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Acknowledgement

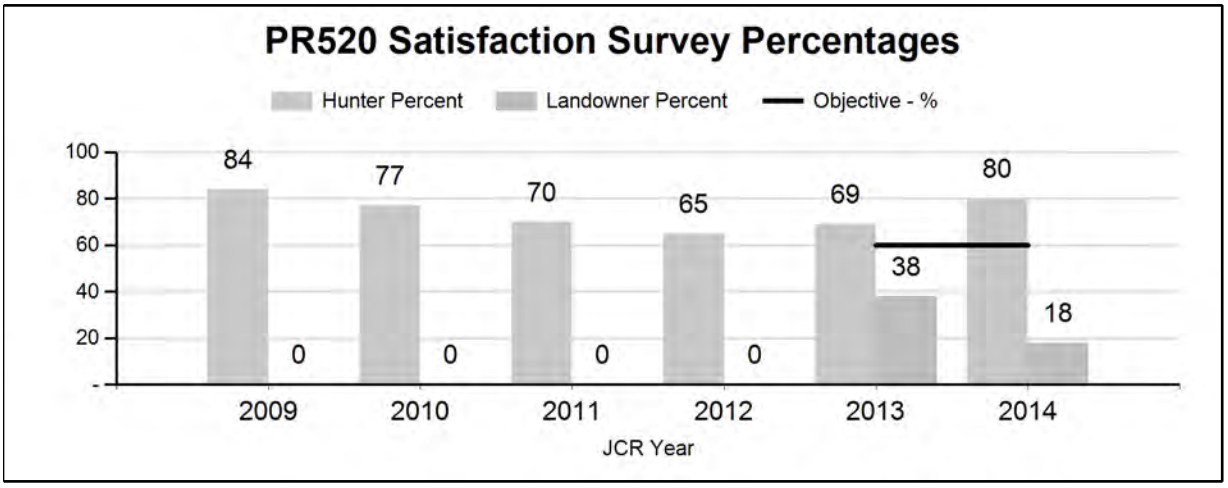
The field data contained in these reports was collected by the combined efforts of the Laramie Region Wildlife Division personnel including District Wildlife Biologists, District Game Wardens, the Wildlife Technicians, the Habitat Biologist, the Wildlife Management Coordinator and Region Supervisor, and other Department personnel and volunteers working at check stations. The authors wish to express their appreciation to all those who assisted in data collection.

2014 - JCR Evaluation Form

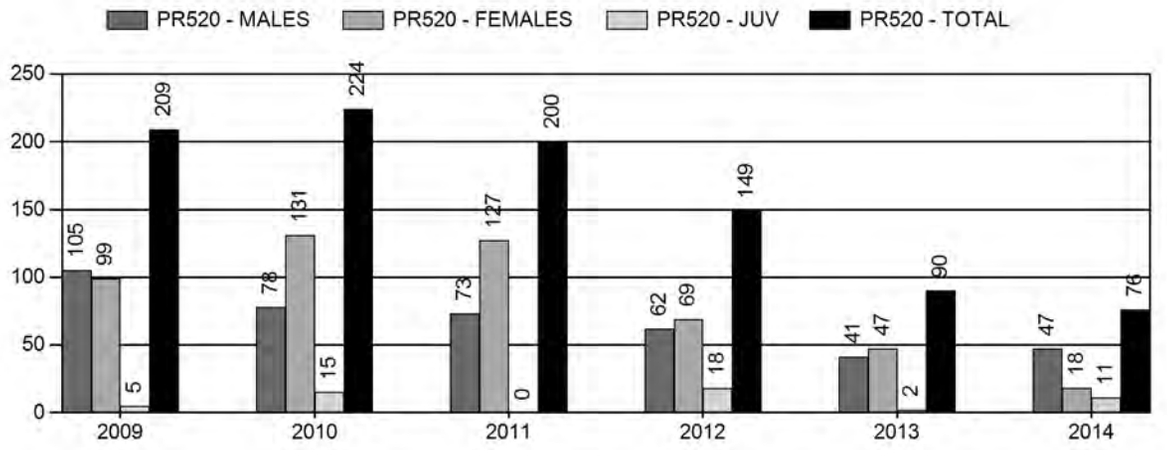
SPECIES: Pronghorn
PERIOD: 6/1/2014 - 5/31/2015
HERD: PR520 - CHALK BLUFFS
HUNT AREAS: 111
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Hunter Satisfaction Percent	73%	80%	75%
Landowner Satisfaction Percent	38%	18%	25%
Harvest:	174	76	80
Hunters:	243	92	90
Hunter Success:	72%	83%	89%
Active Licenses:	275	122	120
Active License Success:	63%	62%	67%
Recreation Days:	1,138	436	430
Days Per Animal:	6.5	5.7	5.4
Males per 100 Females:	22	18	
Juveniles per 100 Females	41	65	

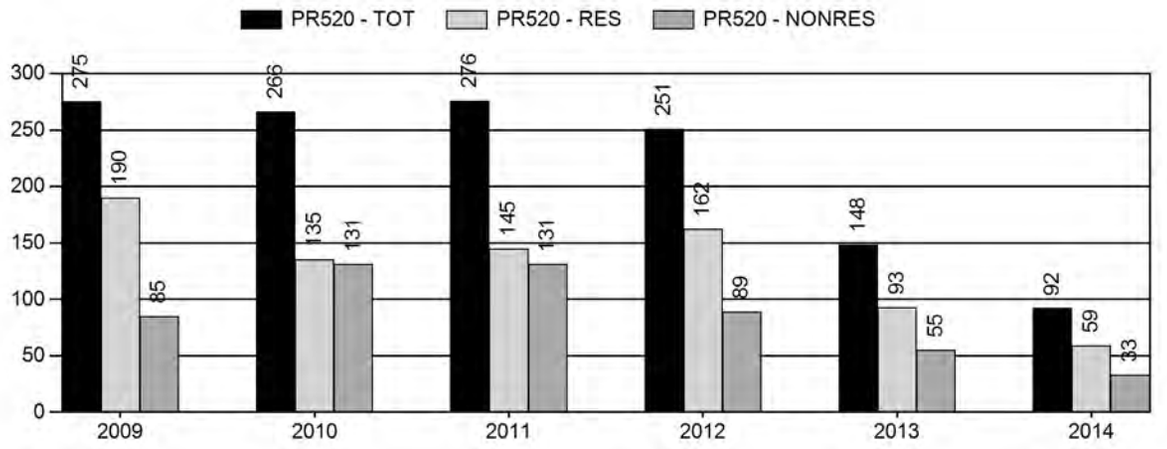
Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-11%
Number of years population has been + or - objective in recent trend:	2



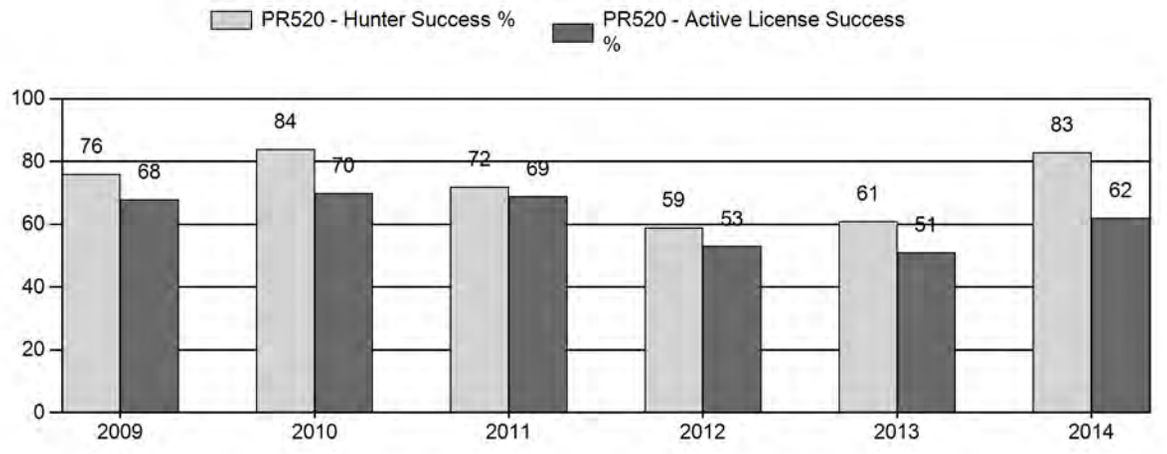
Harvest



Number of Hunters



Harvest Success



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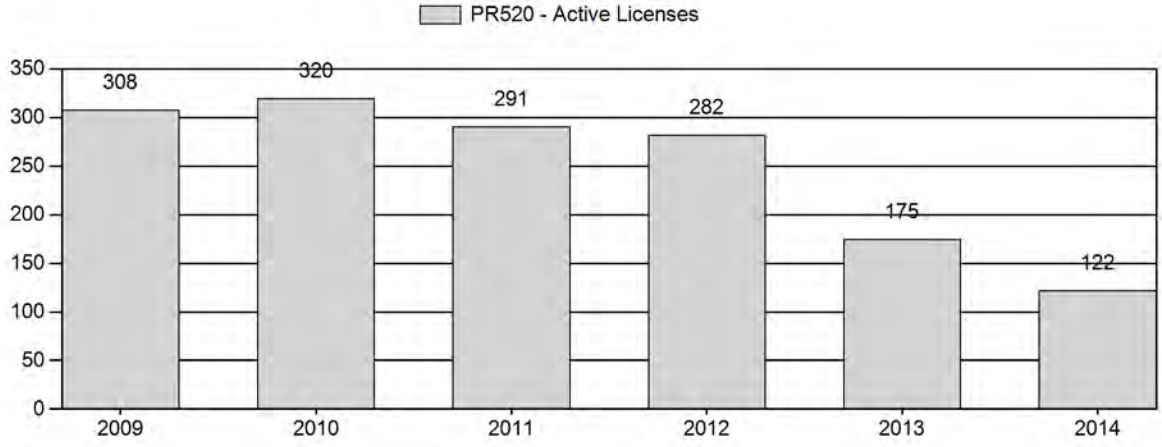
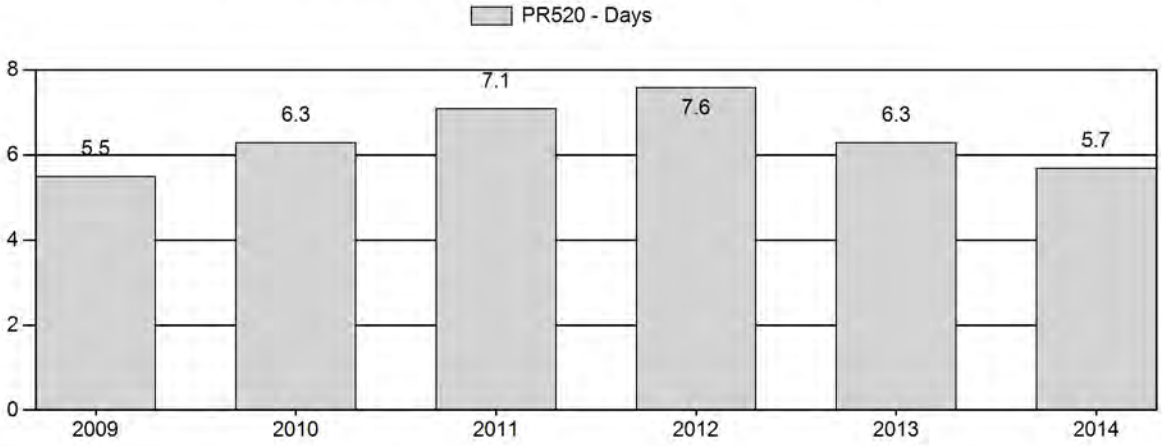
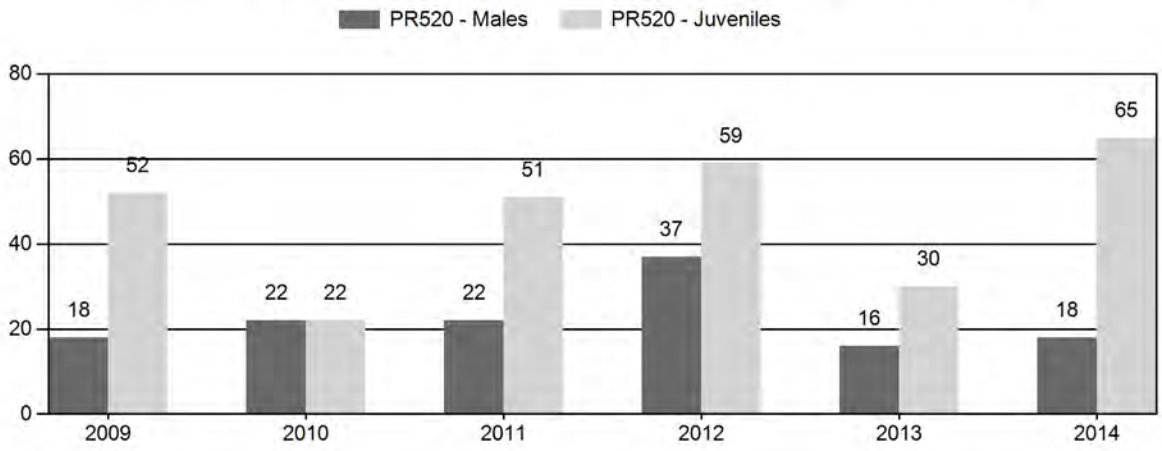


Days Per Animal Harvested



Preseason Animals per 100 Females



2015 HUNTING SEASONS
CHALK BLUFFS PRONGHORN HERD (PR520)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
111	1	Sept. 20	Oct.14	100	Limited Quota; any antelope
	6	Sept. 20	Oct.14	50	Limited Quota; doe or fawn
		Nov. 15	Dec. 31		Unused Area 111 Type 1 and Type 6 licenses valid for doe or fawn
Archery		Aug. 15	Sept. 19		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
111	1	0
	6	0

Management Evaluation
Current Management Objective: Landowner and hunter satisfaction; Target goal ≥ 60%
2014 Post-season Objective Results: 81% of hunters either satisfied or very satisfied, 18% of the landowners were either satisfied or very satisfied
2015 Post-season Objective Results: NA
Management Strategy: Recreational
Sportsman Satisfaction Survey Results: 81% Satisfied, 7% Neutral, 12% Dissatisfied

Herd Unit Issues
The management objective for the Chalk Bluffs Pronghorn Herd Unit numeric post-season population objective was changed starting the 2013 season to a landowner and hunter satisfaction survey. The change was based on public involvement during the 2013 herd objective review process. Classification is now collected to gauge pronghorn numbers and locations prior to the season opener.

There is not a postseason population estimate for a variety of reasons: 1) Open population with Colorado and Nebraska, 2) Restricted access due to urban encroachment and industrial gas development, which prevents our ability to influence harvest, 3) Poor classification data, which is always well below the adequate sample size and 4) No reliable working model.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on all

big game species. For specific meteorological information for the Chalk Bluffs herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in Spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species.

In Spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

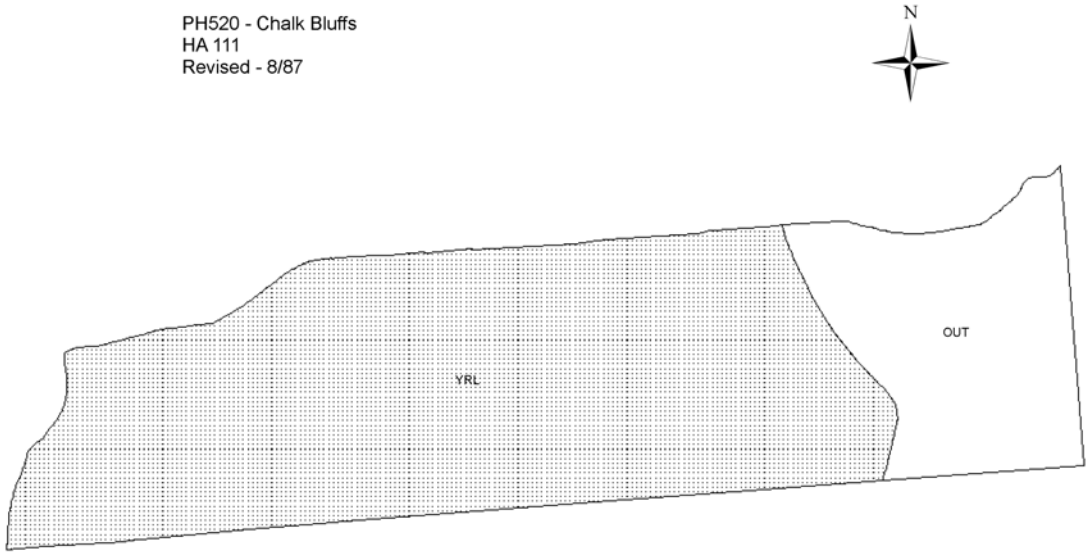
Field and Harvest Data

Due to our inability to collect data there is little confidence in classification data. In the adjacent Hawk Springs Herd Unit's fawn ratios increased, it was expected the same is true for this herd unit resulting in an increase in the population. However, without a reliable population estimate, interstate movement with Colorado, and an increase in industrial and residential expansion, license numbers will remain conservative. Type 6 license success in 2014 (55%) increased compared to 2013 (44%) but is still well below the five-year state average of 80%. Effort in 2014 (5.3 days/harvest) was similar to 2013 (5.8 days/harvest), but is also well below the five-year state-wide effort of 3.8 days/harvest. A combination of poor hunter success and increased effort coupled with limited access does not warrant an increase in Type 6 licenses for 2015. Type 1 licenses are proposed to remain at 100. A late season license will continue to be available to address damage concerns when pronghorn move in from Colorado. The landowner and hunter satisfaction survey showed that 85% of the sportsmen were either satisfied or very satisfied, and landowners were only 18% satisfied or very satisfied. However, a majority (55%) of the landowners were neutral on population size and did not want to see an increase or decrease in pronghorn numbers, indicating they are more or less satisfied with the population.

Management Summary

The opening date will remain the same at September 20 with no change in Type 1 and Type 6 license numbers. Landowners are still in favor of the late season hunt from November 15 – December 31 to address any damage concerns. Based on past seasons we predict a harvest of 50 bucks, 20 does and 10 fawns for a total of 80 pronghorn.

PH520 - Chalk Bluffs
HA 111
Revised - 8/87



2014 - JCR Evaluation Form

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

HERD: PR521 - HAWK SPRINGS

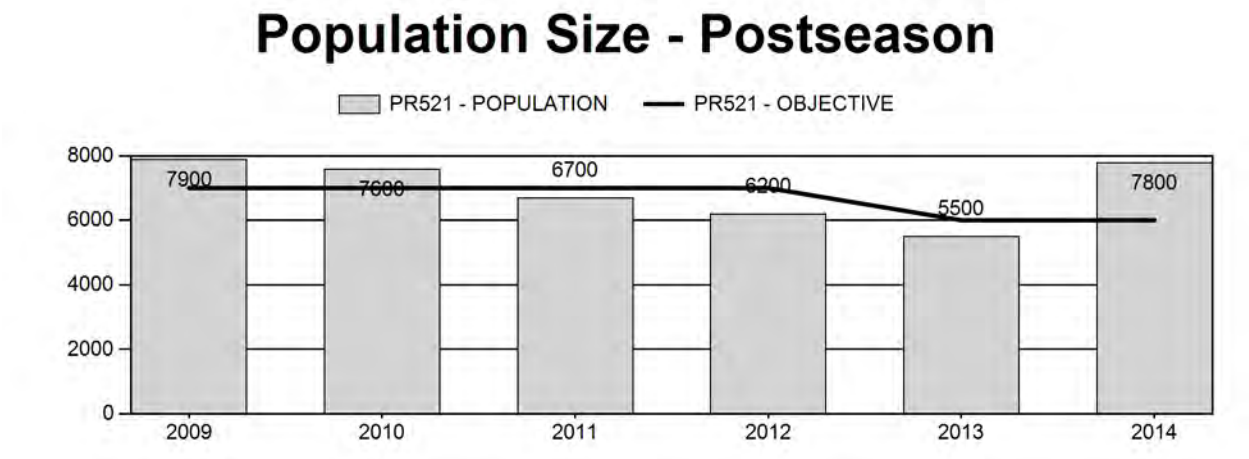
HUNT AREAS: 34
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	6,780	7,800	6,900
Harvest:	1,119	959	1,210
Hunters:	1,229	1,068	1,300
Hunter Success:	91%	90%	93 %
Active Licenses:	1,433	1,141	1,390
Active License Success:	78%	84%	87 %
Recreation Days:	4,946	3,792	4,800
Days Per Animal:	4.4	4.0	4.0
Males per 100 Females	40	43	
Juveniles per 100 Females	47	64	

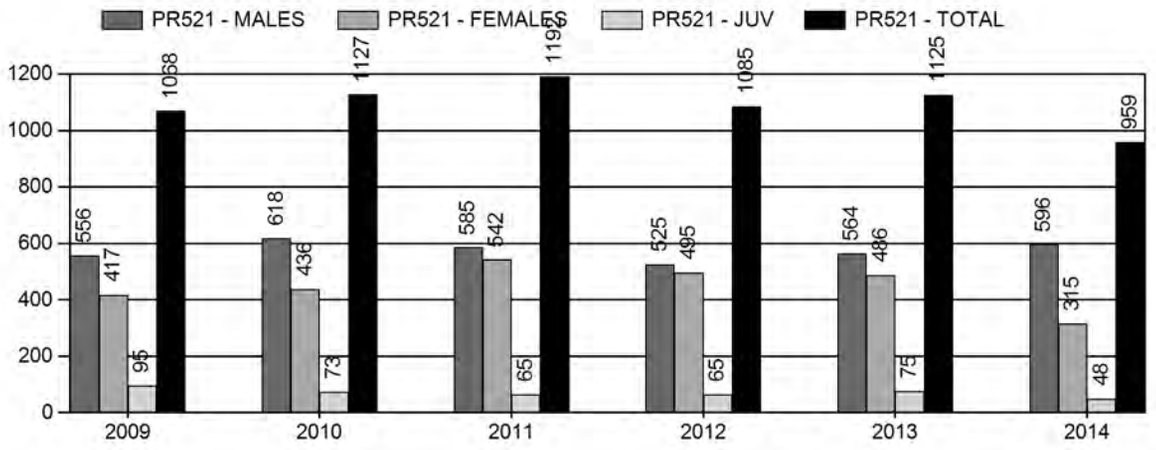
Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	30%
Number of years population has been + or - objective in recent trend:	1
Model Date:	02/20/2015

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

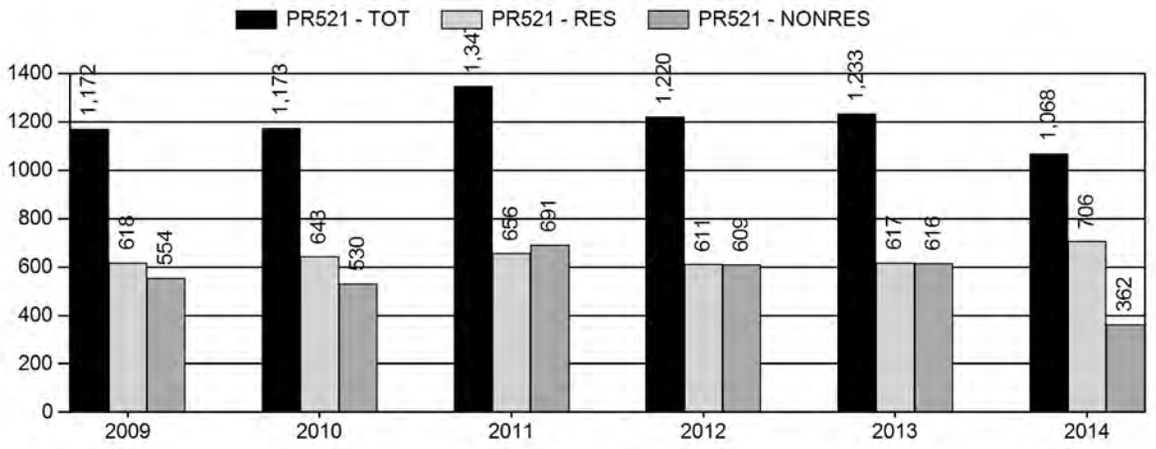
	JCR Year	Proposed
Females ≥ 1 year old:	8%	10%
Males ≥ 1 year old:	36%	40%
Juveniles (< 1 year old):	2%	3%
Total:	10%	12%
Proposed change in post-season population:	-12%	-15%



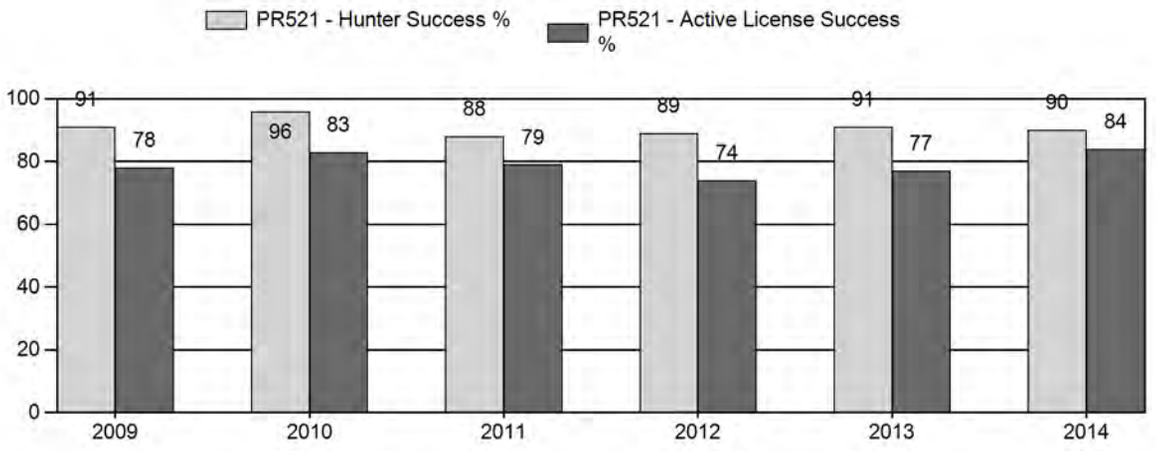
Harvest



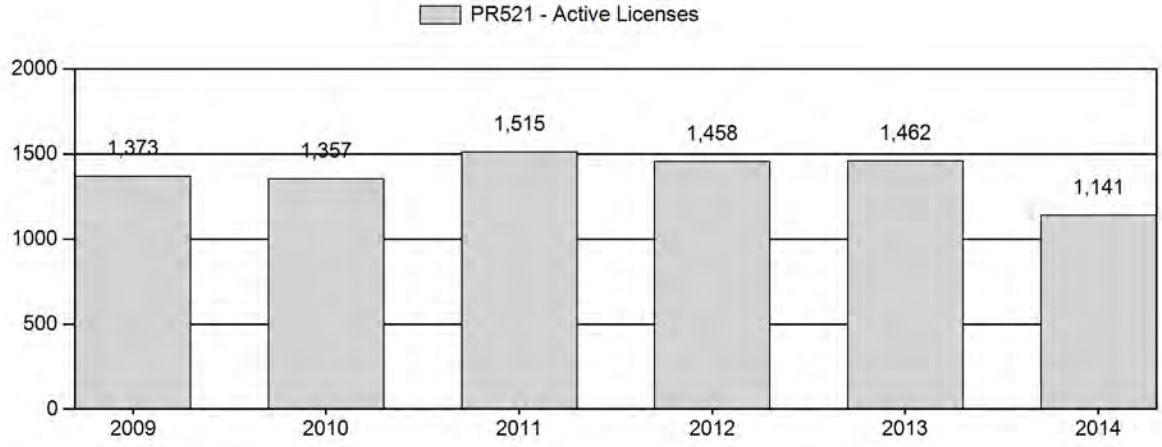
Number of Hunters



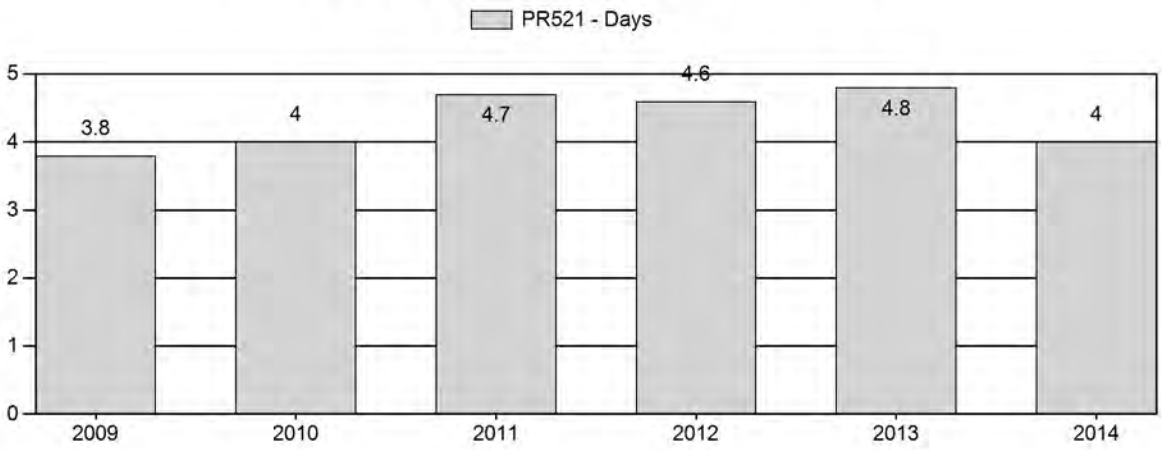
Harvest Success



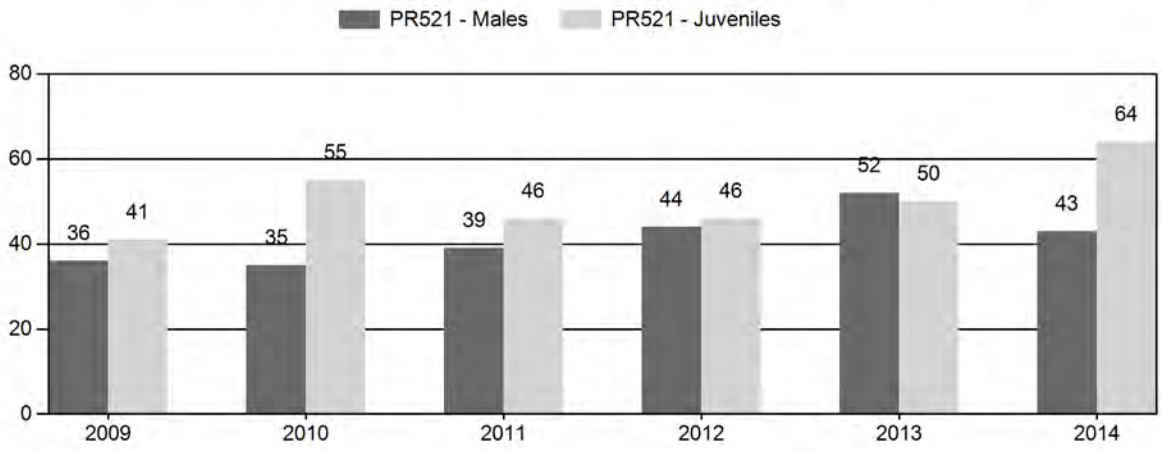
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR521 - HAWK SPRINGS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	9,000	144	166	310	20%	872	57%	359	23%	1,541	1,010	17	19	36	± 4	41	± 4	30
2010	8,800	69	161	230	18%	658	53%	360	29%	1,248	1,183	10	24	35	± 4	55	± 5	41
2011	8,000	104	160	264	21%	669	54%	309	25%	1,242	1,378	16	24	39	± 4	46	± 5	33
2012	7,400	94	132	226	23%	517	53%	240	24%	983	1,297	18	26	44	± 5	46	± 6	32
2013	6,800	88	201	289	26%	558	50%	279	25%	1,126	1,184	16	36	52	± 6	50	± 6	33
2014	8,800	59	155	214	21%	498	48%	317	31%	1,029	1,151	12	31	43	± 5	64	± 7	45

2015 HUNTING SEASON
HAWK SPRINGS PRONGHORN HERD (PR521)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
34	1	Sept. 20	Oct. 14	900	Limited quota; any antelope
	6	Sept. 20	Dec. 31	700	Limited quota; doe or fawn
ARCHERY					
34		Aug. 15	Sept. 19	Refer to Section 3 of this Chapter	

Hunt Area	Type	Quota change from 2014
34	1	+100
34	6	+200
Total	**1**	**+100**
	6	**+200**

Management Evaluation
Current Management Objective: 6,000 (4,800-7,200)
Management Strategy: Recreational
2014 Postseason Population Estimate: ~7,800
2015 Postseason Population Estimate: ~6,900
Management Strategy: Recreational
Sportsmen Satisfaction Survey Results: 86% Satisfied, 6% Neutral, 8% Dissatisfied

Herd Unit Issues
The management objective for the Hawk Springs Herd Unit is a post-season population objective of 6,000 pronghorn. The objective was changed in 2014 from 7,000 to 6,000 and Hunt Areas 34-36 were combined into Hunt Area 34 as a result of the herd unit objective review process in 2013. The management strategy is recreational management with a pre-season buck ratio range of 20-59 bucks:100 does.

The 2014 post-season population estimate was about 7,800 pronghorn, placing the population 30% above the objective of 6,000 and an increase of 2,300 pronghorn from 2013. The last line-transect survey conducted in this herd unit was June 2007 that resulted in a population estimate of 21,000 pronghorn. This survey implied the herd increased by 62% from the previous line-transect conducted in 2003 with a population estimate of 8,100. Given poor fawn production, poor habitat conditions, and loss of habitat this estimate does not seem plausible. As a result this model is anchored to the 2003 line-transect estimate.

The southern end of the herd unit along Interstate Highway 80 to U.S. Highway 85 has experienced an increase in urban and industrial development resulting in a decrease in usable habitat. The northern 2/3 of the unit is comprised of dryland farming, irrigated farming, land enrolled into the Conservation Reserve Program (CRP) and native rangeland. The majority of issues with landowners occur when there are high densities of pronghorn on irrigated and non-irrigated agricultural fields. This typically results in damage issues which is the rationale behind the late season doe/fawn licenses.

A majority of this herd unit is comprised of private land (84%). Access is available through the Department's PLPW program and limited access to 350 square miles of state land.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on big game species. Mild fall temperatures and lack of persistent snows allowed for pronghorn to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Hawk Springs Pronghorn Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern

over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

In Spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data

This herd increased in 2014 as a result of above average fawn production in 2014 (64 fawns:100 does) compared to the five-year average of 47 fawns:100 does and reduced harvest pressure on the female segment of the population. Doe/fawn license issuance has fluctuated around 750 for the past 5 years and was decreased in 2014 to try and increase the population, which was accomplished by 30%. Buck ratios were similar compared to 2013 but are still within the recommended recreational management range 20-59 bucks: 100 does (43 bucks:100 does in 2014). However, limited access prevents additional opportunity to put hunters in the field. The sample size for field check tooth data collected in the field was too small to provide any reliable estimates for population parameters. The age data collected indicates the majority of male pronghorn are 3 years or older, which is typical of hunters looking for a mature buck. Females range from 1+ to 3+ which is plausible given there is not a way for hunters to judge the age of females in the field. Of the hunters surveyed in 2014, 86% were satisfied with their hunt. Based on comments in the field during the 2014 hunting season hunters had more success accessing private land and they appreciated the number of acres enrolled into the PLPW program.

Harvest Data

Active license success of 84% in 2014 was higher than five-year average of 78% and slightly higher than the five-year state-wide average of 82%. There is still difficulty finding access in the southern portion of the herd unit, but access did open up with the Nimmo HMA and private land in the northern portion of the herd unit, which could explain the increase in success. Hunter effort (4.0 days per harvest in 2014) was slightly lower than the five-year average of 4.4 days per harvest but slightly higher than the five-year state-wide average of effort of 3.8 days. Factors impacting success most likely contributed to a decrease in harvest effort.

Population

The "Constant Juvenile – Constant Adult Survival" (CJ,CA) spreadsheet model was chosen for the post season population estimate of this herd. The model did have the lowest AIC score, and the population estimate appears reasonable. The line-transect in 2007 was ignored and the independent estimates of 2001 and 2003 are similar to model estimates. The model predicted a decreasing trend since 2007, but increased in 2014; given increased fawn production and a decrease in female harvest compared to the past five years this seems plausible. WGFD personnel observations indicate that pronghorn densities would support this trend. Some landowners still feel there are too many pronghorn but the amount of damage has decreased in

the last 2-3 years. Trends in harvest statistics (increase in success, and a decrease in effort) seem to support model simulations of a sudden increase in the population. This model is ranked fair since the only data available is harvest and classification data and the most recent LT estimate is from 2003.

Management Summary

The 2014 season is designed to try and decrease the population with an additional 100 Type 1 licenses and 200 Type 6 licenses. Given previous harvest rates and the 1,600 licenses available (900 Type 1 licenses, and 700 Type 6 licenses) we expect to harvest around 1,210 pronghorn, resulting in a post-season population estimate of 6,900 pronghorn.

INPUT	
Species:	Pronghorn
Biologist:	Martin Hicks
Herd Unit & No.:	PH521
Model date:	02/26/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	154	163	☑ CJ,CA Model	fit, AIC and simplicity indicate this is the best model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	154	163	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	102466819	102466923	☐ 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	2557	1349	5309	**9215**	2545	1052	5133	**8730**	1739	5533	**7273**				7000
1994	1911	1705	5423	**9039**	1872	1367	5159	**8397**	1812	5334	**7145**				7000
1995	1694	1775	5227	**8696**	1675	1429	5155	**8259**	1811	5291	**7103**	6102	1199		7000
1996	2775	1775	5186	**9735**	2765	1407	5066	**9238**	2131	5545	**7676**				7000
1997	1677	2088	5434	**9199**	1627	1584	5230	**8440**	1919	5327	**7246**				7000
1998	2415	1880	5220	**9516**	2391	1424	4999	**8814**	2018	5355	**7373**	5788	647		7000
1999	1745	1978	5248	**8970**	1712	1466	4998	**8176**	1839	5138	**6977**				7000
2000	1577	1802	5035	**8414**	1551	1359	4936	**7846**	1697	5045	**6742**				7000
2001	2215	1663	4944	**8822**	2211	1278	4928	**8417**	1838	5256	**7094**	8065	1399		7000
2002	1879	1801	5151	**8831**	1879	1329	5105	**8314**	1775	5315	**7090**				7000
2003	2670	1739	5209	**9618**	2652	1280	5111	**9044**	1968	5553	**7521**	8069	1122		7000
2004	2445	1929	5442	**9815**	2413	1445	5282	**9140**	2040	5628	**7669**				7000
2005	2821	2000	5516	**10336**	2789	1546	5301	**9637**	2255	5758	**8013**				7000
2006	3177	2210	5643	**11030**	3126	1678	5313	**10117**	2471	5860	**8330**				7000
2007	2544	2421	5742	**10707**	2455	1911	5348	**9713**	2472	5669	**8140**				7000
2008	2809	2422	5555	**10787**	2752	1831	5134	**9717**	2489	5567	**8056**				7000
2009	2246	2439	5456	**10141**	2142	1828	4997	**8966**	2285	5237	**7522**				7000
2010	2808	2239	5132	**10179**	2728	1559	4653	**8940**	2217	5103	**7320**				7000
2011	2310	2173	5001	**9484**	2239	1529	4405	**8173**	2145	4802	**6947**				7000
2012	2184	2102	4705	**8992**	2113	1525	4161	**7799**	1997	4498	**6496**				7000
2013	2204	1957	4408	**8570**	2122	1337	3874	**7332**	1833	4420	**6254**				7000
2014	2758	1797	4332	**8886**	2705	1141	3986	**7831**	1706	4405	**6111**				6000
2015	2302	1672	4317	**8291**	2236	869	3855	**6960**							6000
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

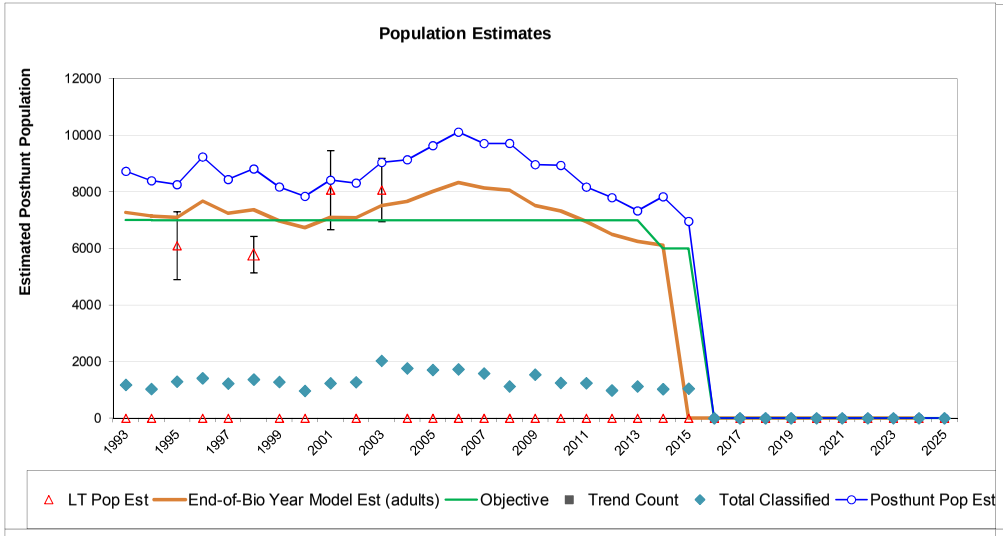
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.61			0.91		
1994	0.61			0.91		
1995	0.61			0.91		
1996	0.61			0.91		
1997	0.61			0.91		
1998	0.61			0.91		
1999	0.61			0.91		
2000	0.61			0.91		
2001	0.61			0.91		
2002	0.61			0.91		
2003	0.61			0.91		
2004	0.61			0.91		
2005	0.61			0.91		
2006	0.61			0.91		
2007	0.61			0.91		
2008	0.61			0.91		
2009	0.61			0.91		
2010	0.61			0.91		
2011	0.61			0.91		
2012	0.61			0.91		
2013	0.61			0.91		
2014	0.61			0.91		
2015	0.61			0.91		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

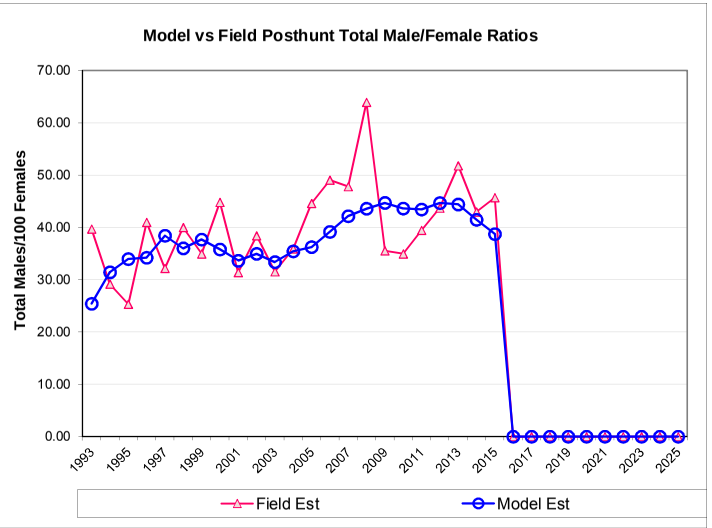
Parameters:	Optim cells
Juvenile Survival =	0.611
Adult Survival =	0.908
Initial Total Male Pop/10,000 =	0.135
Initial Female Pop/10,000 =	0.531

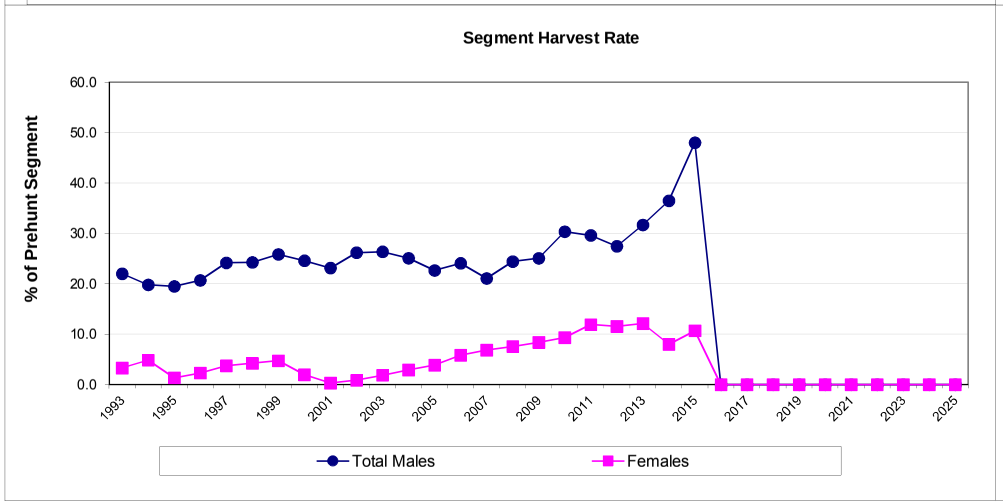
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

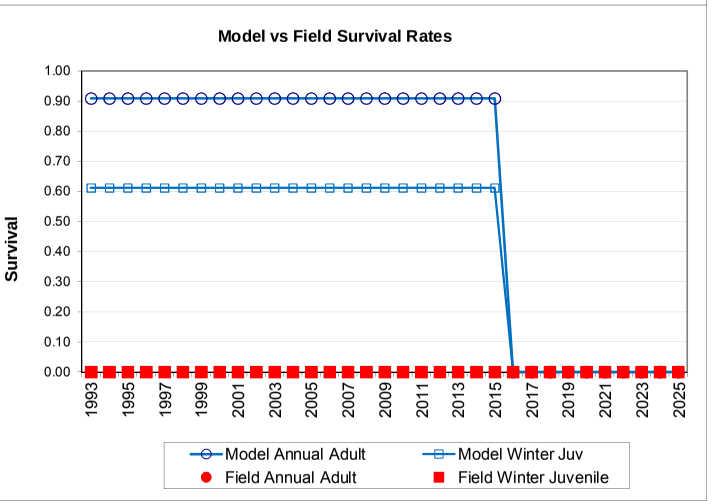
Year	Classification Counts						Harvest					
	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		48.17	3.37	25.42	39.71	2.97	270	160	11	441	22.0	3.3
1994		35.25	2.76	31.44	29.19	2.45	307	240	36	583	19.8	4.9
1995		32.40	2.29	33.97	25.33	1.97	315	65	17	397	19.5	1.4
1996		53.51	3.36	34.23	40.99	2.82	334	109	9	452	20.7	2.3
1997		30.85	2.32	38.43	32.18	2.38	459	186	45	690	24.2	3.8
1998		46.26	3.03	36.02	40.00	2.76	415	201	22	638	24.3	4.2
1999		33.25	2.41	37.69	34.95	2.49	465	227	30	722	25.9	4.8
2000		31.33	2.74	35.80	44.81	3.44	403	90	24	517	24.6	2.0
2001		44.79	3.04	33.64	31.38	2.43	350	15	3	368	23.1	0.3
2002		36.49	2.61	34.97	38.41	2.70	429	41	0	470	26.2	0.9
2003		51.26	2.64	33.39	31.53	1.93	417	89	16	522	26.4	1.9
2004		44.92	2.58	35.44	35.90	2.24	440	145	29	614	25.1	2.9
2005		51.15	2.98	36.25	44.61	2.72	412	195	29	636	22.7	3.9
2006		56.29	3.23	39.16	49.05	2.95	484	300	46	830	24.1	5.8
2007		44.30	2.79	42.16	47.82	2.93	464	359	81	904	21.1	6.9
2008		50.57	3.81	43.61	63.93	4.47	538	383	52	973	24.4	7.6
2009		41.17	2.58	44.71	35.55	2.35	556	417	95	1068	25.1	8.4
2010		54.71	3.59	43.62	34.95	2.68	618	436	73	1127	30.4	9.3
2011		46.19	3.18	43.44	39.46	2.87	585	542	65	1192	29.6	11.9
2012		46.42	3.63	44.68	43.71	3.49			495	1085	27.5	11.6
2013		50.00	3.67	44.41	51.79	3.75			486	1125	31.7	12.1
2014		63.65	4.57	41.47	42.97	3.51			315	959	36.5	8.0
2015		53.33	3.95	38.74	45.71	3.56			420	1210	48.0	10.7
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



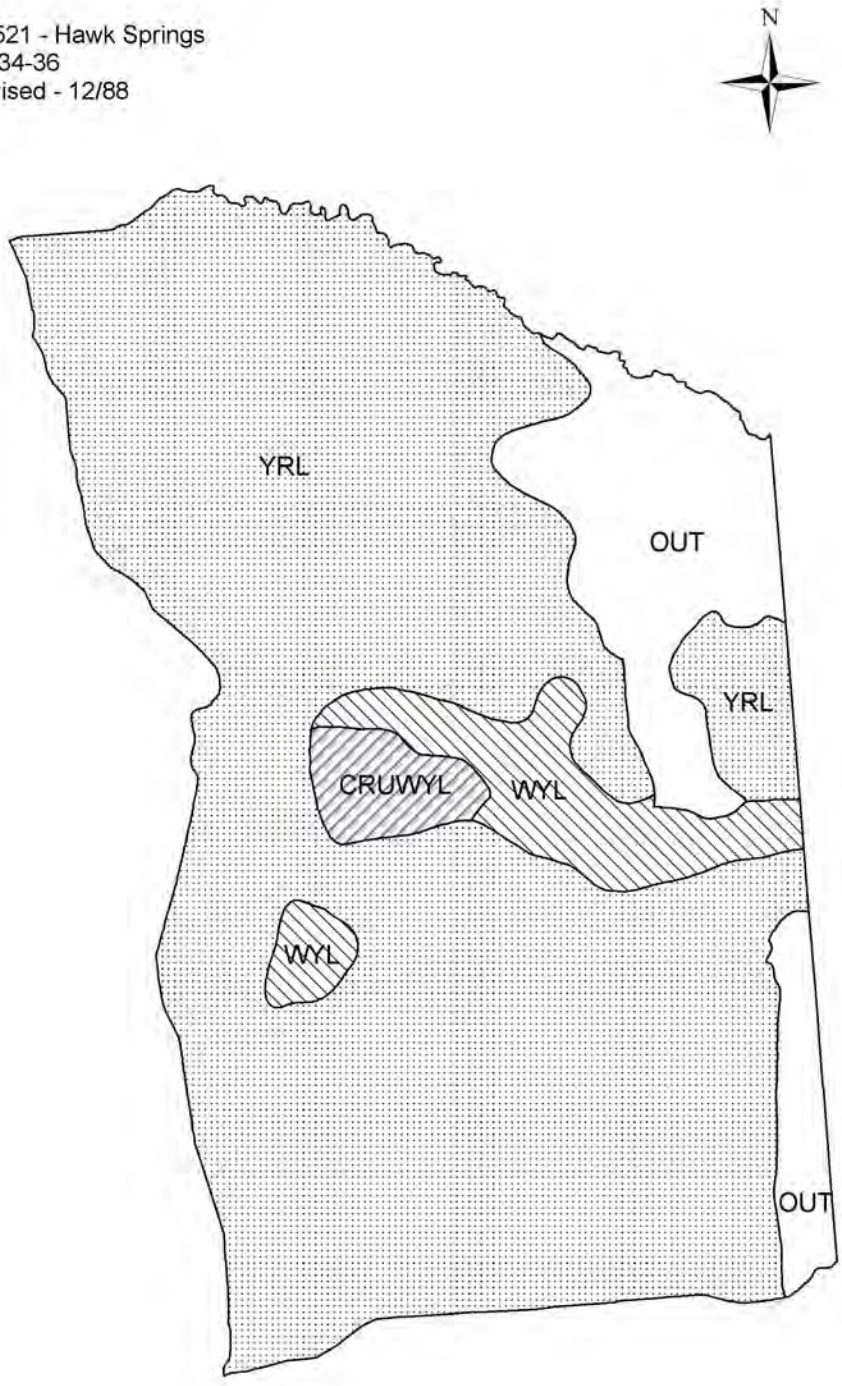






Comments:

PH521 - Hawk Springs
HA 34-36
Revised - 12/88



2014 - JCR Evaluation Form

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

HERD: PR522 - MEADOWDALE

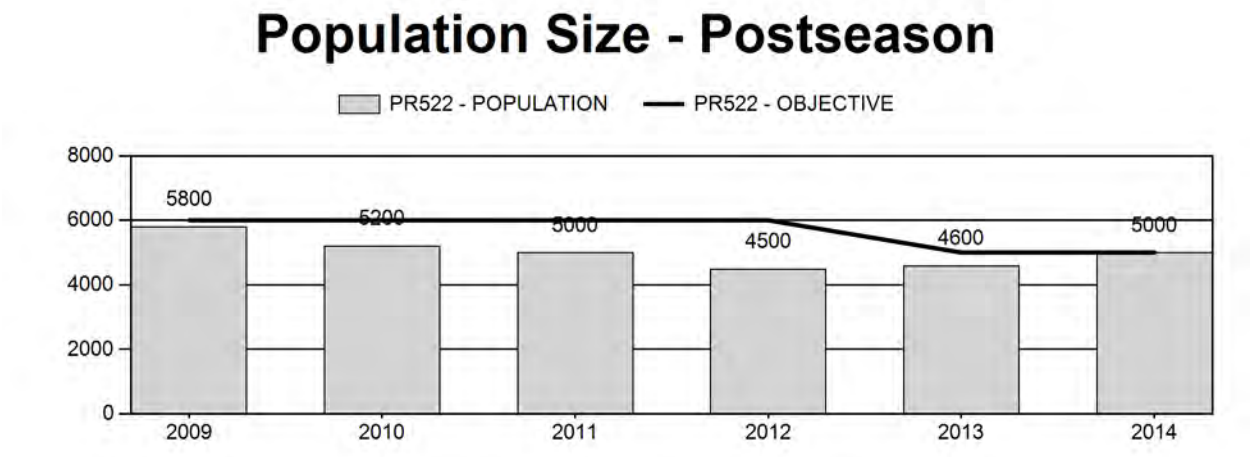
HUNT AREAS: 11
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	5,020	5,000	4,800
Harvest:	588	423	415
Hunters:	641	453	450
Hunter Success:	92%	93%	92%
Active Licenses:	721	519	520
Active License Success:	82%	82%	80 %
Recreation Days:	2,001	1,796	1,800
Days Per Animal:	3.4	4.2	4.3
Males per 100 Females	38	34	
Juveniles per 100 Females	57	65	

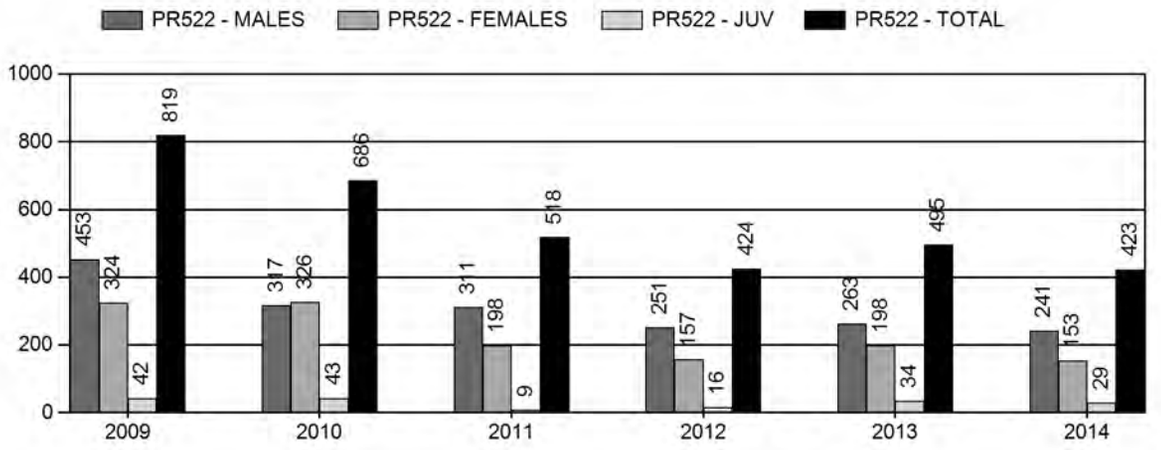
Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	0
Model Date:	02/20/2015

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

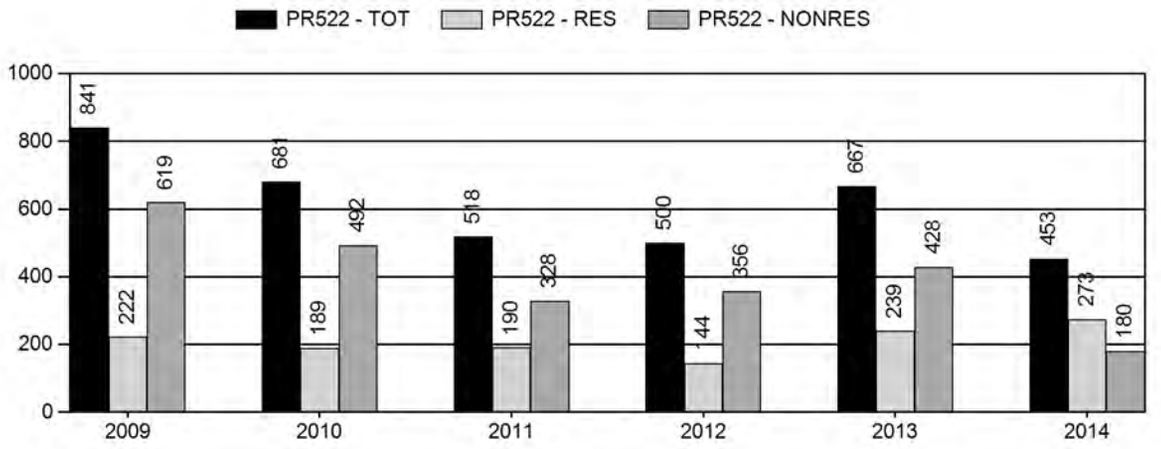
	JCR Year	Proposed
Females ≥ 1 year old:	6%	6%
Males ≥ 1 year old:	30%	28%
Juveniles (< 1 year old):	1%	1%
Total:	7%	8%
Proposed change in post-season population:	-10%	-8%



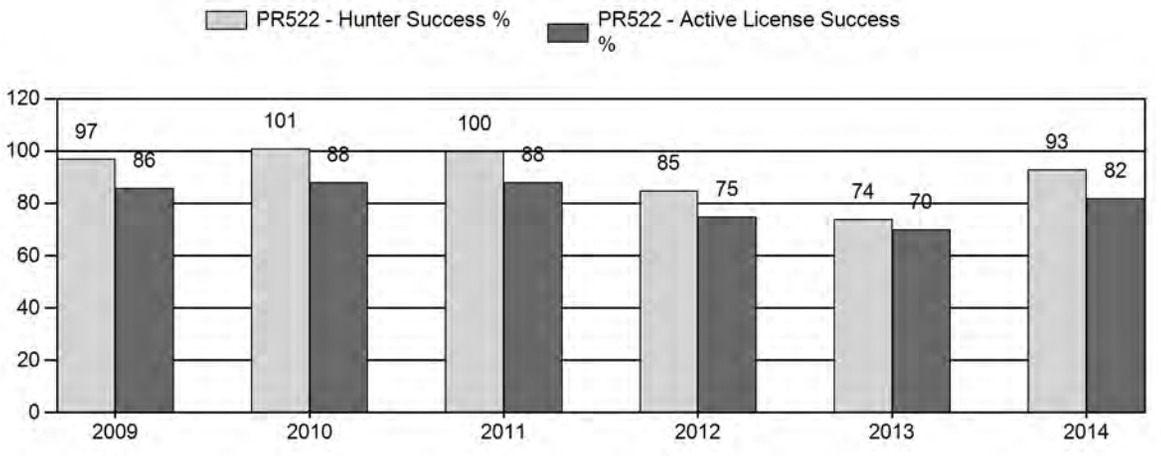
Harvest



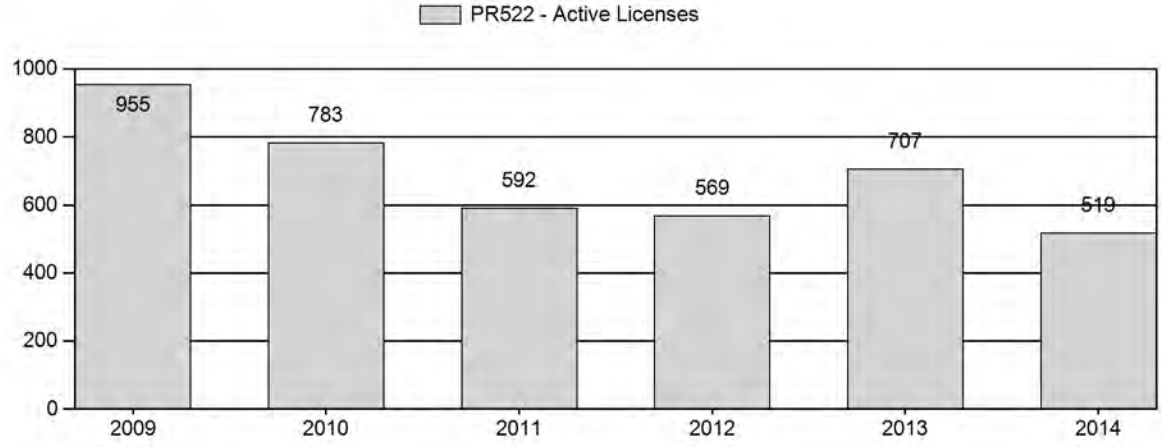
Number of Hunters



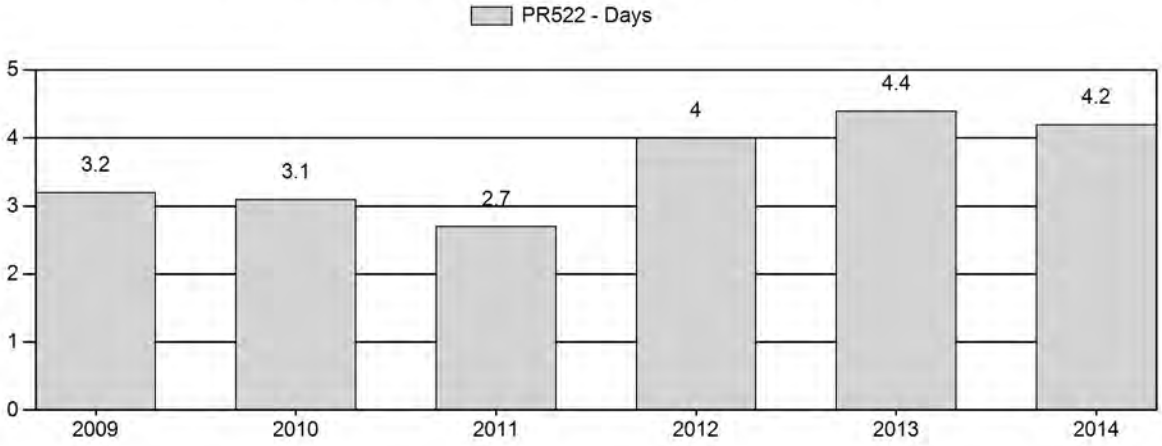
Harvest Success



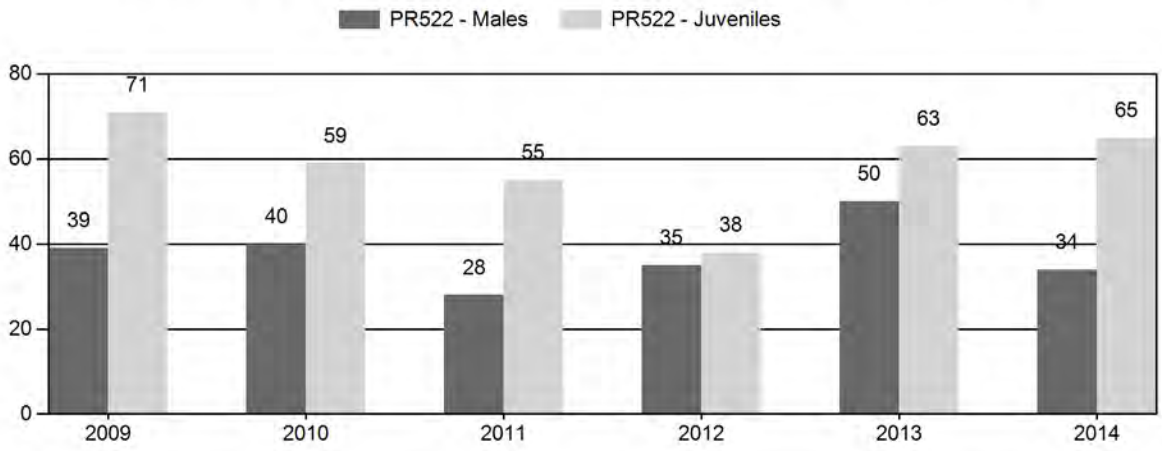
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR522 - MEADOWDALE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	6,700	71	194	265	19%	684	48%	483	34%	1,432	1,744	10	28	39	± 4	71	± 6	51
2010	6,000	80	137	217	20%	543	50%	319	30%	1,079	1,404	15	25	40	± 5	59	± 6	42
2011	5,500	32	140	172	15%	612	55%	334	30%	1,118	1,426	5	23	28	± 4	55	± 5	43
2012	4,900	62	133	195	20%	553	58%	211	22%	959	838	11	24	35	± 4	38	± 5	28
2013	5,100	60	139	199	23%	402	47%	252	30%	853	1,154	15	35	50	± 6	63	± 8	42
2014	5,400	49	169	218	17%	637	50%	411	32%	1,266	1,327	8	27	34	± 4	65	± 6	48

2015 HUNTING SEASONS
MEADOWDALE PRONGHORN HERD (PR522)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
11	1	Oct. 1	Oct. 15	350	Limited quota; any antelope
		Oct. 16	Oct. 31		Unused Area 11 Type 1 licenses valid for doe or fawn
	6	Oct. 1	Oct. 31	200	Limited quota; doe or fawn
Archery		Aug. 15	Sept. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
11	1	None
11	6	None
Total	**1**	**None**
	6	**None**

Management Evaluation
Current Management Objective: 5,000 (4,000-6,000)
2014 Post-season Population Estimate: ~5,000
2015 Post-season Population Estimate: ~4,800
Management Strategy: Recreational
2014 Sportsmen Satisfaction Survey Results: 89% Satisfied, 12% Neutral, 3% Dissatisfied

Herd Unit Issues
The management objective for the Meadowdale Pronghorn Herd Unit of 6,000 was decreased to 5,000 as a result of internal and public input received during the 2013 herd objective review process. The management strategy is recreational management, which is a 20-59 buck:100 doe range.

The 2014 post-season population estimate was about 5,000 with the population trending down from the high of 7,000 pronghorn in 2004. The last line-transect was conducted in June of 2003 that resulted in an estimate of 5,800 pronghorn. The northern portion of the herd unit continues to have the highest densities of pronghorn resulting in more acres of private lands enrolled into the PLPW walk-in program as well as landowners opening access, particularly during the doe/fawn season.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant

prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on big game species. Mild fall temperatures and lack of persistent snows allowed for pronghorn to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Meadowdale Proghorn Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

In spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data

The Meadowdale population has been stable to decreasing since 2004. In 2014 fawn ratios (65 fawns: 100 does) increased compared to the five year average of 57 fawns:100 does. The sample size was only 5% below the 90% CI so herd classification data appears to be plausible. The 2013/14 winter was mild and most likely did not result in high winter mortality. Fawn ratios were similar to adjacent herds, but given excellent habitat conditions during fawn rearing periods a more dramatic increase was expected. Lingering affects to body condition on breading does from the 2012 drought might have possibly led to lower conception rates and survival. Buck to doe ratios have fluctuated from a low of 28:100 to a high of 59:100 within the last ten years. The 2014 buck ration was 34 bucks:100 does, which seems reasonable given the sample size. Low fawn recruitment and seasons designed to reduce the population have resulted in a decreasing population trend, placing the population within the population objective of 5,000 pronghorn. With the population at a desired level there is not a proposal to increase Type 6 licenses, and given buck ratios are within the recommended recreation management strategy parameters there is not a proposal to increase Type 1 licenses. Sample size for tooth data collected in the field is too small to infer any population dynamics.

Harvest Data

The 2014 hunter success rate (93%) was similar to the ten-year average of 91%, but significantly higher than 2013 (74%). Fewer hunters went to the field in 2014 since Type 6 licenses from Hunt Area 9 were not valid in the northern portion of Hunt Area 11, decreasing in harvest in 2014 compared to 2013. Effort in 2014 was 4.2 days per harvest which is higher than the five-year average of 3.4 days per harvest, but similar to 2013 (4.2 days/harvest). Harvest statistics (increase in success, stable effort) support a population that experienced a slight increase from 2013 to 2014. Five-year trends in success (decrease) and effort (increase) supports the models simulation that the population is experiencing a downward trend. However, population assumptions must be interpreted with caution due to movement in and out of Area 11 from Hunt Area 9. At any given time there could be an increase or decrease of pronghorn depending on movement across Highway 18/20. The hunter satisfaction survey showed that 89% of the hunters were satisfied or very satisfied with their hunt. Based on positive comments received from the field the survey seems plausible.

Population

The "Constant Juvenile – Constant Adult Survival" (CJCA) spreadsheet model was selected for the post-season population estimate of this herd. This model did have the lowest AIC score, the second best fit and the population estimate appears reasonable. We conducted line-transects in 1996, 1998, 2000 and 2003 that provide independent population estimates that were similar to the model estimates. Based on relatively consistent harvest regimes and classification surveys this population typically fluctuates around 4,500 pronghorn, (2014 post-season estimate: 5,000 pronghorn) and has not experienced a significant increase or decrease in the past 5 years. This model is ranked fair since the last LT this population was anchored to was conducted in 2003, and the only other data available is harvest and classification data. WGFD personnel, landowner and hunter observations indicate that pronghorn densities remain low in the southern portion of

the hunt are and high in the northern portion. Landowners in that portion of the herd unit have damage problems and have voiced their concern at several Department meetings over the past two years.

Management Summary

The 2014 season was designed to maintain the population within the objective, which is the same goal for the 2015 season. Given previous harvest rates we expect to attain a harvest of 415 pronghorn. We predict a 2015 post-season population estimate of 4,800 pronghorn, 4% below the objective of 5,000, but within the ±20% recommended range for herd management.

INPUT	
Species:	Pronghorn
Biologist:	Martin Hicks
Herd Unit & No.:	PH522
Model date:	02/10/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	220	229	☑ CJ,CA Model	Fit, AIC and simplicity in variables indicate this is the best model
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	228	237	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	215	319	☐ 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	1151	956	2809	**4916**	1125	779	2681	**4585**	969	2815	**3785**				6000
1994	1546	950	2759	**5255**	1512	742	2573	**4827**	1009	2785	**3794**				6000
1995	1274	989	2729	**4992**	1255	794	2616	**4665**	1011	2782	**3793**				6000
1996	2045	991	2726	**5763**	2045	771	2656	**5472**	1156	2991	**4147**	5800	940		6000
1997	1252	1133	2931	**5316**	1230	923	2808	**4961**	1130	2962	**4092**				6000
1998	1689	1107	2902	**5699**	1678	934	2837	**5449**	1237	3089	**4326**	5100	670		6000
1999	1867	1213	3027	**6106**	1844	984	2972	**5800**	1314	3250	**4563**				6000
2000	1590	1288	3185	**6062**	1585	1072	3133	**5790**	1352	3358	**4710**	5500	760		6000
2001	1670	1325	3291	**6286**	1655	1140	3182	**5977**	1431	3414	**4845**				6000
2002	1576	1402	3346	**6324**	1553	1191	3218	**5962**	1456	3425	**4881**				6000
2003	2255	1427	3357	**7039**	2220	1108	3181	**6509**	1503	3520	**5022**	5800	890		6000
2004	2166	1473	3449	**7088**	2122	1151	3313	**6587**	1522	3627	**5149**				6000
2005	2138	1492	3554	**7184**	2097	1153	3262	**6512**	1519	3565	**5084**				6000
2006	2125	1488	3494	**7107**	2089	1147	3205	**6442**	1513	3510	**5024**				6000
2007	2123	1483	3440	**7047**	2104	1050	3068	**6222**	1421	3381	**4803**				6000
2008	1728	1393	3314	**6435**	1687	918	2963	**5568**	1200	3188	**4388**				6000
2009	2206	1176	3125	**6507**	2160	677	2768	**5606**	1061	3095	**4156**				6000
2010	1782	1039	3033	**5854**	1735	691	2674	**5100**	994	2916	**3910**				6000
2011	1560	974	2858	**5391**	1550	632	2640	**4821**	985	2916	**3900**				6000
2012	1090	965	2857	**4913**	1073	691	2686	**4449**	864	2771	**3636**				6000
2013	1703	847	2716	**5266**	1665	558	2498	**4721**	900	2811	**3711**				6000
2014	1777	882	2755	**5414**	1745	617	2586	**4949**	940	2844	**3784**				5000
2015	1525	921	2788	**5234**	1498	646	2601	**4744**							5000
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	0.40			0.95		
1994	0.40			0.95		
1995	0.40			0.95		
1996	0.40			0.95		
1997	0.40			0.95		
1998	0.40			0.95		
1999	0.40			0.95		
2000	0.40			0.95		
2001	0.40			0.95		
2002	0.40			0.95		
2003	0.40			0.95		
2004	0.40			0.95		
2005	0.40			0.95		
2006	0.40			0.95		
2007	0.40			0.95		
2008	0.40			0.95		
2009	0.40			0.95		
2010	0.40			0.95		
2011	0.40			0.95		
2012	0.40			0.95		
2013	0.40			0.95		
2014	0.40			0.95		
2015	0.40			0.95		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.403
Adult Survival =	0.950
Initial Total Male Pop/10,000 =	0.096
Initial Female Pop/10,000 =	0.281

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

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		40.99	2.37	34.05	45.76	2.55	161	116	24	301	18.5	4.5
1994		56.03	3.23	34.43	31.54	2.23	189	169	31	389	21.9	6.7
1995		46.69	2.46	36.22	33.72	1.99	177	103	18	298	19.7	4.2
1996		75.03	3.99	36.36	56.85	3.29	200	64	0	264	22.2	2.6
1997		42.70	2.56	38.66	32.19	2.14	191	112	20	323	18.5	4.2
1998		58.18	3.70	38.16	45.98	3.16	158	59	10	227	15.7	2.2
1999		61.68	3.41	40.07	52.45	3.06	208	50	21	279	18.9	1.8
2000		49.94	3.09	40.43	30.96	2.27	196	47	5	248	16.7	1.6
2001		50.75	2.76	40.26	42.36	2.45	168	99	14	281	13.9	3.3
2002		47.10	2.36	41.91	31.69	1.83	192	116	21	329	15.1	3.8
2003		67.19	5.01	42.50	44.20	3.77	290	160	32	482	22.4	5.2
2004		62.81	4.77	42.69	34.97	3.24	292	124	40	456	21.8	4.0
2005		60.15	4.26	41.97	35.71	3.02	308	266	37	611	22.7	8.2
2006		60.80	3.88	42.60	59.10	3.81	310	263	32	605	22.9	8.3
2007		61.73	4.33	43.11	39.96	3.24	394	338	18	750	29.2	10.8
2008		52.14	3.76	42.04	32.56	2.77	432	319	37	788	34.1	10.6
2009		70.61	4.20	37.62	38.74	2.80	453	324	42	819	42.4	11.4
2010		58.75	4.14	34.27	39.96	3.21	317	326	43	686	33.5	11.8
2011		54.58	3.71	34.08	28.10	2.43	311	198	9	518	35.1	7.6
2012		38.16	3.09	33.78	35.26	2.94			156	421	28.4	6.0
2013		62.69	5.04	31.19	49.50	4.29			198	495	34.2	8.0
2014		64.52	4.08	32.03	34.22	2.69			153	423	30.0	6.1
2015		54.72	4.00	33.03	39.62	3.23			150	415	29.9	6.7
2016												
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2020												
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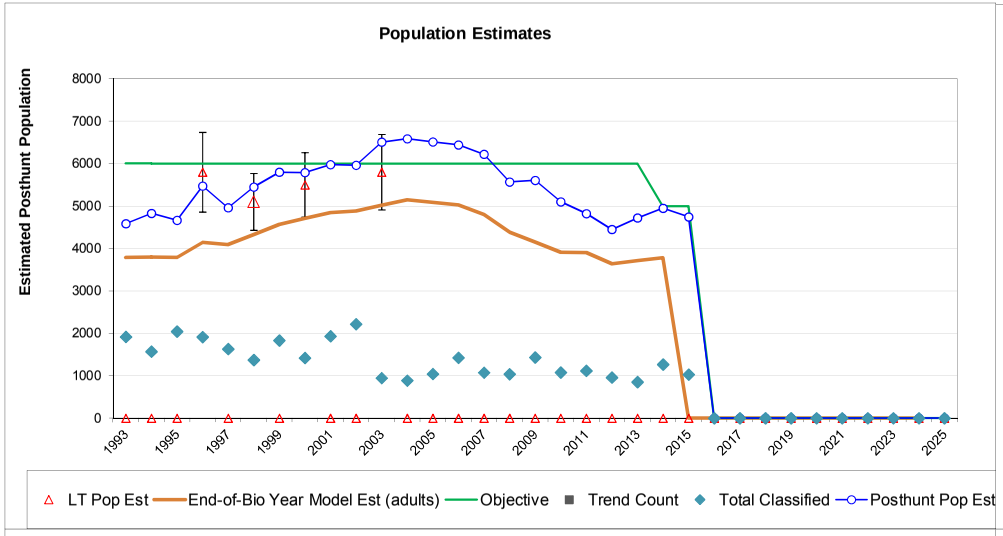
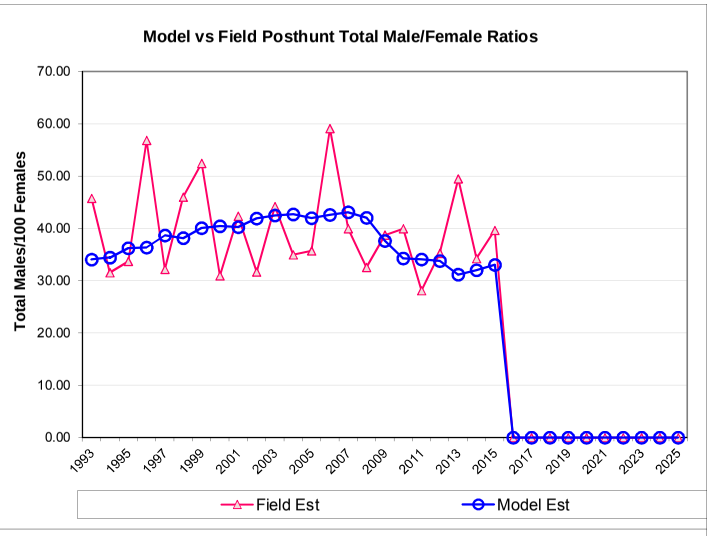
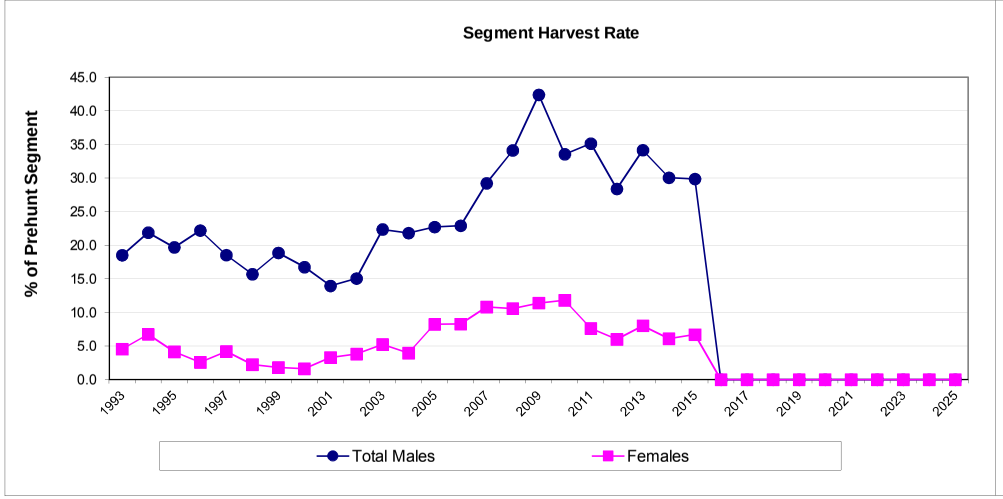
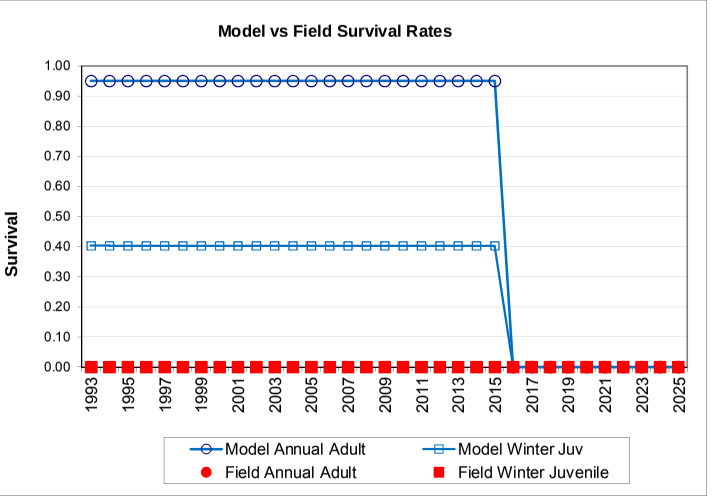
2022												
2023												
2024												
2025												

FIGURES



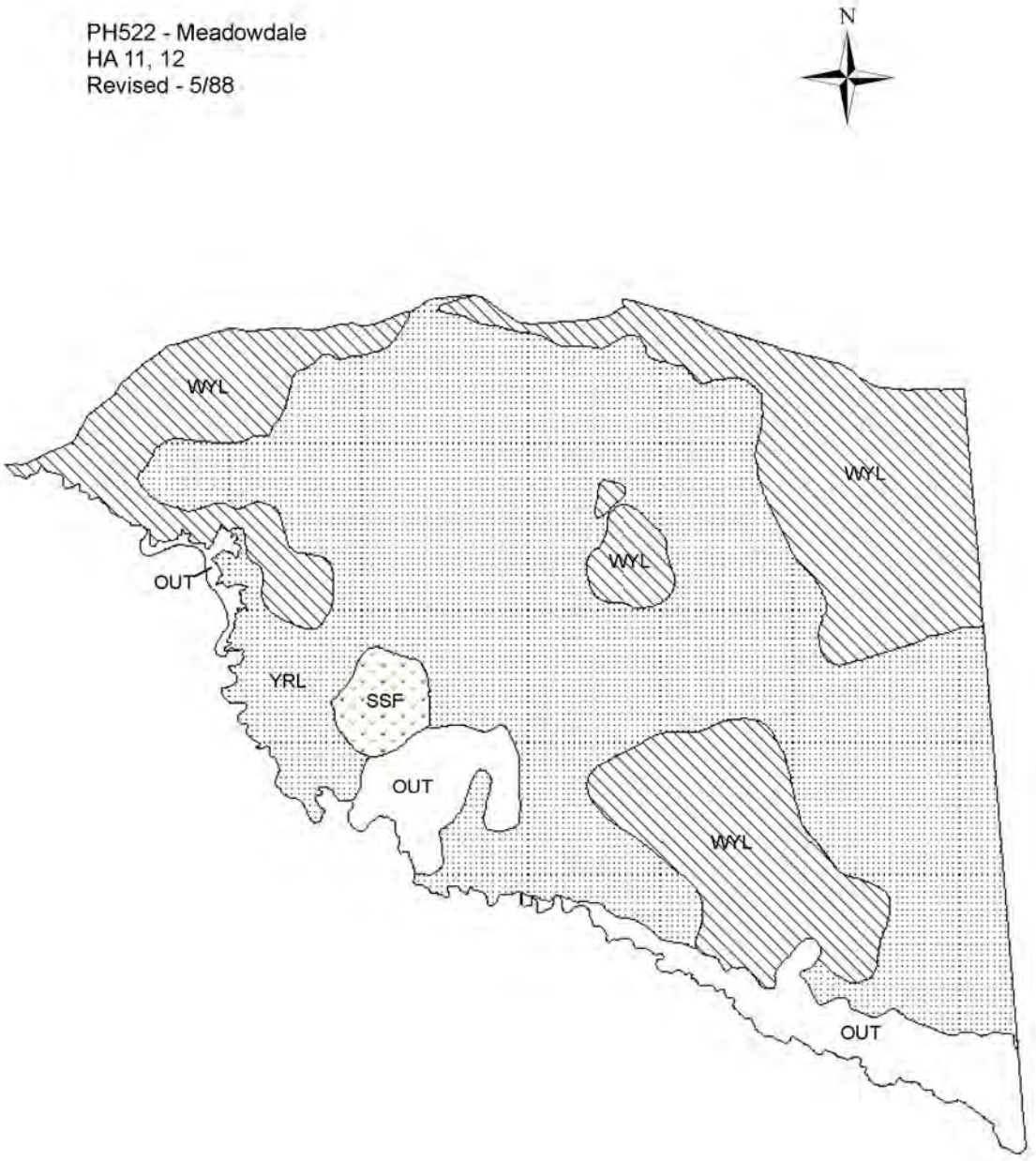






Comments:

PH522 - Meadowdale
HA 11, 12
Revised - 5/88



2014 - JCR Evaluation Form

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

HERD: PR523 - IRON MOUNTAIN

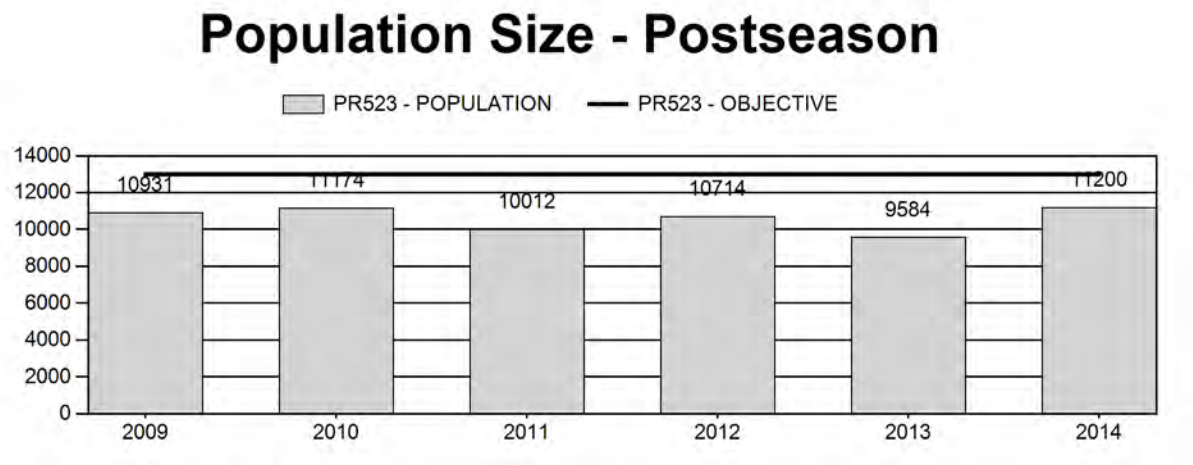
HUNT AREAS: 38
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	10,483	11,200	11,600
Harvest:	1,533	1,519	1,500
Hunters:	1,697	1,665	1,650
Hunter Success:	90%	91%	91 %
Active Licenses:	1,919	1,725	1,750
Active License Success:	80%	88%	86 %
Recreation Days:	5,859	4,673	4,600
Days Per Animal:	3.8	3.1	3.1
Males per 100 Females	47	49	
Juveniles per 100 Females	61	86	

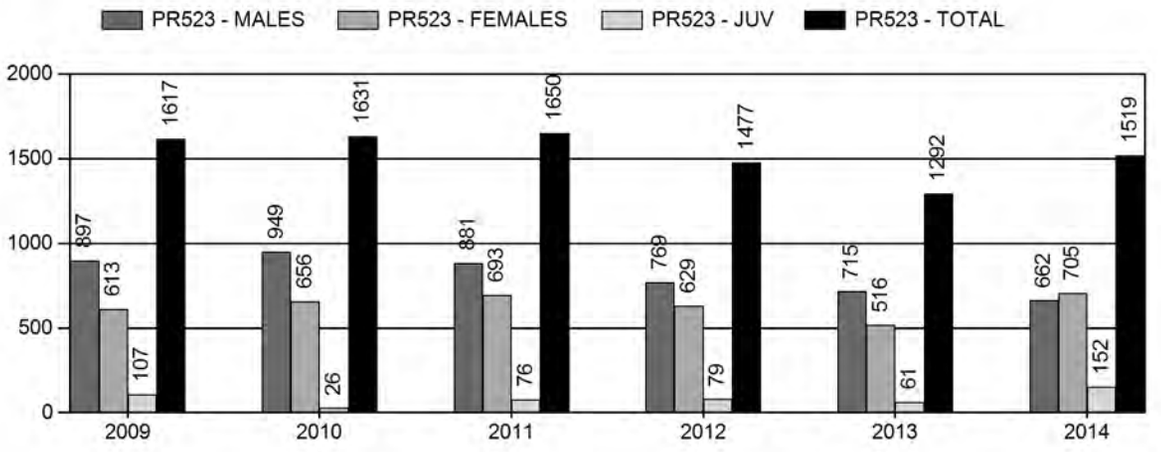
Population Objective (± 20%) :	13000 (10400 - 15600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-13.8%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/26/2015

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

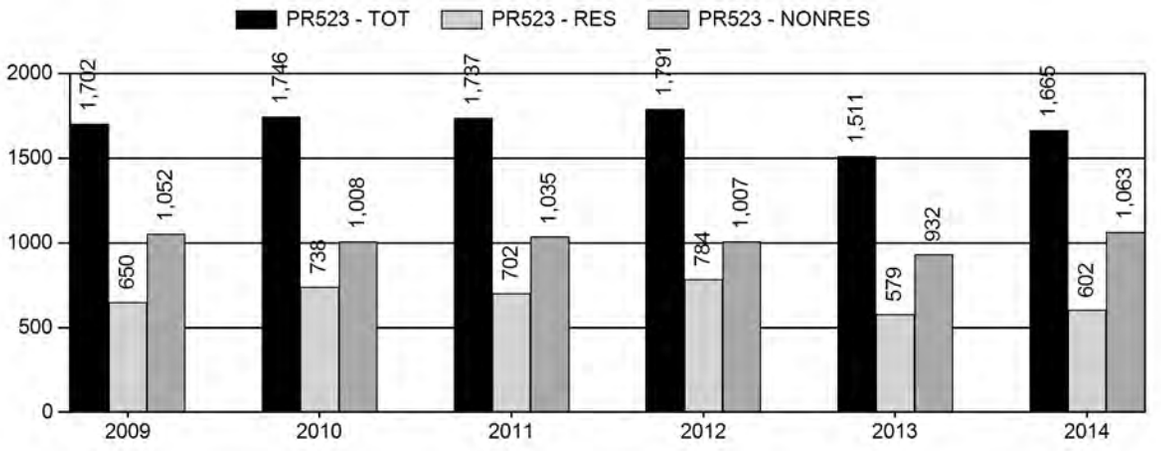
	JCR Year	Proposed
Females ≥ 1 year old:	6%	6%
Males ≥ 1 year old:	5%	5%
Juveniles (< 1 year old):	1%	1%
Total:	12%	12%
Proposed change in post-season population:	2%	2%



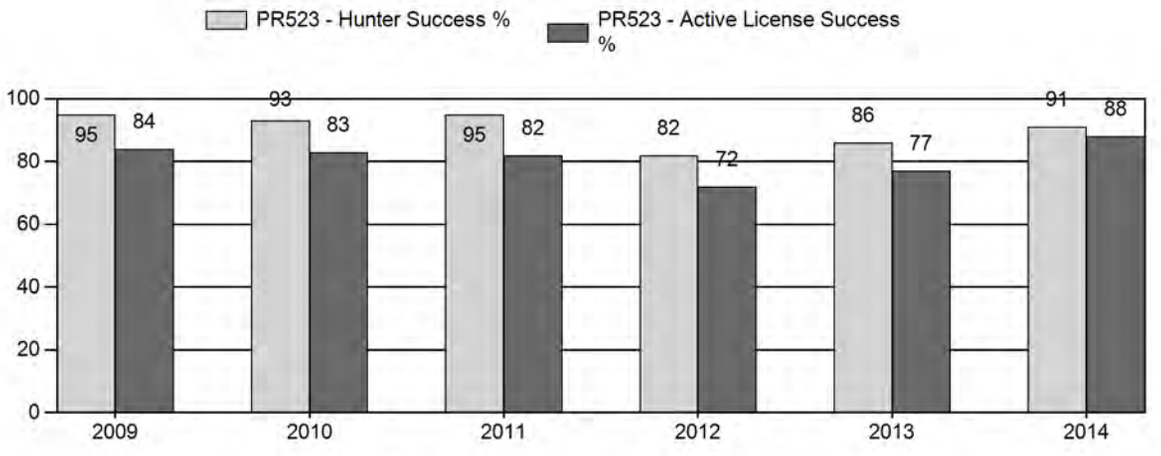
Harvest



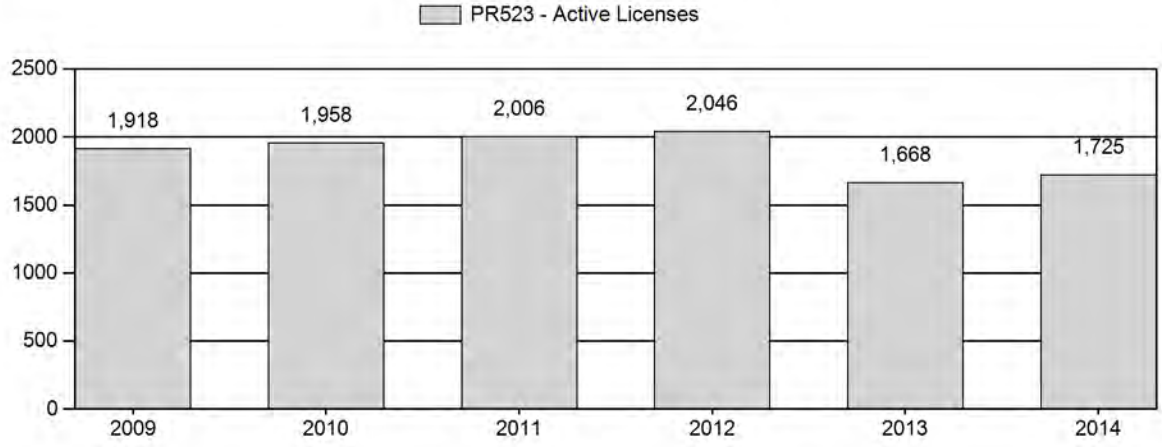
Number of Hunters



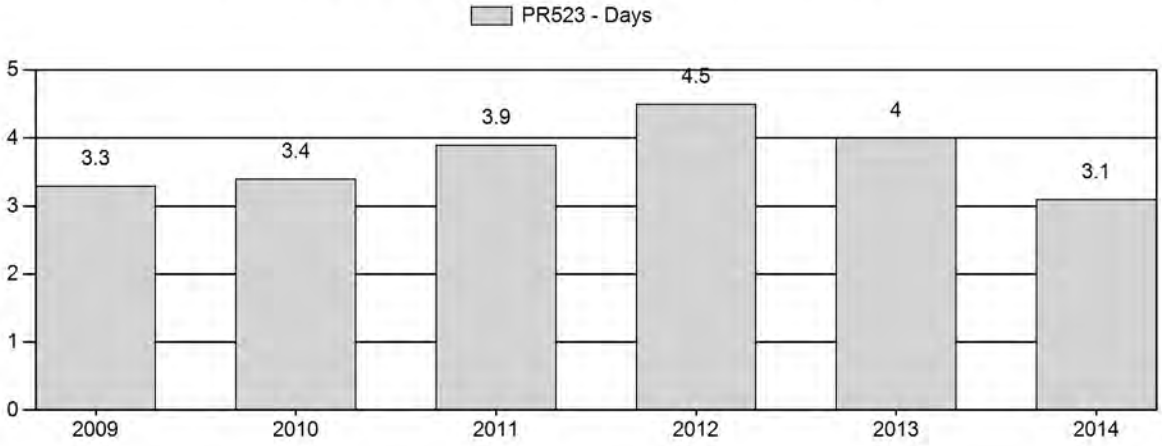
Harvest Success



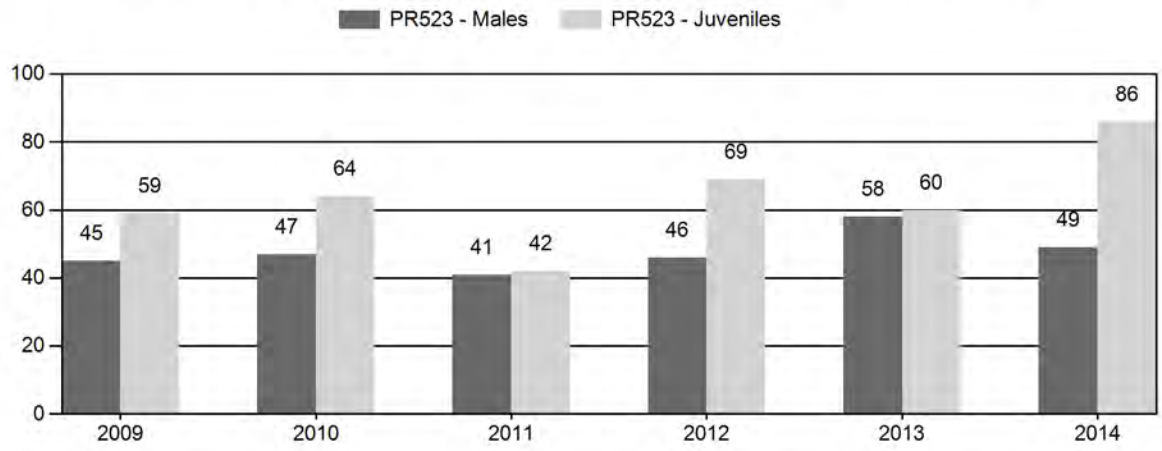
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR523 - IRON MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	12,709	160	259	419	22%	931	49%	550	29%	1,900	1,899	17	28	45	± 4	59	± 5	41
2010	12,968	182	370	552	22%	1,186	48%	755	30%	2,493	2,176	15	31	47	± 4	64	± 4	43
2011	11,827	51	89	140	23%	339	55%	141	23%	620	0	15	26	41	± 7	42	± 7	29
2012	12,359	100	260	360	21%	789	47%	547	32%	1,696	2,355	13	33	46	± 4	69	± 6	48
2013	11,005	120	233	353	27%	608	46%	364	27%	1,325	1,987	20	38	58	± 6	60	± 6	38
2014	12,870	145	276	421	21%	861	43%	737	37%	2,019	2,094	17	32	49	± 4	86	± 6	57

2015 HUNTING SEASONS
IRON MOUNTAIN PRONGHORN (PR523)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
38	1	Oct. 5	Oct. 31	1100	Limited Quota	Any antelope
	6	Oct. 5	Oct. 31	875	Limited Quota	Doe or fawn
		Nov. 1	Dec. 31			Unused Area 38 Type 1 and Type 6 licenses valid for doe or fawn
Archery						Refer to Section 3 of this Chapter

Type	Change from 2014
1 & 2	0
6 & 7	0
TOTAL	0

Management Evaluation

Current Postseason Population Management Objective: 13,000 (10,400-15,600)
Management Strategy: Recreational
2014 Postseason Population Estimate: 11,200
2015 Proposed Postseason Population Estimate: 11,600
2014 Hunter Satisfaction: 86% Satisfied, 10% Neutral, 4% Dissatisfied

The management objective for the Iron Mountain Pronghorn Herd Unit is a post-season population objective of 13,000 pronghorn. The management strategy is recreational management with a post hunt buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2014.

