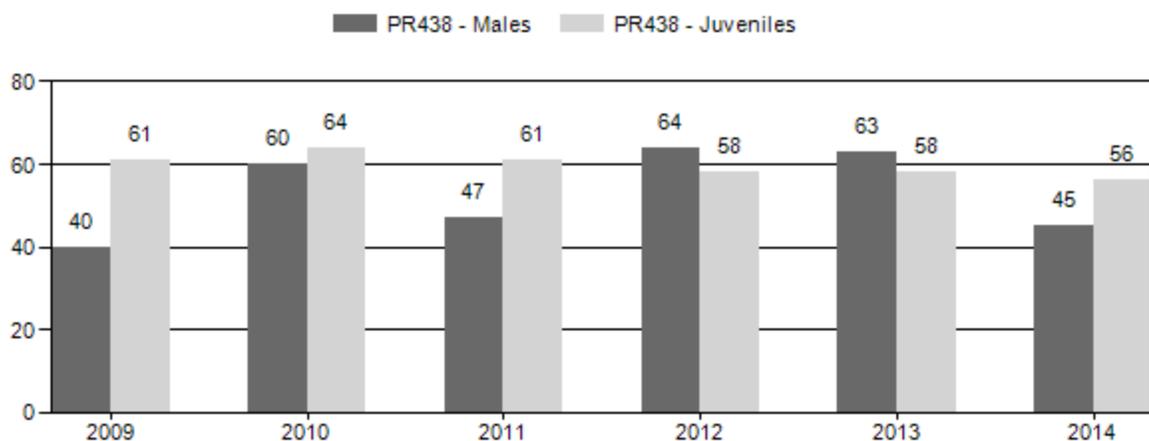
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2015 HUNTING SEASON

SPECIES : Pronghorn

HERD UNIT : **Baggs (438)**

HUNT AREAS: **53, 55**

Dates of Season

Hunt Area	Type	Opens	Closes	Quota	License	Limitations
53	1	Sep. 20	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	75	Limited quota	Doe or fawn
	7	Sep. 1	Oct. 31	25	Limited quota	Doe or fawn valid on or within one (1) mile of irrigated land
55	1	Sep. 20	Sep. 31	100	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	50	Limited quota	Doe or fawn
53, 55	Archery	Aug. 15	Sept. 19			Refer to Section 3

<i>Hunt Area</i>	<i>Type</i>	<i>Quota change from 2014</i>
53	1	0
	6	+75
	7	0
55	1	0
	6	+25
<i>Herd Unit Total</i>	1	0
	6	+100
	7	0

Management Evaluation

Current Management Objective: 9,000

Management Strategy: Recreation

2014 End-of-bio-year Estimate: 6,700

2015 Proposed Postseason Population Estimate: 8,800

The Baggs Pronghorn Herd is nearing the objective of 9,000 (set in 1993), and our current management strategy is to maintain current population levels. Buck ratios remain within recreational management guidelines, but concerns exist in the southern portion of the herd unit (Area 53), where limited access concerns occur. Consequently, Type 1 license issuance will remain the same as last year despite the fact more opportunity is available on a herd unit basis. Since the herd is now at objective, some female harvest is warranted to maintain the herd at objective. Therefore, we are proposing an additional 100 doe/fawn licenses across the herd unit.

Herd Unit Issues

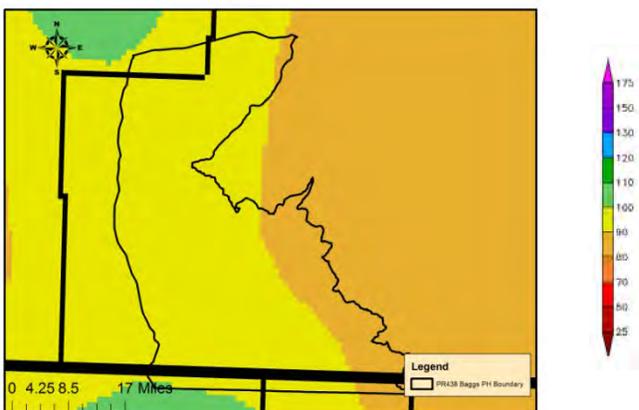
Throughout the Baggs Pronghorn Herd we continue to see increasing development of oil and gas fields associated with the Atlantic Rim Project. Construction of the largest wind turbine project in North America, the Chokeycherry-Sierra Madre Wind Project, should begin within two years. Hunt area 53 consists primarily of public land and remains relatively open to hunting. However, area 55 has significant access concerns due to checkerboard ownership and outfitter leases.

