2012 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2012 - 5/31/2013

HERD: PR740 - CHEYENNE RIVER

HUNT AREAS: 4-9, 27, 29 | PREPARED BY: JOE SANDRINI

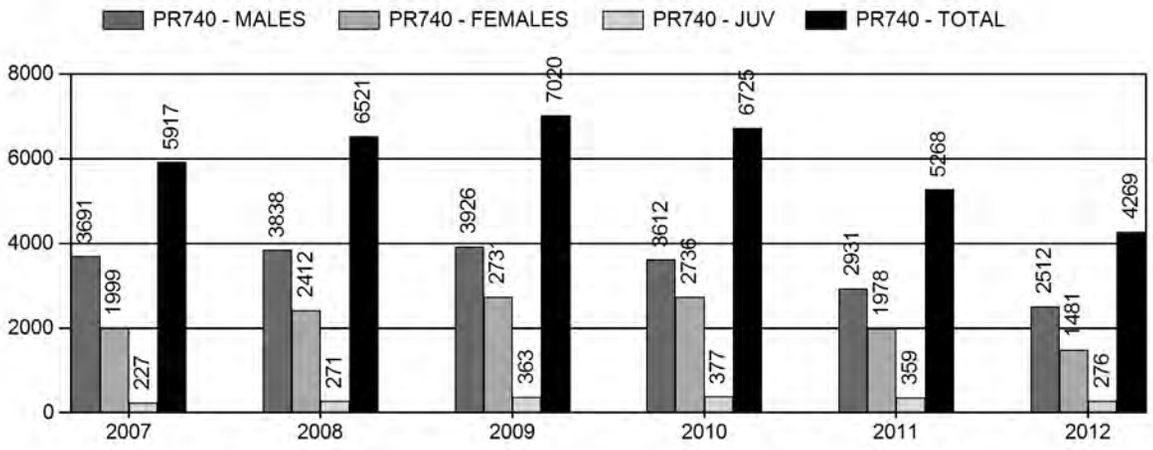
	2007 - 2011 Average	2012	2013 Proposed
Population:	45,102	31,065	33,120
Harvest:	6,290	4,269	3,785
Hunters:	6,523	4,826	4,250
Hunter Success:	96%	88%	89%
Active Licenses:	7,198	5,184	4,560
Active License Percent:	87%	82%	83%
Recreation Days:	22,295	19,330	17,000
Days Per Animal:	3.5	4.5	4.5
Males per 100 Females	57	44	
Juveniles per 100 Females	62	63	

Population Objective:	38,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-18.2%
Number of years population has been + or - objective in recent trend:	2
Model Date:	04/09/2013

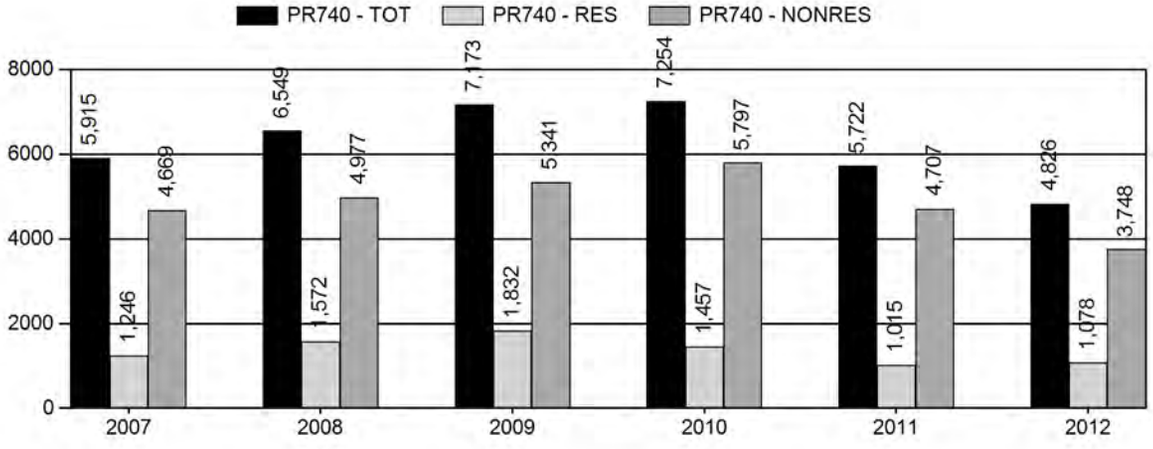
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females Ó 1 year old:	9.6%	7.5%
Males Ó 1 year old:	34.0%	29.0%
Juveniles (< 1 year old):	2.8%	2.3%
Total:	13.0%	11.2%
Proposed change in post-season population:	-15.0%	+6.5%

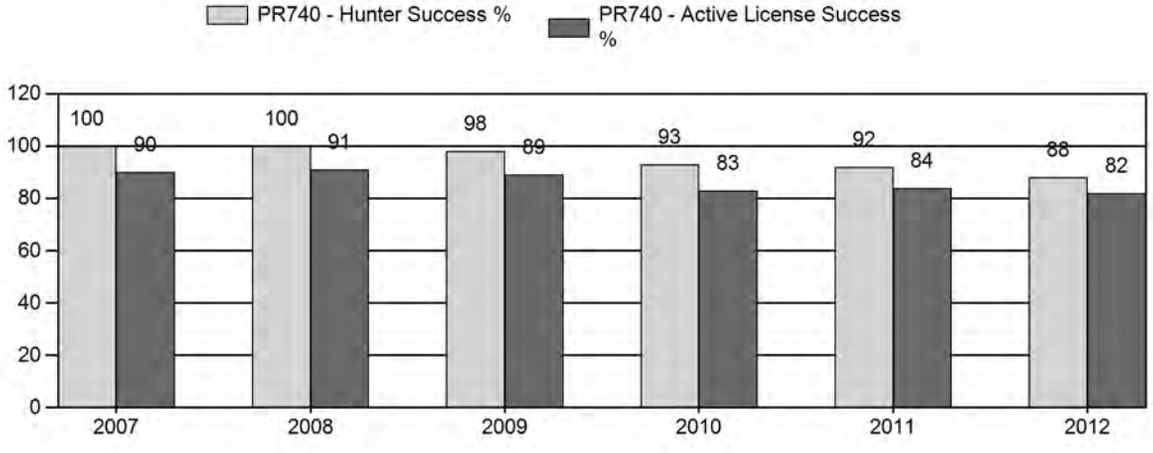
Harvest



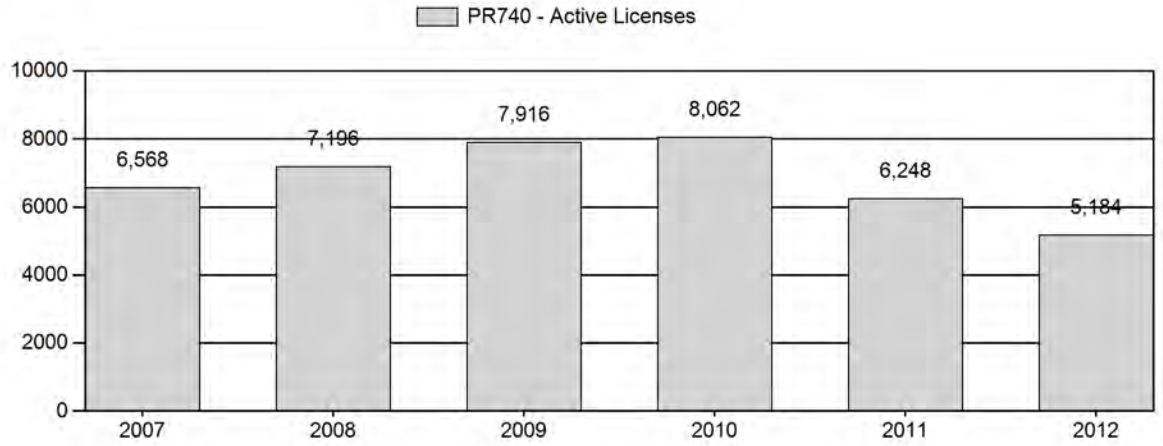
Number of Hunters



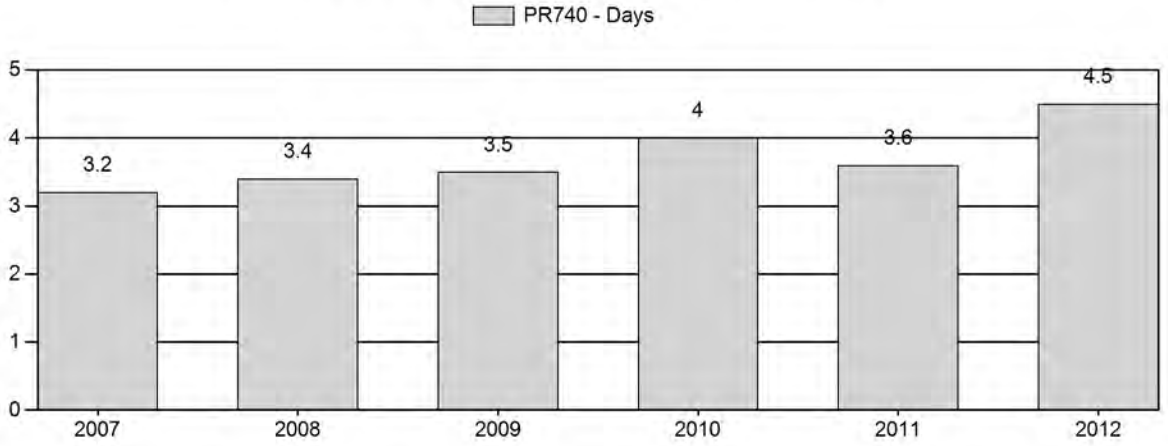
Harvest Success



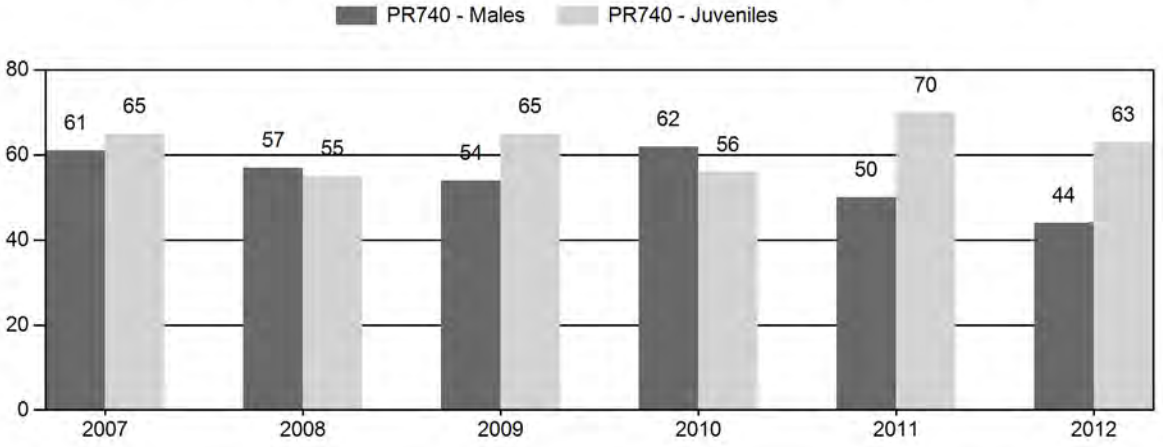
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR740 - CHEYENNE RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	61,548	515	772	1,287	27%	2,103	44%	1,362	29%	4,752	2,513	24	37	61	± 3	65	± 4	40
2008	52,544	601	1,081	1,682	27%	2,950	47%	1,630	26%	6,262	1,982	20	37	57	± 3	55	± 3	35
2009	53,036	395	1,101	1,496	25%	2,757	46%	1,802	30%	6,055	2,429	14	40	54	± 3	65	± 3	42
2010	50,623	411	1,054	1,465	29%	2,345	46%	1,309	26%	5,119	2,261	18	45	62	± 3	56	± 3	34
2011	42,320	208	695	903	23%	1,796	45%	1,258	32%	3,957	2,624	12	39	50	± 3	70	± 4	47
2012	35,760	202	462	664	21%	1,513	48%	960	31%	3,137	2,156	13	31	44	± 3	63	± 4	44