Herd Unit Issues

The Iron Mountain Herd Unit consists of Hunt Areas 38, (combined 39, 40 and 104 into Hunt Area 38 in 2014) which is predominately private lands with traditional agricultural uses. The 2014 post-season population estimate was 11,200 with the population trending slightly upward. Access limitations hinder our ability to manage this herd. Efforts to increase harvest in accessible areas have resulted in reduced success and decreased hunt quality.

Weather

Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts

of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific weather information please refer to the following link: http://www.ncdc.noaa.gov/.

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data

A total of 2,019 pronghorn were classified, which is slightly below the recommended classification objective of 2,094, but 700 more than in 2013. Drive routes have been established in this herd unit so that some inference can be made from a trend in classification samples year to year. Fawn ratios increased from 60 fawns: 100 does in 2013 to 86 fawns: 100 does in 2014 which is the highest on record for this herd. Buck ratios declined from 58 bucks: 100 does in 2013 to 49 bucks: 100 does, which is still higher than average, but we didn't see the large increase in yearling bucks like we did in neighboring herds. The hunter satisfaction survey showed 86% of hunters were either satisfied or very satisfied with their hunt which is an increase from 78% in 2013.

Harvest Data

Hunters had an exceptional year in this herd unit, indicated by the highest hunter success in over a decade at 88% and an increase of 10% from 2013. This is also indicated by days-to-harvest decreasing by a day to 3 days which is also the lowest in 10 years. This herd is typically a low

priority area for resident hunters, due to lack of public access, and many of the licenses are purchased after the draw by nonresidents, 64% of the license holders. Since this is the first year after combining all the hunt areas in the herd unit into one, we kept the license quota in 2014 equal to 2013. In 2013 we had 728 licenses left after the draw, in 2014 we only had 230 type 6s. From 2013 to 2014 total active licenses increased by 55, and overall harvest increased by 200 pronghorn.

Population

The population has remained fairly stable with the population increasing in 2014 due to a record fawn ratio. The spreadsheet model for this herd estimates a post hunt population of 11,200. This estimate uses the Constant Juvenile & Adult Survival model which had a AIC score of 28 and a best fit score of 18. This is a poor model due to little data available; ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; results not biologically defensible. To get the model to run we truncated years to 2002 to eliminate years of poor classification data. We also did not include LT estimates as they are also of poor quality due to such large deviations in terrain height resulting in large standard errors. Field staff and landowners are happy with current numbers and believe the population is fairly stable.

Management Summary

This herd has always been hard to manage due to limited population data and a large percentage of inaccessible private lands. We combined Hunt Areas 38, 39, 40 and 104 in 2014 to simplify regulations and allow hunters more opportunity to move where the pronghorn are most accessible. It appears to be working from the increase in hunter success to record levels. Licenses sold out for the first time in this herd unit in 2014; it is not completely clear why, but we suspect it is due to the large decrease in licenses state wide led to hunters drawing 38 as a second and third choice. Therefore we will leave license issuance as status quo so that we may look at a longer trend and revaluate in 2016.

INPUT	
Species:	Pronghorn
Biologist:	Lee Knox
Herd Unit & No.:	PR523 Iron Mountain
Model date:	02/26/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	18	28	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	4401	4420	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	7	102	☐ 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		
2002	2824	2420	6658	**11901**	2758	1563	6241	**10562**	2439	6861	**9300**				13000
2003	3351	2317	6518	**12187**	3277	1508	6062	**10846**	2596	6893	**9490**				13000
2004	3323	2467	6548	**12338**	3249	1617	6044	**10910**	2684	6860	**9543**				13000
2005	3384	2549	6517	**12450**	3309	1774	5807	**10891**	2862	6638	**9501**				13000
2006	3456	2719	6306	**12481**	3383	1812	5558	**10753**	2911	6431	**9342**				13000
2007	3415	2766	6109	**12290**	3343	1751	5367	**10461**	2826	6236	**9062**				13000
2008	4042	2685	5924	**12651**	3977	1672	5179	**10827**	3003	6312	**9315**				13000
2009	3542	2853	5996	**12391**	3424	1867	5322	**10613**	2963	6229	**9192**				13000
2010	3767	2815	5917	**12499**	3738	1771	5196	**10705**	3003	6241	**9244**				13000
2011	2466	2853	5929	**11248**	2382	1884	5166	**9433**	2575	5666	**8241**				13000
2012	3732	2446	5383	**11561**	3641	1591	4686	**9917**	2810	5720	**8530**				13000
2013	3253	2669	5434	**11357**	3186	1883	4867	**9936**	2915	5729	**8644**				13000
2014	4659	2769	5442	**12870**	4491	2041	4667	**11200**	3572	6020	**9591**				13000
2015	4174	3393	5719	**13286**	4007	2665	4943	**11615**							13000
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
2002	0.75			0.89		
2003	0.75			0.89		
2004	0.75			0.89		
2005	0.75			0.89		
2006	0.75			0.89		
2007	0.75			0.89		
2008	0.75			0.89		
2009	0.75			0.89		
2010	0.75			0.89		
2011	0.75			0.89		
2012	0.75			0.89		
2013	0.75			0.89		
2014	0.75			0.89		
2015	0.75			0.89		
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Parameters:	Optim cells
Juvenile Survival =	0.750
Adult Survival =	0.888
Initial Total Male Pop/10,000 =	0.242
Initial Female Pop/10,000 =	0.666

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	95%

Classification Counts							Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
2002		42.41	2.15	36.36	36.46	1.95	779	379	60	1218	35.4	6.3
2003		51.42	2.81	35.55	36.94	2.26	736	415	68	1219	34.9	7.0
2004		50.75	2.23	37.67	34.15	1.72	772	459	67	1298	34.4	7.7
2005		51.93	2.35	39.12	42.74	2.07	705	645	68	1418	30.4	10.9
2006		54.80	3.71	43.12	44.23	3.22	825	680	66	1571	33.4	11.9
2007		55.90	3.24	45.27	47.35	2.90	922	675	66	1663	36.7	12.2
2008		68.22	3.75	45.32	47.24	2.92	921	678	59	1658	37.7	12.6
2009		59.08	3.18	47.59	45.01	2.65	897	613	107	1617	34.6	11.2
2010		63.66	2.96	47.58	46.54	2.40	949	656	26	1631	37.1	12.2
2011		41.59	4.17	48.12	41.30	4.15	881	693	76	1650	34.0	12.9
2012		69.33	3.86	45.45	45.63	2.90	778	634	83	1495	35.0	13.0
2013		59.87	3.97	49.12	58.06	3.89	715	516	61	1292	29.5	10.4
2014		85.60	4.30	50.88	48.90	2.91	662	705	152	1519	26.3	14.2
2015		72.98	4.10	59.34	50.22	3.17	662	705	152	1519	21.5	13.6
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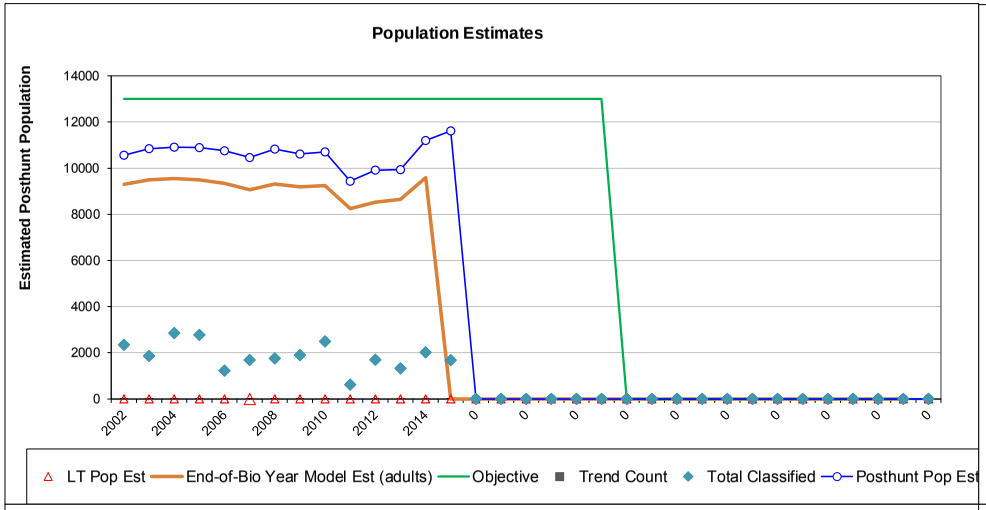
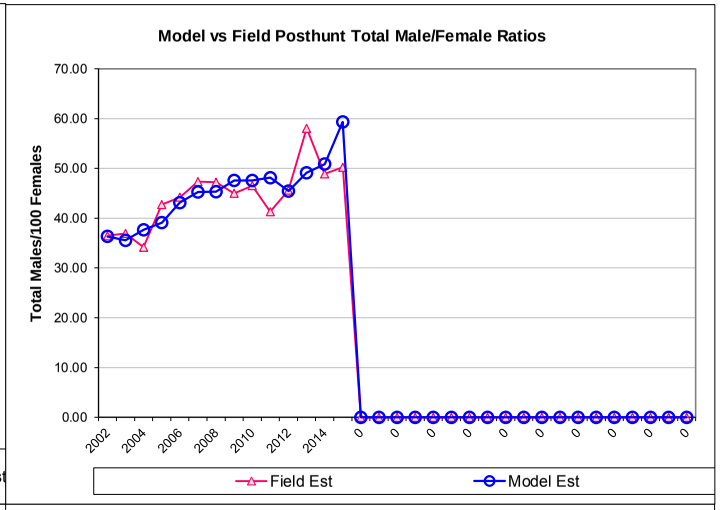
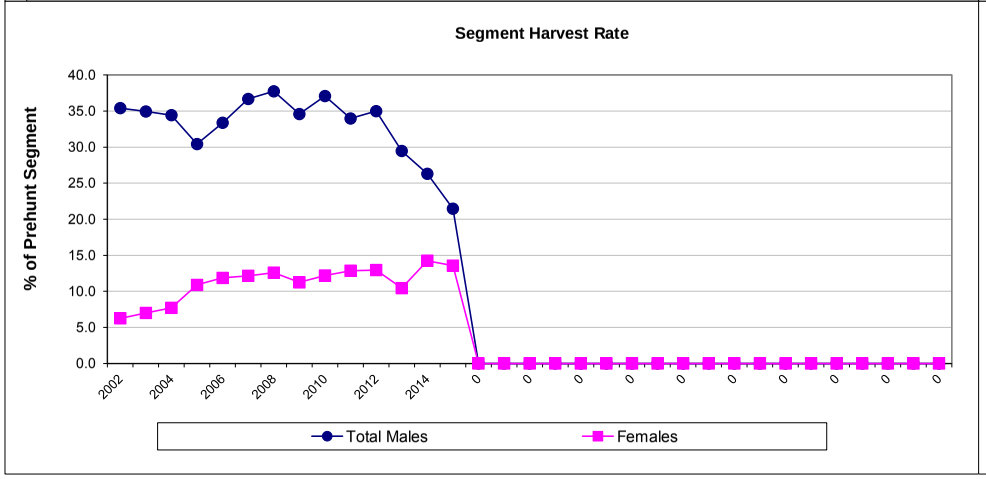
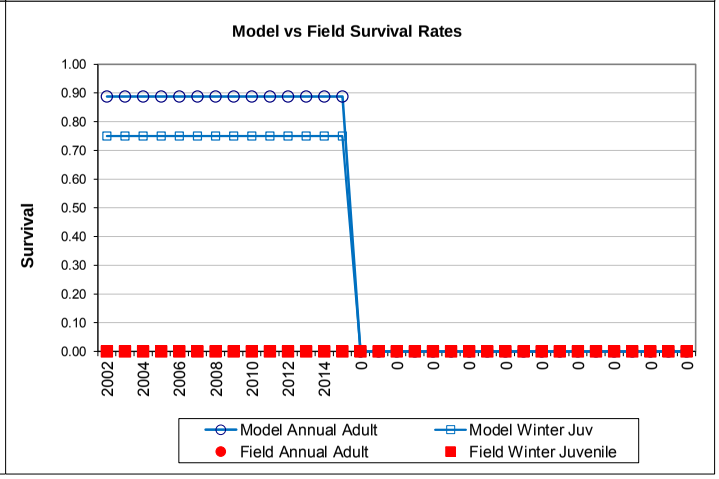
FIGURES





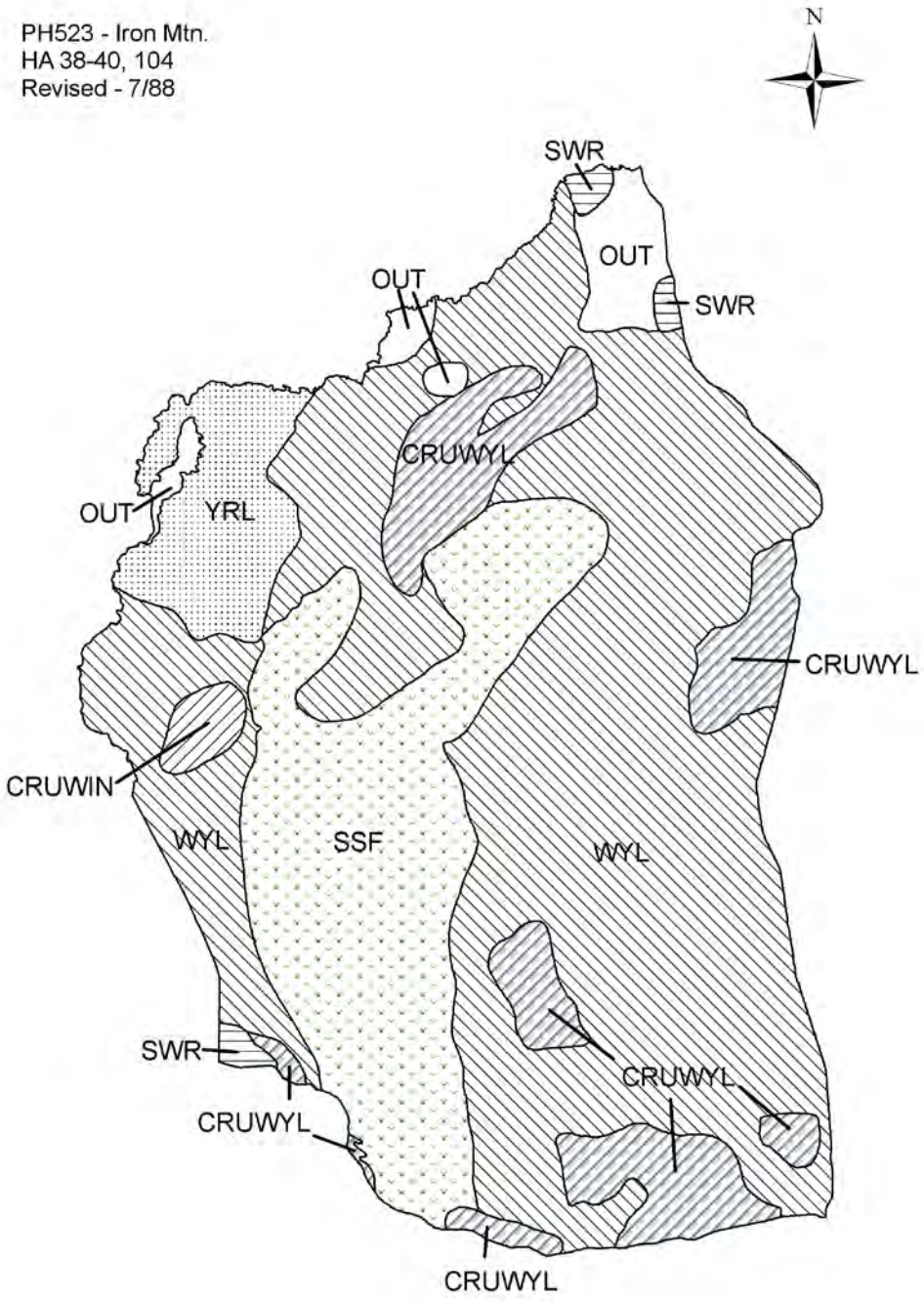




Comments:

END

PH523 - Iron Mtn.
HA 38-40, 104
Revised - 7/88



2014 - JCR Evaluation Form

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

HERD: PR524 - DWYER

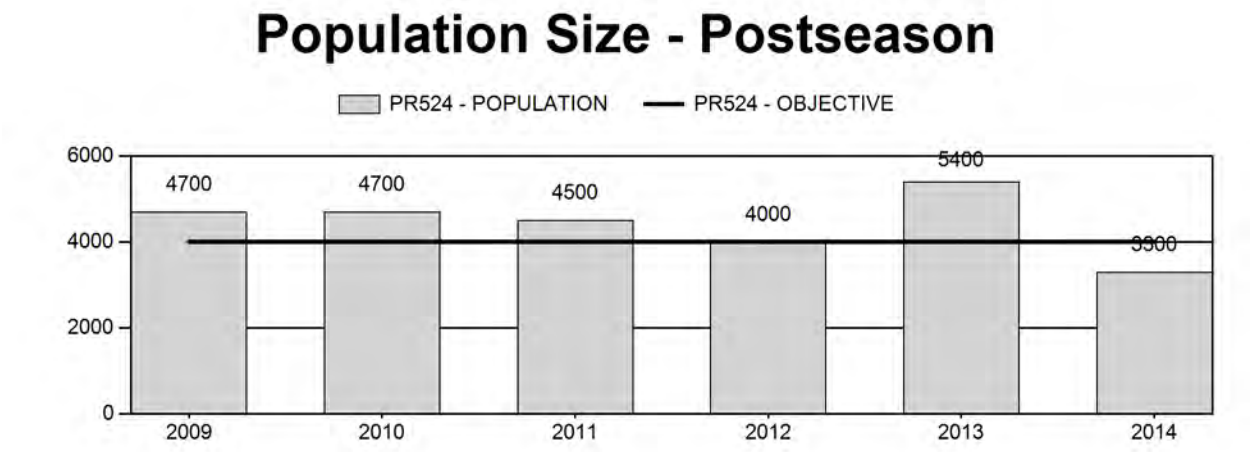
HUNT AREAS: 103
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	4,660	3,300	3,500
Harvest:	521	561	510
Hunters:	527	585	610
Hunter Success:	99%	96%	84%
Active Licenses:	619	690	650
Active License Success:	84%	81%	78%
Recreation Days:	2,015	1,881	1,800
Days Per Animal:	3.9	3.4	3.5
Males per 100 Females	51	42	
Juveniles per 100 Females	48	52	

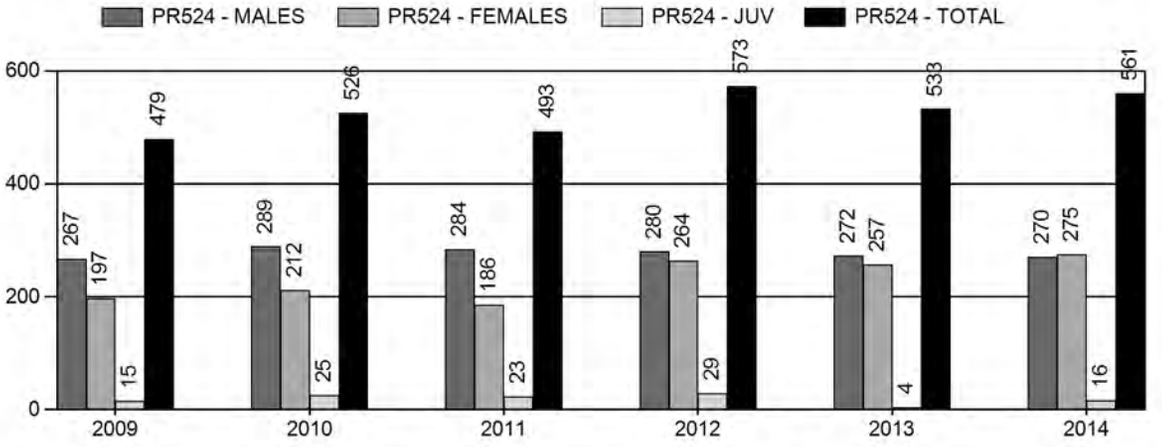
Population Objective (± 20%) :	4000 (3200 - 4800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.5%
Number of years population has been + or - objective in recent trend:	0
Model Date:	3/01/2015

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

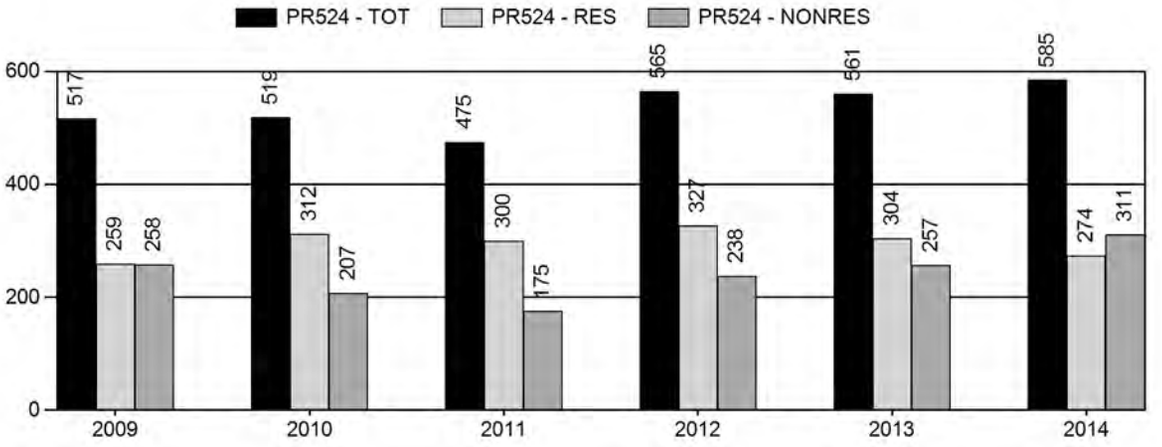
	JCR Year	Proposed
Females ≥ 1 year old:	15%	12%
Males ≥ 1 year old:	32%	29%
Juveniles (< 1 year old):	1.5%	2%
Total:	14%	12%
Proposed change in post-season population:	-39%	+6%



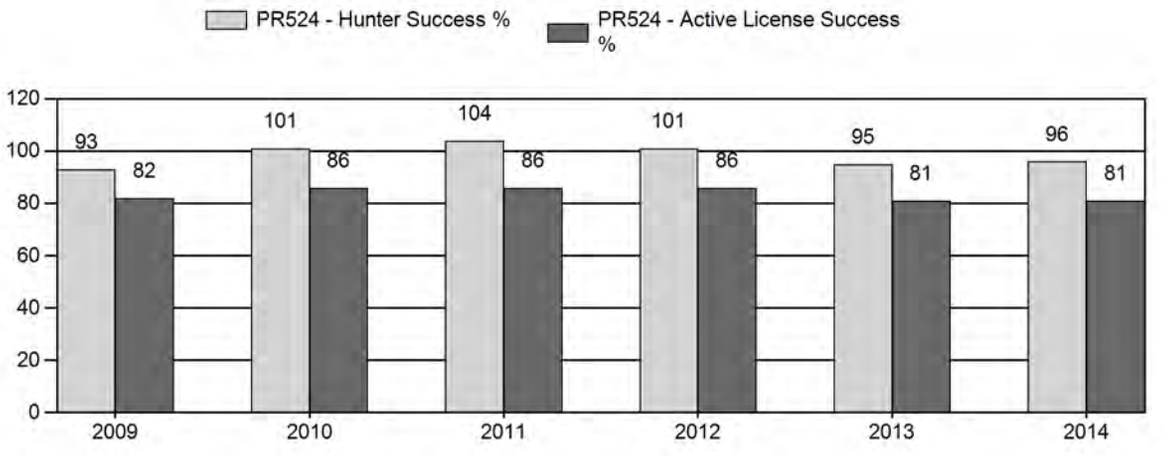
Harvest



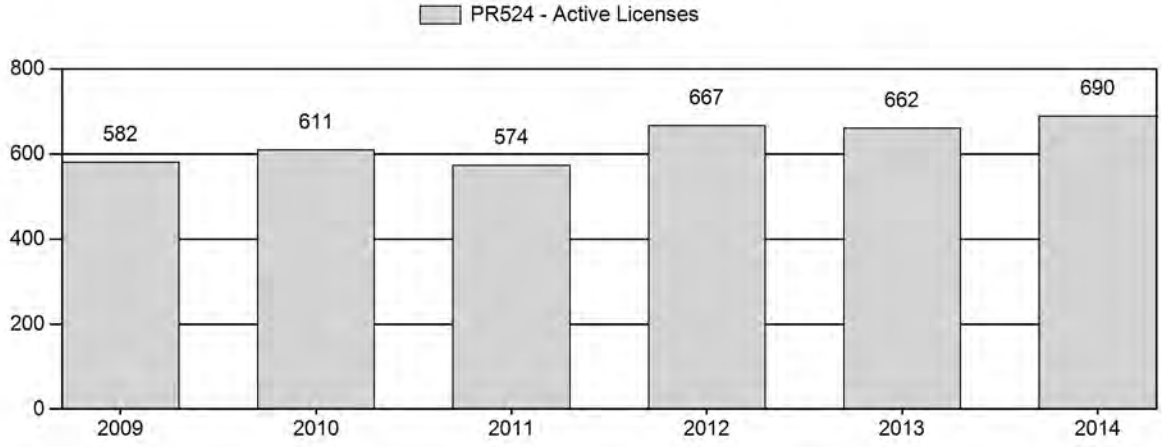
Number of Hunters



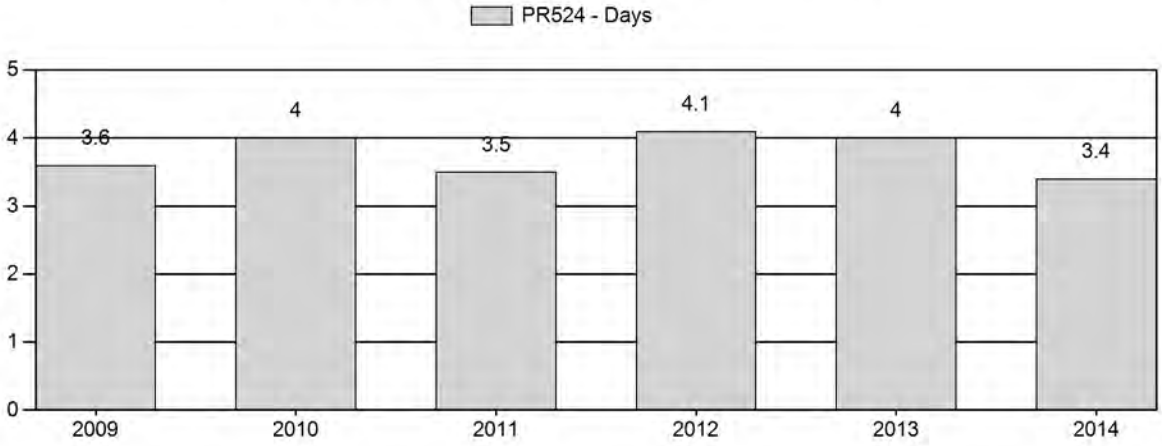
Harvest Success



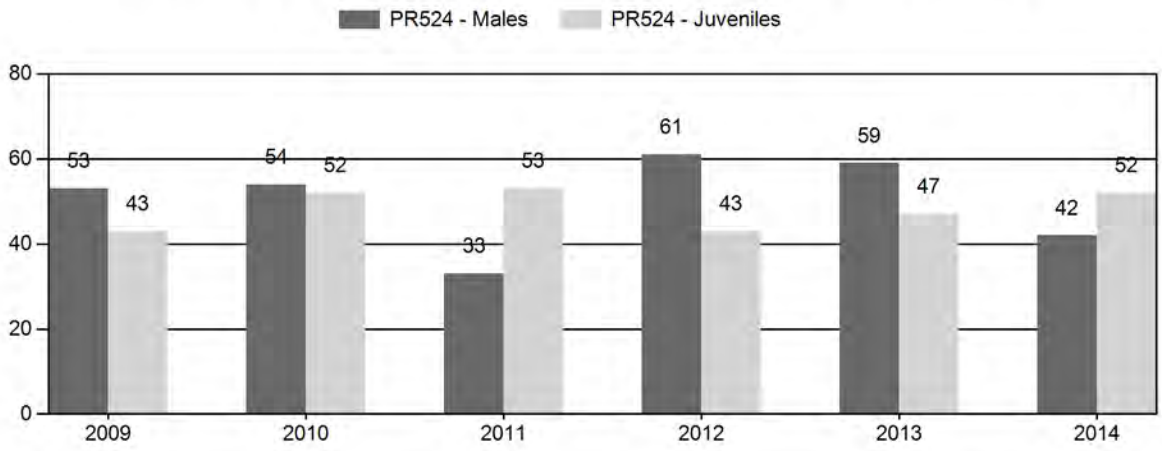
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR524 - DWYER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	5,200	60	123	183	27%	345	51%	147	22%	675	1,036	17	36	53	± 7	43	± 6	28
2010	5,200	78	113	191	26%	356	49%	185	25%	732	807	22	32	54	± 7	52	± 7	34
2011	5,000	56	115	171	18%	512	54%	271	28%	954	1,345	11	22	33	± 4	53	± 6	40
2012	4,500	93	106	199	30%	326	49%	140	21%	665	1,224	29	33	61	± 8	43	± 7	27
2013	6,000	105	221	326	29%	552	49%	258	23%	1,136	1,146	19	40	59	± 6	47	± 5	29
2014	3,900	68	167	235	21%	566	52%	295	27%	1,096	1,362	12	30	42	± 4	52	± 5	37

2015 HUNTING SEASONS
DWYER PRONGHORN HERD (524)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
103	1	Oct. 5	Oct. 31	375	Limited quota; any antelope
	6	Oct. 5	Dec. 31	350	Limited quota; doe or fawn
Archery		Aug. 15	Oct. 4	Refer to Section 3 of this Chapter	

Hunt Area	Type	Quota change from 2014
103	1	none
103	6	+100
103	7	deleted

Management Evaluation
Current Management Objective: 4000 (3,200-4,800)
2014 Post-season Population Estimate: ~3,300
2015 Post-season Population Estimate: ~3,500
Management Strategy: Recreational
2014 Sportsmen Survey Results: 78% Satisfied, 11% Neutral, 11% Dissatisfied

Management Issues
The management objective for the Dwyer Pronghorn Herd Unit is a post-season population objective of 4,000 pronghorn. The management strategy is recreational management with a 20-59 buck:100 doe ratio range. The herd objective and management strategy was reviewed in 2014 and to the decision was made to maintain the same population objective of 4,000 pronghorn and recreational management.

The 2014 post-season population estimate of 3,300 decreased by 14% from 2013. This population had been trending downward from a high of 4,750 in 2009. The last line-transect survey with a density estimate was conducted in June 2003 and resulted in an estimated population of 5,800 pronghorn. A line-transect was flown at the end of the 2013 biological year, but results are not available at this time.

There has been little urban and industrial development within this herd unit. The herd unit is comprised of 90% private land and some accessible state land. Land use is comprised of native range land, irrigated and dry land agriculture fields, and land enrolled into the Conservation Reserve Program (CRP). The majority of access is in the northern portion of the herd unit via the PLPW program and private land opened up address damage situations.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on pronghorn. Mild fall temperatures and lack of persistent snows allowed for pronghorn to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Dwyer Pronghorn Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in Spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

In Spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data

This herd has been declining since 2009, which is most likely a result of poor fawn production. There was a slight increase in fawn production in 2014 (52 fawns:100 does) compared to the five-year average of 47 fawns:100 does, but well below what was expected compared to adjacent herds given excellent habitat conditions. Low recruitment undoubtly has some negative effect on pronghorn population performance.

Buck ratios have fluctuated from a low of 30:100 to a high of 64:100 in the last ten years, well within recreational management levels. When interpreting fawn and buck ratio trends, data needs to be interpreted with caution. Only five out of the past twenty years has the sample size been met or exceeded to 90% CI. However, even with poor classification data the population models have been anchored to LT estimates to provide a plausible population estimate.

Hunter participation was 73% for 2014, a decrease of 9% compared to 2013. Access continues to be an issue in a private land dominated herd unit. Sample size for tooth data collected in the field is too small to infer any population dynamics.

Harvest Data

Hunter success has dropped in the past two years for both Type 1 and Type 6 licenses while effort has remained fairly stable. Private land access has remained stable, Walk in Areas (WIAs) were lost in the southern portion of the unit while a new HMA was gained. In addition some access has opened up in central portion of the herd unit, but due to crop conversion access was lost in the northern portion. The hunter satisfaction survey showed that 78% of the hunters were either satisfied or very satisfied with their hunt, a slight decrease compared to 2013 (85%). Loss of hunting opportunity most likely affected hunter attitudes.

Population

The "Time Specific Juvenile- Constant Adult Survival" (TSJ, CA) spreadsheet model was chosen over the simpler Constant Juvenile-Constant Adult (CJ,CA) model and resulted in a post-season population of 3,300 pronghorn. Without a 2013 end-of-the-year population estimate, derived from a Line Transect, the CJ,CA models predicts the population to crash. By allowing for a variation in juvenile survival the TSJ,CA model runs through three out of the past four Line Transect estimates and provides a plausible population estimate. Harvest statistics in conjunction with no pronghorn die-offs observed indicate the population has not crashed as simulated by the CJ,CA model. The CJ,CA AIC score was slightly lower than the TSJ,CA score, but the TSJ,CA has a better fit than the CJ,CA model. A line-transect was completed in June, 2014 but results are not available at this time to assist with model simulations. This model is ranked fair since the last LT was ran back in 2004 and the only other data available for the model is classification and harvest data.

Management Summary

There will be no changes in the opening and closing dates of the Type 1 and Type 6 licenses. The Type 7 license was left out of the 2015 packet and was deleted for the 2015 season. Reduced damage, herd management simplification and more hunter flexibility to hunt does and fawns are the main reasons to remove the Type 7 license. The number of Type 6 licenses was increased from 250 to 350 to take into account the removal of the Type 7 license and maintain the population within the objective. Type 1 licenses will remain the same. Buck ratios remain within recreation parameters with the current harvest structure.

If the projected harvest of 510 pronghorn is attained coupled with normal fawn recruitment, the pronghorn population should slightly increase to 3,500, 13% below the objective of 4,000.

INPUT	
Species:	Pronghorn
Biologist:	Martin Hicks
Herd Unit & No.:	PH524
Model date:	02/10/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	132	140	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	82330	82339	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	95	206	☑ TSJ,CA Model	; TSJ,CA. There has not been any documented die offs to drive the popul

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	615	1099	2512	**4226**	615	969	2487	**4071**	1016	2439	**3454**	2700	600		4000
1994	1213	996	2390	**4598**	1206	677	2302	**4185**	1155	2689	**3844**				4000
1995	844	1132	2635	**4611**	838	815	2507	**4160**	1115	2708	**3823**				4000
1996	1281	1093	2653	**5027**	1270	784	2503	**4556**	1284	2899	**4184**	3960	559		4000
1997	1072	1259	2841	**5172**	1072	961	2621	**4654**	1264	2817	**4081**				4000
1998	1095	1239	2761	**5095**	1078	935	2603	**4616**	1338	2904	**4241**	4100	610		4000
1999	1168	1311	2846	**5324**	1125	1007	2655	**4787**	1425	2970	**4395**				4000
2000	1412	1396	2910	**5719**	1390	1097	2723	**5210**	1632	3156	**4788**				4000
2001	1440	1599	3093	**6132**	1426	1311	2926	**5663**	1482	2996	**4477**	4070	670		4000
2002	1037	1452	2936	**5425**	1022	1111	2782	**4914**	1459	3031	**4490**				4000
2003	1166	1430	2971	**5566**	1139	1117	2776	**5032**	1264	2819	**4083**				4000
2004	1074	1239	2762	**5075**	1055	894	2570	**4519**	1286	2859	**4145**	3800	776		4000
2005	1090	1260	2802	**5152**	1065	951	2619	**4635**	1341	2905	**4246**				4000
2006	1865	1314	2847	**6026**	1815	1065	2679	**5559**	1324	2834	**4158**				4000
2007	830	1298	2777	**4905**	807	985	2576	**4369**	1259	2750	**4009**				4000
2008	1246	1234	2695	**5175**	1210	960	2523	**4693**	1342	2806	**4148**				4000
2009	1172	1315	2750	**5237**	1155	1021	2534	**4710**	1155	2570	**3725**				4000
2010	1309	1132	2519	**4960**	1281	814	2286	**4381**	983	2360	**3343**				4000
2011	1224	963	2313	**4501**	1199	651	2109	**3958**	1145	2420	**3564**				4000
2012	1018	1122	2371	**4511**	986	814	2081	**3881**	1126	2306	**3431**				4000
2013	1056	1103	2260	**4419**	1052	804	1977	**3832**	939	2011	**2950**				4000
2014	1027	921	1970	**3918**	1009	624	1668	**3301**	1026	2059	**3085**				4000
2015	967	1005	2018	**3990**	945	708	1776	**3429**							4000
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	0.40			0.91		
1994	0.90			0.91		
1995	0.90			0.91		
1996	0.90			0.91		
1997	0.72			0.91		
1998	0.90			0.91		
1999	0.90			0.91		
2000	0.90			0.91		
2001	0.40			0.91		
2002	0.87			0.91		
2003	0.45			0.91		
2004	0.90			0.91		
2005	0.89			0.91		
2006	0.40			0.91		
2007	0.90			0.91		
2008	0.77			0.91		
2009	0.40			0.91		
2010	0.40			0.91		
2011	0.90			0.91		
2012	0.74			0.91		
2013	0.40			0.91		
2014	0.90			0.91		
2015	0.40			0.91		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.912
Initial Total Male Pop/10,000 =	0.110
Initial Female Pop/10,000 =	0.251

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

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		24.48	1.62	43.73	46.31	2.41	118	23	0	141	11.8	1.0
1994		50.76	4.81	41.66	37.16	3.92	290	80	6	376	32.0	3.7
1995		32.04	2.30	42.96	40.52	2.66	288	116	6	410	28.0	4.8
1996		48.26	3.22	41.18	41.16	2.90	281	137	10	428	28.3	5.7
1997		37.75	2.81	44.30	49.16	3.34	271	200	0	471	23.7	7.7
1998		39.67	2.75	44.87	38.03	2.68	276	143	16	435	24.5	5.7
1999		41.03	3.60	46.06	53.36	4.28	276	173	39	488	23.2	6.7
2000		48.51	4.63	47.98	57.74	5.21	272	170	20	462	21.4	6.4
2001		46.57	4.02	51.71	57.68	4.64	262	152	13	427	18.0	5.4
2002		35.33	3.78	49.46	50.00	4.74	310	140	14	464	23.5	5.2
2003		39.25	3.57	48.13	48.13	4.08	284	177	25	486	21.9	6.6
2004		38.88	3.48	44.84	40.00	3.55	313	175	17	505	27.8	7.0
2005		38.90	3.45	44.96	52.31	4.18	281	166	23	470	24.5	6.5
2006		65.51	5.61	46.14	50.43	4.69	226	153	46	425	18.9	5.9
2007		29.89	3.72	46.73	29.54	3.69	284	183	21	488	24.1	7.2
2008		46.25	3.48	45.78	64.29	4.34	249	156	33	438	22.2	6.4
2009		42.61	4.20	47.81	53.04	4.85	267	197	15	479	22.3	7.9
2010		51.97	4.71	44.94	53.65	4.81	289	212	25	526	28.1	9.3
2011		52.93	3.98	41.64	33.40	2.95	284	186	23	493	32.4	8.8
2012		42.94	4.34	47.31	61.04	5.49			264	573	27.5	12.2
2013		46.74	3.52	48.82	59.06	4.13			257	533	27.1	12.5
2014		52.12	3.74	46.72	41.52	3.22			275	561	32.3	15.4
2015		47.92	3.84	49.81	53.13	4.12			220	510	29.5	12.0
2016												
2017												
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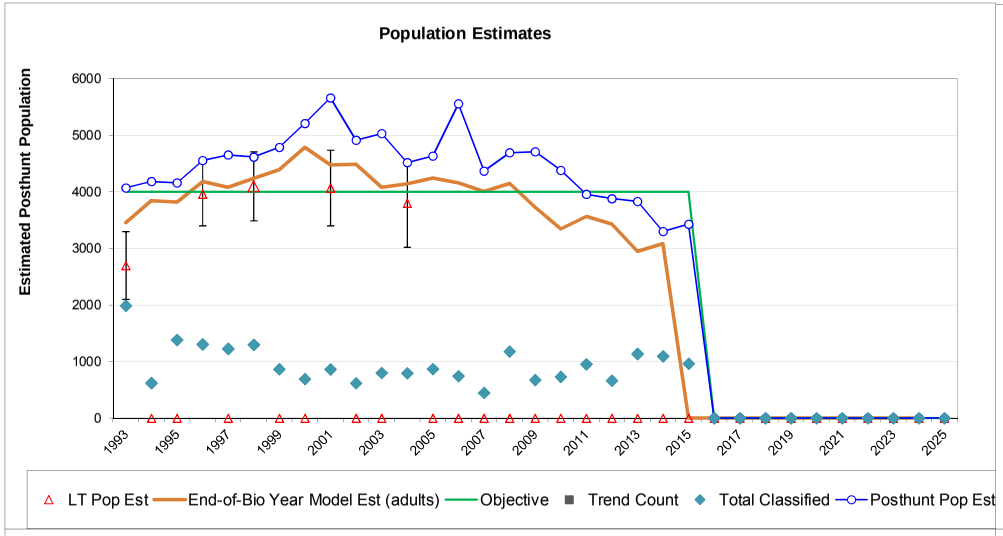
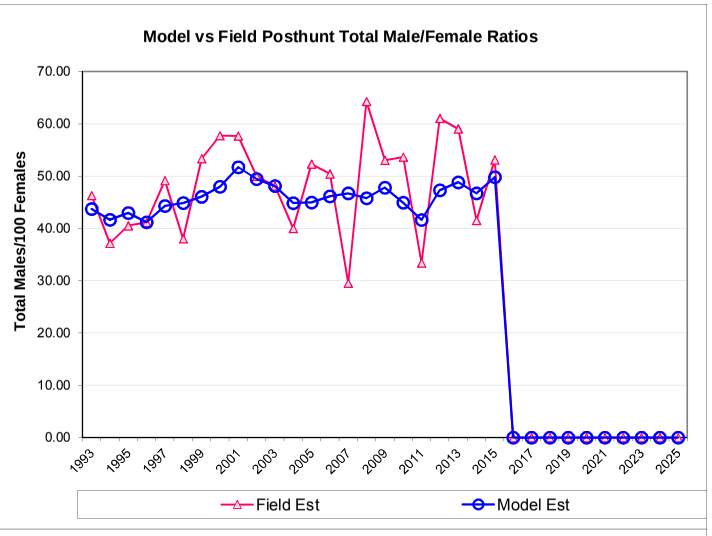
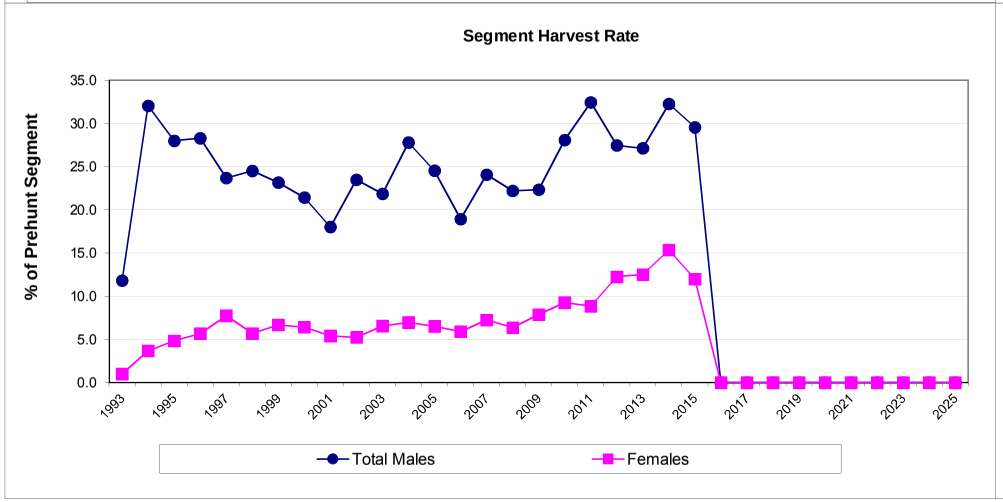
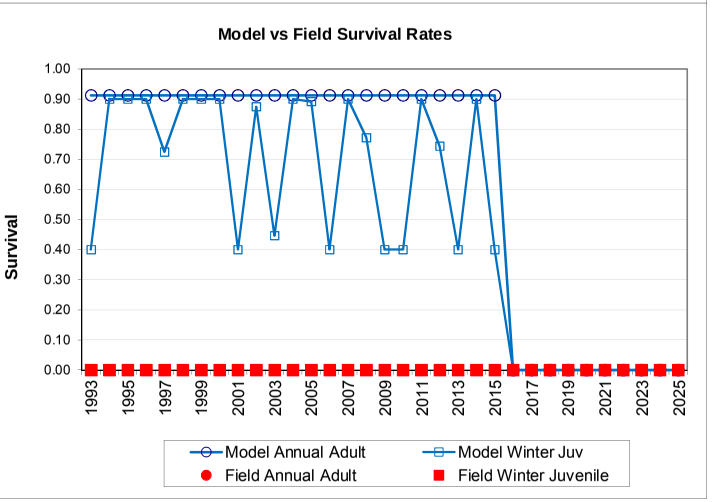
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









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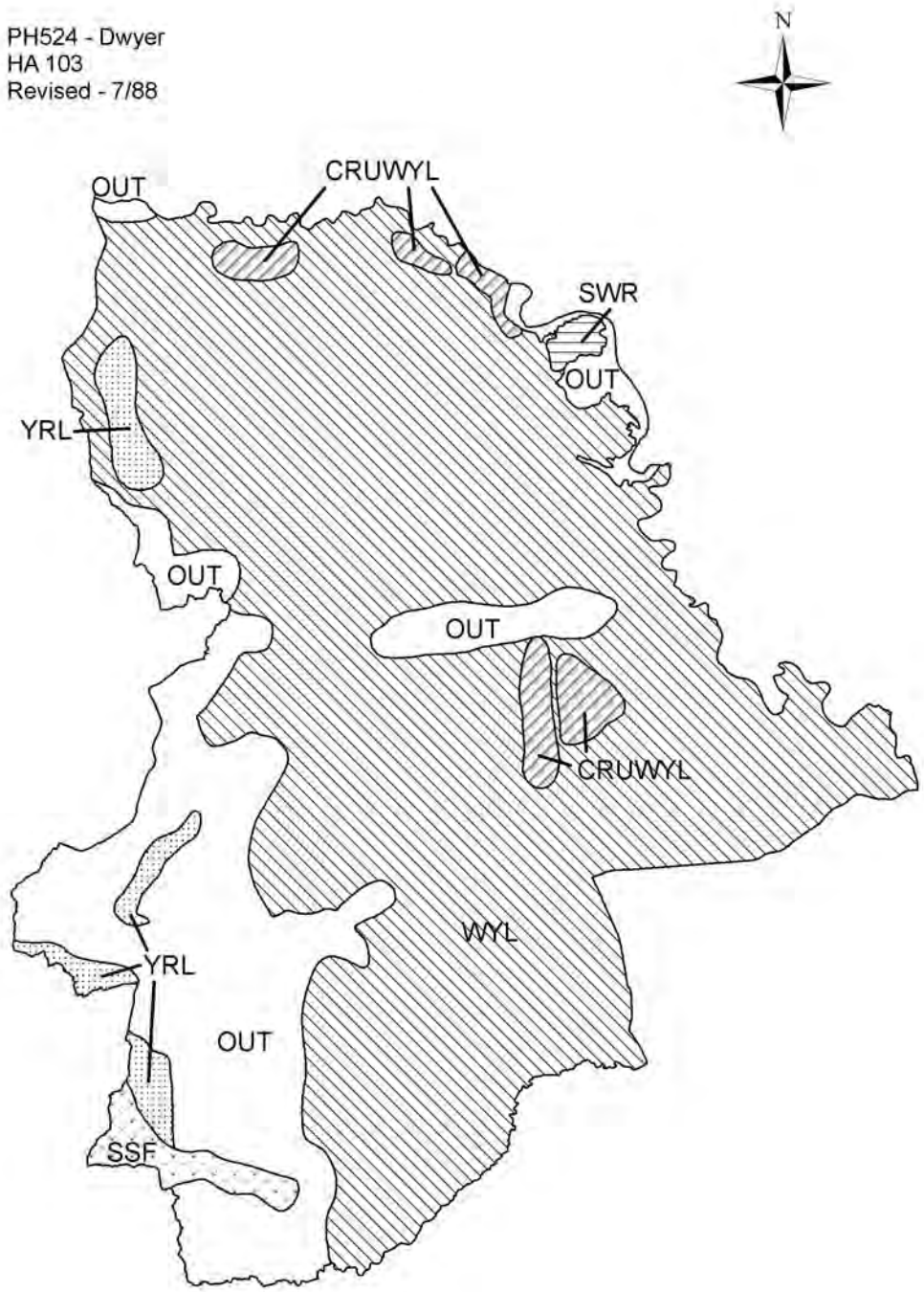
PH524 - Dwyer
HA 103
Revised - 7/88
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YRL
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SSF

2014 - JCR Evaluation Form

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

HERD: PR525 - MEDICINE BOW

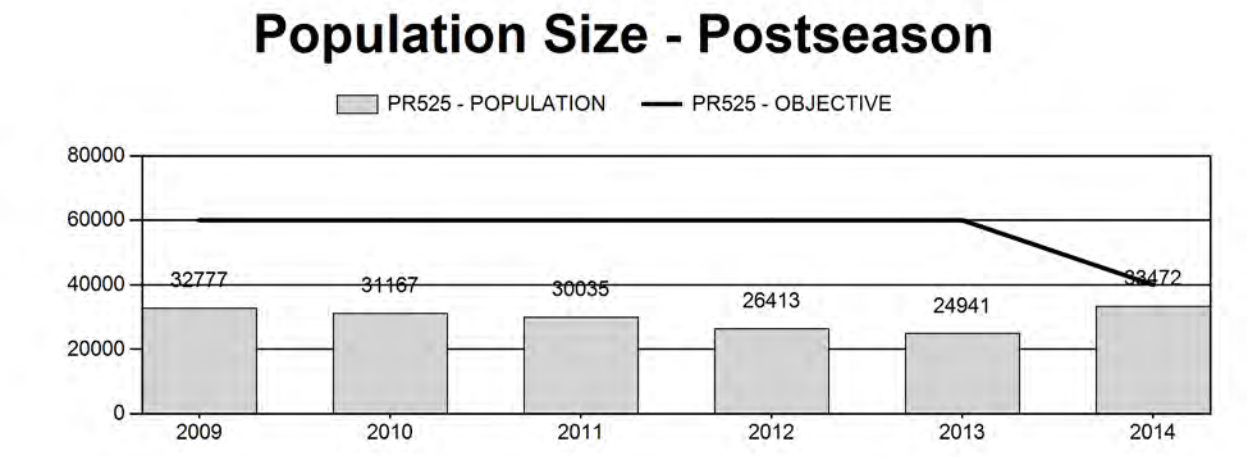
HUNT AREAS: 30-32, 42, 46-48
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	29,067	33,472	34,200
Harvest:	6,402	2,246	2,150
Hunters:	7,107	2,429	2,400
Hunter Success:	90%	92%	90%
Active Licenses:	7,855	2,779	2,500
Active License Success:	82%	81%	86%
Recreation Days:	22,725	7,487	7,000
Days Per Animal:	3.5	3.3	3.3
Males per 100 Females	44	43	
Juveniles per 100 Females	62	71	

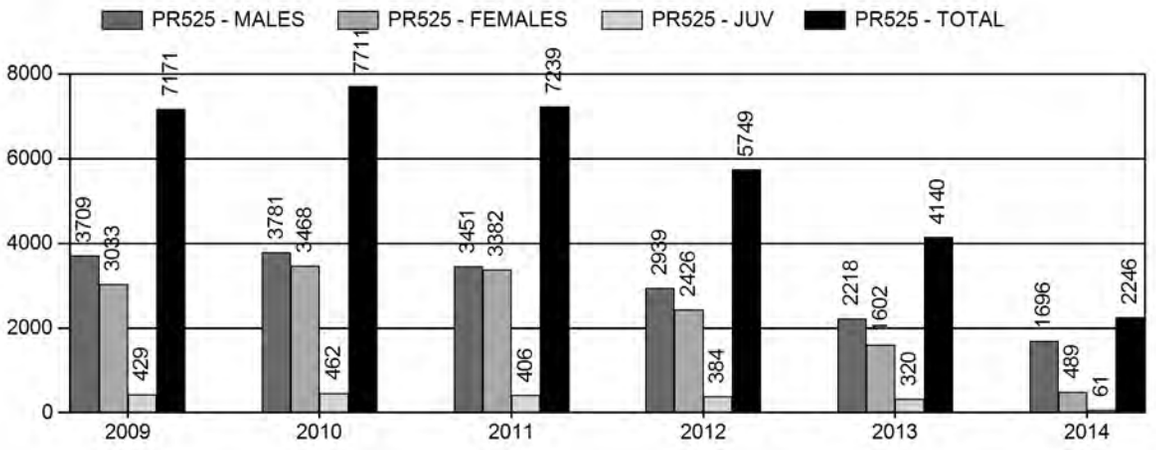
Population Objective (± 20%) :	40000 (32000 - 48000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-16.3%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/26/2015

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

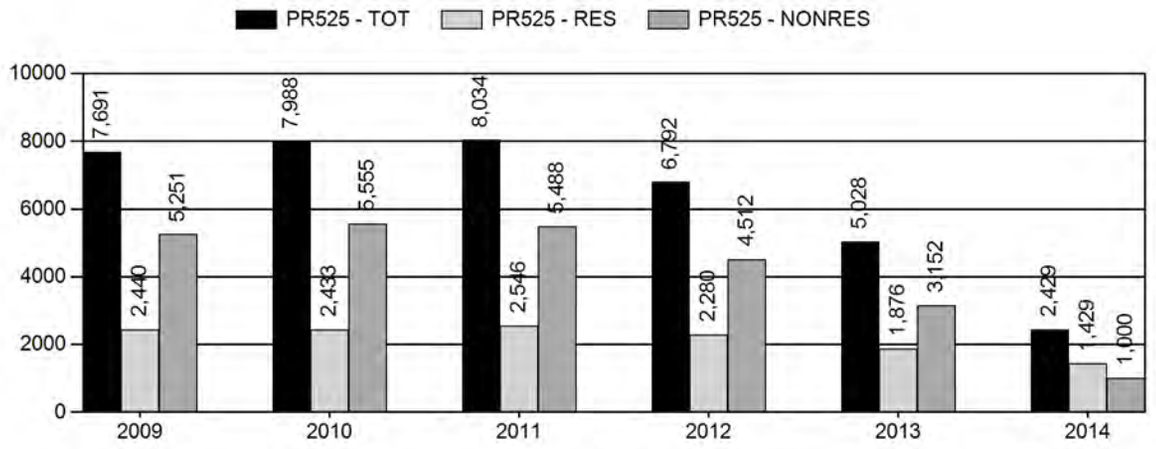
	JCR Year	Proposed
Females ≥ 1 year old:	2.9%	2.3%
Males ≥ 1 year old:	24%	24%
Juveniles (< 1 year old):	1%	1%
Total:	6%	6%
Proposed change in post-season population:	16%	2%



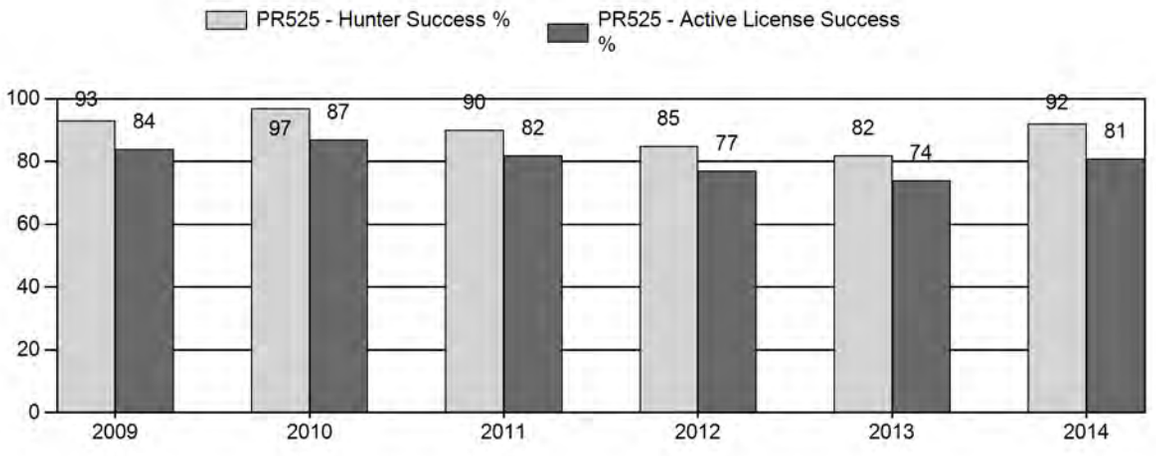
Harvest



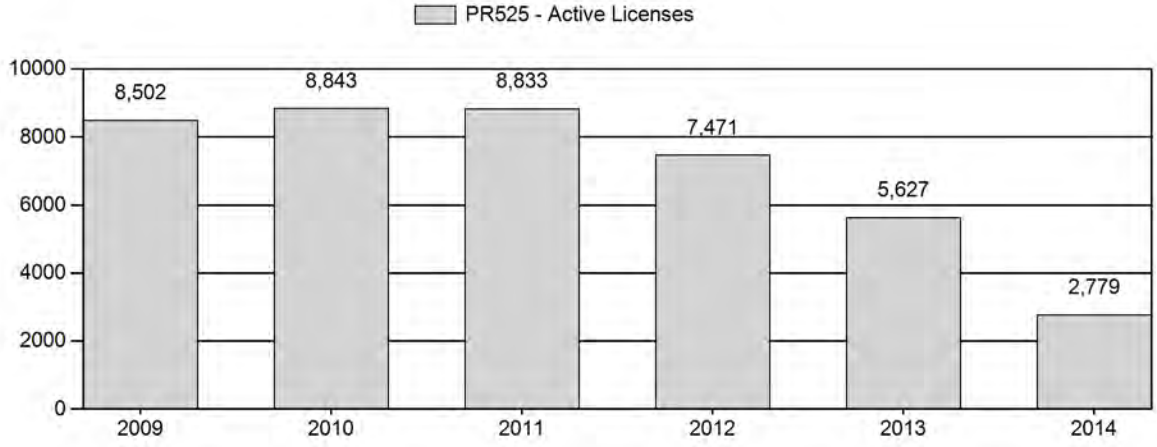
Number of Hunters



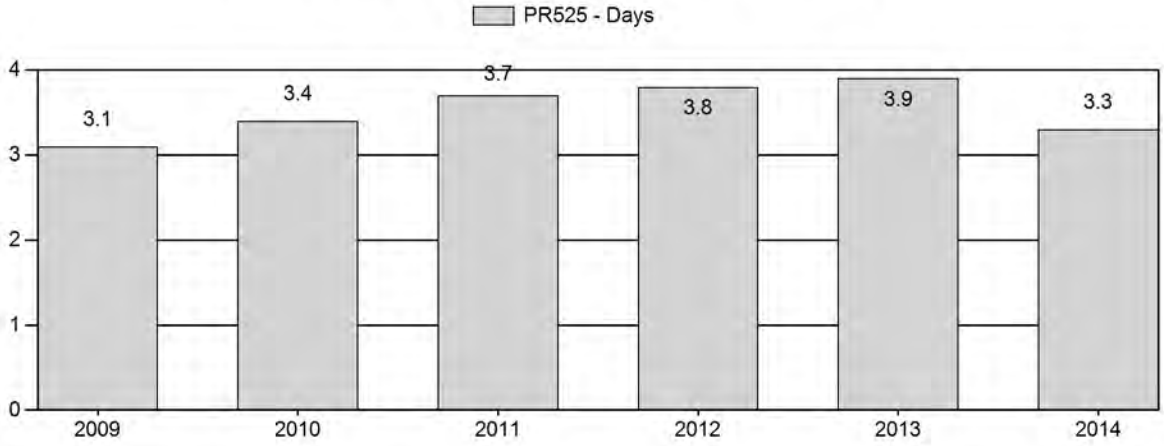
Harvest Success



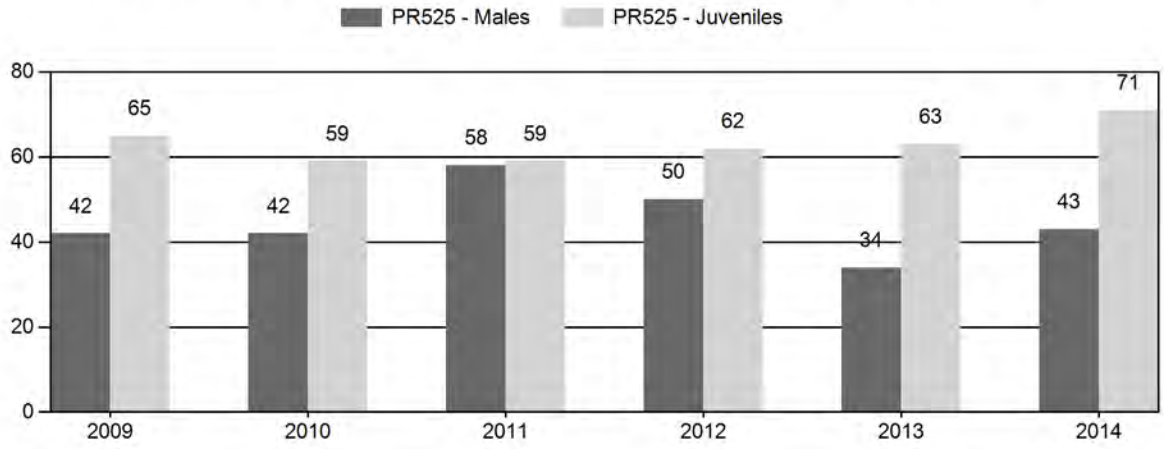
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR525 - MEDICINE BOW

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	40,665	451	940	1,391	20%	3,290	48%	2,149	31%	6,830	2,289	14	29	42	± 2	65	± 3	46
2010	39,649	446	840	1,286	21%	3,072	50%	1,809	29%	6,167	1,978	15	27	42	± 2	59	± 3	42
2011	37,998	299	994	1,293	27%	2,222	46%	1,306	27%	4,821	2,104	13	45	58	± 3	59	± 3	37
2012	32,743	312	616	928	24%	1,857	47%	1,143	29%	3,928	2,433	17	33	50	± 3	62	± 4	41
2013	29,495	301	614	915	17%	2,708	51%	1,698	32%	5,321	2,221	11	23	34	± 2	63	± 3	47
2014	35,942	514	617	1,131	20%	2,655	47%	1,882	33%	5,668	2,598	19	23	43	± 2	71	± 3	50

2015 HUNTING SEASONS
MEDICINE BOW PRONGHORN (PR525)

Hunt Area	Type	Dates of Opens	Season Closes	Quota	License	Limitations
30	1	Oct. 5	Oct. 31	400	Limited quota	Any antelope
	6	Oct. 5	Oct. 31	50	Limited quota	Doe or fawn
31	1	Sep. 25	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
32	1	Sep. 25	Oct. 31	300	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	150	Limited quota	Doe or fawn
41	1	Sep. 25	Oct. 31	50	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
42	1	Sep. 25	Oct. 31	400	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
46	1	Sep. 25	Oct. 31	100	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	75	Limited quota	Doe or fawn
	7	Oct. 5	Oct. 31	75	Limited quota	Doe or fawn
47	1	Sep. 25	Oct. 31	400	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	150	Limited quota	Doe or fawn
	7	Oct. 5	Oct. 31	75	Limited quota	Doe or fawn
48	1	Sep. 25	Oct. 31	100	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
	7	Oct. 5	Oct. 31	50	Limited quota	Doe or fawn
Archery						
30,31,32, 42,46,47,48		Aug. 15				Refer to Section 3 of this Chapter

Area	Type	Change from 2014
32	6	+50
42	1	-50
	6	-50
46	7	-75
47	6	+75
	7	-75
48	1	-50
	2	-50
	7	-50
Herd Totals	**1 & 2**	**-150**
	6 & 7	**-125**
	TOTAL	**-275**

Management Evaluation

Current Postseason Population Management Objective: 45,000 (36,000 – 54,000)
Management Strategy: Recreational
2013 Postseason Population Estimate: ~ 33,500
2014 Proposed Postseason Population Estimate: ~ 34,200
2014 Hunter Satisfaction: 82% Satisfaction, 11% Neutral, 7% Dissatisfied

The management objective for the Medicine Bow Pronghorn Herd Unit is a postseason population objective of 45,000. The management strategy is recreational management which requires maintaining for buck ratios of 30 to 59:100 does. The objective and management strategy were last revised in 2014.

Herd Unit Issues

The Medicine Bow Herd Unit encompasses hunt areas 30, 31, 32, 41, 42, 46, 47 and 48. These hunt areas vary between predominantly public land and exclusively private land. Large scale wind farms and coal mining within this herd may be negatively impacting habitat and productivity. The population has been on a decline from a high of 49,700 in 2004 until 2014 when it increased to 33,500 from 25,000 in 2013. In the early 2000's the Department was trying to reduce the population below the objective of 60,000 to try and improve poor habitat conditions in the Shirley Basin and Bates Hole areas. At the same time this herd was hit hard by harsh winters, drought, and disease, causing the herd to decline below 30,000 pronghorn. The population is still not acceptable to the public or landowners and we are managing this herd to increase the population. The herd objective was reviewed in 2014 and was changed to a post season population objective of 45,000 pronghorn. This will still allow the herd to increase substantially and at the same time manage for fewer pronghorn so that habitat conditions are not as overutilized.

Weather

Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in received the highest amount of precipitation on record. 2014 experienced a mild winter, above

average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. The herd unit received a significant snow storm in May that left 3 to 4 feet of snow that melted quickly, but may have had a negative impact to the herd. For specific weather information please refer to the following link: http://www.ncdc.noaa.gov/.

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Field Data

A total of 5,668 pronghorn were classified in 2014, exceeding the estimated classification objective of 2,598. Classification methods were changed from aerial to ground in 2013. Drive routes were established so that some inference can be made from classification samples year to year. Buck ratios had been on a steady decline since 2011 when it was 58bucks:100 does to 34 bucks:100 does in 2013. In 2014 buck ratios increased to 43:100 does. Interestingly yearling bucks increased, making nearly half the bucks counted, while adult bucks remained near past year's levels. Herd unit wide fawn ratios increased to 71:100 does, and while most hunt areas saw an increase in fawn ratios, some were still lower than average, and 2 hunt areas (31, 48) saw a decline. This herd unit did not see the large increase in fawn ratios like some neighboring herds, but it has more of a shrub component while neighboring herds are mostly grassland prairie. This could be due to grassland habitats ability to respond quicker to increases in precipitation than shrub communities. The large increase in yearling bucks throughout the herd unit indicates that we have a large yearling class and yearling does would not have had a fawn in 2014 which would have also brought down the fawn ratio. In 2014 we aged 237 harvested pronghorn, of which 25% were yearlings, an increase of 10% over the last 5 years. The hunter satisfaction survey shows 82% of hunters were either satisfied or very satisfied with their hunt with 11% remaining neutral, which is comparable to past years.

Harvest Data
Hunter success for all active licenses types increased to near the 10 year average of 82% after a 3 year decline, and hunter effort declined slightly to 3.3 days. We expected more of an increase after cutting 3,400 licenses. Some herd units such as 46 and 47 saw an increase in hunter success to near 90%, while the rest saw only moderate increases. Success on type 6 and 7 licenses was below 70%, and in some cases below 50% even though very few licenses were issued. Even with the significant cut in licenses the last 3 years and the recent increase in fawn ratio, it will take several good production years before we near the population objective and are once again able to provide more hunting opportunity.

Population
The spreadsheet model for this herd indicates the population is increasing with a post hunt population of 33,500. This estimate was derived using the time-Specific juvenile and Constant Adult Survival model which had a AIC score of 274 and a best fit score of 172. The last line transect was conducted in 2011 with an estimate of 31,132 with a standard error of 4,328. The model is of good quality, predicted end of year population trends align well with past line transect estimates, and is comparable with what field personnel have noted from landowner and hunter comments. The model has 15-20 years of data; ratio data available for all years in model; juvenile and adult survival estimate with standard errors available at least 2 out of 10 years (Grogan et al) and at least one sample-based population estimate with standard error available.

Management Summary
If the projected harvest of 2,100 is attained, and the average fawn ratio of 70 fawns: 100 does is maintained, the population is estimated to increase to 34,200. If we have another good year for spring and fall moisture, and fawn production increases like what we have seen in surrounding herds, the population will increase more substantially. License issuance has been decreased to the point that we no longer need to spread out hunting pressure on reduced price licenses. We removed all type 7 licenses, and due to the poor hunter success we only added them to the type 6 quota in hunt area 47. Type 6 licenses will be increased by 50 licenses in hunt area 32 to further address damage issues that occur when pronghorn from northern Shirley basin move into Bates Hole. Hunt area 41 will e combined into 42 in 2015, and we will be leaving the license issuance for 42 as status quo without the addition of 41 licenses due to the decline in hunter success. We are seeing a good increase in productivity and hunter success in most of the hunt areas but hunt area 48 appears to be in poor condition with low fawn recruitment and poor hunter success therefore we cut Type 1s and 2s by 50 each.

Bibliography of Herd Specific Studies

Grogan, R. Lindzey, F. *Pronghorn survival in Wyoming.* Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, WY, 82071, USA

Taylor, K. L. 2014. Pronghorn (*Antilocapra americana*) Response to Wind Energy Development on Winter Range in South-Central, Wyoming. Master's Thesis. Department of Ecosystem Science and Management. University of Wyoming. Laramie. 141 pp.

INPUT	
Species:	Pronghorn
Biologist:	Lee Knox
Herd Unit & No.:	Medbow Pronghorn
Model date:	02/10/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	380	388	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	64953	64962	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	169	271	☑ 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	10518	10704	21729	**42951**	9958	6664	17374	**33996**	7583	17403	**24986**				45000
1994	9740	7432	17055	**34226**	9430	4885	15023	**29339**	6067	15443	**21510**				45000
1995	7858	5946	15134	**28938**	7711	4015	14078	**25804**	5895	15238	**21133**				45000
1996	10613	5777	14934	**31323**	10532	4046	14396	**28975**	8380	18019	**26399**				45000
1997	9798	8212	17658	**35668**	9683	6156	16798	**32638**	9896	19805	**29701**	37921			45000
1998	12456	9698	19408	**41563**	12415	7825	18929	**39169**	9577	19930	**29507**				45000
1999	11677	9385	19532	**40594**	11573	7180	18808	**37561**	8712	19556	**28267**	20726	4656		45000
2000	12653	8537	19165	**40355**	12530	5683	18231	**36443**	8979	20713	**29692**				60000
2001	12450	8799	20299	**41548**	12276	6265	19321	**37862**	9845	22010	**31854**				60000
2002	13398	9648	21570	**44615**	13159	6700	20226	**40084**	11896	24498	**36393**	39551	6829		60000
2003	15790	11658	24008	**51455**	15464	8227	21885	**45576**	14306	27000	**41305**				60000
2004	16577	14020	26460	**57056**	16110	10309	24231	**50650**	13146	26099	**39245**				60000
2005	16869	12883	25577	**55329**	16572	9121	22902	**48595**	11301	24087	**35388**				60000
2006	14702	11075	23605	**49382**	14320	7115	20401	**41836**	12702	24997	**37699**	49249	4790		60000
2007	17138	12448	24497	**54084**	16500	8468	21203	**46171**	11417	23199	**34615**				60000
2008	14759	11188	22735	**48682**	14218	7290	19327	**40835**	9049	20169	**29218**				60000
2009	12911	8868	19766	**41544**	12439	4788	16430	**33656**	9072	19855	**28927**				60000
2010	11458	8891	19457	**39806**	10950	4731	15643	**31324**	8935	19006	**27941**				60000
2011	10947	8757	18626	**38329**	10501	4960	14905	**30367**	6962	16661	**23624**				60000
2012	10050	6823	16328	**33201**	9629	3564	13678	**26871**	5837	15271	**21108**	31132	4328		60000
2013	9384	5720	14966	**30070**	9032	3281	13203	**25516**	7320	17179	**24499**				60000
2014	11934	7174	16835	**35942**	11866	5308	16297	**33472**	7245	17591	**24836**				45000
2015	12177	7101	17239	**36516**	12122	5231	16799	**34151**							45000
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

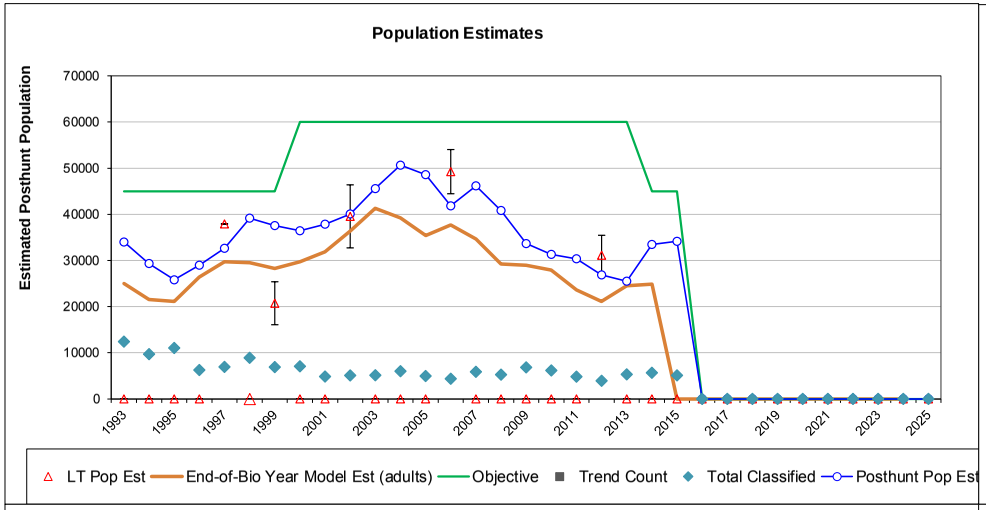
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.90		
1994	0.40			0.90		
1995	0.62			0.90		
1996	0.90			0.90		
1997	0.90			0.90		
1998	0.41			0.90		
1999	0.40			0.90		
2000	0.64			0.90		
2001	0.70			0.90		
2002	0.90			0.90		
2003	0.90			0.90	0.77	0.05
2004	0.51			0.90	0.94	0.03
2005	0.40			0.90	0.73	0.06
2006	0.90			0.90		
2007	0.50			0.90		
2008	0.40			0.90		
2009	0.81			0.90		
2010	0.90			0.90	0.81	0.07
2011	0.40			0.90		
2012	0.40			0.90		
2013	0.83			0.90		
2014	0.42			0.90		
2015	0.40			0.90		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

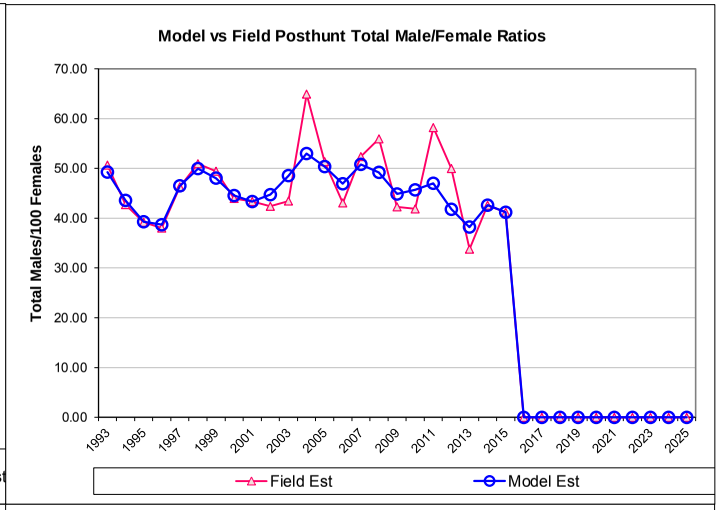
Parameters:	Optim cells
Adult Survival =	0.901
Initial Total Male Pop/10,000 =	1.070
Initial Female Pop/10,000 =	2.173

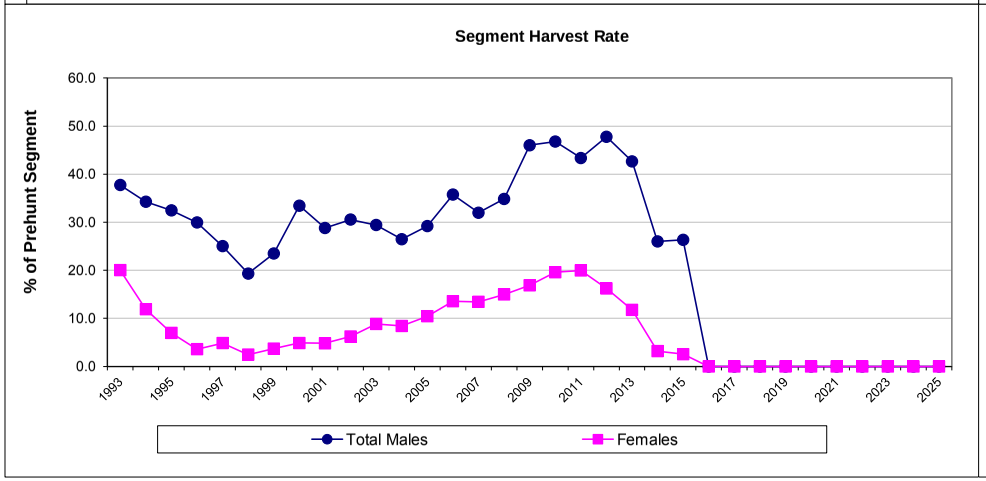
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

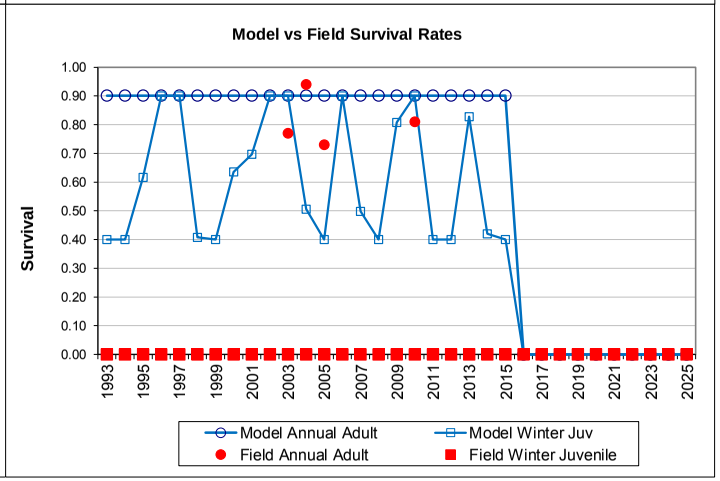
	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		48.40	1.07	49.26	50.67	1.11	3673	3959	509	8141	37.7	20.0
1994		57.11	1.36	43.58	42.73	1.12	2315	1847	281	4443	34.3	11.9
1995		51.92	1.17	39.29	39.18	0.97	1755	960	134	2849	32.5	7.0
1996		71.07	2.02	38.68	38.02	1.32	1573	489	73	2135	30.0	3.6
1997		55.48	1.58	46.51	46.32	1.40	1869	782	104	2755	25.0	4.9
1998		64.18	1.60	49.97	50.94	1.36	1703	436	37	2176	19.3	2.5
1999		59.79	1.70	48.05	49.44	1.50	2005	658	95	2758	23.5	3.7
2000		66.02	1.81	44.55	43.97	1.37	2595	849	112	3556	33.4	4.9
2001		61.33	2.04	43.35	43.35	1.62	2304	889	158	3351	28.8	4.8
2002		62.11	2.01	44.73	42.39	1.56	2680	1222	217	4119	30.6	6.2
2003		65.77	2.11	48.56	43.45	1.59	3119	1930	296	5345	29.4	8.8
2004		62.65	1.96	52.99	64.92	2.01	3373	2026	425	5824	26.5	8.4
2005		65.95	2.19	50.37	51.36	1.85	3420	2432	270	6122	29.2	10.5
2006		62.28	2.18	46.92	43.07	1.70	3600	2913	347	6860	35.8	13.6
2007		69.96	2.12	50.81	52.36	1.74	3618	2995	580	7193	32.0	13.4
2008		64.92	2.12	49.21	55.94	1.91	3544	3098	492	7134	34.8	15.0
2009		65.32	1.81	44.86	42.28	1.35	3709	3033	429	7171	46.0	16.9
2010		58.89	1.75	45.69	41.86	1.39	3781	3468	462	7711	46.8	19.6
2011		58.78	2.05	47.01	58.19	2.04	3451	3382	406	7239	43.4	20.0
2012		61.55	2.31	41.79	49.97	2.01			2409	5755	47.8	16.2
2013		62.70	1.94	38.22	33.79	1.29			1602	4140	42.7	11.8
2014		70.89	2.14	42.61	42.60	1.51			489	2246	26.0	3.2
2015		70.64	2.24	41.19	41.19	1.55			400	2150	26.3	2.6
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES





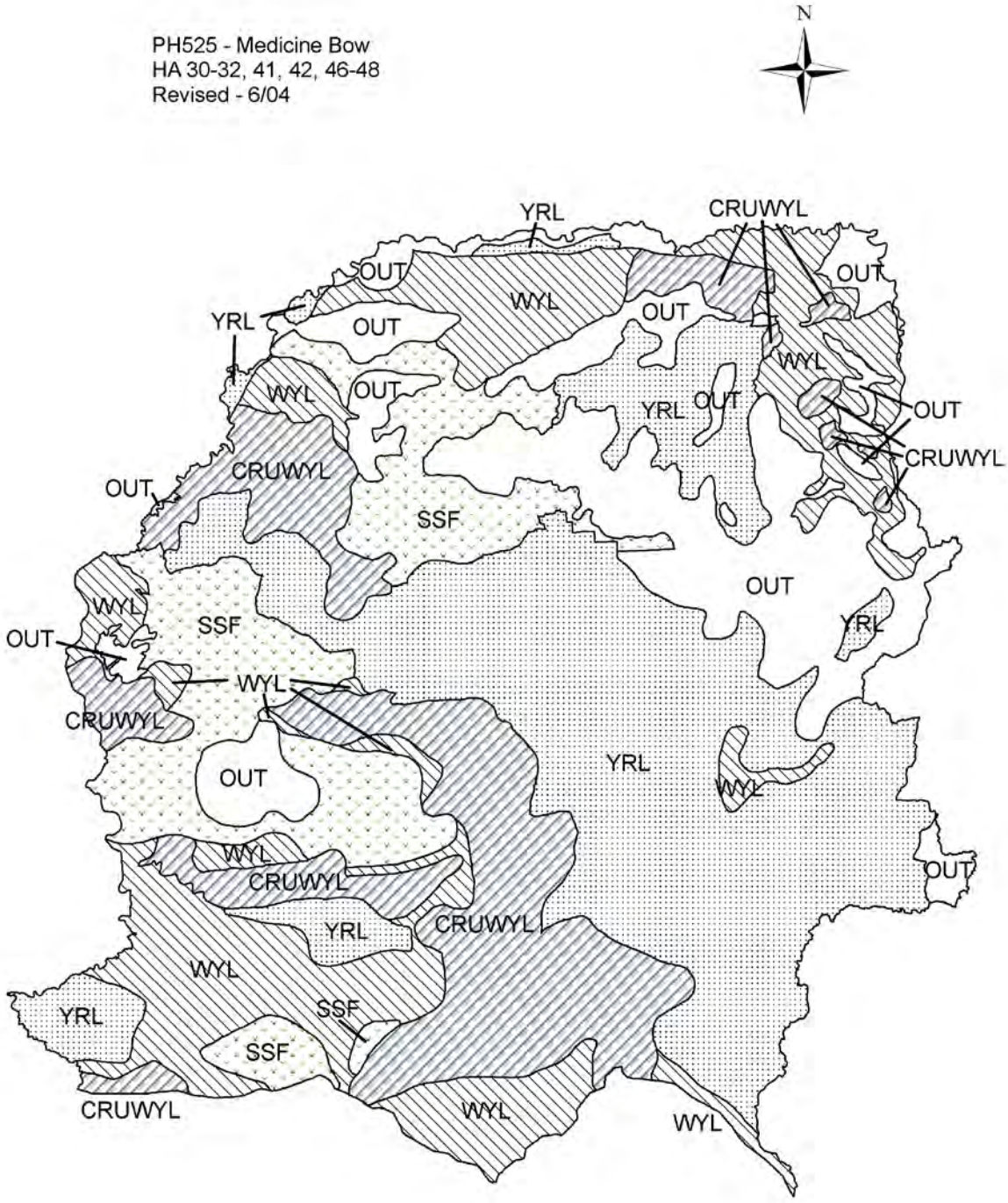




Comments:

END

PH525 - Medicine Bow
HA 30-32, 41, 42, 46-48
Revised - 6/04



2014 - JCR Evaluation Form

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

HERD: PR526 - COOPER LAKE

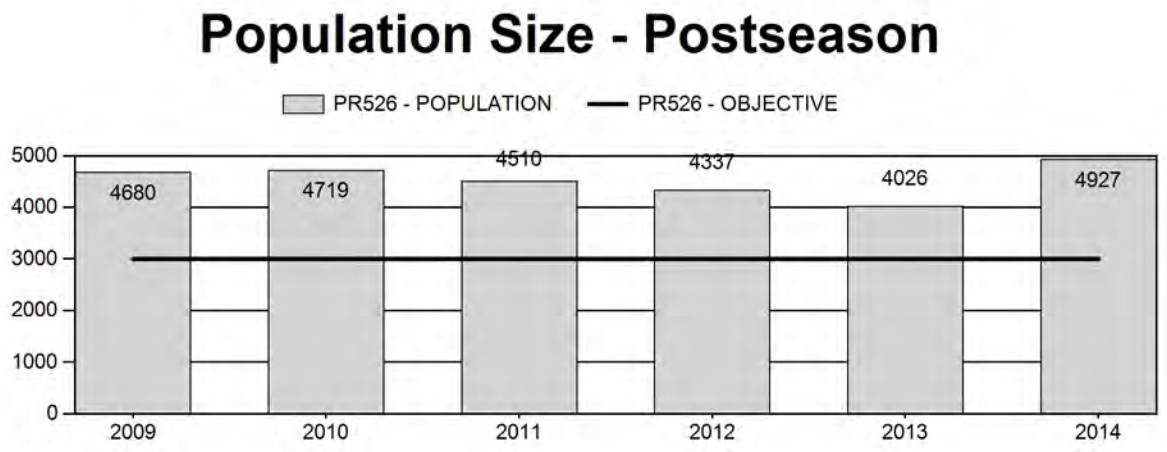
HUNT AREAS: 43
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	4,454	4,927	4,600
Harvest:	686	574	650
Hunters:	742	695	700
Hunter Success:	92%	83%	93%
Active Licenses:	795	748	750
Active License Success:	86%	77%	87%
Recreation Days:	2,333	1,929	1,930
Days Per Animal:	3.4	3.4	3.0
Males per 100 Females	39	66	
Juveniles per 100 Females	74	101	

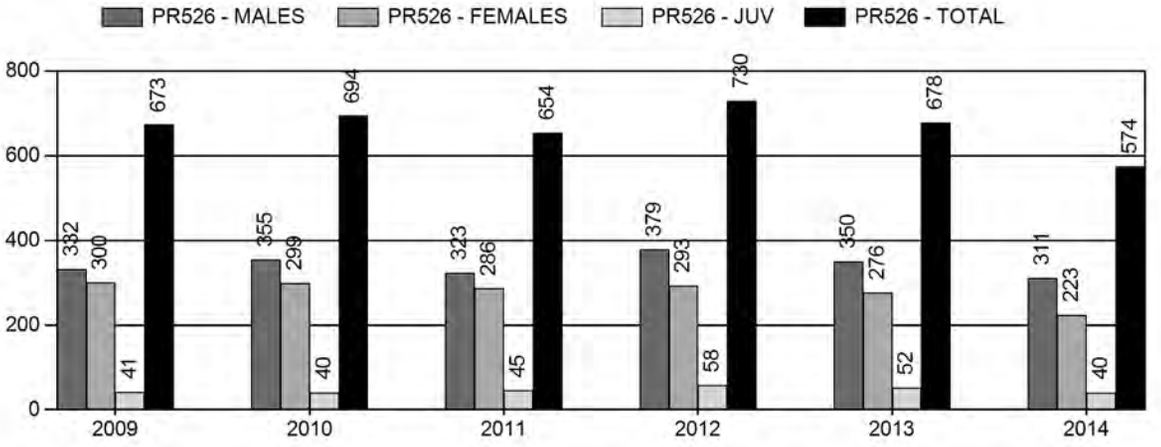
Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	64%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/26/2015

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

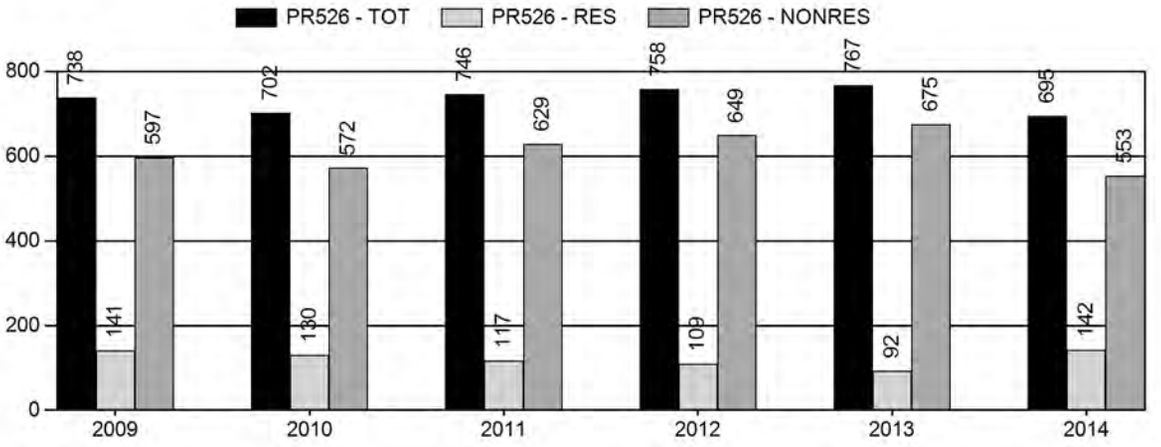
	JCR Year	Proposed
Females ≥ 1 year old:	4%	4%
Males ≥ 1 year old:	6%	6%
Juveniles (< 1 year old):	1%	1%
Total:	10%	10%
Proposed change in post-season population:	12%	-12%



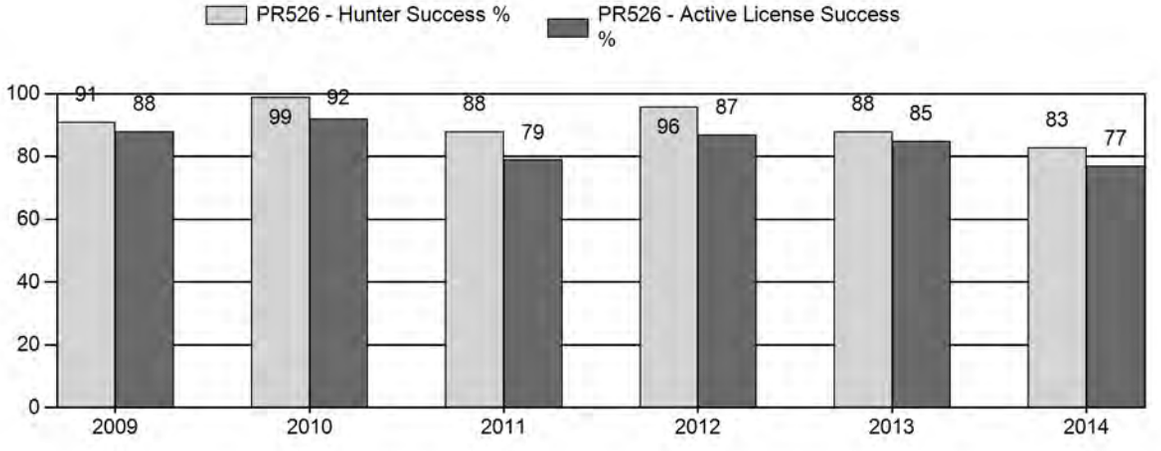
Harvest



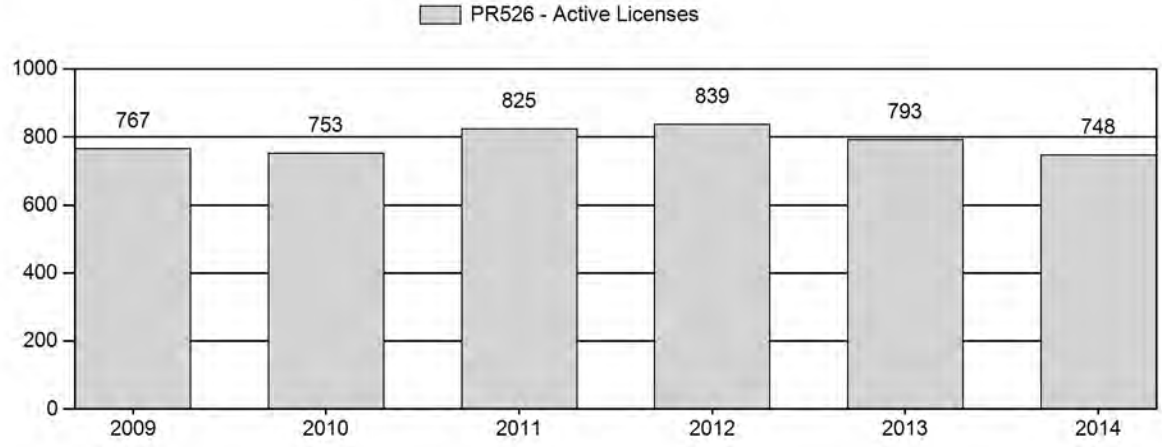
Number of Hunters



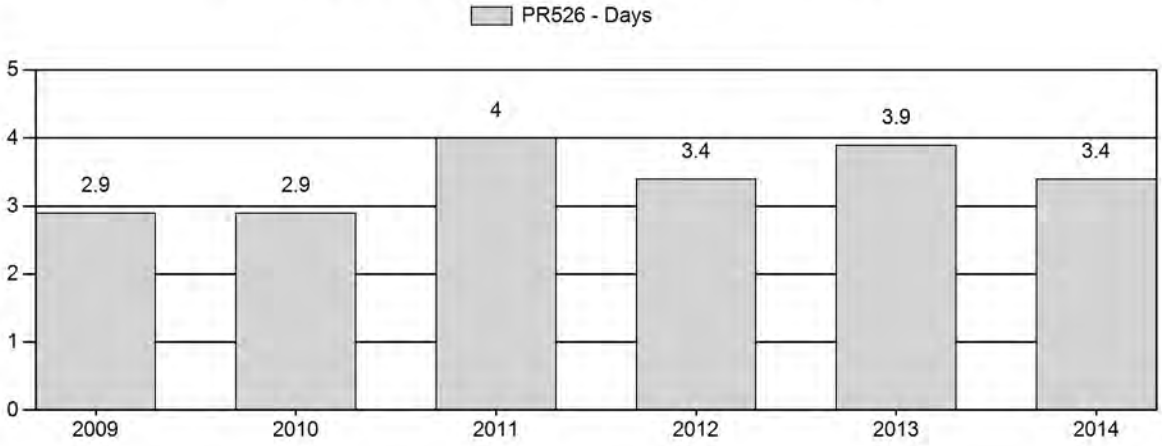
Harvest Success



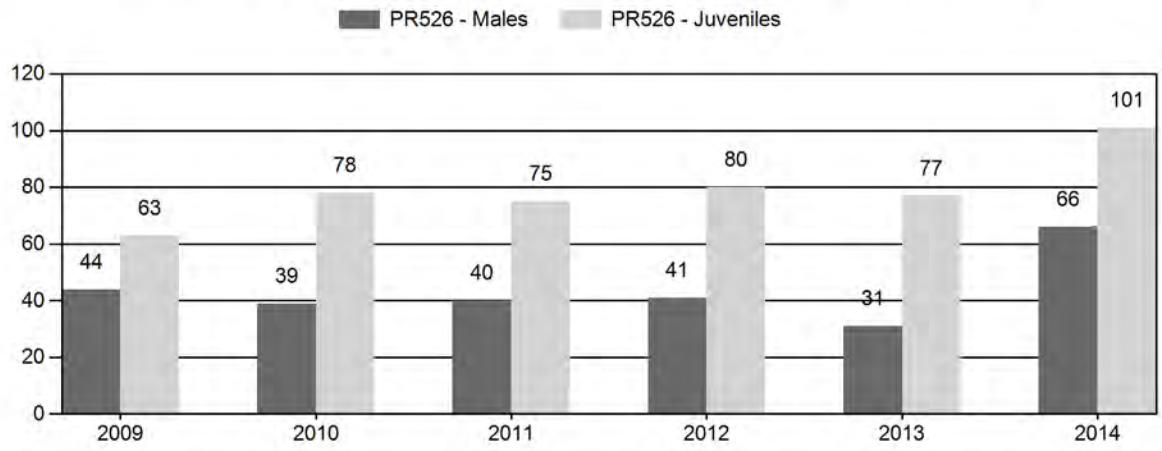
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR526 - COOPER LAKE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	5,420	87	146	233	21%	525	48%	332	30%	1,090	1,780	17	28	44	± 5	63	± 7	44
2010	5,482	89	147	236	18%	599	46%	468	36%	1,303	2,318	15	25	39	± 4	78	± 7	56
2011	5,230	56	162	218	19%	544	47%	406	35%	1,168	2,231	10	30	40	± 5	75	± 7	53
2012	5,154	33	52	85	18%	209	45%	167	36%	461	2,064	16	25	41	± 8	80	± 13	57
2013	4,772	45	82	127	15%	409	48%	314	37%	850	1,784	11	20	31	± 5	77	± 9	59
2014	5,558	101	96	197	25%	300	38%	303	38%	800	1,538	34	32	66	± 9	101	± 13	61

2015 HUNTING SEASONS
COOPER LAKE PRONGHORN (PR526)

Hunt Area	Type	Dates Season Opens	Closes	Quota	License	Limitations
43	1	Sept. 15	Oct. 14	400	Limited quota	Any antelope
	6	Sept. 15	Oct. 14	450	Limited Quota	Doe or fawn
Archery						Refer to Section 3 of this Chapter

Type	Change from 2014
1 & 2	0
6 & 7	0
TOTAL	0

Management Evaluation

Current Postseason Population Management Objective: 3,000 (2,400-3,600)
Management Strategy: Recreational
2014 Postseason Population Estimate: ~ 4,900
2015 Proposed Postseason Population Estimate: ~ 4,600
2014 Hunter Satisfaction: 84% Satisfied, 11% Neutral, 5% Dissatisfied

The management objective for the Cooper Lake Pronghorn Herd Unit is a post-season population objective of 3,000 pronghorn. The management strategy is recreational management with a buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2013.