Weather

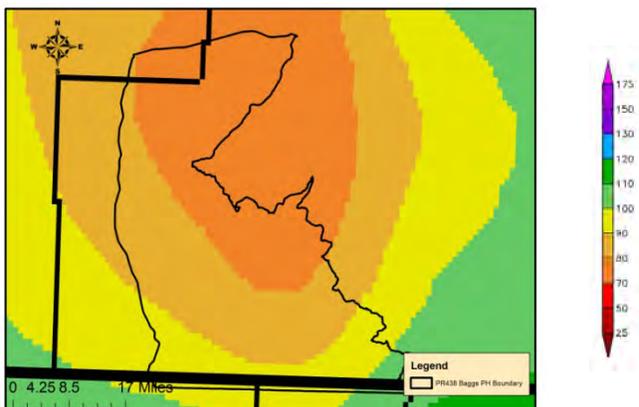
Weather conditions have been quite variable in this herd unit during recent years, ranging from severe winter weather to long-term drought. Conditions have improved dramatically over the past year. Overall, the herd unit has seen higher than normal precipitation in 2014 (Figure 1), when compared to 2013. This increase in moisture should equate to better vegetation in 2015. The 2014-15 winter was extremely mild, with low levels of snowfall and higher than average temperatures throughout winter. Although initially concerning because of the low winter precipitation, 2015 spring moisture levels seem to have more than made up for this shortfall.

Figure 1. A) Percent of normal precipitation for the herd unit from January 2013 to December 2013, B) Percent of normal precipitation for the herd unit from January 2014 to December 2013.

A)



B)



Habitat

Precipitation during 2014-15 has resulted in dramatically improved habitat conditions. The increase in moisture and mild temperatures during the fall months of 2014 resulted in a late growth opportunity for vegetation in the herd unit, and pronghorn benefitted through increased body condition prior to the 2014-15 winter. An early warming trend following this winter, coupled with regular moisture through the 2015 spring months, resulted in an early green up, persisting through today. Some areas in the herd unit received more moisture than observed for many years.

Field Data

Beginning with the severe winter of 2007-08, inclement weather conditions, including droughts and severe winters resulted in a fairly slow recovery for Baggs pronghorn. However, recent higher fawn ratios (5-year average 60:100), favorable winters, and very conservative hunting seasons have allowed this herd to reach objective, and more liberal seasons are warranted in the future. We continue to see disparate adult buck ratios between hunt areas 53 (5-year average 29:100) and 55 (5-year average 47:100), due in large part to differences in access and harvest rates. Fawn production over the last 4 years (60:100) has been high compared to the previous 10 years (52:100).

Harvest Data

The disparity between buck ratios in Areas 53 and 55 is apparent within the harvest data. Hunt area 55 has a higher hunter success rate (hunter success = 98%) when compared to hunt area 53 (hunter success = 87%). However, success rates in Area 53 are consistent with most other public land recreational management areas. The lower hunter success leads local managers to believe that hunters are either not finding bucks, or (more likely) are not finding a buck of suitably large size. In either case, the proposed 2015 hunting season reflects our concern with buck numbers in this southern portion of the herd unit (Area 53), and continues to recognize access concerns in the northern portion (Area 55). Conservative harvest of females and increased fawn production has been successful at increasing population numbers and will allow for additional hunter opportunity in the coming years.

Population

The current population model estimates the 2014 end-of-bio-year population to be 6,700 animals. The CJ, CA model was selected based on the lowest AICc value and what we believe to be a good representation of the actual population trend and size. However, results are inconsistent with the most recent line transect estimate (2012), suggesting the model is conservative. Despite efforts to parameterize the model to try and fit the 2012 line transect estimate, efforts were not successful. I have a high level of confidence in the line transect data collected in 2012. Although the model shows a population nearing the objective, I believe we have already reached that objective. A survey next year is warranted to further calibrate the spreadsheet model.

Management Summary

The challenge with managing this herd is driven by the disparity in buck ratios and access between the two hunt areas, coupled with an increasing population. Because of the overall population levels, we are going to maintain population levels near the objective through

increased female harvest, but are maintaining buck harvest opportunity at 2014 levels due to access and buck ratio disparity. It is likely additional opportunity will be possible in the near future, particularly given expected increases in fawns with the exceptional conditions this year is bringing. Impacts brought on by development are expected to continue in this herd, and will continue to be monitored to document impacts.