INPUT	
Species:	Pronghorn
Biologist:	Heather O'Brien
Herd Unit & No.:	PR745 Rattlesnakes
Model date:	02/28/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	136	145	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	134	145	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	69	177	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	2266	2169	4063	**8498**	2132	1331	3271	**6733**	2038	3764	**5802**				12000
1994	2804	1998	3689	**8490**	2774	1503	3491	**7768**	1874	3675	**5549**				12000
1995	2447	1836	3602	**7885**	2430	1329	3445	**7204**	2224	4147	**6371**				12000
1996	3590	2180	4064	**9833**	3577	1767	3881	**9226**	3153	5057	**8209**				12000
1997	3986	3090	4955	**12031**	3956	2551	4759	**11265**	3887	5889	**9776**				12000
1998	4074	3809	5771	**13654**	4039	2975	5470	**12483**	3338	5620	**8957**	7272	1152		12000
1999	3630	3271	5507	**12408**	3577	2082	5118	**10777**	2896	5694	**8590**				12000
2000	3819	2838	5580	**12237**	3774	1986	5312	**11072**	3375	6402	**9777**	12708	2202		12000
2001	4567	3308	6274	**14149**	4545	2874	6183	**13602**	3410	6387	**9797**				12000
2002	4114	3341	6259	**13714**	4101	2779	6101	**12981**	3220	6217	**9437**	7357	1396		12000
2003	4618	3156	6093	**13867**	4584	2467	5831	**12882**	4197	7235	**11432**				12000
2004	6724	4113	7090	**17927**	6701	3347	6693	**16741**	5073	8087	**13161**				12000
2005	6454	4972	7926	**19352**	6408	4142	7567	**18117**	4853	7950	**12803**				12000
2006	5147	4756	7791	**17694**	5081	3768	7257	**16106**	5262	8415	**13677**				12000
2007	4716	5157	8247	**18120**	4572	3830	7503	**15905**	5307	8640	**13947**				12000
2008	4739	5201	8468	**18407**	4688	3913	7481	**16082**	5444	8646	**14090**				12000
2009	4460	5335	8473	**18269**	4433	3796	7180	**15409**	5191	8222	**13413**				12000
2010	4888	5087	8058	**18033**	4741	3301	6647	**14689**	3607	6623	**10230**				12000
2011	2912	3535	6491	**12938**	2838	1936	5174	**9948**	2649	5526	**8175**				12000
2012	2331	2596	5416	**10343**	2251	1540	4613	**8404**	2473	5364	**7837**				12000
2013	2319	2424	5257	**10000**	2253	1544	4762	**8559**							12000
2014															12000
2015															12000
2016															12000
2017															12000
2018															12000
2019															12000
2020															12000
2021															12000
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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	0.90			0.87		
1994	0.44			0.87		
1995	0.90			0.87		
1996	0.90			0.87		
1997	0.84			0.87		
1998	0.40			0.87		
1999	0.67			0.87		
2000	0.90			0.87		
2001	0.40			0.87		
2002	0.40			0.87		
2003	0.90			0.87		
2004	0.65			0.87		
2005	0.40			0.87		
2006	0.80			0.87		
2007	0.90			0.87		
2008	0.90			0.87		
2009	0.90			0.87		
2010	0.40			0.87		
2011	0.40			0.87		
2012	0.90			0.87		
2013	0.40			0.87		
2014						
2015						
2016						
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2018						
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Parameters:	Optim cells
Adult Survival =	0.868
Initial Total Male Pop/10,000 =	0.217
Initial Female Pop/10,000 =	0.406

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

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		55.76	2.26	53.38	53.18	2.19	762	720	122	1604	38.6	19.5
1994		76.02	3.24	54.16	54.39	2.57	450	180	27	657	24.8	5.4
1995		67.95	2.80	50.98	48.04	2.21	461	142	16	619	27.6	4.3
1996		88.33	3.84	53.64	58.71	2.87	375	166	11	552	18.9	4.5
1997		80.43	4.31	62.35	62.28	3.59	490	179	27	696	17.4	4.0
1998		70.59	3.23	66.00	76.38	3.41	758	274	32	1064	21.9	5.2
1999		65.92	3.02	59.39	56.77	2.72	1081	354	48	1483	36.4	7.1
2000		68.44	3.65	50.86	47.98	2.86	775	243	41	1059	30.0	4.8
2001		72.80	3.84	52.72	55.80	3.19	394	83	20	497	13.1	1.5
2002		65.73	2.96	53.39	53.63	2.58	511	144	12	667	16.8	2.5
2003		75.80	3.35	51.79	47.39	2.42	626	238	31	895	21.8	4.3
2004		94.84	4.51	58.01	70.99	3.65	696	361	21	1078	18.6	5.6
2005		81.44	2.96	62.73	65.18	2.53	754	326	42	1122	16.7	4.5
2006		66.06	2.95	61.04	58.47	2.71	898	486	60	1444	20.8	6.9
2007		57.19	2.21	62.54	56.86	2.20	1207	676	131	2014	25.7	9.0
2008		55.96	2.03	61.42	59.46	2.12	1171	897	46	2114	24.8	11.7
2009		52.64	2.03	62.96	65.81	2.37	1399	1176	25	2600	28.8	15.3
2010		60.66	2.47	63.14	75.30	2.87	1624	1282	134	3040	35.1	17.5
2011		44.87	2.01	54.46	54.64	2.29	1454	1197	67	2718	45.2	20.3
2012		43.05	3.05	47.94	43.96	3.09	960	730	73	1763	40.7	14.8
2013		44.12	3.06	46.10	46.32	3.16	800	450	60	1310	36.3	9.4
2014												
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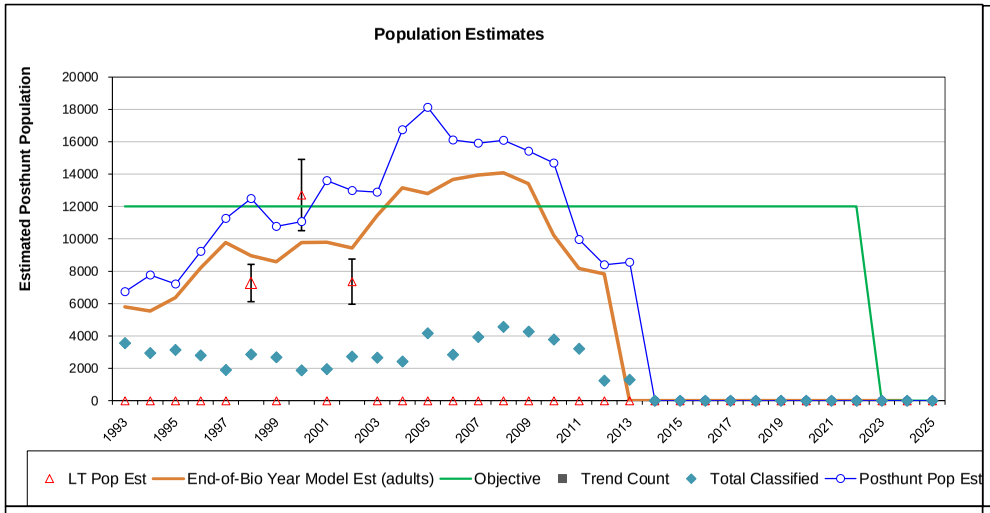
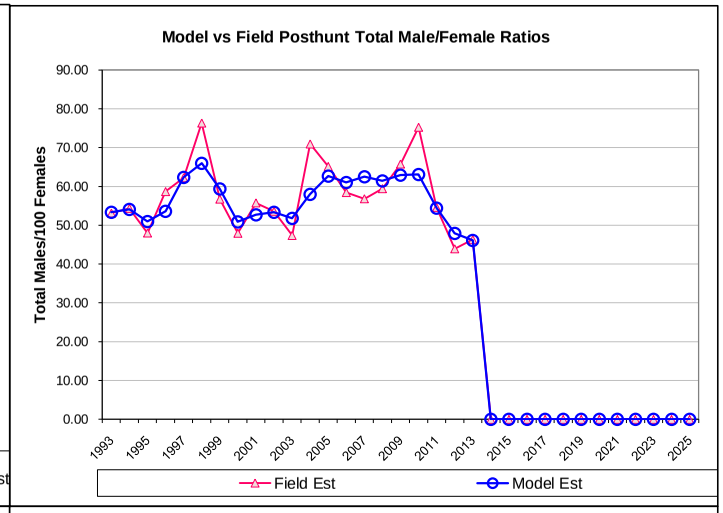
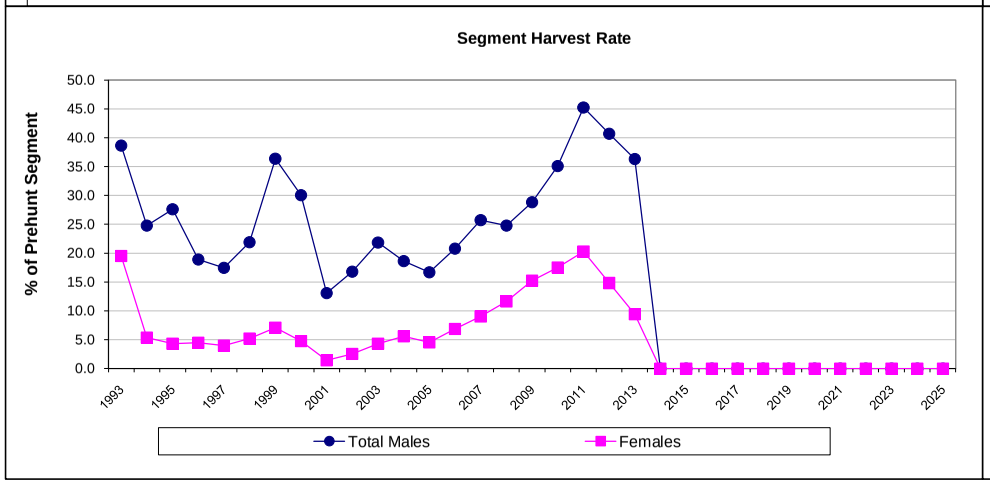
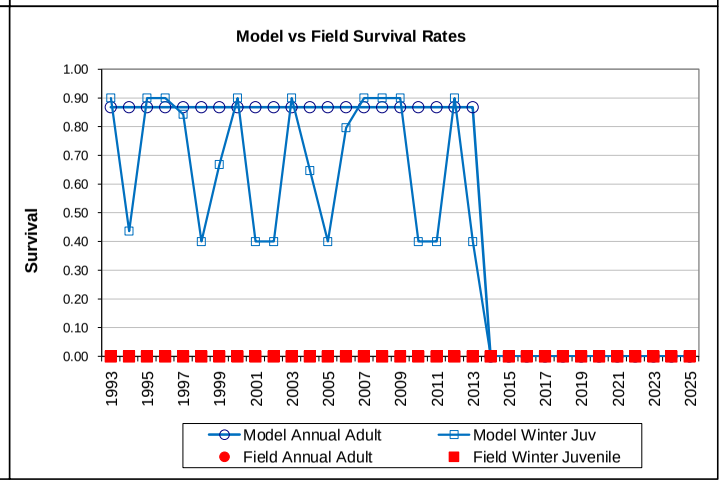
2022												
2023												
2024												
2025												