Herd Unit Issues

The 2014 post-season population estimate is 4,900, an increase from 4,200 in 2013. The long term population has been trending downward since 2008. The last line transect was conducted in 2013. This herd is predominately private land with increasing urban sprawl near Laramie, and a large wind farm in the western portion of the herd. Limited public access has hindered efforts to decrease this herd through harvest. Currently most public hunting is limited to the Diamond Lake and Laramie River Hunter Management Areas (HMA) which encompasses half of the herd unit, but we lost a large piece of property in the middle of the HMA. Field staff has documented Epizootic Hemorrhagic Disease (EHD) in the herd unit in 2012 and 2013. A snow storm in May 2014 left 3 to 4 feet on the ground throughout the herd unit and appears to have killed off some of the older senescent age classes.

Weather

Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an

average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. The Laramie Valley did receive a significant snow storm in May that left 3 to 4 feet of snow that melted quickly, but may have had negative impacts to this herd. For specific weather information please refer to the following link: http://www.ncdc.noaa.gov/.

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Field Data

A total of 800 pronghorn were classified which is below the estimated sample size of 1,500. Classification samples have been below the estimated sample size since 2006. Fawn ratios increased greatly from 77:100 in 2013 to 101 fawns:100 does in 2014. The increase is comparable to other surrounding herds but may be inflated due to a loss of older senescent does from the late may snow storm. Drive routes have been established so that some inference can be made between classification samples year to year. We classified almost the same number of pronghorn in 2013 and 2014 but in 2014 we saw the same number of fawns and 100 less does. Buck ratios had been on a decline due to drought conditions and disease, but in 2014 we saw the ratio double from 31 bucks:100 does in 2013 to 66 bucks:100 does in 2014. We saw a significant increase in both yearling and adult bucks but yearlings made up half the classification sample.

Harvest Data

We issued 850 licenses which did not completely sell in the resident draw but were picked up after the draw by non-residents, who account for 80% of the licenses sold. Hunter success declined for both license types with type 1s declining from 87% in 2013 to 83% in 2014, and the type 6's declined from 84% in 2013 to 70 % in 2014. We lost a large property from one of the HMAs that created a refuge in the middle of the HMA and may have caused hunter success to decline. Hunters had more favorable weather in 2014 and we think that is why hunter effort declined by a day to 3 days to harvest. The hunter satisfaction survey showed 84% of hunters

were either satisfied or very satisfied with their hunt which has been declining since 2012 when it was at 94%.

Population

The model estimates the population is near 4,900 pronghorn and predicts it will decline to 4,600 in 2015. Fawn ratios for this herd exceeded estimates from last 20 years and we saw a large jump in the population estimate from 2013 to 2014 after it had been on a steady decline since 2008. The Constant Juvenile- Constant Adult Mortality Rate (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. The model chosen had the lowest AIC of all three models and the end of year population estimate trends well with the past LTs. We conducted a line transect in June 2014 that estimates an end of bio year estimate of 7,000 with a standard error of 1,200. The histogram for this survey shows that the E band is higher than the B, C or D bands, and therefore breaks the first assumption. This is a poor model due to ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; lacks adult and juvenile survival data; results not biologically defensible.

Management Summary

With the current amount of public access and a predicted harvest of 640 pronghorn, the model predicts that the population will again decline towards the management objective. Modeling efforts predict a 2015 post-season population of about 4,600. Harvest in this herd largely relies on two large HMAs in the hunt area which have been instrumental in moving this population towards objective. With the current number of licenses issued the herd should gradually reach the objective with a smaller chance of over harvesting.

INPUT	
Species:	Pronghorn
Biologist:	Lee Knox
Herd Unit & No.:	Cooper Lake 526
Model date:	02/26/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	160	169	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	171	180	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	103	214	☐ 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	1113	548	2087	**3748**	1069	389	1897	**3355**	588	2048	**2636**				3000
1994	1138	576	2007	**3721**	1098	418	1869	**3386**	624	2032	**2655**				3000
1995	885	611	1991	**3487**	874	482	1960	**3316**	647	2085	**2732**	2486	325		3000
1996	1738	634	2043	**4415**	1727	518	1985	**4229**	867	2292	**3159**				3000
1997	2014	850	2246	**5109**	2000	707	2157	**4864**	1107	2516	**3624**				3000
1998	1722	1085	2466	**5273**	1709	938	2345	**4991**	1268	2633	**3901**	5496	1706		3000
1999	1967	1243	2581	**5790**	1929	1036	2429	**5394**	1401	2754	**4155**	4234	399		3000
2000	1798	1373	2699	**5870**	1769	1097	2545	**5410**	1424	2834	**4257**				3000
2001	2049	1395	2777	**6221**	2017	1087	2591	**5695**	1466	2930	**4396**				3000
2002	1674	1437	2872	**5982**	1601	1118	2667	**5386**	1393	2901	**4293**	4636	548		3000
2003	1661	1365	2843	**5868**	1608	1025	2598	**5231**	1309	2839	**4149**				3000
2004	1479	1283	2783	**5545**	1435	942	2491	**4868**	1194	2698	**3892**				3000
2005	2109	1170	2644	**5923**	1972	804	2415	**5191**	1147	2717	**3864**				3000
2006	1846	1125	2662	**5633**	1812	765	2386	**4963**	1106	2682	**3787**	5401	569		3000
2007	1913	1084	2628	**5625**	1860	726	2401	**4988**	1073	2704	**3777**				3000
2008	2036	1052	2650	**5738**	1969	760	2343	**5072**	1129	2663	**3792**				3000
2009	1650	1107	2609	**5366**	1605	741	2279	**4626**	1035	2527	**3562**				3000
2010	1935	1014	2477	**5426**	1891	624	2148	**4663**	981	2462	**3444**				3000
2011	1801	962	2413	**5176**	1752	607	2099	**4457**	884	2402	**3286**				3000
2012	1881	866	2354	**5101**	1815	436	2033	**4284**	854	2380	**3234**				3000
2013	1790	837	2332	**4960**	1733	452	2028	**4214**	851	2398	**3249**				3000
2014	2374	834	2350	**5558**	2330	492	2105	**4927**	958	2484	**3442**				3000
2015	1959	939	2435	**5332**	1915	581	2132	**4628**							3000
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	0.42			0.95		
1994	0.42			0.95		
1995	0.42			0.95		
1996	0.42			0.95		
1997	0.42			0.95		
1998	0.42			0.95		
1999	0.42			0.95		
2000	0.42			0.95		
2001	0.42			0.95		
2002	0.42			0.95		
2003	0.42			0.95		
2004	0.42			0.95		
2005	0.42			0.95		
2006	0.42			0.95		
2007	0.42			0.95		
2008	0.42			0.95		
2009	0.42			0.95		
2010	0.42			0.95		
2011	0.42			0.95		
2012	0.42			0.95		
2013	0.42			0.95		
2014	0.42			0.95		
2015	0.42			0.95		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.425
Adult Survival =	0.950
Initial Total Male Pop/10,000 =	0.055
Initial Female Pop/10,000 =	0.209

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

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		53.34	3.24	26.24	28.15	2.15	144	173	40	357	28.9	9.1
1994		56.71	4.57	28.72	35.29	3.35	144	125	36	305	27.5	6.9
1995		44.44	3.51	30.69	31.03	2.79	117	28	10	155	21.1	1.5
1996		85.08	7.07	31.04	49.21	4.83	106	53	10	169	18.4	2.9
1997		89.65	6.32	37.82	41.41	3.71	130	81	12	223	16.8	4.0
1998		69.83	4.29	44.01	45.88	3.23	134	110	12	256	13.6	4.9
1999		76.21	4.73	48.15	48.42	3.46	188	138	34	360	16.6	5.9
2000		66.63	3.56	50.86	61.83	3.38	251	140	27	418	20.1	5.7
2001		73.78	3.65	50.24	48.50	2.73	280	169	29	478	22.1	6.7
2002		58.29	3.38	50.03	33.79	2.37	290	186	66	542	22.2	7.1
2003		58.42	3.55	48.02	39.67	2.74	309	222	48	579	24.9	8.6
2004		53.15	3.08	46.11	38.34	2.49	310	265	40	615	26.6	10.5
2005		79.78	4.44	44.25	40.99	2.82	333	208	125	666	31.3	8.7
2006		69.33	3.45	42.24	49.70	2.74	327	251	31	609	32.0	10.4
2007		72.79	4.05	41.23	32.16	2.35	325	206	48	579	33.0	8.6
2008		76.83	7.43	39.69	44.72	5.13	265	279	61	605	27.7	11.6
2009		63.24	4.43	42.41	44.38	3.49	332	300	41	673	33.0	12.6
2010		78.13	4.82	40.94	39.40	3.03	355	299	40	694	38.5	13.3
2011		74.63	4.89	39.86	40.07	3.21	323	286	45	654	36.9	13.0
2012		79.90	8.29	36.80	40.67	5.23			292	743	49.7	13.6
2013		76.77	5.76	35.91	31.05	3.15			276	678	46.0	13.0
2014		101.00	8.23	35.47	65.67	6.02			223	574	41.0	10.4
2015		80.45	5.93	38.56	41.87	3.80			275	640	38.1	12.4
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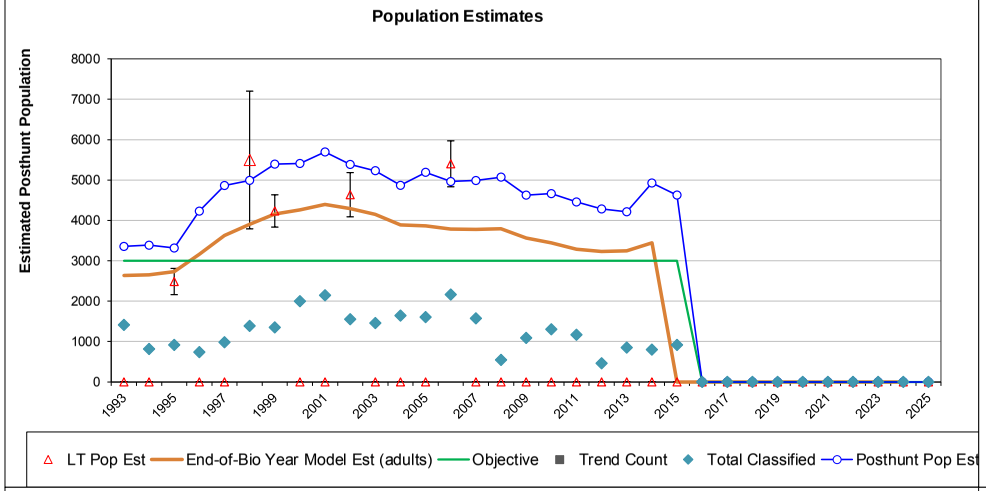
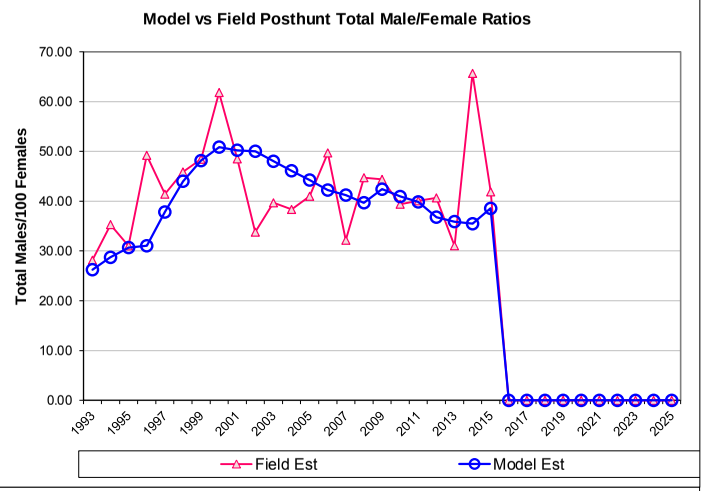
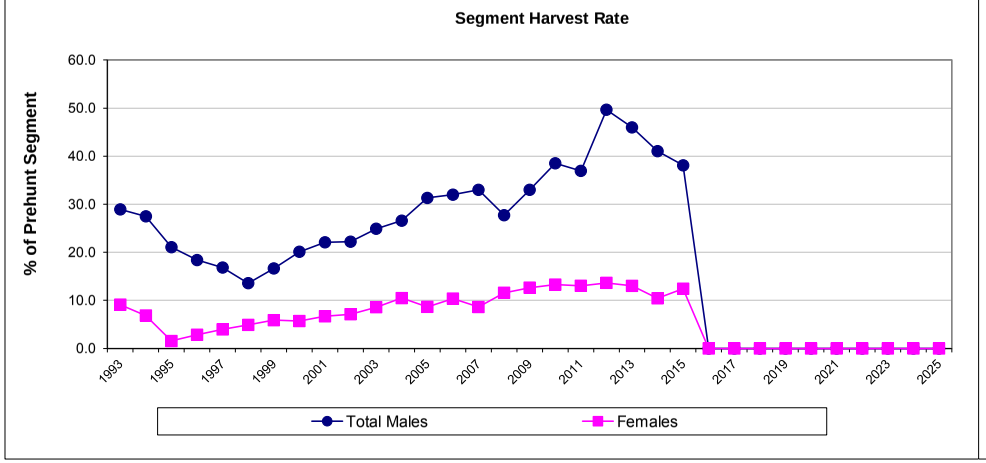
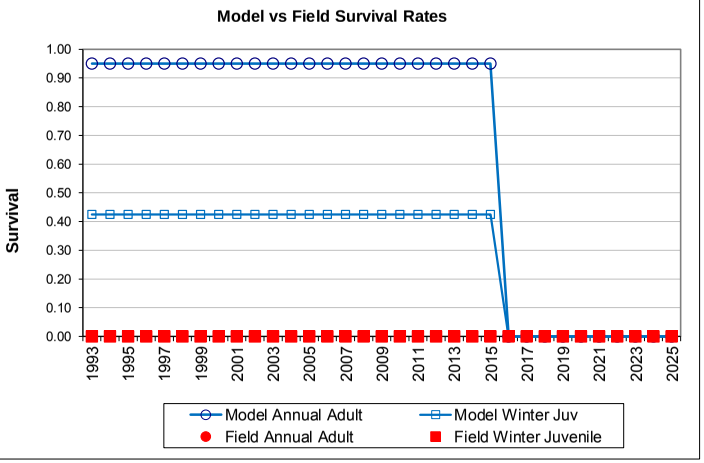
2025												

FIGURES





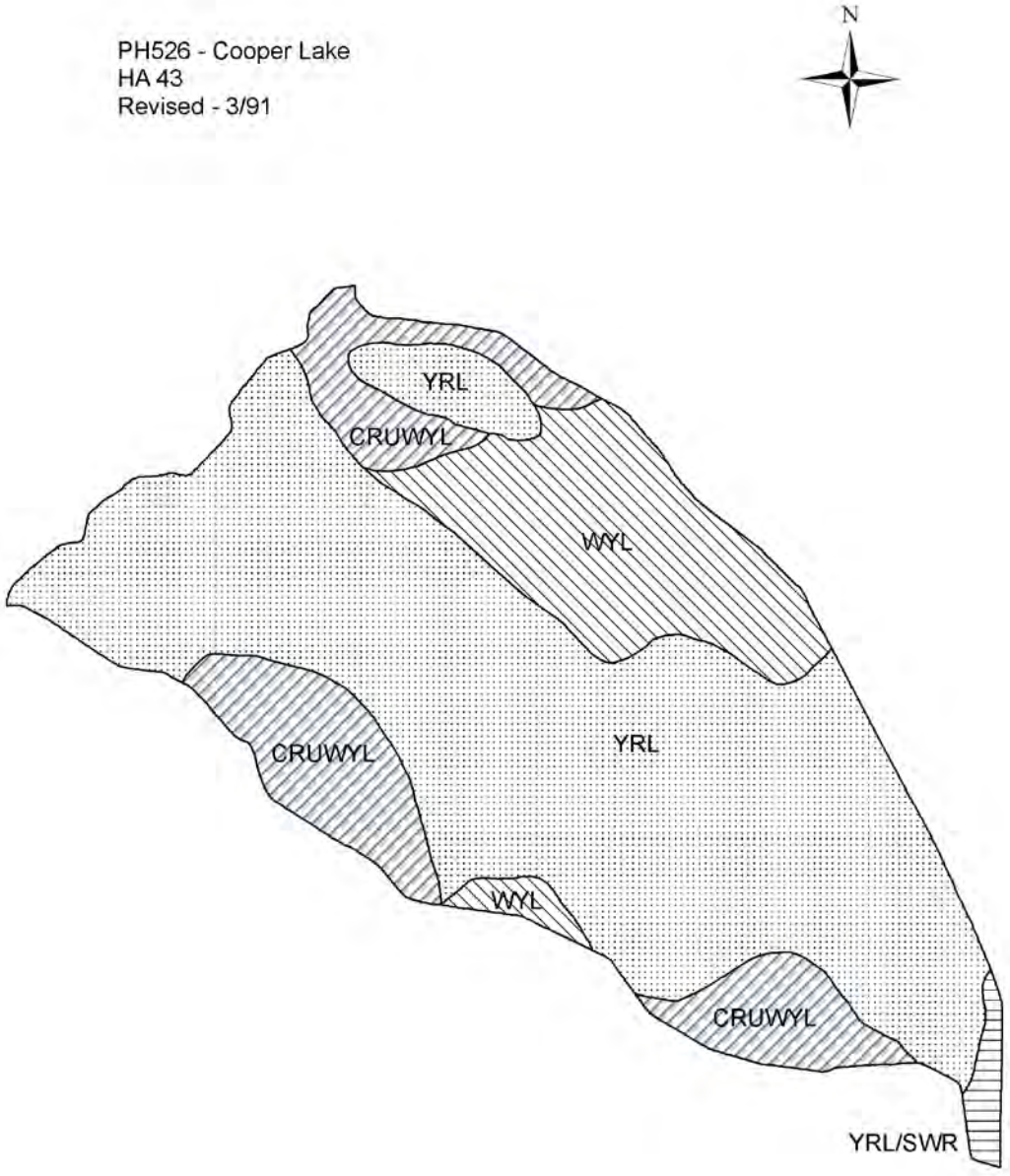




Comments:

END

PH526 - Cooper Lake
HA 43
Revised - 3/91



2014 - JCR Evaluation Form

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

HERD: PR527 - CENTENNIAL

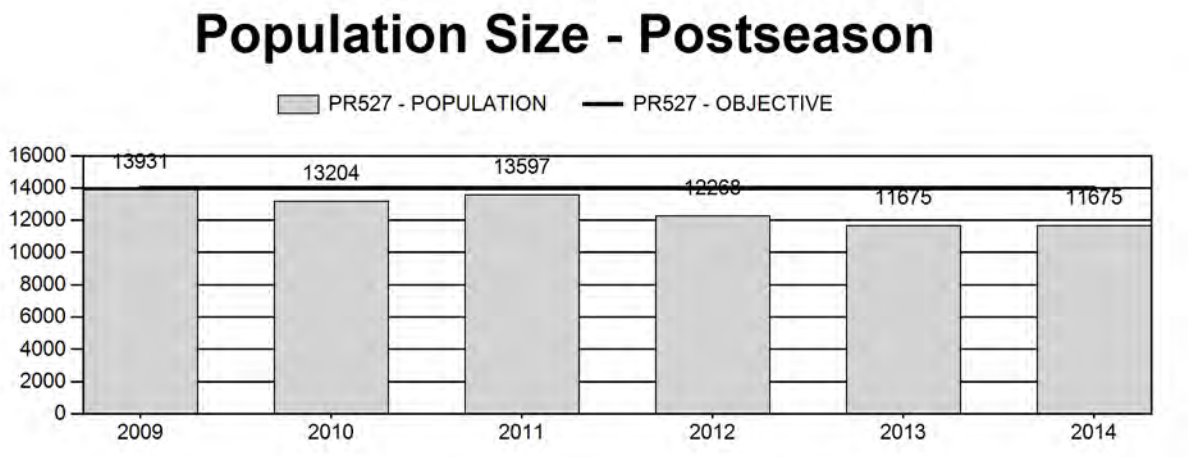
HUNT AREAS: 37, 44-45
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	12,935	11,675	11,200
Harvest:	1,283	988	1,000
Hunters:	1,497	1,045	1,045
Hunter Success:	86%	95%	96%
Active Licenses:	1,679	1,183	1,100
Active License Success:	76%	84%	91%
Recreation Days:	5,446	4,036	4,000
Days Per Animal:	4.2	4.1	4
Males per 100 Females	41	50	
Juveniles per 100 Females	72	79	

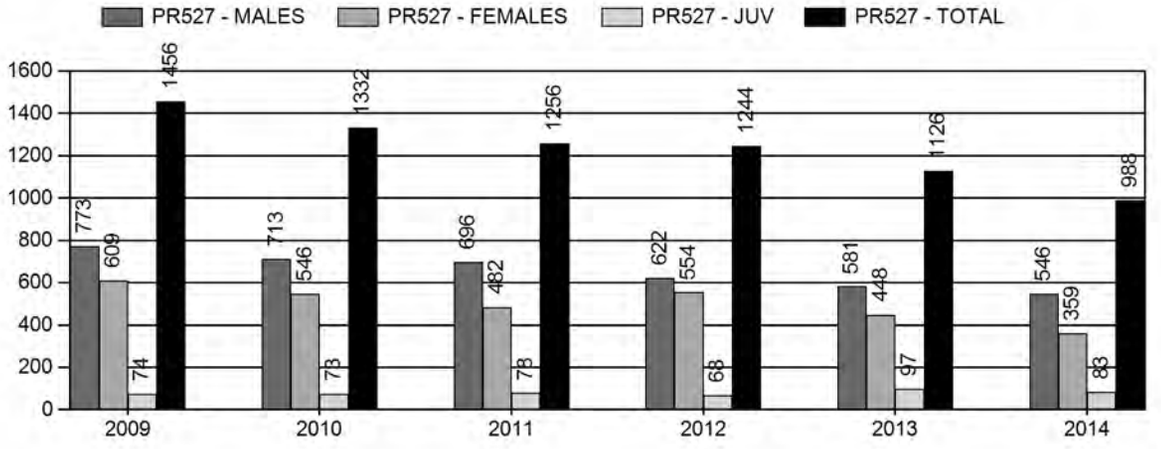
Population Objective (± 20%) :	14000 (11200 - 16800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-16.6%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/26/2015

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

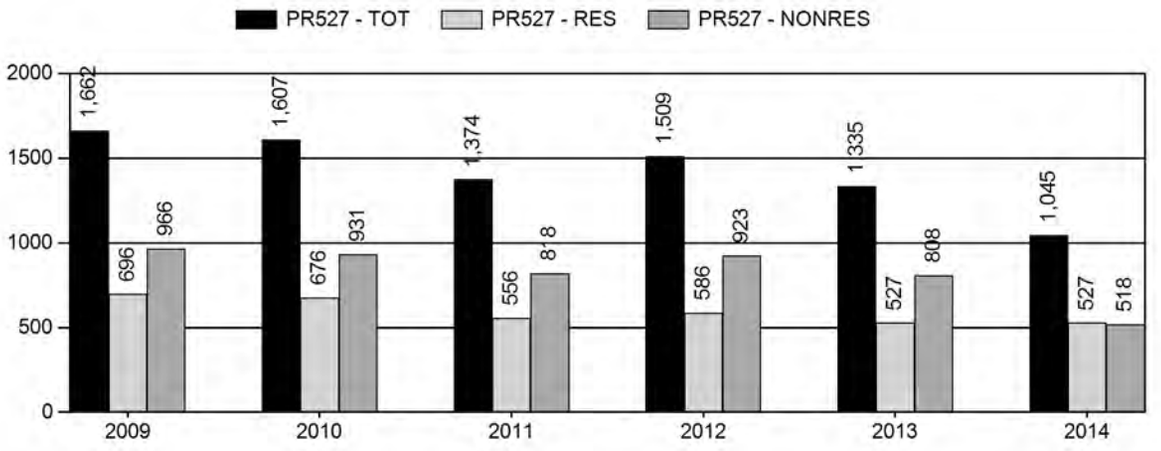
	JCR Year	Proposed
Females ≥ 1 year old:	6%	24%
Males ≥ 1 year old:	22%	7%
Juveniles (< 1 year old):	1%	1%
Total:	7%	7%
Proposed change in post-season population:	-8%	-3%



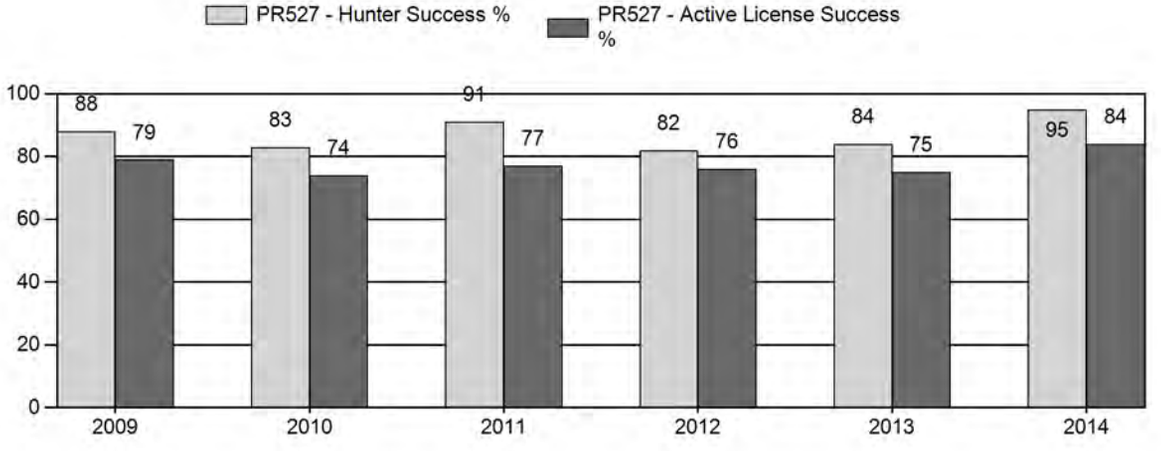
Harvest



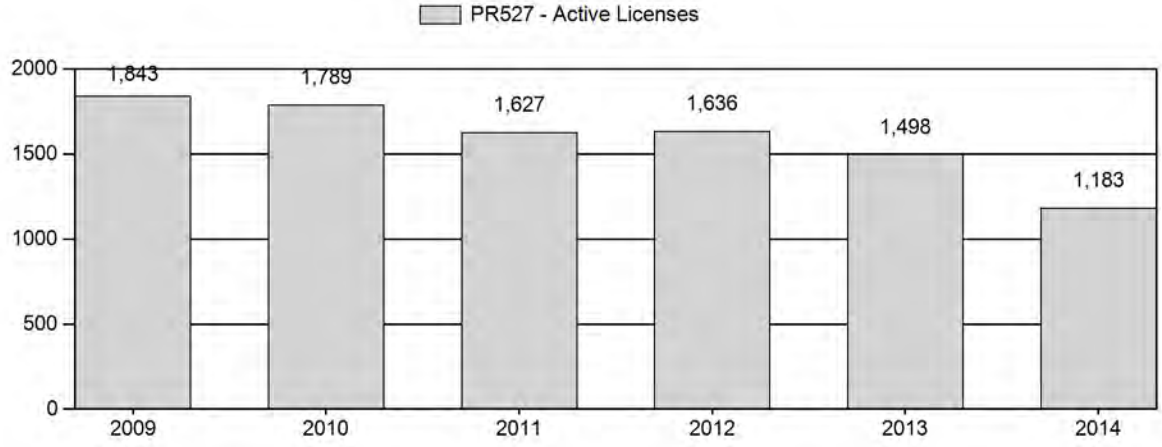
Number of Hunters



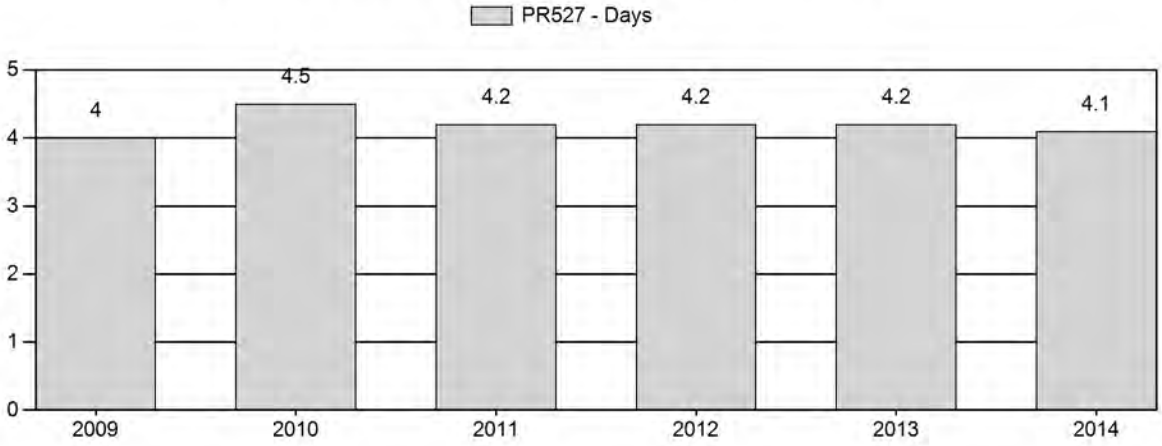
Harvest Success



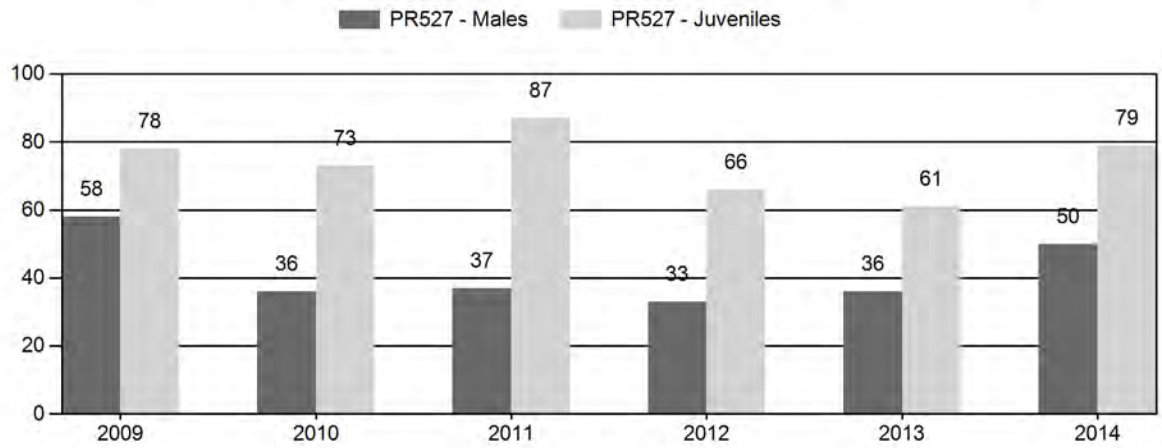
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR527 - CENTENNIAL

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	15,533	359	405	764	24%	1,326	42%	1,035	33%	3,125	3,122	27	31	58	± 4	78	± 5	50
2010	14,669	131	357	488	17%	1,337	48%	978	35%	2,803	2,589	10	27	36	± 3	73	± 5	54
2011	14,978	59	214	273	16%	741	45%	641	39%	1,655	2,886	8	29	37	± 4	87	± 7	63
2012	13,611	190	252	442	17%	1,326	50%	878	33%	2,646	2,016	14	19	33	± 3	66	± 4	50
2013	12,536	113	239	352	18%	975	51%	595	31%	1,922	1,832	12	25	36	± 3	61	± 5	45
2014	12,762	249	321	570	22%	1,149	44%	907	35%	2,626	2,149	22	28	50	± 4	79	± 5	53

2015 HUNTING SEASONS
CENTENNIAL PRONGHORN (PR527)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
37	1	Sep. 20	Oct. 14	225	Limited Quota	Any antelope
	6	Sep. 20	Oct. 14	75	Limited Quota	Doe or fawn
44	1	Sep. 15	Oct. 31	150	Limited Quota	Any antelope
	6	Sep. 15	Oct. 31	150	Limited Quota	Doe or fawn
45	1	Sep. 15	Oct. 31	350	Limited Quota	Any antelope
	6	Sep. 15	Oct. 31	350	Limited Quota	Doe or fawn
Archery						
37,44,45		Aug. 15				Refer to Section 3 of this Chapter

Type	Change from 2014
1 & 2	0
6 & 7	0
TOTAL	0

Management Evaluation

Current Postseason Population Management Objective: 14,000 (11,200 – 15,800)
Management Strategy: Recreational
2014 Postseason Population Estimate: ~ 11,700
2015 Postseason Population Estimate: ~ 11,200
2014 Hunter Satisfaction: 88% Satisfied, 6% Neutral, 5% Dissatisfied

The management objective for the Centennial Pronghorn Herd Unit is a post-season population of 14,000. The management strategy is recreational management requiring a buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2013.

Herd Unit Issues

The Centennial Pronghorn Herd Unit encompasses Hunt Areas 37, 44, and 45 which are predominately private land with little public access. The 2014 post-season population estimate was approximately 11,700 with the population trending slowly downward from 18,000 in 2004. The last line transect was conducted in 2013. Harvest strategies are designed to maximize harvest where possible. Most of the harvest is limited to Hunter Management Areas (HMA) where the threshold of hunter densities has been reached and an increase in license issuance may decrease harvest. This herd has experienced loss of habitat from an increase in subdivisions, and a wind farm is scheduled to be developed in Hunt Area 44 near the Colorado border, which may also cause a loss of access. There is significant interchange with Colorado. Most if not all of the

pronghorn in hunt area 37 winter in Colorado, while it is also thought most of the pronghorn in the Laramie River valley in Colorado winter in hunt area 44.

Weather
Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. The Laramie Valley did receive a significant snow storm in May that left 3 to 4 feet of snow that melted quickly, but may have caused a die off consisting of mostly older senescent age classes. For specific weather information please refer to the following link: http://www.ncdc.noaa.gov/.

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Field Data
A total of 2,626 pronghorn were classified, 700 more than in 2013, and exceeding the estimated classification objective of 2,150. Classification routes have been standardized so that some inference can be made from year to year classifications, and we saw an increase in pronghorn through all 3 hunt areas. Fawn production saw a large increase in 2014 to 79 fawns: 100 does, an increase of 18 fawns: 100 from 2013. Fawn production varied greatly by hunt area, 45 being the highest at 92 fawns: 100 does, and hunt area 37 being the lowest at 65 fawns: 100 does, but still a large increase in fawns for both hunt areas. Buck ratios increased from 36 bucks: 100 does in 2013 to 50 bucks: 100 does in 2014; however the number of mature bucks remained stable while there was a large increase in yearling bucks.

Harvest Data
Hunter success increased to 84% in 2014, an increase of 9% from 2013, and equal to the 10 year average. All three hunt areas saw increases in hunter success across license types; however hunt area 37 type 6 success still remains below 80%. It appears that the reduction in licenses in 2014 provided the relief needed to increase hunter success to near the 10 year average. The Hunter Satisfaction Survey showed 88% of hunters were satisfied or very satisfied with their hunt with 6% of respondents remaining neutral. The biggest challenge is trying to manage harvest on the few accessible public lands and HMAs without decreasing the quality of the hunt and abundance of game.

Population
The Constant Juvenile – Constant Adult Mortality Rate (CJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. This model did not have the lowest relative AIC score but had the most reasonable population estimate, and considering the issue with herd data, we wanted to use the simplest model. To get a model to run the years were truncated to 2000. The model estimates the Centennial pronghorn herd has slowly trended downward since 2004 when the population was estimated at 18,000, and is currently near the population objective. This is a poor model due to ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; significant interchange with populations in Colorado; lacks adult and juvenile survival data; results not biologically defensible. We conducted a line transect survey for this herd in the spring of 2014 which estimates 21,009 pronghorn with a standard error of 3,300. The CI is between 15,370 and 28,700 pronghorn. E band estimates are too high and violates the first assumption of the LT survey.

Management Summary
A confounding influence is that some segments of the herd move back and forth between Colorado and Wyoming. In the past we have not been able to manage this herd through harvest due to high fawn ratios and limited access. We estimate the population has been reduced by half since 2004 and we are near objective. With the high fawn ratios and mild winter, we expect the herd will start increasing. We will maintain the current number of licenses that were issued in 2014 as we believe we have reached a good balance with hunter densities on public land and HMAs. We will extend the season to the end of October in hunt areas 44 and 45 to provide more opportunity by spreading out hunting pressure and we expect to see an increase in hunter success. If we attain the projected harvest of 1,000 pronghorn and have fawn ratios near 70 to 75, the population will remain near the objective. We predict a 2015 post-season population of approximately 11,200.

INPUT	
Species:	Pronghorn
Biologist:	Lee Knox
Herd Unit & No.:	Centennial Pronghorn
Model date:	02/26/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	223	232	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	224	234	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	113	201	☐ 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		
2000	5879	4310	9402	**19590**	5830	3600	8998	**18429**	4423	9429	**13852**	17371	2924		6000
2001	5941	4335	9240	**19516**	5888	3679	8865	**18432**	4512	9319	**13831**				6000
2002	6283	4422	9133	**19838**	6245	3502	8681	**18428**	4400	9219	**13619**				6000
2003	5997	4312	9035	**19344**	5920	3393	8461	**17774**	4222	8926	**13148**	12369	1463		6000
2004	7320	4137	8748	**20205**	7225	3049	8301	**18575**	4148	9052	**13200**				6000
2005	6414	4065	8871	**19351**	6345	2566	8159	**17070**	3491	8724	**12215**				14000
2006	5760	3421	8549	**17730**	5692	2510	7815	**16016**	3364	8271	**11635**				14000
2007	5039	3297	8106	**16441**	4951	2327	7472	**14749**	3032	7808	**10840**	17454	3121		14000
2008	5213	2972	7652	**15836**	5125	1960	6965	**14050**	2725	7371	**10096**				14000
2009	5638	2671	7224	**15533**	5557	1821	6554	**13931**	2703	7084	**9787**				14000
2010	5078	2649	6942	**14669**	4998	1865	6341	**13204**	2637	6781	**9418**				14000
2011	5749	2584	6645	**14978**	5663	1818	6115	**13597**	2730	6714	**9443**				14000
2012	4356	2675	6579	**13611**	4280	1996	5992	**12268**	2623	6315	**8938**				14000
2013	3777	2570	6189	**12536**	3670	1931	5696	**11297**	2433	5918	**8351**				14000
2014	4578	2384	5799	**12762**	4487	1784	5404	**11675**	2473	5830	**8302**				14000
2015	4133	2423	5713	**12270**	4045	1818	5317	**11181**							14000
2016															
2017															
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
2000	0.40			0.90		
2001	0.40			0.90		
2002	0.40			0.90		
2003	0.40			0.90		
2004	0.40			0.90		
2005	0.40			0.90		
2006	0.40			0.90		
2007	0.40			0.90		
2008	0.40			0.90		
2009	0.40			0.90		
2010	0.40			0.90		
2011	0.40			0.90		
2012	0.40			0.90		
2013	0.40			0.90		
2014	0.40			0.90		
2015	0.40			0.90		
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Parameters:	Optim cells
Juvenile Survival =	0.400
Adult Survival =	0.903
Initial Total Male Pop/10,000 =	0.431
Initial Female Pop/10,000 =	0.940

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
2000		62.53	3.19	45.84	59.42	3.08	645	367	44	1056	16.5	4.3
2001		64.29	2.74	46.91	50.46	2.33	596	341	48	985	15.1	4.1
2002		68.80	3.17	48.41	50.99	2.58	836	411	35	1282	20.8	5.0
2003		66.37	3.48	47.72	28.57	2.01	835	522	70	1427	21.3	6.4
2004		83.68	3.17	47.29	47.90	2.15	989	406	87	1482	26.3	5.1
2005		72.30	2.78	45.83	48.08	2.10	1363	647	63	2073	36.9	8.0
2006		67.37	3.22	40.01	39.43	2.25	828	668	62	1558	26.6	8.6
2007		62.16	2.96	40.68	40.19	2.22	882	576	80	1538	29.4	7.8
2008		68.13	2.92	38.84	43.78	2.17	920	624	80	1624	34.1	9.0
2009		78.05	3.24	36.97	57.62	2.62	773	609	74	1456	31.8	9.3
2010		73.15	3.08	38.16	36.50	1.93	713	546	73	1332	29.6	8.7
2011		86.50	4.67	38.89	36.84	2.61	696	482	78	1256	29.6	8.0
2012		66.21	2.88	40.66	33.33	1.83	618	534	69	1221	25.4	8.9
2013		61.03	3.17	41.53	36.10	2.24	581	448	97	1126	24.9	8.0
2014		78.94	3.51	41.11	49.61	2.54	546	359	83	988	25.2	6.8
2015		72.34	3.36	42.41	38.44	2.19	550	360	80	990	25.0	6.9
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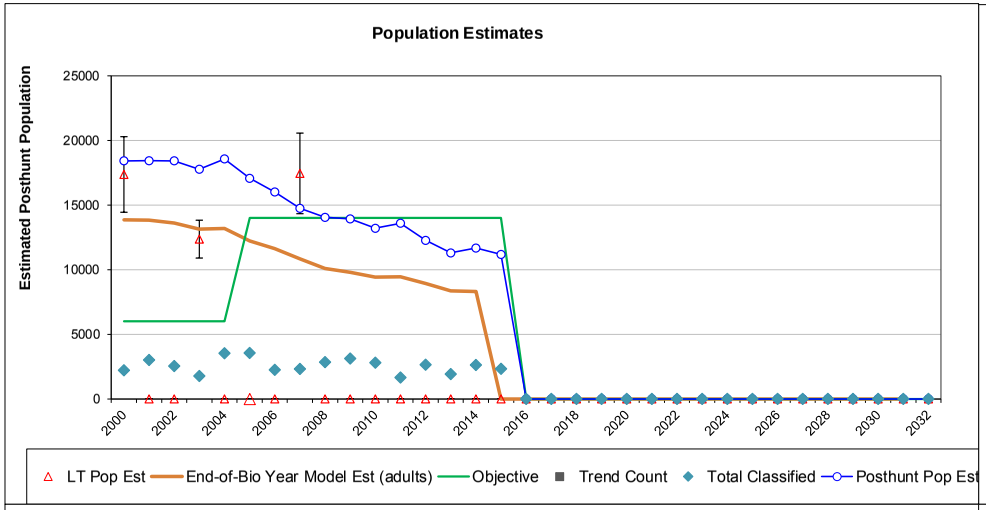
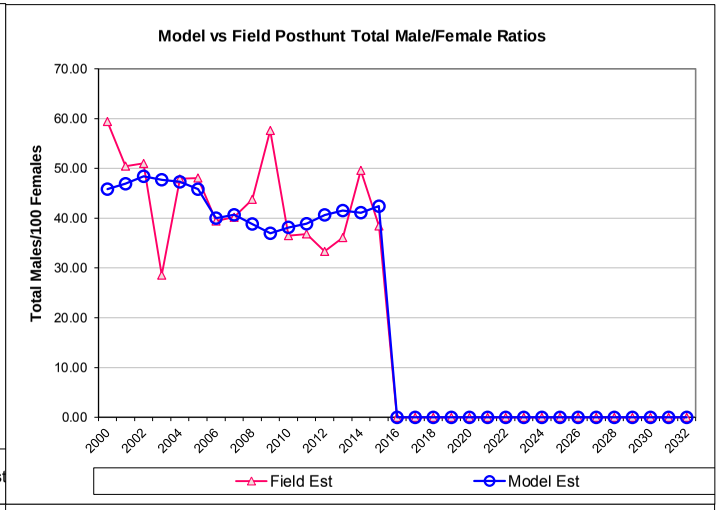
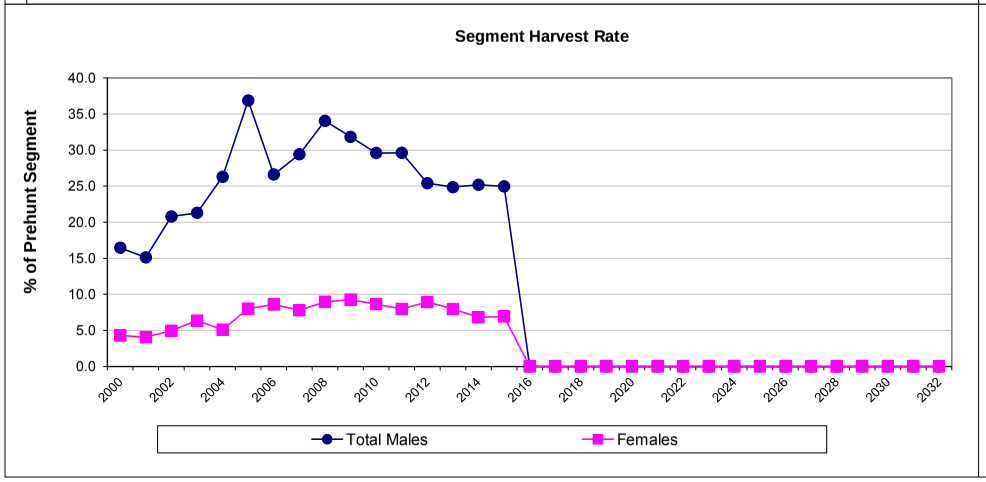
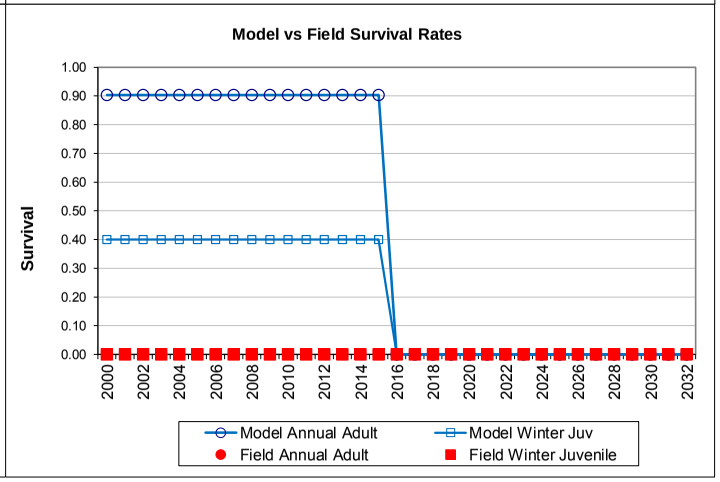
FIGURES





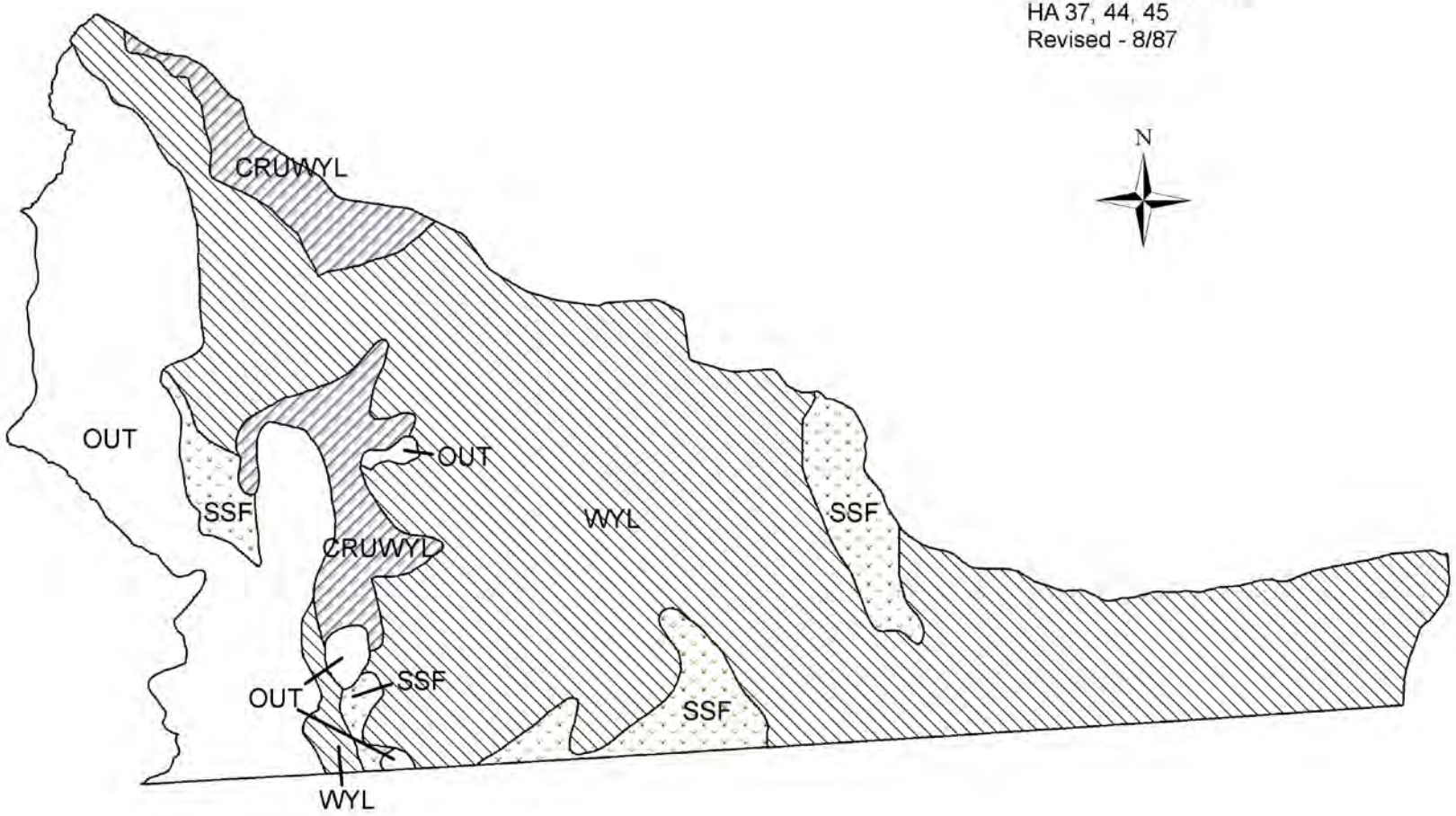




Comments:

END

PH527 - Centennial
HA 37, 44, 45
Revised - 8/87



2014 - JCR Evaluation Form

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

HERD: PR528 - ELK MOUNTAIN

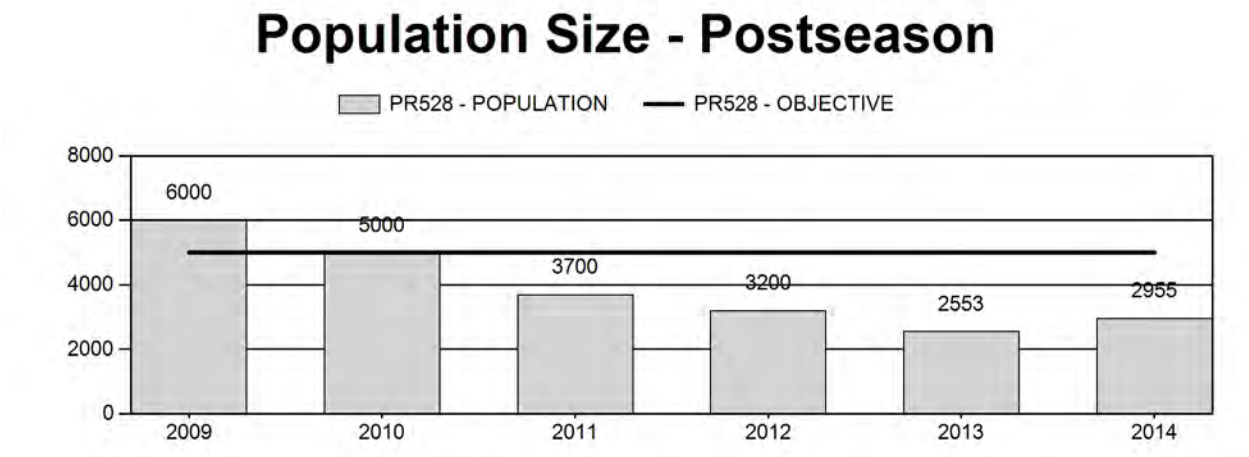
HUNT AREAS: 50
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	4,091	2,955	3,110
Harvest:	892	347	290
Hunters:	990	348	375
Hunter Success:	90%	100%	77%
Active Licenses:	1,052	393	300
Active License Success:	85%	88%	97 %
Recreation Days:	3,262	1,098	1,100
Days Per Animal:	3.7	3.2	3.8
Males per 100 Females	38	34	
Juveniles per 100 Females	48	55	

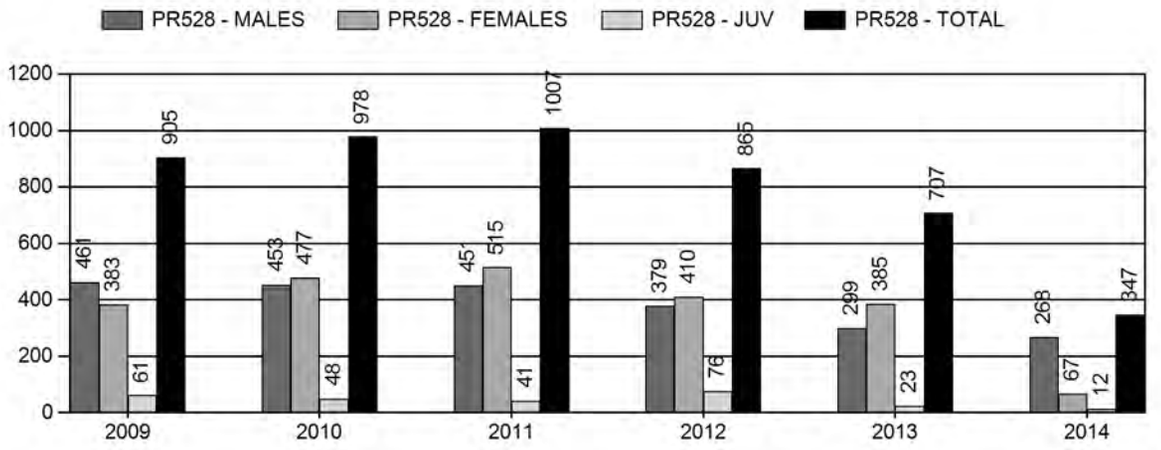
Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-40.9%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/21/2015

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

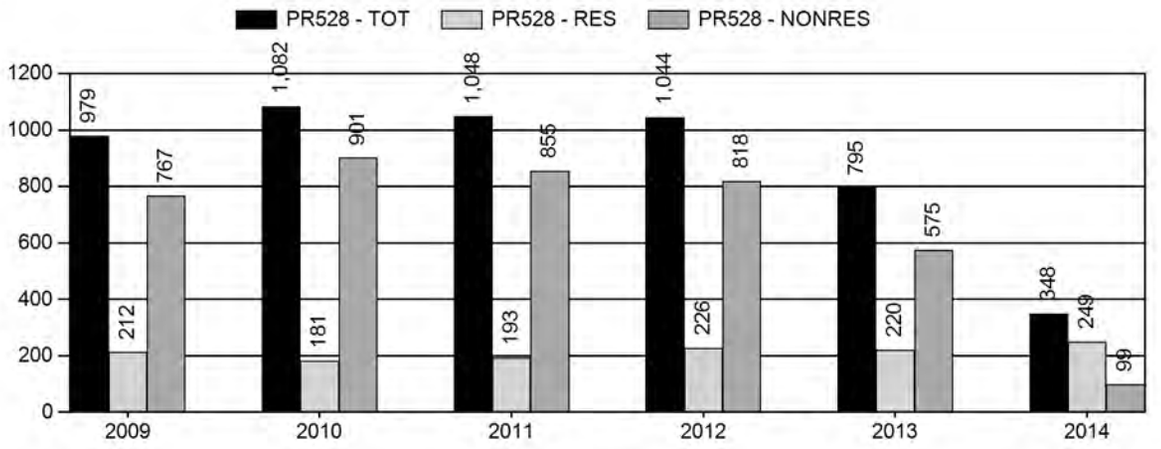
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	47%	54%
Juveniles (< 1 year old):	1%	1%
Total:	-8%	-8%
Proposed change in post-season population:	13%	5%



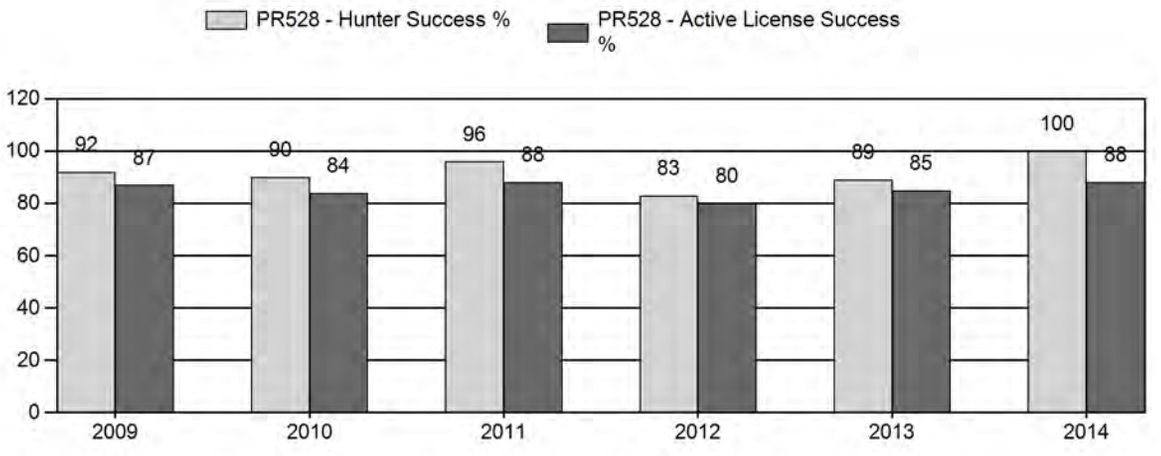
Harvest



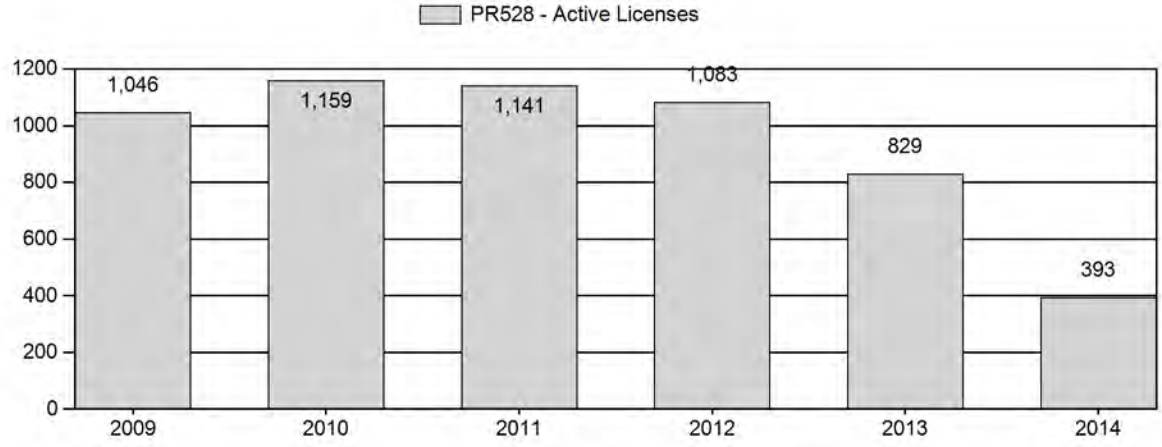
Number of Hunters



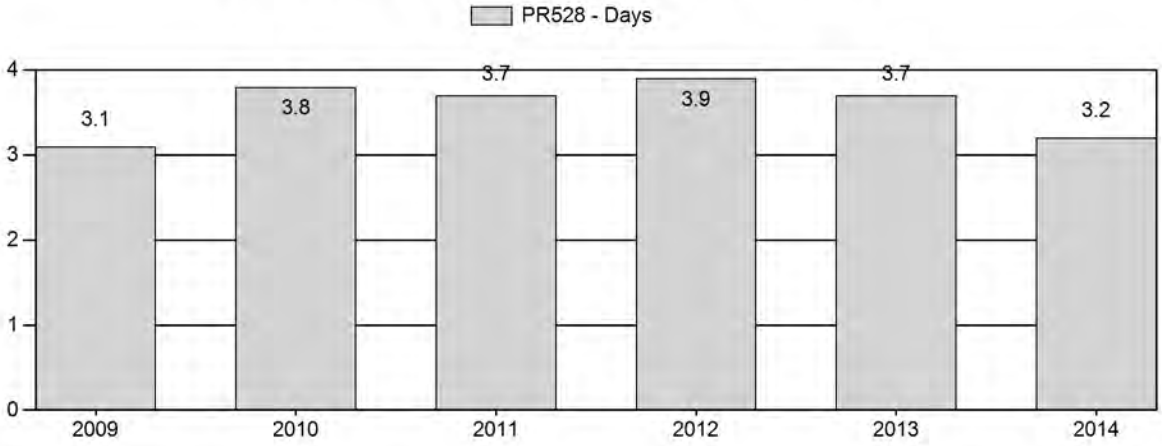
Harvest Success



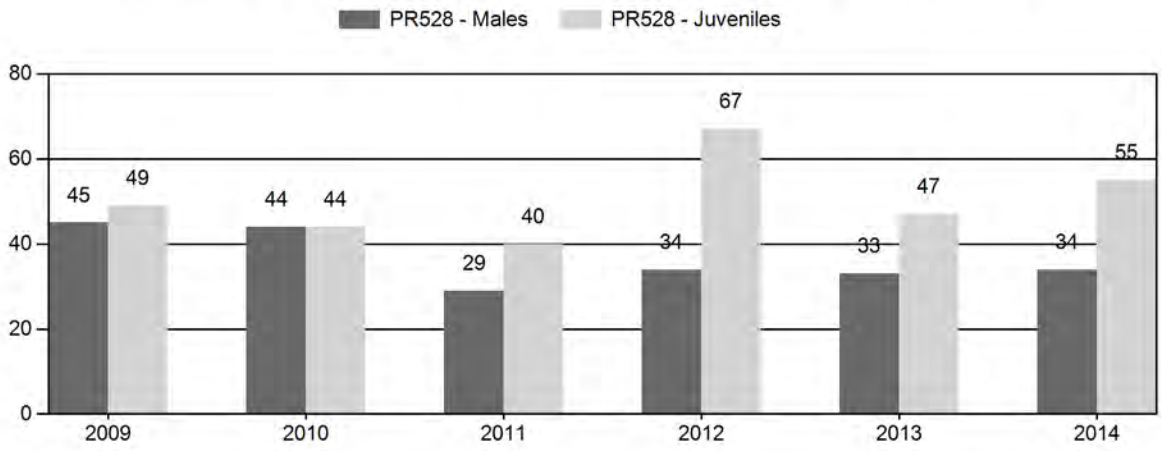
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR528 - ELK MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	7,000	111	272	383	23%	846	52%	412	25%	1,641	1,617	13	32	45	± 4	49	± 4	34
2010	6,000	91	305	396	23%	907	53%	396	23%	1,699	1,668	10	34	44	± 4	44	± 4	30
2011	4,800	82	140	222	17%	764	59%	303	24%	1,289	1,221	11	18	29	± 3	40	± 4	31
2012	4,200	73	115	188	17%	545	50%	367	33%	1,100	1,098	13	21	34	± 4	67	± 6	50
2013	3,331	75	95	170	18%	510	55%	239	26%	919	1,000	15	19	33	± 4	47	± 5	35
2014	3,337	64	111	175	18%	511	53%	280	29%	966	1,021	13	22	34	± 4	55	± 6	41

ELK MOUNTAIN PRONGHORN (PR528)
Hunt Area 50
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons		Limited Quota	License	Limitations
		Opens	Closes			
50	1	Sep. 16	Oct. 31	300	Limited quota	Any antelope
	6	Sep. 16	Oct. 31	25	Limited quota	Doe or fawn
	0	Sep. 1	Sep. 15	50	Limited quota	Any antelope, muzzle-loading firearms only

Hunt Area	Type	Quota change from 2013
50	6	-75
Herd Unit Total	**6**	**-75**

Management Evaluation
Current Management Objective: 5,000 (4,000 – 6,000)
Management Strategy: Recreational
2014 Postseason Population Estimate: 3,000
2015 Proposed Postseason Population Estimate: 3,100
2014 Hunter Satisfaction: 89% Satisfied, 5% Neutral, 6% Dissatisfied

Pronghorn in the Elk Mountain herd unit are managed toward a numeric objective of 5,000. The population was estimated using a spreadsheet model developed in 2012 and updated in 2015. The herd is managed for recreational opportunity. The objective was reviewed in 2014 and retained at a postseason estimate of 5,000 pronghorn (Appendix A).

Herd Unit Issues
The Elk Mountain herd unit is comprised predominantly of either private or land-locked public land. Hunter access to these lands is limited, particularly east of Elk Mountain, where most pronghorn in this herd unit are found during the hunting season. Private lands open to hunters receive a large amount of pressure. Much of the herd unit's sagebrush ecosystem remains intact. However, increased agricultural, energy, and residential development does threaten the sagebrush habitat in this area.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred

transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on pronghorn. Mild fall temperatures and lack of persistent snows allowed for pronghorn to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Elk Mountain herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 was recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data

Preseason ratios for this herd were 34 bucks and 45 fawns/100does in 2014. Buck ratios and fawn ratios both increased in recent classification trend. Traditionally, classification data in this herd unit had been collected from fixed-wing aircraft. Beginning in 2011, classification surveys have been conducted from the ground and have lower sample sizes than those previously completed from fixed-wing aircraft. The ground surveys also may contain more sampling biases in comparison with surveys conducted prior to 2011 due to limited data from more remote areas of the herd unit.

Harvest Data

The 2014 harvest survey indicated a total of 347 pronghorn were harvested which was a decrease of 50% from 2013. Overall harvest success increased 15% to 100% for 348 active licensed hunters in 2014. The days/pronghorn decreased slightly from 3.7 to 3.2 days/harvest. The increase in harvest success and decrease in day/harvest was attributed to the decreases in license numbers made in 2014, as a means to balance hunter opportunity with a decreased population size.

Population

Spreadsheet model estimates indicated the Elk Mountain herd is currently below the management objective of 5,000 pronghorn. The CJ, CA model was selected again for the Elk Mountain herd unit in 2014. The model's population estimates are plausible and match trends in harvest and preseason classifications. The model's end-of-year estimates are less than corresponding year Line-Transect survey density estimates in 2007, 2010, and 2012. A portion of the Elk Mountain herd unit was used a control area for the University of Wyoming's Dunlap Wind Farm research project. We incorporated adult survival rates from this research into the model for bio-year 2010 and 2011.

We rated this model as fair, and biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

Management Summary

The Type 6 license numbers were reduced again for the 2015 season. Liberal seasons in the recent past and severe winters have reduced pronghorn numbers in this herd unit over the past 5 years. The decreased license numbers will assist in increasing the population toward the management objective. The popular muzzleloader only season continued to be offered in 2015.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

Taylor, K. L. 2014. Pronghorn (*Antilocapra americana*) Response to Wind Energy Development on Winter Range in South-Central, Wyoming. Master's Thesis. Department of Ecosystem Science and Management. University of Wyoming, Laramie. 141 pp.

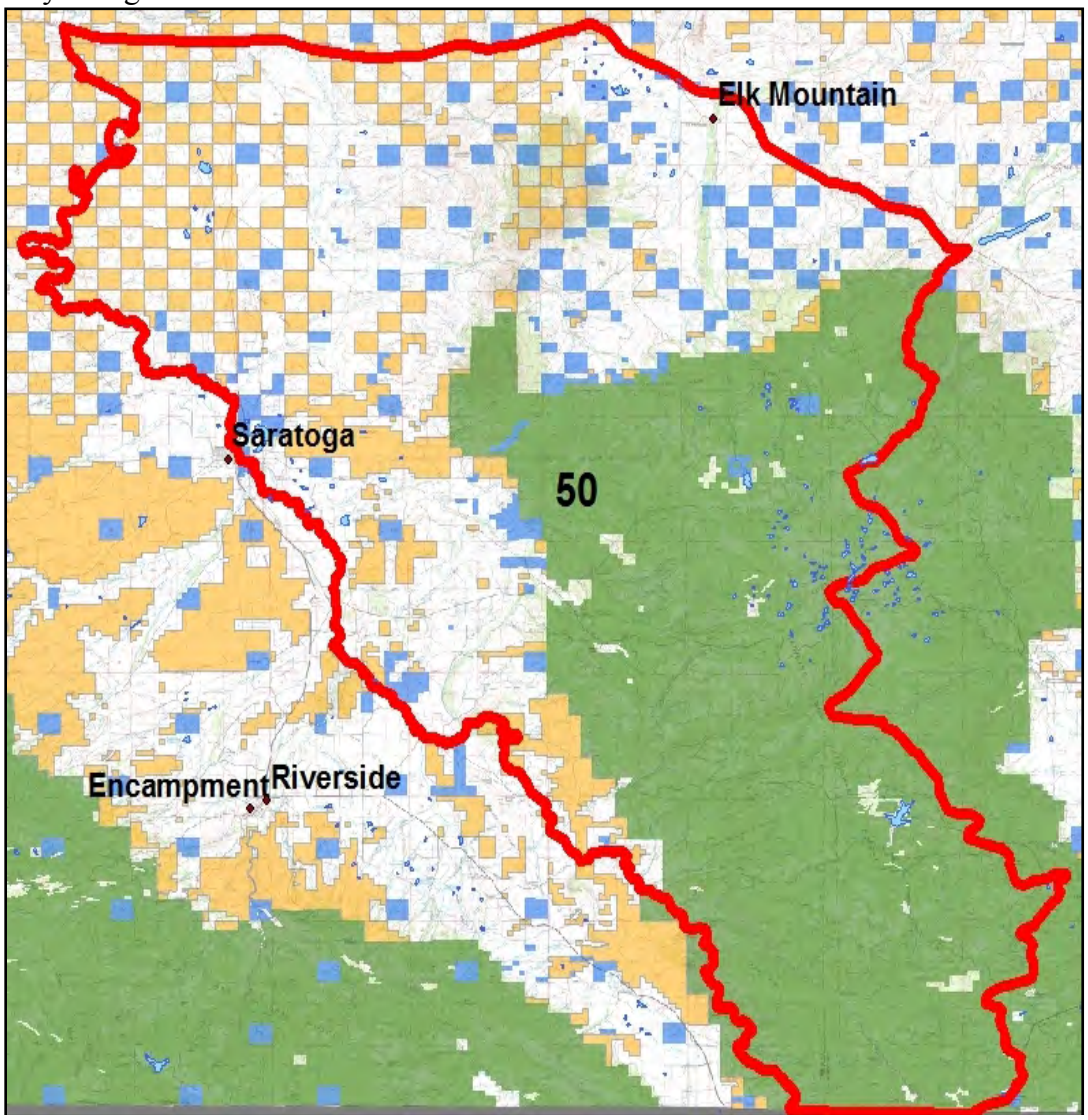
Appendix A

2014 ELK MOUNTAIN PRONGHORN HERD UNIT AND POPULATION OBJECTIVE REVIEW

Prepared by: Will Schultz, Saratoga Wildlife Biologist

The Elk Mountain pronghorn herd unit is located in south-central Wyoming, south of US Interstate 80, between the North Platte River and Rock Creek, and is bordered by the Snowy Range Mountains to the southeast (Figure 1). The Elk Mountain pronghorn herd unit occurs entirely within Hunt Area 50, and contains 1,572.6 km^2 of occupied habitat. The occupied habitat consists primarily of sagebrush grassland and mountain shrub habitat types, with irrigated hay meadows occurring on private lands.

Figure 1. A map of the Elk Mountain pronghorn herd unit and Hunt Area 50 located in south central Wyoming.



Approximately 65% of the herd unit is privately owned. The predominant use of the land in the herd unit is cattle grazing. Energy and urban development has been minimal in this herd unit. However, conversion of suitable pronghorn habitat to rural residential development has occurred east of the town of Saratoga in recent decades.

Although pronghorn can be found throughout suitable habitat year-long, they tend to migrate to lower elevations in the western part of the unit to winter, and migrate to higher elevations in the east to summer. Traditional winter movements to lower elevations to the north have been blocked by US Interstate 80 since its construction in 1967 (Ward et al. 1976). There has been no documented use of the underpasses under US Interstate 80 by pronghorn in this herd unit. The western portion of the herd unit is intersected by Wyoming Highway 130, which impedes the semi-annual migration of these pronghorn.

POPULATION OBJECTIVE REVIEW

Wyoming Game and Fish Department (WGFD) uses postseason population objectives as a guide for pronghorn management at the herd unit level. The postseason population objective is the desired number of pronghorn remaining in the herd unit after the annual hunting season has been completed. Generally, if the population estimate is above the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will increase harvest and reduce the number of pronghorn toward the population objective. Conversely, if the population estimate is below the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will decrease harvest and increase the number of pronghorn toward the population objective.

An actual count of all pronghorn in a herd unit would be, for all practical purposes, impossible to complete. Therefore, WGFD develops herd unit population estimates using a computer-based population model. Data collected annually through hunter-harvest surveys and preseason pronghorn sex and age classification surveys are incorporated into the population models. The population estimate produced by the computer-based population model is used to determine where the herd unit's pronghorn population is in relation to the established population objective.

Annual population estimates for the Elk Mountain herd unit are currently produced using a computer-based, spreadsheet population model (Morrison 2012). Harvest survey data has been adequate for producing harvest estimates with an acceptable 80% confidence interval. However, due to changes in survey technique in recent years (i.e. changed from aerial to ground surveys), preseason pronghorn sex and age classification survey sample sizes have been less than adequate for producing estimates with acceptable 90% confidence intervals. Additionally, WGFD has conducted 7 pronghorn line transect surveys (Guenzel 2007) to estimate pronghorn density in this herd unit. Density estimates from these line transect surveys were incorporated into the spreadsheet model to improve the population estimate's accuracy.

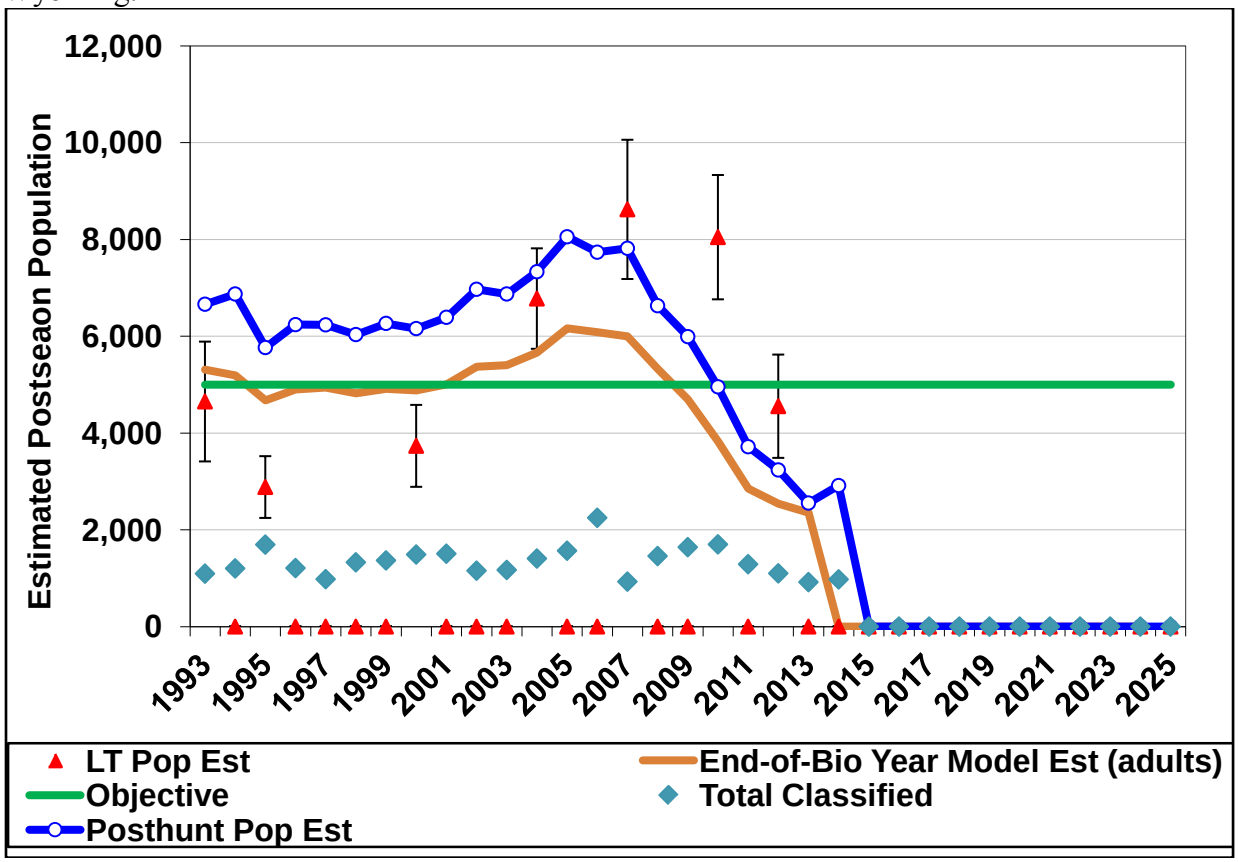
Postseason pronghorn population objectives for the Elk Mountain herd unit have been adopted and subsequently changed following periodic reviews of both biological and social

considerations. These considerations have included changes in: quantity and quality of habitat, sportsmen desires, and landowner desires/tolerance.

A postseason population objective of 3,000 pronghorn was first established for the Elk Mountain herd unit in the late 1970s. In 1986, the population objective was increased to 5,000 pronghorn because this was considered a more realistic objective since the number of pronghorn consistently observed during surveys was approximately 5,000. In 1996, the population objective was reviewed and maintained at 5,000 pronghorn.

The 2013 postseason population estimate was 2,550 pronghorn. Since 2007, the annual population estimates have declined precipitously in trend (Figure 2). This decline was due in part to several severe winters and severe summer drought. Increased female harvest rates since 2007 also contributed to the decline. These increased female harvest rates were prescribed to assist in reducing pronghorn numbers towards a more appropriate population level in consideration for the severe drought experienced during this period. A recent return to more conservative hunting seasons should increase pronghorn numbers towards the objective.

Figure 2. 1993-2013 Elk Mountain herd unit postseason pronghorn population estimates, Wyoming.



CURRENT MANAGEMENT STRATIGIES BY HUNT AREA

Pronghorn Hunt Area 50 is the only hunt area in the Elk Mountain herd unit and is managed under the recreational management strategy. This strategy directs WGFD to manage harvest opportunity to maintain 30-59 bucks/100 does in the herd unit preseason. Historically, this herd unit has exhibited a very good recruitment rate which tends to lend itself toward being managed under the recreational management strategy.

RECOMMENDED HERD UNIT OBJECTIVE AND MANAGEMENT STRATIGIES BY HUNT AREA

WGFD recommends maintaining the current postseason population objective of 5,000 pronghorn for the Elk Mountain Herd Unit. Continuation of a recreational management strategy is also recommended for this herd unit. We believe this population level can be sustained by the herd unit's currently available pronghorn habitat.

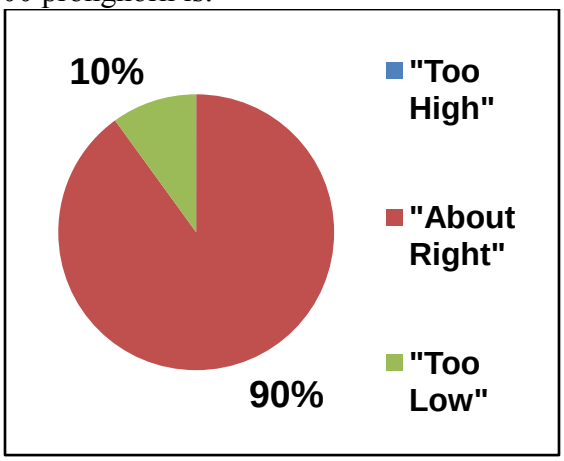
LANDOWNER, AGENCY, AND PUBLIC INVOLVEMENT

WGFD made a concerted effort to provide stakeholders with an opportunity to be involved in the review of the Elk Mountain pronghorn herd unit population objective, and to provide comment on the recommendations.

Landowner Involvement

In February of 2014, a letter describing objective review process and a survey were sent to all landowners (n=53) who owned at least 160 acres in the Elk Mountain herd unit (ATTACHMENT A). We received completed surveys from 10 landowners; for a return rate of 19% (ATTACHMENT B). Ninety percent (90%) of the responding landowners indicated they thought the current population objective was "About Right." Ten percent (10%) of the responding landowners indicated the population objective was, "Too Low," (Figure 3).

Figure 3. Elk Mountain herd unit landowner survey responses to the question, "Do you think the population objective of 5,000 pronghorn is:"



In May of 2014, WGFD sent a postcard to these same landowners describing the recommendation to maintain the population objective at 5,000 pronghorn (ATTACHMENT C). The postcard included an invitation to the landowners to attend upcoming objective recommendation meetings. The postcard also listed an email address where landowners could send their comments electronically. No comments were received from the landowners.

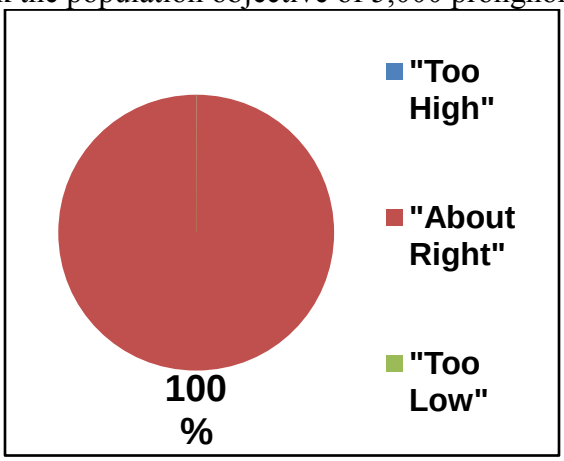
Agency Involvement

In May of 2014, WGFD met with representatives from the US Forest Service (Wendy Haas - Medicine Bow/Routt National Forest); Bureau of Land Management (Heath Cline - Rawlins Field Office); USDA/Natural Resource Conservation Service (Mark Shirley - Saratoga District); and the Saratoga, Encampment, Rawlins Conservation District (Jack Berger and Joe Parsons). WGFD presented a review of the Elk Mountain herd unit population objective and the recommendation. This discussion lasted approximately 2 hours. Agency personnel appeared to be supportive of the recommendation.