INPUT	
Species:	Pronghorn
Biologist:	Tony Mong
Herd Unit & No.:	Baggs, 438
Model date:	03/02/15

MODELS SUMMARY		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	134	125	
SCJ,JSCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	139	116	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	200	81	

Year	Population Estimates from Top Model										LT Population Estimate		Trend Count
	Predicted Prehunt Population (year <i>t</i>)		Predicted Posthunt Population (year <i>t</i>)		Total		Predicted adult End-of-bio-year Pop (year <i>t</i>)		Field Est	Field SE			
	Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total Adults	Field Est	Field SE			
1993	2842	3558	7745	14144	2712	2550	6311	11574	2782	6189	8970		
1994	2779	2726	6065	11570	2753	2395	5905	11053	2748	5987	8735		
1995	1604	2693	5867	10164	1604	2335	5867	9806	2450	5728	8178		
1996	2164	2401	5613	10179	2164	2214	5594	9972	2478	5596	8074		
1997	2088	2429	5484	10001	2080	2288	5440	9808	2530	5432	7962		
1998	2881	2480	5323	10685	2879	2335	5278	10492	2746	5457	8204		
1999	2942	2691	5348	10981	2939	2459	5327	10726	2865	5518	8382		
2000	2771	2807	5407	10986	2771	2507	5325	10603	2866	5474	8340		
2001	2561	2809	5364	10734	2557	2590	5320	10467	2903	5426	8328		
2002	2988	2845	5317	11150	2986	2499	5247	10732	2900	5449	8348		
2003	2290	2842	5340	10471	2282	2417	5288	9987	2663	5335	7998		
2004	2804	2610	5229	10643	2793	2120	5128	10041	2493	5292	7785		
2005	3478	2443	5186	11107	3457	1891	4840	10188	2416	5143	7559		
2006	2520	2368	5040	9928	2473	1745	4361	8579	2056	4450	6506		
2007	2308	2015	4361	8684	2240	1410	3852	7501	1693	3944	5637	4681	676
2008	1751	1659	3865	7275	1745	1467	3810	7021	1700	3863	5563		
2009	2296	1666	3786	7748	2289	1476	3743	7508	1826	3920	5746		
2010	2452	1789	3842	8083	2446	1595	3800	7841	1968	4007	5975		
2011	2383	1929	3927	8238	2376	1762	3885	8024	2133	4110	6244	7791	1155
2012	2352	2090	4028	8470	2352	1944	4023	8319	2223	4190	6413		
2013	2401	2179	4106	8685	2401	1982	4094	8476	2352	4232	6584		
2014	2330	2305	4148	8783	2324	2144	4097	8566	2435	4269	6703		
2015	2449	2386	4183	9018	2443	2208	4146	8797					