FIGURES





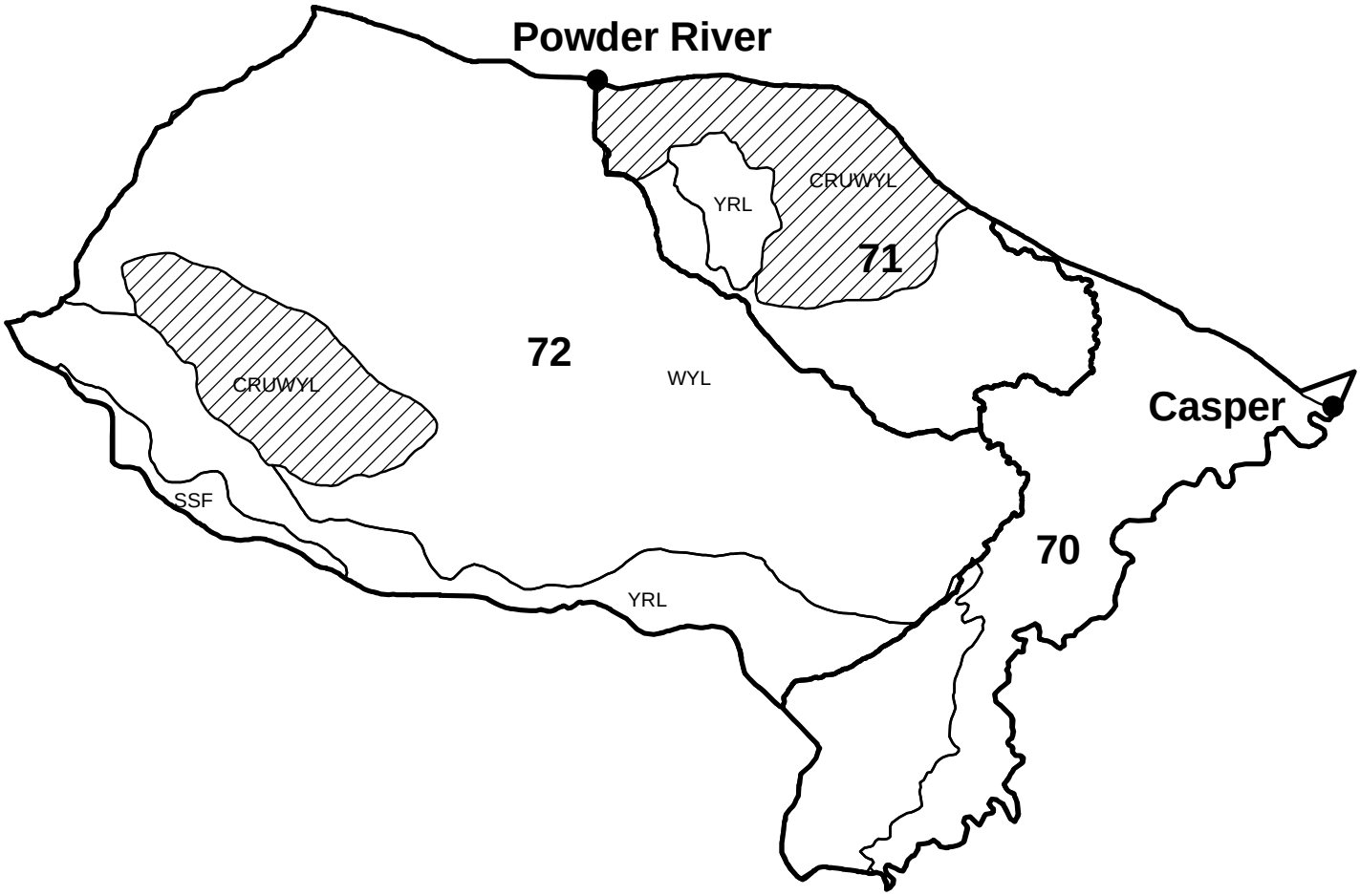




Comments:

END

Antelope - Rattlesnake
Hunt Areas 70,71,72
Casper Region
Revised 4/88



2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR746 - NORTH NATRONA

HUNT AREAS: 73

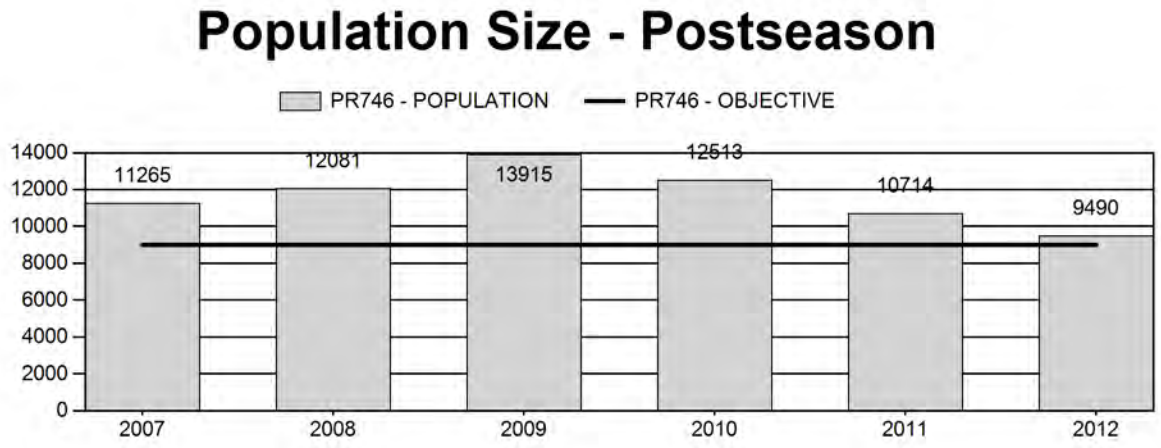
PREPARED BY: HEATHER O'BRIEN

	2007 - 2011 Average	2012	2013 Proposed
Population:	12,098	9,490	9,311
Harvest:	991	990	825
Hunters:	1,123	1,119	900
Hunter Success:	88%	88%	92%
Active Licenses:	1,176	1,185	950
Active License Percent:	84%	84%	87%
Recreation Days:	3,235	3,901	2,700
Days Per Animal:	3.3	3.9	3.3
Males per 100 Females	60	44	
Juveniles per 100 Females	54	46	

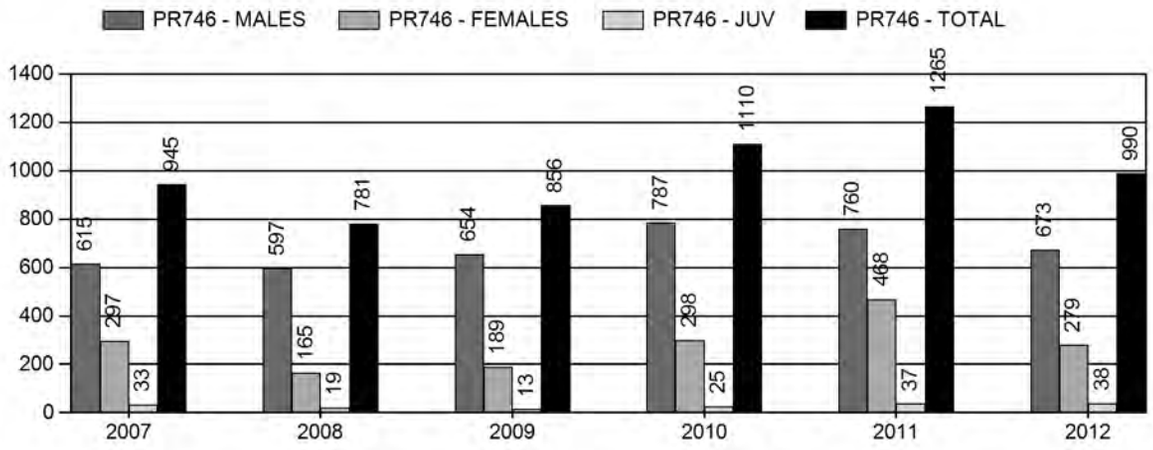
Population Objective:	9,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	5%
Number of years population has been + or - objective in recent trend:	15
Model Date:	2/28/2013

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

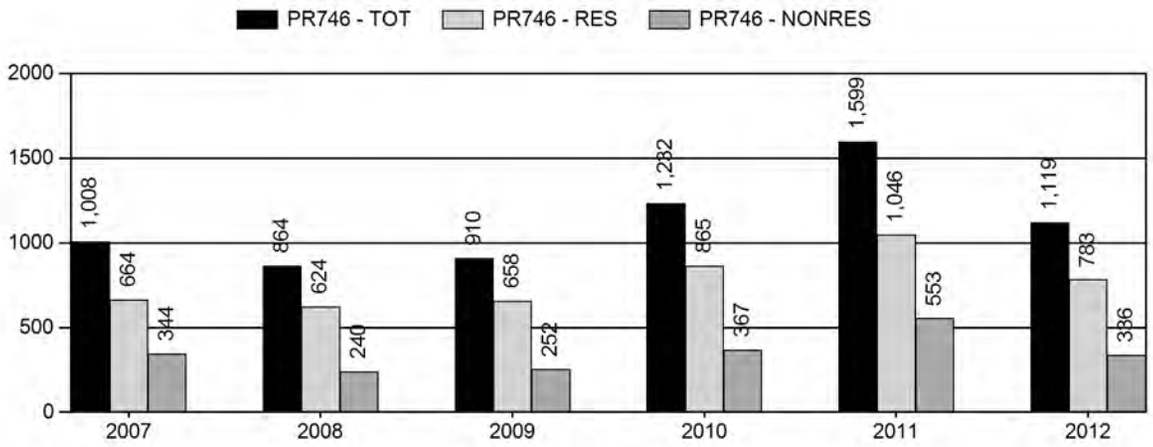
	JCR Year	Proposed
Females Ó 1 year old:	7.9%	5.3%
Males Ó 1 year old:	25.4%	30.3%
Juveniles (< 1 year old):	.7%	.01%
Total:	10.27%	8.96%
Proposed change in post-season population:	-10.5%	-7.9%