Public Involvement

In March of 2014, population objective review meetings were held in conjunction with season-setting public information gathering meetings in Cheyenne, Laramie, and Saratoga. Meeting attendees were asked to fill out sportsperson surveys regarding their attitudes towards current pronghorn numbers and the current population objective (ATTACHMENT D). A total of 110 people attended these meetings and we received 21 completed surveys, for a return rate of 19% (ATTACHMENT E). One Hundred percent (100%) of the survey respondents indicated they thought the current population objective was "About Right," (Figure 4).

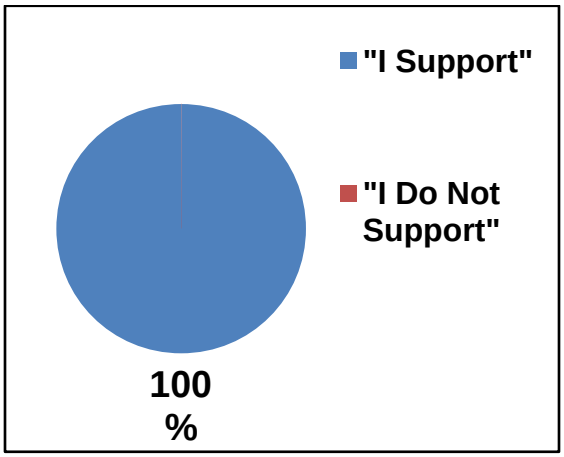
Figure 4. Elk Mountain herd unit public objective review meeting attendee survey responses to the question, "Do you think the population objective of 5,000 pronghorn is:"



In May of 2014, population objective recommendation meetings were held in Cheyenne, Laramie, Saratoga, and Wheatland. Meeting attendees were asked to fill out surveys indicating whether or not they supported the proposed population objective recommendation. A total of 21 people attended these 4 meetings and we received 6 completed surveys; for a return rate of 29% (ATTACHMENT F). One-Hundred percent (100%) of the survey respondents indicated they

supported the recommendation to maintain the population objective at 5,000 pronghorn (Figure 5).

Figure 5. Elk Mountain herd unit public objective recommendation meeting attendee survey responses to the statement, "Propose to maintain the population objective of 5,000 pronghorn for the next 5-years."



LITERATURE CITED

Guenzel, R.J. 2007. Procedures for Estimating Pronghorn Abundance in Wyoming Using Aerial Line Transect Sampling. Wyoming Game and Fish Department, Cheyenne. WY. USA.

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Ward, A. L., J. J. Cupal, G. A. Goodwin and H. D. Morris. 1976. Effects of highway construction and use on big game populations. Rept. No. FHWA-RD-76-174, Federal Highway Administration, Washington, D.C, USA.

17 March 2014

Dear Landowner,

The Wyoming Game and Fish Department (WGFD) is seeking your assistance in the future management of big game wildlife in your area. During the spring of 2014, WGFD will review the herd unit management objectives for several big game herd units such as Platte Valley mule deer, Elk Mountain pronghorn, and Big Creek pronghorn. Enclosed in this letter you will find a short survey for each herd unit your property is located in, and postage-paid return envelope. Please complete the survey questions, provide additional comments if you desire, and mail the survey in the return envelope.

The herd unit management objective is the "benchmark" which WGFD manages big game wildlife towards. For most big game herd units in Wyoming, WGFD manages big game wildlife towards a numeric management objective, usually identified as a specific postseason population estimate.

Many of Wyoming's big game wildlife rely on habitat located on private lands. Therefore, landowner opinions on herd unit management objectives are important to WGFD. The comments we receive from your completed surveys will be used in part to formulate WGFD recommendations for the future herd unit management objectives. Changes in the herd unit management objective could result in increasing harvest opportunities to decrease big game numbers, or conversely, changes could result in reducing harvest opportunities in order to increase big game numbers.

We also would like to invite you to one of the upcoming public meetings to discuss herd unit management objectives. Locations and dates are listed below:

- Saratoga Town Hall, March 26, 7:30 p.m.
- Laramie Fire Hall #3, March 27, 7:30 p.m.

Thank you for taking the time to share your thoughts and opinions with us. We hope to see you at one of the upcoming meetings. If you have any questions please contact Will Schultz at 307-326-3020. We look forward to receiving your survey and working with you on the future management of Wyoming's Wildlife.

Sincerely,

Will Schultz
Saratoga Wildlife Biologist
WS/ws

Elk Mountain Pronghorn Herd Unit

Antelope Hunt Area:	50
Management Objective:	5,000 pronghorn
2013 Postseason Population Estimate:	3,800 pronghorn
Last Management Objective Review:	1997

1. How satisfied are you with the current number of pronghorn in the Elk Mountain herd unit (current estimate is 3,800 pronghorn):

   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

2. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many pronghorn in the herd unit
   ❑ There are too few pronghorn in the herd unit
   ❑ Other _____

3. Do you think the herd unit management objective of 5,000 pronghorn is:

   ❑ Too high
   ❑ Too low
   ❑ About right

Comments

If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your name and email address below.

_____

THANK YOU for your participation!

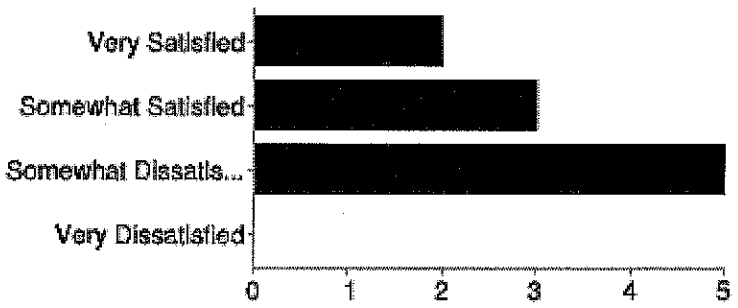
10 responses

Elk Mtn PH

View all responses Publish analytics

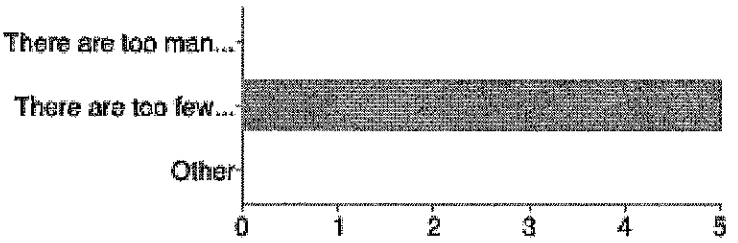
Summary

How satisfied are you with the current number of pronghorn in the Elk Mountain herd unit



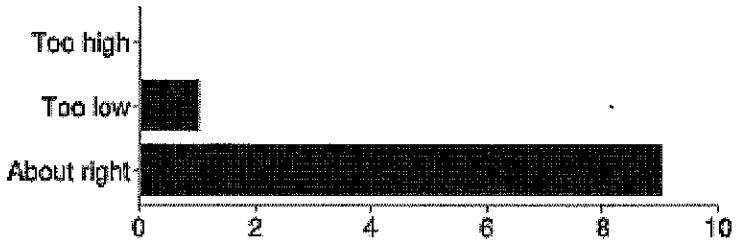
Very Satisfied	**2**	20%
Somewhat Satisfied	**3**	30%
Somewhat Dissatisfied	**5**	50%
Very Dissatisfied	**0**	0%

If you answered somewhat dissatisfied or very dissatisfied, please indicate why



There are too many pronghorn in the herd unit	**0**	0%
There are too few pronghorn in the herd unit	**5**	100%
Other	**0**	0%

Do you think the herd unit management objective of 5,000 pronghorn is



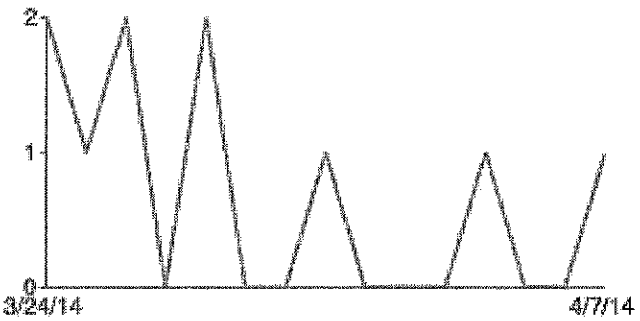
Too high	**0**	0%
Too low	**1**	10%
About right	**9**	90%

Comments

We trust your judgement on this! Seems like there are too many doe/fawn licenses sold. **Why was the last management objective review done in 1997? How come the review isn't done more often?** **Need to control predators.**

Name & Email

Number of daily responses



Meeting Dates

Cheyenne, May 6th, 6:00 p.m., WGFD Office Building, Elk Room

Laramie, May 8th, 6:00 p.m., Fire Hall #3

Saratoga, May 22th, 6:00 p.m., Town Hall

Herds Covered

Big Creek Pronghorn
(Hunt Area 51)

Elk Mountain Pronghorn
(Hunt Area 50)

Platte Valley Mule Deer
(Hunt Areas 78,79,80,81,83,161)

WGFD Public Meeting

Wyoming Game and Fish Department wants to invite you to attend one of the upcoming meetings to discuss herd unit management objective proposals. Earlier this year, we held meetings in these communities asking for your input. Now, we would like to present to you the proposals we developed with the help of your earlier input:

- Recommend increasing the management objective to 800 pronghorn from 600 pronghorn for the Big Creek Pronghorn Herd Unit.
- Recommend maintaining the current management objective of 5,000 pronghorn for the Elk Mountain Pronghorn Herd Unit.
- Recommend decreasing the management objective to 16,000 mule deer from 20,000 mule deer for the Plate Valley Mule Deer Herd Unit.

Your input at these upcoming meetings is important to us! Recommendations, and your input from these meetings, will be presented to the Wyoming Game and Fish Commission in July

For more information please contact:
Saratoga Wildlife Biologist, Will Schultz, 307-326-3020
OR
Contact us via email at wgflaramiecomments@wyo.gov

Sportsperson Survey

Platte Valley Mule Deer Herd Unit

1. Please circle the hunt area where you spend the majority of your time hunting mule deer:
   Hunt Area 78 79 80 81 83 161 elsewhere

2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (current estimate is 8,800 mule deer):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many mule deer in the herd unit
   ❑ There are too few mule deer in the herd unit
   ❑ Other _____

4. Do you think the herd unit management objective of 20,000 mule deer is:

   ❑ Too high
   ❑ Too low
   ❑ About right

5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

6. Would you support dividing Hunt Area 161 along the Big Ditch? This would result in the southern portion of Hunt Area 161 being combined into Hunt Area 79 and the northern portion of Hunt Area 161 being combined into Hunt Area 70, for future hunting seasons.
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

Elk Mountain and Big Creek Pronghorn Herd Unit

7. Please circle the hunt area where you spend the majority of your time hunting pronghorn:
   Hunt Areas 50 51 elsewhere

8. How satisfied are you with the current number of pronghorn in the **Elk Mountain herd unit** (current estimate is 3,800 pronghorn):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

SURVEY IS CONTINUED ON BACK

9. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

10. Do you think the herd unit management objective of 5,000 pronghorn in the **Elk Mountain herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

11. How satisfied are you with the current number of pronghorn in the **Big Creek herd unit** (current estimate is 800 pronghorn):

❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

12. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

13. Do you think the herd unit management objective of 600 pronghorn in the **Big Creek herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

Comments - If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your name and email address below.

_____

THANK YOU for your participation!

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
1. Please circle the hunt area where you spend the majority of your time hunting mule deer:			
78	4	4	**8**
79	4	4	**8**
80	4	4	**8**
81	2	3	**5**
83			**0**
161			**0**
Elsewhere	1	3	**4**
2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (8,800 mule deer):			
Very Satisfied			
Somewhat Satisfied		1	**1**
Somewhat Dissatisfied	3	4	**7**
Very Dissatisfied	4	7	**11**
3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many			**0**
Too Few	8	12	**20**
Other			**0**
4. Do you think the herd unit management objective of 20,000 mule deer is:			
Too High	0	3	**3**
Too Low	1	2	**3**
About Right	7	7	**14**
5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?			
Yes	2	4	**6**
No	2	2	**4**
Neither	4	6	**10**

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
6. Would you support dividing Hunt Area 161 along the Big Ditch?			
Yes	3	6	**9**
No	0		**0**
Neither	5	6	**11**
7. Please circle the hunt area where you spend the majority of your time hunting pronghorn:			
50	0		**0**
51	2	3	**5**
Elsewhere	1	4	**5**
8. How satisfied are you with the current number of pronghorn in the Elk Mountain herd unit (estimate is 3,800 pronghorn):			
Very Satisfied			**0**
Somewhat Satisfied	1	4	**5**
Somewhat Dissatisfied	1	1	**2**
Very Dissatisfied	0		**0**
9. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many	0		**0**
Too Few	2	2	**4**
Other		1	**1**
10. Do you think the herd unit management objective of 5,000 pronghorn in the Elk Mountain herd unit is:			
Too High	0		**0**
Too Low	0		**0**
About Right	2	3	**5**
11. How satisfied are you with the current number of pronghorn in the Big Creek herd unit (estimate is 800 pronghorn):			
Very Satisfied	0		**0**
Somewhat Satisfied	1	2	**3**
Somewhat Dissatisfied	1	2	**3**
Very Dissatisfied	0		**0**

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
12. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many	0		**0**
Too Few	1	2	**3**
Other			**0**
13. Do you think the herd unit management objective of 600 pronghorn in the Big Creek herd unit is:			
Too High			**0**
Too Low	1	2	**3**
About Right	1	2	**3**

Herd Unit Management Objective Proposal Meeting
Saratoga Town Hall – 6:00 PM, 22 May 2014

Platte Valley Mule Deer

Current population estimate = 8,800 mule deer
Propose to decrease the management objective from 20,000 to 16,000 mule deer for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Elk Mountain Pronghorn

C*urrent population estimate = 3,800 pronghorn*
Propose to maintain the management objective of 5,000 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Big Creek Pronghorn

Current population estimate = 800 pronghorn
Propose to increase the management objective from 600 to 800 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Comments: _____

_____

_____

_____

_____

_____

_____

_____

INPUT	
Species:	PRONGHORN
Biologist:	WILL SCHULTZ
Herd Unit & No.:	ELK MTN. PR528
Model date:	02/21/15

MODEL EVALUATION: FAIR

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	98	107	☑ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	98	107	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	48	143	☐ 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	1724	1601	4395	**7719**	1651	1091	3876	**6618**	1376	3889	**5265**	4650	1238		5000
1994	2635	1349	3811	**7795**	2570	910	3331	**6811**	1482	3664	**5146**				5000
1995	1355	1453	3590	**6398**	1299	1105	3309	**5713**	1312	3309	**4620**	2883	638		5000
1996	2016	1286	3242	**6544**	1998	970	3196	**6164**	1400	3441	**4841**				5000
1997	1868	1372	3373	**6613**	1861	969	3324	**6154**	1353	3520	**4873**				5000
1998	1664	1326	3450	**6440**	1659	920	3367	**5946**	1251	3498	**4749**				5000
1999	1993	1226	3428	**6647**	1976	886	3296	**6158**	1315	3515	**4830**				5000
2000	1816	1289	3445	**6550**	1801	926	3315	**6042**	1299	3484	**4783**	3734	847		5000
2001	2046	1273	3414	**6733**	2029	896	3329	**6254**	1335	3566	**4901**				5000
2002	2484	1308	3495	**7288**	2475	921	3412	**6808**	1484	3769	**5253**				5000
2003	2129	1454	3693	**7277**	2106	1050	3548	**6704**	1491	3777	**5267**				5000
2004	2555	1461	3701	**7718**	2548	987	3598	**7132**	1554	3955	**5510**	6777	1038		5000
2005	2977	1523	3876	**8376**	2970	1091	3761	**7822**	1773	4220	**5994**				5000
2006	2353	1738	4136	**8226**	2326	1244	3929	**7499**	1717	4175	**5892**				5000
2007	2709	1683	4092	**8483**	2664	1187	3692	**7543**	1757	4030	**5786**	8620	1438		5000
2008	1618	1722	3949	**7289**	1567	1276	3519	**6362**	1532	3558	**5090**				5000
2009	1698	1501	3487	**6686**	1631	994	3066	**5691**	1284	3164	**4448**				5000
2010	1354	1258	3101	**5713**	1301	760	2576	**4638**	984	2620	**3604**	8046	1285		5000
2011	1018	964	2568	**4551**	973	468	2001	**3443**	723	2157	**2881**				5000
2012	1424	709	2114	**4247**	1340	282	1674	**3296**	707	1880	**2587**	4553	1067		5000
2013	863	693	1842	**3398**	838	364	1418	**2620**	569	1832	**2401**				5000
2014	984	558	1795	**3337**	970	263	1722	**2955**	535	1880	**2415**				5000
2015	1010	524	1842	**3376**	1004	282	1824	**3110**							5000
2016															5000
2017															5000
2018															5000
2019															5000
2020															5000
2021															5000
2022															5000
2023															5000
2024															5000
2025															5000

Survival and Initial Population Estimates

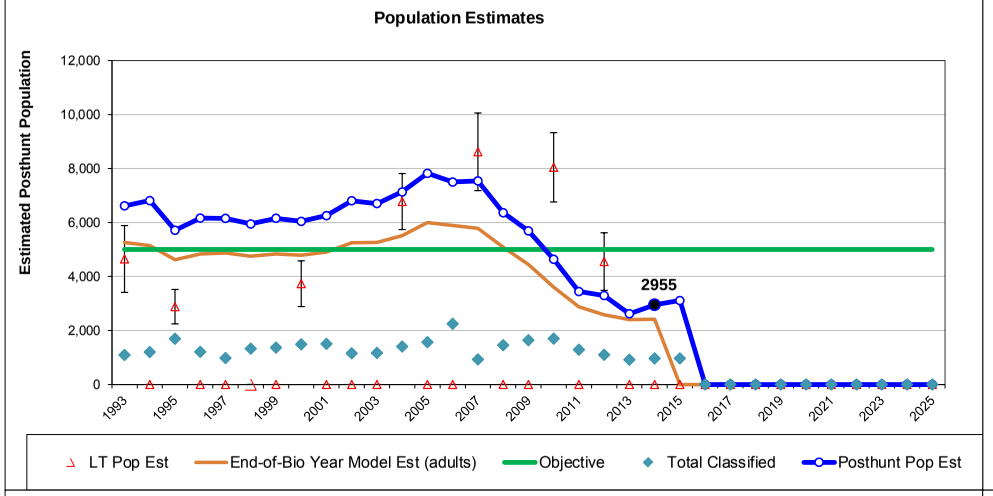
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.55			0.88		
1994	0.55			0.88		
1995	0.55			0.88		
1996	0.55			0.88		
1997	0.55			0.88		
1998	0.55			0.88		
1999	0.55			0.88		
2000	0.55			0.88		
2001	0.55			0.88		
2002	0.55			0.88		
2003	0.55			0.88		
2004	0.55			0.88		
2005	0.55			0.88		
2006	0.55			0.88		
2007	0.55			0.88		
2008	0.55			0.88		
2009	0.55			0.88		
2010	0.55			0.88	0.88	0.06
2011	0.55			0.88	0.82	0.07
2012	0.55			0.88		
2013	0.55			0.88		
2014	0.55			0.88		
2015	0.55			0.88		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

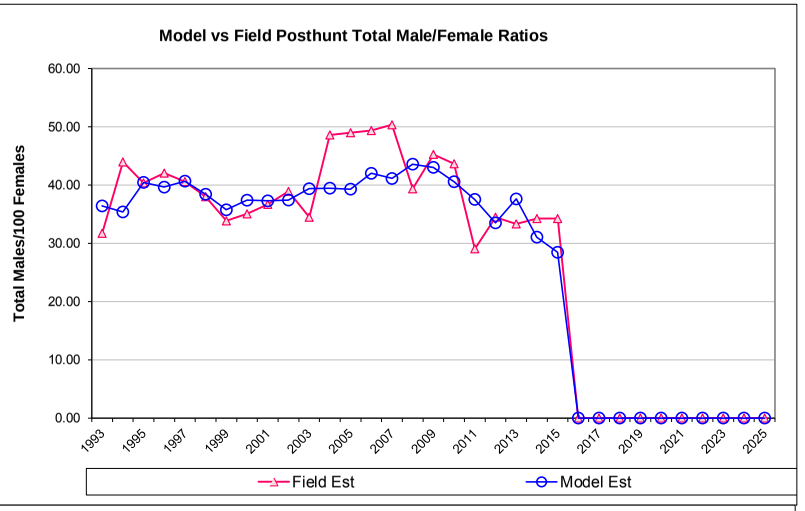
Parameters:	Optim cells
Juvenile Survival =	0.555
Adult Survival =	0.885
Initial Total Male Pop/10,000 =	0.160
Initial Female Pop/10,000 =	0.440

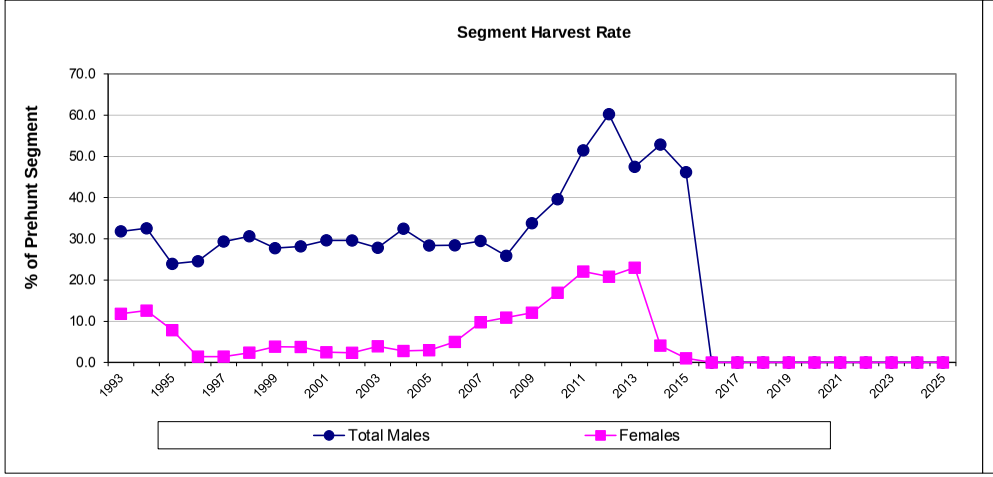
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

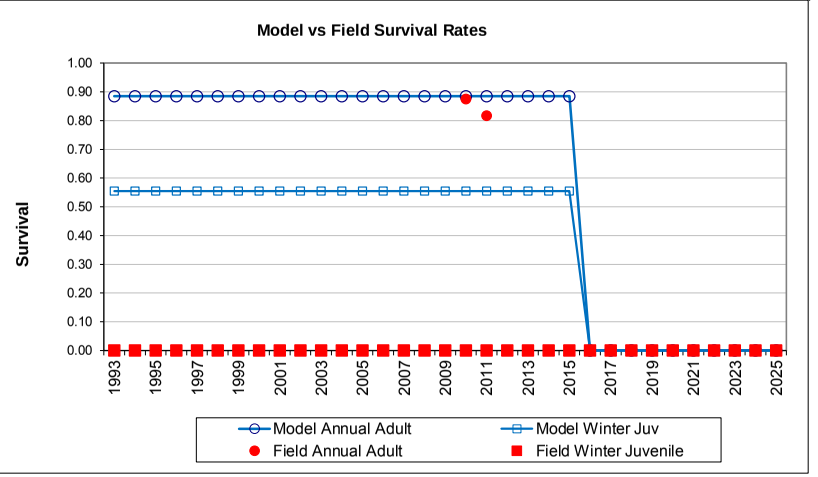
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		39.22	2.92	36.42	31.72	2.56	463	472	66	1001	31.8	11.8
1994		69.15	4.55	35.39	43.97	3.35	399	436	59	894	32.5	12.6
1995		37.75	2.34	40.46	40.38	2.44	316	256	51	623	23.9	7.8
1996		62.16	4.13	39.65	42.06	3.18	287	42	16	345	24.6	1.4
1997		55.40	4.15	40.68	40.60	3.38	366	44	7	417	29.3	1.4
1998		48.25	3.17	38.42	38.01	2.71	369	75	5	449	30.6	2.4
1999		58.15	3.59	35.75	33.85	2.52	309	120	16	445	27.7	3.9
2000		52.71	3.19	37.41	35.06	2.44	330	118	14	462	28.2	3.8
2001		59.92	3.54	37.29	36.68	2.56	343	77	15	435	29.6	2.5
2002		71.09	4.70	37.43	38.91	3.13	352	75	9	436	29.6	2.4
2003		57.64	3.86	39.38	34.48	2.76	368	132	21	521	27.8	3.9
2004		69.04	4.25	39.47	48.61	3.34	431	94	7	532	32.5	2.8
2005		76.80	4.42	39.30	48.99	3.24	393	105	6	504	28.4	3.0
2006		56.88	2.86	42.02	49.36	2.60	449	188	24	661	28.4	5.0
2007		66.20	5.06	41.13	50.35	4.20	451	363	41	855	29.5	9.8
2008		40.97	2.67	43.59	39.36	2.61	405	391	46	842	25.9	10.9
2009		48.70	2.93	43.04	45.27	2.79	461	383	61	905	33.8	12.1
2010		43.66	2.63	40.58	43.66	2.63	453	477	48	978	39.6	16.9
2011		39.66	2.69	37.54	29.06	2.22	451	515	41	1007	51.5	22.1
2012		67.34	4.55	33.52	34.50	2.92	388	400	76	864	60.2	20.8
2013		46.86	3.67	37.62	33.33	2.95	299	385	23	707	47.5	23.0
2014		54.79	4.07	31.06	34.25	3.00	268	67	12	347	52.9	4.1
2015		54.79	4.07	28.46	34.25	3.00	220	17	5	242	46.2	1.0
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES





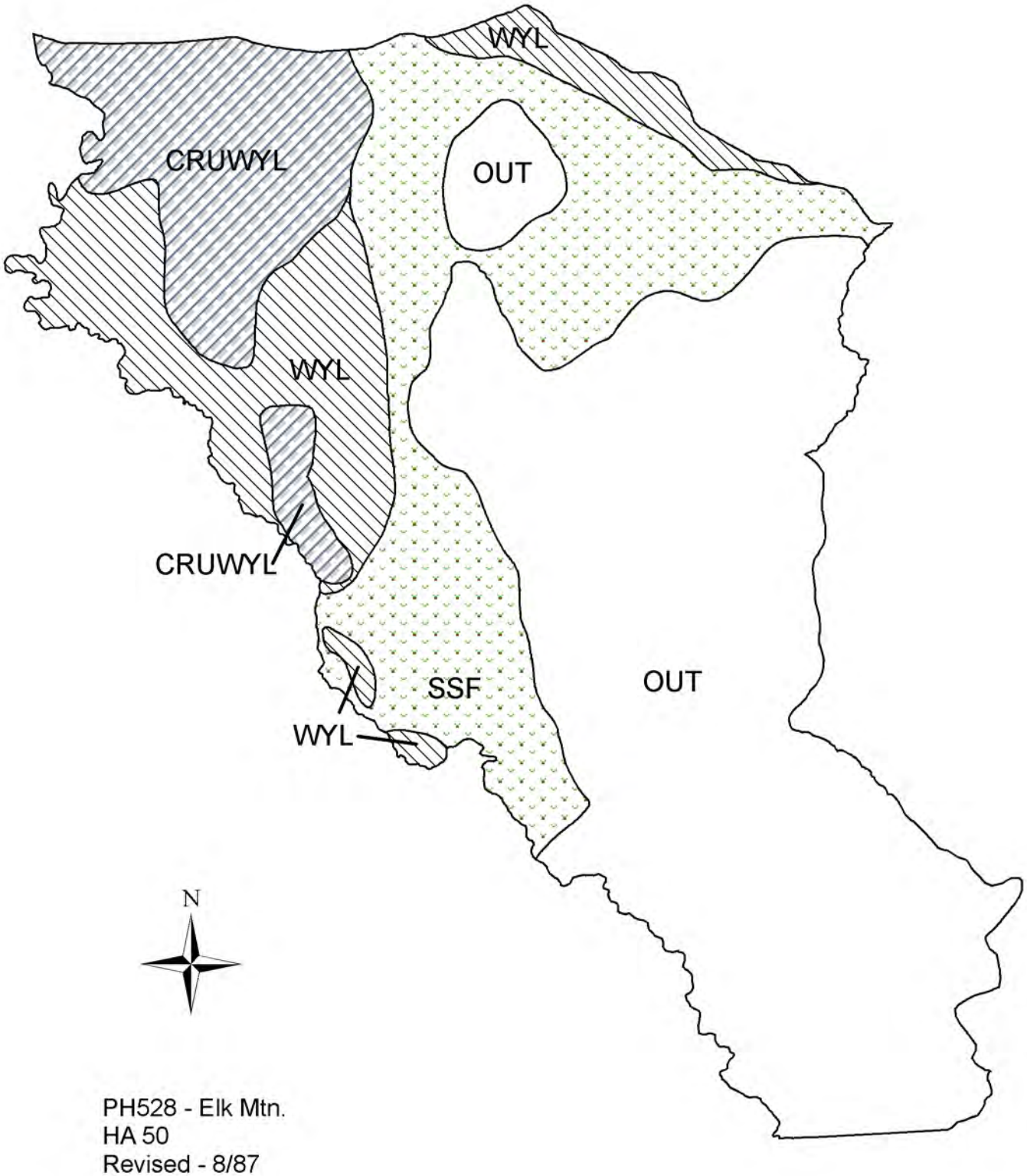




Comments:

The CJ,CA model was used to due the relative simplicity and low AIC_c score. Model postseason estimate is plausible.

END



PH528 - Elk Mtn.
HA 50
Revised - 8/87

2014 - JCR Evaluation Form

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

HERD: PR529 - BIG CREEK

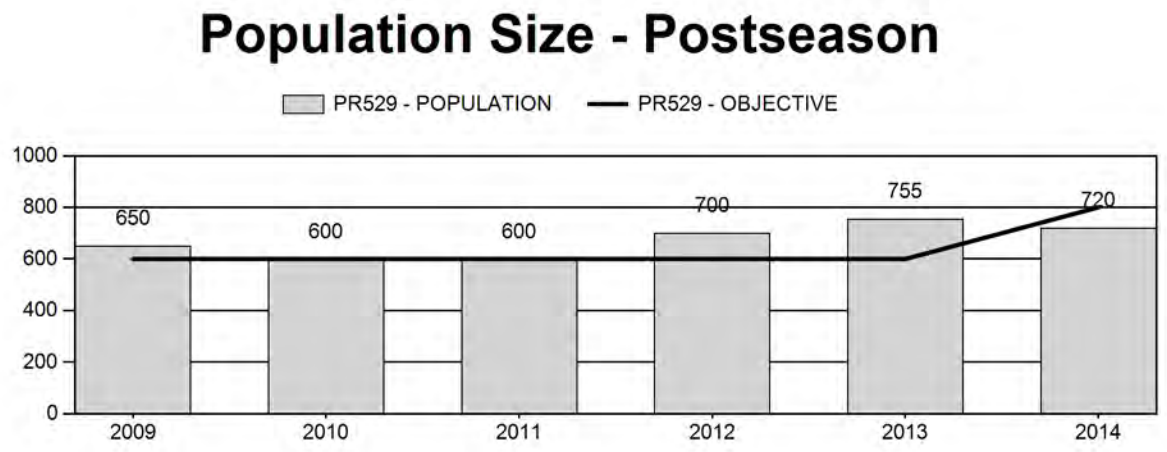
HUNT AREAS: 51
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	661	720	692
Harvest:	68	75	100
Hunters:	67	71	100
Hunter Success:	101%	106%	100%
Active Licenses:	79	85	85
Active License Success:	86%	88%	118%
Recreation Days:	259	271	271
Days Per Animal:	3.8	3.6	2.7
Males per 100 Females	42	48	
Juveniles per 100 Females	39	51	

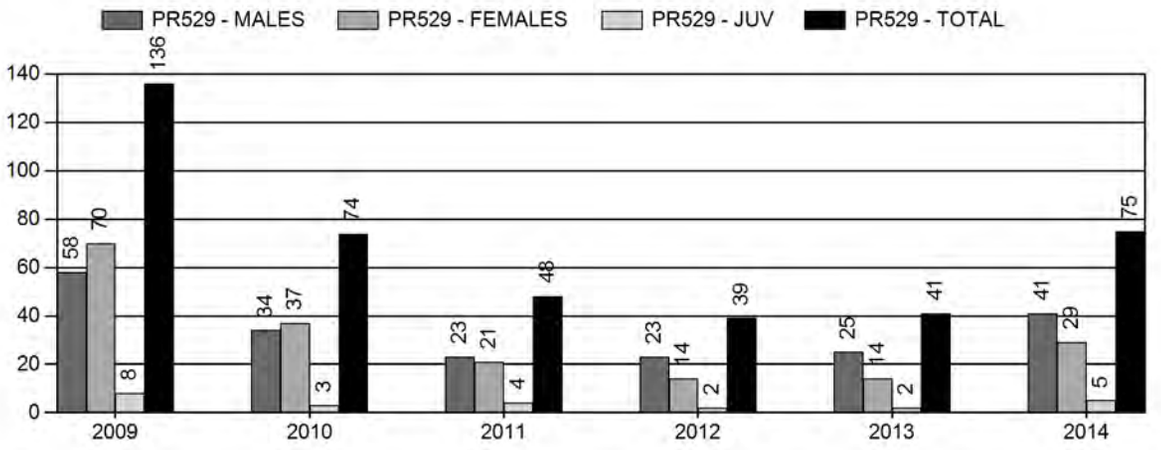
Population Objective (± 20%) :	800 (640 - 960)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/21/2015

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

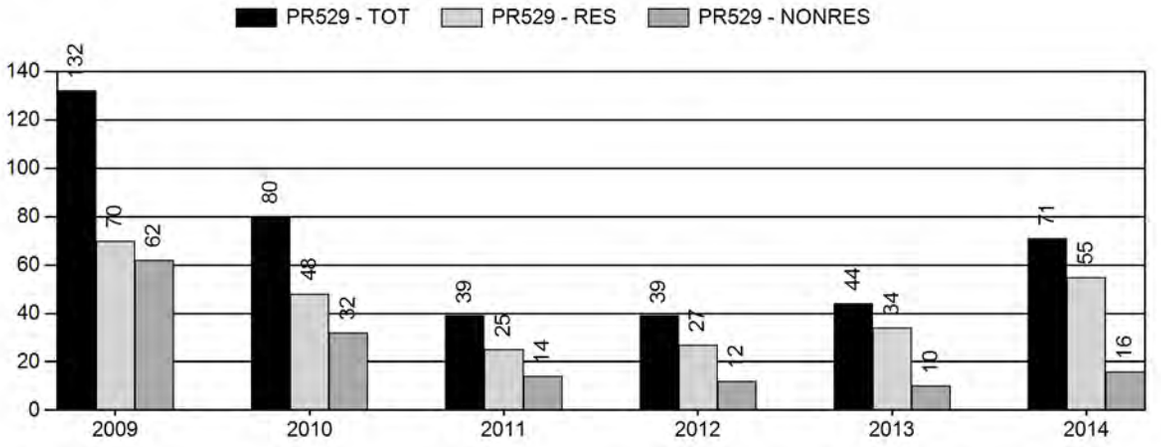
	JCR Year	Proposed
Females ≥ 1 year old:	8.8%	9%
Males ≥ 1 year old:	29.6%	25%
Juveniles (< 1 year old):	2.6%	0%
Total:	10.7%	12%
Proposed change in post-season population:	-11.8%	-4%



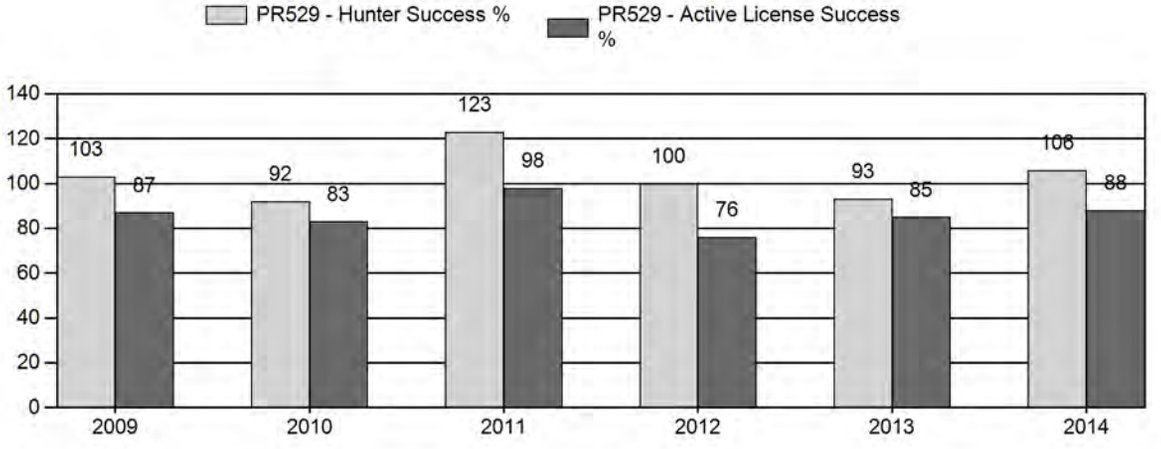
Harvest



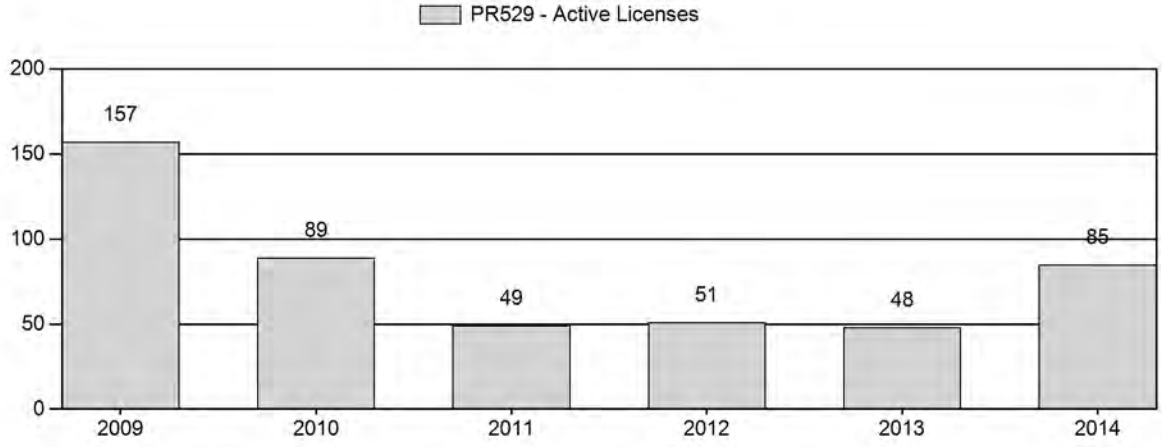
Number of Hunters



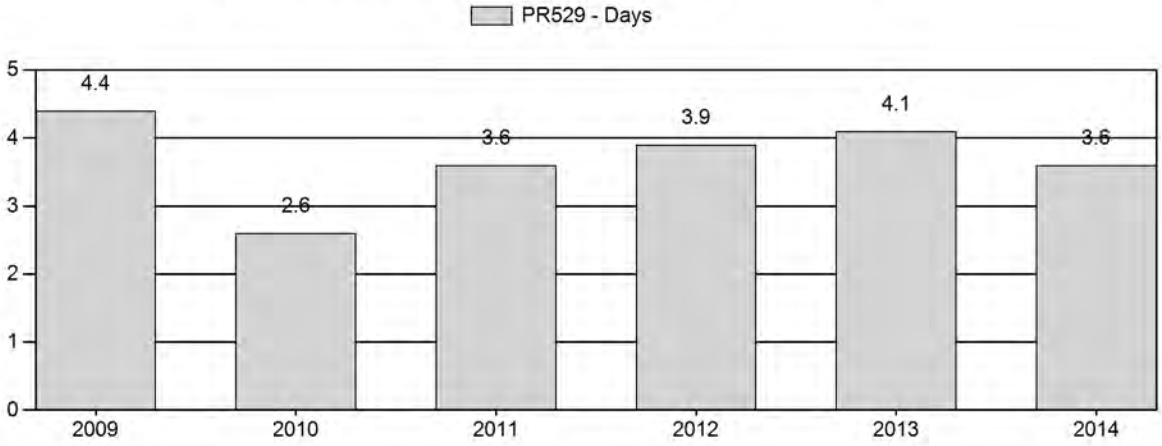
Harvest Success



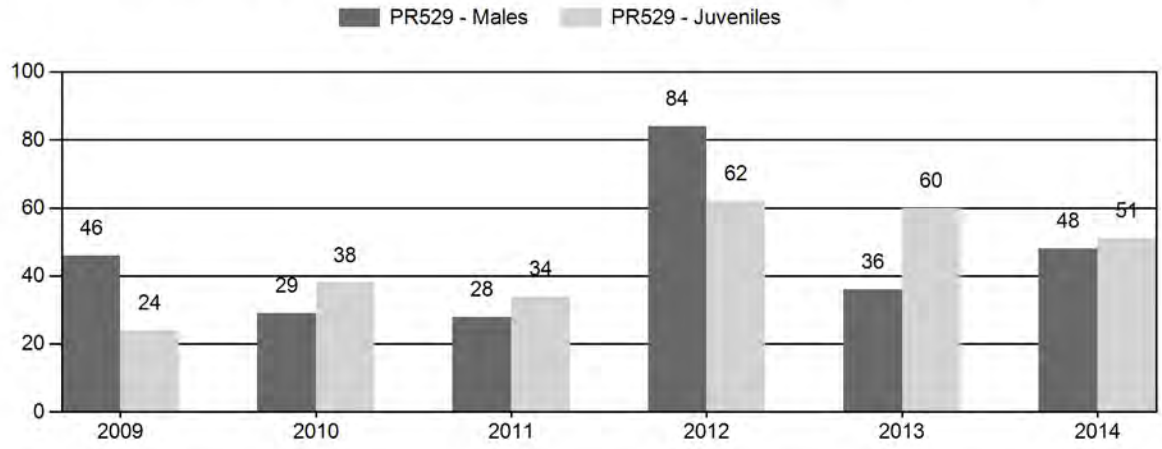
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2009 - 2014 Preseason Classification Summary

for Pronghorn Herd PR529 - BIG CREEK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	800	42	84	126	27%	272	59%	64	14%	462	476	15	31	46	± 5	24	± 3	16
2010	700	13	49	62	17%	214	60%	82	23%	358	361	6	23	29	± 5	38	± 6	30
2011	650	15	33	48	17%	170	62%	57	21%	275	446	9	19	28	± 6	34	± 6	26
2012	750	32	60	92	34%	110	41%	68	25%	270	441	29	55	84	± 16	62	± 13	34
2013	800	8	43	51	18%	141	51%	84	30%	276	503	6	30	36	± 8	60	± 11	44
2014	802	42	87	129	24%	271	50%	137	26%	537	501	15	32	48	± 5	51	± 5	34

BIG CREEK PRONGHORN (PR529)
Hunt Area 51
2015 Hunting Season

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
51	1	Sep. 16	Nov. 14	50	Limited quota	Any antelope
	6	Sep. 16	Nov. 14	50	Limited quota	Doe or fawn

Hunt Area	Type	Quota change from 2014
Herd Unit Total	**None**	**None**

Management Evaluation
Current Management Objective: 800 (640 – 960)
Management Strategy: Recreational
2014 Postseason Population Estimate: 720
2015 Proposed Postseason Population Estimate: 690
2014 Hunter Satisfaction: 86% Satisfied, 14% Neutral, 0% Dissatisfied

Pronghorn in the Big Creek herd unit are managed toward a numeric objective of 600. The population was estimated using a spreadsheet model developed in 2012 and updated in 2014. The herd is managed for recreational opportunity. The management objective was reviewed in 2014 and increased to a postseason population estimate of 800 pronghorn (Appendix A).

Herd Unit Issues
Pronghorn damage to alfalfa crops has diminished due to the low number of pronghorn observed in this herd unit. Access is difficult except for on those private lands receiving damage. Recent changes in land use have been observed in this herd unit. Several sections of abandoned wheat fields have been converted into cattle pastures which have been grazed intensively. Development in the Trail Run subdivision is also continuing.
In the past these areas provided pronghorn with seasonal habitat and the observed changes in land use appear to be displacing pronghorn into other areas.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of

precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on pronghorn. Mild fall temperatures and lack of persistent snows allowed for pronghorn to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Big Creek herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data

The 2014 preseason ratios were 48 bucks and 51 fawns per 100 does produced from an adequate sample of 537 pronghorn obtained through ground surveys. 2014 fawn ratios had decreased from 62 fawns/100 does in 2013, to 51 fawns/100 does in 2014. This reduction was not expected as pronghorn fawn ratios had increased in adjacent herd units where it was attributed to mild spring weather having been more conducive to fawn survival than in previous years.

Harvest Data
The harvest survey data for the 2014 hunting season indicated a total of 75 pronghorn, 41 bucks, 20 does, and 5 fawns were harvested with an overall harvest success rate of 106%. This high success rate was due to many of the successful hunters possessing both Type 1 and Type 6 licenses and is typical for this herd unit.

Population
In 2014, the CJ, CA spreadsheet model was selected again for the Big Creek herd unit because it produced the lowest AICc score and appeared. The population estimate from this model was also considered to be plausible and representative of field observations. The end of year density estimates developed from Line-Transect density surveys appeared to overestimate actual pronghorn abundance in this herd unit. Small sample sizes and interstate movements of pronghorn for this herd unit may produce bias in Line-Transect survey estimates for this herd unit.

We rated this model as poor, and not biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012). The poor rating was primarily due to inadequate sample sizes for preseason classification surveys and the likely violation of an assumption that this is a closed population.

Management Summary
A total of 50 Type 1 and 50 Type 6 licenses were maintained in 2015 for the Big Creek herd unit. This amount of harvest should continue to increase pronghorn numbers toward the management objective. Interstate movement of pronghorn complicates monitoring and subsequent management activities in this herd unit.

Literature Cited
Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies
None.

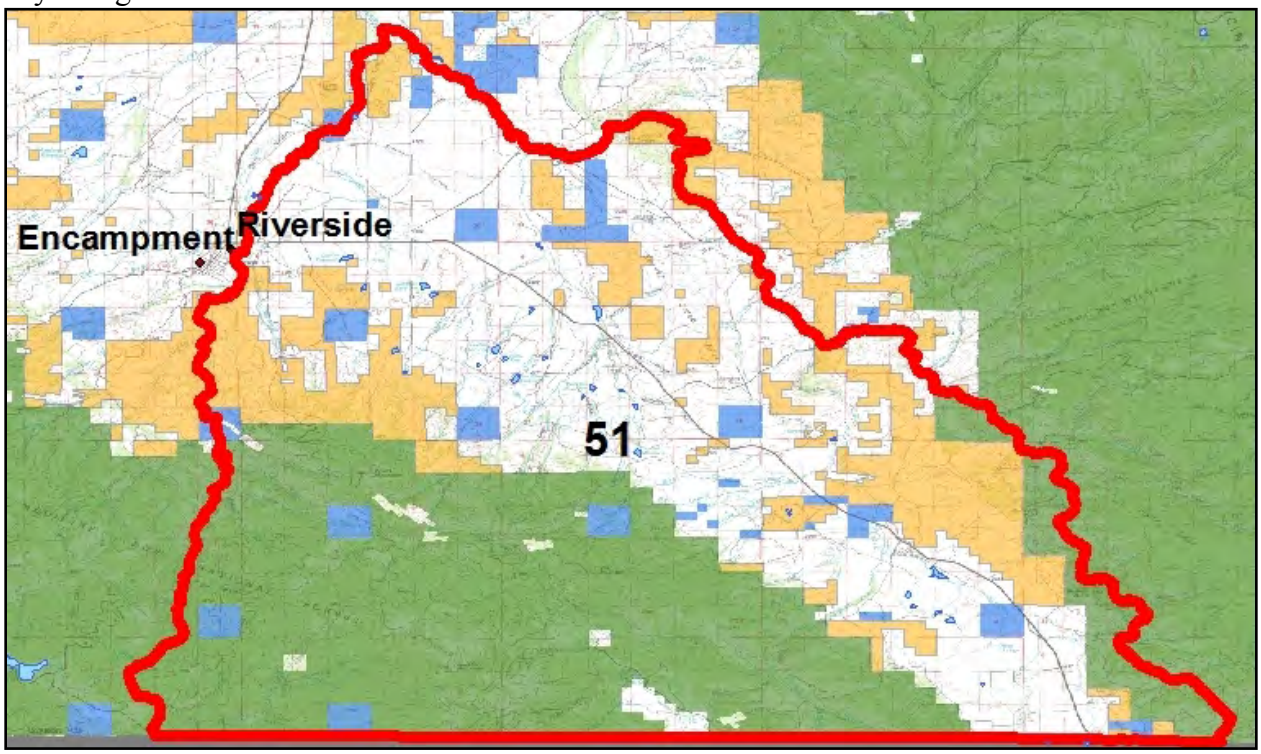
Appendix A

2014 BIG CREEK PRONGHORN HERD UNIT AND POPULATION OBJECTIVE REVIEW

Prepared by: Will Schultz, Saratoga Wildlife Biologist

The Big Creek pronghorn herd unit is located in south-central Wyoming (Figure 1). The boundaries for this herd unit consist of the Wyoming-Colorado border on the south, the Encampment River on the west, and the North Platte River on the north and east sides. The Big Creek pronghorn herd unit occurs entirely within Hunt Area 51, and contains 533.8 km^2 of occupied habitat. The occupied habitat consists primarily of sagebrush grassland and mountain shrub habitat types. Agricultural lands consist of irrigated alfalfa and former wheat fields which are reverting to rangeland. Cattle ranches occupy most of the rangeland in this herd unit. Rural residential development is occurring to the east of the town of Riverside, and in the Baggot Rocks and Skyline areas.

Figure 1. A map of the Big Creek pronghorn herd unit and hunt areas located in south central Wyoming.



Pronghorn in this herd unit tend to migrate north to the North Platte River and west to the Encampment River in fall, and return to the south and east in the spring. This herd is considered an interstate herd connected to the North Park pronghorn herd of Colorado. During severe winters, many of the North Park pronghorn migrate north into the Big Creek herd unit. During milder winters the North Park pronghorn tend to winter in Colorado. Pronghorn from this herd unit may cross the rivers and enter the Iron Springs and Elk Mountain pronghorn herd units, particularly during severe winters.

The interstate nature of this herd makes management difficult. Population estimates and sex and age ratios for this herd fluctuate frequently. Population model simulations have been unreliable. License allocation for the Big Creek herd has been conservative and harvest success has been very good. Damage to standing alfalfa crops has been a sporadic problem in this herd unit. Hunter access is good for private lands sustaining damage, otherwise access can be difficult.

POPULATION OBJECTIVE REVIEW

Wyoming Game and Fish Department (WGFD) uses postseason population objectives as a guide for pronghorn management at the herd unit level. The postseason population objective is the desired number of pronghorn remaining in the herd unit after the annual hunting season has been completed. Generally, if the population estimate is above the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will increase harvest and reduce the number of pronghorn toward the population objective. Conversely, if the population estimate is below the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will decrease harvest and increase the number of pronghorn toward the population objective.

An actual count of all pronghorn in a herd unit would be, for all practical purposes, impossible to complete. Therefore, WGFD develops herd unit population estimates using a computer-based population model. Data collected annually through hunter-harvest surveys and preseason pronghorn sex and age classification surveys are incorporated into the population models. The population estimate produced by the computer-based population model is used to determine where the herd unit's pronghorn population is in relation to the established population objective.

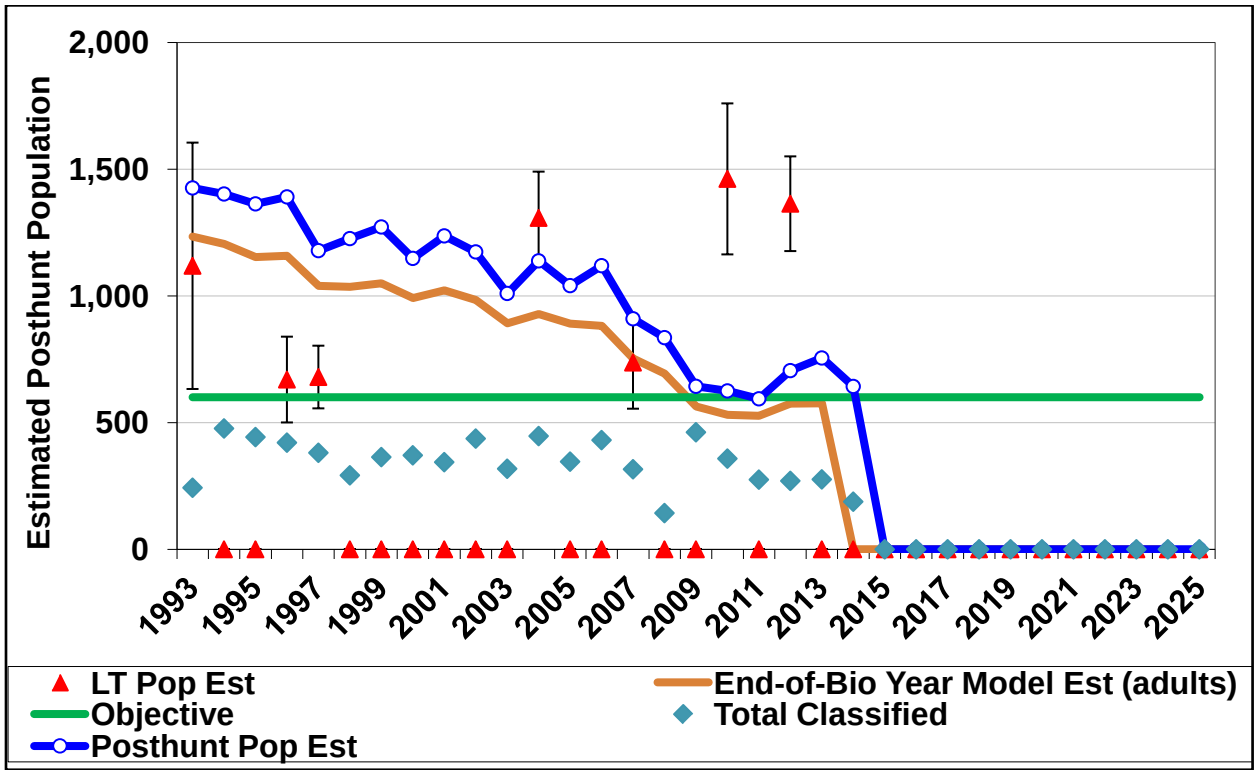
Annual population estimates for the Big Creek herd unit are currently produced using a computer-based, spreadsheet population model (Morrison 2012). Harvest survey data has been adequate for producing harvest estimates with an acceptable 80% confidence interval. However, due to changes in survey technique in recent years (i.e. changed from aerial to ground surveys), preseason pronghorn sex and age classification survey sample sizes have been less than adequate for producing estimates with acceptable 90% confidence intervals. Additionally, WGFD has conducted 7 pronghorn line transect surveys (Guenzel 2007) to estimate pronghorn density in this herd unit. Density estimates from these line transect surveys were incorporated into the spreadsheet model to improve the population estimate's accuracy.

Postseason pronghorn population objectives for the Big Creek herd unit have been adopted and subsequently changed following periodic reviews of both biological and social considerations. These considerations have included changes in: quantity and quality of habitat, sportsmen desires, and landowner desires/tolerance.

A postseason population objective of 100 pronghorn was first established for the Big Creek herd unit in the late 1970s. In 1986, the population objective was increased to 600 pronghorn. This was considered a more realistic objective since the number of pronghorn consistently observed during surveys was approximately 600. In 1996, the population objective was reviewed and maintained at 600 pronghorn.

The 2013 postseason population estimate was 760 pronghorn. Since 1993, annual population estimates have generally declined in trend (Figure 2). The interstate nature of pronghorn in this herd unit has made monitoring with certainty difficult. Most annual postseason population estimates have been greater than the current population objective of 600 pronghorn.

Figure 2. 1993-2013 Big Creek herd unit postseason pronghorn population estimates, Wyoming.



CURRENT MANAGEMENT STRATIGIES BY HUNT AREA

Pronghorn Hunt Area 51 is the only hunt area in the Big Creek herd unit and is managed under the recreational management strategy. This strategy directs WGFD to manage harvest opportunity to maintain 30-59 bucks/100 does in the herd unit preseason. Historically, this herd unit's harvest rates have been conservative and buck ratios were allowed to approach or exceed the upper limit of the recreational management strategy parameter. The interstate nature of these pronghorn and the limited access for hunting have made it challenging to offer more liberal buck harvest opportunity, with any certainty of maintaining a satisfactory hunting experience for the hunter.

RECOMMENDED HERD UNIT OBJECTIVE AND MANAGEMENT STRATIGIES BY HUNT AREA

WGFD recommends increasing the current postseason population objective from 600 pronghorn to 800 pronghorn for the Big Creek Herd Unit. The proposed management objective provides for a more realistic goal to manage pronghorn numbers towards in this herd unit. This increase is based on the differences in population estimation between the discontinued POP-II population model and the recently adopted spreadsheet model. Continuation of a recreational management strategy is also recommended for this herd unit. We believe this population level can be sustained by the herd unit's currently available pronghorn habitat.

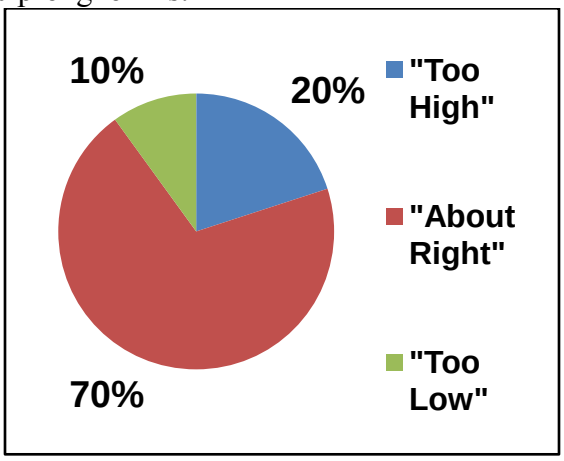
LANDOWNER, AGENCY, AND PUBLIC INVOLVEMENT

WGFD made a concerted effort to provide stakeholders with an opportunity to be involved in the review of the Big Creek pronghorn herd unit population objective, and to provide comment on the recommendations.

Landowner Involvement

In February of 2014, a letter describing objective review process and a survey were sent to all landowners (n=35) who owned at least 160 acres in the Big Creek herd unit (ATTACHMENT A). We received completed surveys from 10 landowners; for a return rate of 29% (ATTACHMENT B). Seventy percent (70%) of the responding landowners indicated they thought the current population objective was "About Right," (Figure 3). Ten percent (10%) of the responding landowners indicated the population objective was, "Too Low."

Figure 3. Big Creek herd unit landowner survey responses to the question, "Do you think the population objective of 600 pronghorn is:"



In May of 2014, WGFD sent a postcard to these same landowners describing the recommendation to increase the population objective from 600 pronghorn to 800 pronghorn (ATTACHMENT C). The postcard included an invitation to the landowners to attend upcoming objective recommendation meetings. The postcard also listed an email address where

landowners could send their comments electronically. No comments were received from the landowners.

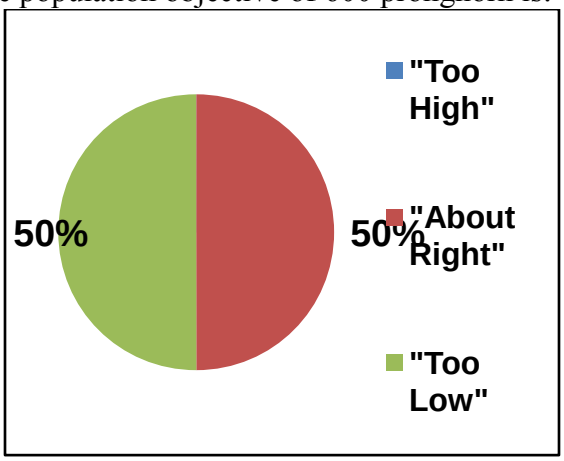
Agency Involvement

In May of 2014, WGFD met with representatives from the US Forest Service (Wendy Haas - Medicine Bow/Routt National Forest); Bureau of Land Management (Heath Cline - Rawlins Field Office); USDA/Natural Resource Conservation Service (Mark Shirley - Saratoga District); and the Saratoga, Encampment, Rawlins Conservation District (Jack Berger and Joe Parsons). WGFD presented a review of the Big Creek herd unit population objective and the recommendation. This discussion lasted approximately 2 hours. Agency personnel appeared to be supportive of the recommendation.

Public Involvement

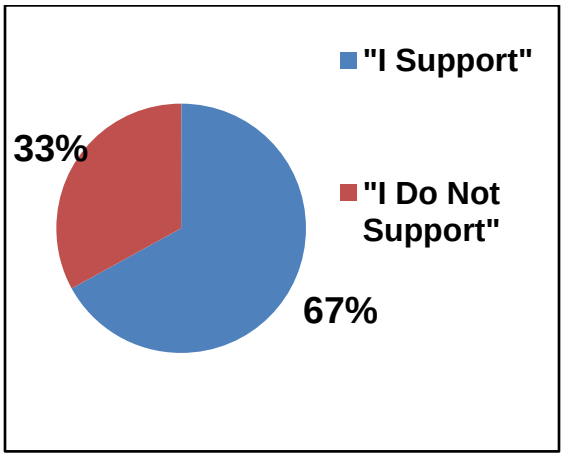
In March of 2014, population objective review meetings were held in conjunction with season-setting public information gathering meetings in Cheyenne, Laramie, and Saratoga. Meeting attendees were asked to fill out sportsperson surveys regarding their attitudes towards current pronghorn numbers and the current population objective (ATTACHMENT D). A total of 110 people attended these meetings and we received 21 completed surveys, for a return rate of 19% (ATTACHMENT E). Fifty percent (50%) of the survey respondents indicated they thought the current population objective was "About Right." Fifty percent (50%) of the survey respondents indicated the population objective was, "Too Low" (Figure 4).

Figure 4. Big Creek herd unit public objective review meeting attendee survey responses to the question, "Do you think the population objective of 600 pronghorn is:"



In May of 2014, population objective recommendation meetings were held in Cheyenne, Laramie, Saratoga, and Wheatland. Meeting attendees were asked to fill out surveys indicating whether or not they supported the proposed population objective recommendation. A total of 21 people attended these 4 meetings and we received 6 completed surveys; for a return rate of 29% (ATTACHMENT F). Sixty-seven percent (67%) of the survey respondents indicated they supported the recommendation to increase the population objective from 600 pronghorn to 800 pronghorn (Figure 5.).

Figure 5. Big Creek herd unit public objective recommendation meeting attendee survey responses to the statement, "Propose to increase the population objective from 600 to 800 pronghorn for the next 5-years."



LITERATURE CITED

Guenzel, R.J. 2007. Procedures for Estimating Pronghorn Abundance in Wyoming Using Aerial Line Transect Sampling. Wyoming Game and Fish Department, Cheyenne. WY. USA.

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

17 March 2014

Dear Landowner,

The Wyoming Game and Fish Department (WGFD) is seeking your assistance in the future management of big game wildlife in your area. During the spring of 2014, WGFD will review the herd unit management objectives for several big game herd units such as Platte Valley mule deer, Elk Mountain pronghorn, and Big Creek pronghorn. Enclosed in this letter you will find a short survey for each herd unit your property is located in, and postage-paid return envelope. Please complete the survey questions, provide additional comments if you desire, and mail the survey in the return envelope.

The herd unit management objective is the "benchmark" which WGFD manages big game wildlife towards. For most big game herd units in Wyoming, WGFD manages big game wildlife towards a numeric management objective, usually identified as a specific postseason population estimate.

Many of Wyoming's big game wildlife rely on habitat located on private lands. Therefore, landowner opinions on herd unit management objectives are important to WGFD. The comments we receive from your completed surveys will be used in part to formulate WGFD recommendations for the future herd unit management objectives. Changes in the herd unit management objective could result in increasing harvest opportunities to decrease big game numbers, or conversely, changes could result in reducing harvest opportunities in order to increase big game numbers.

We also would like to invite you to one of the upcoming public meetings to discuss herd unit management objectives. Locations and dates are listed below:

- Saratoga Town Hall, March 26, 7:30 p.m.
- Laramie Fire Hall #3, March 27, 7:30 p.m.

Thank you for taking the time to share your thoughts and opinions with us. We hope to see you at one of the upcoming meetings. If you have any questions please contact Will Schultz at 307-326-3020. We look forward to receiving your survey and working with you on the future management of Wyoming's Wildlife.

Sincerely,

Will Schultz
Saratoga Wildlife Biologist
WS/ws

Big Creek Pronghorn Herd Unit

Antelope Hunt Area: 51
Management Objective: 600 pronghorn
2013 Postseason Population Estimate: 800 pronghorn
Last Management Objective Review: 1997

1. How satisfied are you with the current number of pronghorn in the Big Creek herd unit (current estimate is 800 pronghorn):

   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

2. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many pronghorn in the herd unit
   ❑ There are too few pronghorn in the herd unit
   ❑ Other _____

3. Do you think the herd unit management objective of 600 pronghorn is:

   ❑ Too high
   ❑ Too low
   ❑ About right

Comments

If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your name and email address below.

_____

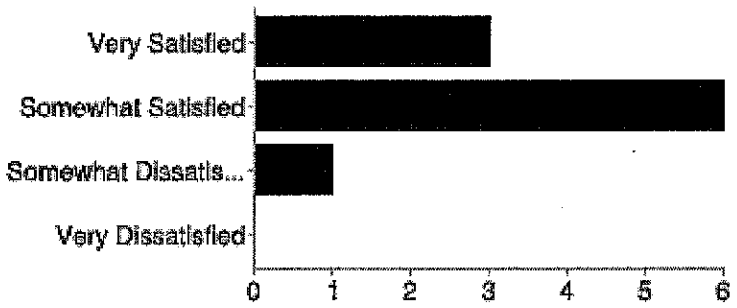
THANK YOU for your participation!

10 responses Big Creek PH

View all responses Publish analytics

Summary

How satisfied are you with the current number of pronghorn in the Big Creek herd unit

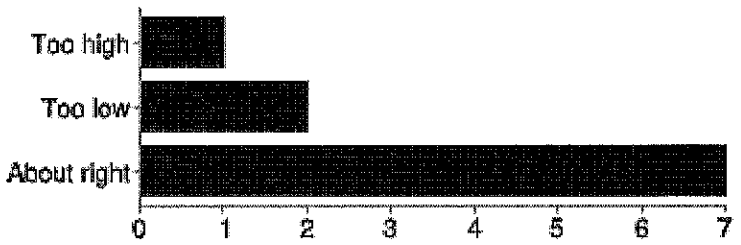


Very Satisfied	**3**	30%
Somewhat Satisfied	**6**	60%
Somewhat Dissatisfied	**1**	10%
Very Dissatisfied	**0**	0%

If you answered somewhat dissatisfied or very dissatisfied, please indicate why

There are too many pronghorn in the herd unit	**1**	50%
There are too few pronghorn in the herd unit	**1**	50%
Other	**0**	0%

Do you think the herd unit management objective of 600 pronghorn is

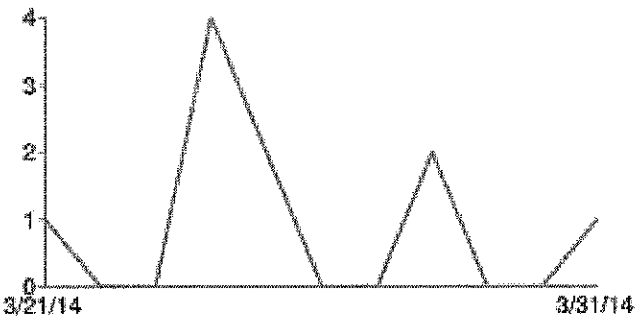


Too high	1	10%
Too low	2	20%
About right	7	70%

Comments

What are the migration patterns for this herd? Does this herd winter in the same area as mule deer and/or Elk? The latter two should be the priority. **I feel the pronghorn in this area are still trying to recover from the drought followed by several hard winters. If the estimate of 800 pronghorn post season 2013 is correct then the herd management objective is WAY TO LOW. On a daily basis I see very few pronghorn. Especially compared to 8-10 years ago. The pronghorn in area 51 are struggling!** **Since this herd spends a great deal of time in CO and weather determining if or when they migrate, I don't believe we have anywhere near 800 antelope during hunting season. We need to increase resident herd and not worry about CO. antelope. One late season harvests some of CO antelope.** **Again why aren't management objective reviews done more often? Looks like proper big game management is being ignored.**

Number of daily responses



Meeting Dates

Cheyenne, May 6th, 6:00 p.m., WGFD Office Building, Elk Room

Laramie, May 8th, 6:00 p.m., Fire Hall #3

Saratoga, May 22th, 6:00 p.m., Town Hall

Herds Covered

Big Creek Pronghorn
(Hunt Area 51)

Elk Mountain Pronghorn
(Hunt Area 50)

Platte Valley Mule Deer
(Hunt Areas 78,79,80,81,83,161)

WGFD Public Meeting

Wyoming Game and Fish Department wants to invite you to attend one of the upcoming meetings to discuss herd unit management objective proposals. Earlier this year, we held meetings in these communities asking for your input. Now, we would like to present to you the proposals we developed with the help of your earlier input:

- Recommend increasing the management objective to 800 pronghorn from 600 pronghorn for the Big Creek Pronghorn Herd Unit.
- Recommend maintaining the current management objective of 5,000 pronghorn for the Elk Mountain Pronghorn Herd Unit.
- Recommend decreasing the management objective to 16,000 mule deer from 20,000 mule deer for the Plate Valley Mule Deer Herd Unit.

Your input at these upcoming meetings is important to us! Recommendations, and your input from these meetings, will be presented to the Wyoming Game and Fish Commission in July

For more information please contact:
Saratoga Wildlife Biologist, Will Schultz, 307-326-3020
or
Contact us via email at wgflaramiecomments@wyo.gov

Sportsperson Survey

Platte Valley Mule Deer Herd Unit

1. Please circle the hunt area where you spend the majority of your time hunting mule deer:
   Hunt Area 78 79 80 81 83 161 elsewhere

2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (current estimate is 8,800 mule deer):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many mule deer in the herd unit
   ❑ There are too few mule deer in the herd unit
   ❑ Other _____

4. Do you think the herd unit management objective of 20,000 mule deer is:

   ❑ Too high
   ❑ Too low
   ❑ About right

5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

6. Would you support dividing Hunt Area 161 along the Big Ditch? This would result in the southern portion of Hunt Area 161 being combined into Hunt Area 79 and the northern portion of Hunt Area 161 being combined into Hunt Area 70, for future hunting seasons.
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

Elk Mountain and Big Creek Pronghorn Herd Unit

7. Please circle the hunt area where you spend the majority of your time hunting pronghorn:
   Hunt Areas 50 51 elsewhere

8. How satisfied are you with the current number of pronghorn in the **Elk Mountain herd unit** (current estimate is 3,800 pronghorn):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

SURVEY IS CONTINUED ON BACK

9. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

10. Do you think the herd unit management objective of 5,000 pronghorn in the **Elk Mountain herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

11. How satisfied are you with the current number of pronghorn in the **Big Creek herd unit** (current estimate is 800 pronghorn):

❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

12. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

13. Do you think the herd unit management objective of 600 pronghorn in the **Big Creek herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

Comments - If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your name and email address below.

_____

THANK YOU for your participation!

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
1. Please circle the hunt area where you spend the majority of your time hunting mule deer:			
78	4	4	**8**
79	4	4	**8**
80	4	4	**8**
81	2	3	**5**
83			**0**
161			**0**
Elsewhere	1	3	**4**
2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (8,800 mule deer):			
Very Satisfied			
Somewhat Satisfied		1	**1**
Somewhat Dissatisfied	3	4	**7**
Very Dissatisfied	4	7	**11**
3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many			**0**
Too Few	8	12	**20**
Other			**0**
4. Do you think the herd unit management objective of 20,000 mule deer is:			
Too High	0	3	**3**
Too Low	1	2	**3**
About Right	7	7	**14**
5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?			
Yes	2	4	**6**
No	2	2	**4**
Neither	4	6	**10**

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
6. Would you support dividing Hunt Area 161 along the Big Ditch?			
Yes	3	6	**9**
No	0		**0**
Neither	5	6	**11**
7. Please circle the hunt area where you spend the majority of your time hunting pronghorn:			
50	0		**0**
51	2	3	**5**
Elsewhere	1	4	**5**
8. How satisfied are you with the current number of pronghorn in the Elk Mountain herd unit (estimate is 3,800 pronghorn):			
Very Satisfied			**0**
Somewhat Satisfied	1	4	**5**
Somewhat Dissatisfied	1	1	**2**
Very Dissatisfied	0		**0**
9. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many	0		**0**
Too Few	2	2	**4**
Other		1	**1**
10. Do you think the herd unit management objective of 5,000 pronghorn in the Elk Mountain herd unit is:			
Too High	0		**0**
Too Low	0		**0**
About Right	2	3	**5**
11. How satisfied are you with the current number of pronghorn in the Big Creek herd unit (estimate is 800 pronghorn):			
Very Satisfied	0		**0**
Somewhat Satisfied	1	2	**3**
Somewhat Dissatisfied	1	2	**3**
Very Dissatisfied	0		**0**

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs

12. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

Too Many	0		**0**
Too Few	1	2	**3**
Other			**0**

13. Do you think the herd unit management objective of 600 pronghorn in the Big Creek herd unit is:

Too High			**0**
Too Low	1	2	**3**
About Right	1	2	**3**

Herd Unit Management Objective Proposal Meeting
Saratoga Town Hall – 6:00 PM, 22 May 2014

Platte Valley Mule Deer

Current population estimate = 8,800 mule deer
Propose to decrease the management objective from 20,000 to 16,000 mule deer for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Elk Mountain Pronghorn

C*urrent population estimate = 3,800 pronghorn*
Propose to maintain the management objective of 5,000 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Big Creek Pronghorn

Current population estimate = 800 pronghorn
Propose to increase the management objective from 600 to 800 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Comments: _____

_____

_____

_____

_____

_____

_____

_____

INPUT	
Species:	PRONGHORN
Biologist:	WILL SCHULTZ
Herd Unit & No.:	BIG CR. PR529
Model date:	02/21/15

MODEL EVALUATION: FAIR

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	177	186	☑ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	177	186	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	147	238	☐ 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	310	255	954	**1518**	300	217	902	1419	283	946	**1229**	1119	486		600
1994	319	277	927	**1523**	307	226	864	1396	291	910	**1201**				600
1995	345	285	891	**1522**	336	242	780	1358	316	834	**1150**				600
1996	394	310	817	**1521**	382	266	739	1387	350	807	**1156**	670	169		600
1997	206	343	791	**1339**	185	288	704	1176	318	720	**1037**	680	124		600
1998	318	311	705	**1334**	313	260	651	1224	328	707	**1035**				600
1999	383	321	693	**1397**	383	267	621	1271	354	696	**1050**				600
2000	248	347	682	**1277**	245	283	620	1148	333	660	**992**				600
2001	372	326	646	**1345**	367	278	594	1238	359	665	**1024**				600
2002	318	352	651	**1322**	316	283	578	1176	350	636	**987**				600
2003	174	343	624	**1141**	164	278	571	1013	306	590	**896**				600
2004	368	300	578	**1246**	368	224	552	1143	307	627	**934**	1308	183		600
2005	245	301	615	**1160**	237	231	578	1047	279	617	**897**				600
2006	423	274	605	**1302**	413	175	540	1128	267	623	**890**				600
2007	256	262	611	**1129**	247	177	495	920	228	535	**763**	737	182		600
2008	238	224	524	**985**	231	161	455	847	210	495	**705**				600
2009	114	206	485	**805**	105	142	408	655	159	416	**575**				600
2010	156	156	408	**720**	153	118	367	638	151	392	**543**	1462	298		600
2011	129	148	384	**661**	124	123	361	608	151	389	**540**				600
2012	236	148	382	**765**	234	122	366	722	175	414	**589**	1364	187		600
2013	242	172	406	**819**	240	144	391	774	182	423	**605**				600
2014	209	178	414	**802**	204	133	382	**720**	176	416	**592**				800
2015	206	172	407	**786**	200	123	369	**692**							800
2016															800
2017															800
2018															800
2019															800
2020															800
2021															800
2022															800
2023															800
2024															800
2025															800

Survival and Initial Population Estimates

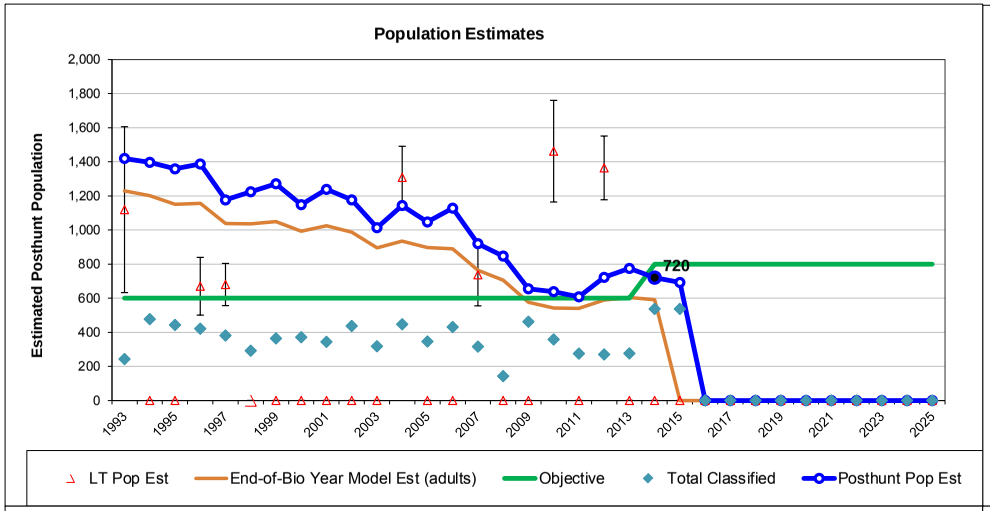
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.50			0.95		
1994	0.50			0.95		
1995	0.50			0.95		
1996	0.50			0.95		
1997	0.50			0.95		
1998	0.50			0.95		
1999	0.50			0.95		
2000	0.50			0.95		
2001	0.50			0.95		
2002	0.50			0.95		
2003	0.50			0.95		
2004	0.50			0.95		
2005	0.50			0.95		
2006	0.50			0.95		
2007	0.50			0.95		
2008	0.50			0.95		
2009	0.50			0.95		
2010	0.50			0.95		
2011	0.50			0.95		
2012	0.50			0.95		
2013	0.50			0.95		
2014	0.50			0.95		
2015	0.50			0.95		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

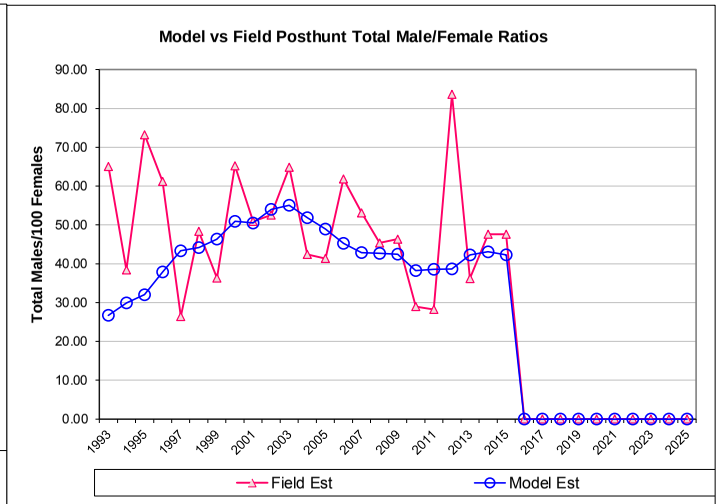
Parameters:	Optim cells
Juvenile Survival =	0.500
Adult Survival =	0.950
Initial Total Male Pop/10,000 =	0.025
Initial Female Pop/10,000 =	0.095

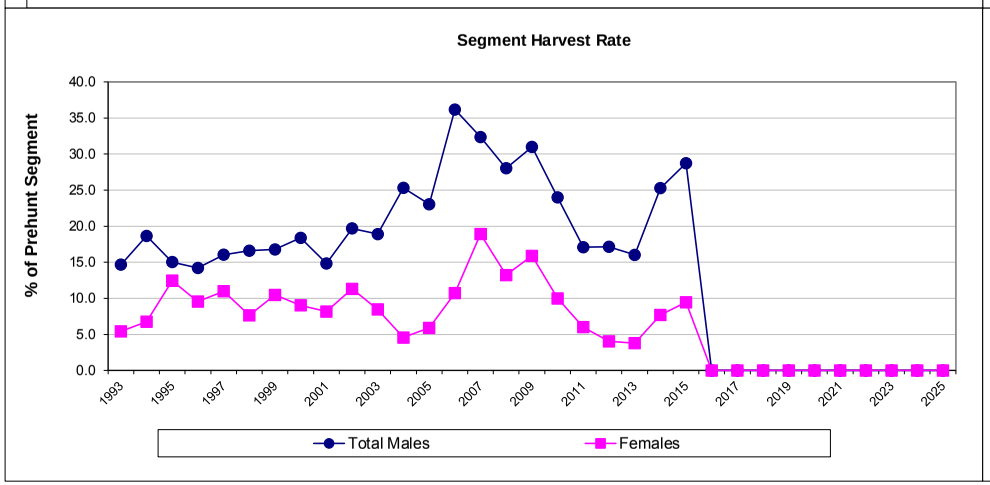
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

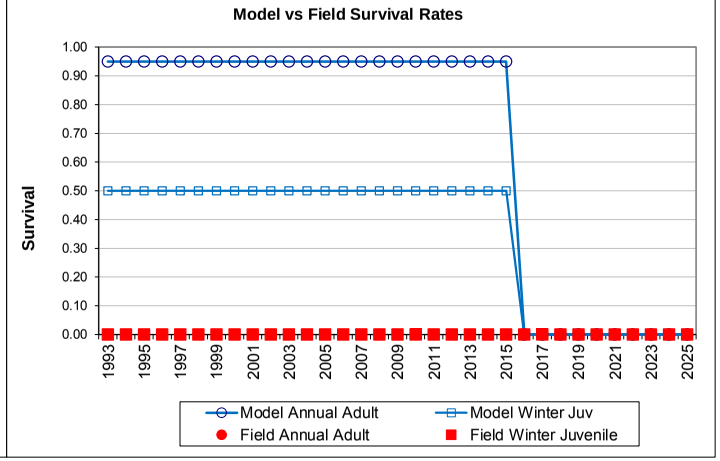
	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1993		32.52	5.92	26.72	65.04	9.34	34	47	9	90	14.7	5.4
1994		34.42	4.09	29.91	38.41	4.39	47	57	11	115	18.7	6.8
1995		38.76	5.07	32.01	73.21	7.79	39	101	9	149	15.0	12.5
1996		48.26	5.97	37.88	61.19	7.01	40	71	11	122	14.2	9.6
1997		26.00	3.62	43.33	26.40	3.65	50	79	19	148	16.1	11.0
1998		45.03	6.58	44.16	48.34	6.89	47	49	4	100	16.6	7.6
1999		55.26	6.72	46.35	36.32	5.10	49	66	0	115	16.8	10.5
2000		36.41	5.20	50.91	65.22	7.65	58	56	3	117	18.4	9.0
2001		57.58	7.42	50.48	50.91	6.82	44	48	5	97	14.8	8.2
2002		48.85	5.79	54.00	52.53	6.08	63	67	2	132	19.7	11.3
2003		27.88	4.65	55.06	64.85	8.05	59	48	9	116	18.9	8.5
2004		63.59	6.92	51.85	42.40	5.27	69	24	0	93	25.3	4.6
2005		39.79	5.40	48.93	41.36	5.53	63	33	7	103	23.0	5.9
2006		69.89	7.99	45.25	61.83	7.33	90	59	9	158	36.2	10.7
2007		41.98	6.07	42.88	53.09	7.08	77	105	8	190	32.4	18.9
2008		45.33	9.37	42.67	45.33	9.37	57	63	6	126	28.0	13.2
2009		23.53	3.27	42.46	46.32	4.99	58	70	8	136	31.0	15.9
2010		38.32	4.98	38.24	28.97	4.18	34	37	3	74	24.0	10.0
2011		33.53	5.13	38.56	28.24	4.62	23	21	4	48	17.1	6.0
2012		61.82	9.54	38.67	83.64	11.82	23	14	2	39	17.1	4.0
2013		59.57	8.21	42.27	36.17	5.91	25	14	2	41	16.0	3.8
2014		50.55	5.30	43.06	47.60	5.09	41	29	5	75	25.3	7.7
2015		50.55	5.30	42.30	47.60	5.09	45	35	5	85	28.7	9.5
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES





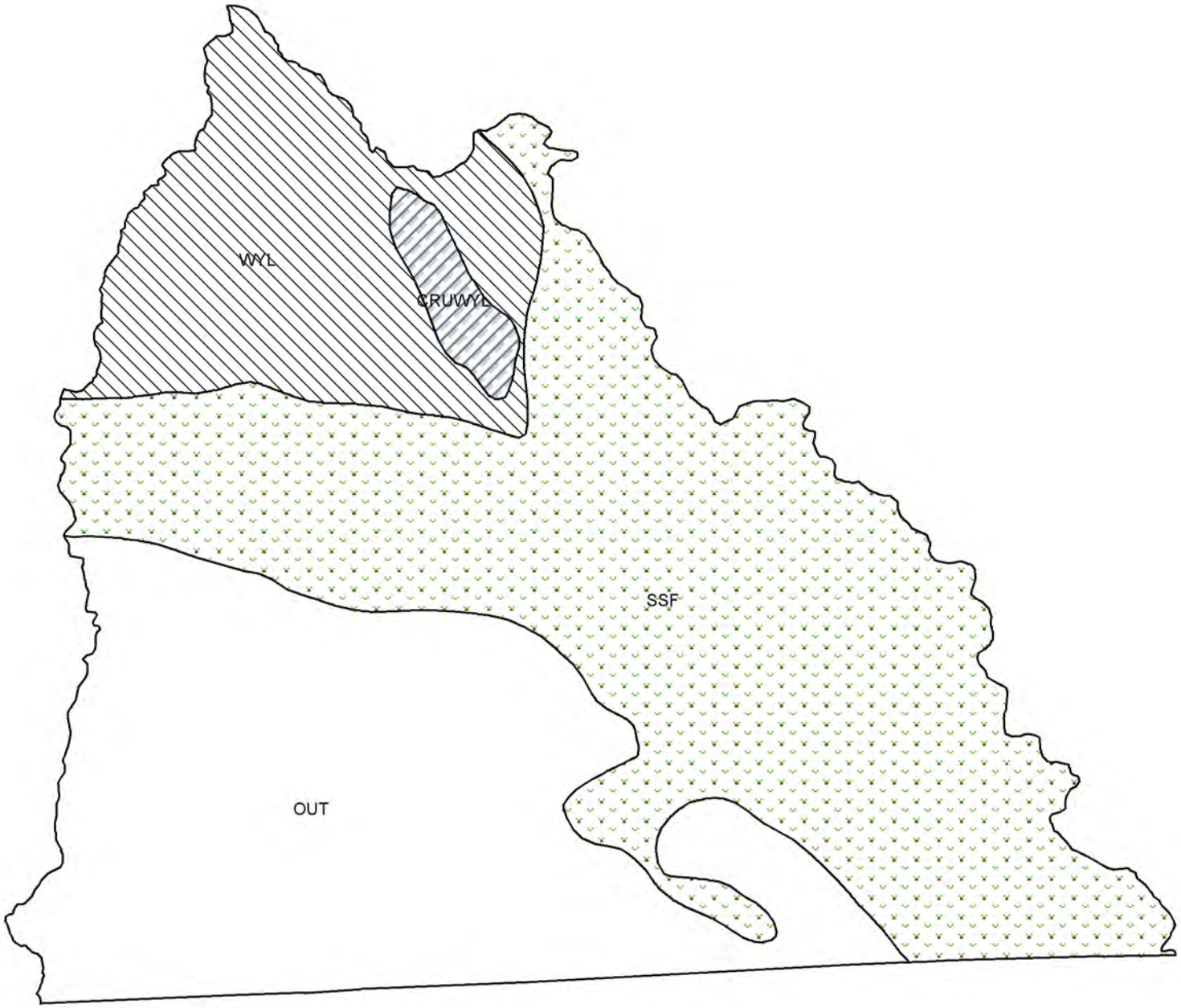




Comments:

The CJ,CA model was used to due the relative simplicity and low AIC_C score. Model postseason estimate is plausible.