Survival and Initial Population Estimates

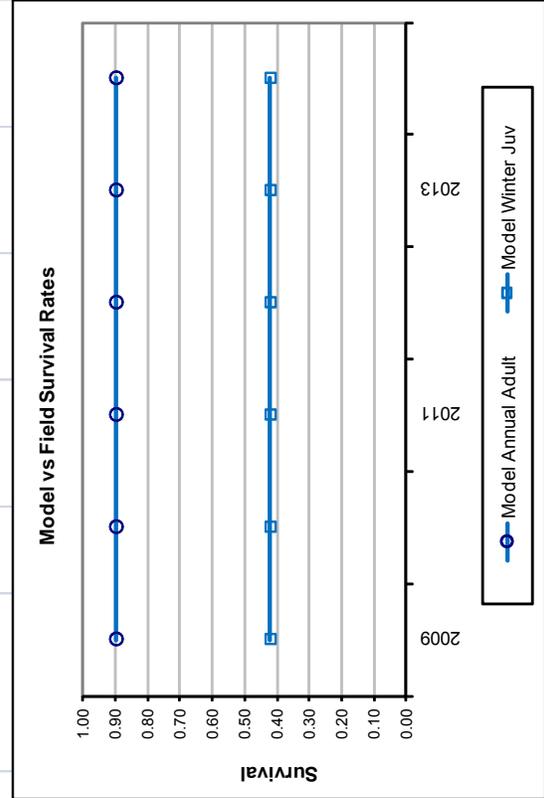
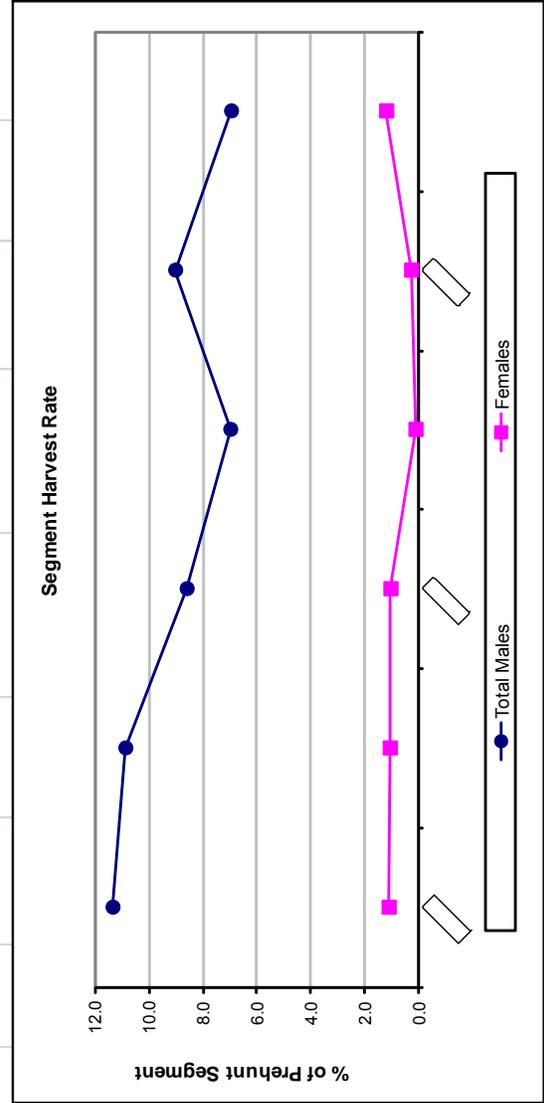
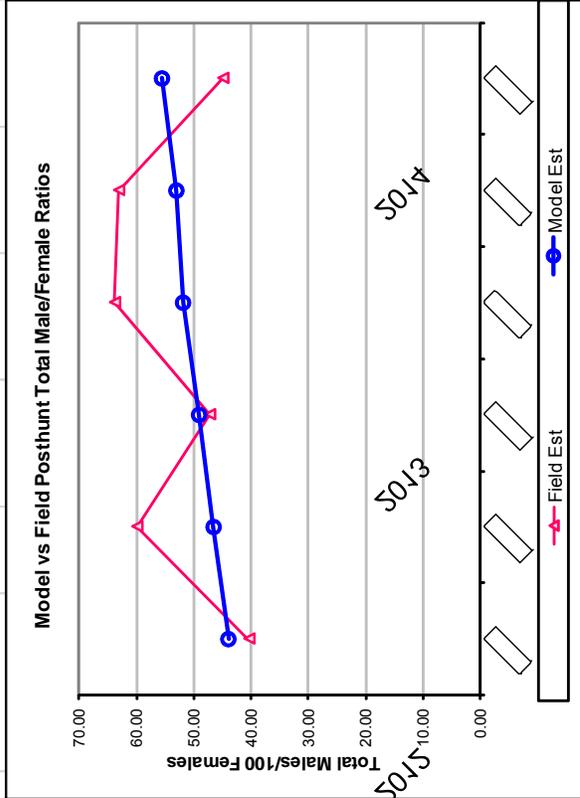
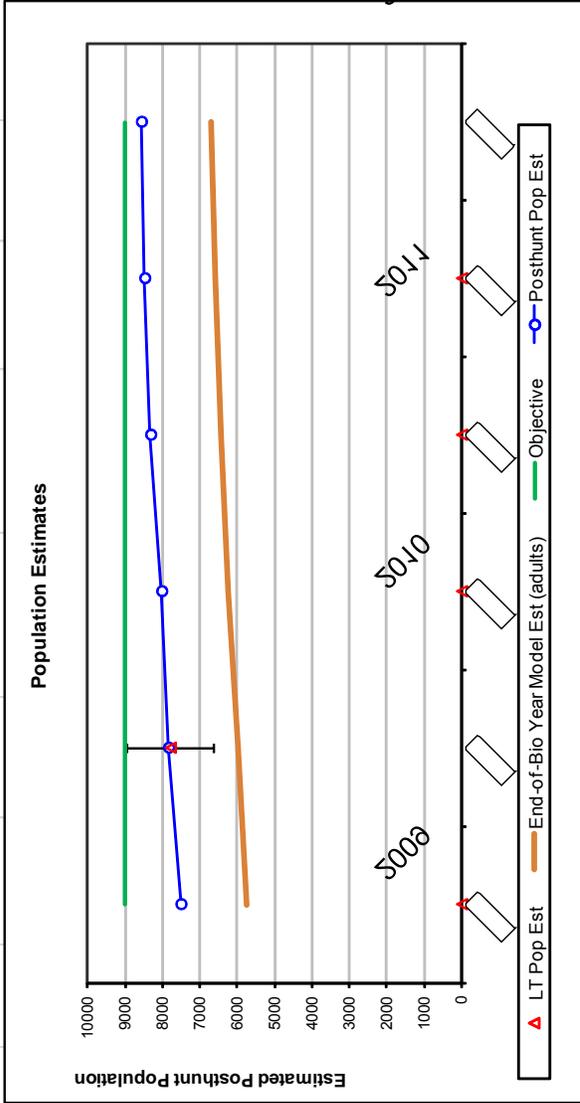
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.42		0.90	
1994	0.42		0.90	
1995	0.42		0.90	
1996	0.42		0.90	
1997	0.42		0.90	
1998	0.42		0.90	
1999	0.42		0.90	
2000	0.42		0.90	
2001	0.42		0.90	
2002	0.42		0.90	
2003	0.42		0.90	
2004	0.42		0.90	
2005	0.42		0.90	
2006	0.42		0.90	
2007	0.42		0.90	
2008	0.42		0.90	
2009	0.42		0.90	
2010	0.42		0.90	
2011	0.42		0.90	
2012	0.42		0.90	
2013	0.42		0.90	
2014	0.42		0.90	
2015	0.42		0.90	