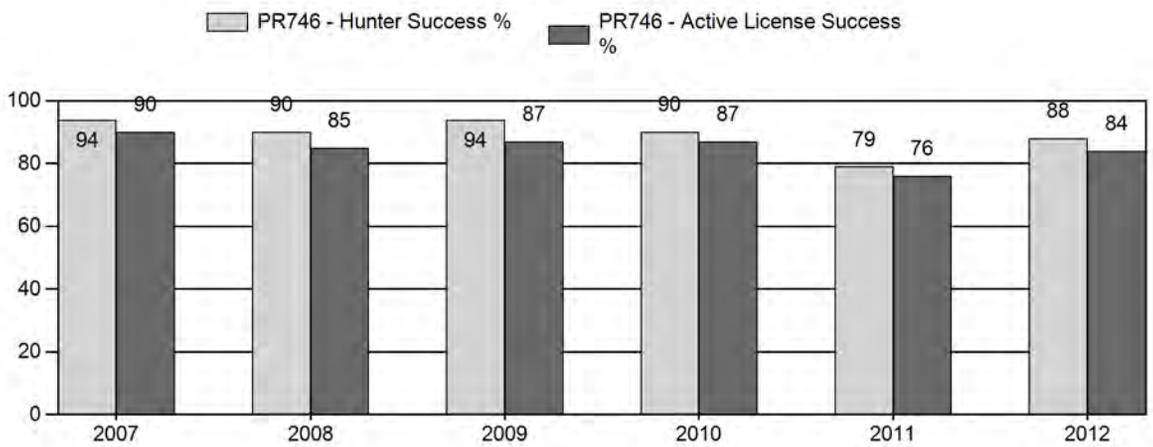
Harvest



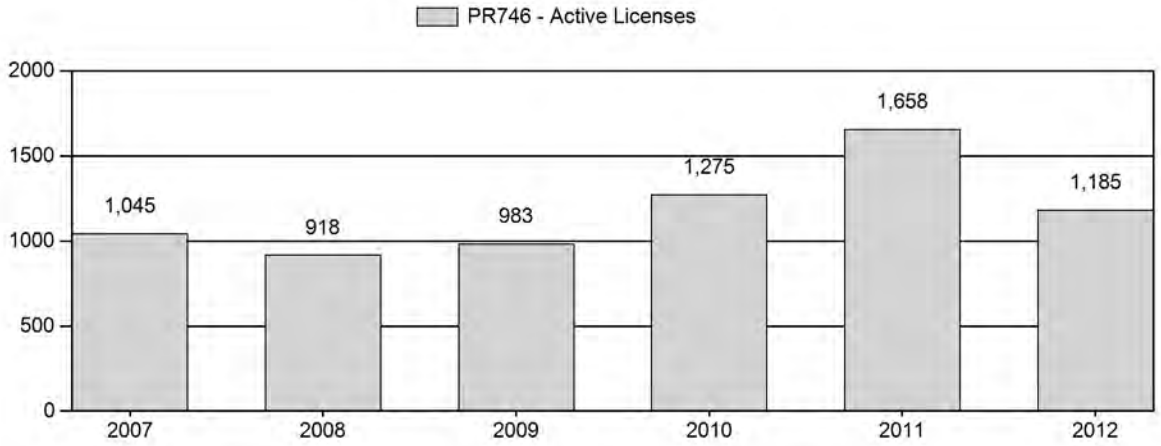
Number of Hunters



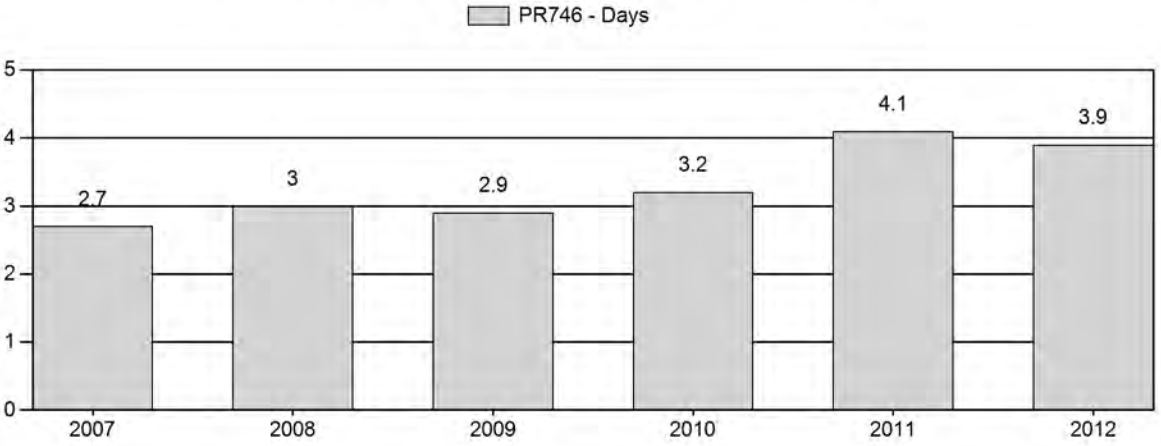
Harvest Success



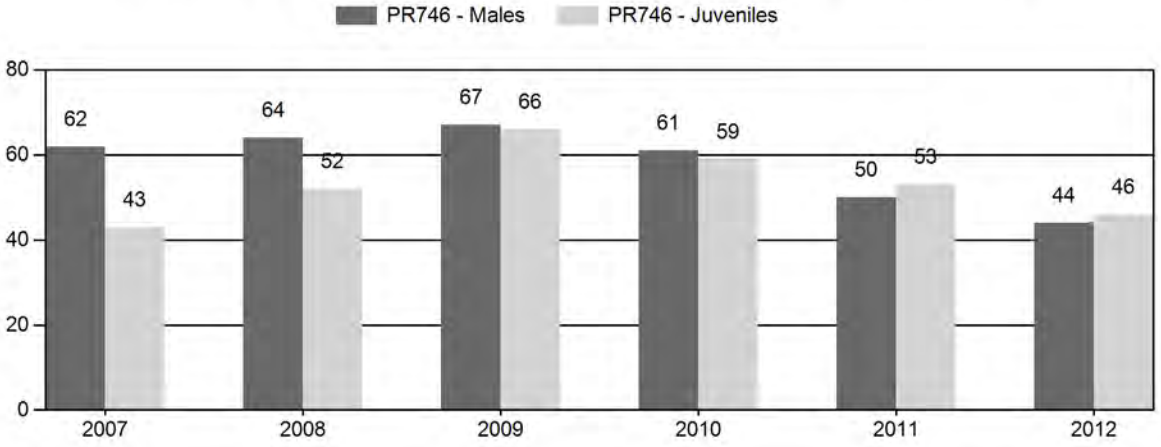
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR746 - NORTH NATRONA

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	12,305	368	547	915	30%	1,485	49%	637	21%	3,037	1,804	25	37	62	± 4	43	± 3	27
2008	12,940	245	380	625	30%	972	46%	508	24%	2,105	2,056	25	39	64	± 5	52	± 4	32
2009	14,856	273	541	814	29%	1,218	43%	809	28%	2,841	2,361	22	44	67	± 4	66	± 4	40
2010	13,734	172	392	564	28%	932	46%	552	27%	2,048	1,988	18	42	61	± 5	59	± 5	37
2011	12,124	119	540	659	25%	1,322	49%	697	26%	2,678	2,129	9	41	50	± 3	53	± 4	35
2012	10,579	127	190	317	23%	713	53%	327	24%	1,357	1,843	18	27	44	± 5	46	± 5	32

2013 HUNTING SEASONS
NORTH NATRONA PRONGHORN HERD (PR746)

Hunt Area	Type	Date of Seasons Opens	Closes	Quota	Limitations
73	1	Sept. 15	Oct. 31	800	Limited quota; any antelope
	6	Sept. 15	Oct. 31	100	Limited quota; doe or fawn antelope
	7	Sept. 15	Oct. 31	100	Limited quota; doe or fawn antelope valid on private land east of the Bucknum Rd (Natrona County Road 125) within the Casper Creek drainage
Archery		Aug. 15	Sept. 14		Refer to license type and limitations in Section 3

Hunt Area	Type	Quota change from 2012
73	1	-100
	6	-100
	7	-100

Management Evaluation

Current Postseason Population Management Objective: ~ 9,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~ 9,500
2013 Proposed Postseason Population Estimate: ~ 9,300

The North Natrona Herd unit has a post-season population management objective of 9,000 pronghorn. The herd is managed using the recreational management strategy, with a goal of maintaining preseason buck ratios between 30-59 bucks per 100 does. The objective and management strategy were last revised in 1987, and will be formally reviewed in 2014.

Herd Unit Issues

Hunting access within the herd unit is very good, with large tracts of public lands as well as walk-in areas available for hunting. The southeastern corner of the herd unit is the only area dominated by private lands. In this area, specific doe/fawn licenses have been added to address damage issues on irrigated agricultural fields. The main land use within the herd unit is traditional ranching and grazing of livestock. Industrial scale developments, including oil and gas development, are limited and isolated within this herd unit. Periodic disease outbreaks (i.e. hemorrhagic diseases, *Clostridium spp*. infections) can impact this herd and contribute to population declines when environmental conditions are suitable.

Weather

The winter of 2011-2012 was mild with below average snow accumulations and relatively warm temperatures. The growing season of 2012 through early winter of 2013 were extremely dry with above average temperatures. During the same time period, available water, forage growth, and forage quality were below average. As a result, very poor fawn ratios of 46:100 were observed during 2012 preseason classification surveys. The continued lack of quality forage in the winter of 2012-2013 could result in increased pronghorn mortality in spring of 2013, particularly if late snow accumulations create an additional stressor.

Habitat

This herd unit has no established habitat transects that measure production and/or utilization on shrub species that are preferred browse for pronghorn. Additionally, there are no comparable habitat transects in neighboring herd units to reference. Anecdotal observations and shrub monitoring for other big game species showed summer and winter forage availabilit for pronghorn to be very poor in 2012, with the possible exception of areas at higher elevations within this herd unit. Herbaceous forage species also were observed to be in poor condition, which likely contributed to diminished nutrition for lactating does and their fawns.

Field Data

Fawn ratios were high in this herd from 2002-2005, and the population grew markedly during this time period. Fawn ratios were moderate to poor from 2006-2012, but the population continued to grow through 2009 as license issuance did not keep pace with herd growth. In 2010-2011, license issuance increased sharply to address high antelope numbers and reduce the herd toward objective. By 2012, higher license issuance was no longer necessary to control growth of the herd, and licenses were reduced. Hunter harvest, mortality from harsh winter conditions in 2010-2011, extremely poor fawn production/survival, and severe drought in 2012 has subsequently reduced this herd.

Buck ratios for the North Natrona Herd historically average in the mid-50s per 100 does, though they exceeded recreational limits from 2007-2010, when ratios were in the 60s. Since then, buck ratios have dropped markedly each year along with the population as a whole, reaching a 15-year low of 44 bucks per hundred does in 2012. While this is still well within the targeted range for recreational management, hunters have developed higher expectations for buck numbers and quality within this herd. Managers thus plan to strive toward the upper range of recreational management with the goal of maintaining buck ratios in the 50s.

Harvest Data

License success in this herd unit is typically in the 80-90th percentile, with the exception of 2011 when license issuance remained high while the population declined. Hunter days reached a 15-year high in 2011 as well; further validating the aforementioned trend. In 2012, license issuance was cut in accordance with estimated population size, diminishing buck ratios, decreased harvest success, and increased harvest days. As a result, license success and hunter days improved in 2012, and the population estimate seemed relatively stable around the objective of 9,000 animals.

Population

The 2012 post-season population estimate was approximately 9,500 and trending downward from an estimated high of 14,000 pronghorn in 2009. The last line transect in this herd unit in 2003 resulted in an estimated end-of-year population of 8,500 pronghorn, with a standard error of about 1,000. An additional line transect survey will be conducted in May 2013 to further refine the population model.

The "Time-Specific Juvenile Survival - Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. This model seemed the most representative of the herd, as it selects for higher juvenile survival during the years when field personnel observed more favorable environmental and habitat conditions, particularly from 2003-2008. The simpler models (CJ,CA and SCJ,CA) select for a very low juvenile survival rate across years, which does not seem feasible for this herd. All three models follow a trend that seems representative for this herd unit, and all three models align with two of the three line transect population estimates. However, the CJ,CA and SCJ,CA models estimate population peaks in 2009 that do not seem realistic compared to the perceptions of field personnel and landowners at that time. While the AIC for the TSJ,CA model is the highest of the three, it is only due to year-by-year penalties and is still well within one level of power in comparison to the AICs of the simpler models. Overall the model is considered to be fair in representing dynamics of the herd. The TSJ, CA model aligns with two of three line transect estimates, appears to be the best representation relative to the perceptions of managers on the ground, and follows trends with license issuance and harvest success.

Management Summary

Traditional season dates in this herd run from September 15th through October 31st. Season dates will remain the same for 2013, with a reduction of licenses to compensate for poor fawn ratios and declining buck ratios. The 2013 season includes 800 Type 1 licenses, 100 Type 6 licenses, and 100 Type 7 licenses. Type 7 licenses are adjusted accordingly with available access from year to year, and access is predicted to be similar to 2012 in 2013. While fawn ratios and

population growth rates have been poor in recent years, habitat conditions are now poor due to recent drought. Goals for 2013 are to maintain pronghorn numbers near objective, improve the buck ratio, and increase hunter success.

If we attain the projected harvest of 825 with fawn ratios similar to the last few years, this herd will maintain itself near objective. The predicted 2013 post-season population size of the North Natrona Pronghorn Herd is approximately 9,300 animals.