END



PH529 - Big Creek
HA 51
Revised - 7/87

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS516 - DOUGLAS CREEK

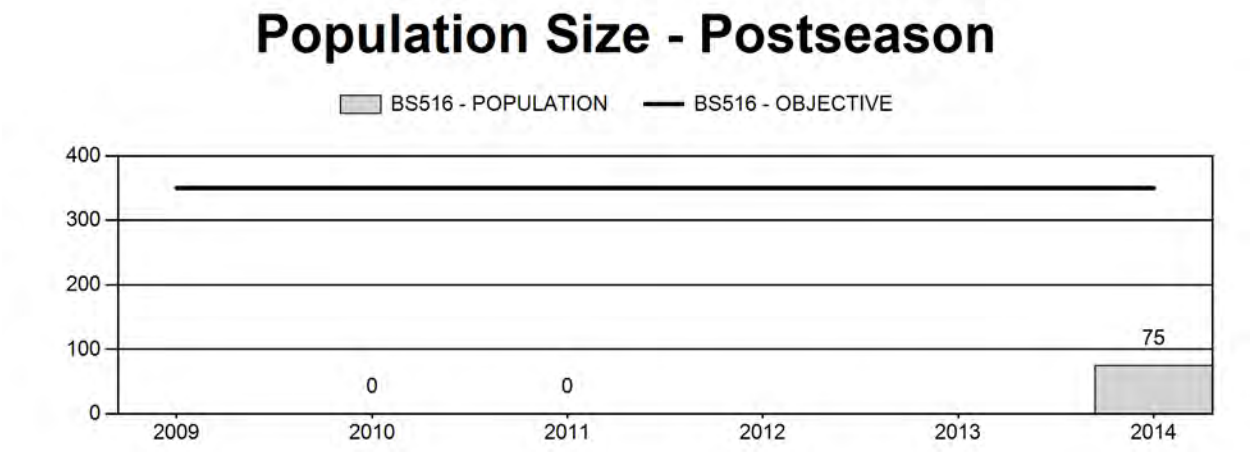
HUNT AREAS: 18
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	0	75	75
Harvest:	0	2	0
Hunters:	0	2	0
Hunter Success:	0%	100%	0 %
Active Licenses:	0	2	0
Active License Success:	0%	100%	0 %
Recreation Days:	1	7	0
Days Per Animal:	0	3.5	0
Males per 100 Females	37	0	
Juveniles per 100 Females	46	0	

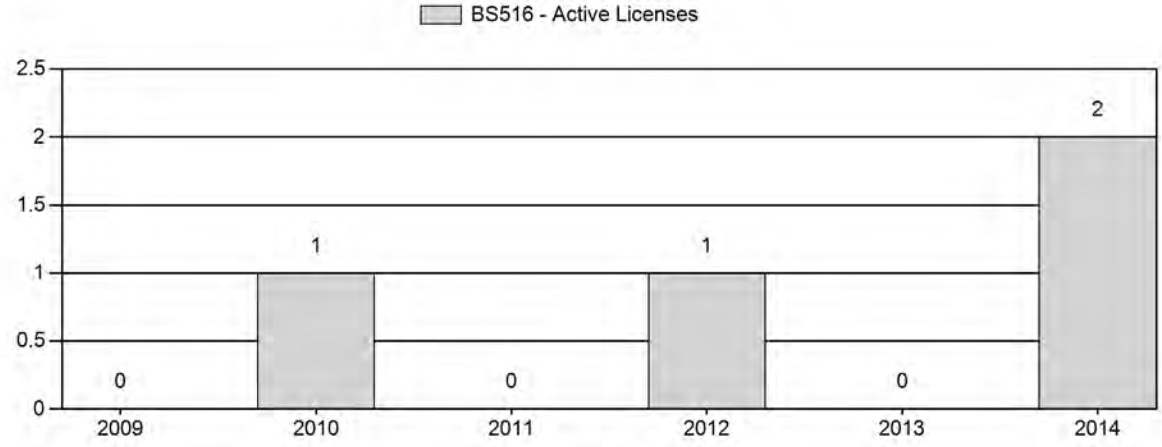
Population Objective (± 20%) :	350 (280 - 420)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-78.6%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/26/2015

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

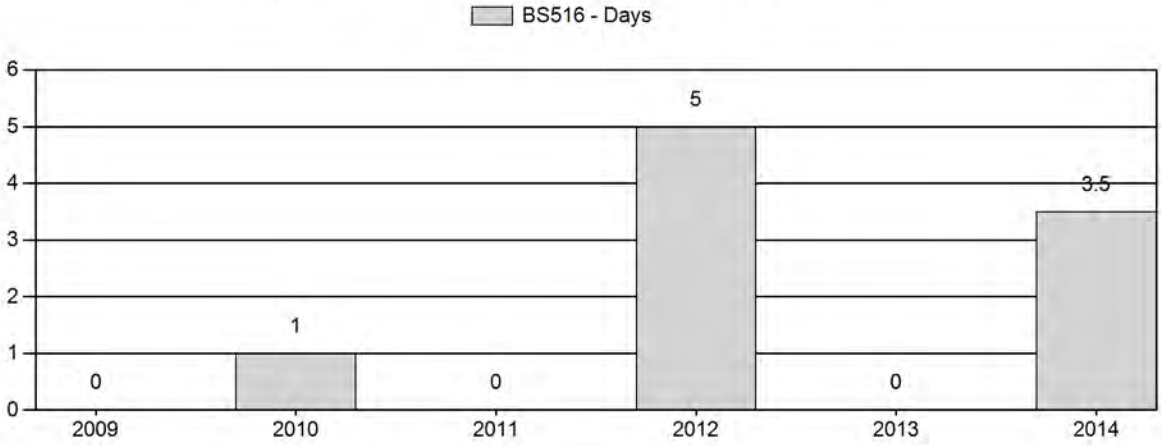
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



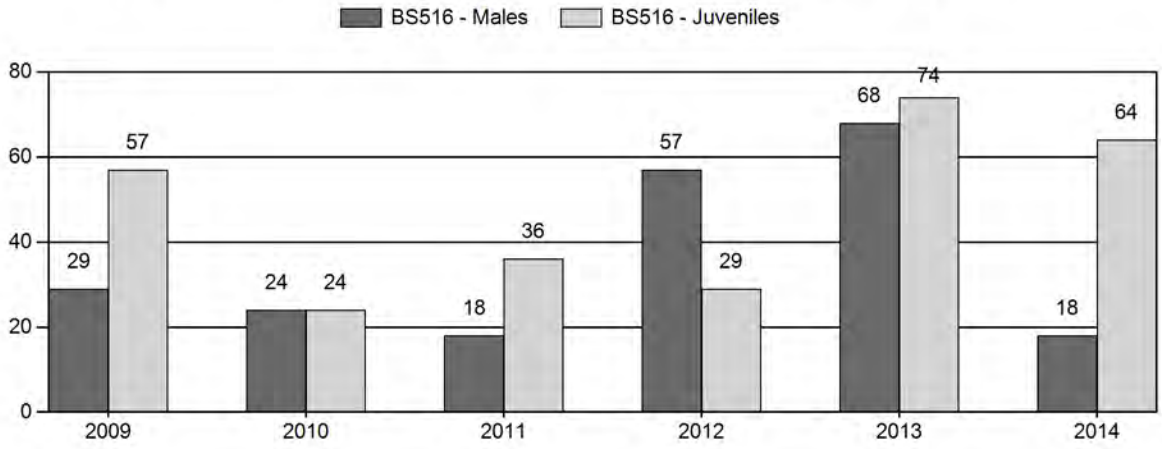
Active Licenses



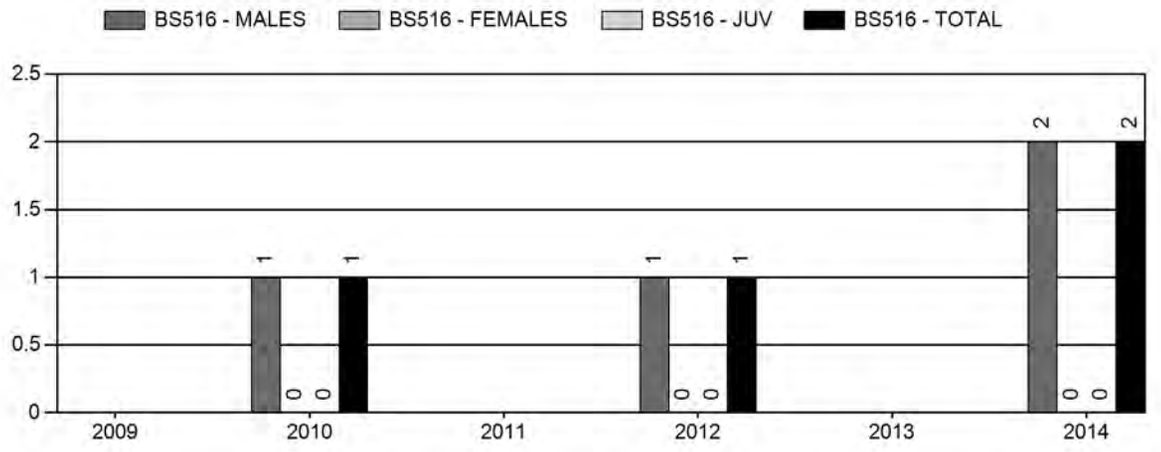
Days per Animal Harvested



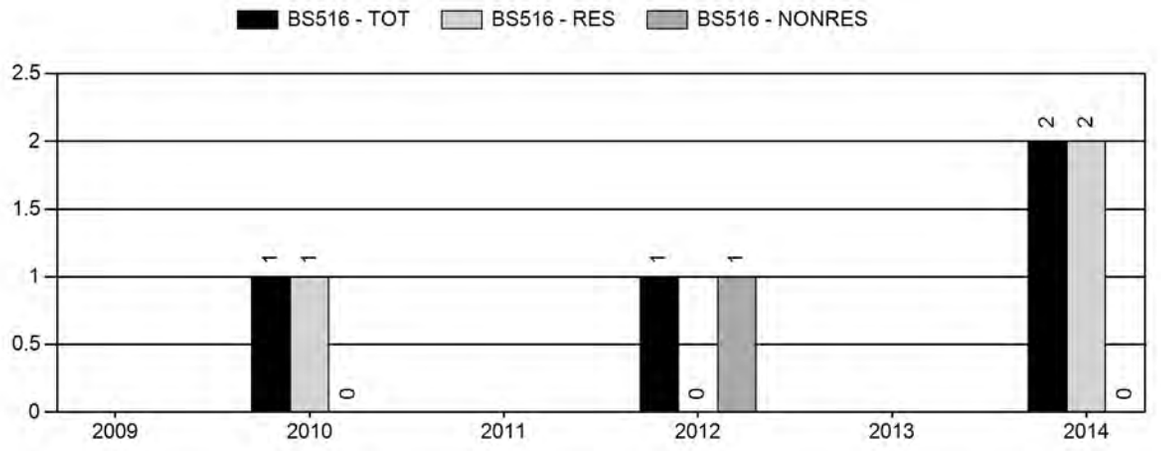
Postseason Animals per 100 Females



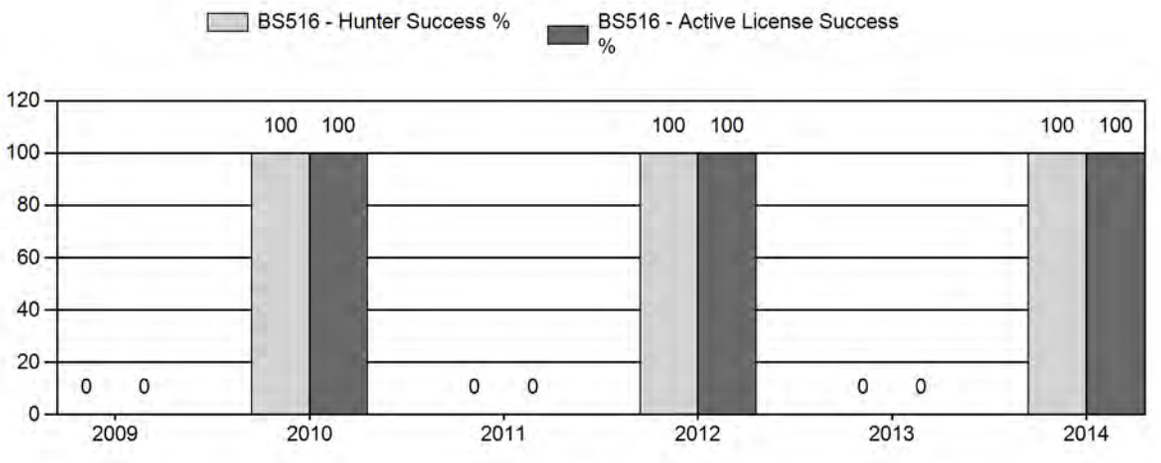
Harvest



Number of Hunters



Harvest Success



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS516 - DOUGLAS CREEK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	0	0	4	4	15%	14	54%	8	31%	26	92	0	29	29	± 0	57	± 0	44
2010	0	1	3	4	16%	17	68%	4	16%	25	74	6	18	24	± 0	24	± 0	19
2011	0	0	4	4	12%	22	65%	8	24%	34	0	0	18	18	± 0	36	± 0	31
2012	0	1	3	4	31%	7	54%	2	15%	13	0	14	43	57	± 0	29	± 0	18
2013	0	6	7	13	28%	19	41%	14	30%	46	0	32	37	68	± 0	74	± 0	44
2014	75	3	1	4	10%	22	55%	14	35%	40	0	14	5	18	± 9	64	± 19	54

2015 HUNTING SEASONS

DOUGLAS CREEK BIGHORN SHEEP (BS516)

Hunt Area	Type	Dates of Opens	Season Closes	Quota	Limitations
18,21					CLOSED
18,21	Archery				Refer to Section 3 of this Chapter

Area	Type	Change from 2014
18	1	CLOSED -2
Herd Totals	**1**	**CLOSED. -2**

Management Evaluation

Current Postseason Population Management Objective: 350
2014 Postseason Population Estimate: ~ 75
2015 Proposed Postseason Population Estimate: ~ 75
Management Strategy: Special

The management objective for the Douglas creek Bighorn Sheep Herd Unit is a post-season population objective of 350 bighorn sheep. The management strategy is special management. The herd objective and management strategy were last revised in 1986 and will be reviewed in 2016.

Herd unit Issues

The Douglas Creek Herd Unit is located primarily in the Savage Run and Platte River Wilderness areas in the Snowy Range Mountains on the Medicine Bow National Forest. The herd is under special management guidelines which require the mean age of harvested rams to be between 6-and 8 years old. This direction was taken to provide trophy opportunity to the public and allow this herd to grow. Pine Beetles have dramatically changed the landscape in the Medicine Bow National Forest where a large percentage of mature pines have died and starting to fall over. The impacts from the beetle kill are unclear but could improve sheep habitat as the forest becomes more open. Area 18 was closed from 2004 through 2007 and then again in 2009, 2011, and 2013 because this population has remained below desired levels. Hunt Area 18 will be closed again in 2015.

Weather
Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

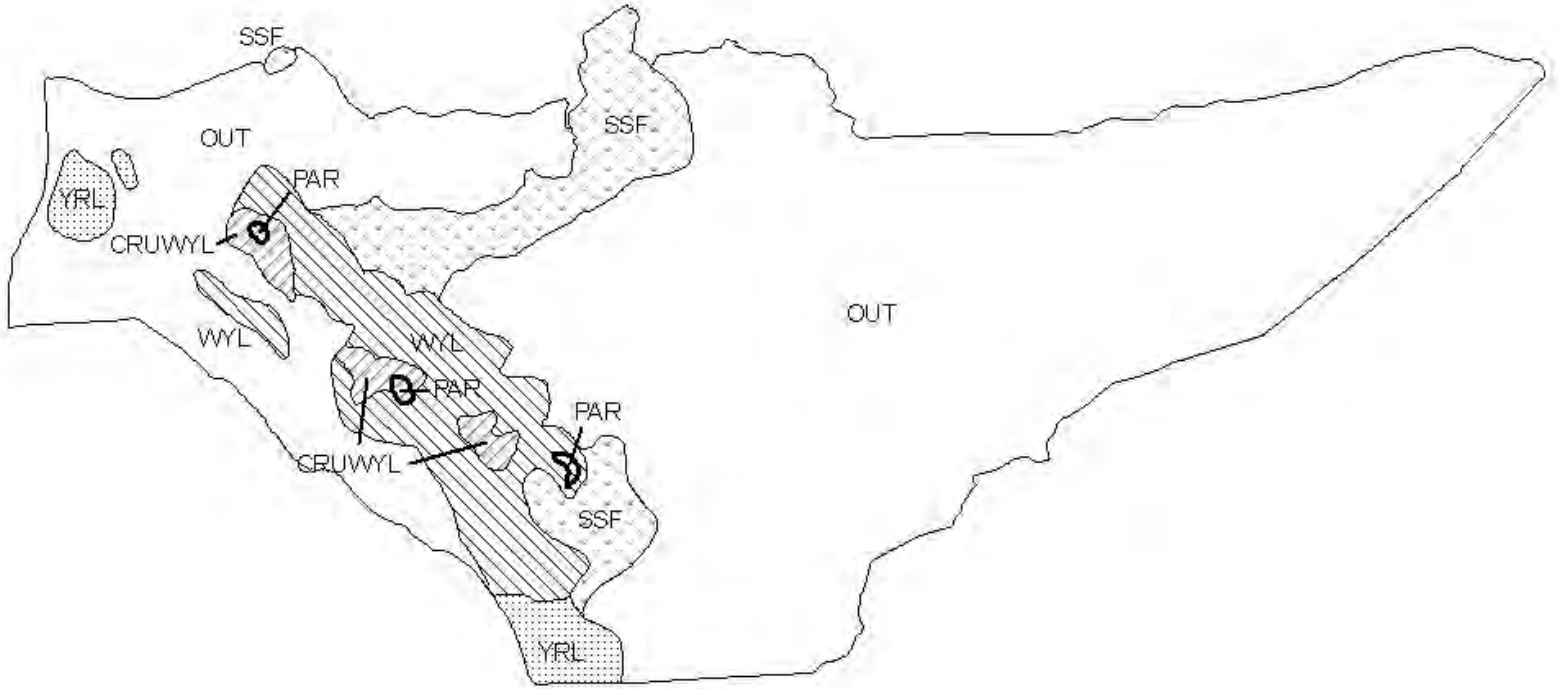
Field Data
We have very little data on this population. The general public provides a few reports during the summer and hunting seasons. Our field personnel make some effort to document the status of segments of the herd during other big game surveys and an annual winter ground survey. Past observation data consistently documents low post-weaning lamb survival. Poor habitat conditions, the lack of well-defined seasonal migrations, and perhaps lingering effects of Pasteurellosis or some other disease may be stagnating this population. We classified 40 sheep in February, with a lamb to ewe ratio of 64:100, which is down from the 2013 estimate of 74:100 but much higher than past counts. 50 sheep were seen in October in the same area but were not

classified. An area 18 hunter observed a bachelor herd of 12 plus rams west of the Platte River, and 15 sheep were observed by 230 at the state line.

Harvest Data
We offered 2 resident licenses in 2014 and each hunter harvest a ram; one ram was 11 years old and the other was 2. One hunter saw 50 sheep on his hunt which is comparable to what field staff saw this summer.

Population
Data is not adequate for developing a reasonable population model. We are unable to collect the data needed to reliably estimate the population size of this sheep herd.

Management Strategy
The season closure will provide an additional year to allow the available rams an opportunity to attain the minimum 6 year old age class specified by the special management guidelines.



BHS516 - Douglas Creek
HA 18
Revised 7/02

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep | PERIOD: 6/1/2014 - 5/31/2015

HERD: BS517 - LARAMIE PEAK

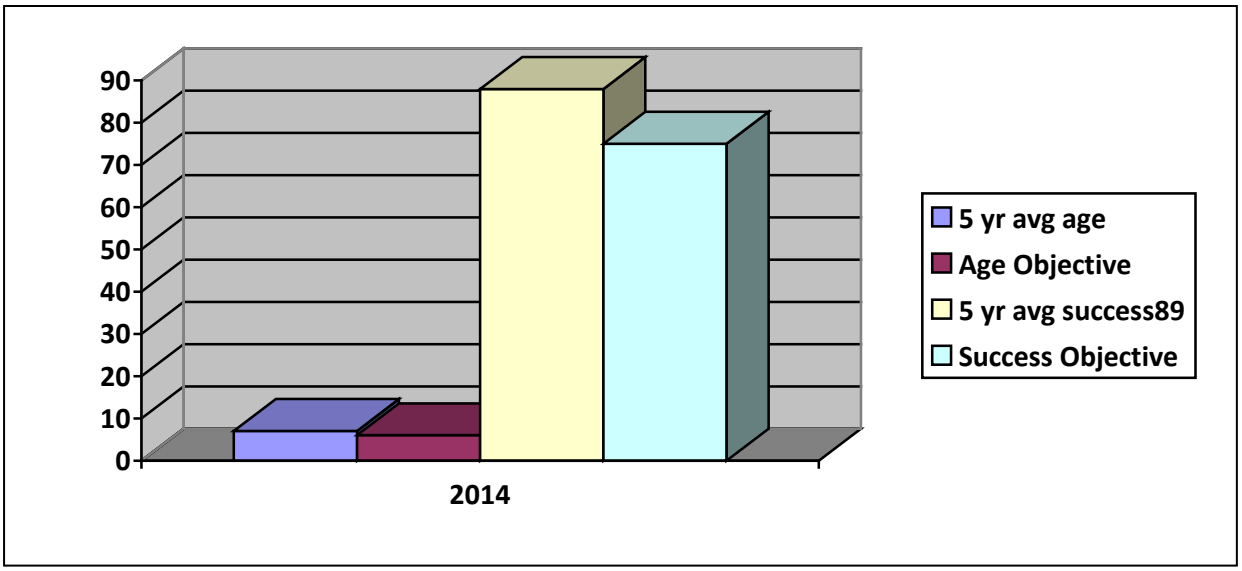
HUNT AREAS: 19 | PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	0	N/A	N/A
Harvest:	6	7	8
Hunters:	7	8	9
Hunter Success:	86%	88%	89 %
Active Licenses:	7	8	9
Active License Success:	86%	88%	89 %
Recreation Days:	82	70	80
Days Per Animal:	13.7	10	10
Males per 100 Females	49	106	
Juveniles per 100 Females	40	55	

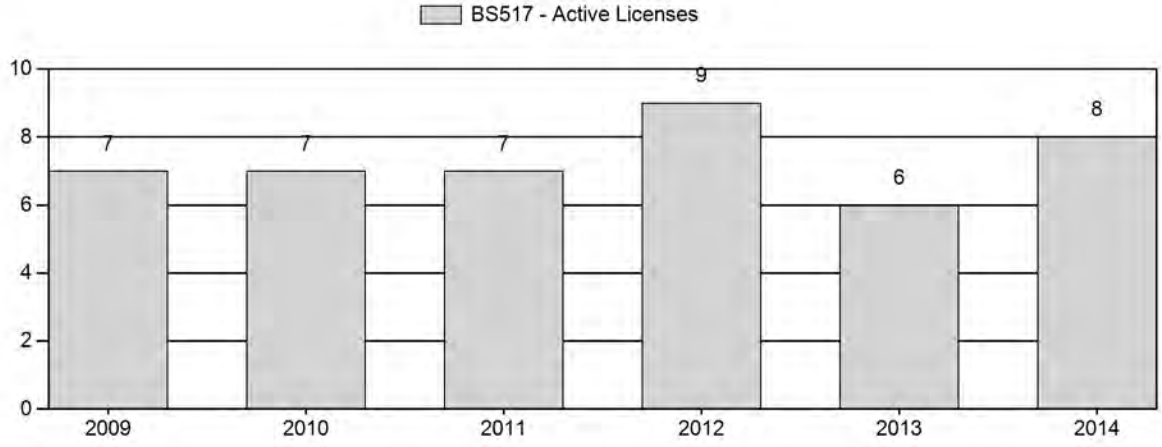
Alternative Population Objective (5 year avg age- objective 6yrs old) :	7 yrs old
Alternative Population Objective (5 yr avg success-objective 75%)	89%
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

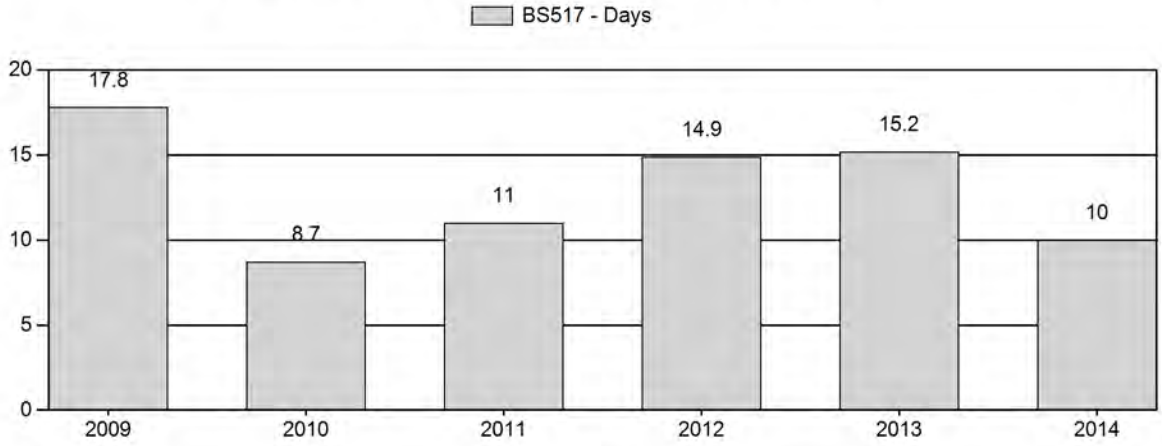
	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%



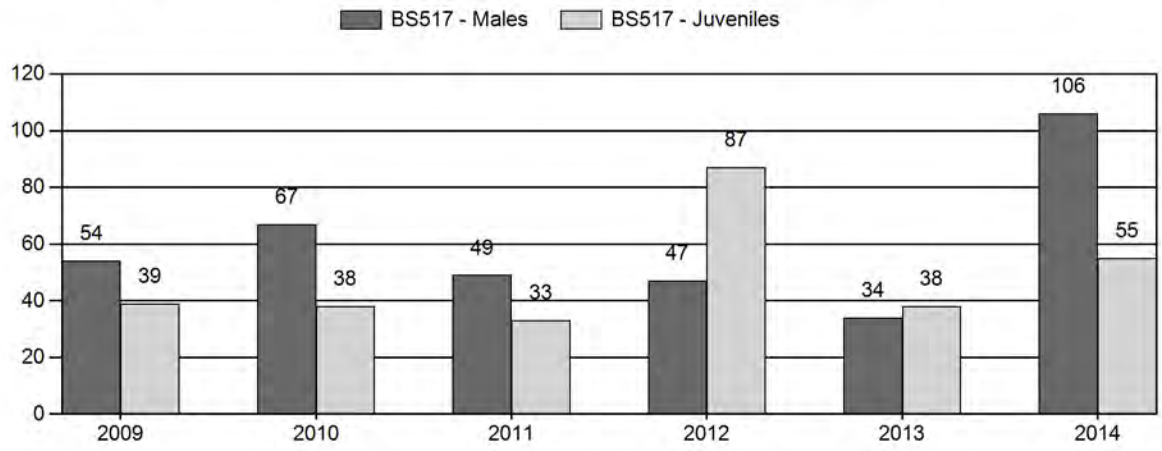
Active Licenses



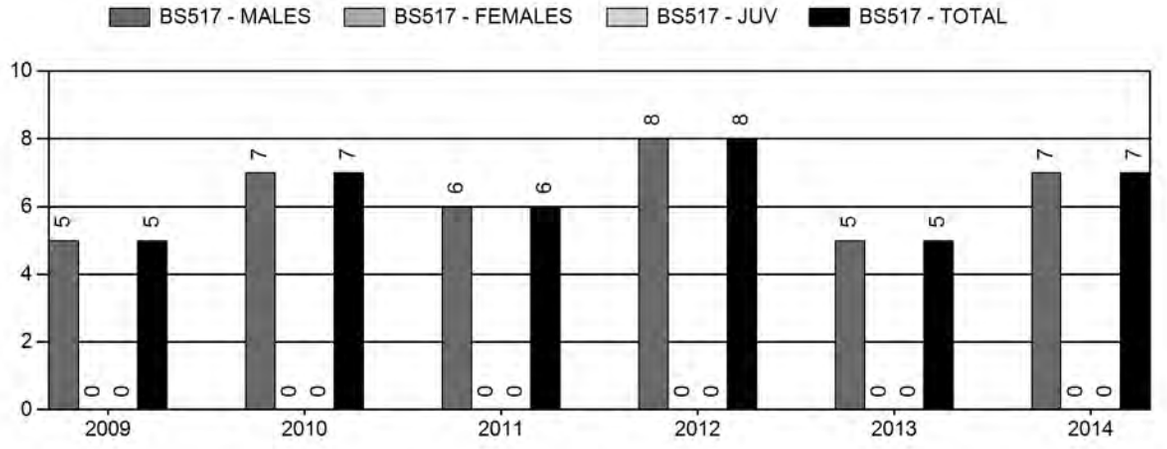
Days per Animal Harvested



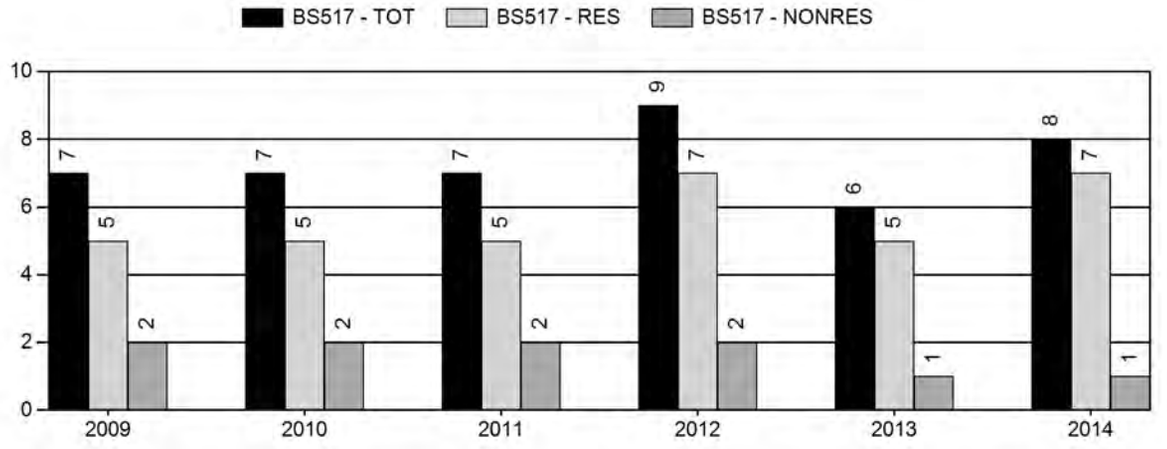
Postseason Animals per 100 Females



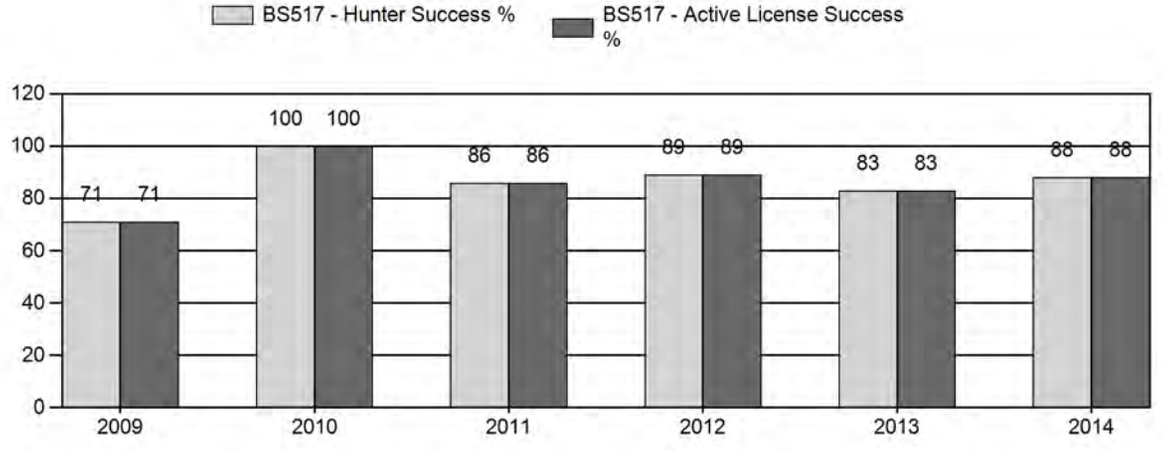
Harvest



Number of Hunters



Harvest Success



2015 HUNTING SEASONS
LARAMIE PEAK BIGHORN SHEEP HERD (BHS517)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
19	1	Sep. 1	Oct. 31	8	Limited quota licenses; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
19	1	0

Management Evaluation

Current Management Objective:

1) **5-year running average of ≥ 75% hunter success- 89%**
2) **5-year running average age of harvested rams between 6 and 8 years of age 2010-2014 Average Age: 6 years old**
3) **Documented occurrence of adult rams in the population**

Management Strategy: Recreational

Herd Unit Issues

The management objective for the Laramie Peak Bighorn Sheep herd was a post-season population objective of 500 wild sheep. The management strategy is recreational management. The objective and strategy were last revised in 1978. The population objective was reviewed during the winter/spring of 2014. Based on department staff, landowner, and public comments the following population management alternative objectives were approved by the WGFD Commission:

1) 5-year running average of ≥ 75% hunter success
2) 5-year running average age of harvested rams between 6 and 8 years of age
3) Documented occurrence of adult rams in the population

The Laramie Peak Herd Unit is comprised of 70% private land. The southern portion (south of WY Hwy 34) is over 90% private land. Hunters can expect to pay a trespass/trophy or outfitter fee to hunt on private land. There are two state sections that hunters can access that hold sheep throughout the season and have produced adult rams in past hunting seasons. A portion of occupied sheep habitat was within the 2012 Arapahoe fire that burned over 98,000 acres. This affected sheep distribution post-fire, but above average summer/fall precipitation in 2013 and spring precipitation in 2014 resulted in increased vegetation production for pre-winter diets and early spring green up that will benefit parturition areas for pregnant ewes. The fire will have long-term benefits for wild sheep, but initially there has been a flush of noxious weeds (e.g. cheatgrass, Canada thistle) that land managers will need to address. A majority of wild sheep are harvested within the northern portion of the herd unit. The Laramie Peak Wildlife Habitat Management Unit provides essential habitat to 200 plus sheep, and provides some of the only

public hunting access within this herd. In 2007 forty-two sheep were released in this area from the Perma-Paradise Herd in Montana. These sheep have thrived and improved the overall genetics and health of the existing herd.

During the winter of 2014/15 the WGFD tried to gather biological samples for disease surveillance, with a target goal of 150 bighorn sheep across Wyoming through the use of drop nets, free-darting, and aerial captures. The goal of this effort is to obtain information on each herd and its overall health. Some animals will be fitted with GPS radio-collars to increase our understanding of movements and habitat use. The goal for the Laramie Peak Herd Unit was to collect samples from 15 wild sheep between Sybille Canyon and Iron Mountain. A drop net was set up on Iron Mountain, unfortunately the bighorn sheep did not come to the bait under the net. Grants through the Governor's Big Game License Coalition and the Wyoming Wild Sheep Foundation will be submitted for aerial capture efforts during the 2015/15 winter to obtain the necessary sample size of 15.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the Laramie Peak Bighorn Sheep Herd Unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on bighorn sheep Mild fall temperatures and lack of persistent snows allowed for bighorn sheep to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Laramie Peak Bighorn Sheep Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in Spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain

mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.
In Spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data
In 2014 there were seven bighorn sheep harvested in with an average of 6 years old and hunters experienced a 88% success rate. The five-year age average is 7 years and the five-year running success average is 89%, which met the two alternative objective criteria.

Since 1964 there have been a total of 228 wild sheep released from two herd sources: Whiskey Mountain in Wyoming and Perma-Paradise in Montana (Table 1). These transplants have helped to supplement the herd and improve overall herd health.

Table 1. Transplant release data for the Laramie Peak Bighorn Sheep Herd.

Year	Number	Release Location	Source Herd
1964	40	North Laramie River Canyon	Whiskey Mountain Herd
1965	36	Labonte Canyon	Whiskey Mountain Herd
1966	21	Labonte Canyon	Whiskey Mountain Herd
1973	42	Duck Creek Canyon	Whiskey Mountain Herd
1982	27	Marshall	Whiskey Mountain Herd
1989	20	Marshall	Whiskey Mountain Herd
2007	42	Hay Canyon	Perma-Paradise- MT
Total	228		

Lamb recruitment continues to improve compared to ratios prior to the 2007 release. There was a total of 81 wild sheep classified in 2014 with an above average ratio of 55 lambs:100 ewes. Ram ratios were highly skewed with more rams observed than ewes. Based on surveys there is a well represented number for each age class. Several 8+ old rams were observed in the Duck Creek sub-herd.

In 2014, 7 out of 8 sheep licenses were successful. One license will carryover to 2015 due to a medical hardship. Four sheep were harvested from the Duck Creek sub-herd and three from the Sybille Canyon sub-herd.

Harvest Data

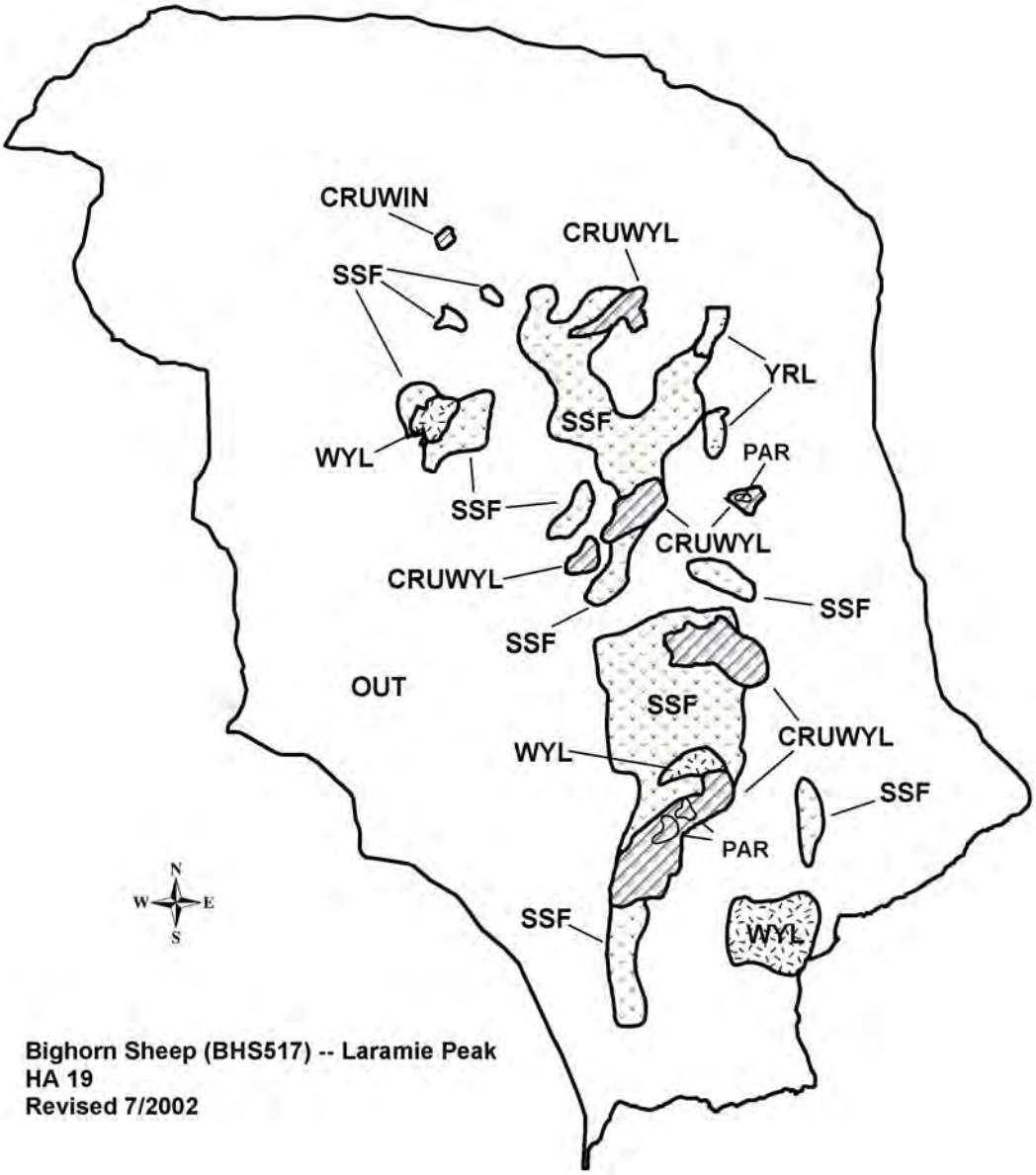
Success has reached ≥ 75% five out of the past five years. This last year active license hunters harvested 7 out of 8 rams, with a success rate of 88%. Hunters who pre-scout or hire an outfitter typically harvest their ram within 3-5 days. This year the average hunter effort was 10 days, which was lower than the five-year average of 13 days per harvest. Hunters that chose to not use an outfitter spend more time scouting and hunting. There is limited public land within occupied wild sheep habitat. Overcrowding is an issue that results in pushing bighorn sheep onto private land, where there is no access. To maintain high harvest success no more than 8 licenses are issued. In the past when the quota increased to 12, success decreased drastically.

The Laramie Peak bighorn sheep season has been September 1-October 31 for the past 24 years. Prior to that, the season ran from September 1- October 14. The increased season length appears to provide adequate opportunity to harvest a ram, given this is typically a once in a lifetime license.

In 2012 there were several fires that burned within bighorn sheep occupied habitat. The Arapahoe, Cow Camp, and Russell's Camp fires burned over 112,000 acres, with the Arapahoe fire being the largest (98,000 acres). Throughout the area there is observed recovery in vegetation. Photo points have been established throughout the fire to document plant succession. Perennial forbs and grasses along with aspen have re-established post-fire.

There is not a reliable working model for this herd unit due to limited population data collected on an annual basis.

For the 2014 season, 8 licenses will be offered for any ram along with 1 carryover license for a total of 9. Hunters should have a high probability of harvesting a mature ram. There is some concern with nine hunters going to the field that success will be compromised. To improve harvest success hunters will need to put more time into scouting and hunting if they are accessing public lands.



Bighorn Sheep (BHS517) -- Laramie Peak
HA 19
Revised 7/2002

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS519 - ENCAMPMENT RIVER

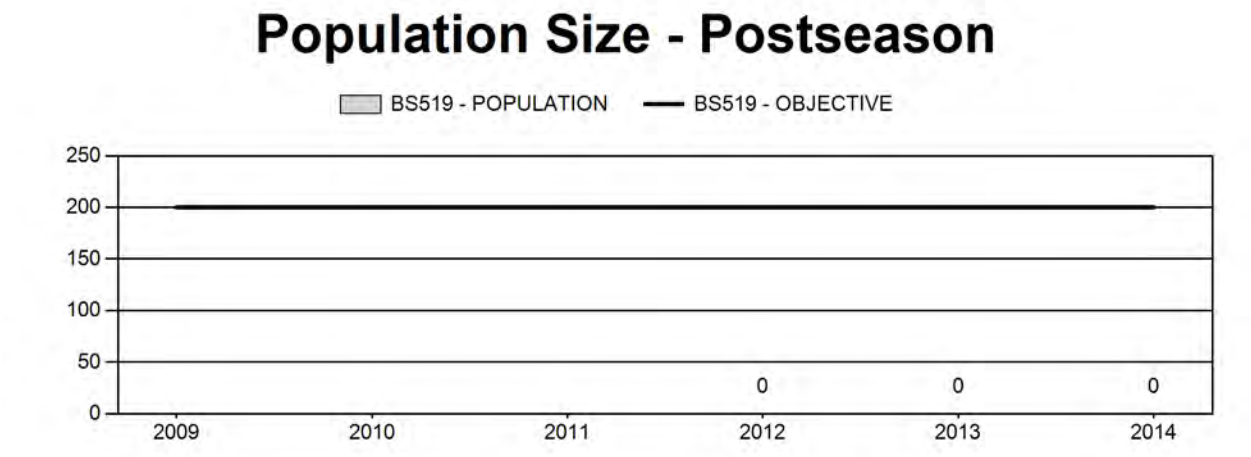
HUNT AREAS: 21
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	0	N/A	N/A
Harvest:	0	0	0
Hunters:	0	0	0
Hunter Success:	0%	0%	0 %
Active Licenses:	0	0	0
Active License Success:	0%	0%	0 %
Recreation Days:	1	0	0
Days Per Animal:	0	0	0
Males per 100 Females	57	24	
Juveniles per 100 Females	34	41	

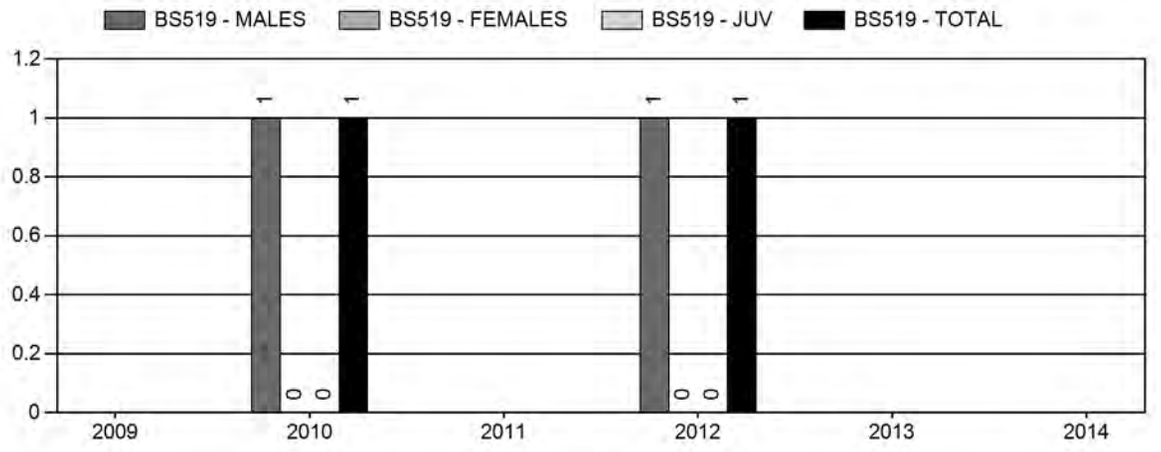
Population Objective (± 20%) :	200 (160 - 240)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

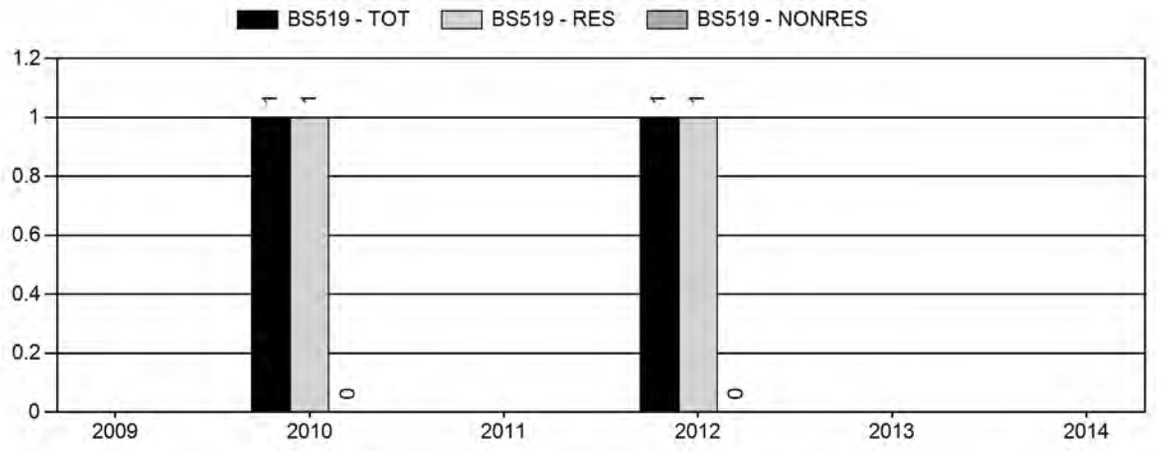
	JCR Year	Proposed
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



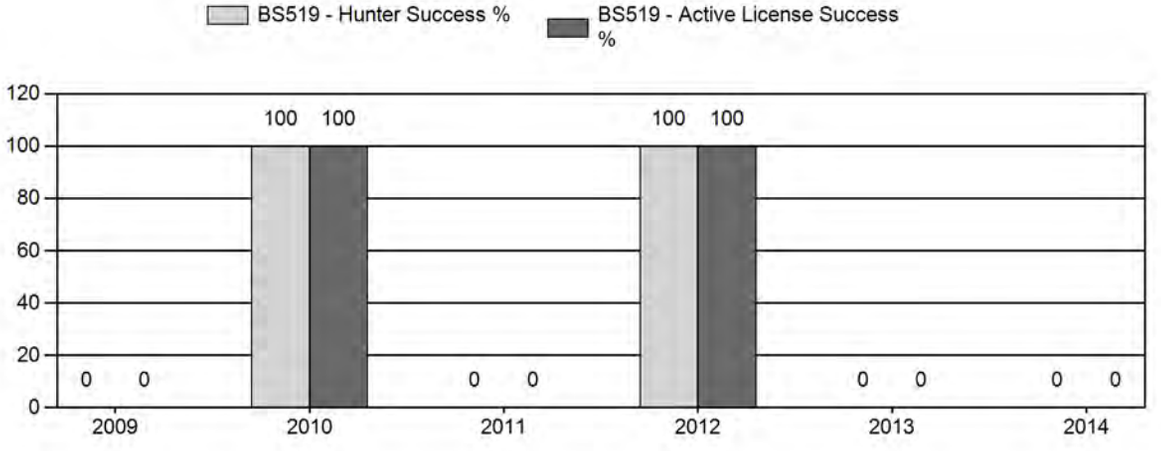
Harvest



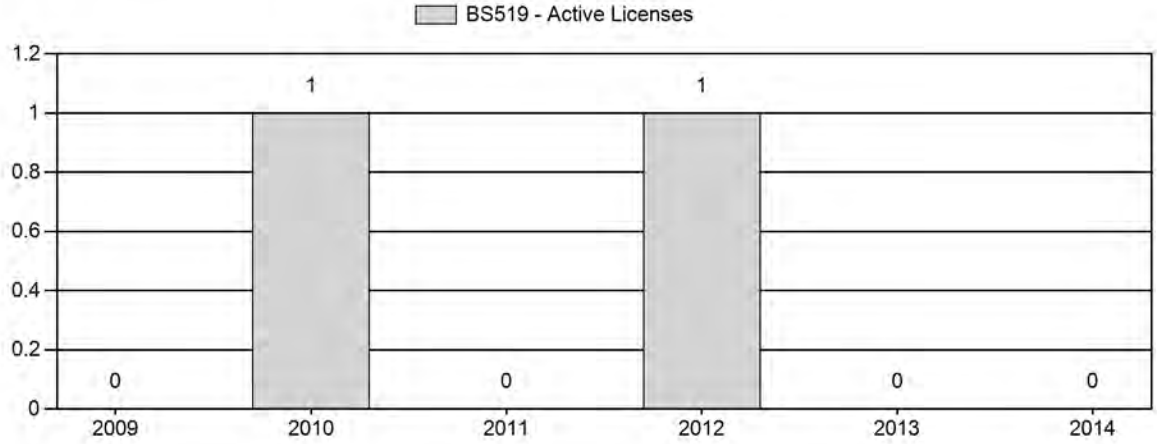
Number of Hunters



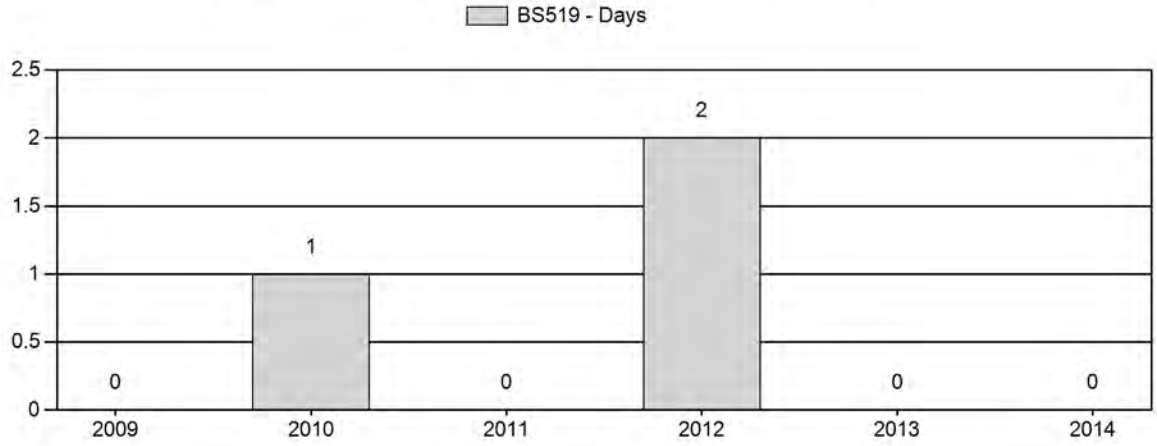
Harvest Success



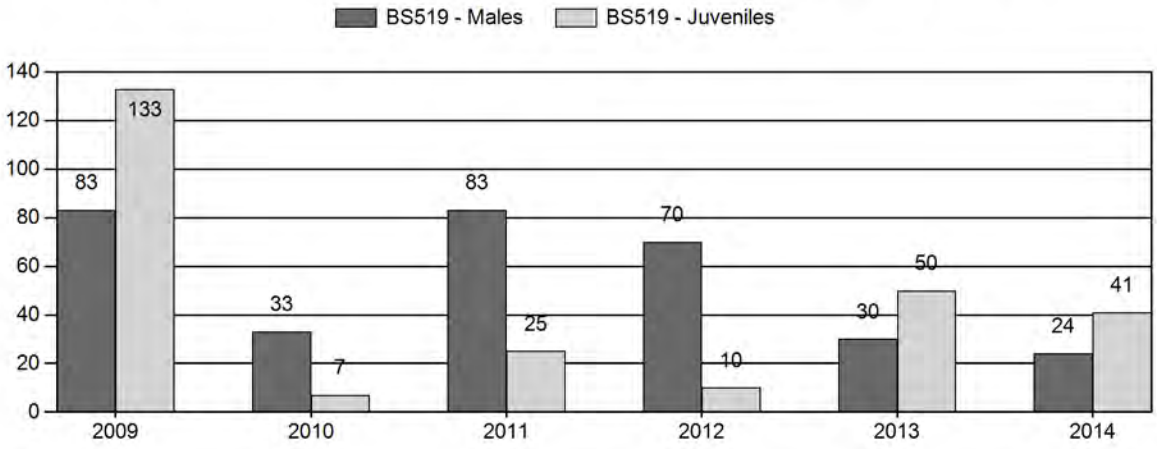
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS519 - ENCAMPMENT RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	0	0	5	5	26%	6	32%	8	42%	19	0	0	83	83	± 0	133	± 0	73
2010	0	0	5	5	24%	15	71%	1	5%	21	0	0	33	33	± 0	7	± 0	5
2011	0	0	10	10	40%	12	48%	3	12%	25	0	0	83	83	± 0	25	± 0	14
2012	0	0	7	7	39%	10	56%	1	6%	18	0	0	70	70	± 0	10	± 0	6
2013	0	0	3	3	17%	10	56%	5	28%	18	0	0	30	30	± 0	50	± 0	38
2014	0	1	3	4	14%	17	61%	7	25%	28	0	6	18	24	± 0	41	± 0	33

Encampment River Bighorn Sheep (BS519)
Hunt Area 21
2015 Hunting Season

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
18, 21	1					CLOSED

Hunt Area	Type	Quota change from 2014
18, 21	1	-2
Herd Unit Total	**1**	**-2**

Management Evaluation
Current Management Objective: 200 (160-240)
Management Strategy: Special
2013 Postseason Population Estimate: NA
2014 Proposed Postseason Population Estimate: NA

Bighorn sheep in the Encampment River herd unit are managed toward a numeric objective of 200. A population model has not been constructed for the herd unit. The herd is managed under the bighorn sheep special management strategy. The objective was last reviewed in 1987.

Herd Unit Issues
Bighorn sheep numbers in this herd unit appeared to peak in the late 1970s, not long after reintroduction efforts. Bighorn sheep numbers have been in decline since the early 1980s. The lack of a rebound in numbers has been attributed to decadent habitat. Domestic sheep in grazing on the west slope of the Sierra Madres also poses a disease concern for managers. The population is now at such a low number it is assumed natural recovery is not possible. Limited harvest opportunities have been offered in past years, in combination with the Douglas Creek bighorn sheep herd unit.

In 2013, the State of Wyoming, and thus the Wyoming Game and Fish Department, intervened on behalf of the U.S. Forest Service, in the U.S. District Court case, BIODIVERSITY CONSERVATION ALLIANCE vs. BUTCH BLAZER, et al. This case continues to await a ruling, and may affect future management of bighorn sheep in this herd unit.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on bighorn sheep. Mild fall temperatures and lack of persistent snows allowed for bighorn sheep to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Encampment River herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunk brush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data
Adequate classification data for this herd has been difficult to collect. 2014 postseason classification observations were obtained while conducting mule deer and elk survey

from a helicopter in December of 2014. The classification results were 3 adult rams, 1 yearling ram, 17 ewes, and 7 lambs. Past postseason classification efforts generally have located a greater number of ewes and lambs than what was observed in 2014. We received several reports of a group of 20+ ewes and lambs in the North Fork area during the fall of 2014 but unable to collect classification information for this group. Based on the trend of classification data and casual observations, a reasonable estimate of 25-50 bighorn sheep should be considered for this herd unit.

Population

A population model has not been constructed for this herd unit due to limited classification and no annual survival information. A review of the management objective, currently at 200 bighorn sheep, will be evaluated within the next 2-years.

Harvest Data

Two (2) licenses were offered in 2014 valid in both Hunt Area 18 and 21. The hunters each harvested a bighorn ram in Hunt Area 18. Therefore, no harvest occurred in the Encampment River herd unit (Hunt Area 21).

Management Summary

The hunting season will be closed in 2015. We will evaluate offering a harvest opportunity for the combination of Hunt Areas 18 and 21 again in 2016.

Bibliography of Herd Specific Studies

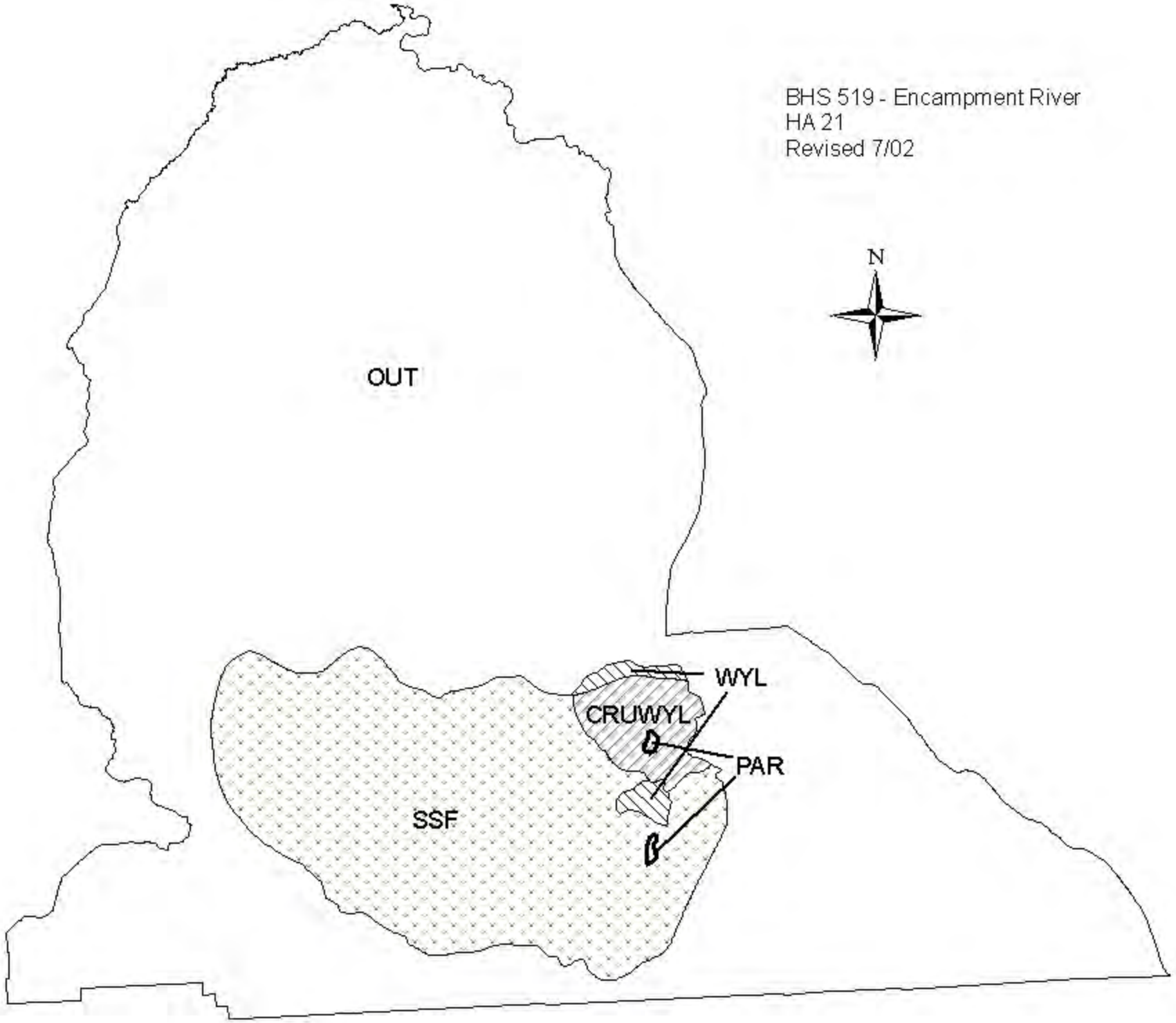
Arnett, E.B. 1990. Bighorn sheep habitat selection patterns and response to fire and timber harvest in Southcentral Wyoming. M.S. Thesis, University of Wyoming, Laramie. USA. 156 pp.

Cook, J.G. 1990. Habitat, nutrition, and population ecology of two transplanted bighorn sheep populations in southcentral Wyoming. Ph.D. Thesis, University of Wyoming, Laramie. Wyoming. USA. 310 pp.

_____ E.B. Arnett, L.L. Irwin, F. Lindzey. 1989. Ecology and Population Dynamics of Two Transplanted Bighorn Sheep Herds in Southcentral Wyoming. University of Wyoming, Laramie. Wyoming. USA. 234 pp.

Haas, W.L. 1979. Ecology of an introduced herd of Rocky Mountain bighorn sheep in southcentral Wyoming. M.S. Thesis, Colorado State University, Fort Collins. Colorado. USA. 343 pp.

_____ and E. Decker. 1980. A study of a recently introduced bighorn sheep herd in Proc. Bien Symp. North Wild Sheep and Goat Coun. 2:143-166.


BHS 519 - Encampment River
HA 21
Revised 7/02
N
OUT
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PAR
SSF

2014 - JCR Evaluation Form

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

HERD: EL531 - IRON MOUNTAIN

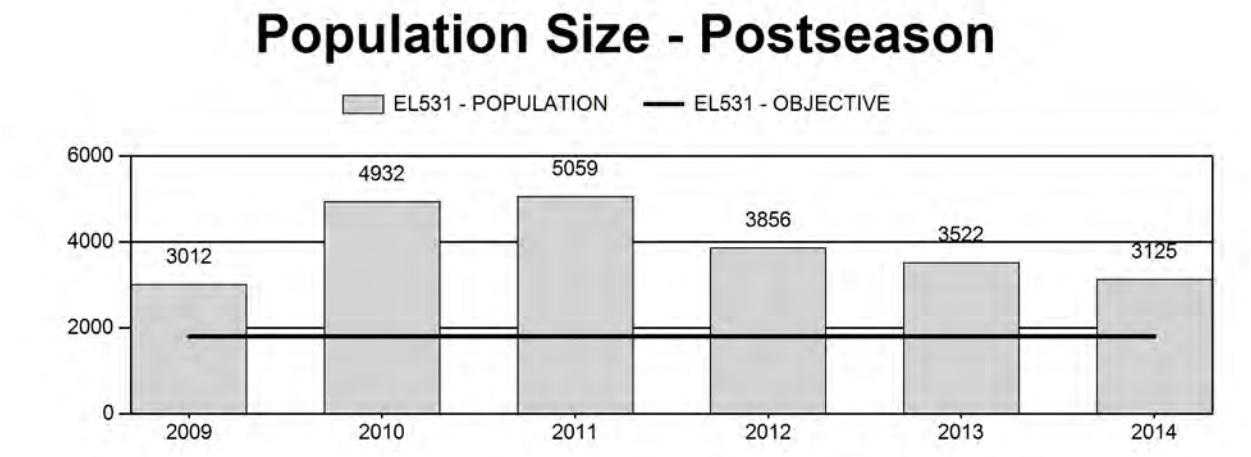
HUNT AREAS: 6
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	4,076	3,125	2,700
Harvest:	753	779	750
Hunters:	1,427	1,665	1,300
Hunter Success:	53%	47%	58%
Active Licenses:	1,490	1,712	1,500
Active License Success:	51%	46%	50%
Recreation Days:	8,989	12,525	11,500
Days Per Animal:	11.9	16.1	15.3
Males per 100 Females	20	22	
Juveniles per 100 Females	47	48	

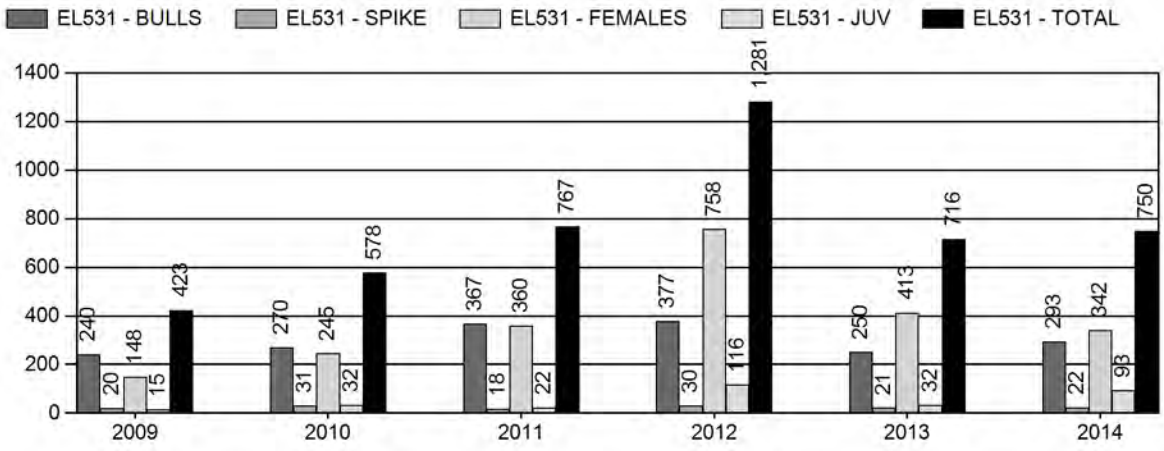
Population Objective (± 20%) :	1800 (1440 - 2160)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	74%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/26/2015

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

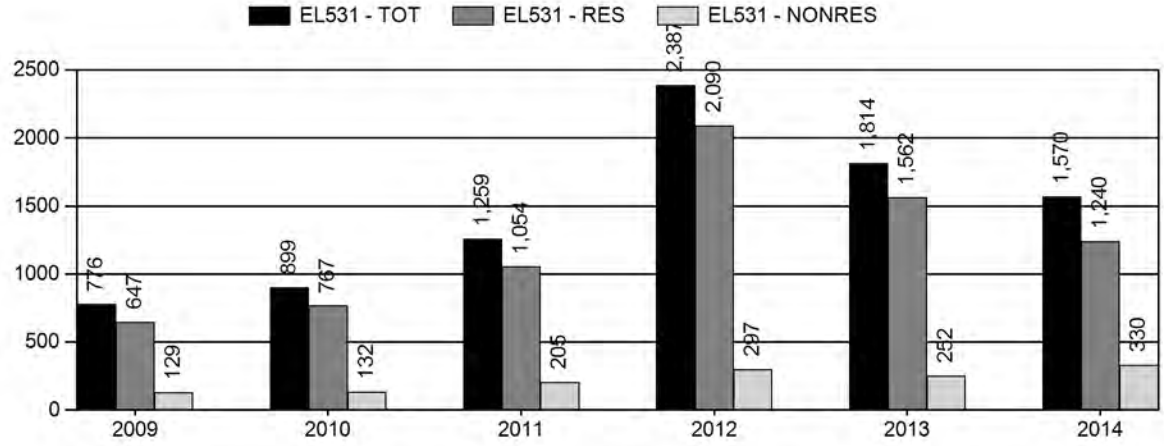
	JCR Year	Proposed
Females ≥ 1 year old:	20%	20%
Males ≥ 1 year old:	30%	30%
Juveniles (< 1 year old):	4.5%	4.5%
Total:	21%	25%
Proposed change in post-season population:	-12%	-15%



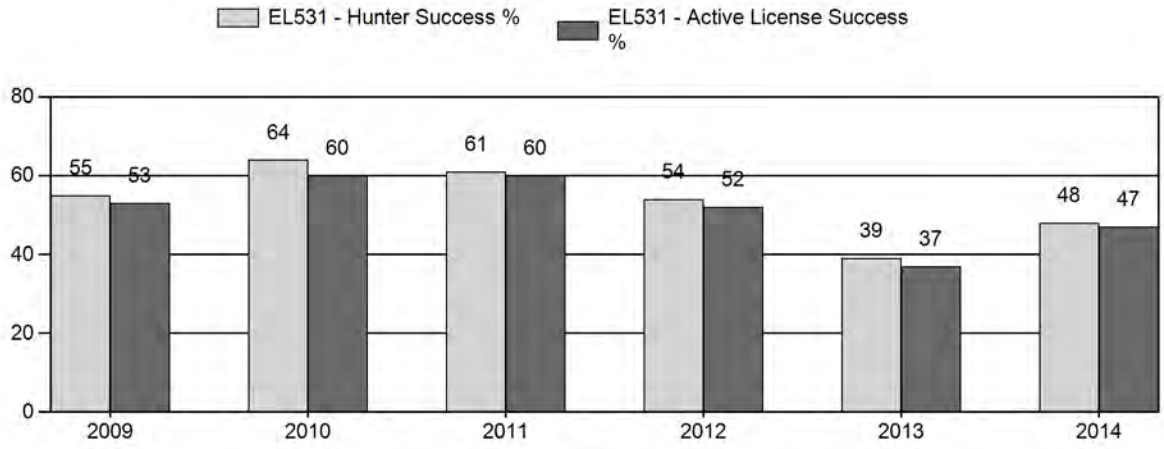
Harvest



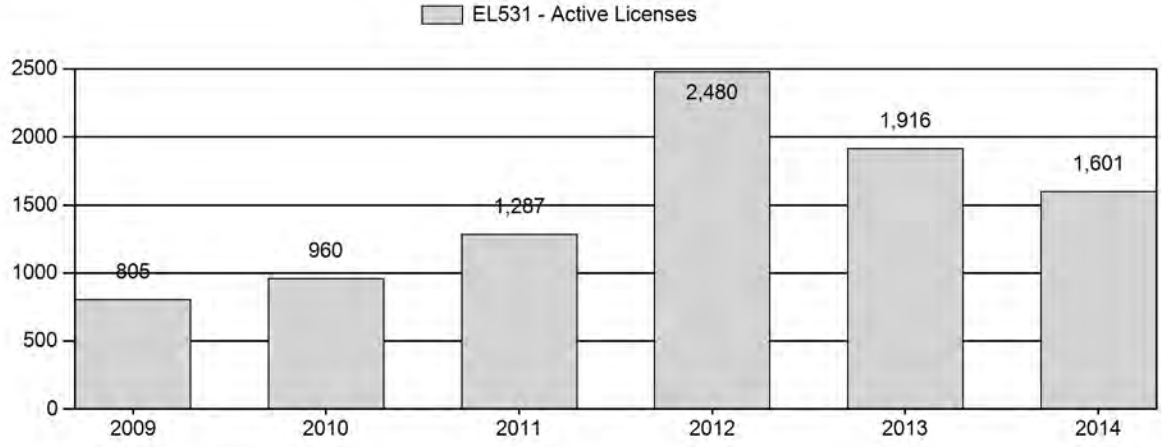
Number of Hunters



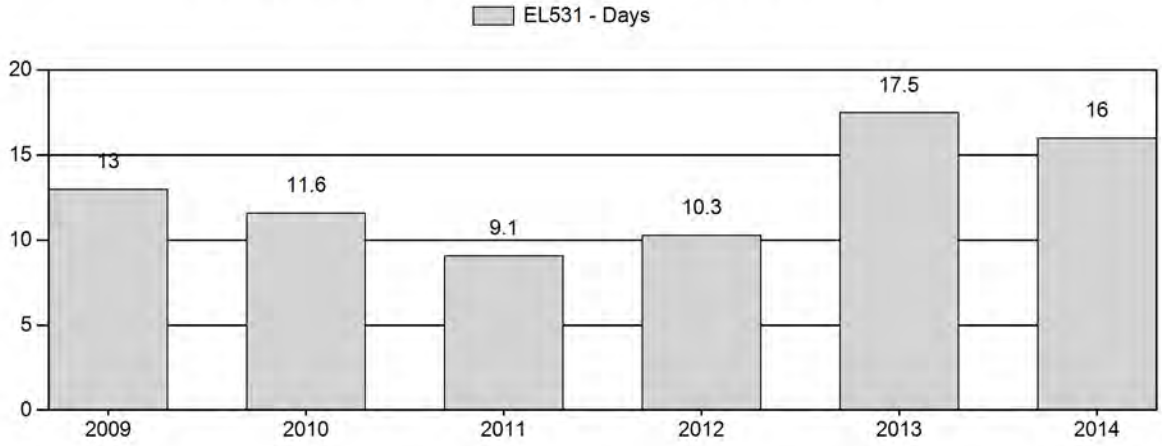
Harvest Success



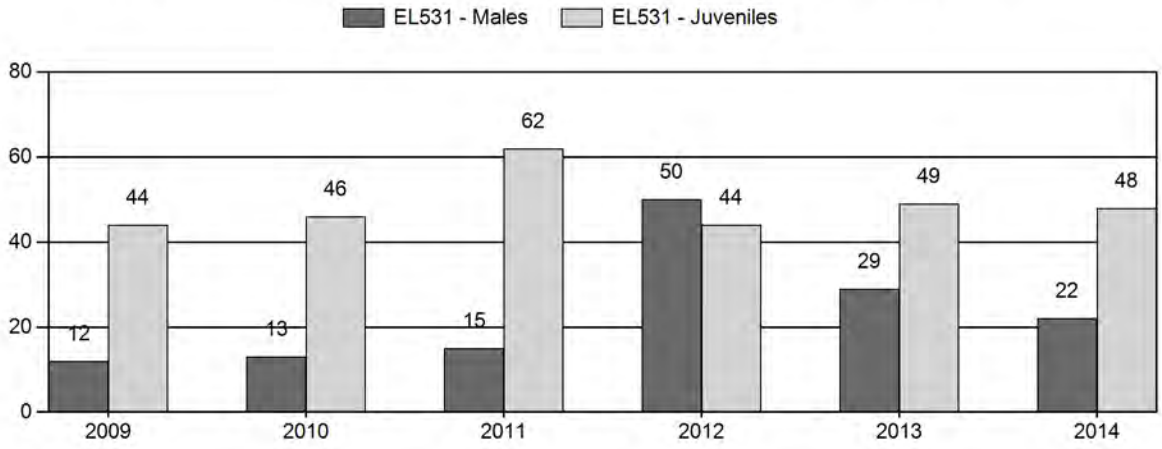
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL531 - IRON MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	3,012	70	21	91	8%	741	64%	325	28%	1,157	533	9	3	12	± 1	44	± 3	39
2010	4,932	53	26	79	8%	604	63%	278	29%	961	617	9	4	13	± 2	46	± 4	41
2011	5,059	20	16	36	9%	235	56%	145	35%	416	646	9	7	15	± 3	62	± 8	54
2012	3,856	52	46	98	26%	196	51%	87	23%	381	617	27	23	50	± 8	44	± 7	30
2013	3,522	75	86	161	16%	557	56%	273	28%	991	707	13	15	29	± 3	49	± 4	38
2014	3,125	44	67	111	13%	499	59%	238	28%	848	671	9	13	22	± 3	48	± 4	39

2015 HUNTING SEASONS
IRON MOUNTAIN ELK (EL531)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
6		Oct. 1 Nov. 1	Oct. 31 Jan. 31		General	Any elk valid off national forest Antlerless elk valid off national forest
	1	Oct.15 Nov. 1	Oct. 31 Jan. 31	75	Limited Quota	Any elk Unused Area 6 Type 1 licenses valid for antlerless elk
	4	Nov. 1	Jan. 31	100	Limited Quota	Antlerless elk
	6	Aug. 15	Jan. 31	1100	Limited Quota	Cow or calf valid off national forest
Archery						Refer to Section 3 of this Chapter

Type	Change from 2014
1	0
6	0
TOTAL	0

MANAGEMENT EVALUATION

Current Postseason Population Management Objective: 1,800 (1,400-2,100)
Management Strategy: Recreational
2014 Postseason population Estimate: ~ 3,100
2015 Proposed Postseason Population Estimate: ~ 2,700
2014 Hunter Satisfaction: 68% Satisfied, Neutral 18%, Dissatisfied 14%

The management objective for the Iron Mountain Elk herd unit is a post-season population objective of 1,800 elk. The management strategy is recreational management which requires maintaining a post hunt bull ratio of 15 to 29:100 cows. The objective and management strategy were last revised in 2013.

Herd Unit Issues

The Iron Mountain Elk herd unit includes hunt area 6 (combined hunt areas 5 and 6 for 2014 season) which is composed of mostly private lands except for the Pole Mountain National Forest segment which is managed under a limited quota license to maintain hunt quality. Urban sprawl and nontraditional landowners are increasing in the herd unit. The 2014 post-season population estimate was 3,100 with the population trending downward from a high of 5,100 in 2011.

Weather
Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Field Data
A total of 848 elk were classified which exceeded the estimated classification objective of 670. 2014 calf ratios were comparable to 2013 (49:100 cows) at 48: 100 cows. Bull ratios declined from 29:100 cows in 2013 to 22:100 cows in 2014 which may be a factor of harvest, but could also be due to missing some of the bachelor groups during our classifications. With fewer hunters in the field that are unfamiliar with the area we saw hunter success in 2014 increase by 10%, and hunter effort decreased by 1 day. After switching from limited quota to general licenses hunter numbers have been on a steady decline from a high of 2,480 hunters in 2012 to 1,600 in 2014. We expect this trend to continue as the public realizes how difficult it is to find access.

Harvest Data
The Iron Mountain HMAP was not implemented during the 2014 season, but harvest in 2014 was comparable to 2013 with a total of 750 elk harvested. It seems that more landowners are allowing hunters to harvest cow elk and that is maintaining harvest levels in the herd at an appropriate level to decrease the population. Both the type 1 and type 4 license success increased and are providing opportunity on the only national forest land within the herd unit. Both license types remain very popular with the public with drawing odds less than 10% for residents and nonresidents needing 5 or more preference point to draw the type 1 license.

Population
This is the second year that we have had enough data to run a model. The constant juvenile and adult survival model had an AIC score of 362 and a best Fit of 372. It did not have the lowest AIC score but predicted a more reasonable population estimate to what field staff believes exists on the ground. This model predicts the population declining from a high of 5,900 in 2011 to the current population estimate of 3,100 in 2014. This model is ranked poor for a variety of reasons including: little data available; ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; herd unit closure issues apparent; results not biologically defensible.

Management Summary
The 2014 season structure went well and maintained the 2013 harvest of 750 without an HMAP program. The hunting season is status quo for the 2015 season structure. This herd unit continues to be a concern with landowners due to large wintering herds of elk, sometimes exceeding 800. At the same time most all of the landowners in the herd unit outfit elk hunters to some degree on their property and bull quality and quantity is a concern. If we harvest a minimum of 650 elk, we will continue to reduce the population towards the objective. The Sherman Hill HMA, located near the Colorado boarder, was added in 2013 and provides some access in the southern part of the herd unit, but harvest is minimal.

INPUT	
Species:	Elk
Biologist:	Lee Knox
Herd Unit & No.:	Iron Moutnain
Model date:	02/26/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	362	372	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	386	395	☐ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	4435	4527	☐ TSJ,CA Model	
TSJ,CA,MSC	**Time-Specific Juv, Constant Adult Survival, Male survival coefficient**	186	297	☐ TSJ,CA,MSC Mode	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
2003				1216	558	2552	4326	1198	380	2445	4023	1800
2004				1137	672	2696	4505	1120	510	2562	4191	1800
2005				1155	780	2790	4725	1121	591	2637	4349	1800
2006				1162	859	2865	4886	1137	651	2710	4498	1800
2007				1336	922	2940	5198	1322	743	2723	4788	1800
2008				1126	1059	2999	5184	1098	854	2794	4746	1800
2009				1267	1111	3013	5391	1250	825	2850	4926	1800
2010				1341	1121	3106	5568	1305	790	2836	4932	1800
2011				1696	1101	3106	5903	1672	677	2710	5059	1800
2012				1104	1082	3074	5259	990	635	2231	3856	1800
2013				1005	870	2434	4309	970	572	1980	3522	1800
2014				964	803	2183	3950	862	457	1806	3125	1800
2015				829	663	1986	3477	760	340	1570	2671	1800
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2034												
2035												

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
2003	0.50			0.98		
2004	0.50			0.98		
2005	0.50			0.98		
2006	0.50			0.98		
2007	0.50			0.98		
2008	0.50			0.98		
2009	0.50			0.98		
2010	0.50			0.98		
2011	0.50			0.98		
2012	0.50			0.98		
2013	0.50			0.98		
2014	0.50			0.98		
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Parameters:	Optim cells
Juvenile Survival =	0.500
Adult Survival =	0.980
Initial Total Male Pop/10,000 =	0.038
Initial Female Pop/10,000 =	0.245

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Total Bulls Adjustment Factor	75%

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio				Harvest					Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
2003		49.01	4.90	15.53	31.58	23.68	3.10	16	6	156	97	275	31.9	4.2
2004		43.71	5.59	19.91	53.13	39.85	5.27	16	16	131	122	285	24.1	5.0
2005		42.52	6.91	22.39	60.89	45.67	7.24	31	7	165	139	342	24.3	5.5
2006		41.95	5.02	24.03	36.72	27.54	3.86	23	32	157	141	353	24.2	5.4
2007		48.53	5.15	27.29	46.57	34.93	4.16	13	14	149	197	373	19.4	7.4
2008		39.29	5.71	30.56	43.65	32.74	5.09	26	17	169	186	398	19.3	6.8
2009		43.86	2.92	28.96	16.37	12.28	1.36	15	20	240	148	423	25.7	5.4
2010		46.03	3.34	27.86	17.44	13.08	1.56	32	31	270	245	578	29.5	8.7
2011		61.70	6.52	24.99	20.43	15.32	2.74	22	18	367	360	767	38.5	12.8
2012		44.39	5.72	28.47	102.04	76.53	8.30	103	30	376	766	1275	41.3	27.4
2013		49.01	3.62	28.89	38.54	28.90	2.59	32	21	250	413	716	34.3	18.7
2014		47.70	3.76	25.27	29.66	22.24	2.33	93	22	293	342	750	43.1	17.2
2015		48.39	3.69	21.68	34.34	25.76	2.48	63	22	272	378	733	48.6	20.9
2016														
2017														
2018														
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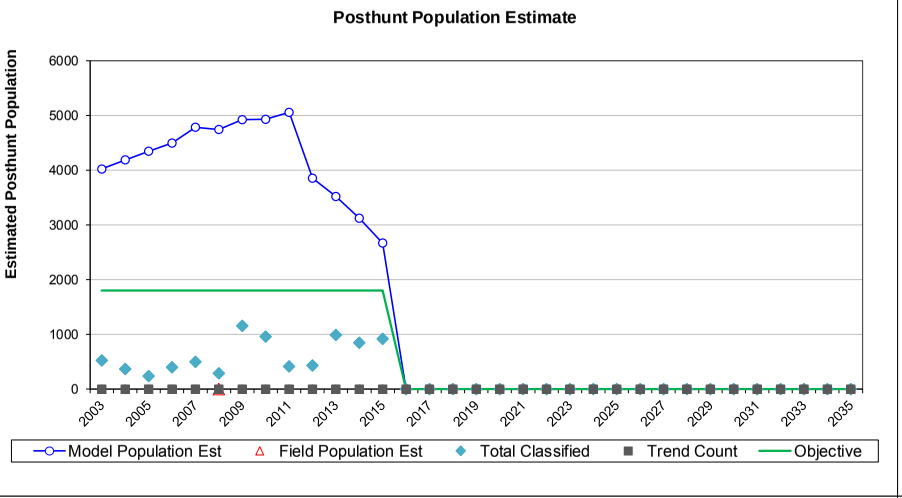
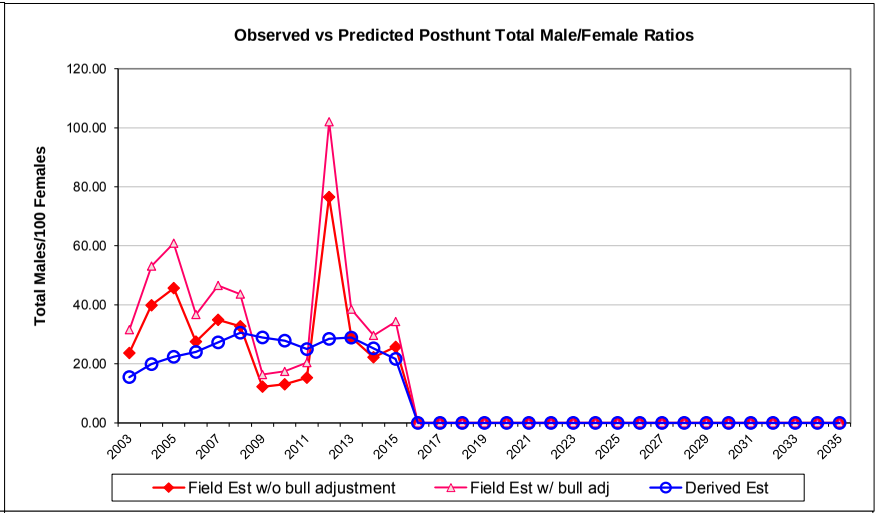
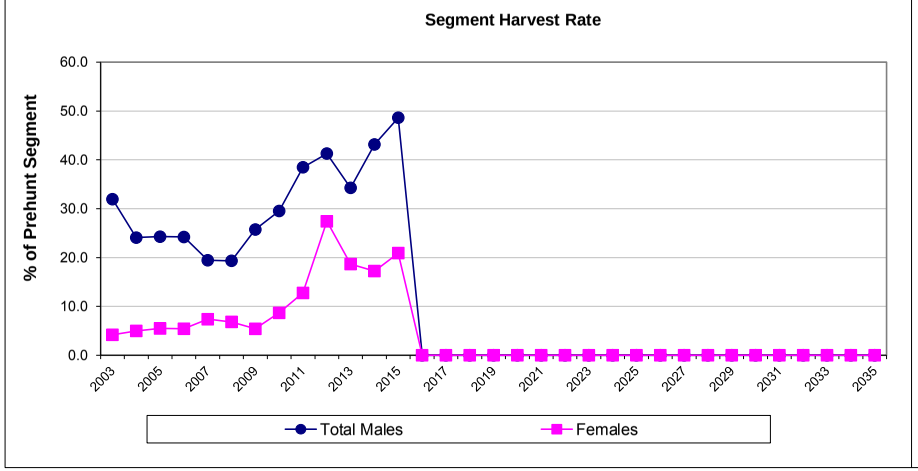
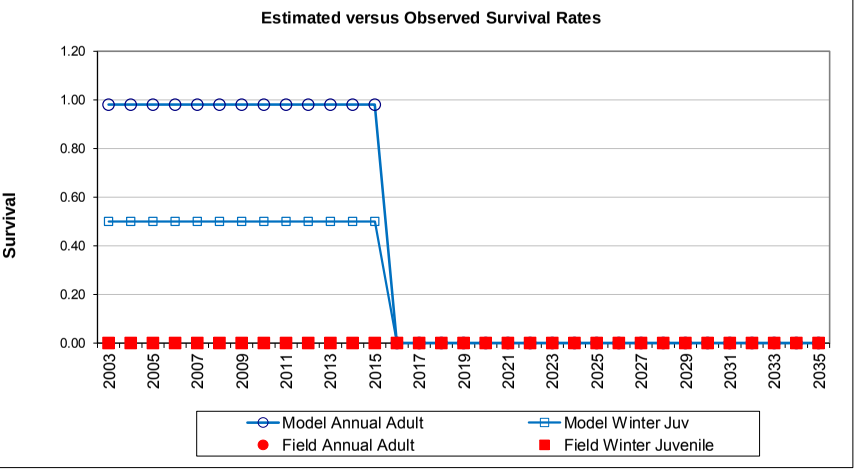
FIGURES









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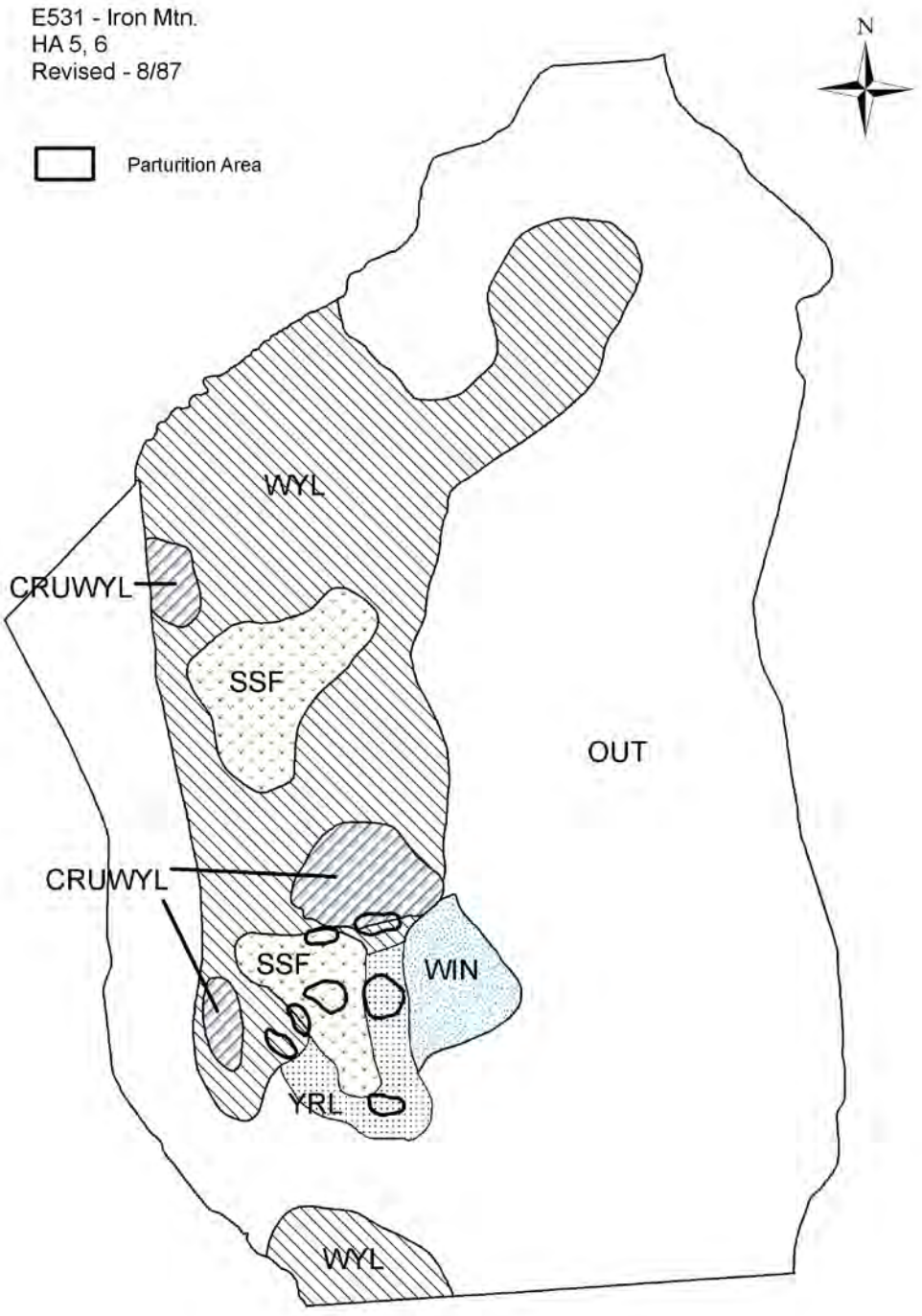

E531 - Iron Mtn.
HA 5, 6
Revised - 8/87
Parturition Area
N
WYL
CRUWYL
SSF
OUT
CRUWYL
SSF
WIN
YRL
WYL

2014 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2014 - 5/31/2015

HERD: EL533 - SNOWY RANGE

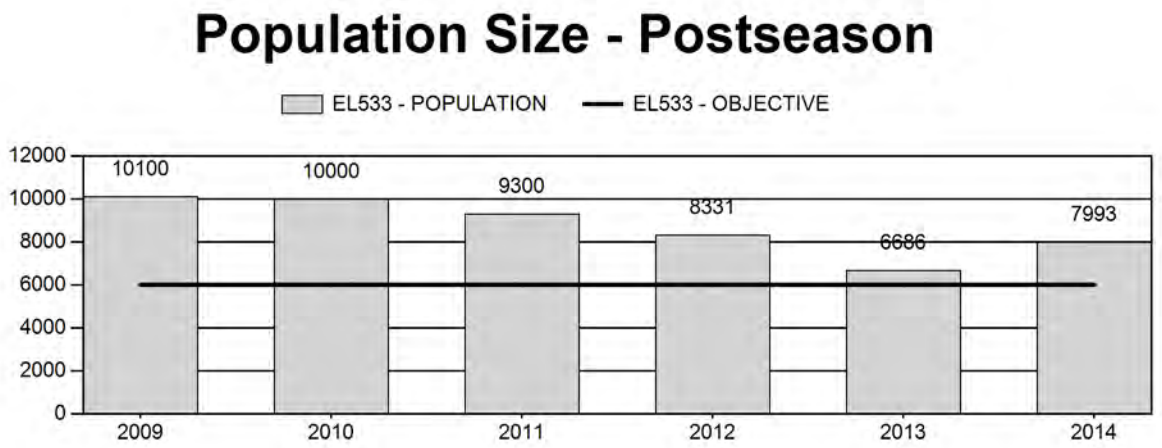
HUNT AREAS: 8-12, 110, 114, 125 | PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	8,883	7,993	7,550
Harvest:	1,825	2,058	1,800
Hunters:	5,666	6,032	6,000
Hunter Success:	32%	34%	30%
Active Licenses:	5,856	6,287	6,400
Active License Success:	31%	33%	28%
Recreation Days:	42,548	50,604	51,337
Days Per Animal:	23.3	24.6	28.5
Males per 100 Females	23	25	
Juveniles per 100 Females	44	50	

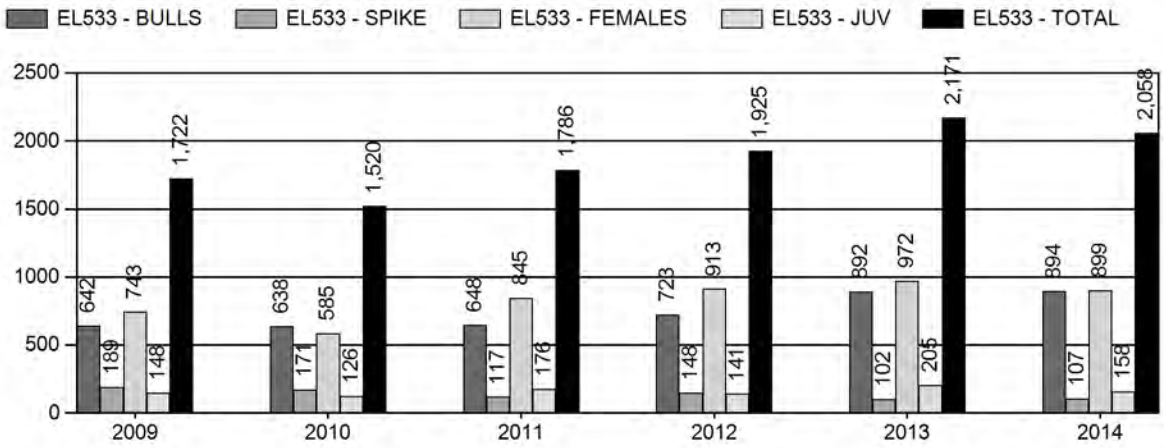
Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	33%
Number of years population has been + or - objective in recent trend:	10
Model Date:	05/11/2015

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

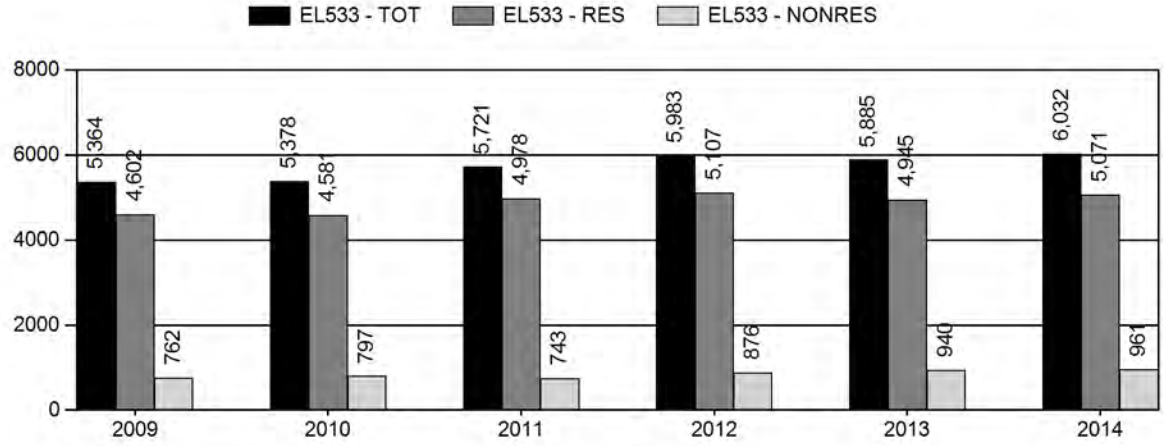
	JCR Year	Proposed
Females ≥ 1 year old:	17.2%	17%
Males ≥ 1 year old:	63.0%	51%
Juveniles (< 1 year old):	7.8%	5%
Total:	21.2%	21%
Proposed change in post-season population:	-23.4%	-6%



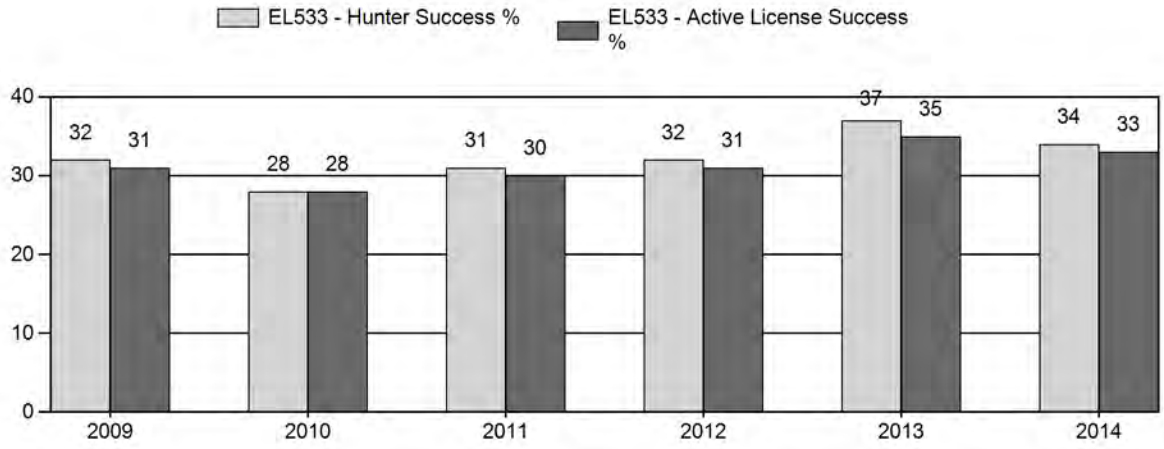
Harvest



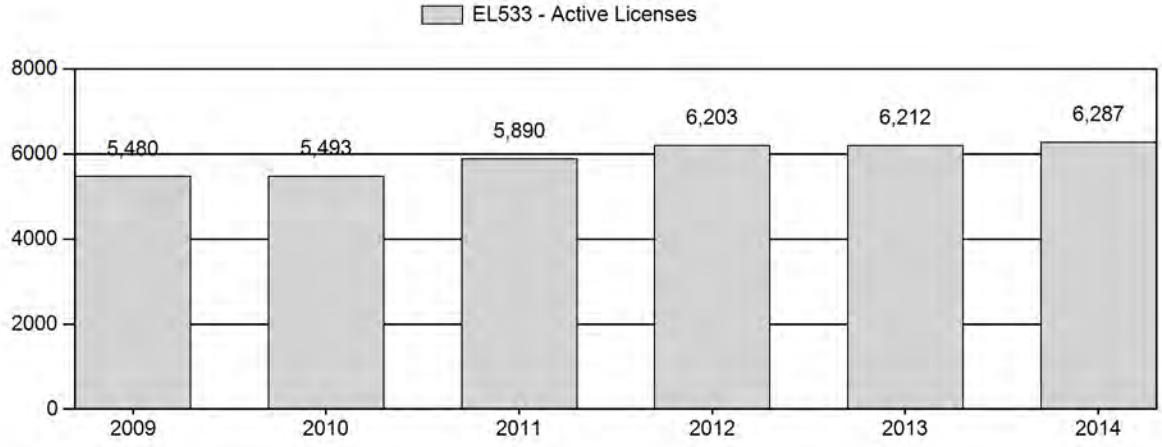
Number of Hunters



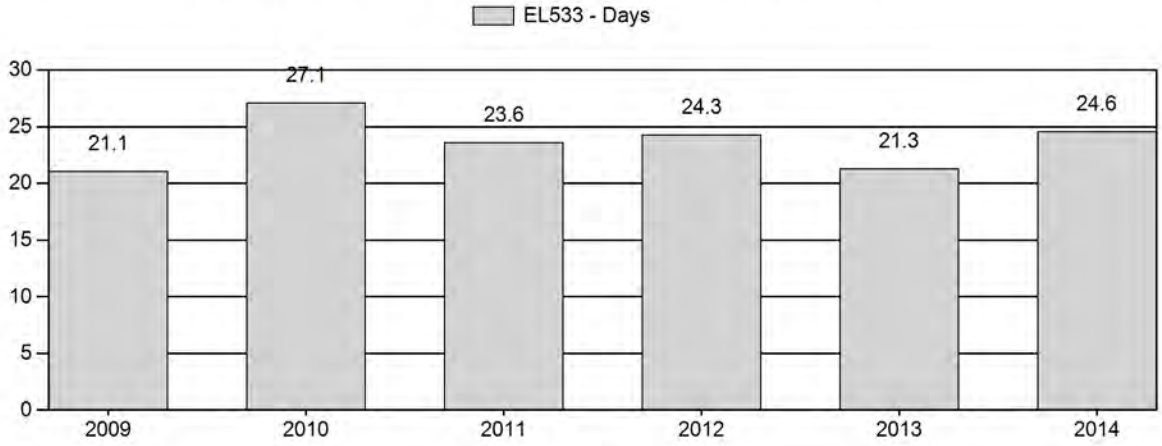
Harvest Success



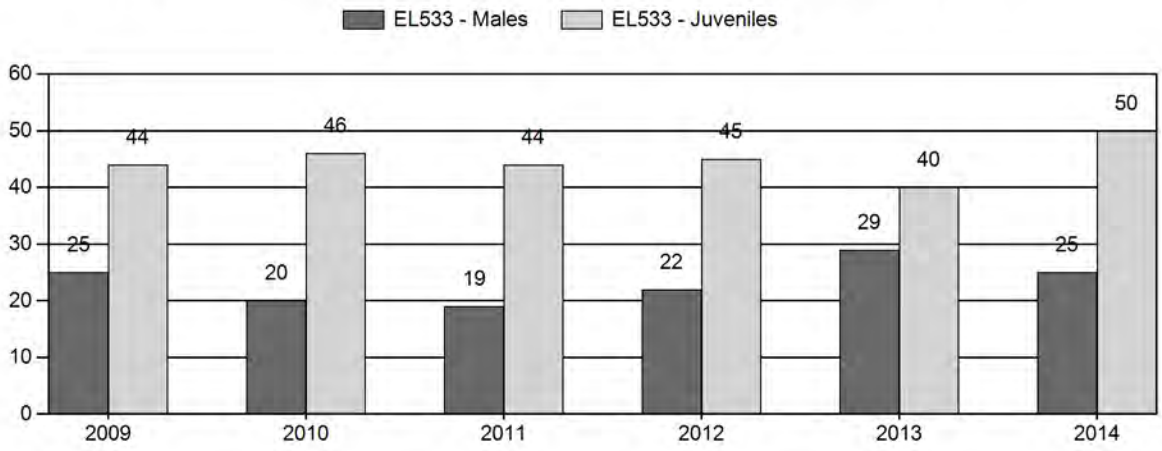
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL533 - SNOWY RANGE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	10,100	279	179	458	15%	1,816	59%	802	26%	3,076	679	15	10	25	± 1	44	± 2	35
2010	10,000	318	200	518	12%	2,633	60%	1,211	28%	4,362	650	12	8	20	± 1	46	± 2	38
2011	9,300	145	109	254	12%	1,308	61%	576	27%	2,138	639	11	8	19	± 1	44	± 2	37
2012	8,331	252	218	470	13%	2,181	60%	990	27%	3,641	664	12	10	22	± 1	45	± 2	37
2013	6,686	292	456	748	17%	2,539	59%	1,023	24%	4,310	646	12	18	29	± 1	40	± 1	31
2014	7,934	259	148	407	14%	1,609	57%	800	28%	2,816	640	16	9	25	± 1	50	± 2	40

Snowy Range Elk (EL533)
Hunt Areas 8, 9, 10, 11, 12, 110, 114 and 125
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
8	1	Oct. 1	Oct. 31	150	Limited quota	Any elk
		Nov. 1	Jan. 31			Unused Area 8 Type 1 licenses valid for any elk west of Sand Creek Road (Albany County Road 34) and antlerless elk east of Sand Creek Road (Albany County Road 34)
	6	Aug. 15	Jan. 31	100	Limited quota	Cow or calf
9		Oct. 15	Oct. 31		General	Any elk, spikes excluded
	6	Aug. 15	Sep. 30	150	Limited quota	Cow or calf valid on private land
		Oct. 1	Dec. 31			Unused Area 9 Type 6 licenses valid in the entire area
		Jan. 1	Jan. 31			Unused Area 9 Type 6 licenses valid off national forest
10		Oct. 15	Oct. 31		General	Any elk, spikes excluded
	6	Aug. 15	Sep. 30	400	Limited quota	Cow or calf valid on private land
		Oct. 1	Nov. 30			Unused Area 10 Type 6 licenses valid in the entire area
		Dec. 1	Jan. 31			Unused Area 10 Type 6 licenses valid off national forest
11	1	Oct. 1	Oct. 31	150	Limited quota	Any elk
	4	Oct. 1	Oct. 31	300	Limited quota	Antlerless elk
	6	Aug. 15	Jan. 31	50	Limited quota	Cow or calf valid off national forest and off the Wyoming Game and Fish Commission's Wick Wildlife Habitat Management Area
	9	Sep. 1	Sep. 30	50	Limited quota	Any elk, archery only
12		Oct. 15	Oct. 31		General	Any elk, spikes excluded
	6	Oct. 1	Nov. 14	150	Limited quota	Cow or calf
12, 13, 15, 110	7	Aug. 15	Jan. 31	75	Limited quota	Cow or calf valid on private land
110		Oct. 15	Oct. 31		General	Any elk, spikes excluded
	6	Oct. 1	Nov. 14	50	Limited quota	Cow or calf

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
114	1	Oct. 1	Jan. 31	50	Limited quota	Any elk
	6	Aug. 15	Jan. 31	75	Limited quota	Cow or calf
125	1	Oct. 1	Dec. 31	200	Limited quota	Any elk
		Jan. 1	Jan. 31			Unused Area 125 Type 1 licenses valid for antlerless elk
	6	Oct. 1	Jan. 31	200	Limited quota	Cow or calf
					Archery	Refer to Section 3 of Chapter. 7

Hunt Area	Type	Quota change from 2014
11	9	+50
114	6	-75
Herd Unit Total	**9**	**+50**
	6	**-75**

Management Evaluation

Current Management Objective: 6,000 (4,800 – 7,200)
Management Strategy: Recreational
2014 Postseason Population Estimate: 8,000
2015 Proposed Postseason Population Estimate: 8,000
2014 Hunter Satisfaction: 65% Satisfied, 20% Neutral, 15% Dissatisfied

Elk in The Snowy Range herd unit are managed toward a numeric objective of 6,000. The population was estimated using a spreadsheet models developed in 2012 and updated in 2014. The herd is managed for recreation opportunity. The objective was last reviewed in 2013.