Parameters:		Optim cells
Juvenile Survival =		0.422
Adult Survival =		0.899
Initial Total Male Pop/10,000 =		0.356
Initial Female Pop/10,000 =		0.774

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			Juv	Males	Females	Total Harvest	Segment Harvest Rate (%)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE					Total Males	Females
1993	36.70	2.13	2.51	45.94	47.52	2.51	916	1303	118	2337	28.3	18.5
1994	45.83	3.45	4.25	44.95	62.52	4.25	301	145	24	470	12.1	2.6
1995	27.35	2.37	2.97	45.91	39.16	2.97	0	0	0	326	13.3	0.0
1996	38.55	2.84	2.77	42.78	37.20	2.77	170	18	0	188	7.8	0.4
1997	38.07	2.58	2.88	44.29	45.05	2.88	128	40	7	175	5.8	0.8
1998	54.13	3.71	3.53	46.58	50.33	3.53	132	41	2	175	5.9	0.8
1999	55.00	3.49	3.21	50.32	48.57	3.21	211	19	2	232	8.6	0.4
2000	51.25	3.38	3.11	51.92	45.21	3.11	273	75	0	348	10.7	1.5
2001	47.74	3.20	3.83	52.36	62.15	3.83	199	40	4	243	7.8	0.8
2002	56.20	3.56	3.16	53.50	47.12	3.16	314	64	2	380	12.1	1.3
2003	42.88	3.15	4.20	53.22	65.86	4.20	386	47	7	440	14.9	1.0
2004	53.63	2.92	2.57	49.91	44.29	2.57	445	92	10	547	18.8	1.9
2005	67.06	3.83	3.03	47.11	47.38	3.03	502	315	19	836	22.6	6.7
2006	50.00	3.38	3.73	46.98	57.90	3.73	566	617	43	1226	26.3	13.5
2007	52.92	3.44	3.38	46.20	51.46	3.38	550	463	62	1075	30.0	11.7
2008	45.32	3.51	3.12	42.94	37.83	3.12	175	50	6	231	11.6	1.4
2009	60.66	3.65	2.79	44.00	40.44	2.79	172	39	7	218	11.4	1.1
2010	63.81	3.66	3.50	46.57	59.97	3.50	177	38	5	220	10.9	1.1
2011	60.67	3.94	3.33	49.11	47.29	3.33	151	38	6	195	8.6	1.1
2012	58.38	3.56	3.79	51.90	63.87	3.79	133	5	5	138	7.0	0.1
2013	58.46	3.81	4.02	53.07	63.17	4.02	179	11	11	190	9.0	0.3
2014	56.17	3.36	2.90	55.58	44.99	2.90	146	46	46	197	7.0	1.2
2015	58.53	3.69	3.35	57.03	50.74	3.35	162	34	34	201	7.5	0.9

FIGURES



Baggs PR438 Herd Seasonal Ranges