INPUT	
Species:	Pronghorn
Biologist:	Heather Obrien
Herd Unit & No.:	North Natrona
Model date:	02/28/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	101	110	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	101	110	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	39	147	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	2477	2151	3920	**8548**	2410	1438	3389	**7238**	2291	4053	**6344**				9000
1994	3192	2245	3972	**9409**	3171	1816	3864	**8851**	2388	4253	**6641**				9000
1995	3003	2340	4168	**9512**	2991	1930	4079	**9000**	2272	4227	**6499**				9000
1996	4103	2227	4143	**10473**	4092	1824	3985	**9902**	2404	4360	**6764**				9000
1997	2382	2356	4273	**9010**	2358	1930	4138	**8425**	2468	4471	**6939**				9000
1998	4106	2418	4382	**10906**	4079	1961	4242	**10282**	2511	4584	**7095**	5485	995		9000
1999	3044	2461	4492	**9997**	3033	2041	4366	**9440**	2543	4652	**7195**				9000
2000	3427	2492	4559	**10478**	3413	2038	4410	**9862**	2523	4675	**7197**	8211	1412		9000
2001	3015	2472	4581	**10068**	2978	2151	4477	**9606**	2470	4569	**7040**				9000
2002	3202	2421	4478	**10101**	3193	1981	4301	**9475**	2356	4456	**6811**				9000
2003	3289	2309	4367	**9964**	3276	1848	4180	**9304**	2852	4964	**7817**	8514	1020		9000
2004	4082	2795	4865	**11743**	4031	2230	4663	**10923**	3015	5229	**8244**				9000
2005	4352	2955	5124	**12431**	4320	2312	4892	**11523**	3536	5887	**9423**				9000
2006	3035	3465	5769	**12269**	3016	2792	5395	**11204**	3783	6140	**9922**				9000
2007	2581	3707	6017	**12305**	2545	3030	5690	**11265**	3777	6191	**9968**				9000
2008	3171	3702	6067	**12940**	3150	3045	5886	**12081**	4071	6663	**10734**				9000
2009	4337	3990	6530	**14856**	4323	3271	6322	**13915**	3697	6480	**10176**				9000
2010	3761	3623	6350	**13734**	3734	2757	6022	**12513**	3096	6074	**9170**				9000
2011	3138	3034	5952	**12124**	3097	2183	5434	**10714**	2587	5627	**8214**				9000
2012	2529	2535	5515	**10579**	2487	1795	5208	**9490**	2489	5598	**8088**				9000
2013	2462	2439	5486	**10388**	2417	1700	5194	**9311**							9000
2014															
2015															
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	0.90			0.87		
1994	0.51			0.87		
1995	0.40			0.87		
1996	0.40			0.87		
1997	0.67			0.87		
1998	0.40			0.87		
1999	0.51			0.87		
2000	0.44			0.87		
2001	0.40			0.87		
2002	0.40			0.87		
2003	0.76			0.87		
2004	0.54			0.87		
2005	0.71			0.87		
2006	0.90			0.87		
2007	0.90			0.87		
2008	0.90			0.87		
2009	0.40			0.87		
2010	0.40			0.87		
2011	0.40			0.87		
2012	0.76			0.87		
2013	0.40			0.87		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.873
Initial Total Male Pop/10,000 =	0.215
Initial Female Pop/10,000 =	0.392

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

	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		63.21	2.49	54.88	51.14	2.15	648	482	61	1191	33.1	13.5
1994		80.37	3.67	56.54	63.63	3.11	390	98	19	507	19.1	2.7
1995		72.06	3.26	56.15	57.95	2.81	373	81	11	465	17.5	2.1
1996		99.05	4.32	53.75	58.01	2.95	366	143	10	519	18.1	3.8
1997		55.74	3.65	55.13	47.63	3.28	387	123	22	532	18.1	3.2
1998		93.70	4.88	55.19	58.14	3.47	416	127	24	567	18.9	3.2
1999		67.78	3.61	54.78	55.73	3.15	382	115	10	507	17.1	2.8
2000		75.17	3.53	54.67	54.67	2.83	413	135	12	560	18.2	3.3
2001		65.81	3.22	53.96	59.52	3.01	292	95	33	420	13.0	2.3
2002		71.51	3.78	54.06	48.95	2.91	400	161	8	569	18.2	4.0
2003		75.31	3.57	52.87	52.17	2.77	419	170	11	600	20.0	4.3
2004		83.91	3.66	57.46	56.26	2.76	514	184	47	745	20.2	4.2
2005		84.93	3.71	57.67	57.67	2.82	585	211	29	825	21.8	4.5
2006		52.60	2.64	60.06	53.91	2.68	612	340	17	969	19.4	6.5
2007		42.90	2.03	61.61	61.62	2.59	615	297	33	945	18.2	5.4
2008		52.26	2.86	61.01	64.30	3.30	597	165	19	781	17.7	3.0
2009		66.42	3.01	61.11	66.83	3.03	654	189	13	856	18.0	3.2
2010		59.23	3.18	57.05	60.52	3.23	787	298	25	1110	23.9	5.2
2011		52.72	2.47	50.97	49.85	2.38	774	471	37	1282	28.1	8.7
2012		45.86	3.06	45.97	44.46	3.00	673	279	38	990	29.2	5.6
2013		44.88	3.02	44.46	44.46	3.00	650	160	15	825	30.3	5.3
2014												
2015												
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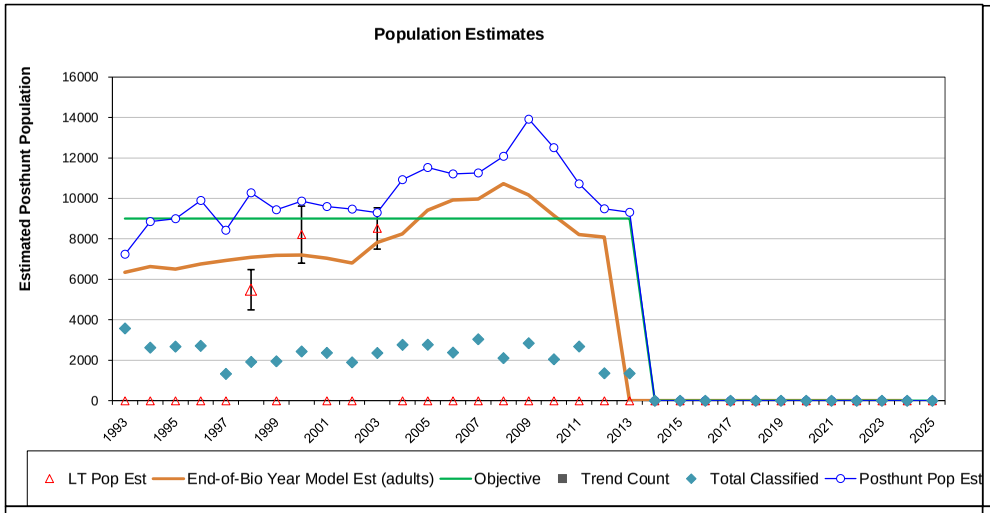
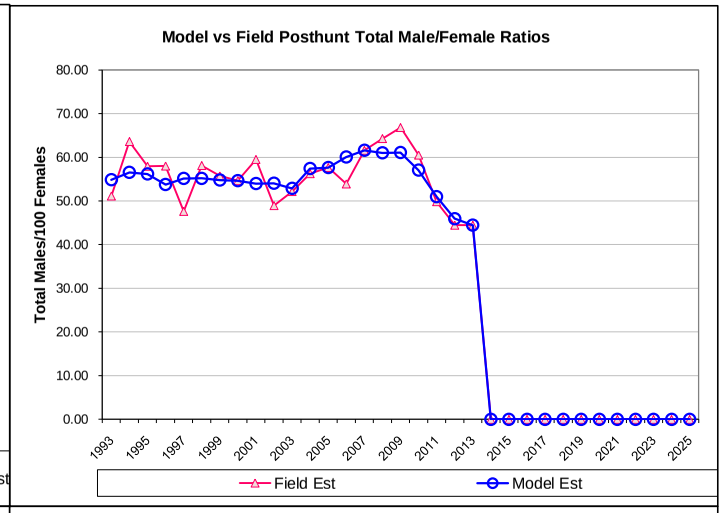
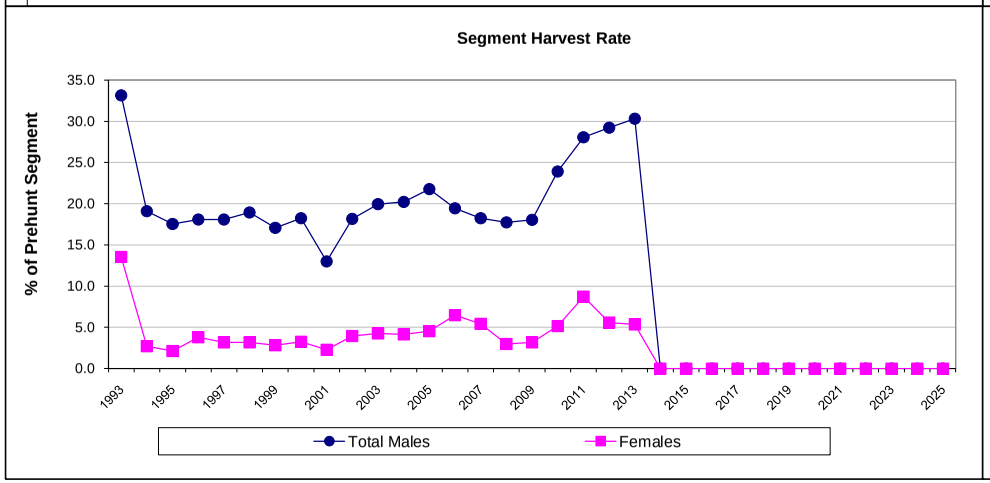
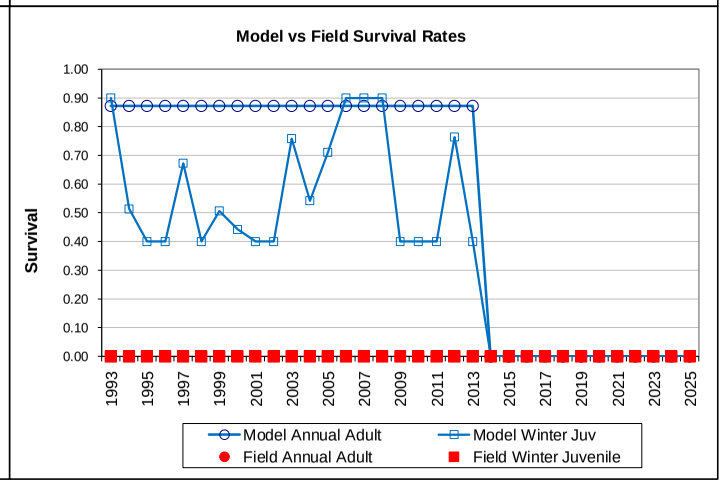
2025												

FIGURES









Comments:

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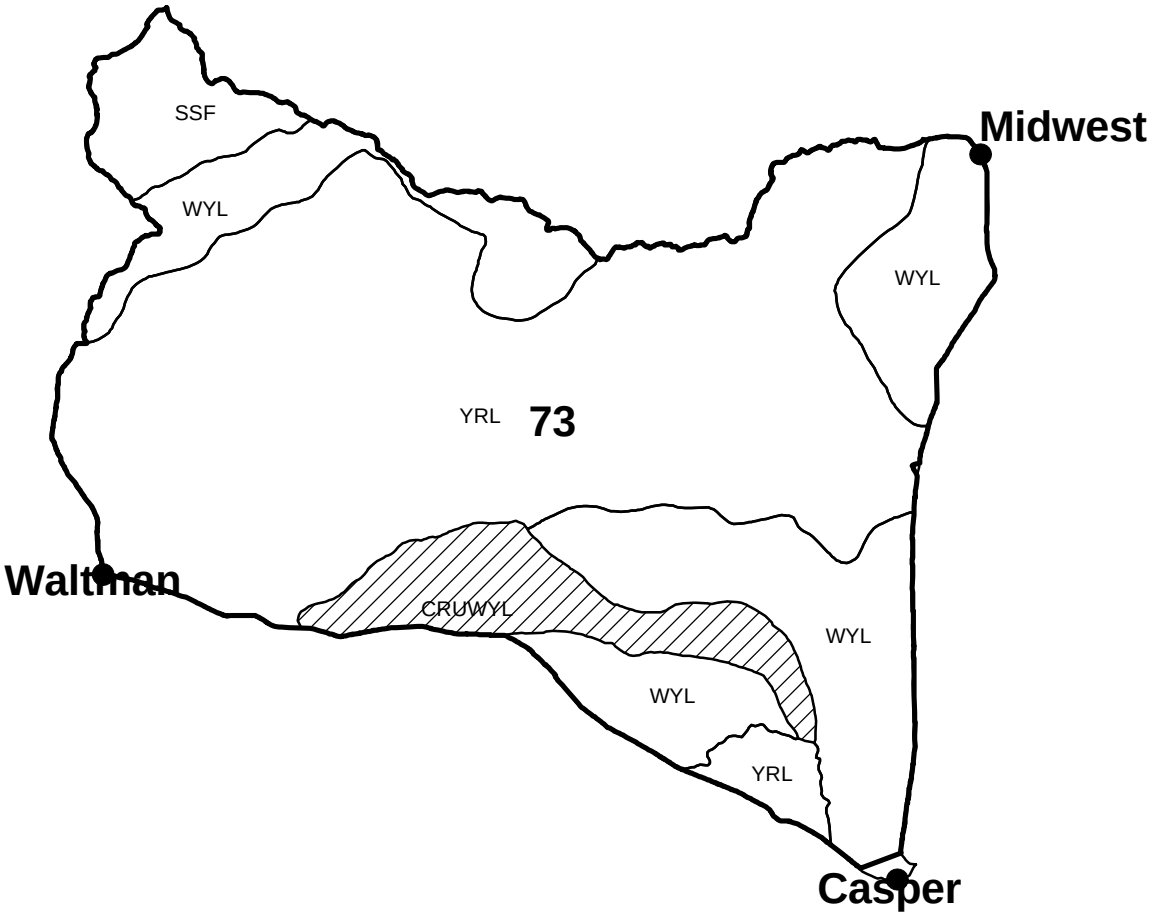
Antelope - North Natrona
Hunt Area 73
Casper Region
Revised 4/88