Herd Unit Issues

The Snowy Range herd unit covers a large portion of south central Wyoming. Issues here include development in the form of energy, agricultural, residential, invasive and noxious plants, forestry and range management, and travel management in important elk habitat.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. Neither significant prolonged periods of extreme heat or cold temperatures were observed nor was extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on elk. Mild fall temperatures and lack of persistent snows

allowed for elk to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Snowy Range herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunk brush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently have not heavily influenced population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Turnover in personnel, changes in individual job responsibilities of employees, and evolving WGFD agency priorities have resulted in some issues with consistent habitat data collection and interpretation of data. Some transects, years after their initial establishment, have been identified as being in "non-representative" locations. Site selection was often influenced by terrain and/or land ownership status (i.e. public access). Changing land uses (wind turbines, roads, fence construction, other developments, etc.) have influenced habitat use by wildlife in some locations, and in some instances have resulted in major shifts in animal usage of the area being monitored. Department personnel are currently evaluating shrub transects and the types of information being collected, and will be looking for ways to improve efficiency of data collection, types of data being collected, and refining criteria for site selection for future transects. This may result in changing habitat monitoring protocols to improve the quality and quantity of data being gathered. These potential changes will hopefully result in improved validity of

habitat information being gathered, and may prove to be a useful tool in population management of wild ungulates.

Field Data

In 2014, we classified elk from a helicopter in conjunction with local mule deer classifications. A postseason classification sample of 2,816 elk produced ratios of 25 bulls and 50 calves per 100 cows in this herd unit (Figure 1). The high calf ratio was attributed to the previous mild winter and timely summer precipitation which enhanced calf and survival. A comparison of the trend in bull ratios between general season hunt areas and limited quota hunt areas in the Snowy Range herd unit demonstrated the difference in ratios between the 2 hunting season strategies (Figure 2). Limited quota area bull ratios were generally higher in trend than in general hunt areas. The trend in general hunt area ratios has become stable and within the recreational management strategy parameters.

Figure 1. 2005-2014 Bull and calf ratios per 100 cows from the Snowy Range Elk Herd Unit, Wyoming.

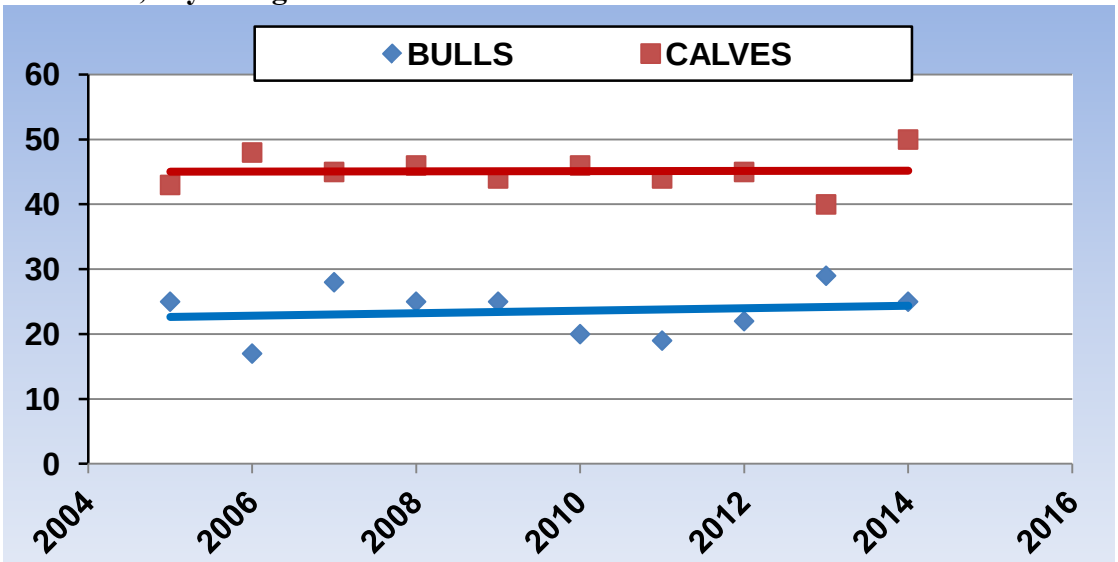
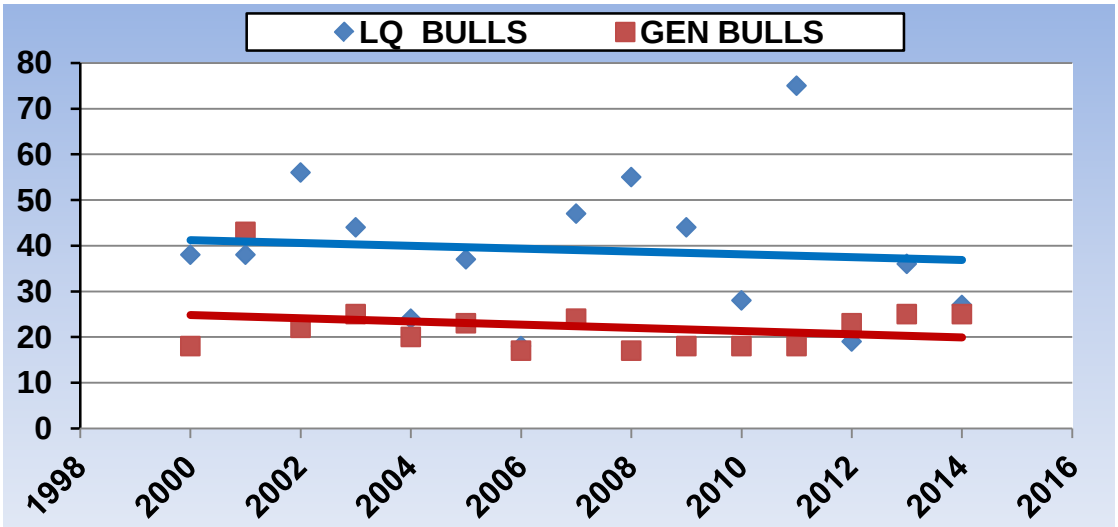


Figure 2. 2000-2014 Bull ratios per 100 cowsfrom limited quota (8, 11, 114, 125) and general season (9, 10, 12, 110) Hunt Areas in the Snowy Range Elk Herd Unit, Wyoming.



Harvest Data

The 2014 preliminary harvest survey data indicated 6,200 (same as 2013) active licensed hunters harvested 2,200 (15% decrease from 2013), with a total harvest success rate of 35% (6% decrease from 2013). Branch antlered bulls accounted for 90% of the male harvest in 2014 and 44% of the overall harvest. The spikes excluded seasons in areas 12 and 110 did result in lower spike harvest rates in those hunts when compared to previous year's harvest rates. The proportion of spikes in the male harvest for the entire herd unit declined from 9% in 2013 to 5% in 2014. Postseason spike ratios in hunt areas 12 and 110 improved with the general season limitation in 2014. Antlerless elk accounted for 56% of the total 2014 elk harvest. Overall, harvest rates under the current liberal hunting season structure continue to be maintained at a very acceptable level.

Population

In 2014, we switched from the SCJ, SCA spreadsheet model to the CJ, CA model to simulate Snowy Range herd unit population dynamics. The other 2014 models either ceased to run due to predicting bull harvest exceeding the number estimated to be available; or was not biologically realistic (i.e. 50,000 elk in 1993). This switch in models and the relatively high 2014 calf ratio increased the 2014 postseason estimate by approximately 2,000 elk over what we were predicting in 2013. A decreasing trend in the annual estimate was retained in the CJ, CA and considered to be consistent with the observations by field managers. Without other information such as an independent abundance estimate or historical survival data to incorporate into the model accuracy of estimates will continue to be unknown. We considered the 2014 postseason estimate produced by the CJ, CA spreadsheet model to be plausible.

We rated this model as fair, and biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

Management Summary

The hunting seasons in the Snowy Range Herd Unit continue to provide opportunities to reduce the overall elk population. Elk numbers appear to be declining towards the management objective and we may need to consider reducing antlerless harvest rates in the not so distant future. In addition to the Hunt Areas 12 and 110, spikes excluded limitations were added to the Hunt Area 9 and 10 general season limitation to assist in maintaining future branch antlered bull ratios, which had been in decline.

A Type 9 archery only season was added to Hunt Area 11 in order to provide additional hunting opportunity. This license type was supported by the results of a survey which gauged the attitudes of hunters who had previously applied to hunt in Hunt Area 11 (APPENDIX I). The survey indicated hunters who supported the addition of a Type 9 license supported implementing this season as a choose your weapon season; where only Type 9 hunters would be allowed to hunt in September and Type 1 and Type 4 licensed hunters would only be able to hunt during the rifle season in October. However, Type 1 and Type 4 licensed hunters will also be allowed an opportunity to hunt September 15 – September 30 with a Special Archery permit.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

Reeve, A.F., F.G. Lindzey, and S.H. Anderson. 2003. Elk population in Wyoming: 1978-2001. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming. USA. 138pp.

2014 Elk Hunt Area 11 hunter attitude survey regarding Type 9 archery only elk licenses

Conducted by: Corey Class, Laramie Region Wildlife Management Coordinator

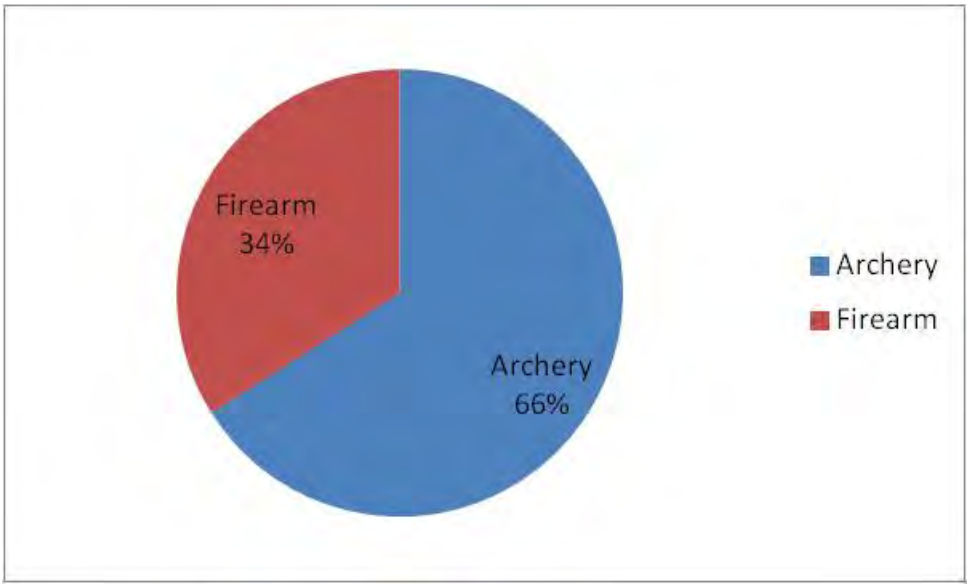
Survey Summary

In late summer of 2014 the Wyoming Game and Fish Department developed and sent out an invitation to participate in a Type 9 (archery only) elk hunter survey online to 326 randomly selected Type 1 and 4 elk hunters from Hunt Area11. The survey process was initiated due to a high demand for type 9 hunting opportunities for elk demonstrated during the previous year's season setting process. The pool of hunters included all hunters who applied for Type 1 or Type 4 licenses over the past 3 years. A power analysis was conducted to determine how many surveys would need to obtained using an assumed response rate of 30%. This assumption proved to be optimistic, with only 51 (16%) people responding to the survey. Overall, respondents desired a Type 9 elk hunt in hunt area 11, and they preferred the Type 9 be exclusive to archery hunters only, removing the traditional Type 1 special archery season for Type 1 and Type 4 license holders.

Survey Question Results

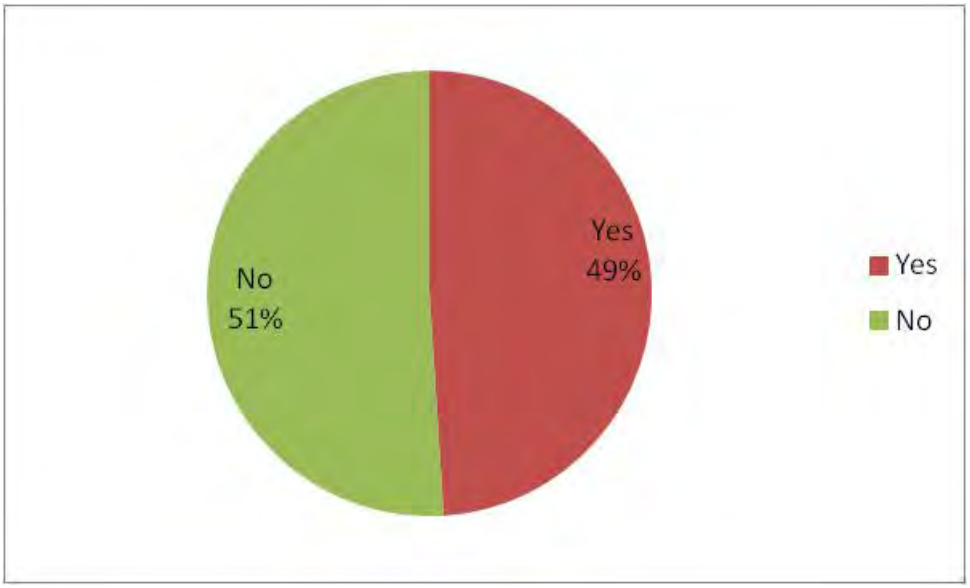
1. What weapon do you prefer to use when hunting in elk Hunt Area 11?

Archery	33
Firearm	17



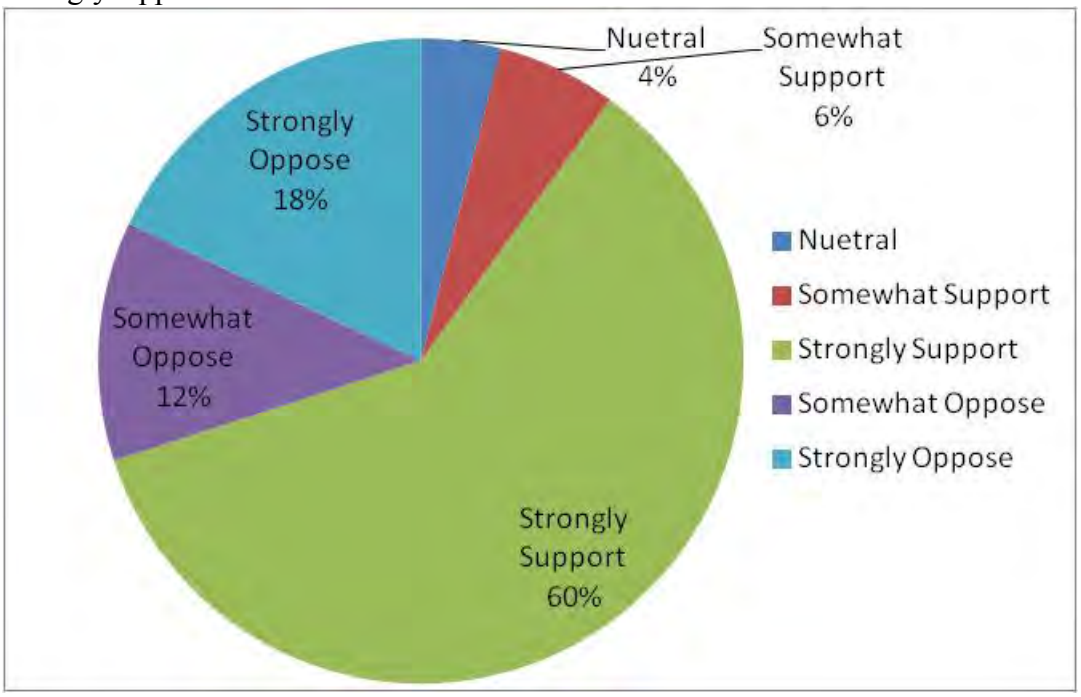
2. Have you ever archery hunted elk in Hunt Area 11?

Yes	24
No	25



3. For Elk Hunt Area 11, would you support the addition of a Type 9 license (archery only) hunting opportunity?

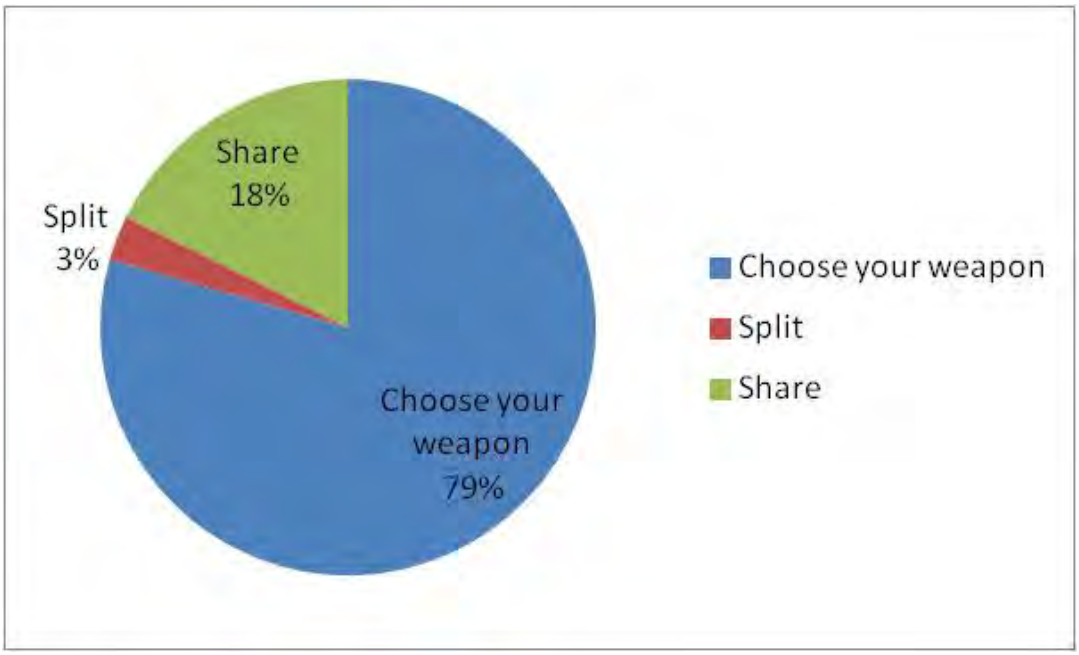
Neutral	2
Somewhat Support	3
Strongly Support	30
Somewhat Oppose	6
Strongly Oppose	9



4. If you strongly support or somewhat support a Type 9 (archery only) hunting opportunity, what format would you prefer?

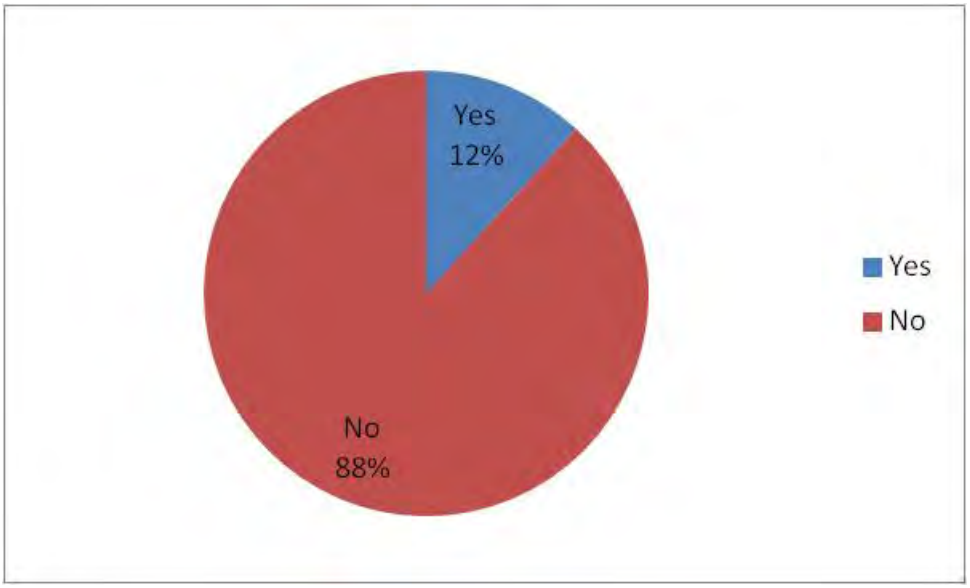
- Choose your weapon - Only Type 9 hunters can hunt the archery season, which would mean a "choose your weapon season" while Type 1 hunters would only be able to hunt the rifle season.
- Split - Only Type 9 hunters can hunt the first two weeks of September, but both Type 9 and Type 1 hunters can hunt the last two weeks of September.
- Share - Type 9 hunters and Type 1 hunters hunt archery season together.

Choose your weapon	27
Split	1
Share	6



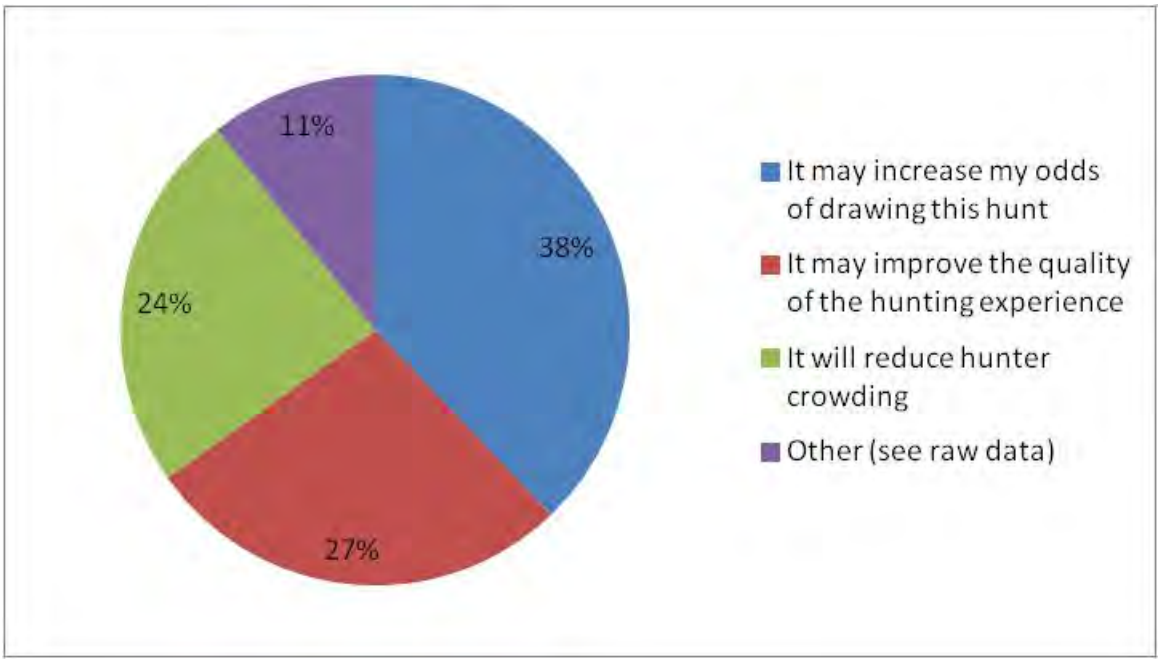
5. Have you applied for Type 9 (archery only) elk licenses before?

Yes	6	(*Hunt Areas 32, 34, Bighorns*)
No	45	



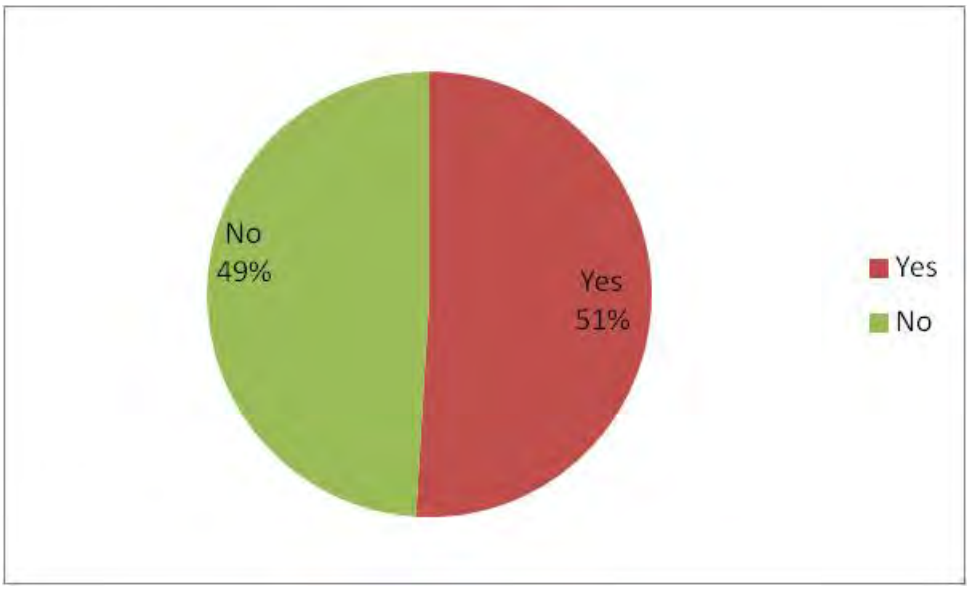
6. If you support Type 9 (archery only) hunting opportunities in Elk Hunt Area 11, Why?

It may increase my odds of drawing this hunt	25
It may improve the quality of the hunting experience	18
It will reduce hunter crowding	16
Other (see raw data)	7



7. Would you continue to apply for a Type 1 Elk License in Hunt Area 11 if the special archery hunt was removed and became a Type 9 only hunt?

Yes 26
No 25



INPUT	
Species:	ELK
Biologist:	WILL SCHULTZ
Herd Unit & No.:	SNOWY RANGE 533
Model date:	05/11/15

☐ Clear form

MODEL EVALUATION: **FAIR**

MODELS SUMMARY

		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	443	452	☑ CJ,CA Model	*Constrained CJ @ <0.95 & >0.8 and CA @ <0.98 & .0.85*
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	304	314	☐ SCJ,SCA Mod	*Crashed in 2015. Constrained SCJ @ <0.95 & >0.5 and SCA @ <0.98 & .0.8*
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	232	375	☐ TSJ,CA Model	Crashed in 2015.
TSJ,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	123	250	☐ TSJ,CA,MSC Model	Population estimate not biologically plausible

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				2182	2019	5623	9825	1951	1073	4632	7657	6000
1994				2462	1802	5189	9453	2337	1062	4703	8102	6000
1995				2563	1945	5411	9919	2433	1255	4935	8622	6000
1996				2488	2167	5669	10325	2362	1566	4806	8734	6000
1997				2490	2436	5519	10445	2313	1390	4558	8261	6000
1998				2485	2248	5264	9997	2363	1480	4645	8488	6000
1999				2596	2354	5366	10316	2385	1529	4715	8629	6000
2000				2465	2409	5441	10316	2297	1767	4718	8781	6000
2001				2551	2600	5409	10560	2345	1726	4677	8747	6000
2002				2548	2580	5389	10517	2430	1785	4900	9115	6000
2003				2149	2671	5635	10455	2040	1815	5046	8900	6000
2004				2995	2543	5618	11156	2861	1563	5099	9523	6000
2005				2474	2632	5997	11103	2353	1756	5425	9534	6000
2006				2755	2613	6104	11471	2615	1661	5501	9777	6000
2007				2682	2627	6281	11591	2535	1703	5640	9878	6000
2008				2760	2635	6382	11777	2627	1737	5723	10087	6000
2009				2671	2704	6497	11873	2508	1790	5680	9978	6000
2010				2790	2707	6409	11906	2652	1817	5766	10234	6000
2011				2668	2790	6548	12006	2474	1948	5618	10041	6000
2012				2558	2844	6337	11738	2403	1869	5293	9565	6000
2013				2211	2740	5998	10950	1986	1647	4929	8562	6000
2014				2409	2362	5485	10256	2236	1261	4496	**7993**	6000
2015				2285	2094	5174	9552	2107	1202	4239	7548	6000
2016												6000
2017												6000
2018												6000
2019												6000
2020												6000
2021												6000
2022												6000
2023												6000
2024												6000
2025												6000

Survival and Initial Population Estimates

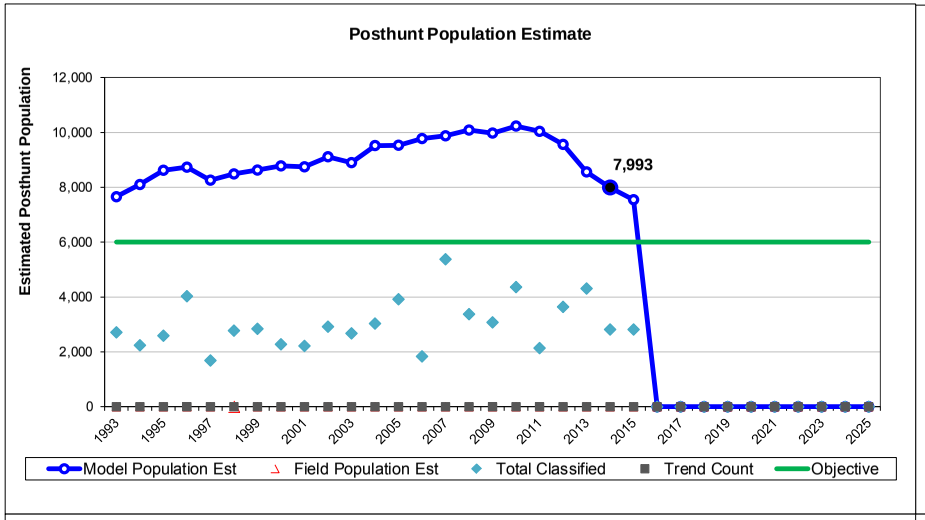
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.80			0.95		
1994	0.80			0.95		
1995	0.80			0.95		
1996	0.80			0.95		
1997	0.80			0.95		
1998	0.80			0.95		
1999	0.80			0.95		
2000	0.80			0.95		
2001	0.80			0.95		
2002	0.80			0.95		
2003	0.80			0.95		
2004	0.80			0.95		
2005	0.80			0.95		
2006	0.80			0.95		
2007	0.80			0.95		
2008	0.80			0.95		
2009	0.80			0.95		
2010	0.80			0.95		
2011	0.80			0.95		
2012	0.80			0.95		
2013	0.80			0.95		
2014	0.80			0.95		
2015	0.80			0.95		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

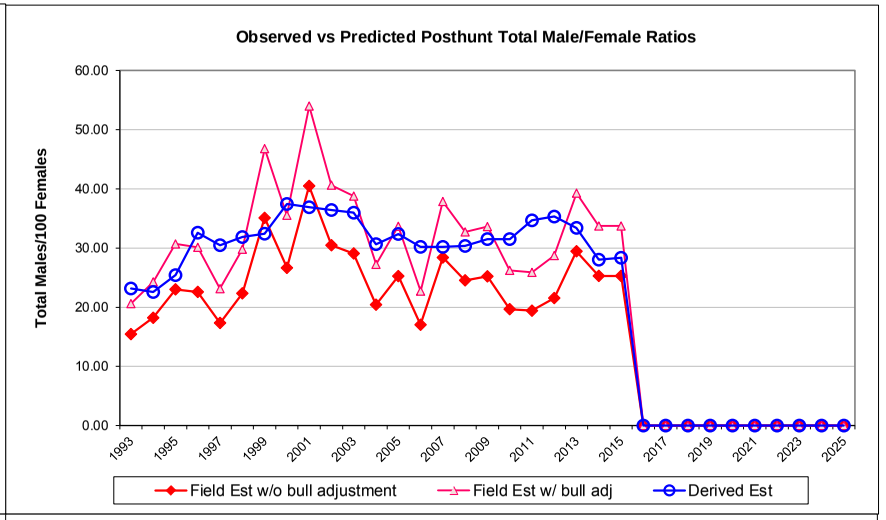
Parameters:	Optim cells
Juvenile Survival =	0.800
Adult Survival =	0.952
Initial Total Male Pop/10,000 =	0.107
Initial Female Pop/10,000 =	0.463

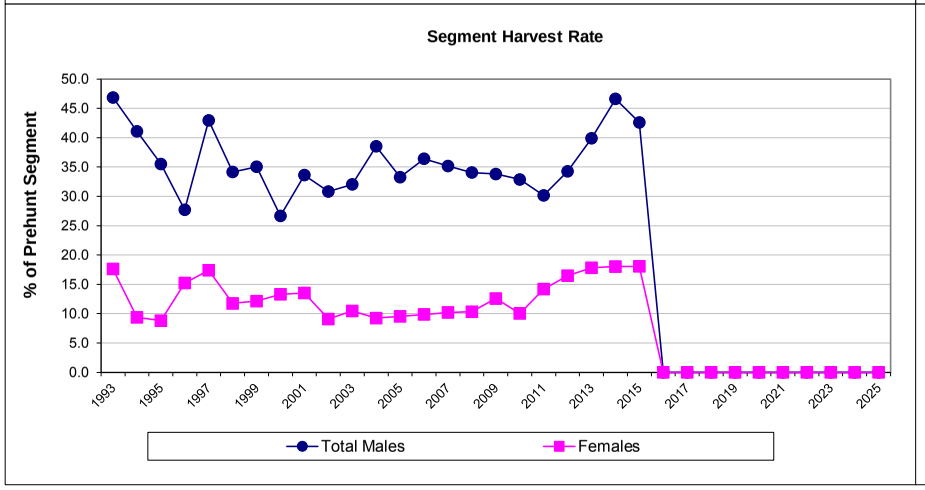
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Total Bulls Adjustment Factor	75%

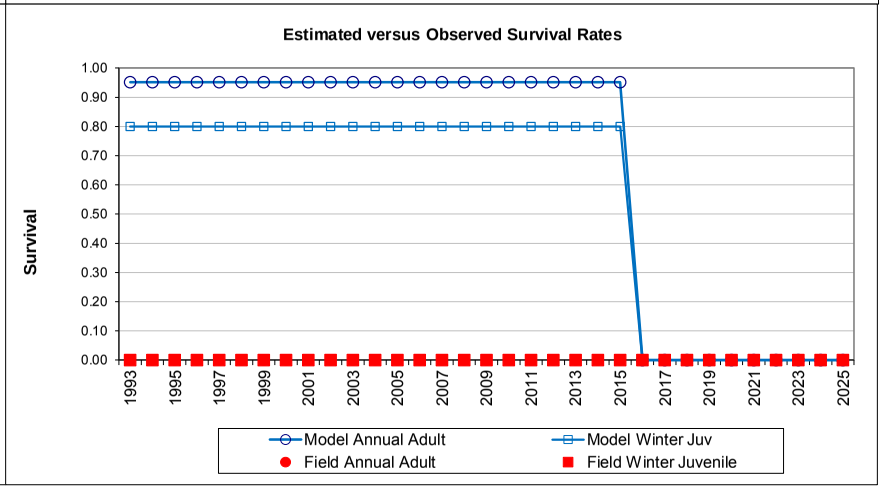
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio				Harvest					Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		42.13	1.87	23.17	20.61	15.46	1.02	210	249	611	901	1971	46.9	17.6
1994		49.70	2.36	22.57	24.29	18.22	1.27	113	199	474	442	1228	41.1	9.4
1995		49.30	2.21	25.42	30.69	23.02	1.37	118	206	422	433	1179	35.5	8.8
1996		49.15	1.77	32.59	30.12	22.59	1.09	115	118	428	785	1446	27.7	15.2
1997		50.75	2.76	30.48	23.13	17.35	1.42	161	266	685	873	1985	43.0	17.4
1998		50.87	2.19	31.86	29.80	22.35	1.31	111	158	540	562	1371	34.2	11.7
1999		50.59	2.23	32.42	46.80	35.10	1.76	192	203	547	592	1534	35.1	12.1
2000		48.69	2.36	37.45	35.54	26.66	1.61	153	117	467	658	1395	26.7	13.3
2001		50.13	2.54	36.89	54.00	40.50	2.21	188	165	630	665	1648	33.6	13.5
2002		49.60	2.14	36.43	40.63	30.48	1.57	107	97	626	445	1275	30.8	9.1
2003		40.43	1.90	35.97	38.78	29.09	1.54	99	149	629	536	1413	32.0	10.5
2004		56.11	2.26	30.66	27.24	20.43	1.20	122	113	778	472	1485	38.5	9.2
2005		43.37	1.64	32.38	33.68	25.26	1.17	110	190	606	520	1426	33.3	9.5
2006		47.53	2.51	30.20	22.72	17.04	1.34	127	160	705	548	1540	36.4	9.9
2007		44.94	1.45	30.19	37.87	28.40	1.08	134	157	683	583	1557	35.2	10.2
2008		45.91	1.84	30.35	32.73	24.55	1.24	121	179	637	599	1536	34.1	10.3
2009		44.16	1.87	31.51	33.63	25.22	1.32	148	189	642	743	1722	33.8	12.6
2010		45.99	1.60	31.51	26.23	19.67	0.95	126	171	638	585	1520	32.9	10.0
2011		44.04	2.20	34.68	25.89	19.42	1.33	176	117	648	845	1786	30.2	14.2
2012		45.39	1.74	35.32	28.73	21.55	1.10	141	153	733	949	1976	34.3	16.5
2013		40.29	1.49	33.41	39.28	29.46	1.23	205	102	892	972	2171	39.9	17.8
2014		49.72	2.15	28.03	33.73	25.30	1.40	158	107	894	899	2058	46.6	18.0
2015		49.72	2.15	28.35	33.73	25.30	1.40	161	50	761	850	1822	42.6	18.1
2016														
2017														
2018														
2019														
2020														
2021														
2022														
2023														
2024														
2025														

FIGURES





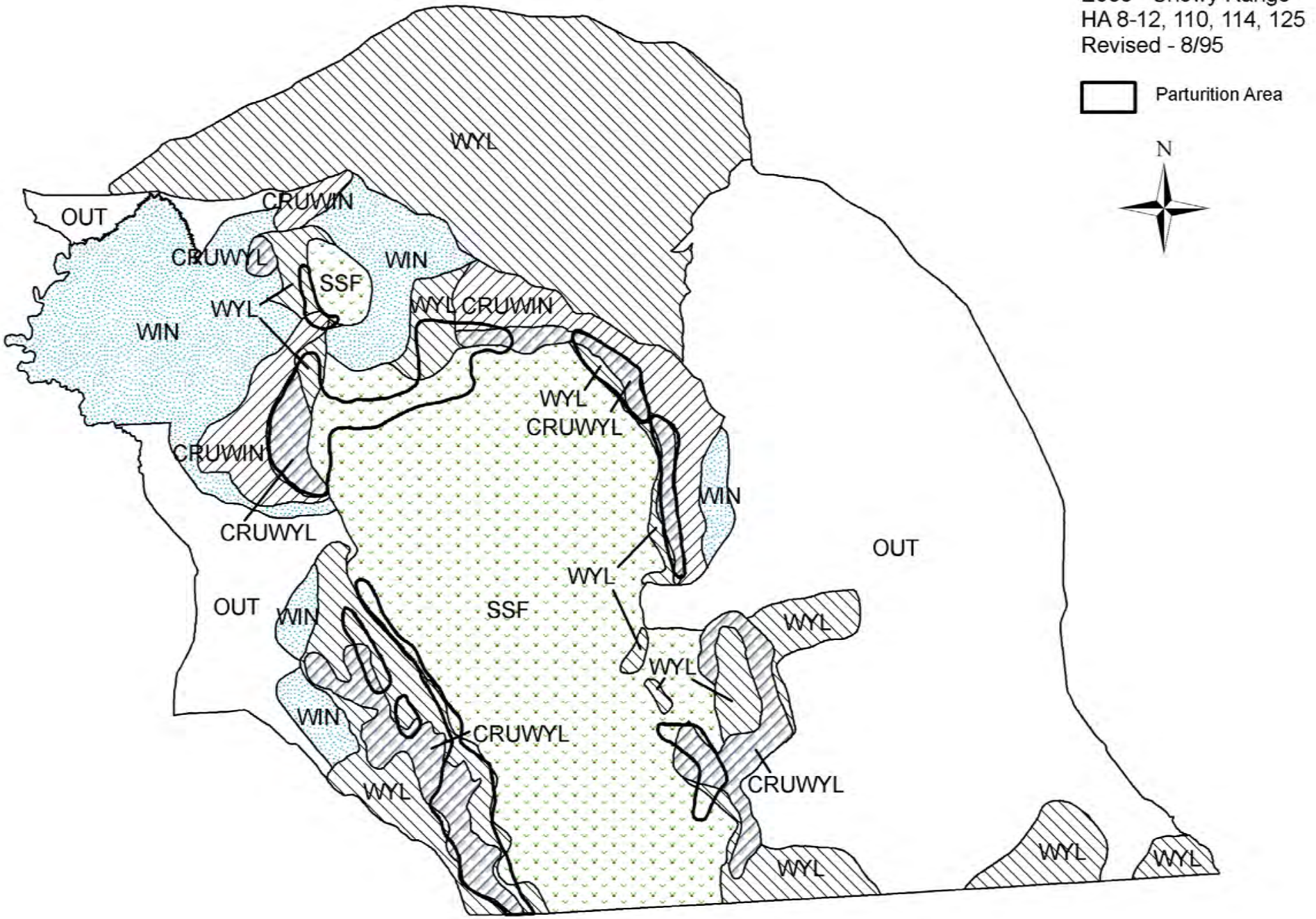




Comments:

The CA, CA model was selected because it produced the only biologically plausible model which continued to function through 2015. This is the simplest model but may overestimate the population. However, without other information (e.g. an independent population estimate or survival data) for comparison it is difficult to determine which of these 4 models produced the most accurate estimate. WS 11 May '15

END


E533 - Snowy Range
HA 8-12, 110, 114, 125
Revised - 8/95
Parturition Area
N
WYL
OUT
CRUWIN
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2014 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2014 - 5/31/2015

HERD: EL534 - SHIRLEY MOUNTAIN

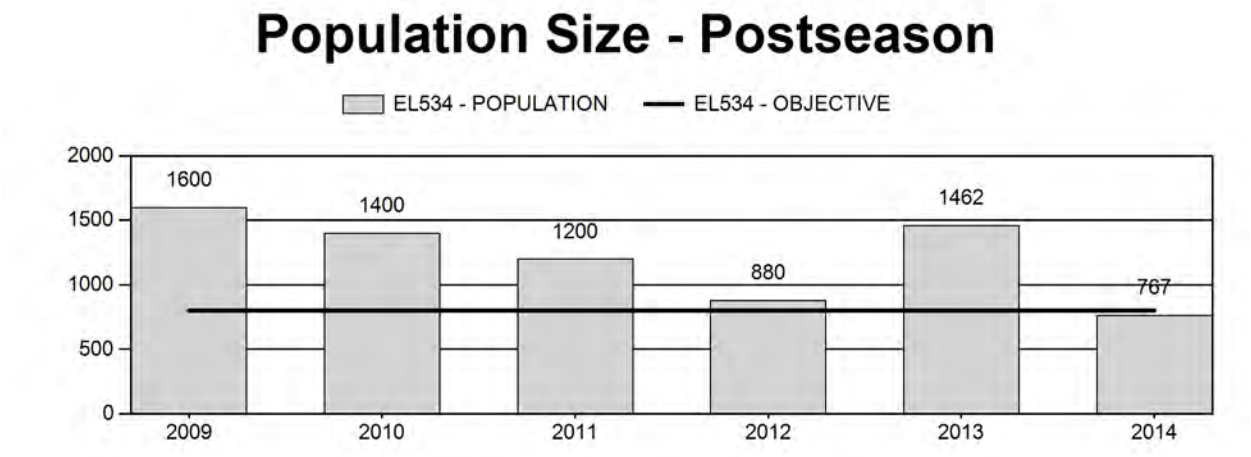
HUNT AREAS: 16 | PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	1,308	767	419
Harvest:	337	354	382
Hunters:	586	622	622
Hunter Success:	58%	57%	61%
Active Licenses:	609	651	646
Active License Success:	55%	54%	59%
Recreation Days:	4,424	4,859	4,715
Days Per Animal:	13.1	13.7	12.3
Males per 100 Females	35	21	
Juveniles per 100 Females	44	43	

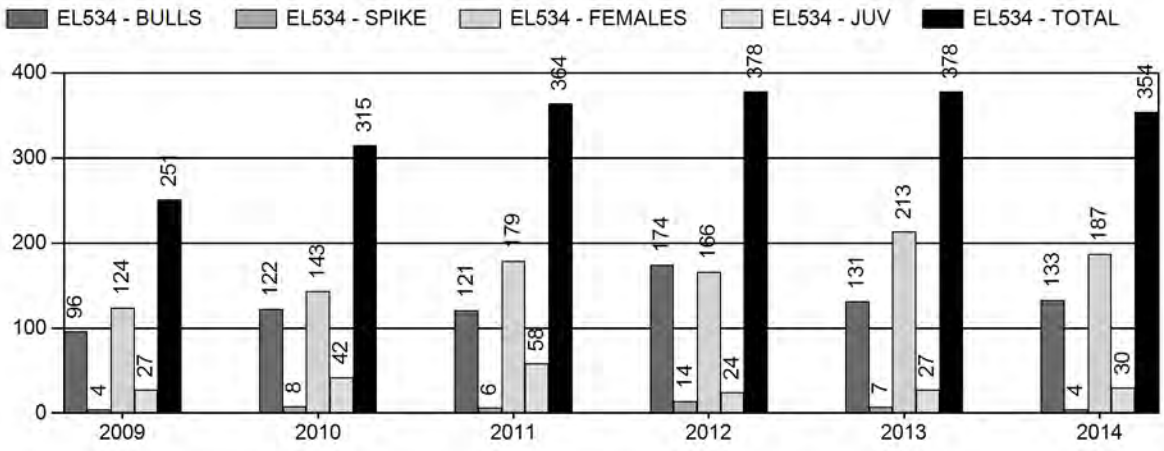
Population Objective (± 20%) :	800 (640 - 960)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-4.1%
Number of years population has been + or - objective in recent trend:	0
Model Date:	5/11/2015

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

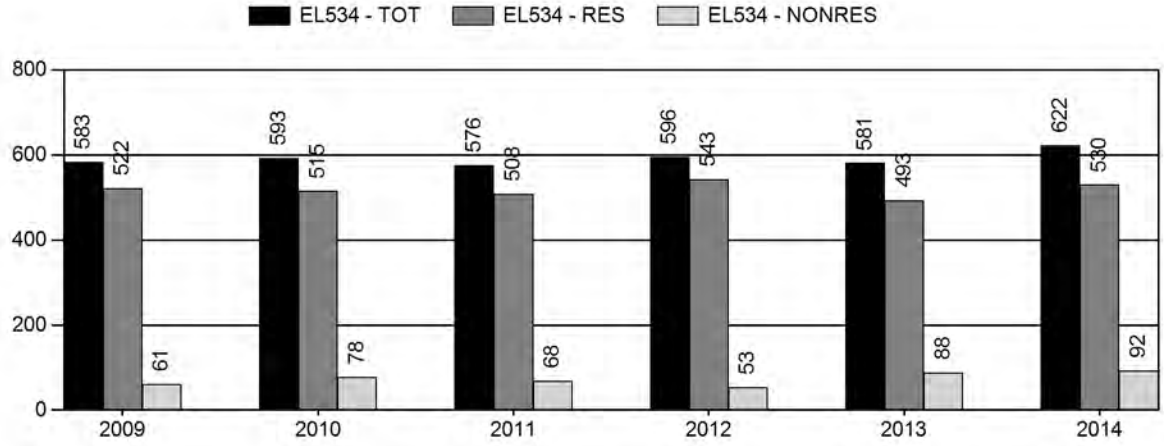
	JCR Year	Proposed
Females ≥ 1 year old:	29%	51%
Males ≥ 1 year old:	41%	60%
Juveniles (< 1 year old):	11%	27%
Total:	27%	50%
Proposed change in post-season population:	-29%	-45%



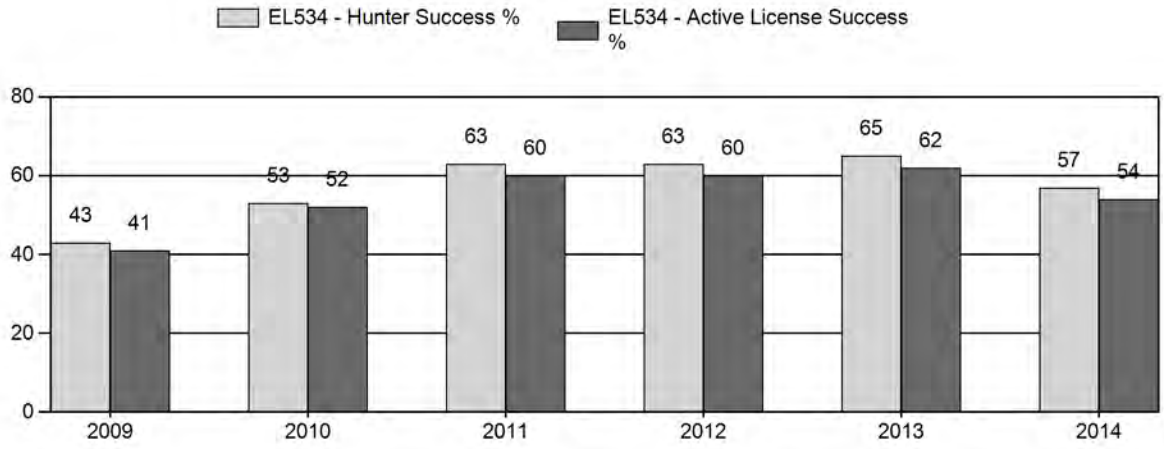
Harvest



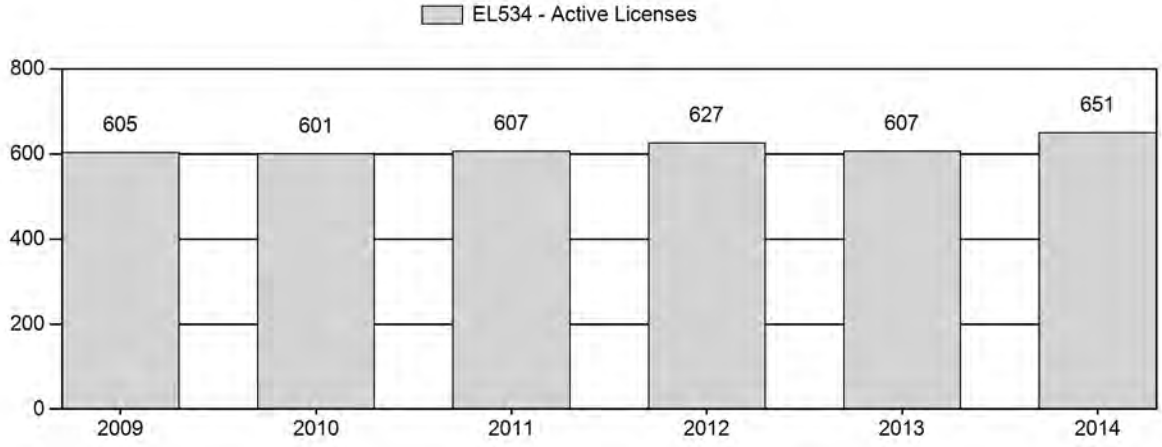
Number of Hunters



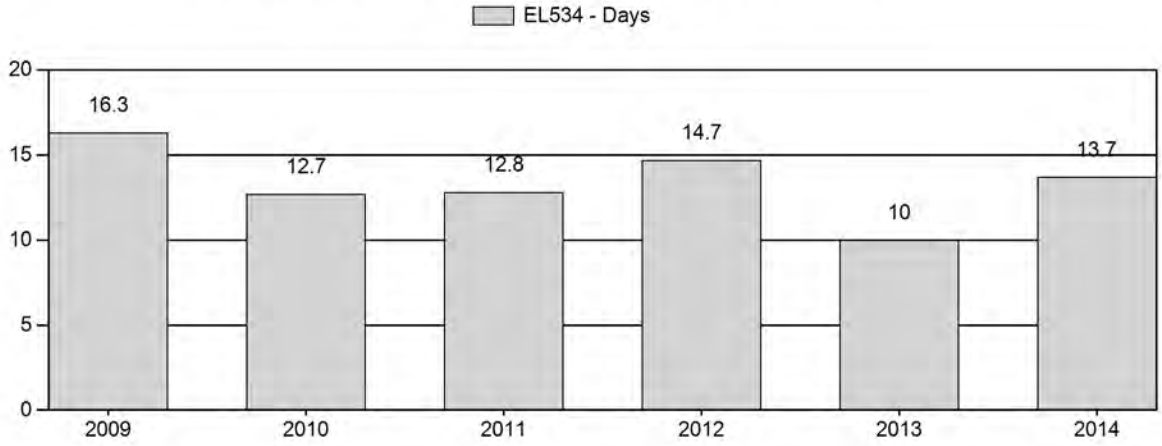
Harvest Success



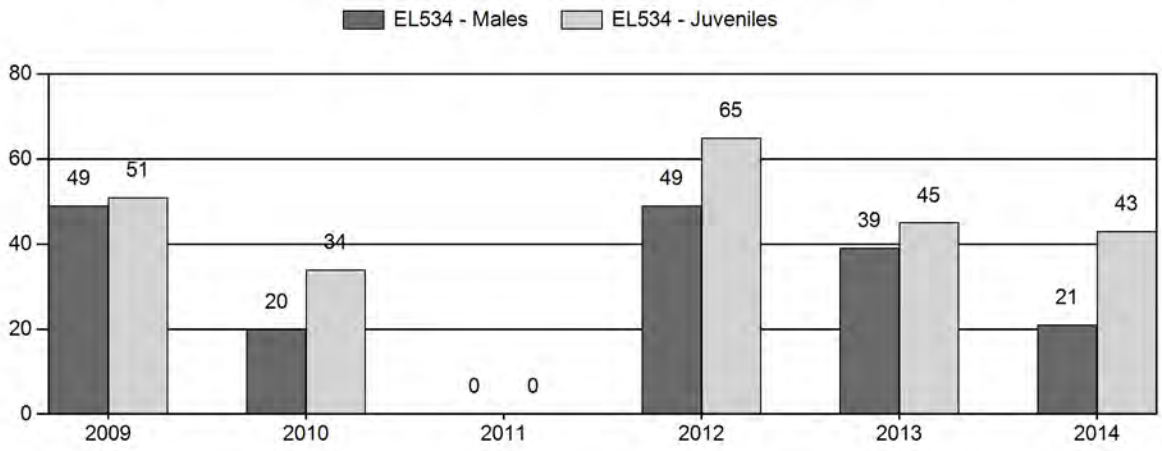
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL534 - SHIRLEY MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	1,600	37	108	145	25%	295	50%	151	26%	591	463	13	37	49	± 5	51	± 5	34
2010	1,400	49	42	91	13%	449	65%	151	22%	691	469	11	9	20	± 2	34	± 3	28
2011	1,200	0	0	0	0%	0	0%	0	0%	0	500	0	0	0	± 0	0	± 0	0
2012	880	8	32	40	23%	81	47%	53	30%	174	420	10	40	49	± 11	65	± 13	44
2013	1,462	52	90	142	21%	365	54%	165	25%	672	568	14	25	39	± 4	45	± 4	33
2014	703	14	47	61	13%	294	61%	127	26%	482	395	5	16	21	± 2	43	± 3	36

Shirley Mountain Elk (EL534)
Hunt Areas 16
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
16	1	Oct. 1	Oct. 31	150	Limited quota	Any elk
	2	Nov. 1	Nov. 30	50	Limited quota	Any elk
		Dec. 1	Dec. 15			Unused Area 16 Type 1 and Type 2 licenses valid on the Beer Mug Hunter Management Area (HMA permission slip required)
		Jan. 15	Jan. 31			Unused Area 16 Type 1 and Type 2 licenses valid on the Beer Mug Hunter Management Area (HMA permission slip required)
	4	Oct. 1	Jan. 31	300	Limited quota	Antlerless elk
	6	Aug. 15	Sep. 30	200	Limited quota	Cow or calf valid on private land
		Oct. 1	Jan. 31			Unused Area 16 Type 6 licenses valid in the entire area
					Archery	Refer to Section 3 of Chapter. 7

Hunt Area	Type	Quota change from 2014
16		**None**

Management Evaluation
Current Management Objective: 800 (640 - 960)
Management Strategy: Recreational
2014 Postseason Population Estimate: 700
2015 Proposed Postseason Population Estimate: 400
2014 Hunter Satisfaction: 75% Satisfied, 15% Neutral, 10% Dissatisfied

Elk in the Shirley Mountain herd unit are managed toward a numeric objective of 800. The population was estimated using a spreadsheet model developed in 2012 and updated in 2014. The herd is managed for recreation opportunity. The objective was last reviewed in 1997 and planned for review in 2015.

Herd Unit Issues

Wind energy developments are a relatively new land use in this herd unit. There a currently 2 wind farms in this herd unit and there is interest in developing more wind farms. Our ability to manage elk numbers through harvest is difficult because a large portion of the elk habitat in this herd unit is owned by one landowner who provides a very limited amount of access. Elk damage in this herd unit is minimal. Interchange of elk with adjacent herd units may compromise the closed population assumption for this herd unit. Annual population monitoring efforts and results have been highly variable due to no annual allocation of flight budget resources.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on elk. Mild fall temperatures and lack of persistent snows allowed for elk to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Shirley Mountain herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunk brush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago.

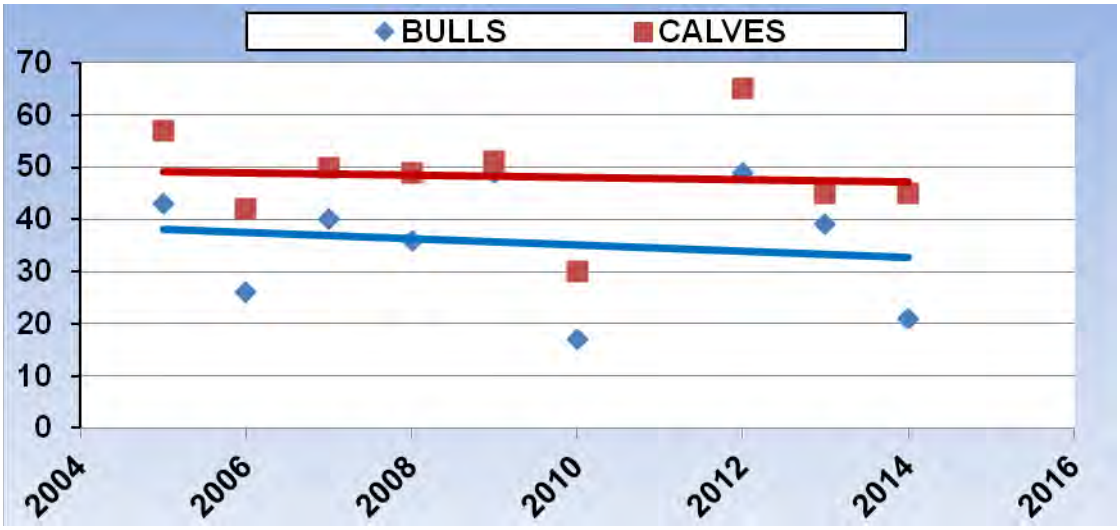
Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently have not heavily influenced population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Field Data

Postseason classification surveys were conducted from the ground in January of 2015. The 2014 postseason ratios were 21 bulls and 43 claves/100 cows, from a sample size of 482 elk. This sample is thought to have under sampled the bull segment of the population. The trend from past classifications inferred this herd unit was still above the recreational management strategy maximum for bull ratios (Figure 1). The collection of classification data has varied annually in methodology primarily due to no dedicated flight budget for this herd.

Figure 1. Wyoming 2005-2014 Shirley Mountain Elk Herd Unit bull and calf ratio trend.



Harvest Data

Preliminary elk harvest survey data indicated 619 active licensed hunters' harvested 382 elk in 2014, with an overall success rate of 62%. 2014 harvest success decreased 8% from 2013 harvest. 2014 bull harvest (n=138) was a 1% decrease from 2013. Antlerless harvest (n=240) decreased 19% in 2014. This harvest rate appeared high in respect to the population estimate.

Population

In 2014, we selected the TSJ,CA,MSC model again to simulate elk population dynamics in the Shirley Mountain herd unit. This model was the only model in the 2014 suite of models which did not cease functioning due to harvest rates. The 2014 observed bull ratios were replaced in the model with an average because they were not considered representative. The 2014 postseason population estimate was plausible; however, the trajectory in trend for this model's annual population estimates appears unrealistic. The 2014 postseason population of 760 elk is thought to be low, because our classification sample of almost 500 elk was obtained from a ground survey in a relatively small portion of the herd unit. Field managers speculated there were 750 – 1,200 elk in the herd unit.

Preliminary data from the Dunlap Wind Farm elk telemetry project has documented antidotal elk interchange between the Shirley Mountain and Laramie Peak/Muddy Mountain herd units. The proportion of interchange will be reported at the conclusion of this research project. This factor may contribute along with poor classification data to the population model's inability to provide estimates which are comparable to field observations and supported by the annual harvest rates. Ultimately, we will be unable to develop more accurate population estimates for this herd unit without conducting abundance surveys or collecting long-term juvenile and adult survival estimates.

We rated this model as poor, in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

Management Summary

The 2015 Shirley Mountain Herd Unit hunting seasons were proposed the same as the previous two seasons, and will continue to provide opportunities to reduce the overall elk population and reduce bull ratios towards recreational parameters. Elk numbers appear to be stable to decreasing in trend. The continued operation of the Beer Mug Mountain Hunter Management Area has provided additional harvest opportunities for many elk hunters in this herd unit.

In 2014 we conducted a hunter attitude survey regarding a proposal to implement a Type 9 archery only license in this herd unit. Results of this survey indicated surveyed hunters supported a Type 9 hunting opportunity (APPENDIX I). However, survey response rate was poor (7%), and there was a fair amount of opposition to Type 9 hunts for this area at public meetings. Therefore, we did not propose a Type 9 license in the Shirley Mountain elk herd unit in 2015.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

None at present time.

2014 Elk Hunt Area 16 hunter attitude survey regarding Type 9 archery only licenses

Conducted by: Corey Class, Laramie Region Wildlife Management Coordinator

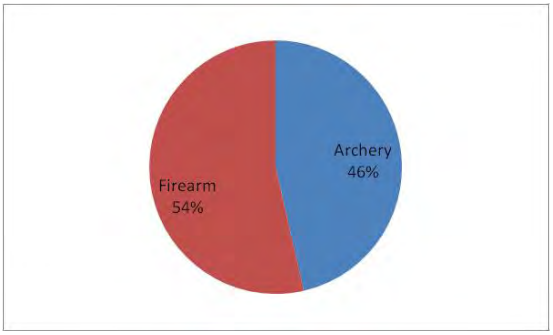
Survey Summary

In late summer of 2014 the Wyoming Game and Fish Department developed and sent out an invitation to participate in a Type 9 (archery only) elk hunter survey online to 326 randomly selected Type 1 and 4 elk hunters from Hunt Area16. The survey process was initiated due to a high demand for Type 9 hunting opportunities for elk demonstrated during the previous year's season setting process. The pool of hunters included all hunters who applied for Type 1 or Type 4 licenses over the past 3 years. A power analysis was conducted to determine how many surveys would need to obtained using an assumed response rate of 30%. This assumption proved to be optimistic, with only 28 (7%) people responding to the survey. Overall, respondents appeared to be split somewhat evenly either in favor of, or not in favor of, Type 9 elk licenses in Hunt Area 16.

Survey Question Results

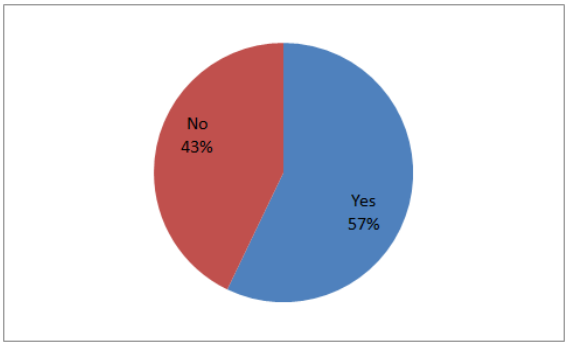
1. What weapon do you prefer to use when hunting in elk Hunt Area 16?

Archery	13
Firearm	15



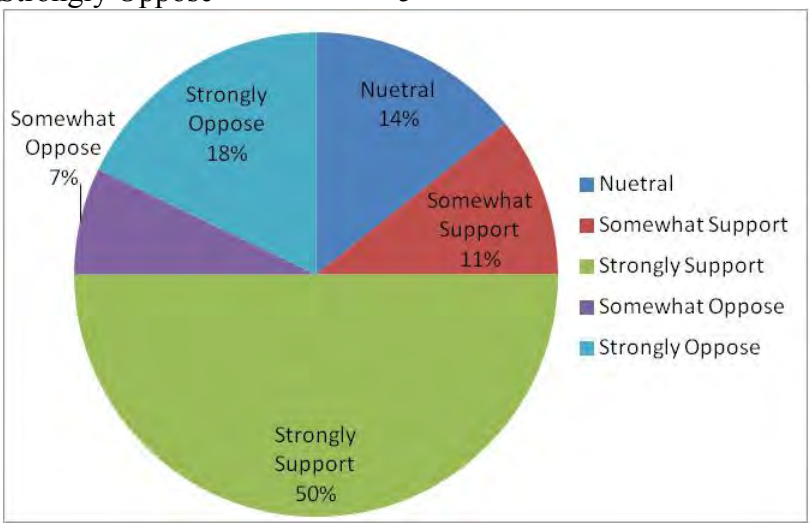
2. Have you ever archery hunted elk in Hunt Area 16?

Yes	16
No	12



3. For Elk Hunt Area 16, would you support the addition of a Type 9 license (archery only) hunting opportunity?

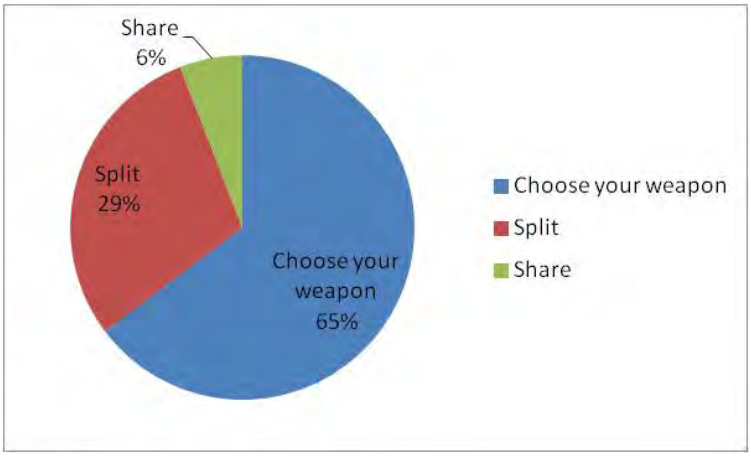
Neutral	4
Somewhat Support	3
Strongly Support	14
Somewhat Oppose	2
Strongly Oppose	5



4. If you strongly support or somewhat support a Type 9 (archery only) hunting opportunity, what format would you prefer?

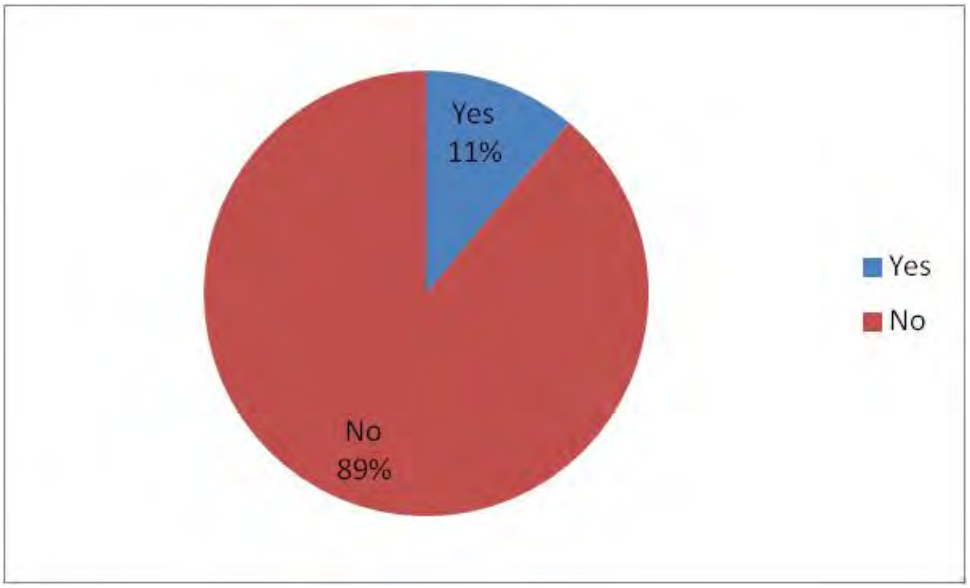
- Choose your weapon - Only Type 9 hunters can hunt the archery season, which would mean a "choose your weapon season" while Type 1 hunters would only be able to hunt the rifle season.
- Split - Only Type 9 hunters can hunt the first two weeks of September, but both Type 9 and Type 1 hunters can hunt the last two weeks of September.
- Share - Type 9 hunters and Type 1 hunters hunt archery season together.

Choose your weapon	11
Split	5
Share	1



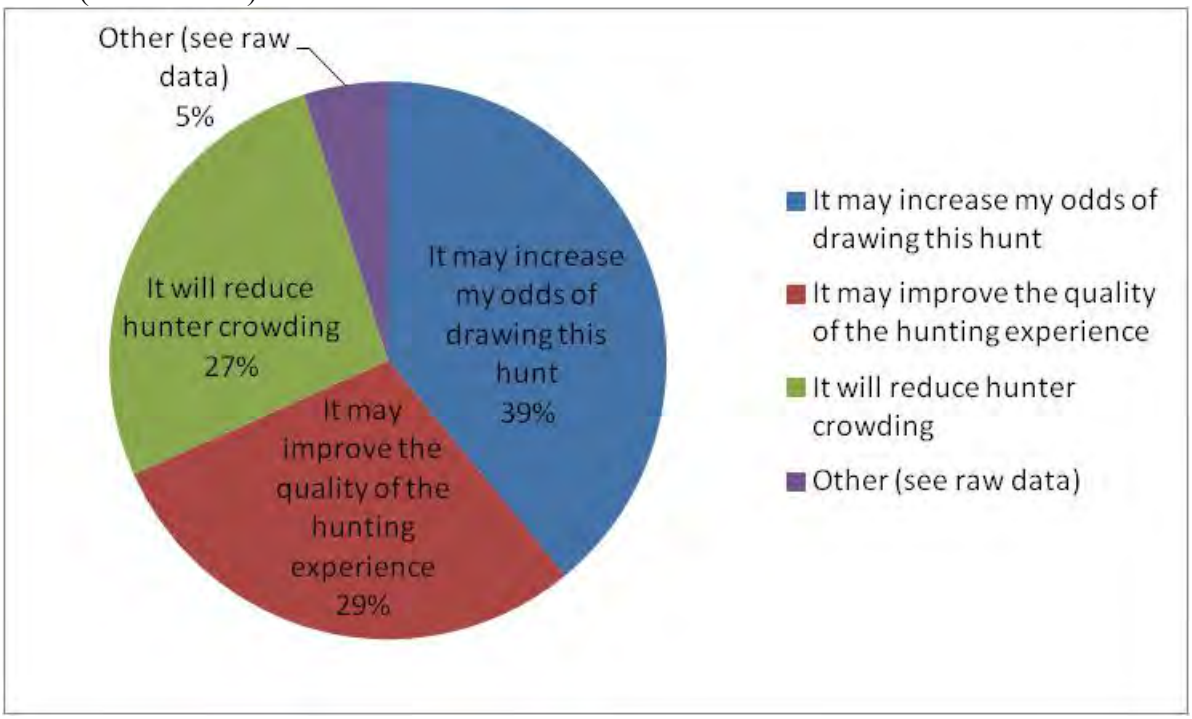
5. Have you applied for Type 9 (archery only) elk licenses before?

Yes 3 (*Hunt Areas 38, 39, or 54*)
No 24



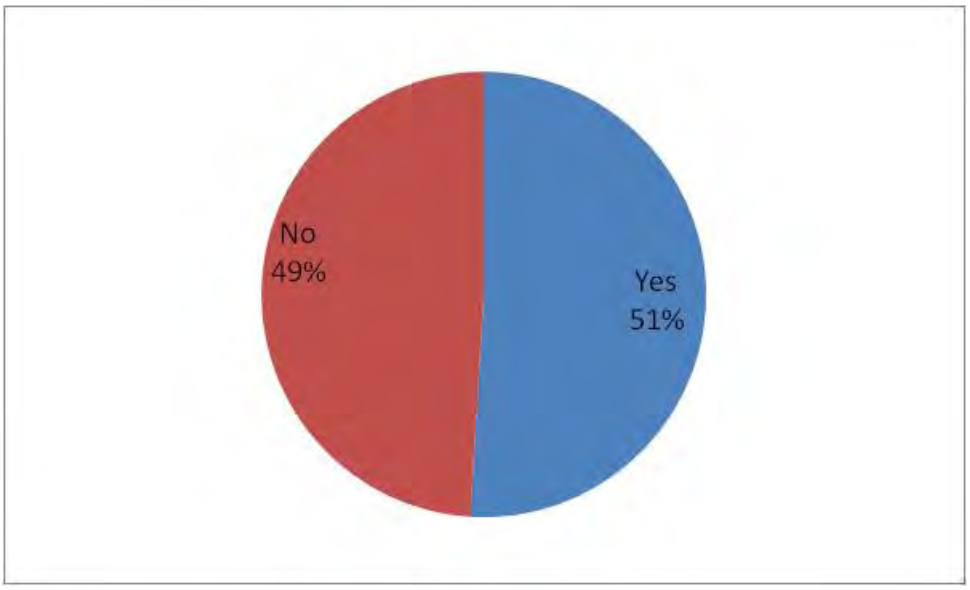
6. If you support Type 9 (archery only) hunting opportunities in Elk Hunt Area 16, Why?

It may increase my odds of drawing this hunt	16
It may improve the quality of the hunting experience	12
It will reduce hunter crowding	11
Other (see raw data)	2



7. Would you continue to apply for a Type 1 Elk License in Hunt Area 16 if the special archery season was removed and became a Type 9 only season?

Yes 26
No 25



INPUT	
Species:	ELK
Biologist:	SCHULTZ
Herd Unit & No.:	SHIRLEY EL534
Model date:	05/11/15

☑ Clear form

MODEL EVALUATION: POOR

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	107	116	☐ CJ,CA Model	Harvest will exceed population estimate in 2015
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	119	128	☐ SCJ,SCA Mod	Harvest will exceed population estimate in 2015
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	121	221	☐ TSJ,CA Model	Harvest will exceed population estimate in 2014
TSJ,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	50	159	☑ TSJ,CA,MSC Model	Plausible

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				243	315	827	1386	228	237	740	1205	800
1994				280	302	797	1379	272	217	737	1227	800
1995				240	327	837	1404	224	260	753	1238	800
1996				406	344	830	1580	397	262	711	1371	800
1997				354	428	871	1653	354	337	787	1477	800
1998				321	427	875	1624	307	349	809	1466	800
1999				345	464	923	1732	320	371	805	1496	800
2000				592	490	925	2007	575	418	872	1865	800
2001				513	632	1089	2234	497	555	1031	2083	800
2002				608	631	1113	2352	582	542	1024	2148	800
2003				563	640	1129	2332	535	541	998	2073	800
2004				483	627	1092	2201	458	516	975	1949	800
2005				546	585	1051	2182	525	446	927	1898	800
2006				392	538	1021	1952	379	413	913	1705	800
2007				490	557	1057	2103	438	441	881	1760	800
2008				415	520	963	1897	392	426	805	1623	800
2009				451	575	959	1985	421	465	823	1709	800
2010				417	532	898	1846	370	389	741	1500	800
2011				409	531	887	1826	345	391	690	1426	800
2012				442	520	826	1789	413	315	631	1358	800
2013				259	424	742	1426	230	272	508	1010	800
2014				202	357	597	1156	169	207	391	**767**	800
2015				130	261	448	839	95	105	219	419	800
2016												800
2017												800
2018												800
2019												800
2020												800
2021												800
2022												800
2023												800
2024												800
2025												800

Survival and Initial Population Estimates

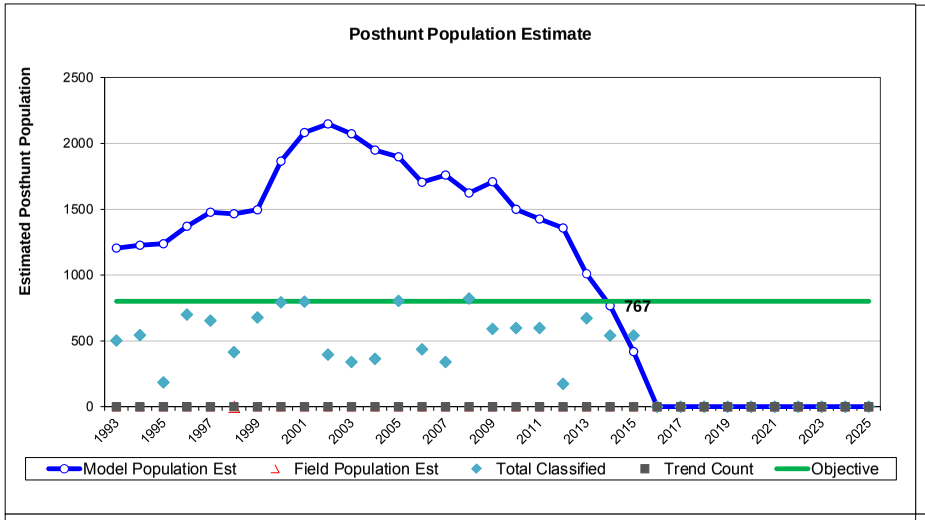
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.75			0.96		
1994	0.95			0.96		
1995	0.95			0.96		
1996	0.95			0.96		
1997	0.68			0.96		
1998	0.95			0.96		
1999	0.95			0.96		
2000	0.87			0.96		
2001	0.50			0.96		
2002	0.50			0.96		
2003	0.50			0.96		
2004	0.50			0.96		
2005	0.50			0.96		
2006	0.95			0.96		
2007	0.54			0.96		
2008	0.95			0.96		
2009	0.51			0.96		
2010	0.95			0.96	0.97	0.03
2011	0.95			0.96	0.91	0.08
2012	0.66			0.96		
2013	0.95			0.96		
2014	0.86			0.96		
2015	0.86			0.96		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

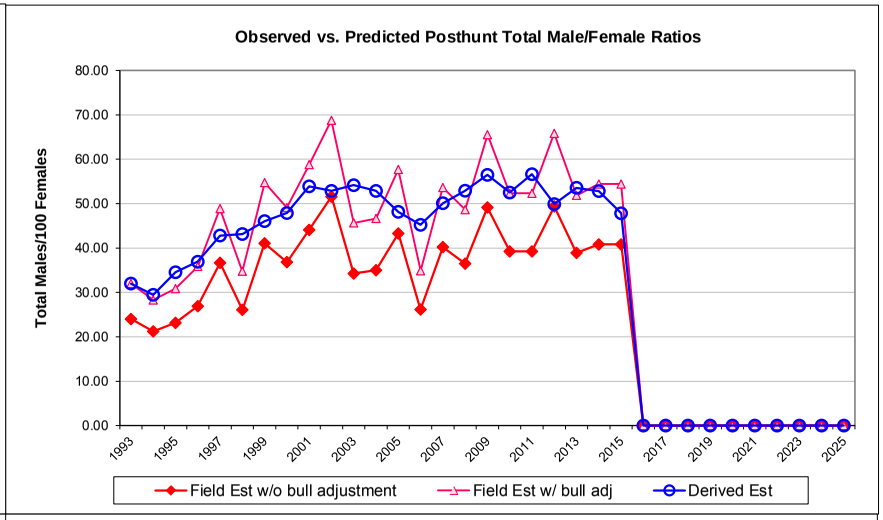
Parameters:	Optim cells
Male Survival Coefficient	0.950
Adult Survival =	0.960
Initial Total Male Pop/10,000 =	0.024
Initial Female Pop/10,000 =	0.074

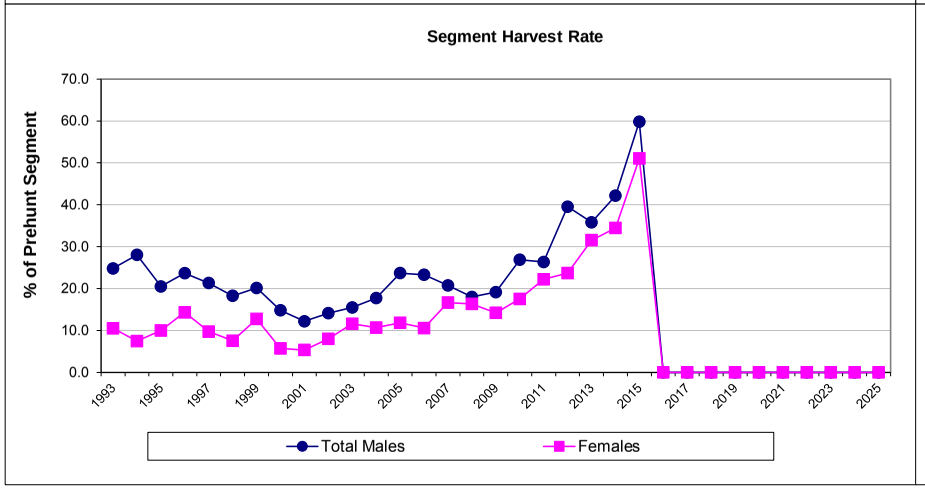
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Total Bulls Adjustment Factor	75%

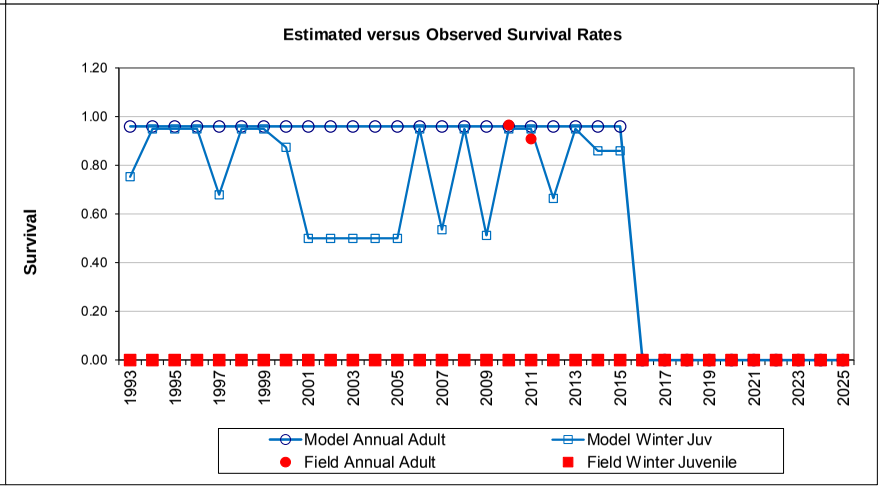
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio				Harvest					Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		30.77	3.52	32.00	32.00	24.00	3.03	14	23	48	79	164	24.8	10.5
1994		36.92	3.83	29.47	28.29	21.22	2.73	7	21	56	54	138	28.1	7.5
1995		29.75	5.65	34.55	30.85	23.14	4.85	14	9	52	76	151	20.5	10.0
1996		55.87	4.77	36.92	35.86	26.89	2.98	8	11	63	108	190	23.7	14.3
1997		45.00	4.26	42.82	48.89	36.67	3.73	0	18	65	77	160	21.3	9.7
1998		37.94	4.55	43.16	34.78	26.09	3.61	13	12	59	60	144	18.3	7.5
1999		39.73	3.85	46.07	54.76	41.07	3.93	23	22	63	107	215	20.1	12.8
2000		65.98	5.29	47.89	49.10	36.83	3.59	15	11	55	48	129	14.8	5.7
2001		48.19	4.15	53.90	58.80	44.10	3.91	6	9	61	53	129	12.2	5.4
2002		56.84	6.85	52.88	68.77	51.58	6.41	23	3	78	81	185	14.1	8.0
2003		53.59	6.74	54.16	45.67	34.25	5.04	26	0	90	119	235	15.5	11.6
2004		47.00	5.88	52.87	46.67	35.00	4.86	22	16	85	106	229	17.7	10.7
2005		56.72	4.70	48.16	57.71	43.28	3.93	19	10	116	113	258	23.7	11.8
2006		41.54	4.76	45.23	34.87	26.15	3.56	12	8	106	98	224	23.3	10.6
2007		49.72	6.45	50.10	53.63	40.22	5.61	47	10	95	160	312	20.7	16.7
2008		48.65	4.04	52.92	48.65	36.49	3.35	21	4	81	143	249	18.0	16.3
2009		51.19	5.12	56.48	65.54	49.15	4.99	27	4	96	124	251	19.1	14.2
2010		50.00	4.87	52.50	52.32	39.24	4.16	42	8	122	143	315	26.9	17.5
2011		50.00	4.87	56.64	52.32	39.24	4.16	58	6	121	179	364	26.3	22.2
2012		65.43	11.56	49.90	65.84	49.38	9.54	27	14	173	178	392	39.5	23.7
2013		45.21	4.24	53.58	51.87	38.90	3.85	27	7	131	213	378	35.8	31.6
2014		43.20	4.59	52.83	54.42	40.82	4.42	30	4	133	187	354	42.2	34.5
2015		43.20	4.59	47.83	54.42	40.82	4.42	32	4	138	208	382	59.8	51.1
2016														
2017														
2018														
2019														
2020														
2021														
2022														
2023														
2024														
2025														

FIGURES





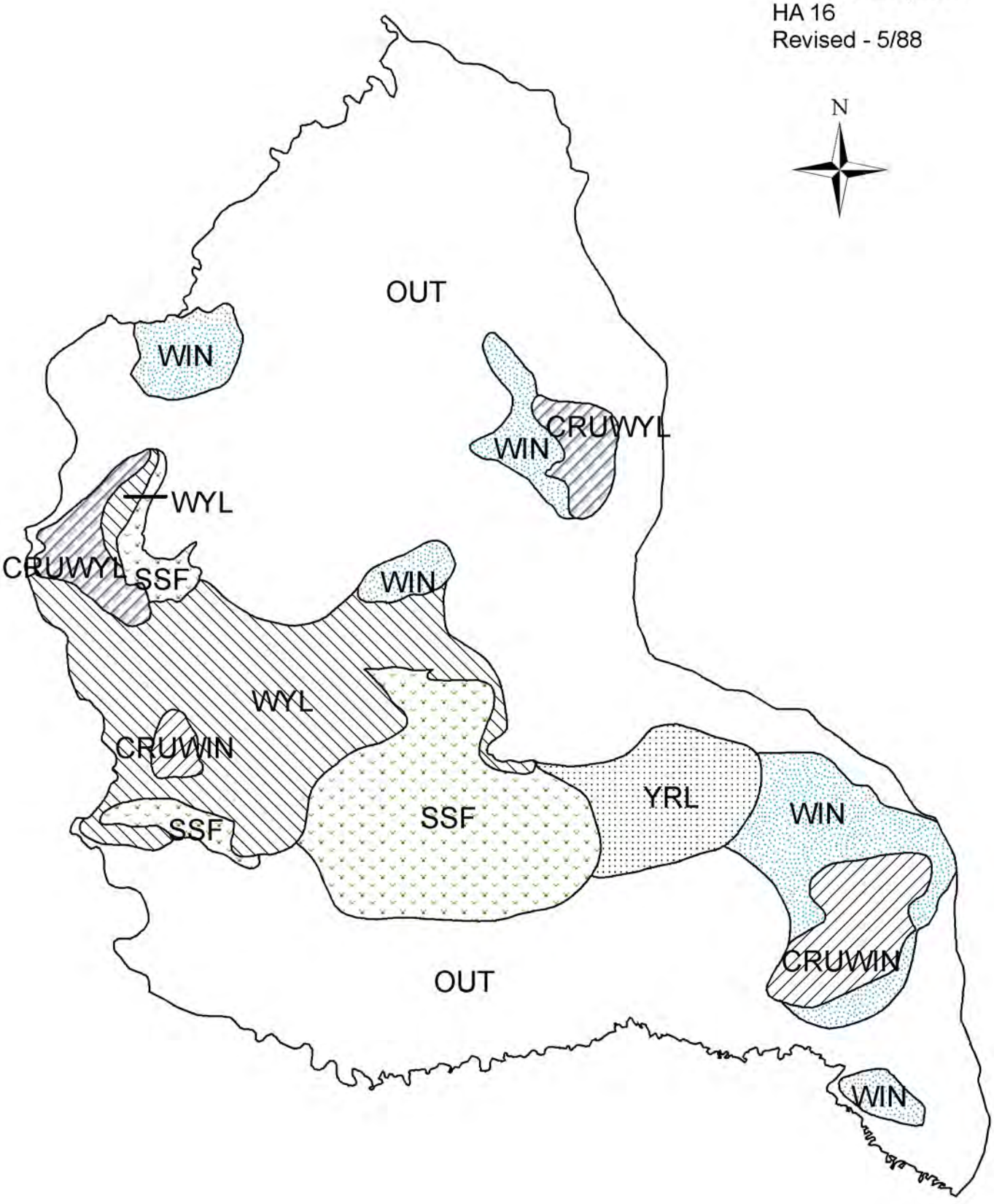




Comments:

For 2014, the TSJ,CA,MSC model was selected due to the most plausible population estimate. However, this model's steep decreasing trajectory is suspsect. The data set for this herd has accuracy issues related to survey sample sizes for classifcation data. Interchange of elk with surrounding herd units has been documented, leading to the question of whether this is a closed population.