2012 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2012 - 5/31/2013

HERD: PR748 - NORTH CONVERSE

HUNT AREAS: 25-26

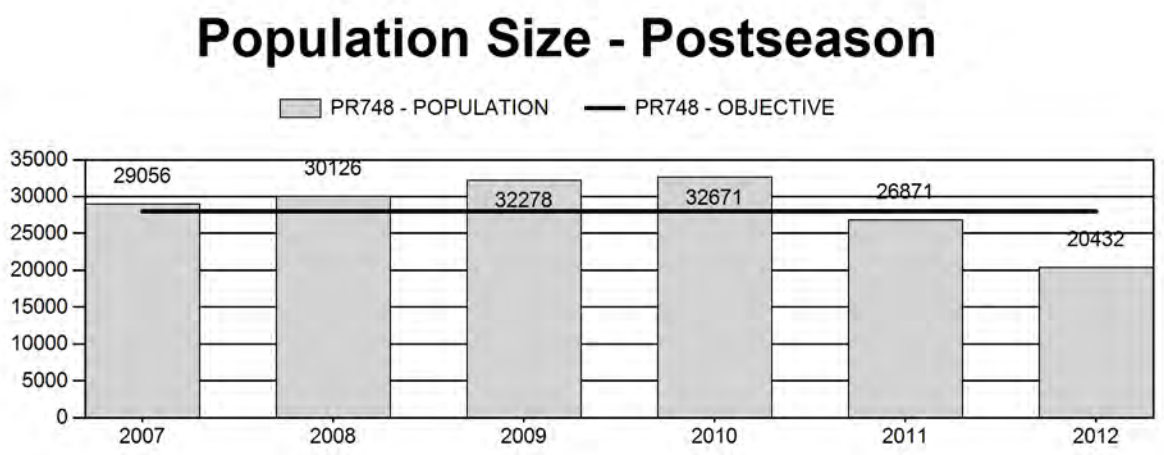
PREPARED BY: ERIKA PECKHAM

	2007 - 2011 Average	2012	2013 Proposed
Population:	30,200	20,432	17,463
Harvest:	2,784	3,169	2,395
Hunters:	2,856	3,822	3,000
Hunter Success:	97%	83%	80%
Active Licenses:	3,034	3,964	2,850
Active License Percent:	92%	80%	84%
Recreation Days:	9,599	11,944	9,000
Days Per Animal:	3.4	3.8	3.8
Males per 100 Females	70	59	
Juveniles per 100 Females	73	66	

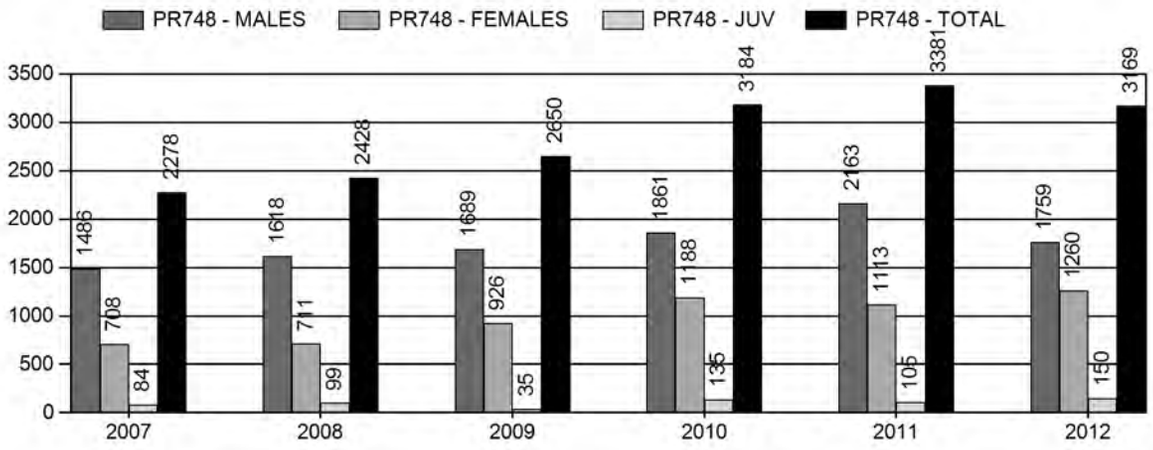
Population Objective:	28,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-27.0%
Number of years population has been + or - objective in recent trend:	3
Model Date:	02/22/2013

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

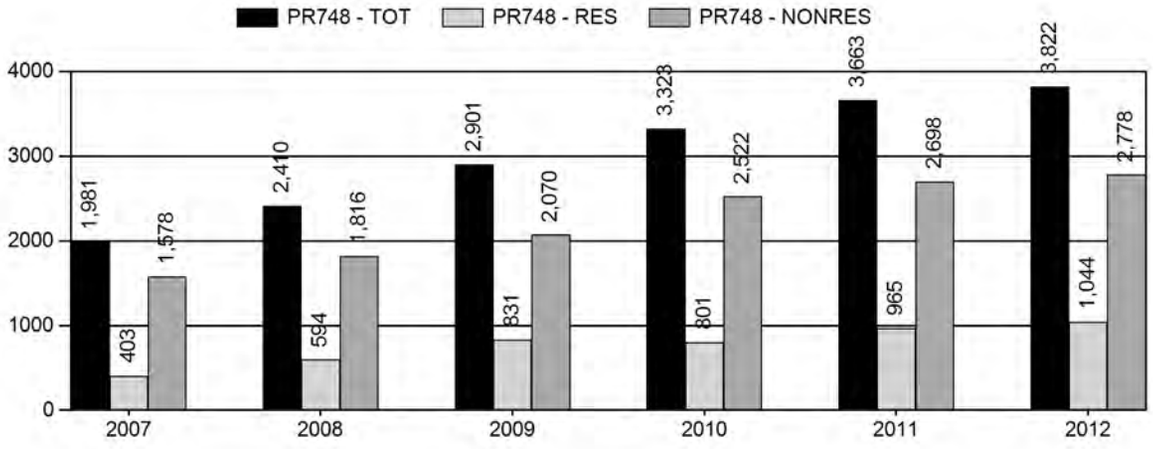
	JCR Year	Proposed
Females Ó 1 year old:	10%	10%
Males Ó 1 year old:	28%	33%
Juveniles (< 1 year old):	1%	0%
Total:	12%	12%
Proposed change in post-season population:	-8%	-15%



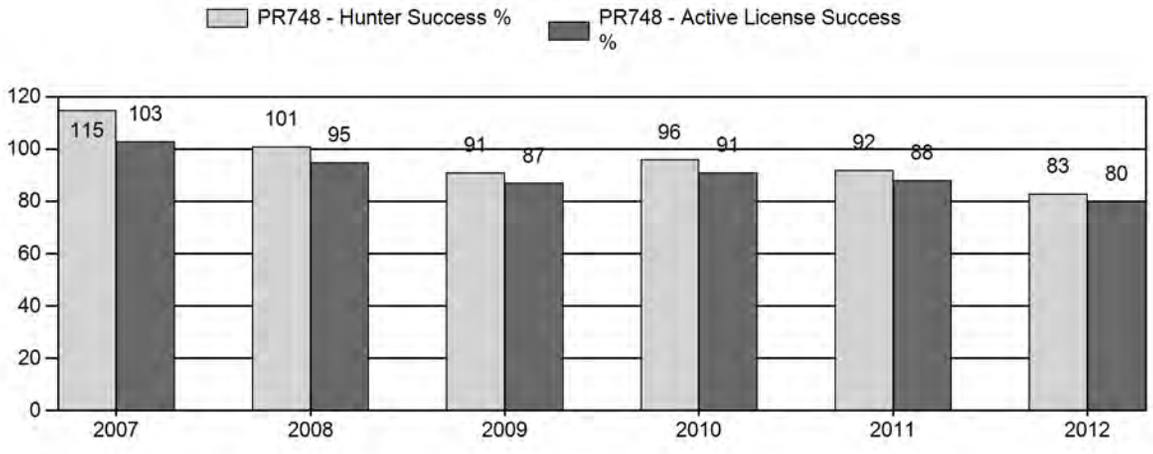
Harvest



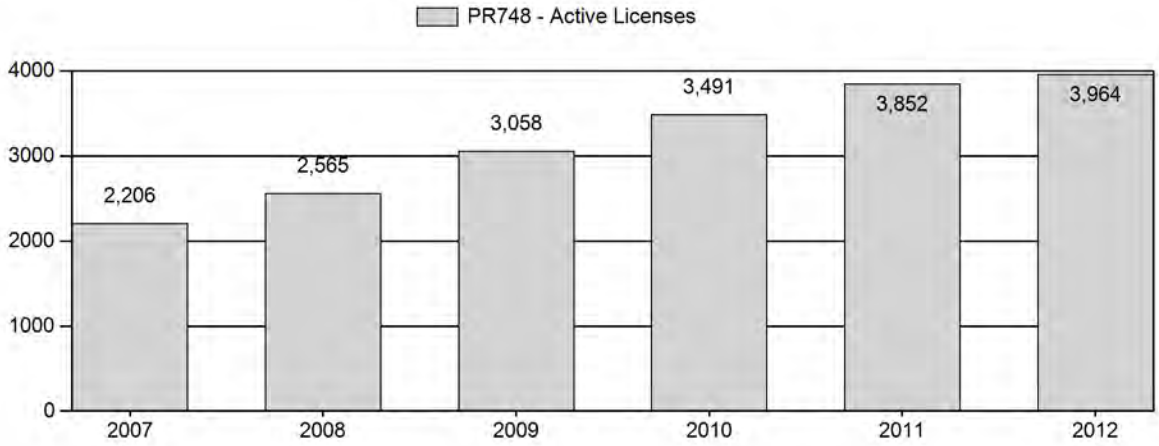
Number of Hunters



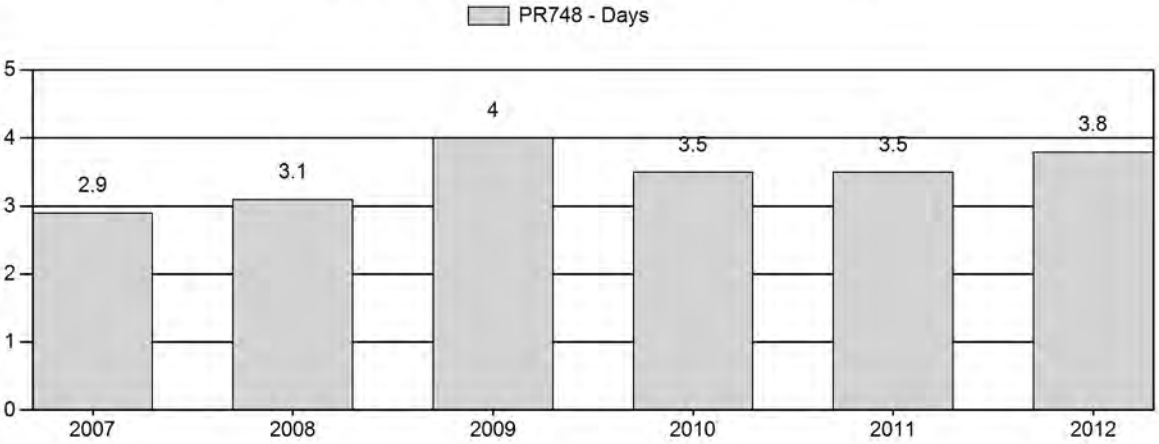
Harvest Success



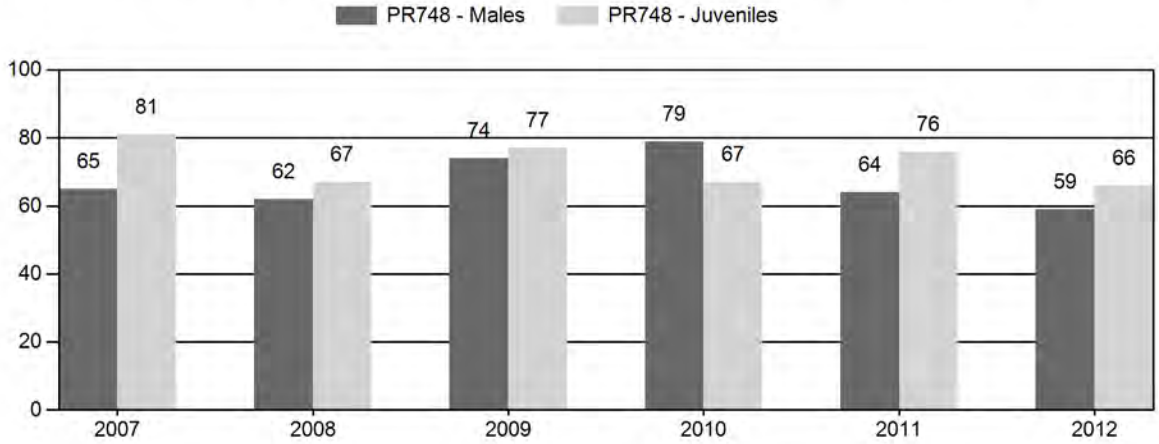
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2007 - 2012 Preseason Classification Summary

for Pronghorn Herd PR748 - NORTH CONVERSE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	31,562	343	442	785	27%	1,200	41%	974	33%	2,959	3,523	29	37	65	± 5	81	± 5	49
2008	32,797	289	488	777	27%	1,248	44%	832	29%	2,857	3,496	23	39	62	± 4	67	± 5	41
2009	35,193	312	740	1,052	29%	1,430	40%	1,101	31%	3,583	3,287	22	52	74	± 5	77	± 5	44
2010	36,174	373	807	1,180	32%	1,490	41%	999	27%	3,669	3,160	25	54	79	± 5	67	± 4	37
2011	30,590	93	480	573	27%	895	42%	683	32%	2,151	3,105	10	54	64	± 5	76	± 6	47
2012	23,918	82	253	335	26%	567	44%	376	29%	1,278	3,040	14	45	59	± 7	66	± 7	42

2013 HUNTING SEASONS
NORTH CONVERSE PRONGHORN HERD (PR748)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
25	1	Oct. 1	Oct. 14	900	Limited quota licenses; any antelope
	6	Oct. 1	Oct. 14	500	Limited quota licenses; doe or fawn
26	1	Sep. 24	Oct. 14	1,200	Limited quota licenses; any antelope
	6	Sep. 24	Oct. 14	800	Limited quota licenses; doe or fawn
Archery		Aug. 15	Sep. 30		Refer to license type and limitations in Section 3

Hunt Area	Type	Quota change from 2012
25	1	-100
	6	-300
26	1	-300
	6	-400
Herd Unit Total	**1**	**-400**
	6	**-700**

<u>Management Evaluation</u>
Current Postseason Population Management Objective: 28,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~20,400
2013 Proposed Postseason Population Estimate: ~17,500

Herd Unit Issues

The management objective for the North Converse Pronghorn Herd Unit is a post-season population objective of 28,000 pronghorn. This herd is managed under the recreational management strategy, with a goal of maintaining preseason buck ratios between 30-59 bucks per 100 does. The objective and management strategy were last revised in 1989.

Public hunting access within the herd unit is poor, with only small tracts of accessible public land interspersed with predominantly private lands. Two Walk-In Areas provide some additional hunting opportunity, although they are relatively small in size. Primary land uses in this herd unit include extensive oil and gas production, large-scale industrial wind generation, In-Situ uranium production, and traditional cattle and sheep grazing. In recent years, expansion of oil shale development has dramatically escalated anthropogenic disturbance throughout this herd unit.

Weather

Weather conditions throughout 2012 and into 2013 were extremely dry and warmer than normal. The winters of 2011-2012 and 2012-13 were mild and with little snow accumulation. As a result, over winter survival was likely high in bio-year 2011 and is presumed to again be good in bio-year 2012. Although the model suggests low juvenile survival rates, field observations indicate otherwise.

Habitat

Although there are no habitat transects in this herd unit, current habitat conditions are generally poor due to the extreme drought realized in 2012. Anecdotal observations by personnel confirm this, as there was little to no herbaceous and sagebrush forage production. In addition to poor leader growth production in 2012, sagebrush communities are likely experiencing heavy browsing pressure given remaining pronghorn densities in conjunction with large-scale domestic sheep production.

Field Data

Although the spring and summer of 2012 were extraordinarily dry, it appears fawn productivity and over-summer survival did not suffer. In 2012, the fawn to doe ratio was 66, which is below the preceding 5-year average of 73 fawns per 100 does, but much higher than that of adjacent herds. Buck ratios remained fairly high in 2012 at 59, although they decreased when compared to the preceding 5-year average of 70. Prior to 2012, buck ratios have exceeded management strategy maximums due to difficult access and the preponderance of outfitting in this herd unit. In recent years, it has been increasingly difficult to meet classification sample sizes in this herd unit. In 2012, the adequate sample size was 3,100 animals, yet only 1,280 pronghorn were classified. This further corroborates the notion that this population has declined, as classification sample sizes have declined dramatically in recent years despite similar levels of effort.

Harvest

This herd has the potential for rapid growth as has been seen in years past. High fawn productivity coupled with limited access have allowed this herd to exceed the management objective as recently as 2010. However, this population has recently dropped below objective and is predicted to continue to decline. As such, the reduction in licenses was warranted for 2013 to manage this herd back toward objective. In 2012 there were 4,500 licenses available (2,500 Type 1 and 2,000 Type 6). All but 92 Type 6 licenses in hunt area 25 were sold by the

close of the season. Again, the largest issue with achieving adequate harvest in this herd is access, as most of the pronghorn are found on private lands.

License success in this herd unit has averaged 92% over the preceding 5 years. In 2012, license success declined to 80%, indicating hunters had a much more difficult time locating and harvesting pronghorn in this herd unit. Days per animal also increased from the previous 5-year average.

Population

The 2012 post-season population estimate is around 20,400, which according to the current model is the lowest number this herd has experienced since before 1993. This population began to decline following elevated mortality during the relatively severe 2010-2011 winter. The last line transect survey was conducted in this herd unit in May of 2004, which resulted in an estimated end-of-year population of 31,000 pronghorn.

The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJ-CA) spreadsheet model was chosen for the post-season population estimate of this herd. Although this model did not have the lowest relative AIC (154), they were all fairly close with the TSJ-CA model most accurately representing what was occurring on the ground, based on field personnel and landowner perceptions. Population trends seemed to simulate what field personnel and nearly all landowners were observing in this herd unit. This model is considered to be of fair quality.

Management Strategy

The traditional season in this hunt area has been from October 1st to October 14th in hunt area 25 and from September 24th to October 14th in hunt area 26. These season dates have typically been adequate to meet landowner desires while allowing a reasonable harvest. For 2013, the number of both Type 1 and Type 6 licenses were decreased by 400 and 700, respectively. These reductions were warranted to decrease harvest pressure on both males and females given this population is now ~27% below objective and predicted to continue to decline.

If we attain the projected harvest of ~2,400 individuals and near normal fawn recruitment, this pronghorn population is projected to decrease slightly. Based on the model, we predict a 2013 postseason population of about 17,500 pronghorn.

INPUT	
Species:	Pronghorn
Biologist:	Erika Peckham
Herd Unit & No.:	North Converse (PR748)
Model date:	02/22/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	130	139	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	130	139	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	46	154	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	7757	9881	15186	**32825**	7667	8171	13984	**29822**	9368	14139	**23507**				28000
1994	12736	9181	13856	**35772**	12542	7075	12671	**32289**	7711	12397	**20108**				28000
1995	9953	7556	12149	**29659**	9770	5759	11235	**26765**	8434	13017	**21451**				28000
1996	13274	8266	12757	**34296**	13212	6103	12316	**31631**	10039	15396	**25435**				28000
1997	11036	9838	15088	**35962**	10984	8039	14621	**33644**	11091	16659	**27749**				28000
1998	15742	10869	16325	**42937**	15712	8985	16012	**40708**	9986	15962	**25949**				28000
1999	13000	9786	15643	**38429**	12956	7970	15361	**36286**	8621	14881	**23502**				28000
2000	12674	8449	14583	**35706**	12636	6700	14143	**33479**	7554	13807	**21361**	20200	2901		28000
2001	9827	7403	13531	**30760**	9785	5991	13225	**29000**	7198	13238	**20437**				28000
2002	11128	7054	12974	**31155**	11108	5696	12585	**29389**	7028	12763	**19791**	18507	3491		28000
2003	9994	6888	12508	**29389**	9921	5597	12140	**27659**	6207	11653	**17859**				28000
2004	9938	6082	11420	**27440**	9871	4758	11052	**25681**	8053	13308	**21361**	30769	4602		28000
2005	9827	7892	13042	**30760**	9733	6467	12431	**28632**	6830	11788	**18618**				28000
2006	9742	6693	11552	**27988**	9700	5337	10975	**26012**	8433	13122	**21555**				28000
2007	10438	8264	12860	**31562**	10346	6630	12081	**29056**	9702	14259	**23961**				28000
2008	9316	9508	13974	**32797**	9207	7728	13191	**30126**	10027	14624	**24651**				28000
2009	11035	9826	14332	**35193**	10996	7968	13313	**32278**	11028	15495	**26523**				28000
2010	10181	10807	15185	**36174**	10033	8760	13879	**32671**	8575	12840	**21416**				28000
2011	9603	8404	12583	**30590**	9487	6025	11359	**26871**	6725	10631	**17356**				28000
2012	6909	6590	10419	**23918**	6741	4659	9033	**20432**	5037	8841	**13877**				28000
2013	6498	4936	8664	**20098**	6388	3313	7762	**17463**							28000
2014															28000
2015															28000
2016															28000
2017															28000
2018															28000
2019															28000
2020															28000
2021															28000
2022															28000
2023															28000
2024															28000
2025															28000