END


E534 - Shirley Mtn.
HA 16
Revised - 5/88
N
OUT
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SSF
YRL
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CRUWIN
OUT
WIN

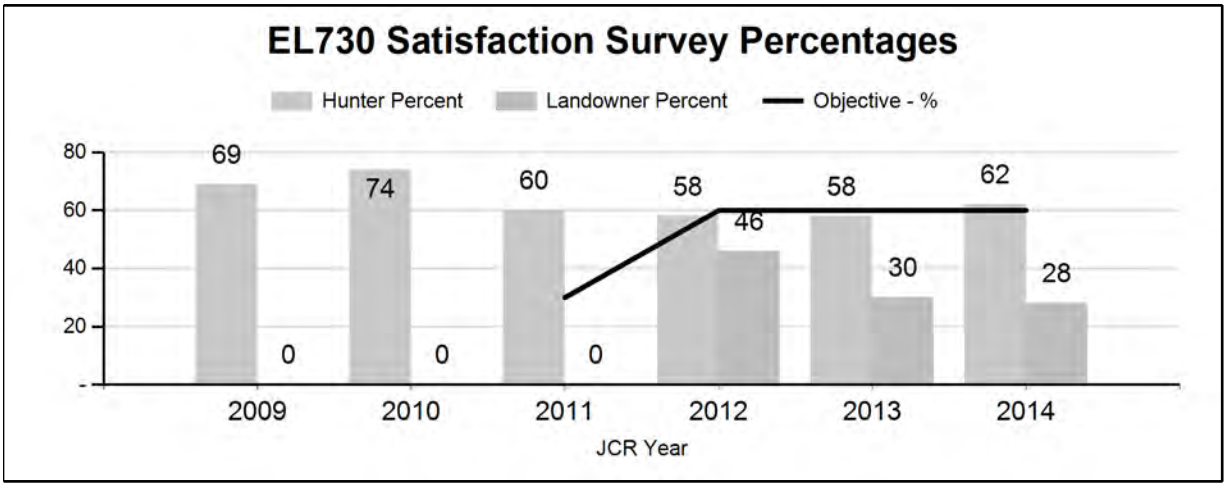
2014 - JCR Evaluation Form

SPECIES: Elk
HERD: EL730 - RAWHIDE
HUNT AREAS: 3

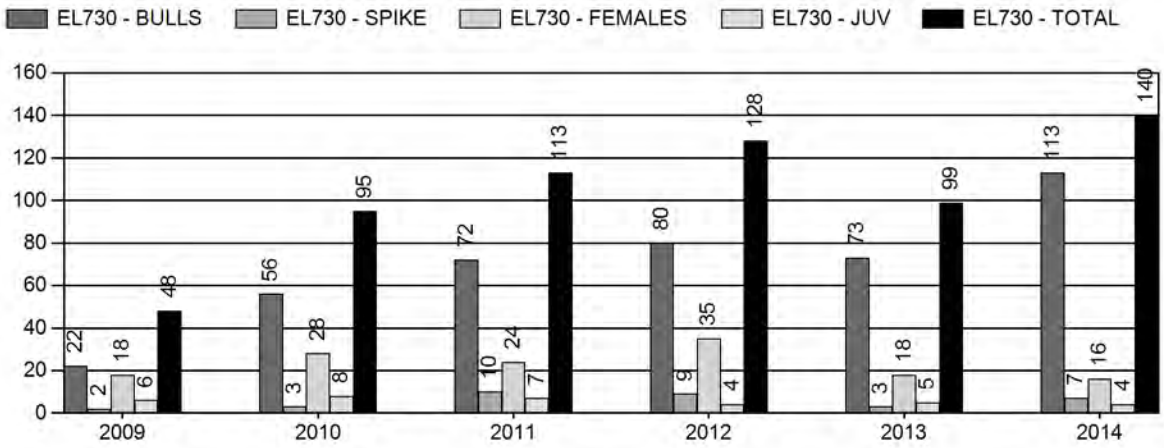
PERIOD: 6/1/2014 - 5/31/2015
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Hunter Satisfaction Percent	63%	62%	65%
Landowner Satisfaction Percent	40%	28%	45%
Harvest:	97	145	140
Hunters:	227	393	380
Hunter Success:	43%	37%	37%
Active Licenses:	244	410	390
Active License Success:	40%	35%	36%
Recreation Days:	1,813	3,143	2,900
Days Per Animal:	18.7	21.7	20.7
Males per 100 Females:	52	0	
Juveniles per 100 Females	61	0	

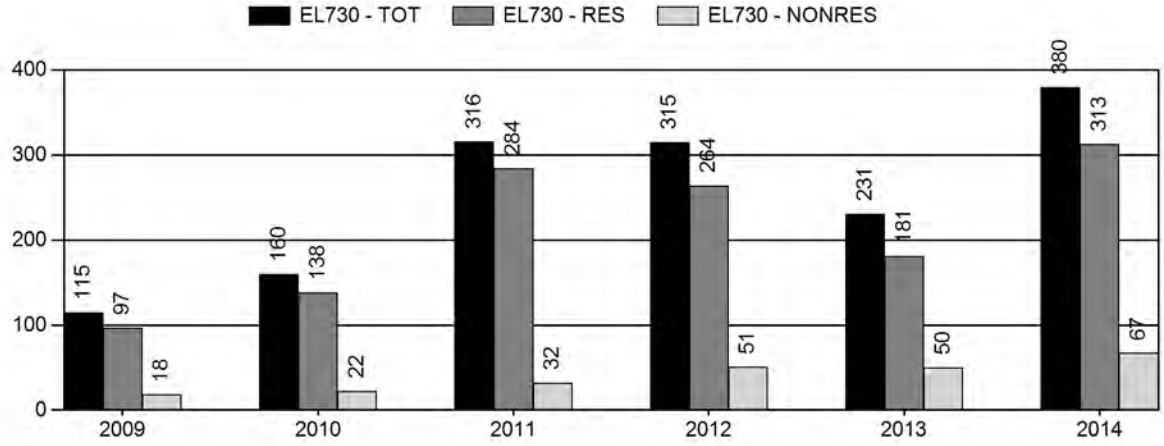
Satisfaction Based Objective	60%
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-15%
Number of years population has been + or - objective in recent trend:	3



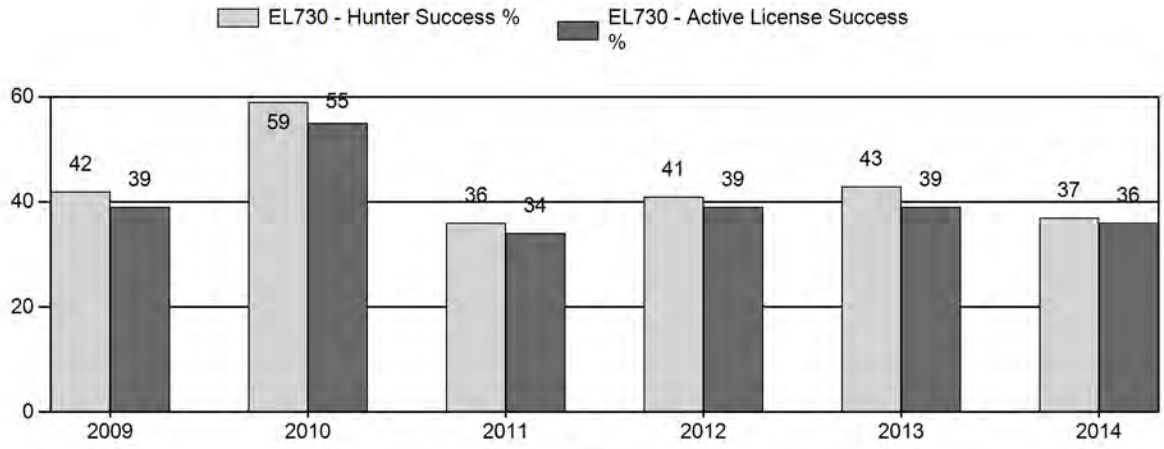
Harvest



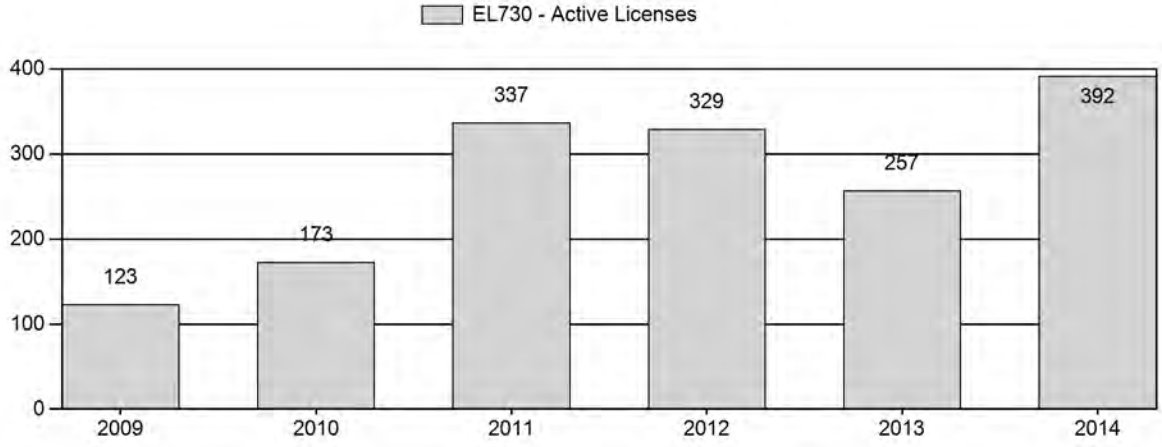
Number of Hunters



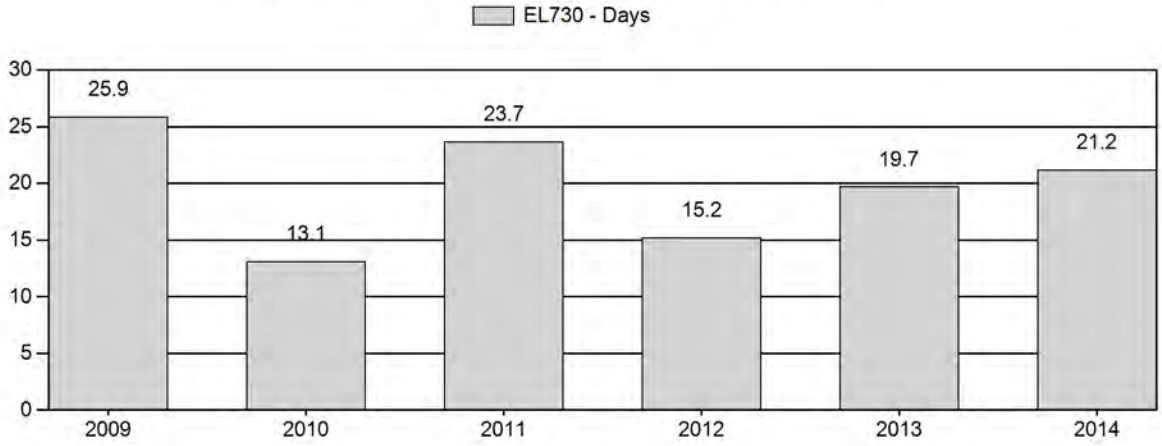
Harvest Success



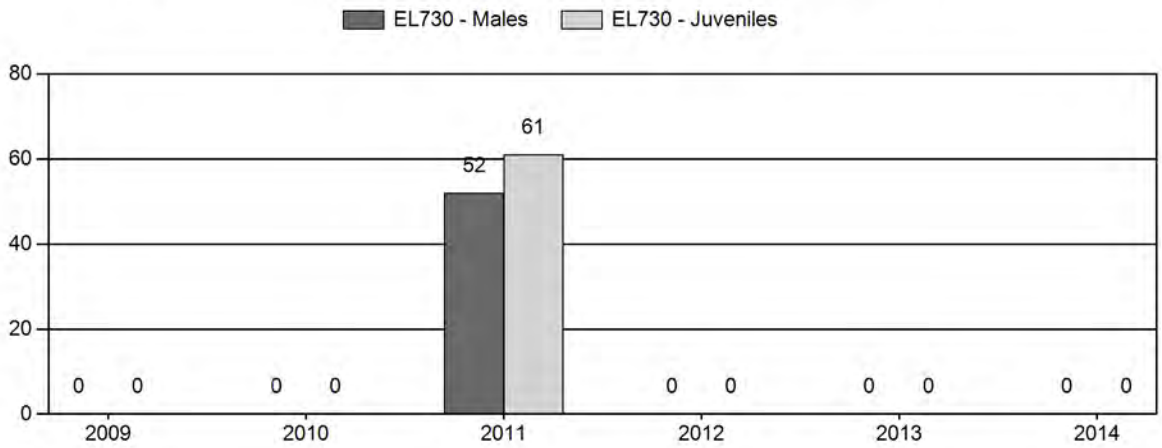
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



RAWHIDE ELK HERD (730)
2015 HUNTING SEASONS

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
3	Gen	Sept. 15	Oct. 14		Any elk
		Oct. 15	Jan. 31		General License; any elk south of U.S. Hwy 26
	6	Aug. 15	Jan. 31	200	Limited quota; cow or calf
Archery		Sept. 1	Sept. 14		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
3	1	0
	6	0

Management Evaluation

Current Management Objective: 1) Landowner and hunter satisfaction; Target goal: ≥ 60% 2) Male "quality"; Target goal: ≥ 61% branch antlered bulls in harvest survey
2014 Post-season Objective Results: 1) 39% landowners either satisfied or very satisfied, 2) 61% sportsmen were either satisfied or very satisfied, 3) 95% branch antlered bulls
2015 Post-season Results: NA
Management Strategy: Special
2014 Sportsmen Satisfaction Survey Results: 61% Satisfied, 27% Neutral, 12% Dissatisfied

Management Issues

The management objective for this herd was changed in 2012 from a post-season population objective of 40 elk to a nonnumeric population objective based on landowner and hunter satisfaction and the percentage of branch antlered bulls in the harvest. The management strategy was changed from recreational to special. We will follow trends over time to make management decisions based on constituent satisfaction and bull harvest parameters. There is not a working model for this herd unit due to our inability to collect adequate population data.

This herd unit has been difficult to manage based on our inability to collect adequate herd composition data along with field harvest data. Based on field personnel and landowner

observations we estimate there are over 400 elk in the Rawhide Elk Herd, with the population expanding south of the North Platte River into Goshen, Platte and Laramie Counties. There have been several public meetings to address the increasing population, and as a result the herd boundary was expanded south to the Colorado border for the 2012 season. Additionally the portion of Area 3 north of U.S. Highway 26 was changed to a general season for the 2014 season (the southern portion was changed to a general in 2011).

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the Rawhide Elk Herd Unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on elk. Mild fall temperatures and lack of persistent snows allowed for elk to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Rawhide Elk Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

There are no established habitat transects for this herd unit. Recent fire activity in 2012 and 2010 burned over 20,000 acres will likely improve elk habitat by reducing competition from encroaching conifers on perennial grasses and forbs, which provide key elk forage.

Field/Harvest Data

Harvest success and effort has fluctuated the past five years, and when the 2014 harvest data is compared to the five-year average success and effort decreased. Harvest is driven by access and if hunters are limited to public land, success decreases and effort increases. Finding elk in this herd unit can be difficult due to landownership patterns. Access is restricted to the Broom Creek HMA north of US Hwy 26 and is dependent on crop damage south of US Hwy 26. A majority of landowners do not want elk south of the highway and are willing to allow access. In 2011 elk were plentiful and hunters were successful. In 2012 the severe drought displaced elk and they were not found in traditional places (i.e. alfalfa fields). In 2014 above average spring and summer precipitation re-distributed elk which increased forage production and as a result elk were not dependent upon irrigated crops. The high percentage of branch antlered elk is indicative of the quality of bulls and the amount of private land that provides sanctuaries to allow bulls to reach maturity.

Licenses numbers have fluctuated from 50 to 200 over the years. Starting in 2011 that portion of Hunt Area 3 south of U.S. Highway 26 became a general season. After several public meetings over the past three years coupled with a landowner survey it was decided to convert that portion of Area 3 north of US Hwy 26 from a limited quota area to a general hunt area. This will simplify the management by allowing hunters with a general license the opportunity to hunt in other general areas in the state if they are not successful in hunt area 3. Population and damage issues will be easier to address with this type of season structure as well.

Since this herd unit changed to a satisfaction management evaluation and the percent of branch antlered bulls in the harvest we no longer collect classification data.

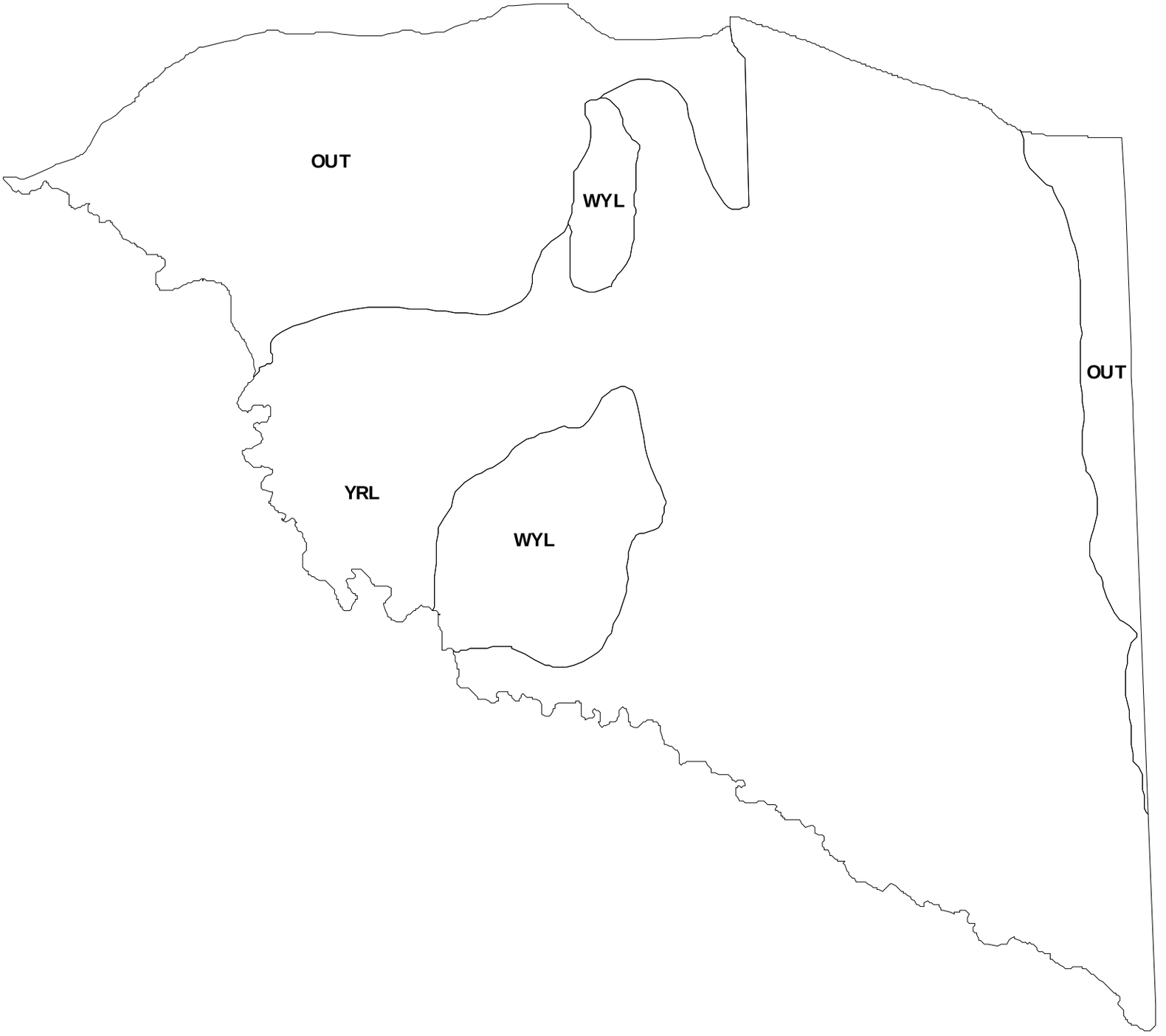
Landowner/Hunter Satisfaction Survey Results

The hunter satisfaction survey is not available at the time that this report was due. The landowner satisfaction survey showed that 39% of the landowners were satisfied, 26% were neutral and 26% were dissatisfied. Sportsmen were 61% satisfied with their hunt. There were 23 surveys returned for a 30% return rate, slightly lower than 2013, which had a return rate of 41%. Based on the past two years of landowner satisfaction surveys it appears we need to make an effort to improve landowner satisfaction. The hunt area is split on how landowners want to manage elk. Based on input from the field, meeting and survey comments, about half of the landowners want to reduce elk and the other half want to manage for trophy bulls. Bringing their satisfaction up to 60% will be a challenge. The high percentage of satisfied sportsmen is somewhat surprising given the number of complaints received from the field that hunters could not find trophy class bulls or cow elk later in the season. However, there were several trophy class bulls taken during the archery and early rifle season just north of Guernsey on or adjacent to the Guard Camp. The percent of branched antlered bulls in the harvest survey was 95%. Our ability to manage this segment of the population is limited due to access and adult bulls within the harvest will likely remain high.

Management Summary

In summary the 2015 season is designed to reduce elk numbers throughout the entire hunt area by having both portions (north and south of US Hwy 26) a general firearm season from Sept 15-Oct 14, and then 109 days of a general license any season elk south of US Hwy 26 and a 168 day season for the Type 6 licenses. We hope to attain a harvest of 140 elk.

Rawhide Elk Herd Unit(E730)



2014 - JCR Evaluation Form

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

HERD: MO545 - SNOWY RANGE

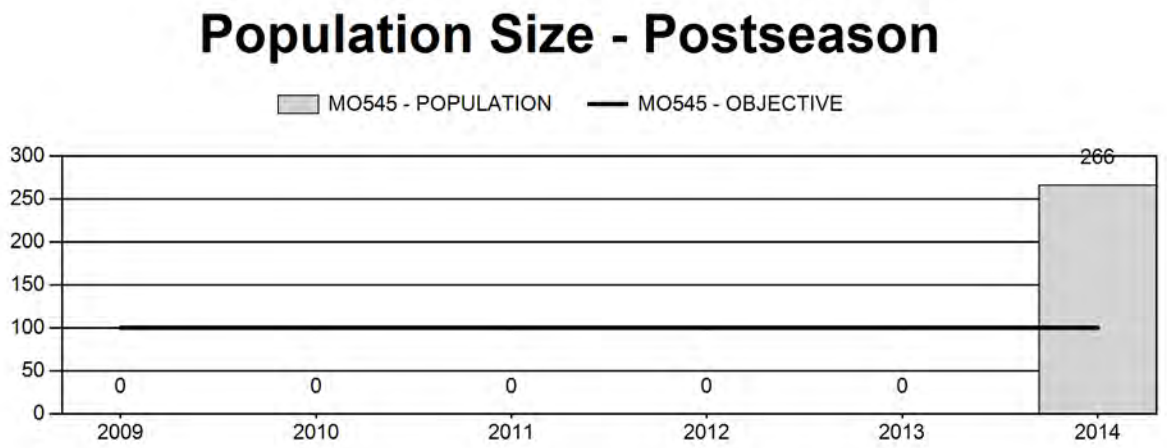
HUNT AREAS: 38, 41
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	0	266	N/A
Harvest:	49	46	46
Hunters:	54	48	48
Hunter Success:	91%	96%	96%
Active Licenses:	54	48	48
Active License Success:	91%	96%	96%
Recreation Days:	444	319	319
Days Per Animal:	9.1	6.9	6.9
Males per 100 Females	106	100	
Juveniles per 100 Females	51	36	

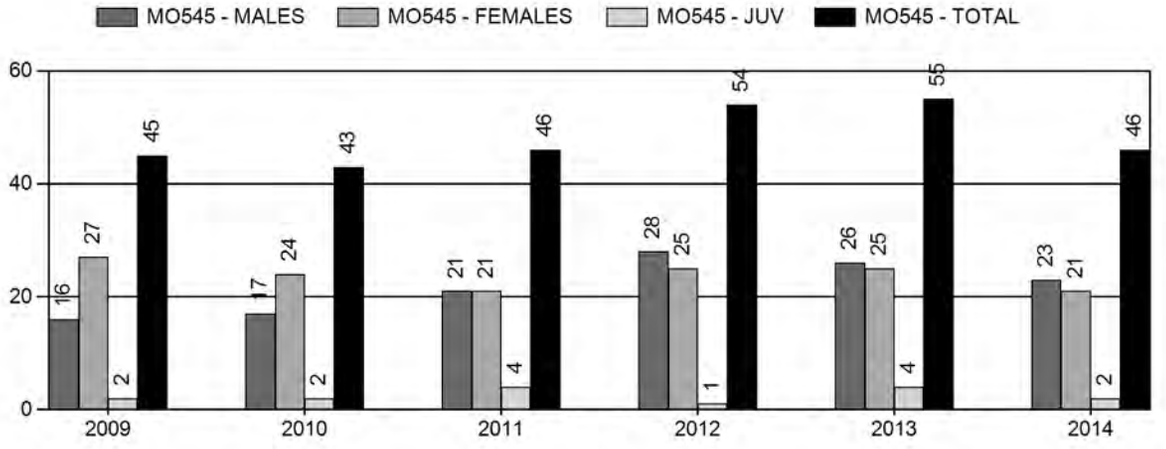
Population Objective (± 20%) :	100 (80 - 120)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	166%
Number of years population has been + or - objective in recent trend:	1
Model Date:	None

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

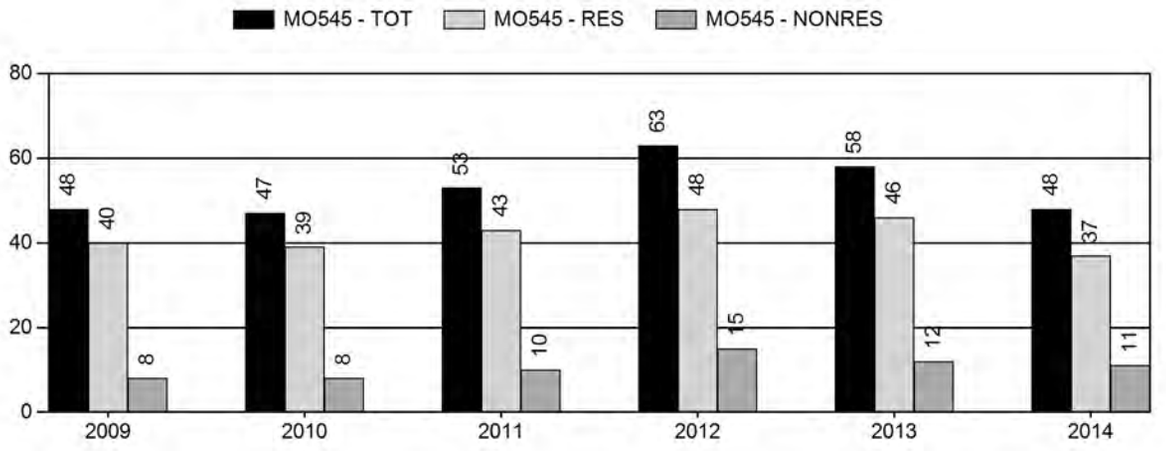
	JCR Year	Proposed
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



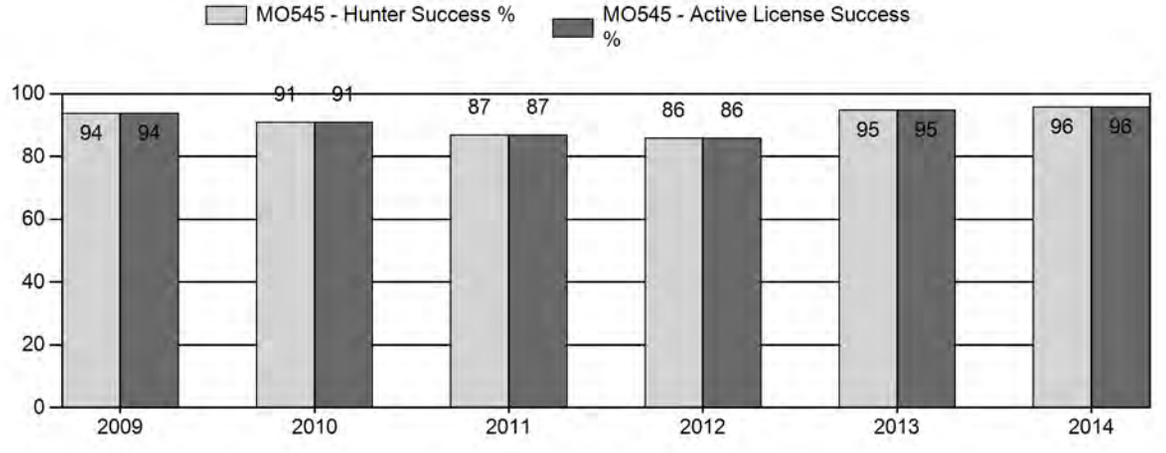
Harvest



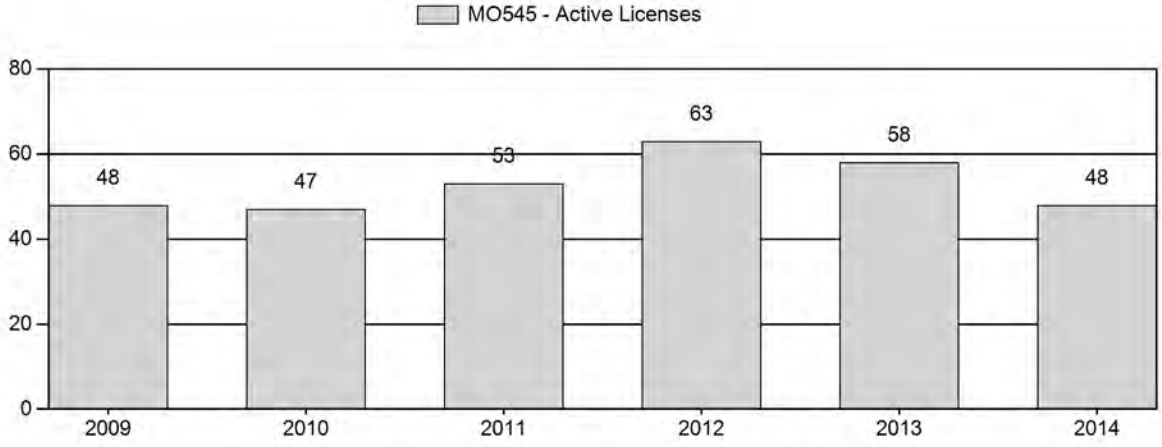
Number of Hunters



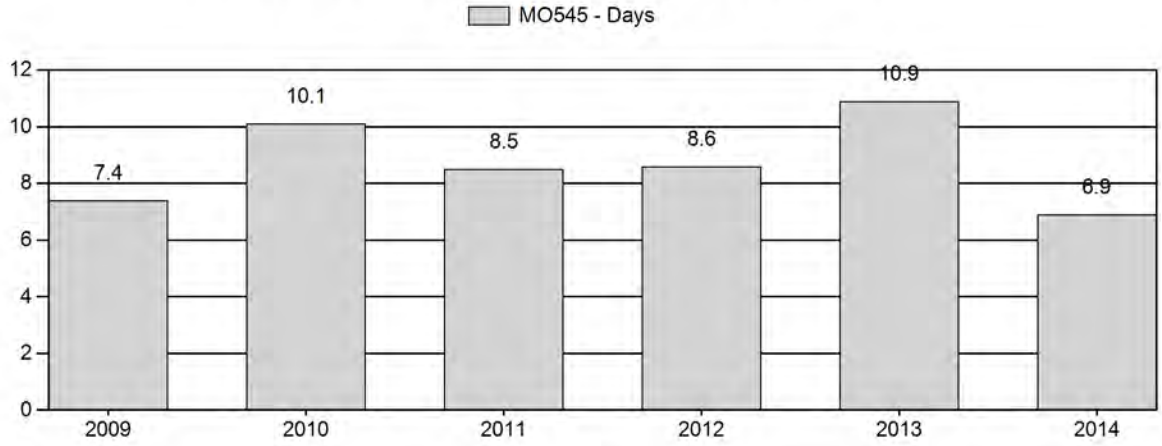
Harvest Success



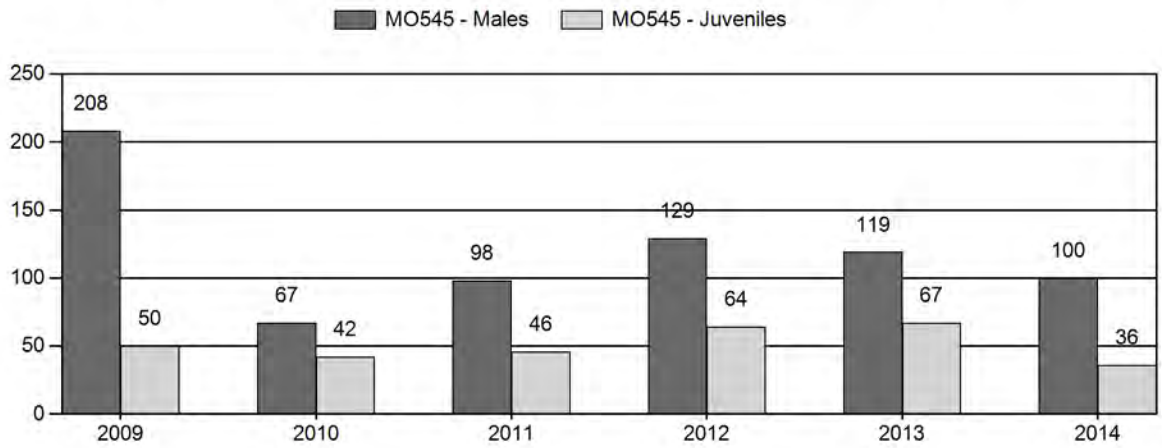
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Moose Herd MO545 - SNOWY RANGE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	0	4	21	25	58%	12	28%	6	14%	43	0	33	175	208	± 0	50	± 0	16
2010	0	7	17	24	32%	36	48%	15	20%	75	0	19	47	67	± 0	42	± 0	25
2011	0	3	46	49	40%	50	41%	23	19%	122	0	6	92	98	± 0	46	± 0	23
2012	0	4	14	18	44%	14	34%	9	22%	41	0	29	100	129	± 0	64	± 0	28
2013	0	5	27	32	42%	27	35%	18	23%	77	0	19	100	119	± 0	67	± 0	31
2014	0	2	20	22	42%	22	42%	8	15%	52	0	9	91	100	± 0	36	± 0	18

Snowy Range Moose (MO545)
Hunt Areas 38, 41
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
38, 41	1	Oct. 1	Nov. 14	20	Limited quota	Any moose, except cow moose with calf at side
	4	Oct. 1	Nov. 14	25	Limited quota	Antlerless moose, except cow moose with calf at side

Hunt Area	Type	Quota change from 2014
Herd Unit	**1**	**0**
Total	**4**	**0**

Management Evaluation
Current Management Objective: 100 (80 – 120)
Management Strategy: Special
2014 Postseason Population Estimate: 266
2015 Proposed Postseason Population Estimate: NA

Moose in the Snowy Range herd unit are managed toward a numeric objective of 100. A moose population model has not been developed for this herd unit. The herd is managed under a special management strategy. The objective was last reviewed in 1997.

Herd Unit Issues
The Snowy Range herd unit stretches across southern Wyoming, along the Colorado border, from Baggs to Cheyenne. Moose are found year-round in areas on Pole Mountain, Sierra Madre Mountains, and most notably, the Snowy Range Mountains. These moose descended from moose transplanted in Colorado and were not native to this area historically. Challenges for managing moose in this herd unit include a rapidly changing forest ecosystem, high infestation rates for parasites, and human conflict/safety. Limited population monitoring for moose has been an issue in this herd unit.

Weather
Weather in this herd unit was relatively normal during the past bio-year. This weather pattern most likely had a neutral to positive influence on moose. For specific meteorological information for the Snowy Range herd unit the reviewer is referred to the following links:
http://www.ncdc.noaa.gov/temp-and-precip/time-series/

http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html

Habitat

Moose habitat conditions are currently being monitored across Wyoming and in the North Park, Colorado area through a University of Wyoming project. Preliminary results published in a recent annual report for this project indicated the Snowy Range's willow habitat quality and moose fitness were relatively low when compared to the other areas (Jesmer, et. al. 2014).

Habitat conditions improved in 2014 with an increase in timely seasonal precipitation. However, much of the transition and winter ranges were severely impacted by the drought conditions experienced in bio-year 2012. No WGFD moose habitat production/utilization data was available for this herd unit. However, annual production rates were assumed to have improved from the previous year, while utilization rates on winter ranges were assumed to have continued to be high.

Field Data

Traditionally there has been little allocation of funding in this herd unit to collect moose classification data. Moose classification data has been collected incidentally during annual mule deer and elk classification surveys. In 2014, no additional hours of helicopter flight time was allocated to collect moose classification data in the Snowy Range herd unit. A classification sample of 52 moose was collected in December of 2014 in conjunction with mule deer and elk surveys. Eleven (11) of the 52 moose observed during the 2014 survey were in Hunt Area 41, on the Sierra Madre range. The 2014 classification ratios were 100 bulls/100 cows and 36 calves/100 cows.

Harvest Data

In 2014, the weighted harvest estimates indicated 48 hunters harvested 23 bulls, 22 cows and 2 calves (lab data indicated 1 calf). A total of 2 illegally harvested moose were documented in 2014. Male lab-aged tooth samples (n=37) indicated this year's median age and percentage of the bull harvest $\geq$ 5 years of age, were within the "prime-age bull" class (Figures 1, 2 and 3) (Thomas 2008). Age class distribution from female lab-aged tooth samples (n=17) indicated 47% of the antlerless moose harvest were $\leq$ 2 years old (Figure 4).

Median age for tooth samples from harvested bulls increased in 2014 and this increase was attributed to a reduction of 5 licenses being allocated for the 2014. The 2014 median bull age increased to 5 years of age which was an improvement of 1 year in age from the 2013 season, and within the parameters for the "prime-age bull" class. The Snowy Range has a reputation for producing trophy quality bulls. An objective for managers is to sustain both quantity and quality for the bull segment of this moose population.

The reported ages for harvested antlerless moose in 2014 was similar to the 2013 results even though license numbers had been reduced by 10 licenses. Although the proportion

of antlerless harvest ≤ 2 years in age (47%) was acceptable, it was assumed this proportion would increase in 2014 with the decrease in license numbers. As stated earlier in this report, making inferences from small or incomplete data sets has hampered the ability of managers to make management decisions of significant consequence for this herd unit.

Figure 1. Median age of bulls harvested for the Snowy Range Moose herd unit, from lab aged teeth (n=20), Wyoming, 2014.

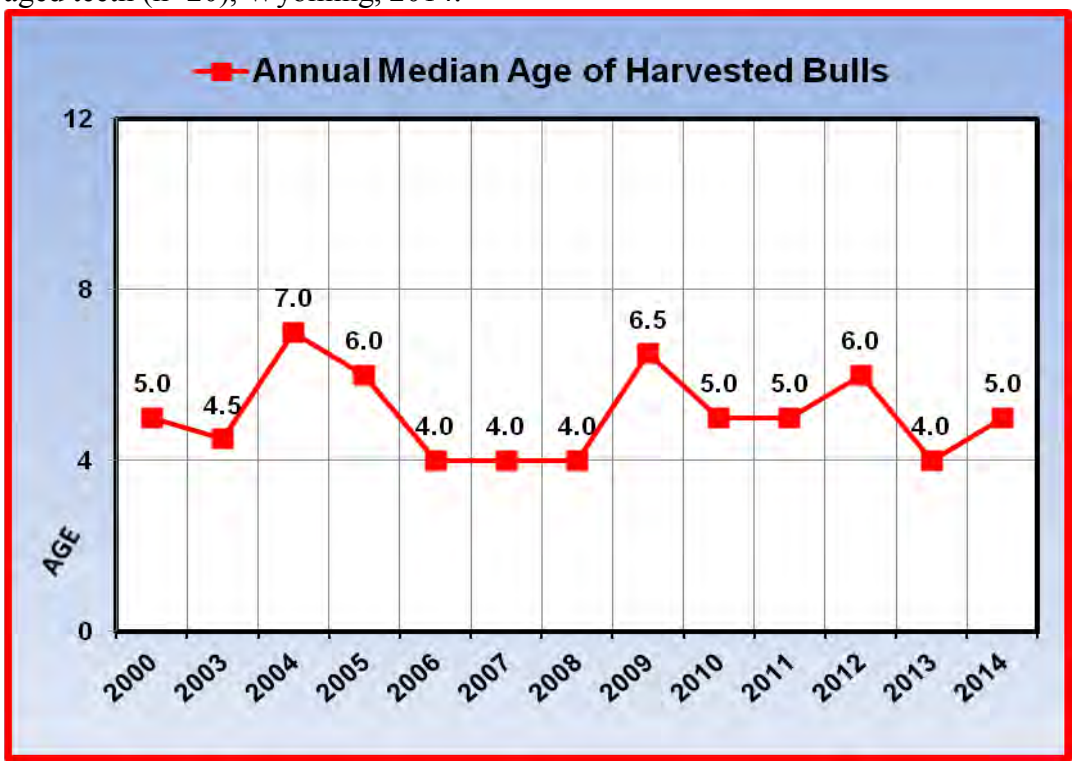


Figure 2. Average (3-year running) median age of bulls harvested for the Snowy Range Moose Herd Unit, from lab aged teeth (n=20), Wyoming, 2014.

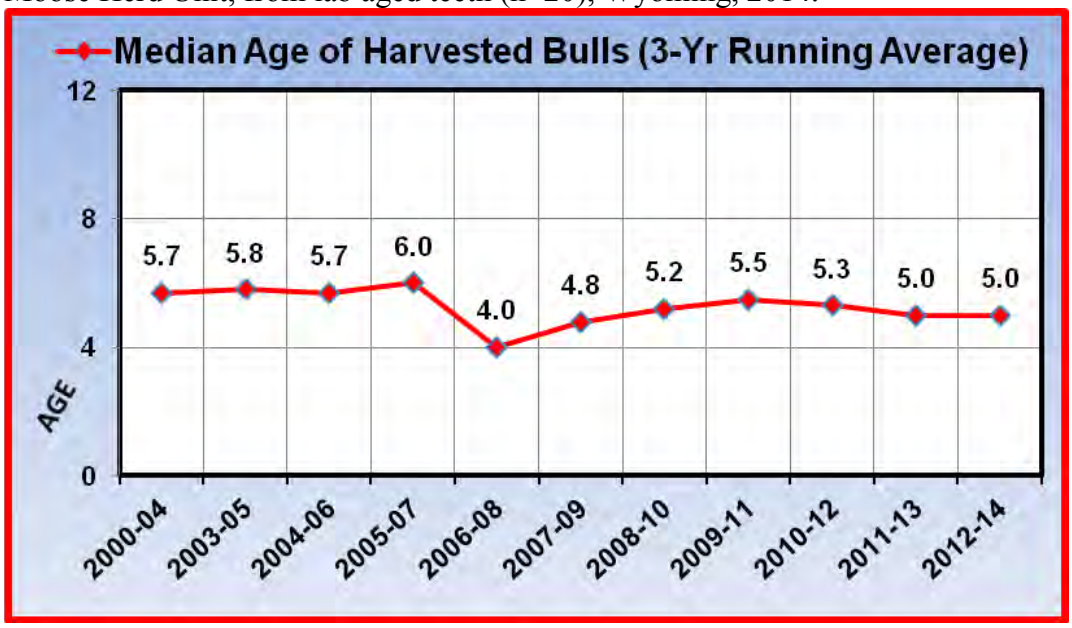


Figure 3. Annual Percentages of the bull harvest ≥ 5-years in age from Snowy Range Moose Herd Unit, from lab aged teeth (n=20), Wyoming, 2014.

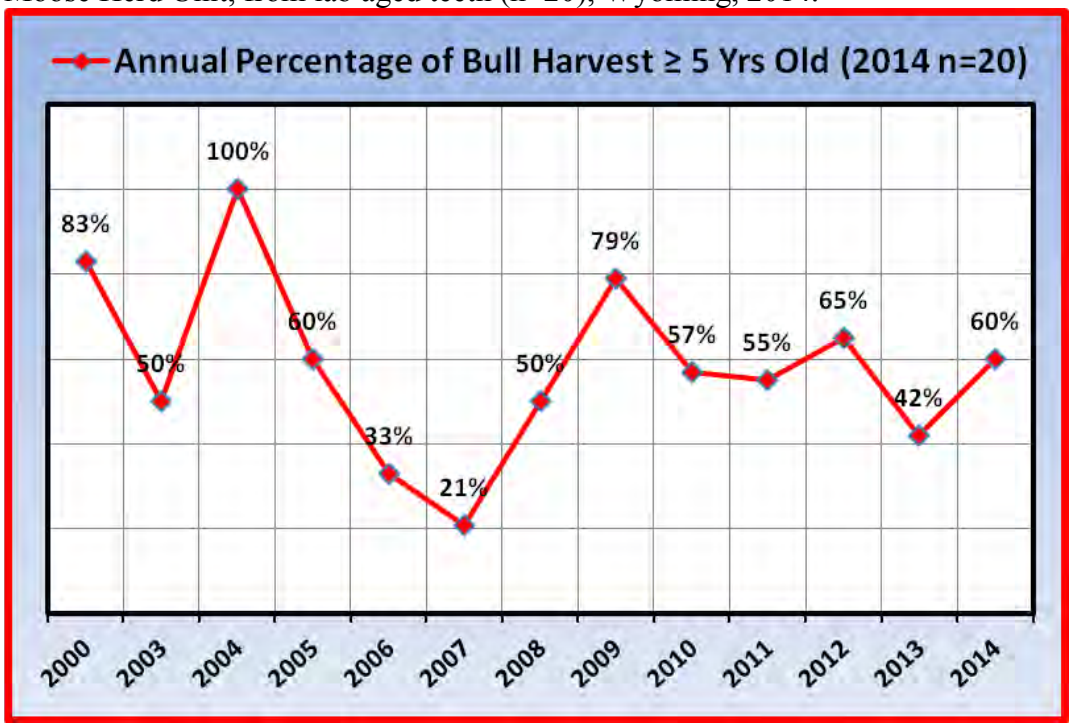
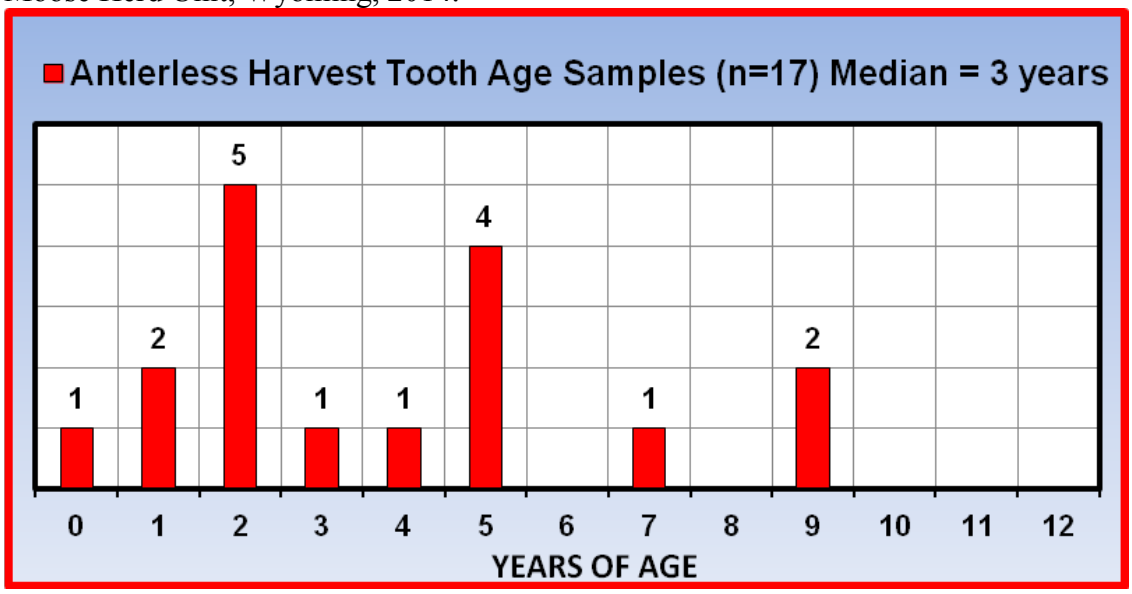


Figure 4. Age class distribution for antlerless moose harvested from Snowy Range Moose Herd Unit, Wyoming, 2014.



Population

A Wyoming Spreadsheet model has not been developed for this herd unit. A moose abundance survey was completed in the Snowy Range herd unit in March 2015 (Appendix I). A total abundance estimate of 266 ± 56 (90% *CI*) (*SE* = 34) moose was produced for this herd unit. The results of the sightability survey provided managers with a plausible abundance estimate for moose wintering in the Snowy Range herd unit. The abundance estimate will be useful in constructing a population model and making future harvest recommendations for moose in this herd unit.

Management Summary

In 2015, licenses numbers and hunting season lengths remained the same as they were in 2014. We decreased license numbers for the 2014 hunting season due to concerns for our ability to maintain trophy quality in the bull harvest. This decrease was also done in part as an effort to become more conservative with harvest rates; as a precaution in case moose numbers were approaching our postseason management objective of 100 moose.

Current Herd Specific Studies

A new collaborative study initiated in fall 2014 by the Wyoming Cooperative Fish and Wildlife Research Unit and the Wyoming Game and Fish Department presents an excellent opportunity to examine the relationship between moose habitat use and seral changes brought about by bark beetles. By making use of an existing GPS dataset collected prior to extensive beetle damage (Baigas 2008), comparing it to new GPS data, and examining current individual movement strategies through the lens of body condition, this project will provide new information on the status of moose in the Snowy Range and their response to its beetle-killed forests.

The project began its field component in March 2015. Thirty (30) female moose (29 adults and one yearling) were captured via helicopter darting on winter habitats within and surrounding the Medicine Bow National Forest. Moose were fitted with GPS store-on-board collars set to collect 90-minute fixes. The fix-rate is identical to that used in the previous study, which will allow us to compare movement strategies and space use of moose prior to and following the extensive bark beetle damage. Collars will remain deployed for a period of two years, during which study animals will be recaptured twice per year to gather longitudinal data on demography and body condition (measured via ultrasonography). Monitoring body condition in the context of pregnancy (during winter) and lactation costs (in summer) will allow the project to critically examine the habitat quality of the Snowy Range, with the goal of understanding where the herd sits relative to nutritional carrying capacity.

Bibliography of Herd Specific Studies

Baigas, P. E. 2008. Winter Habitat selection, winter diet, and seasonal distribution mapping of Shiras moose (*Alces alces shirasi*) in southeastern Wyoming. M.S. Thesis, Univ. Wyoming, Laramie, Wyoming. USA. 220 pp.

Wyoming Game and Fish Department [WGFD]. 2000. Snowy Range – Sierra Madre Moose Herd Management Plan. Wyoming Game and Fish Department, Laramie. USA. 15 pp.

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ESTIMATING MOOSE ABUNDANCE FOR THE SNOWY RANGE HERD UNIT IN WYOMING

May 2015
Will Schultz and Corey Class

INTRODUCTION

Moose (*Alces americanus shirasi*) were introduced in north central Colorado during the 1970s and 1980s and subsequently migrated north into portions of adjacent Wyoming mountain ranges. The first documented sighting of a moose in the Snowy Range herd unit occurred in 1981. Since 1981, moose have continued to expand in range and numbers throughout the Snowy, Sierra Madre and Laramie Mountain ranges of south central Wyoming.

Wyoming Game and Fish Department (WGFD) established a postseason management objective of 100 moose for the Snowy Range herd unit in 1987. By 2000, WGFD assumed the moose population had increased beyond the management objective and established the first hunting season for moose in this herd unit. Annual moose hunting seasons have been offered continuously in this herd unit since 2002. Harvest recommendations for a big game population such as the Snowy Range moose are difficult to formulate without the appropriate population data. Uninformed recommendations may result in over harvest or extirpation if too many moose are harvested annually, or it may result in reduced sustainability for moose browse if too few moose are harvested annually.

Past moose population monitoring in the Snowy Range herd unit consisted of collecting moose sex and age composition data incidentally while completing elk and mule deer postseason composition surveys. WGFD had not developed an abundance estimate for moose in the Snowy Range herd unit, either from abundance surveys or from a population model. In recent years, this herd unit has become the premier moose hunting and viewing destination in Wyoming. Insuring moose in this herd unit are managed sustainably has become a priority for WGFD. These factors cumulatively resulted in WGFD conducting an abundance survey in March 2015 to determine the current population status for moose in the Snowy Range herd unit.

SURVEY AREA

The Snowy Range herd unit is comprised of moose Hunt Areas 38 and 41 in southern Wyoming (Figure 1).

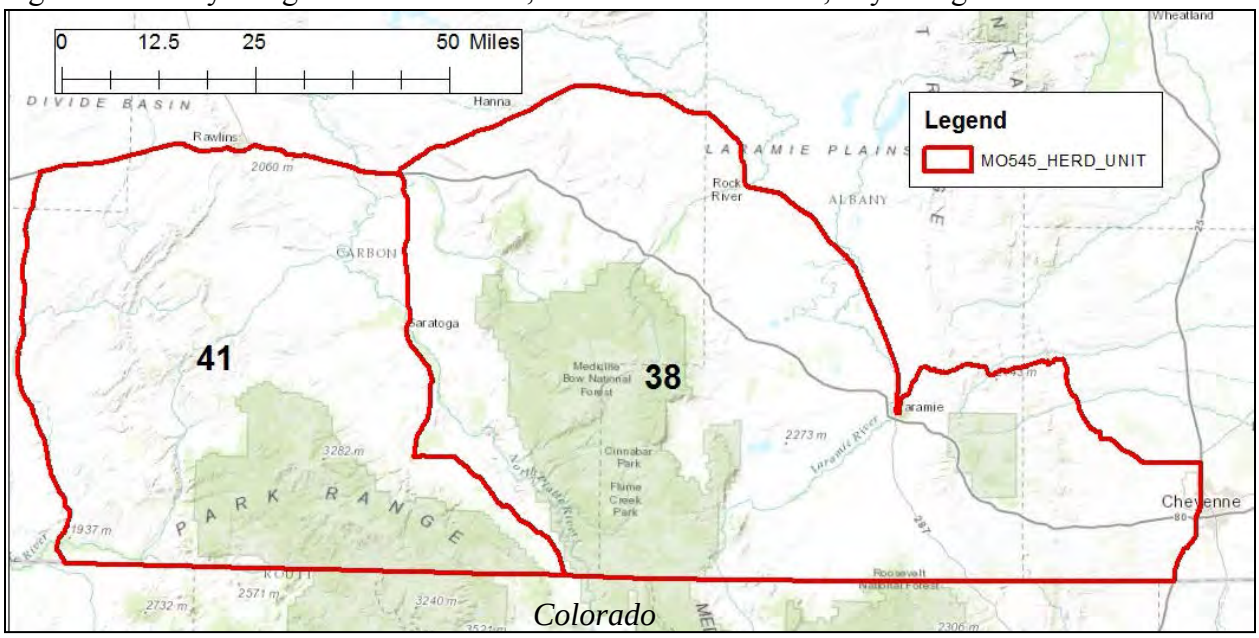
METHODS

Survey Area Selection

Moose abundance surveys had not been previously conducted in this herd unit and therefore some extrapolation of where moose might potentially be located in late winter was required.

WGFD managers associated with this herd unit mapped out locations known to be occupied by moose during winter using data from the WGFD Wildlife Observation System. Additionally, resource selection model results from Baigas (2008) were used to identify areas assumed to

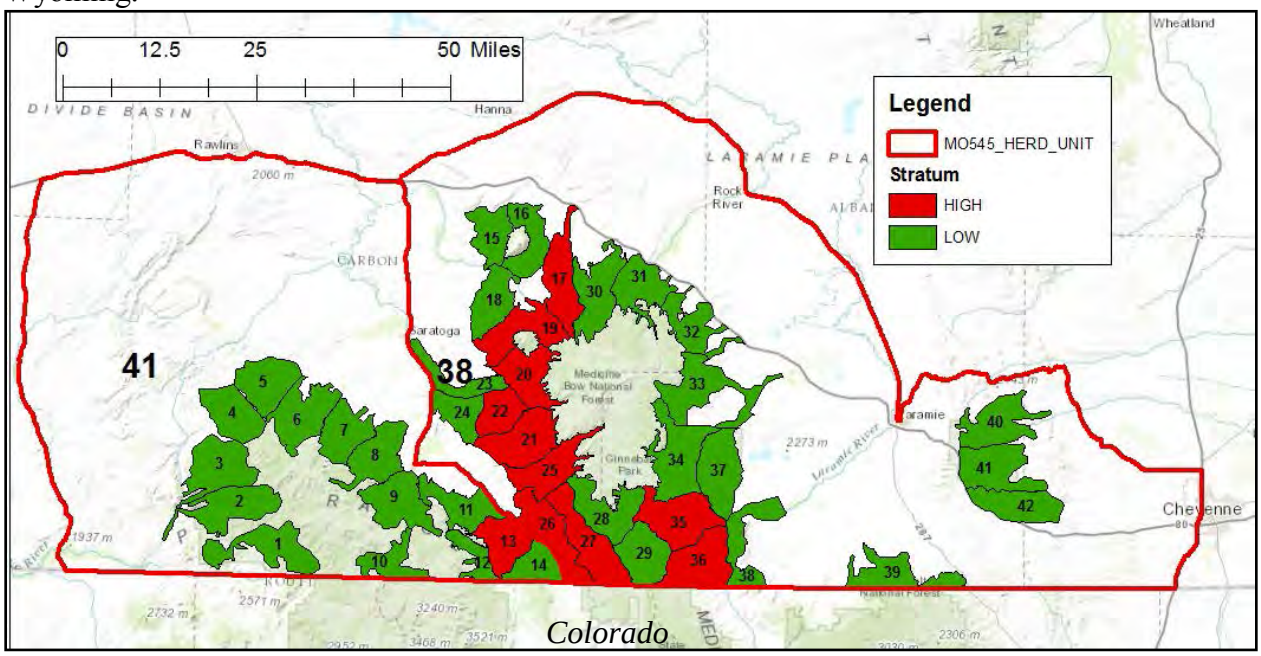
Figure 1. Snowy Range moose herd unit, Hunt Areas 38 and 41, Wyoming.



contain suitable winter moose habitat. Data from these two sources were incorporated to delineate an area assumed to be potentially occupied by moose in late winter.

A stratified random sample survey of the potentially occupied area was selected due to time and budgetary restraints. The potentially occupied area was divided geographically into survey search units (subunits) (n = 42) using features distinguishable from the air such as roads and waterways. Subunits were stratified by WGFD managers as either low or high strata with respect to assumed relative moose numbers (Figure 2). A random sample (n = 9) of the 31 low strata subunits were selected to be included in the survey. All (n = 11) high strata subunits were also included the survey.

Figure 2. Subunits for areas potentially occupied by moose in the Snowy Range herd unit, Wyoming.



Survey

A sightability survey technique (Anderson 1994, Anderson and Lindzey 1996) was selected to determine moose abundance in the Snowy Range herd unit. The survey was conducted using a Bell® Jet Ranger helicopter (Bell Helicopter Textron Inc, Fort Worth, Texas, USA) supplied by Northern Skies Aviation (Laurel, Montana, USA). The survey was conducted 14 March - 22 March 2015. Helicopter speed was maintained at 40-50 knots, at an altitude of 100-200 ft. above ground during survey flights. Survey flight lines were flown in a manner to provide for the possibility to detect all moose groups in between the survey lines. All habitat in the subunits assumed to be occupied by moose was surveyed. Areas occupied by humans and confined livestock (e.g. houses and ranch yards) were excluded because of safety considerations. Seventy-three (73) hours of flight time were used to complete the survey.

Two (2) observers occupied the helicopter on all survey flights. Observers were Bill Brinegar, Biff Burton, Corey Class, Rick King, Lee Knox, and Will Schultz. The primary observer was seated in the left front seat of the helicopter and was responsible for observing the ground in front of and to the left of the helicopter. The secondary observer was seated in the right rear passenger seat and was responsible for observing the ground to the right the helicopter. The secondary observers also recorded observation data on paper survey forms and collected waypoints and flight tracks using a Garmin® (Garmin International Inc., Olathe, Kansas, USA) handheld GPS unit. Sightability variables recorded for each moose group observed included: waypoint number, moose group size, activity of the most active moose in the group, percent of snow cover, vegetation class, and percent of vegetative screening cover. Observations of other wildlife were also recorded incidentally.

RESULTS

A total 134 moose were observed in 86 groups (Attachment A). Moose group observation and sightability variable data were analyzed using the Wyoming Hiller-Soloy moose model in the Aerial Survey computer program (Unsworth, et. al. 1999). A total abundance estimate of 266 ± 56 (90% *CI*) (*SE* = 34) moose was produced for this herd unit (Attachment B). Sex and age ratios from the survey yielded 38 calves, 16 yearling bulls, and 53 adult bulls /100 cows.

DISCUSSION

The abundance estimate of 266 ± 56 moose was considered a minimum estimate based on an antidotal comparison between unmarked moose and marked (radio-collared) moose observed during the survey. During the 7 days prior to the sightability survey, 30 moose in this herd unit were chemically immobilized using a dart gun fired from a helicopter, handled for sampling, and fitted with radio-collars. Twenty-seven (27) of the 30 radio-collared moose were located within subunits which were surveyed during the time of the survey. Four (4) of the 27 radio-collared moose in the surveyed subunits were observed during the survey. Several of the radio-collared moose not observed during the survey were relocated using radio telemetry immediately after the respective subunit survey was completed. These relocated radio-collared moose appeared to be actively evading the helicopter by moving into dense cover types. The inability of observers to locate the radio-collared moose during the initial survey flight indicated sightability correction rates from the Wyoming Hiller-Soloy moose model may under estimate abundance for moose group observations in dense cover.

Sex and age ratios from the sightability survey were similar to the results of the postseason classification survey completed in December of 2014 (Table 1) with the exception of the adult bull ratio. Adult bull ratios from the sightability survey were lower than the ratio from the postseason classification survey. The lower adult bull ratios from the sightability survey may have been due to bulls which had lost their antlers being classified as unknowns during the sightability survey.

Table 1. Moose sex and age ratios from a postseason classification survey completed December 2014, and a sightability survey completed March 2015, in the Snowy Range herd unit, Wyoming.

Survey	Sample	Unknown	Ad. Bulls	Yr. Bulls	Calves	Cows	Ad. Bulls /100 Cows	Yr. Bulls /100 Cows	Calves /100 Cows
Class.	52	0	20	2	8	22	91	9	36
Sight.	134	18	29	8	23	56	53	16	38

The results of the sightability survey provided managers with a plausible abundance estimate for moose wintering in the Snowy Range herd unit. The abundance estimate will be useful in constructing a population model and making future harvest recommendations for moose in this herd unit.

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Anderson, C.R. 1994. A sightability model for moose developed from helicopter surveys in western Wyoming. M.S. Thesis. Univ. of Wyoming. 69 pp.

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Unsworth, J. W., F. A. Leban, E. O. Garton, D. J. Leptich, and P. Zager. 1999. Aerial Survey: User's Manual. Electronic Edition. Idaho Department of Fish & Game, Boise, Idaho, USA.

Attachment A. Snowy Range herd unit moose group observation and sightability data.

H A	Subunit	Strat	Total	Cows	Calves	YR Bulls	AD Bulls	Unkn	Act	% Snow	% Veg	Veg Class	East	North
38	13	L	0	0	0	0	0	0	0	0	0	0		
38	15	L	0	0	0	0	0	0	0	0	0	0		
38	17	H	1	0	0	0	1	0	2	5	70	2	382060	4612515
38	17	H	1	1	0	0	0	0	2	10	40	2	381675	4609230
38	17	H	1	1	0	0	0	0	2	10	20	2	381783	4604586
38	17	H	2	1	1	0	0	0	2	100	40	4	381620	4595478
38	17	H	2	1	1	0	0	0	2	100	40	4	379740	4597395
38	17	H	2	1	1	0	0	0	2	5	35	2	381922	4612804
38	17	H	2	1	1	0	0	0	2	10	20	2	381809	4607597
38	17	H	2	1	0	0	1	0	2	10	40	2	381356	4609797
38	18	L	2	1	1	0	0	0	2	90	25	3	369248	4603980
38	19	H	1	0	0	0	0	1	3	100	55	4	369171	4590620
38	19	H	1	0	0	0	1	0	3	85	50	4	365830	4591991
38	19	H	1	0	0	0	0	1	3	100	25	4	376345	4595934
38	19	H	1	1	0	0	0	0	3	100	20	4	377219	4594032
38	19	H	1	1	0	0	0	0	3	100	50	4	378290	4590393
38	19	H	2	1	1	0	0	0	2	100	20	4	377890	4594088
38	19	H	3	0	0	0	3	0	3	100	25	4	375976	4593995
38	20	H	1	0	0	0	1	0	3	80	10	3	372777	4579083
38	20	H	1	0	0	0	1	0	3	100	5	4	373165	4579252
38	20	H	1	0	0	0	1	0	3	60	50	4	371619	4581231
38	20	H	1	1	0	0	0	0	3	50	25	3	369818	4584078
38	20	H	1	1	0	0	0	0	3	100	60	4	370946	4585394
38	20	H	1	1	0	0	0	0	3	90	35	4	370446	4587865
38	20	H	2	1	1	0	0	0	2	60	15	3	373335	4580294
38	20	H	2	1	0	0	1	0	3	100	35	4	373306	4580695
38	20	H	2	0	0	0	2	0	3	90	35	4	370315	4587271
38	21	H	1	0	0	0	0	1	1	100	10	2	373085	4567067
38	21	H	1	1	0	0	0	0	3	100	15	3	373345	4567457
38	21	H	1	1	0	0	0	0	3	100	40	4	373239	4572590
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38	25	H	1	0	0	0	1	0	2	100	20	4	377757	4564535
38	25	H	1	0	0	1	0	0	1	100	40	4	376450	4563867
38	25	H	1	1	0	0	0	0	1	100	10	3	376071	4562421
38	25	H	1	0	0	0	0	1	2	0	0	1	376945	4562087
38	25	H	1	0	0	0	1	0	2	80	0	1	378773	4562542
38	25	H	1	0	0	0	0	1	3	100	30	4	376386	4560938
38	25	H	2	2	0	0	0	0	2	100	25	3	377621	4562738
38	25	H	2	1	1	0	0	0	3	0	0	1	380822	4562566
38	25	H	3	1	2	0	0	0	2	5	25	4	378994	4563346
38	25	H	3	0	0	0	1	2	3	100	30	3	381196	4560826
38	26	H	2	0	0	1	1	0	2	100	35	3	385465	4541706
38	26	H	4	0	0	1	1	2	3	100	50	4	379617	4551990
38	27	H	1	1	0	0	0	0	3	95	25	4	384765	4551903
38	27	H	1	1	0	0	0	0	1	50	35	4	386241	4551867
38	27	H	1	0	0	0	0	1	3	100	40	4	380677	4556517
38	27	H	1	1	0	0	0	0	3	100	25	3	379469	4556641
38	27	H	1	1	0	0	0	0	3	100	45	3	381393	4558770

H A	Subunit	Strat	Total	Cows	Calves	YR Bulls	AD Bulls	Unkn	Act	% Snow	% Veg	Veg Class	East	North
38	27	H	1	0	0	0	1	0	3	100	15	4	385951	4546151
38	27	H	1	0	0	1	0	0	2	65	15	2	387981	4539905
38	27	H	1	1	0	0	0	0	2	85	10	3	387339	4549877
38	27	H	2	1	1	0	0	0	3	100	30	4	380443	4558926
38	27	H	2	1	1	0	0	0	3	100	30	4	384124	4548167
38	27	H	2	1	1	0	0	0	2	100	30	4	383682	4547487
38	27	H	2	1	1	0	0	0	2	100	30	4	386115	4546597
38	27	H	2	1	1	0	0	0	3	85	10	3	389261	4539565
38	27	H	2	1	1	0	0	0	2	90	20	4	389568	4541806
38	27	H	2	1	1	0	0	0	3	100	20	2	390492	4541315
38	27	H	2	1	0	1	0	0	2	100	10	2	392011	4540184
38	27	H	3	1	0	1	1	0	1	50	10	3	388763	4542253
38	27	H	4	3	0	0	1	0	3	100	50	4	387337	4549879
38	29	L	0	0	0	0	0	0	0	0	0	0		
38	30	H	1	0	0	0	0	1	1	100	40	3	412982	4548198
38	30	H	1	1	0	0	0	0	2	100	65	4	410780	4539249
38	30	H	2	1	1	0	0	0	1	100	65	4	411828	4548823
38	30	H	2	1	1	0	0	0	3	100	25	4	407862	4540466
38	30	H	2	1	1	0	0	0	1	100	45	4	412149	4592986
38	31	H	2	1	0	0	0	1	2	75	15	3	409585	4550567
38	31	H	2	1	0	0	1	0	2	15	0	1	409145	4556049
38	31	H	2	1	1	0	0	0	2	80	15	3	408234	4555453
38	31	H	2	1	0	0	0	1	3	60	35	1	405787	4552152
38	35	L	0	0	0	0	0	0	0	0	0	0		
38	38	L	2	0	0	1	1	0	2	95	20	3	467062	4557887
38	38	L	3	0	0	0	0	3	2	85	35	2	468968	4557921
38	42	L	1	0	0	0	1	0	3	65	35	4	408209	4588658
38	42	L	1	0	0	0	1	0	3	5	20	4	409025	4593952
38	42	L	2	1	0	1	0	0	3	45	20	3	408364	4591926
41	1	L	1	0	0	0	1	0	2	0	0	1	375729	4541003
41	1	L	2	2	0	0	0	0	3	5	10	4	369890	4542158
41	2	H	2	1	1	0	0	0	3	60	5	2	369695	4546878
41	5	L	0	0	0	0	0	0	0	0	0	0		

Aerial Survey for Windows, Version 1.00 Beta 6.1.4 (12-Feb-2000)

Monday, May 18, 2015 03:44 PM

Model: Moose, Hiller-Siloy, Wyoming

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.....

2015 Snowy Range Moose SAB

Section 1: Summary of Raw Counts

	Units		Number of Each Class Counted					
Stratum	Sampled	Total	Cows	Bulls	Calves	YrBull	AdBull	Unclas
1	9	14	4	6	1	2	4	3
2	11	120	52	31	22	6	25	15
Total	20	134	56	37	23	8	29	18

Section 2: Summary of Raw Counts for Perfect Visibility Model

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

	No of Units			Number of Each Class Counted					
Strat	Popn	Sample	Total	Cows	Bulls	Calves	YrBull	AdBull	Unclas
1	31	9	48	14	21	3	7	14	10
2	11	11	120	52	31	22	6	25	15
Total	42	20	168	66	52	25	13	39	25

Section 3: Estimates for Total Number

Total

	Number of Units			Variance			Bound
Stratum	Popn.	Sample	Estimate	Sampling	Sightability	Model	90%
1	31	9	56	431	21	0	35
2	11	11	210	0	636	90	44
Total	**42**	**20**	**266**	**431**	**657**	**90**	**56**

Cows

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	15	47	2	0	12
2	11	11	93	0	218	33	26
Total	42	20	108	47	220	33	28

Bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	24	137	6	0	20
2	11	11	50	0	87	11	16
Total	42	20	74	137	93	11	26

Calves

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	4	12	1	0	6
2	11	11	37	0	68	11	15
Total	42	20	41	12	69	11	16

Yearling bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	8	22	2	0	8
2	11	11	9	0	6	0	4
Total	42	20	17	22	8	0	9

Adult bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	16	56	3	0	13
2	11	11	41	0	75	11	15
Total	42	20	57	56	78	11	20

Unclassified

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	12	111	8	0	18
2	11	11	31	0	78	11	16
Total	42	20	43	111	86	11	24

Section 4: Estimates for Proportions

Cows

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.27333	0.01344	0.00049	0.00002	0.19433
2	11	11	0.44264	0.00000	0.00179	0.00115	0.08912
Total	42	20	0.40696	0.00061	0.00113	0.00072	0.08147

Bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.43167	0.01066	0.00123	0.00007	0.17989
2	11	11	0.23768	0.00000	0.00160	0.00038	0.07305
Total	42	20	0.27900	0.00048	0.00105	0.00024	0.06910

Calves

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.07375	0.00428	0.00023	0.00001	0.11050
2	11	11	0.17417	0.00000	0.00091	0.00031	0.05748
Total	42	20	0.15296	0.00019	0.00058	0.00019	0.05103

Yearling bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.14750	0.00203	0.00036	0.00001	0.08066
2	11	11	0.04206	0.00000	0.00013	0.00001	0.01972
Total	42	20	0.06446	0.00009	0.00010	0.00001	0.02313

Adult bulls

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.28417	0.00548	0.00073	0.00003	0.12994
2	11	11	0.19562	0.00000	0.00140	0.00033	0.06831
Total	42	20	0.21453	0.00025	0.00090	0.00020	0.06050

Unclassified

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	0.22125	0.02122	0.00169	0.00006	0.24925
2	11	11	0.14551	0.00000	0.00148	0.00030	0.06943
Total	42	20	0.16167	0.00096	0.00100	0.00019	0.07613

Section 5: Estimates for Ratios

Calves per 100 Cows

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	27.0	640.5	12.5	0.9	42.1
2	11	11	39.3	0.0	118.7	18.4	19.3
Total	42	20	37.7	13.1	87.9	13.6	17.6

Yearling bulls per 100 Cows

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	54.0	1465.5	29.0	2.0	63.6
2	11	11	9.5	0.0	9.3	0.6	5.2
Total	42	20	15.9	29.9	7.5	0.5	10.1

Adult bulls per 100 Cows

Stratum	Number of Units Popn.	Sample	Estimate	Variance Sampling	Sightability	Model	Bound 90%
1	31	9	104.0	4258.6	62.0	4.2	108.2
2	11	11	44.2	0.0	136.1	20.2	20.6
Total	42	20	52.8	87.0	101.8	15.0	23.5

Section 6: Summary Statistics

Percent correction from perfect visibility model

Stratum	Units Sampled	Total	Cows	Bulls	Calves	YrBull	AdBull	Unclas
1	9	17.1	12.0	17.9	20.9	20.9	16.5	20.9
2	11	74.7	78.5	60.8	66.0	47.0	64.1	103.4
Total	20	58.1	64.2	43.2	61.1	31.9	47.0	69.7

[Total variances (i.e., standard error squared) are in parenthesis]

Total estimates...

266	(1178)	Total
108	(300)	Cows
74	(241)	Bulls
41	(92)	Calves
17	(30)	Yearling bulls
57	(145)	Adult bulls
43	(208)	Unclassified

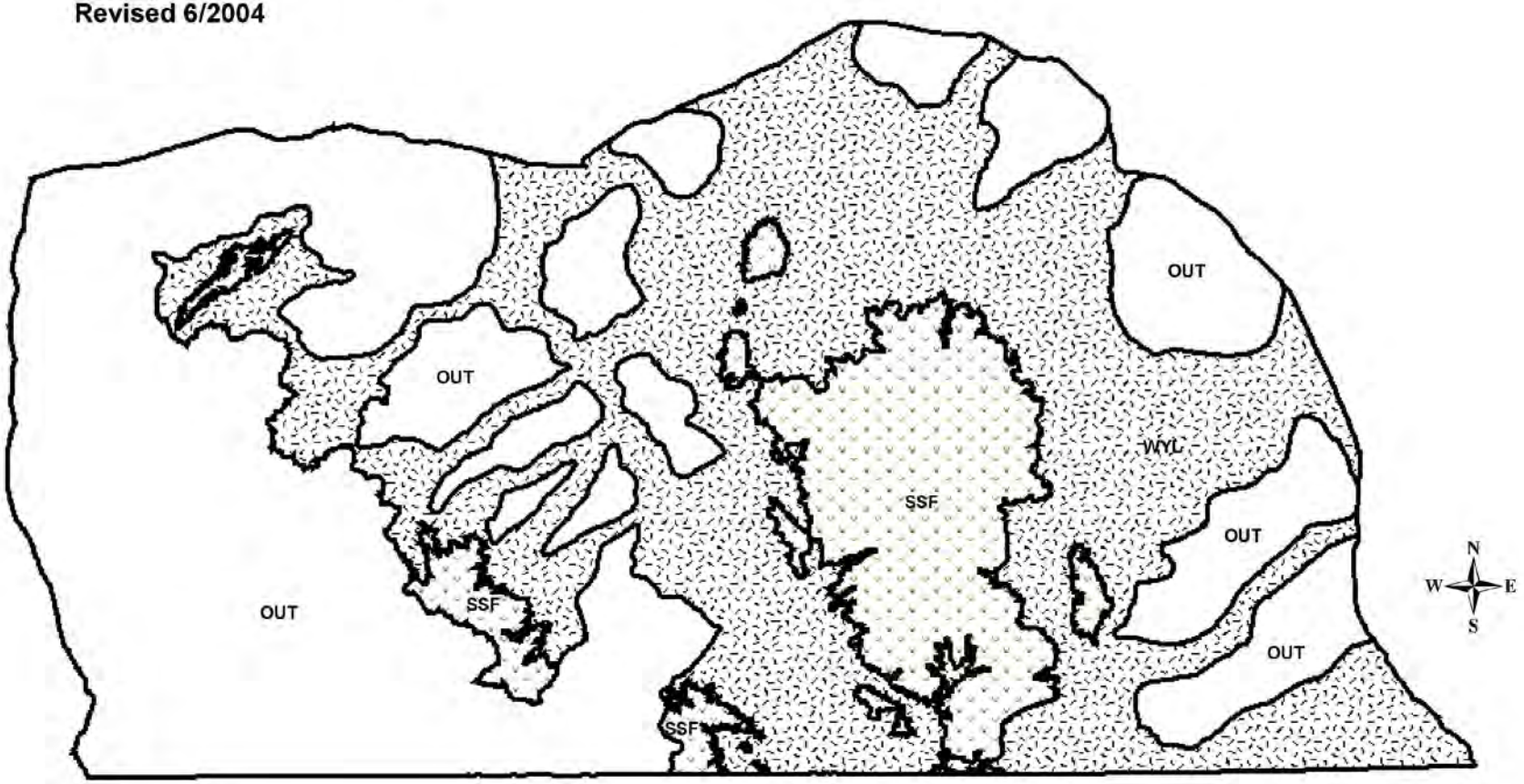
Proportions...

0.4070	(0.002453)	Cows
0.2790	(0.001765)	Bulls
0.1530	(0.000962)	Calves
0.0645	(0.000198)	Yearling bulls
0.2145	(0.001353)	Adult bulls
0.1617	(0.002142)	Unclassified

Ratios...

38	(115)	Calves per 100 Cows
16	(38)	Yearling bulls per 100 Cows
53	(204)	Adult bulls per 100 Cows

Moose (M545) -- Snowy Range/Sierra Madre
HA 38, 41
Revised 6/2004



2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD534 - GOSHEN RIM

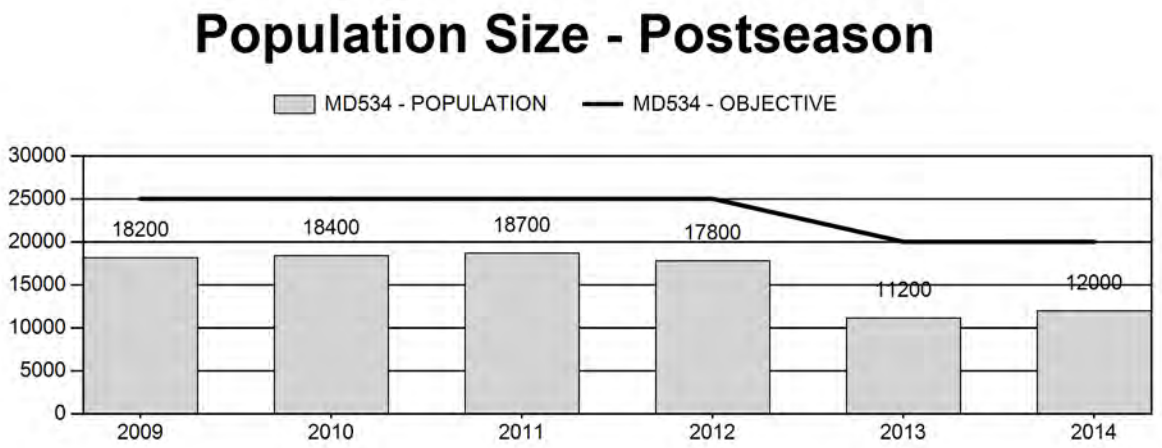
HUNT AREAS: 15
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	16,860	12,000	12,200
Harvest:	782	787	790
Hunters:	1,656	1,610	1,600
Hunter Success:	47%	49%	49 %
Active Licenses:	1,715	1,707	1,700
Active License Success:	46%	46%	46 %
Recreation Days:	6,258	6,555	6,550
Days Per Animal:	8.0	8.3	8.3
Males per 100 Females	31	28	
Juveniles per 100 Females	60	81	

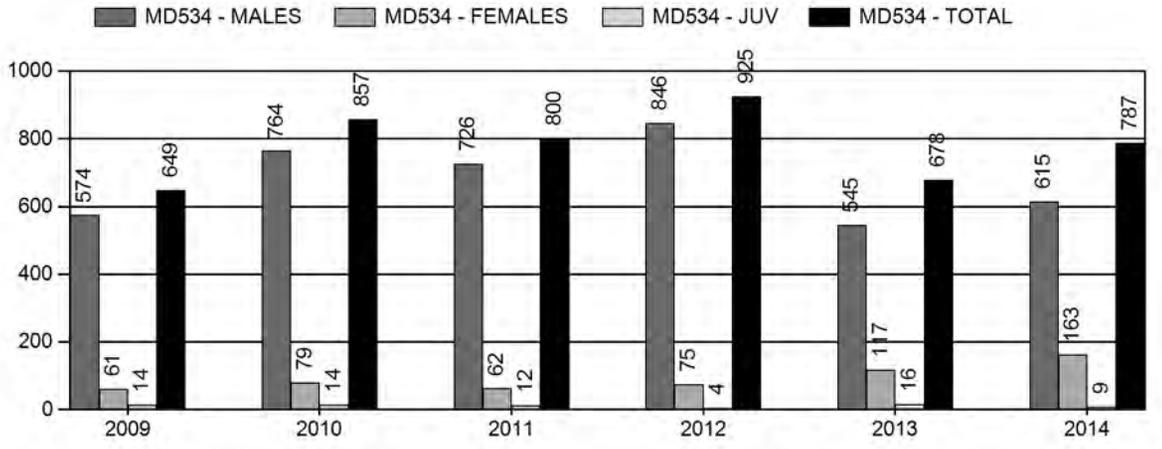
Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-40%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/20/2015

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

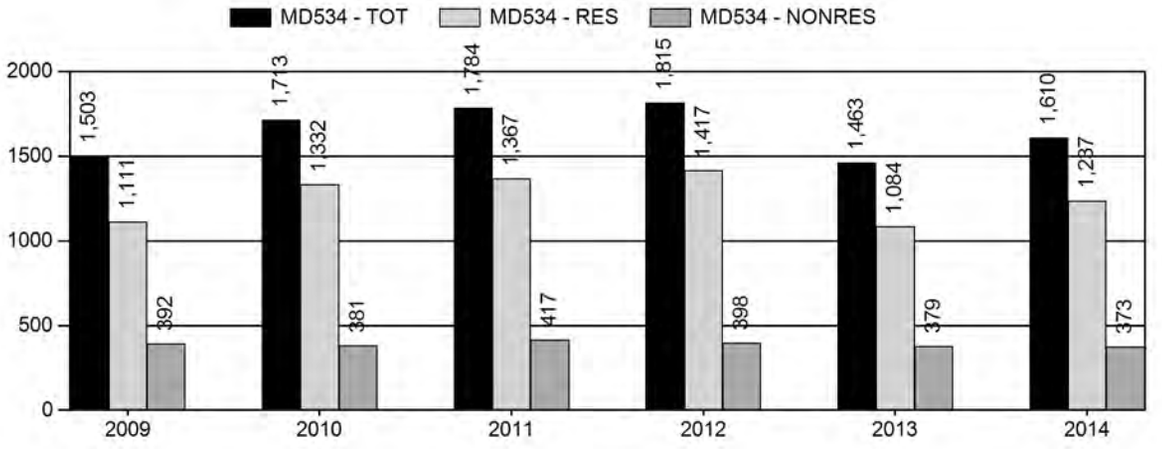
	JCR Year	Proposed
Females ≥ 1 year old:	3%	1.5%
Males ≥ 1 year old:	29%	29%
Juveniles (< 1 year old):	.2%	.2%
Total:	6%	6%
Proposed change in post-season population:	-8%	-7%



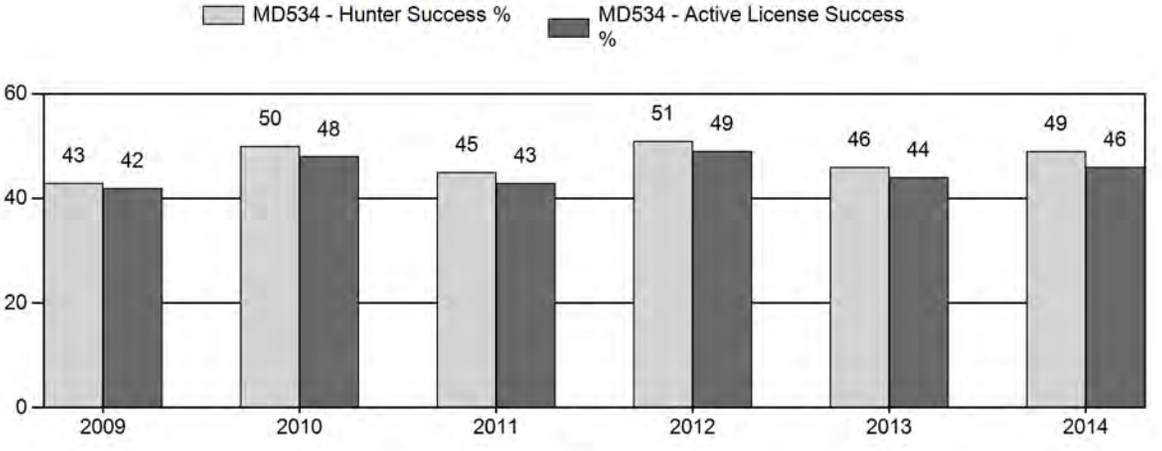
Harvest



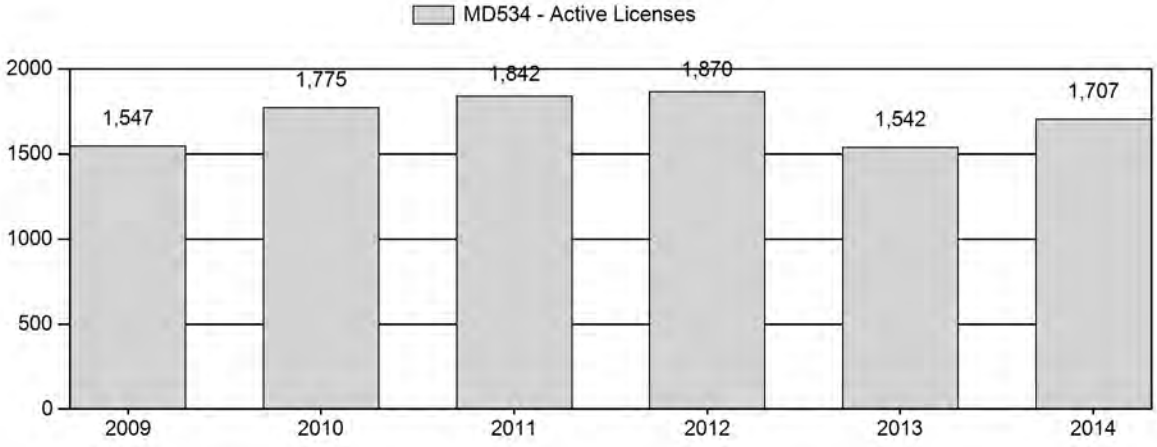
Number of Hunters



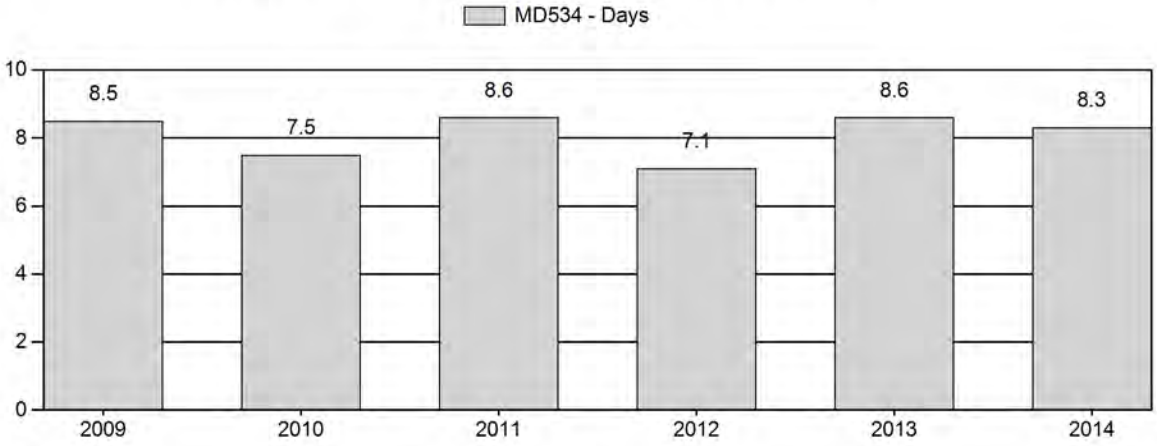
Harvest Success



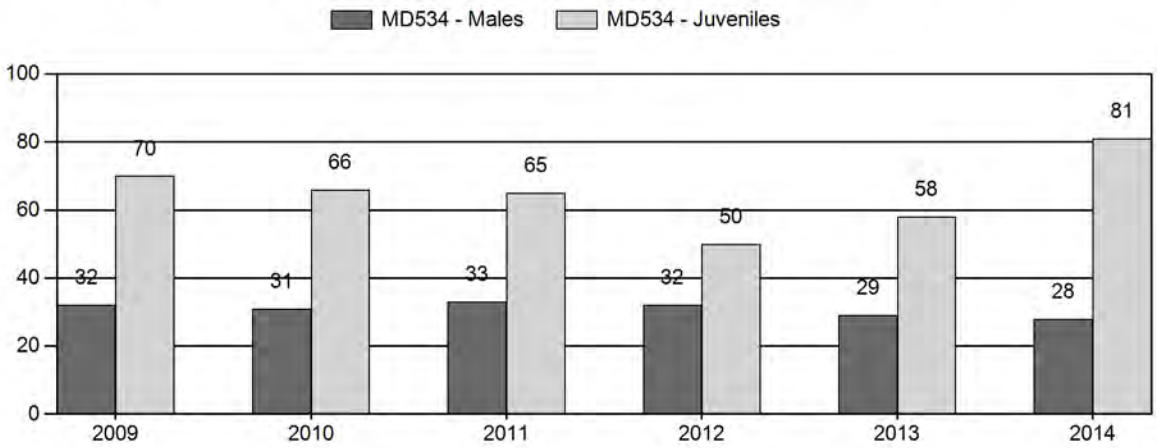
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD534 - GOSHEN RIM

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	18,200	44	0	0	0	98	142	16%	442	49%	311	35%	895	1,210	10	22	32	± 4	70	± 7	53
2010	18,400	80	0	0	0	125	205	16%	668	51%	440	34%	1,313	1,123	12	19	31	± 3	66	± 5	50
2011	18,700	116	0	0	0	226	342	17%	1,031	51%	665	33%	2,038	1,364	11	22	33	± 3	65	± 4	48
2012	17,800	121	0	0	0	192	313	18%	977	55%	487	27%	1,777	1,076	12	20	32	± 3	50	± 3	38
2013	11,200	39	128	172	21	88	224	15%	776	53%	451	31 %	1,451	1,235	5	24	29	± 3	58	± 4	45
2014	12,000	93	53	67	23	7	243	13%	876	48%	706	39%	1,825	1,130	11	17	28	± 2	81	± 5	63

2015 HUNTING SEASONS
GOSHEN RIM MULE DEER HERD UNIT (MD534)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
15	Gen	Oct. 1	Oct. 14		General license; antlered mule deer or any white-tailed deer.
	6	Oct. 1	Dec. 31	350	Limited quota; doe or fawn
Region T				400	
Archery		Sept. 1	Sept. 30	Refer to Section 3 of this Chapter	

Hunt Area	Type	Quota change from 2014
15	6	No Change
Total	6	No Change

Management Evaluation
Current Management Objective: 20,000 (16,000-24,000)
2014 Post-season Population Estimate: ~12,000
2015 Post-season Population Estimate: ~12,200
2014 Hunter Satisfaction Survey Results: 64% Satisfied
Management Strategy: Recreational
2014 Sportsmen Satisfaction Survey Results: 64% Satisfied, 20% Neutral, 15% Dissatisfied

Herd Unit Issues
The management objective for the Goshen Rim Mule Deer Herd Unit was changed from 25,000 to 20,000 and Hunt Areas 15,16,55,57 were combined into Hunt Area 15 as a result of internal recommendations and public input during the 2013 herd objective review process. The management strategy is recreational management with a post-season buck ratio range of 20-29 bucks:100 does.