Survival and Initial Population Estimates

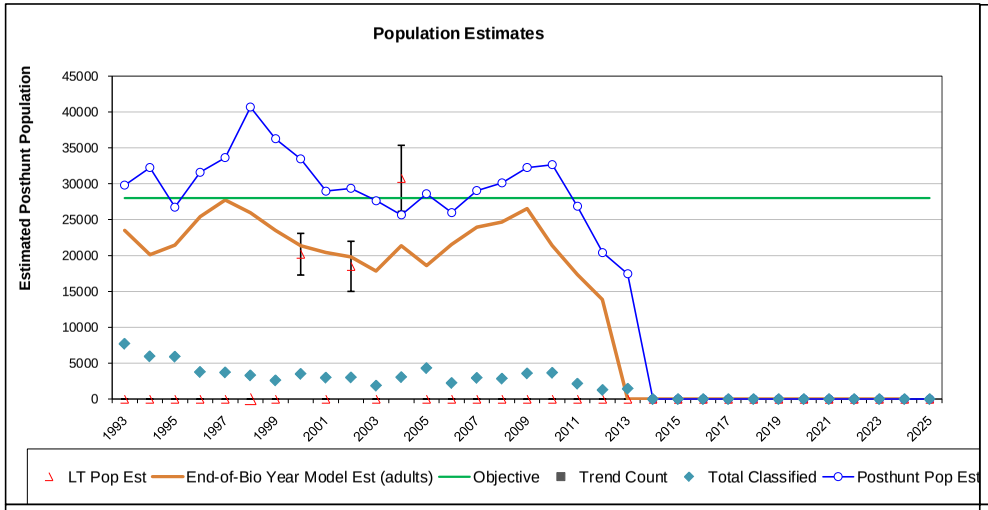
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.82			0.79		
1994	0.40			0.79		
1995	0.85			0.79		
1996	0.83			0.79		
1997	0.90			0.79		
1998	0.40			0.79		
1999	0.40			0.79		
2000	0.40			0.79		
2001	0.54			0.79		
2002	0.49			0.79		
2003	0.40			0.79		
2004	0.90			0.79		
2005	0.40			0.79		
2006	0.90			0.79		
2007	0.90			0.79		
2008	0.90			0.79		
2009	0.90			0.79		
2010	0.40			0.79		
2011	0.40			0.79		
2012	0.40			0.79		
2013	0.40			0.79		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

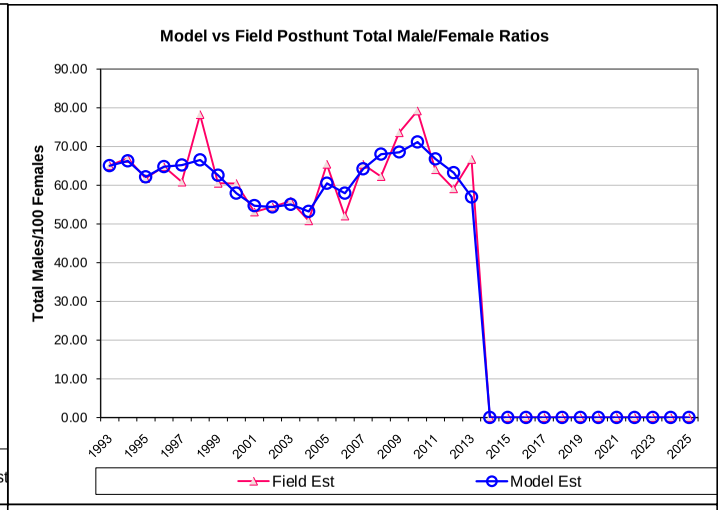
Parameters:	Optim cells
Adult Survival =	0.786
Initial Total Male Pop/10,000 =	0.988
Initial Female Pop/10,000 =	1.519

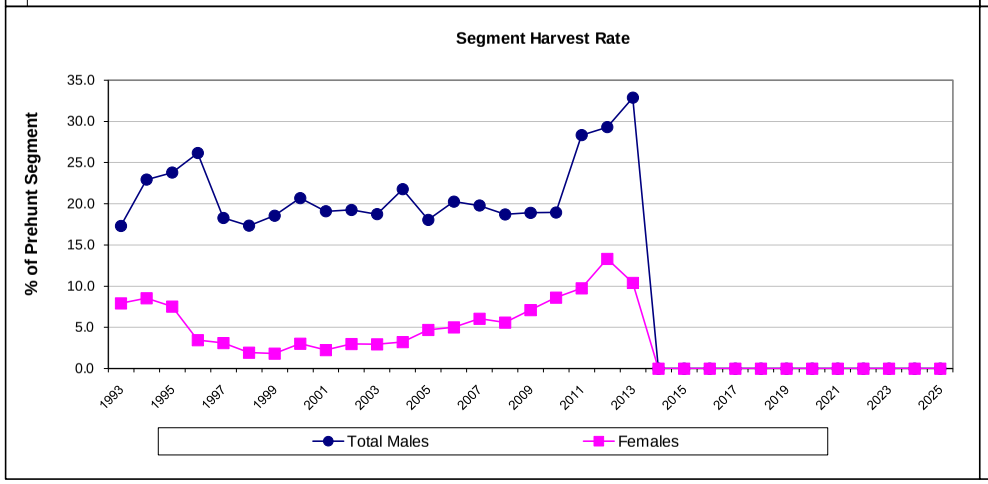
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

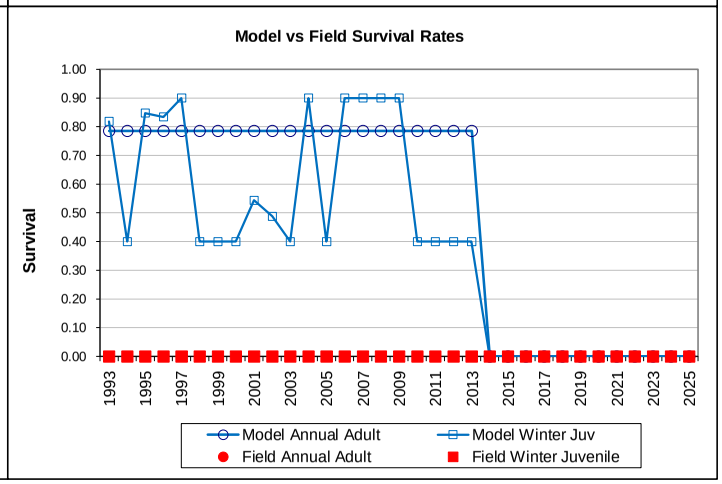
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		51.08	1.47	65.07	65.07	1.74	1555	1093	82	2730	17.3	7.9
1994		91.92	2.77	66.26	66.93	2.20	1914	1077	176	3167	22.9	8.6
1995		81.92	2.48	62.20	61.74	2.03	1634	831	166	2631	23.8	7.5
1996		104.05	3.89	64.79	64.79	2.76	1966	401	56	2423	26.2	3.5
1997		73.14	2.82	65.21	60.82	2.48	1636	424	47	2107	18.3	3.1
1998		96.43	3.97	66.58	78.24	3.40	1713	285	28	2026	17.3	1.9
1999		83.10	3.77	62.56	60.50	3.01	1651	257	40	1948	18.6	1.8
2000		86.91	3.38	57.94	60.45	2.61	1590	400	35	2025	20.7	3.0
2001		72.62	3.07	54.72	53.09	2.48	1284	278	38	1600	19.1	2.3
2002		85.77	3.56	54.37	54.37	2.58	1235	353	18	1606	19.3	3.0
2003		79.90	4.25	55.07	55.90	3.31	1173	334	66	1573	18.7	2.9
2004		87.02	3.56	53.26	50.82	2.44	1204	334	61	1599	21.8	3.2
2005		75.35	2.71	60.51	65.42	2.46	1295	555	85	1935	18.1	4.7
2006		84.33	4.04	57.94	52.05	2.88	1233	525	38	1796	20.3	5.0
2007		81.17	3.50	64.26	65.42	3.00	1486	708	84	2278	19.8	6.1
2008		66.67	2.98	68.04	62.26	2.85	1618	711	99	2428	18.7	5.6
2009		76.99	3.09	68.56	73.57	2.99	1689	926	35	2650	18.9	7.1
2010		67.05	2.74	71.17	79.19	3.09	1861	1188	135	3184	18.9	8.6
2011		76.31	3.88	66.79	64.02	3.43	2163	1113	105	3381	28.3	9.7
2012		66.31	4.41	63.25	59.08	4.07	1756	1260	153	3169	29.3	13.3
2013		75.00	4.68	56.97	66.67	4.30	1475	820	100	2395	32.9	10.4
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



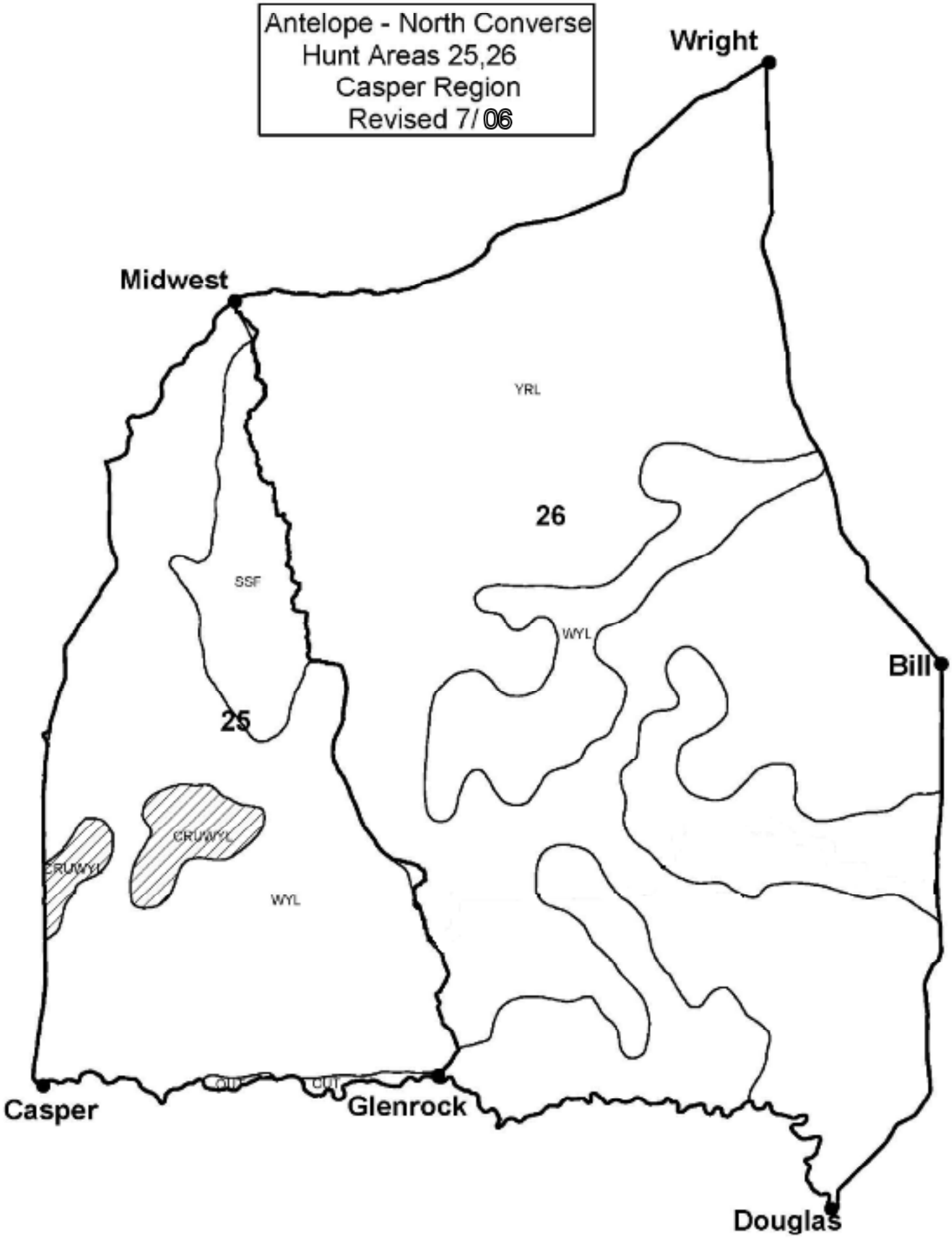






Comments:

END


Antelope - North Converse
Hunt Areas 25,26
Casper Region
Revised 7/06
Wright
Midwest
YRL
26
SSF
WYL
Bill
25
CRUWYL
CRUWYL
WYL
Casper
Glenrock
Douglas