The 2014 post-season population estimate was about 12,000 with a stable population. Restricted access makes it difficult to manage this herd. Access is driven by isolated private land experiencing damage and small parcels of state, BLM lands, and private lands enrolled into the Department's PLPW program.

Without paying a trespass/trophy fee or hiring an outfitter, hunters have a difficult time harvesting a mature mule deer buck. Landowners and hunters would like to see an increase in mule deer, but without major habitat revitalization (for part of the year mule deer are dependent on irrigated and dryland agriculture fields) this herd unit will most likely remain around 12,000 mule deer. Buck ratios are anticipated to remain on the higher end of the recreational management strategy due to private land (92% of the occupied habitat). Public land hunters will continue to have a difficult time finding a mature buck due to the majority of land being held in private ownership.

Major landscape changes have been occurring in the southern portion of the herd unit. Urban sprawl continues to increase north and east of Cheyenne as well as industrial (methane production) development in Laramie County. The USDA's Conservation Reserve Program (CRP) has experienced a decline in productivity and quality of perennial forage throughout the herd unit. The conversion of dryland (wheat fields) cropland to CRP in the past provided favorable fawning and winter cover for mule deer. These stands are now monotypic stands of unfavorable perennial grass (i.e. smooth brome and crested wheatgrass) and no legume component, providing little if any habitat benefits.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the Goshen Rim Mule Deer Herd Unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on mule deer. Mild fall temperatures and lack of persistent snows allowed for mule deer to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Goshen Rim Mule Deer Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in Spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of

"representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

In Spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data

This herd experienced a sharp decline in 2012 following the worst drought recorded since the 1930's, and since then has been fluctuating around 12,000 mule deer. General licenses have focused harvest on the male segment of the population with little effort to remove females. There were 350 Type 6 licenses available for the 2014 season for some doe harvest opportunity and address damage situations. On average less than 1 percent of the female population o is harvested. Chronic wasting disease is not as prevalent in this herd when compared to the Laramie Mountains and South Converse Mule Deer Herd Units, but the long-term prevalence rate average of 11% is most likely impacting population performance to an unknown extent.

In 2014 fawn ratios exceeded 66 fawns: 100 does (81 fawns:100 does) for the first time in over ten years, which is needed to increase a population (Unsworth et al. 1999). Despite buck ratios well within the recreational management range, (28 bucks:100 does in 2014) it appears based on personnel and hunter observation the buck ratios on accessible lands are likely on the lower end of the management strategy.

In 2014, 30% of the field harvest data was comprised of yearling bucks, which is the highest sample size in five years. The majority of yearling mule deer that are aged in the field typically come from public land where hunters are usually less selective, so the 30% in not surprising. Yearling harvest data correlated well with post-season yearling classification data, fawn ratios increased by 100% from 2013 to 2014. On public land the majority of mature male deer are typically 2-3+ years old. On private land where access is controlled, the average age is 4-6+ years old. Based on field observations public land hunters typically harvest younger deer, lending credibility to a lower buck: doe ratio on the limited amount of public lands.

Since 2012 antler class data has been collected from harvested mule deer, then in 2013 from classified mule deer to gauge buck quality. Antler class data is broken down into three classes: 1) Class I- $\leq$19", 2) Class II- 20-25", Class III- $\geq$26". Typically harvest class data is similar to classification class data (see tables from JCR). The only significant observation when comparing antler harvest data and classification antler data is the percent of Class II deer increased in 2014 compared to 2012/13, and 2014 was a mirror image of the classification antler class data. Based on these observations it appears the harvested deer are representative of male age cohorts within the population, which indicates the season structure is working to maintain the recreational management guidelines. The hunter satisfaction survey showed that 64% of the hunters were satisfied or very satisfied, similar to 2013. This level of satisfaction is somewhat

surprising given the negative comments received from hunters by field personnel. Hunters continue to comment on lack of mature bucks and overall lack of deer.

Harvest Data

Hunter success (49%) was slightly higher than the five-year average of 47%, and hunter effort (8.3 days/harvest) was similar to the five-year average of 8.0 days per harvest. Access continues to be an issue in this herd unit with 92% of the occupied habitat consisting of private land. The only major access is the PLPW's Hunter Management Program on the Guernsey Guard Camp, walk-in areas, and the various Wildlife Habitat Management Areas. Access for the most part is driven by damage, which is the reason for the few Type 6 licenses. Access for buck harvest is extremely difficult unless a hunter is willing to pay a trespass fee or hire an outfitter. Private land ratios inflate overall buck ratios to the higher end of the recreational management strategy.

Population

The "Time-Specific Juvenile and Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. The model has a slightly higher AIC value but did have the best fit compared to the other two models. Given the better fit of data and perceived population trend by personnel, landowners and hunters, this seemed like the most plausible model. Juvenile survival ranges varied from a high of 90% to a low of 40% with an average of 60%. The 2007 winter was mild, so a high survival rate is plausible. Hunters and landowners would like to see a continued increase in the population, however, given poor fawn production CWD, and poor shrub conditions an increase is not likely in the near future. This models ranks fair. The only data available is classification and harvest data.

Management Summary

Hunting seasons in this herd unit have traditionally started on October 1 and run for 11 to 14 days for the general season with limited doe/fawn harvest opportunity running later. The 2015 season structure will remain the same as the 2014 season; general season October 1-14 and 350 Type 6 licenses. Department personnel will work with landowners and hunters to distribute harvest as damage issues arise. The Region T licenses will remain at 400. In 2014, 93% of the licenses were active, similar to the number of hunters that went to the field in 2013 when 500 Region T licenses were available. Based on harvest data, harvest increased, success increased, and effort decreased compared to 2013. The current number of Region T licenses seems adequate.

If we attain the projected harvest of 790 deer and observe normal fawn production the mule deer population of 12,200 will continue to remain well below the objective of 20,000.

Literature cited:

Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. J. Wildl. Manage. 63(1):315-326, 1999

INPUT	
Species:	Deer
Biologist:	Martin Hicks
Herd Unit & No.:	Goshen Rim MD534
Model date:	02/13/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	73	82	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	62	89	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	7	112	☑ TSJ,CA Model	mild winters provide allow for higher survival during certain years than a constant .6 survival

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1993				3521	2685	6196	12402	3436	1207	5292	9935	14500
1994				3207	2353	5837	11396	3127	1046	4908	9082	14500
1995				3656	1996	5290	10942	3603	986	4838	9427	14500
1996				4168	2462	5747	12377	4168	1557	5630	11356	14500
1997				3923	2162	5635	11719	3919	1437	5459	10814	14500
1998				3650	2119	5549	11318	3648	1312	5369	10328	14500
1999				4712	2760	6220	13692	4681	1684	5994	12359	25000
2000				4090	2629	6305	13024	4070	1625	5977	11672	25000
2001				2787	2200	5911	10898	2755	1365	5632	9752	25000
2002				2989	2001	5640	10629	2979	1374	5448	9801	25000
2003				3995	2330	5805	12130	3955	1685	5566	11206	25000
2004				3573	3217	6526	13316	3548	2563	6258	12369	25000
2005				4573	2939	6089	13601	4556	2160	5961	12678	25000
2006				2904	2920	6161	11985	2891	2107	6065	11062	25000
2007				2758	2594	5969	11321	2738	1795	5805	10338	25000
2008				3927	2696	6116	12739	3914	2085	6048	12046	25000
2009				4148	2560	5940	12648	4132	1929	5873	11934	25000
2010				3927	2663	6026	12617	3912	1823	5939	11674	25000
2011				4106	2904	6414	13424	4093	2105	6346	12544	25000
2012				3222	2920	6537	12678	3217	1990	6454	11661	25000
2013				3515	2340	6147	12003	3498	1741	6019	11257	25000
2014				4633	2268	5916	12817	4623	1591	5737	11951	20000
2015				4273	2645	6180	13099	4262	1870	6098	12230	20000
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

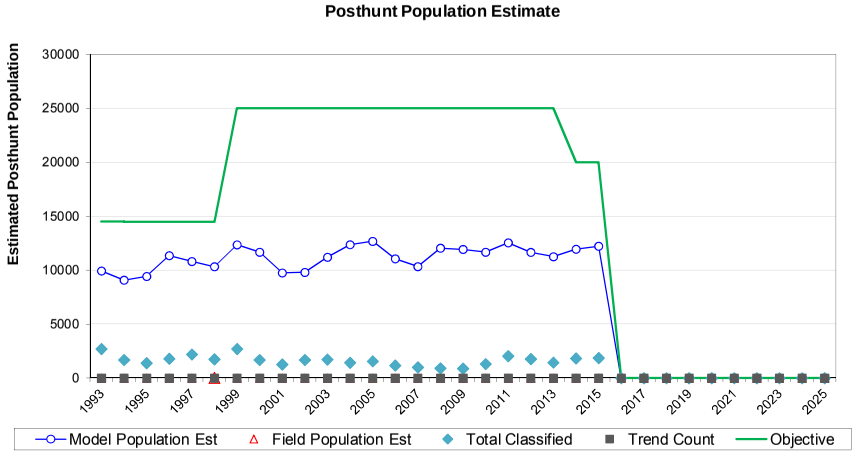
Year	Winter Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.77			0.85		
1994	0.71			0.85		
1995	0.90			0.85		
1996	0.40			0.85		
1997	0.46			0.85		
1998	0.90			0.85		
1999	0.51			0.85		
2000	0.40			0.85		
2001	0.61			0.85		
2002	0.78			0.85		
2003	0.90			0.85		
2004	0.42			0.85		
2005	0.47			0.85		
2006	0.55			0.85		
2007	0.85			0.85		
2008	0.40			0.85		
2009	0.49			0.85		
2010	0.69			0.85		
2011	0.55			0.85		
2012	0.40			0.85		
2013	0.45			0.85		
2014	0.56			0.85		
2015	0.60			0.85		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

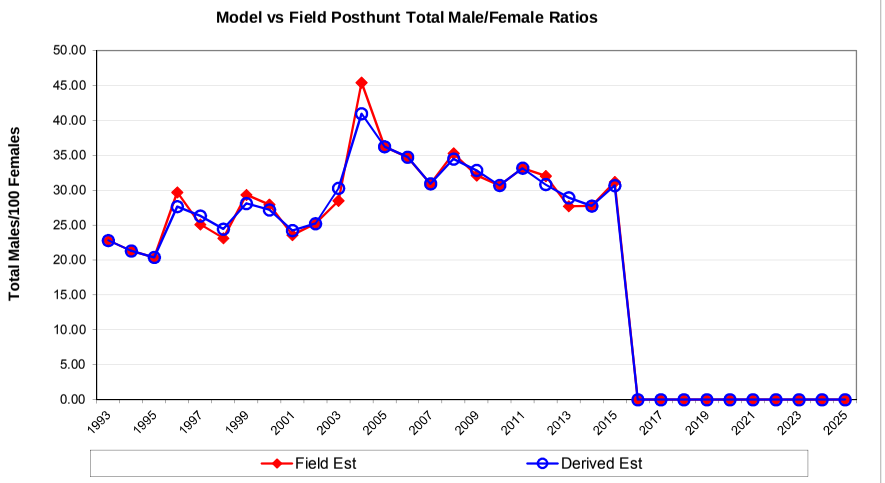
Parameters:	Optim cells
Adult Survival =	0.853
Initial Total Male Pop/10,000 =	0.121
Initial Female Pop/10,000 =	0.529

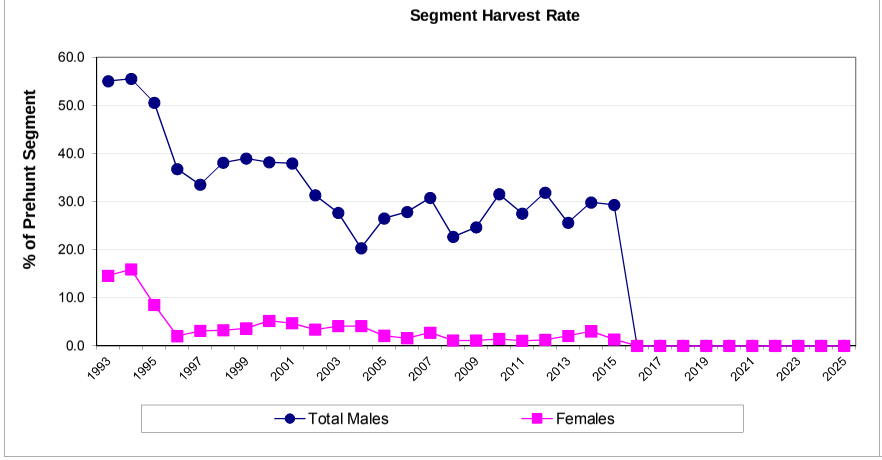
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

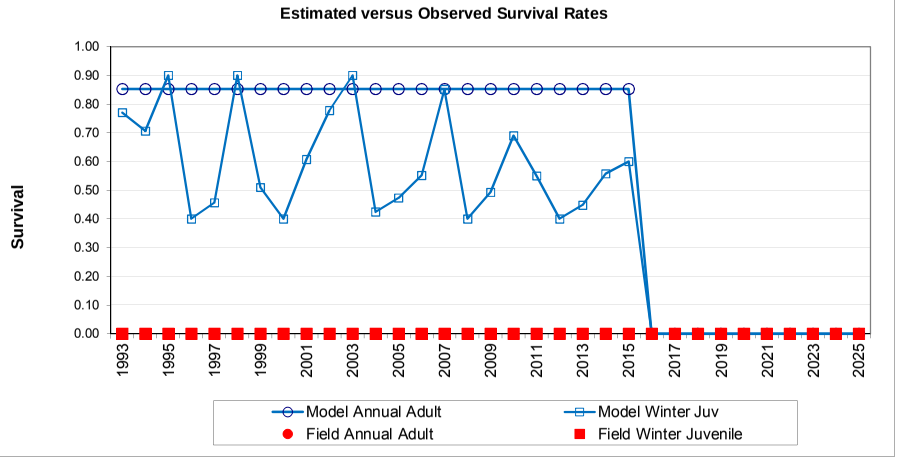
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Classification Counts					Harvest: Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		64.93	2.72	22.80	22.80	1.39	77	0	1344	822	2243	55.1	14.6
1994		63.72	3.38	21.31	21.31	1.68	72	0	1188	844	2104	55.5	15.9
1995		74.48	4.26	20.39	20.36	1.85	48	0	918	411	1377	50.6	8.5
1996		74.04	3.82	27.66	29.71	2.09	0	0	823	106	929	36.8	2.0
1997		71.79	3.32	26.32	25.09	1.67	4	0	659	160	823	33.5	3.1
1998		67.94	3.53	24.44	23.12	1.76	2	0	734	164	900	38.1	3.3
1999		78.08	3.26	28.10	29.35	1.71	29	0	978	205	1212	39.0	3.6
2000		68.10	3.65	27.19	27.94	2.04	18	0	913	298	1229	38.2	5.2
2001		48.92	3.14	24.23	23.58	1.99	29	0	759	253	1041	38.0	4.7
2002		54.68	3.00	25.21	25.21	1.83	9	0	570	174	753	31.3	3.4
2003		71.05	3.74	30.28	28.49	2.05	37	0	586	217	840	27.7	4.1
2004		56.70	3.54	40.96	45.42	3.05	23	0	594	244	861	20.3	4.1
2005		76.43	4.29	36.23	36.24	2.59	15	0	708	116	839	26.5	2.1
2006		47.66	3.31	34.74	34.74	2.70	12	0	739	88	839	27.8	1.6
2007		47.17	3.50	30.92	30.92	2.67	18	0	726	149	893	30.8	2.7
2008		64.72	4.80	34.47	35.28	3.21	12	0	556	62	630	22.7	1.1
2009		70.36	5.21	32.85	32.13	3.10	14	0	574	61	649	24.7	1.1
2010		65.87	4.04	30.69	30.69	2.45	14	0	764	79	857	31.6	1.4
2011		64.50	3.21	33.17	33.17	2.07	12	0	726	62	800	27.5	1.1
2012		49.85	2.76	30.83	32.04	2.08	4	0	846	75	925	31.9	1.3
2013		58.12	3.44	28.92	27.71	2.14	16	0	545	117	678	25.6	2.1
2014		80.59	4.08	27.74	27.74	2.01	9	0	615	163	787	29.8	3.0
2015		69.89	3.57	30.67	31.18	2.10	10	0	705	75	790	29.3	1.3
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES









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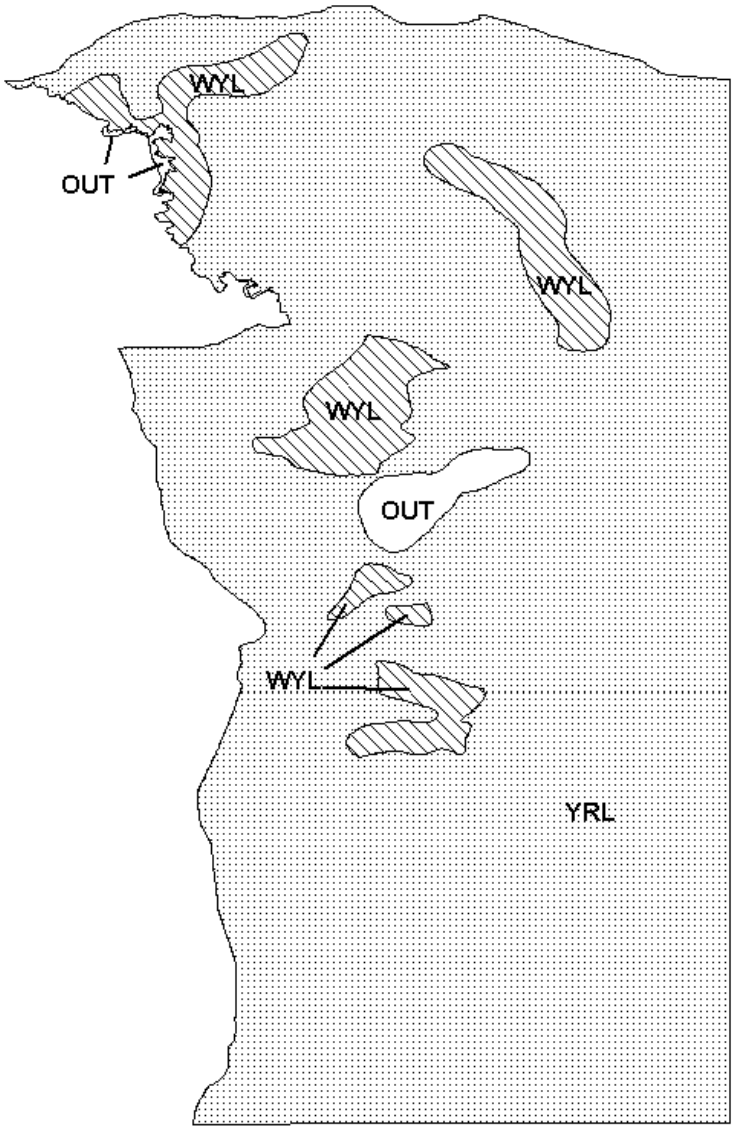


Mule Deer (MD534) - Goshen Rim
HA 15, 16, 55, 57
Revised - 97

2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD537 - LARAMIE MOUNTAINS

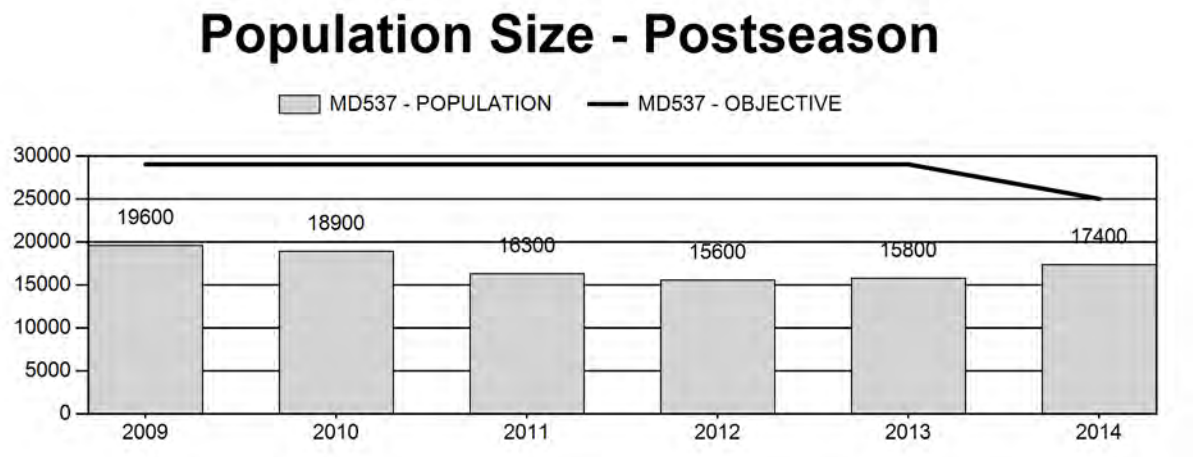
HUNT AREAS: 59-60, 62-64, 73
PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	17,240	17,400	15,600
Harvest:	1,171	953	970
Hunters:	2,172	1,847	1,880
Hunter Success:	54%	52%	52 %
Active Licenses:	2,259	1,898	1,930
Active License Success:	52%	50%	50 %
Recreation Days:	9,812	9,490	9,400
Days Per Animal:	8.4	10.0	9.7
Males per 100 Females	38	37	
Juveniles per 100 Females	60	81	

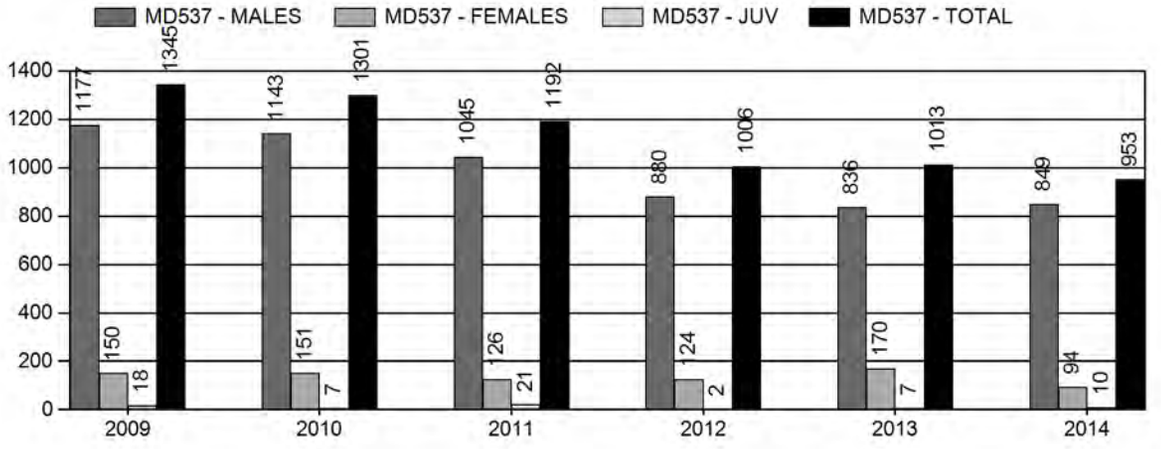
Population Objective (± 20%) :	25000 (20000 - 30000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-30.4%
Number of years population has been + or - objective in recent trend:	20
Model Date:	02/26/2015

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

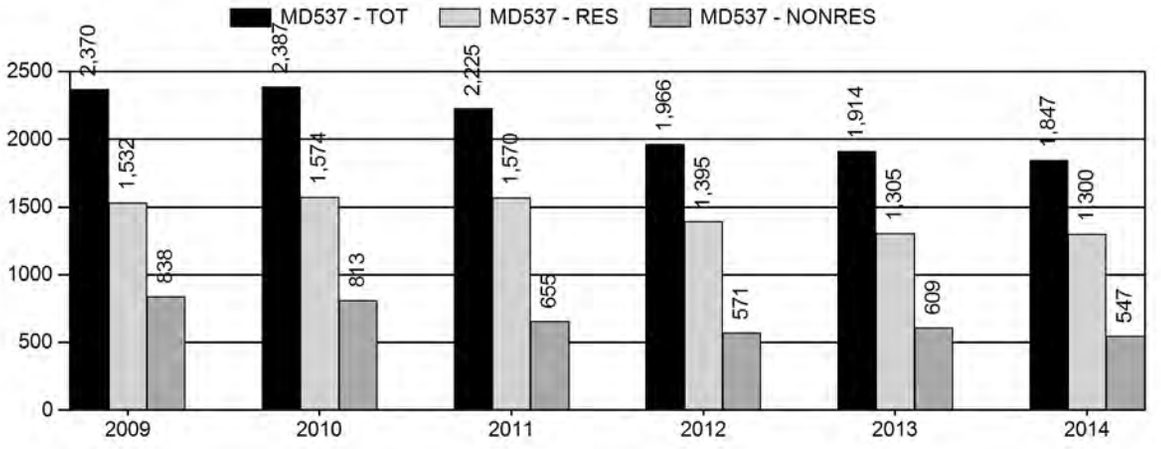
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	23%	26%
Juveniles (< 1 year old):	.1%	.1%
Total:	5%	5%
Proposed change in post-season population:	-6%	-7%



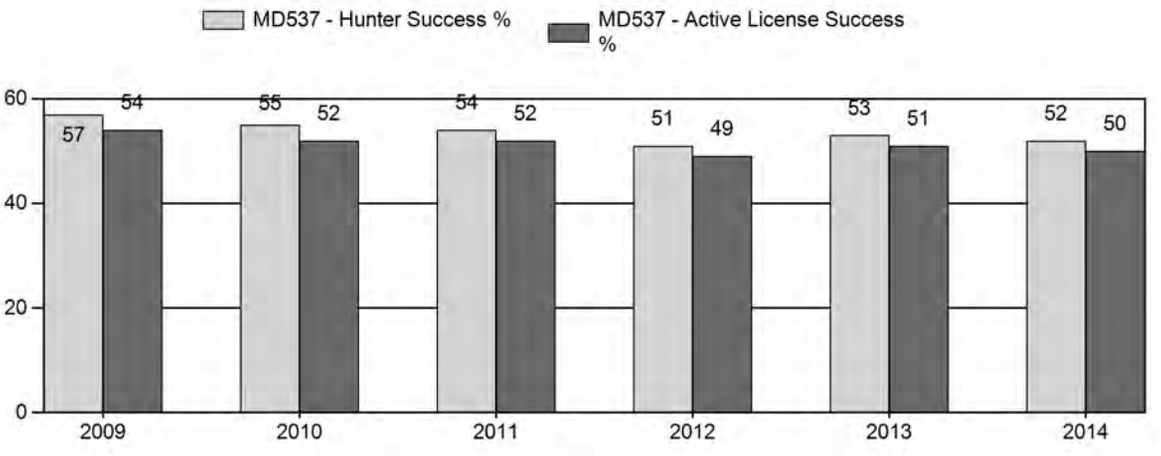
Harvest



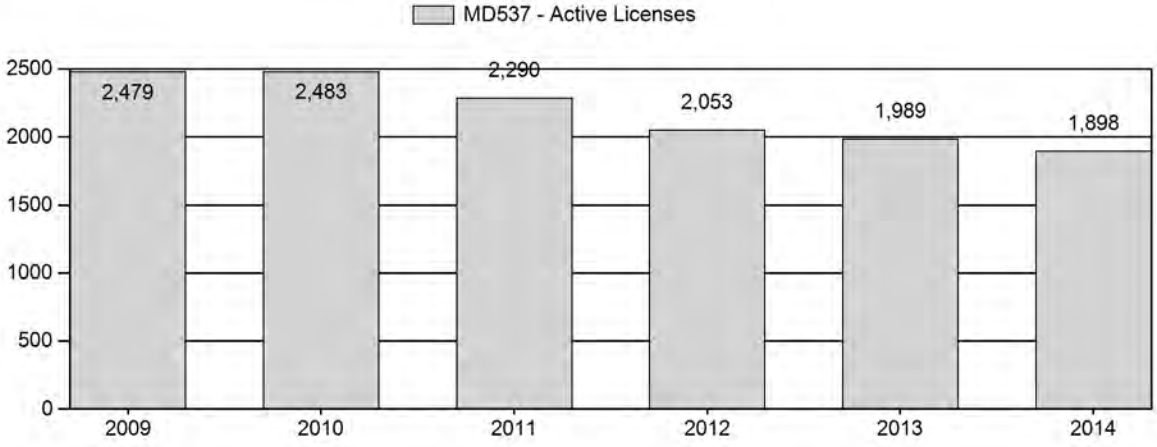
Number of Hunters



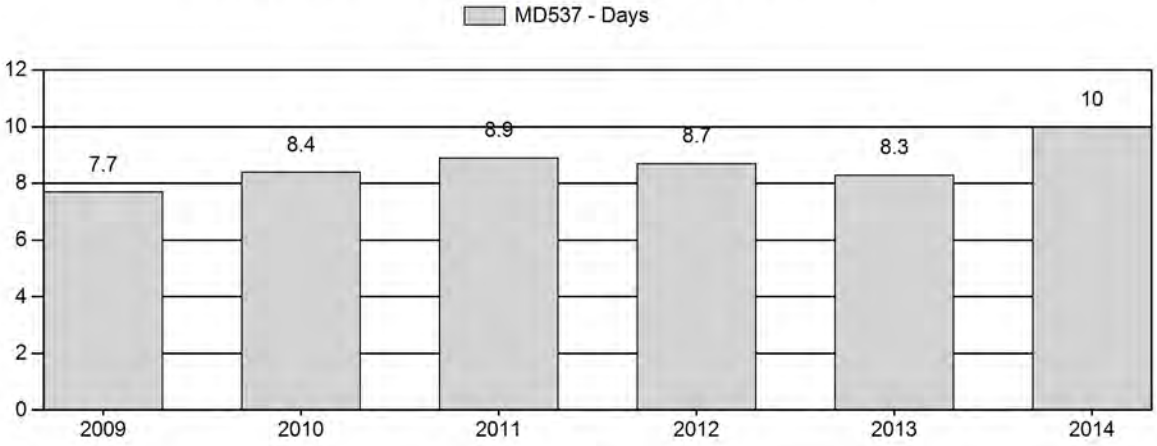
Harvest Success



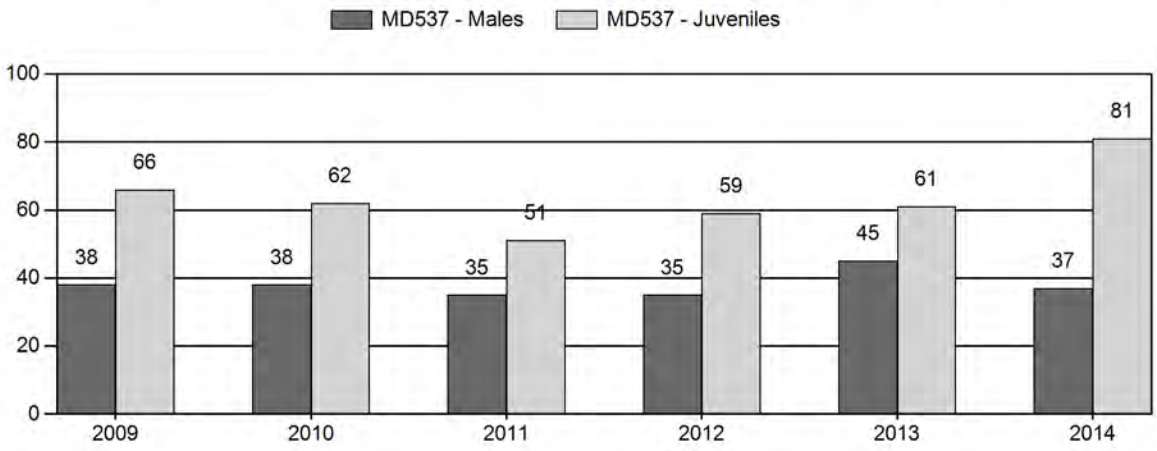
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD537 - LARAMIE MOUNTAINS

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	19,600	155	0	0	0	395	550	19%	1,433	49%	952	32%	2,935	1,245	11	28	38	± 2	66	± 3	48
2010	18,900	205	0	0	0	425	630	19%	1,639	50%	1,015	31%	3,284	1,202	13	26	38	± 2	62	± 3	45
2011	16,300	102	0	0	0	296	398	19%	1,122	54%	570	27%	2,090	1,263	9	26	35	± 2	51	± 3	38
2012	15,600	83	0	0	0	162	245	18%	699	51%	415	31%	1,359	1,218	12	23	35	± 3	59	± 5	44
2013	15,800	23	101	104	9	2	239	22%	528	48%	324	30%	1,091	1,161	4	41	45	± 4	61	± 5	42
2014	17,400	147	177	161	36	0	521	17%	1,384	46%	1,115	37%	3,020	1,135	11	27	38	± 2	81	± 4	59

2015 HUNTING SEASONS
LARAMIE MOUNTAINS MULE DEER HERD (MD537)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
59	General	Oct. 15	Oct.25		General license; antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille shall be closed
64	6	Oct. 15	Oct. 31	100	Limited quota; doe or fawn, valid on private land
	6	Nov. 1	Dec. 31		Unused Area 59**,** , 64 Type 6 licenses valid for doe or fawn white-tailed deer
60	1	Oct. 20	Nov. 5	100	Limited quota; antlered deer on national forest, any deer valid off national forest; All lands within Curt Gowdy State Park, archery only
	2	Oct. 20	Nov. 5	200	Limited quota; any deer valid off national forest; all lands within Curt Gowdy State Park, archery only
		Nov. 6	Nov. 30		Unused Area 60 Type 1 and Type 2 licenses valid for doe or fawn white-tailed deer valid off national forest; all lands within Curt Gowdy State Park, archery only
	6	Oct. 20	Nov. 30	50	Limited quota; doe or fawn; all lands within Curt Gowdy State Park, archery only
64	General	Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Rd 727), shall be closed
	2	Oct. 15	Oct. 25	100	Limited quota; antlered mule deer or any white-tailed deer
Region J Archery		Sept. 1	Sept. 30	900	Refer to Section 3 of this Chapter

Summary of Change

Hunt Area	License Type	Quota Change from 2014
62,63,64	T6	0
60	T1	0
60	T2	+50
60	T6	0
64	T2	0
59,60,62-65,73	Region J	0
Total	**1**	**0**
	2	**+50**
	6	**0**
	Region J	**0**

Management Evaluation

Current Post-season Population Objective: 25,000 (20,000-30,000)
2014 Post-season Population Estimate: ~17,300
2015 Post-season Population Estimate: ~15,500
Management Strategy: Recreational
2014 Sportsmen Satisfaction Survey Results: 59% Satisfied, 20% Neutral, 21% Dissatisfied

Herd Unit Issues

The management objective for the Laramie Mountains Mule Deer Herd Unit was reviewed in 2014 and as a result of internal and public involvement the objective was decreased to 20,000 mule deer, and Hunt Areas 59, 62, 63 were combined into Hunt Area 59, and Hunt Areas 64, 73 were combined into Hunt Area 64. The recreational management strategy will remain in place with a post-season buck ratio range of 20-29 bucks:100 does.

The 2014 post-season population estimate was about 17,300 with the population fluctuating around 17,500. Chronic wasting disease (CWD) has been detected in this herd for well over two decades. The average prevalence rate since 1997 is 22%, contributing towards the suppression of this herd. Management strategy has been very conservative with little doe harvest to try and increase the herd. Approximately 50% of the herd unit is private lands which affects our ability to provide opportunity.

The Arapahoe wild fire in 2012 will have habitat effects for years to come. In some areas perennial vegetation is responding. In other places the ground appears sterile with little to no vegetation growth. Mule deer have been harvested in the burned area in 2012 and 2013. Mule deer occupation in burned areas was also documented during the winter of 2013. In the long run this major fire will be positive for ungulate habitat. It will take time to see the major re-vegetation events and herd population response.

Landowners and sportsmen would like to see more mule deer. To address this desire the Type 6 license are proposed to stay at a conservative number.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the Laramie Mountains Herd Unit. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on mule deer. Mild fall temperatures and lack of persistent snows allowed for mule deer to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Laramie Mountains Mule Deer Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunkbrush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of "representative habitats" utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

In spring 2015, population biologists and habitat managers will be working together to modify habitat monitoring techniques utilized statewide and to improve overall consistency among the regions. Identification of key herd units per big game species, identification of representative monitoring locations in all seasonal ranges per big game species (summer, transition, winter), and development of correlations to amounts of and timing of precipitation will help improve data collected and result in our abilities to more strongly correlate management decisions for populations based off habitat conditions.

Field Data

Fawn ratios of 81 fawns:100 does in 2014 were the highest observed in over ten years, allowing for population growth. According to Unsworth et al. (1999) populations increase when fawn ratios are above 66 fawn: 100 does. Buck ratios of 39 bucks:100 does were well above the recreational management strategy. However, finding a mature buck on public land is often difficult. Yearling bucks classified in 2014 (11 yearling bucks: 100 does) were similar to the five-year average of 10 yearling bucks:100 does. The 2014 sample size was the highest collected in the past ten years (n=3,012), lending credibility to herd composition data.

Field harvest data in 2014 was somewhat similar to post-season classification data. Seventeen percent of the field harvest data was comprised of yearling bucks, and post-season classification data resulted in 11 yearling bucks: 100 does. A poor fawn crop in 2013 coupled with an increase in harvest pressure on the yearling bucks could explain the slight discrepancy.

Since 2012 antler class data has been collected from harvested mule deer and then starting in 2013 from classified mule deer to gauge buck quality. Antler class data is broken down into three classes: 1) Class I- $\leq$19", 2) Class II- 20-25", Class III- $\geq$26".

The majority of mule deer bucks harvested in 2012 were in the Class I category (75%). Then it was split between class II (14%) and Class III (12%) bucks. In 2013 the harvest data is similar to the classification data. In 2014 Class I harvest data and Class I classification data were similar but Class II classification data was 24% lower than Class II harvest data, and Class III classification data was 12% higher than Class III harvest data. Male cohorts follow typical pattern in harvest and herd composition data over their lifespan; typically there is a greater percentage of bucks in the lower antler classes. As deer mature there are fewer left in the population. By comparing these two data sets this more or less holds true. One would expect to see a higher percentage of Class III bucks in classification data since they are observed during the rut with a greater sample size, this also holds true.

Deer were in good condition going into the winter given the excellent habitat conditions in 2014. The average body score taken from 35 mule deer was 17 out of 20. The satisfaction survey showed that 59% of the hunters were satisfied, which was somewhat surprising based on negative comments received from the field that hunters were having difficulty finding mature buck.

Harvest Data

Hunter success in 2014 (52%) was similar to the five-year average of 54% and hunter effort of 10 days per harvest which was significantly higher than the five-year average of 8.4 days per harvest. These data support a stable to decreasing trend in population, which also supports personnel, landowner, and sportsmen observations. The boost in fawn production should help to offset the higher rate of adult mortality due to CWD.

Population

The "Time-Specific Juvenile and Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. The AIC value was slightly higher but did have a better fit than the other two models. This model was chosen for the following reasons: 1) The model tracks juvenile variability in survival, which is more consistent with this herd unit based on the fluctuations in juvenile composition data, 2) There is a large number of years with classification and harvest data, indicative of the TSJ, CA model, 3) simulated population trends mimic perceived trends observed by local personnel, landowners and hunters. Adult survival was changed in years 2010-2013. Adult survival data from the South Converse Mule Deer Herd Unit CWD study was incorporated from those years since both herd units have high prevalence rates and the Laramie Mountains Herd Unit is adjacent to South Converse. This model is rated as fair. There is not an annual population estimate with a standard error available to anchor the model and results are biologically defensible, giving the model a fair fit. Adult survival was adjusted to .7-.8 instead of the recommended range of .7-.95 to account for chronic wasting disease prevalence rates in years that did not have adult survival data. Hunters and landowners would like to see an increase in mule deer, but given poor recruitment, CWD, and poor habitat conditions an increase in the population does not seem likely in the near future.

Management Summary

Hunting seasons in this herd unit have started on the 15th of October and run between 10-15 days. Late doe/fawn seasons have been used to address damage situations in lower elevations on private land, but the public has overwhelmingly indicated they would like to see more mule deer. The season structure for the general season and Type 6 licenses will remain the same as 2014. Area 60 remains a sought after license for hunters since it provides a chance to hunt into November when bucks are more susceptible to harvest. In order to try and provide more opportunity for the coveted license the number of Hunt Area 60 Type 2 licenses will increase from 150 to 200. Region J licenses will remain the same at 900 to address low deer densities, especially on public lands. Nonresident licenses continue to decrease over the past few years. The 900 Region J quota will be consistent with recent license sales (2012=949, 2013=779 and 2014= 822) and hopefully improve harvest statistics and reduce hunting pressure.

To simplify management and regulations Hunt Areas 59, 62 and 63 were combined into Hunt Area 59 and Areas 64 and 73 were combined into Hunt Area 64.

If we attain the projected harvest of 970 mule deer (890 bucks, 80 does), maintain average fawn recruitment, and take into account CWD prevalence rates the mule deer population will slightly decline and still remain well below the management objective. We predict a 2014 post-season population of about 15,500.

Literature Cited:

Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. J. Wildl. Manage. 63(1):315-326, 1999

INPUT	
Species:	Mule Deer
Biologist:	Martin Hicks
Herd Unit & No.:	Laramie Mts Herd
Model date:	02/08/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	117	126	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	116	126	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	18	114	☑ TSJ,CA Model	ered model based on fit and AIC score- survival data from CWD study just north of herd unit is plausible for

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1993				4685	4679	10481	19845	4638	3200	9648	17486	29000
1994				4088	3760	8917	16765	4088	2453	8704	15245	29000
1995				4979	3251	8251	16481	4974	2191	8210	15375	29000
1996				4526	3318	8133	15977	4518	2412	8111	15041	29000
1997				5429	2976	7535	15940	5426	2191	7515	15132	29000
1998				5373	3337	7596	16306	5373	2358	7577	15307	29000
1999				5678	4304	8479	18461	5678	2779	8466	16924	29000
2000				4773	3359	7909	16040	4770	2072	7889	14731	29000
2001				4517	3646	8299	16462	4517	2531	8258	15307	29000
2002				4802	4058	8639	17499	4802	3036	8610	16448	29000
2003				5922	3389	7848	17160	5922	2287	7816	16025	29000
2004				5072	3550	7973	16595	5057	2439	7860	15357	29000
2005				5834	4227	8564	18625	5831	3007	8510	17348	29000
2006				5749	5029	9432	20210	5734	3672	9382	18788	29000
2007				5560	5437	10005	21002	5539	3895	9830	19264	29000
2008				6142	5608	10357	22107	6103	4162	10130	20395	29000
2009				6385	4972	9747	21104	6365	3677	9582	19624	29000
2010				5857	4888	9612	20358	5850	3631	9446	18927	29000
2011				4481	4262	8914	17658	4458	3113	8775	16346	29000
2012				4643	3860	8390	16894	4641	2892	8254	15787	29000
2013				4909	3886	8175	16970	4902	2966	7988	15856	29000
2014				6434	4008	8026	18467	6423	3074	7922	17419	20000
2015				5292	3744	7622	16658	5287	2765	7540	15591	20000
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

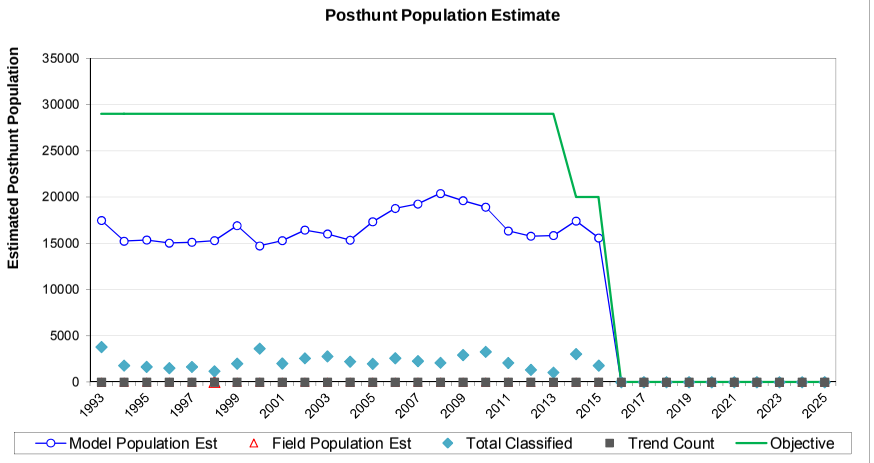
Year	Winter Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.52			0.80		
1994	0.63			0.80		
1995	0.63			0.80		
1996	0.46			0.80		
1997	0.58			0.80		
1998	0.90			0.80		
1999	0.40			0.80		
2000	0.83			0.80		
2001	0.90			0.80		
2002	0.40			0.80		
2003	0.58			0.80		
2004	0.90			0.80		
2005	0.90			0.80		
2006	0.87			0.80		
2007	0.90			0.80		
2008	0.54			0.80		
2009	0.61			0.80		
2010	0.46			0.80	0.70	0.07
2011	0.61			0.80	0.65	0.10
2012	0.68			0.80	0.67	0.12
2013	0.67			0.80	0.70	0.14
2014	0.40			0.80		
2015	0.60			0.80		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

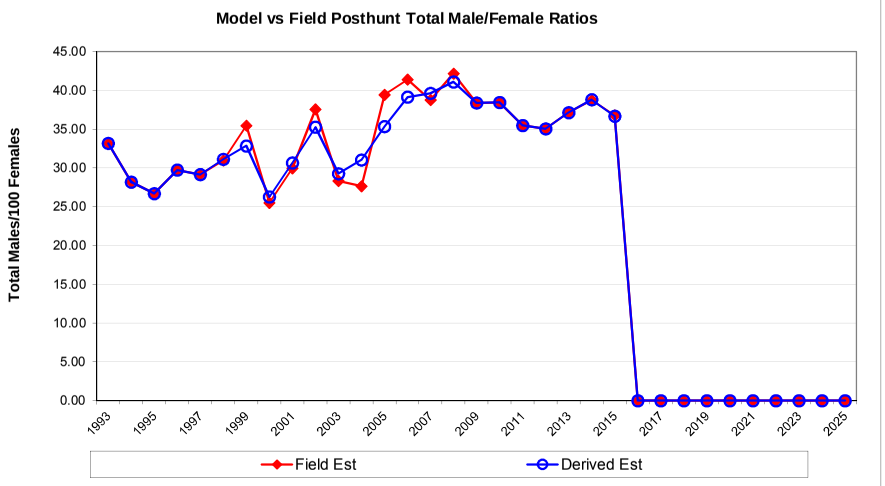
Parameters:	Optim cells
Adult Survival =	0.800
Initial Total Male Pop/10,000 =	0.320
Initial Female Pop/10,000 =	0.965

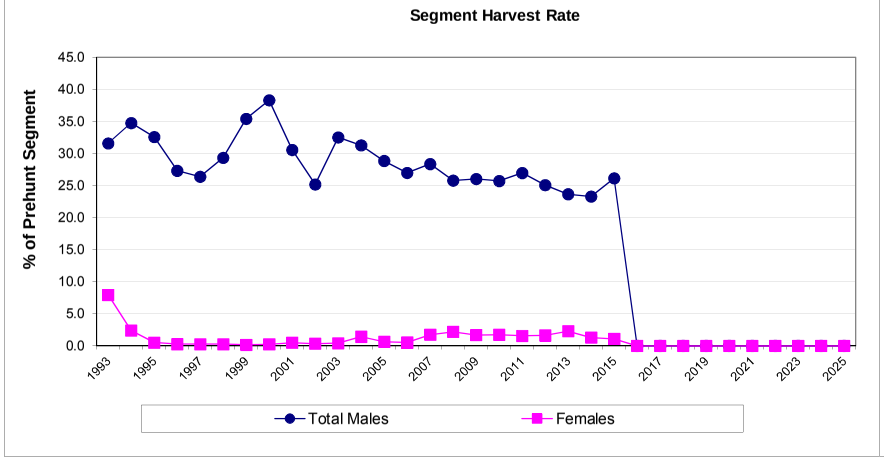
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

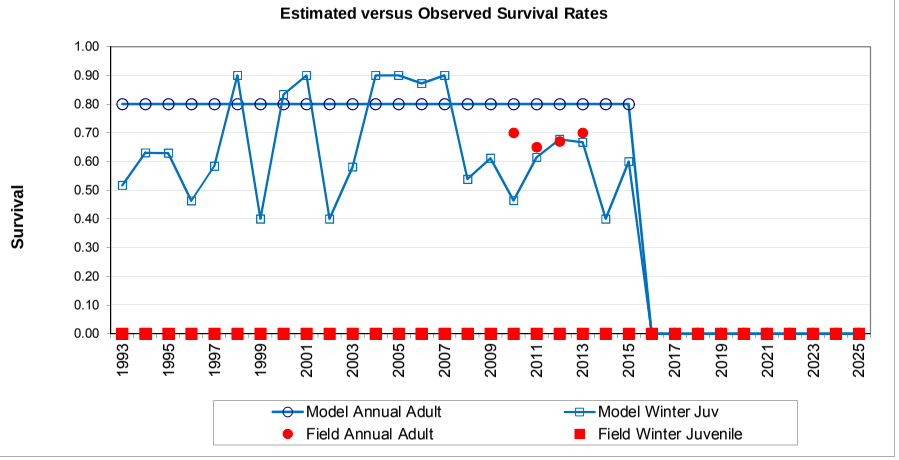
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Classification Counts					Harvest: Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		48.07	1.84	33.17	33.17	1.45	43	0	1344	758	2145	31.6	8.0
1994		46.97	2.60	28.18	28.18	1.88	0	0	1188	194	1382	34.8	2.4
1995		60.59	3.31	26.69	26.69	1.95	5	0	963	38	1006	32.6	0.5
1996		55.70	3.24	29.73	29.73	2.16	7	0	824	20	851	27.3	0.3
1997		72.20	3.89	29.15	29.15	2.14	3	0	714	18	735	26.4	0.3
1998		70.92	4.54	31.12	30.95	2.63	0	0	890	18	908	29.3	0.3
1999		67.07	3.36	32.83	35.45	2.20	0	0	1386	12	1398	35.4	0.2
2000		60.47	2.23	26.27	25.50	1.28	2	0	1170	18	1190	38.3	0.3
2001		54.70	2.78	30.65	29.95	1.89	0	0	1013	37	1050	30.6	0.5
2002		55.77	2.55	35.26	37.56	1.97	0	0	929	27	956	25.2	0.3
2003		75.77	3.12	29.26	28.33	1.63	0	0	1002	29	1031	32.5	0.4
2004		64.34	3.02	31.03	27.65	1.74	13	0	1010	103	1126	31.3	1.4
2005		68.51	3.48	35.34	39.44	2.40	3	0	1109	49	1161	28.9	0.6
2006		61.11	2.78	39.14	41.39	2.14	14	0	1234	45	1293	27.0	0.5
2007		56.35	2.75	39.62	38.77	2.15	19	0	1402	159	1580	28.4	1.7
2008		60.25	3.06	41.08	42.17	2.41	35	0	1315	206	1556	25.8	2.2
2009		66.43	2.78	38.38	38.38	1.93	18	0	1177	150	1345	26.0	1.7
2010		61.93	2.47	38.44	38.44	1.80	7	0	1143	151	1301	25.7	1.7
2011		50.80	2.61	35.47	35.47	2.07	21	0	1045	126	1192	27.0	1.6
2012		56.22	3.54	35.04	35.05	2.60	2	0	880	124	1006	25.1	1.6
2013		61.36	4.33	37.13	37.12	3.10	7	0	836	170	1013	23.7	2.3
2014		81.07	3.26	38.80	38.73	1.97	10	0	849	94	953	23.3	1.3
2015		70.11	3.70	36.67	36.78	2.40	5	0	890	75	970	26.1	1.1
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES









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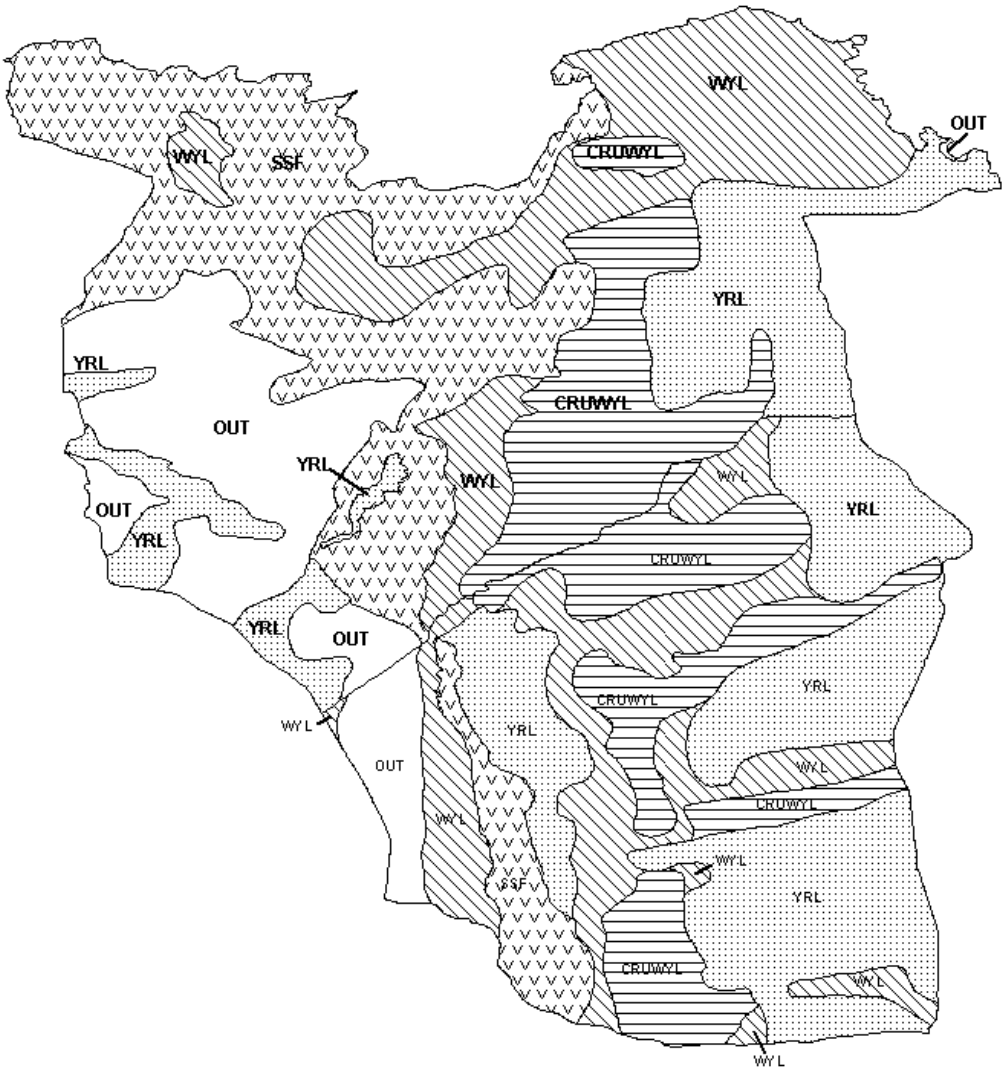


Mule Deer (MD537) - Laramie Mountains
HA 59, 60, 62-64, 73
Revised - 3/04

N

2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD539 - SHEEP MOUNTAIN

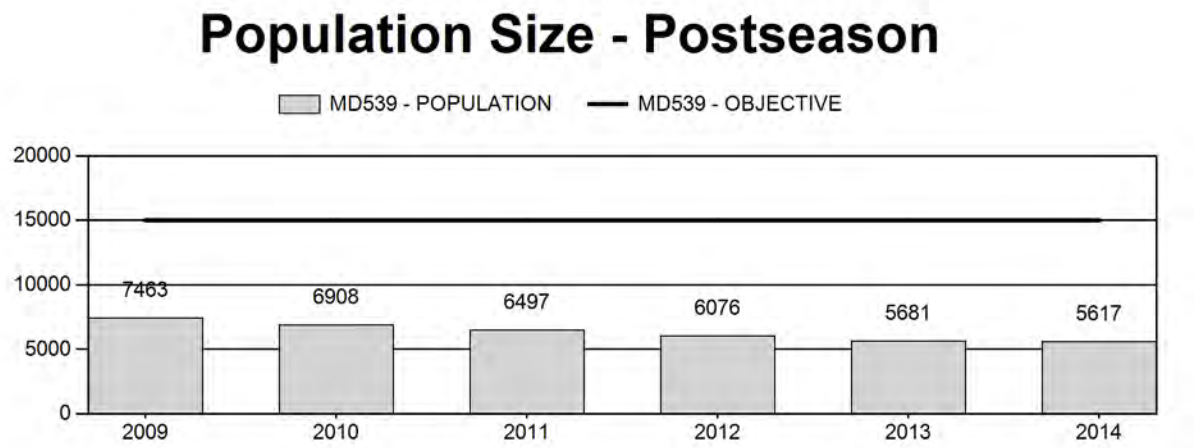
HUNT AREAS: 61, 74-77
PREPARED BY: LEE KNOX

	2009 - 2013 Average	2014	2015 Proposed
Population:	6,525	5,617	5,926
Harvest:	373	290	335
Hunters:	1,681	1,194	1,200
Hunter Success:	22%	24%	28%
Active Licenses:	1,681	1,194	1,200
Active License Success:	22%	24%	28%
Recreation Days:	8,305	6,984	7,000
Days Per Animal:	22.3	24.1	20.9
Males per 100 Females	26	26	
Juveniles per 100 Females	59	75	

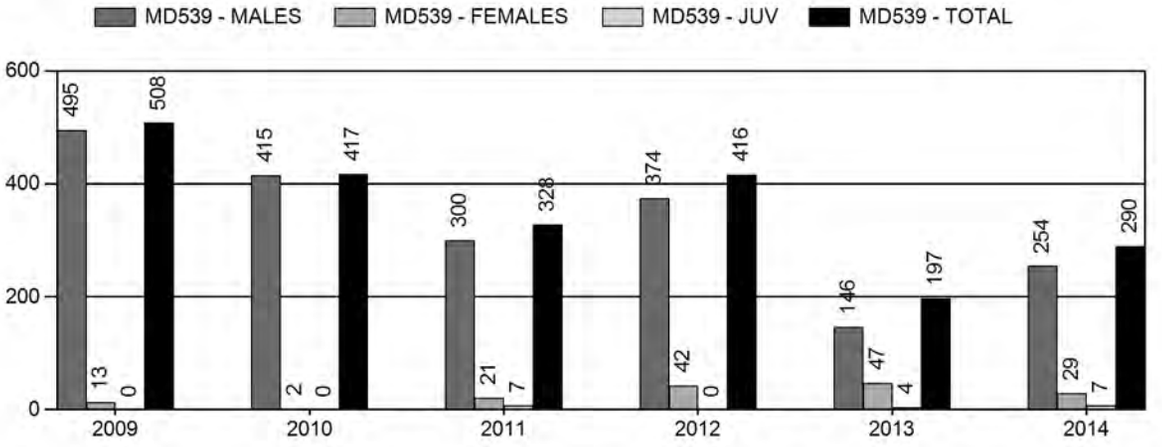
Population Objective (± 20%) :	15000 (12000 - 18000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-62.6%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/26/2015

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

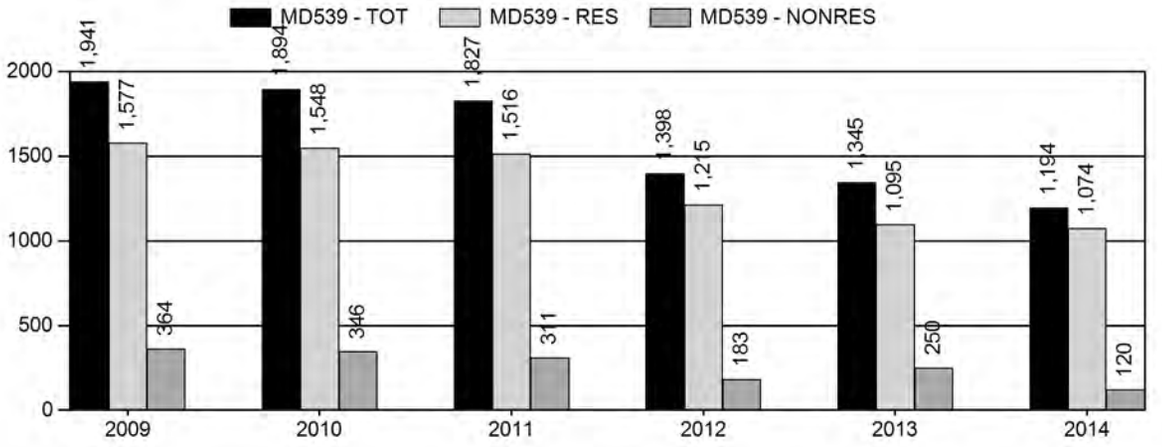
	JCR Year	Proposed
Females ≥ 1 year old:	1%	.1%
Males ≥ 1 year old:	26%	24%
Juveniles (< 1 year old):	0.0%	0%
Total:	6%	6%
Proposed change in post-season population:	5%	5%



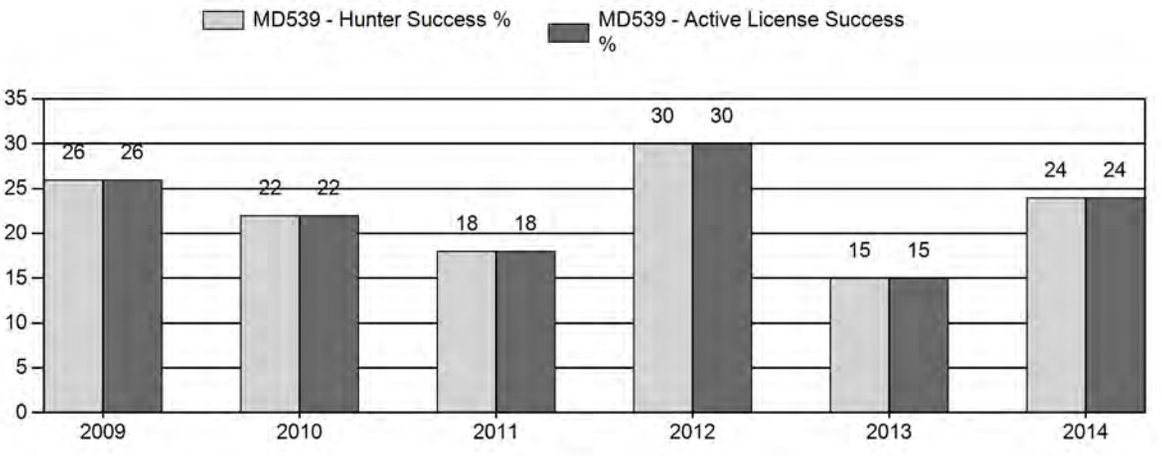
Harvest



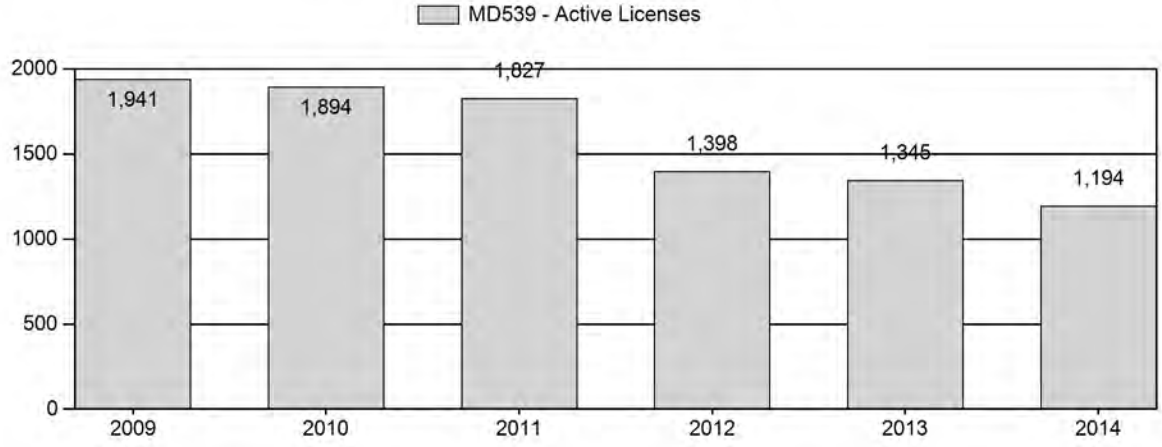
Number of Hunters



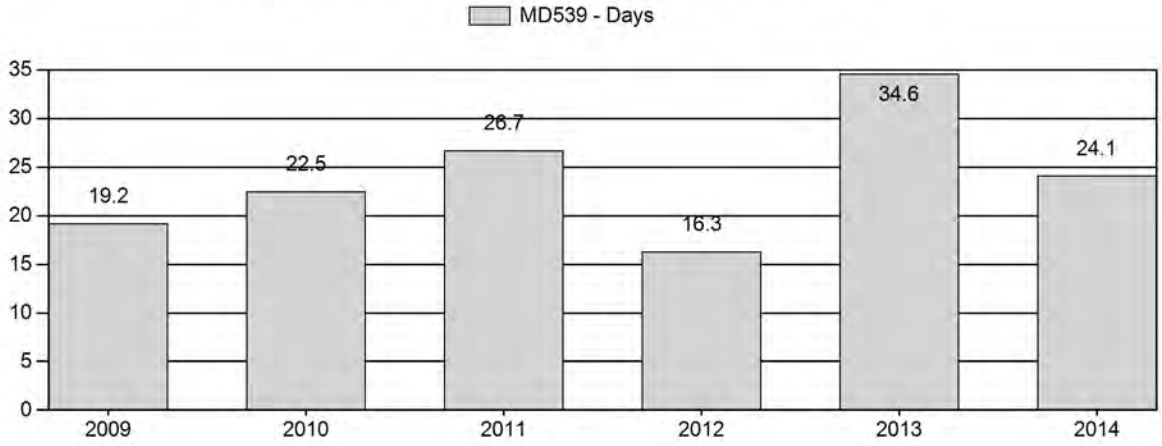
Harvest Success



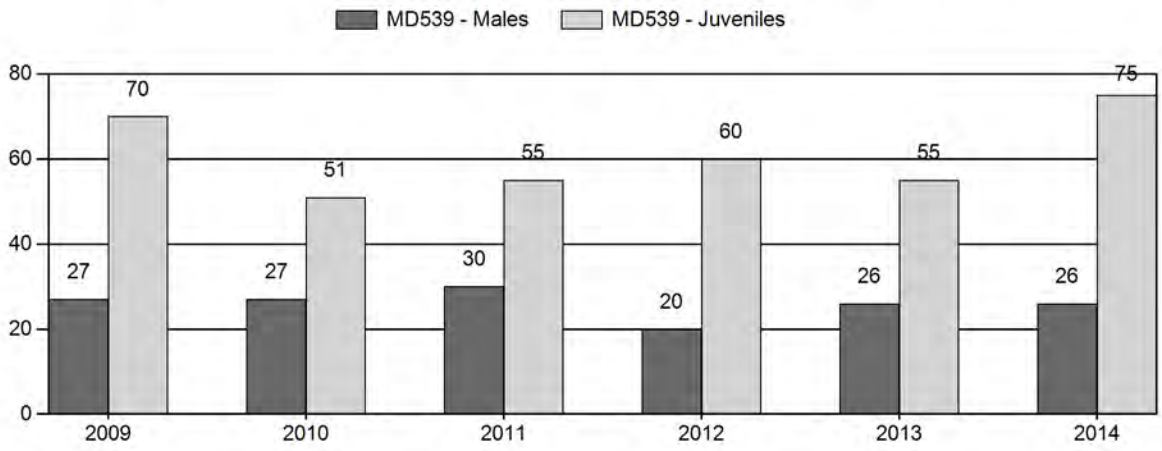
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD539 - SHEEP MOUNTAIN

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	8,168	91	0	0	0	134	225	14%	843	51%	593	36%	1,661	1,391	11	16	27	± 2	70	± 4	56
2010	6,908	63	0	0	0	63	126	15%	474	56%	243	29%	843	840	13	13	27	± 3	51	± 5	40
2011	6,497	48	0	0	0	98	146	16%	480	54%	263	30%	889	1,087	10	20	30	± 3	55	± 5	42
2012	6,076	33	0	0	0	52	85	11%	416	55%	249	33%	750	1,047	8	12	20	± 3	60	± 6	50
2013	5,681	82	47	42	16	1	188	14%	721	55%	395	30%	1,304	984	11	15	26	± 2	55	± 4	43
2014	5,617	31	23	14	8	0	76	13%	290	50%	218	37%	584	1,109	11	16	26	± 4	75	± 8	60

2015 HUNTING SEASONS
Sheep Mountain Mule Deer (MD539)

Hunt Area	Type	Date of Seasons Opens	Closes	Quota	License	Limitations
61		Oct. 1	Oct. 7		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
74		Oct.1	Oct. 7		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
75		Oct.1	Oct. 7		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
76		Oct.1	Oct. 7		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
77		Oct.1	Oct. 7		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
Archery		Sep. 1	Sep. 30			Refer to Section 4 of this Chapter

Region D Nonresident Quota: 400

Area	Type	Change from 2014
Herd	General	0
Totals	TOTAL	0

Management Evaluation
Current Postseason Population Management Objective: 15,000 (12,000-18,000)
Management Strategy: Recreational
2014 Postseason population Estimate: ~ 5,600
2015 Proposed Postseason Population Estimate: ~ 5,900
2014 Hunter Satisfaction: 49% Satisfied, 24% Neutral, 27% Dissatisfied

The management objective for the Sheep Mountain Mule Deer Herd Unit is a post-season population objective of 15,000 mule deer. The management strategy is recreational management with guidelines to maintain a post hunt buck ratio of 20 to 29:100 does. The objective and management strategy was reviewed in the spring of 2015 (appendix B).

Herd Unit Issues
The Sheep Mountain herd unit encompasses hunt areas 61, 74, 75, 76 and 77. Landownership varies from mostly private lands with limited public access, to large portions of public lands. The 2014 post-season population estimate is approximately 5,600 with the population stabilizing after a decline from 7,500 in 2009. The Sheep Mountain Herd Unit historically has one of the lowest hunter success rates in the state, even when we estimated a higher population. Most of the herd's summer range is in dense lodge pole or spruce forests that were once heavily logged in the 1960s and 1970s. There is a large scale forest die off from pine and spruce beetles, and though we think it will be beneficial, the effects are unknown. Winter and transition range is limited. In 2012 there was a large scale wildfire that is thought to be beneficial in the long run, but currently has caused displacement. Black bear and lion mortality limits were liberalized, and season lengths were increased. There is an ongoing predator removal project with the Albany County Predator Board focusing on key mule deer parturition areas in the Sheep Mountain herd unit to evaluate the effect of coyotes on fawn recruitment (Appendix A). We are currently in the middle of a mule deer initiative process with this herd unit. So far it has helped spark more discussions with the WGFD, federal agencies, and non-government organizations that should turn into some good on the ground improvements that will be beneficial.

Weather
Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. The fall of 2013 in the Laramie Valley received the highest amount of precipitation on record. 2014 in the Laramie Valley experienced a mild winter, above average precipitation in the spring, followed by an average summer, and ending once again with above average precipitation in the fall. Mild fall temperatures and lack of persistent snows allowed for big game species to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to year 2012. Utilization rates of key winter range shrubs documented in spring 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The Squirrel Creek Fire (Figure 1.) started on June 30th 2012, burning about 11,000 acres of transitional and crucial mule deer winter range within the Sheep Mountain Herd Unit. Habitat conditions were old and decadent and we expect this fire to greatly benefit range conditions in the future. During the summer of 2014 field personal observed a high success of re-sprouting from true mountain mahogany and antelope bitterbrush. However, on steep south facing slopes

and areas that burned at higher temperatures there is substantial cheatgrass encroachment. The USFS has not finished the EIS to allow aerial application of herbicide, and until this is complete there is little that can be done.

Figure 1. Squirrel Creek Fire Perimeter with Sheep Mountain Mule Deer crucial winter range.

Field Data

In 2014, 580 deer were aerially classified within the herd unit. This effort did not meet the classification objective of 1,110 due to a mild fall with little snow and warmer than average temperatures, causing deer to be less concentrated on the winter ranges. Fawn ratios increased from 55:100 does in 2013 to 75:100 does in 2014. Mule deer herds state wide saw similar increases in fawn ratios and it is mostly attributed to the excellent fall and spring moisture in 2013 and 2014. Youth and archery hunters harvested 36 does and fawns in 2014, less than 1% of the total female population. 2014 was the second year an antler point restriction was implemented. The buck ratio remained at 26:100 does from 2013 to 2014, reaching the high side of recreational management, but 40% of the bucks classified were yearlings. We are also certain that we missed mature bucks during our classification flight due to the mild weather conditions and the buck ratio mostly like does not truly reflect what is on the ground. We implemented a new ranking system in our classification in 2013 that places bucks into 3 classes based on antler spread: class I is 19 inches or less, class II is 20-25 inches, and class III is 26 inches or greater. Of the total number of bucks classified, class I made up 71%, class II was 18%, and class III was 11%, which is comparable to 2013. Total active licenses remained comparable to 2013 at 1,100, but over the last decade we have lost 1,000 resident hunters. Nonresident hunters decreased by 130, which was expected with the reduction in region D quota. Hunter effort decreased by 10 days to 24, and hunter success increased by 10% to 24%, indicating hunters are finding more mature bucks. However 24% hunter success is still far below the state wide average of 66%, and is one of the lowest herd unit success rates in the state. The hunter satisfaction survey indicated that 50% of hunters were satisfied or very satisfied with their hunt, up from 40% in 2013, with 23% remaining neutral in the survey.

Harvest Data
2014 was the third year of a weeklong season, and the second year of an antler point restriction. Harvest has been on a steady decline from a high of 980 deer in 2004 to 190 deer in 2013. The 2014 harvest saw a slight increase to 290 deer. Of the estimated 290 mule deer harvested, 36 were does and fawns, and 29 of those were harvested with archery equipment. Even though the female harvest makes up 10% of the total harvest, it is less than 1% of the total female population and is not substantial enough to affect the population, but it is perceived poorly by the public. The 2014 season structure was mostly well received; hunters and landowners perceived it as the Department is addressing their concerns with this herd unit. Overall public comments are that the herd is increasing.

Population
Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model was chosen for this Herd Unit. This model has the lowest AIC score of 167 and a Fit of 71, and estimates the population declining from a high of 7,500 in 2009 to the current estimate of 5,600. This model is ranked as fair; there is 15-20 years of data; ratio data available for all years in model; juvenile and adult survival estimate with standard errors obtained from adjacent or other similar herds; model aligns fairly well. We were able to get several years of fawn and adult survival rates from radio collared studies in Colorado that took place near the Wyoming border. With this information the model provides a more believable estimate considering the classification samples and fawn ratios. Field staff, landowners, and hunters all agree the population is down and the herd should be managed conservatively.

Management summary
If we attain the projected harvest of 335 deer, and have a fawn ratio of 66:100 does or higher, the herd should start to rebound. Using 66:100 (Unsworth 1999) does as our predicted fawn ratio, we estimate a 2015 post-season population of about 5,900. The 2015 season will be 7 days with a 3 point or better antler restriction to maintain higher buck ratios, and address public concerns. We feel the 3 point or better limitation is restrictive enough without a short season, but the majority of the public did not want more than a week. The nonresident quota for region D will remain at 400 licenses to address the declining populations in region D herd units and the conversion of six hunt areas from general to limited quota in the Platte Valley. This will maintain hunter opportunity that is in line with the current mule deer resource.

Bibliography
Unsworth, J.W., D.F. Pac, G.C. White, and R.M. Bartmann. 1999. Mule deer survival in Colorado, Idaho, and Montana. Journal of Wildlife Management 63:315-326.

INPUT	
Species:	Deer
Biologist:	Lee Knox
Herd Unit & No.:	MD539 Sheep Mountain
Model date:	02/26/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	331	340	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	435	444	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	71	167	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				1234	1096	2836	5166	1190	470	2380	4041	15000
1994				1299	920	2483	4702	1299	425	2476	4200	15000
1995				1630	880	2557	5067	1630	468	2557	4655	15000
1996				1460	772	2482	4714	1460	389	2473	4323	15000
1997				1537	909	2613	5059	1537	587	2613	4738	15000
1998				1903	1040	2698	5641	1903	681	2698	5282	15000
1999				1925	1310	2961	6195	1925	785	2961	5670	15000
2000				2278	1478	3258	7015	2266	825	3246	6337	15000
2001				1964	1618	3599	7181	1964	997	3587	6548	15000
2002				2300	1552	3671	7524	2300	843	3662	6806	15000
2003				2243	1536	3844	7624	2207	878	3548	6632	15000
2004				1881	1711	3896	7488	1812	1008	3585	6406	15000
2005				1488	1641	3749	6878	1470	908	3495	5873	15000
2006				2251	1404	3521	7176	2251	762	3517	6529	15000
2007				2434	1636	3890	7960	2429	1068	3880	7377	15000
2008				2226	1817	4119	8162	2211	1173	3947	7330	15000
2009				2671	1540	3811	8022	2671	996	3796	7463	15000
2010				1865	1349	3641	6855	1865	892	3638	6396	15000
2011				1872	1179	3426	6478	1865	849	3403	6117	15000
2012				1855	1068	3157	6080	1855	656	3111	5622	15000
2013				1654	1053	3062	5769	1649	893	3010	5552	15000
2014				2083	1060	2793	5936	2076	781	2761	5617	15000
2015				1955	1360	2980	6294	1949	1030	2947	5926	15000
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			0.82		
1994	0.82			0.82		
1995	0.48			0.82		
1996	0.81			0.82		
1997	0.73	0.80	0.07	0.82		
1998	0.79	0.85	0.06	0.82		
1999	0.87	0.87	0.05	0.82		
2000	0.83	0.86	0.05	0.82		
2001	0.75			0.82		
2002	0.74			0.82	0.79	0.04
2003	0.90			0.82	0.67	0.09
2004	0.90			0.82		
2005	0.90			0.82		
2006	0.90			0.82		
2007	0.78			0.82		
2008	0.53			0.82		
2009	0.40			0.82		
2010	0.48	0.60	0.12	0.82	0.77	0.04
2011	0.40	0.83	0.14	0.82	0.81	0.03
2012	0.56	0.86	0.12	0.82	0.79	0.04
2013	0.40			0.82	0.73	0.04
2014	0.69			0.82		
2015	0.69			0.82		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.818
Initial Total Male Pop/10,000 =	0.047
Initial Female Pop/10,000 =	0.238

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

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Classification Counts				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		50.00	2.84	19.75	19.14	1.57	40	569	414	1023	57.1	16.1
1994		52.46	4.05	17.18	18.24	2.10	0	450	7	457	53.8	0.3
1995		63.73	5.95	18.31	18.31	2.71	0	374	0	374	46.8	0.0
1996		59.06	6.08	15.75	15.75	2.68	0	348	8	356	49.6	0.4
1997		58.81	5.15	22.48	30.40	3.36	0	292	0	292	35.3	0.0
1998		70.54	10.36	25.22	26.79	5.51	0	327	0	327	34.6	0.0
1999		65.01	3.30	26.52	24.01	1.74	0	477	0	477	40.1	0.0
2000		69.81	4.99	25.41	29.14	2.81	11	594	11	616	44.2	0.4
2001		54.74	4.27	27.81	24.78	2.58	0	564	11	575	38.3	0.3
2002		62.81	3.85	23.01	23.01	2.02	0	645	8	653	45.7	0.2
2003		62.21	4.08	24.74	22.28	2.12	33	599	269	901	42.9	7.7
2004		50.55	3.25	28.13	22.58	1.96	62	639	283	984	41.1	8.0
2005		42.05	3.82	25.98	25.67	2.81	17	666	231	914	44.7	6.8
2006		64.00	4.27	21.67	31.30	2.67	0	584	4	588	45.7	0.1
2007		62.60	3.67	27.51	29.58	2.25	4	517	9	530	34.8	0.3
2008		56.01	4.45	29.71	29.71	2.96	14	586	156	756	35.5	4.2
2009		70.34	3.77	26.23	26.69	2.00	0	495	13	508	35.3	0.4
2010		51.27	4.04	24.53	26.58	2.66	0	415	2	417	33.8	0.1
2011		54.79	4.20	24.96	30.42	2.87	7	300	21	328	28.0	0.7
2012		59.62	4.78	21.10	20.43	2.43	0	374	42	416	38.5	1.5
2013		54.79	3.43	29.65	26.07	2.14	4	146	47	197	15.2	1.7
2014		75.17	6.74	28.28	26.21	3.38	7	254	29	290	26.4	1.1
2015		66.15	4.80	34.94	26.08	2.63	5	300	30	335	24.3	1.1
2016												
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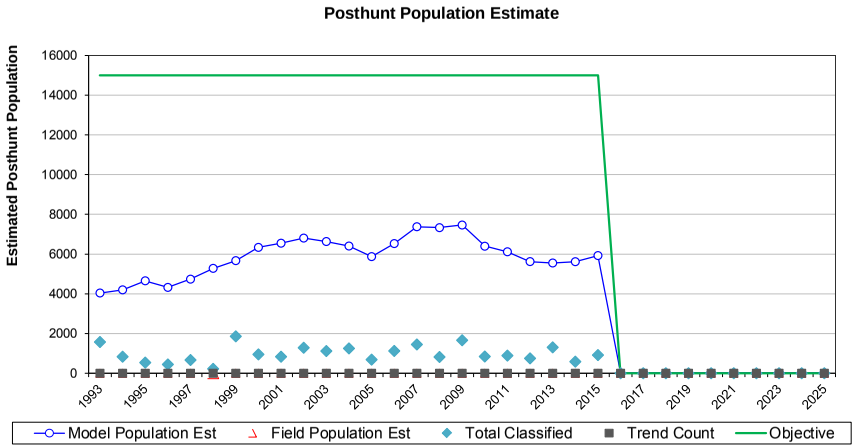
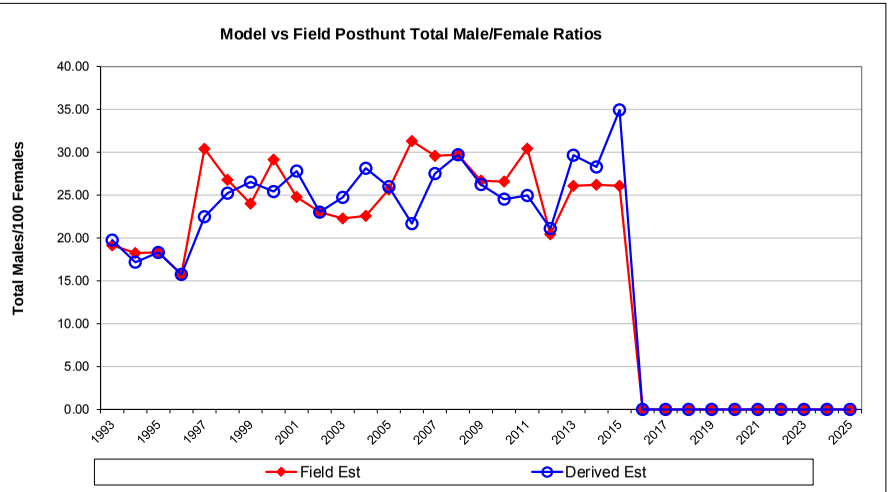
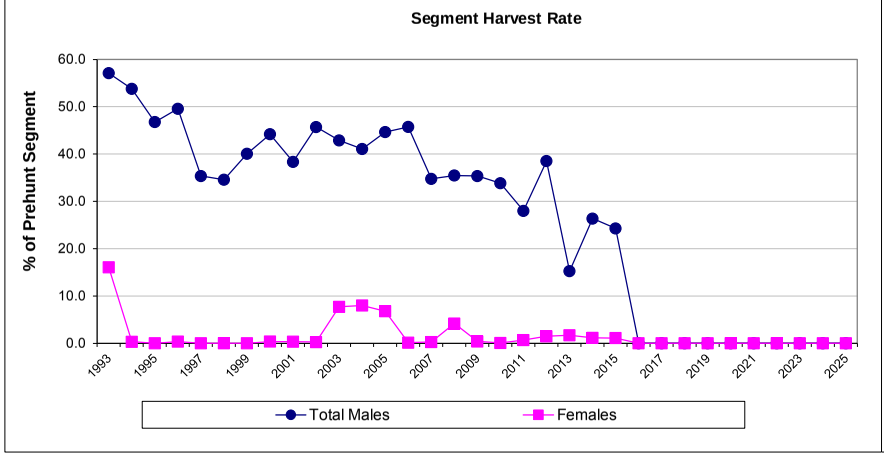
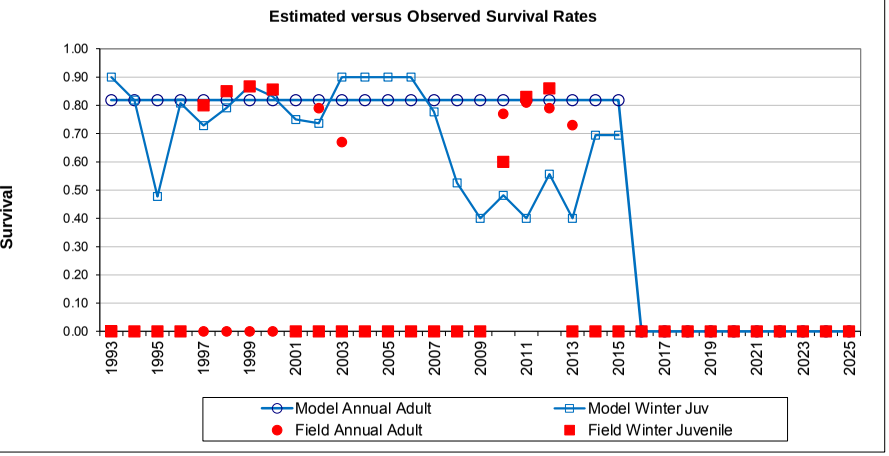
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

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APENDIX A

ALBANY COUNTY PREDITOR BOARD SPECIAL PROJECT EVALUATING THE EFFECTS OF PREDITORS ON MULE DEER FAWN RECRUITMENT

Sheep Mountain Mule Deer Recruitment Project

Albany County Predatory Management District (ACPMD), USDA/APHIS/Wildlife Services (WS'), Wyoming Game and Fish Department (WGFD)

01/01/2013-12/31/14

The Sheep Mtn. Mule Deer Recruitment Project consists of a 3 yr. (01/01/2013- 12/31/2015) cooperative effort aimed at the removal of coyotes (*Canis latrans*) within Wyoming Hunt Areas 61, 74, 75, 76, 77 and adjacent lands. These removal efforts are aimed at increasing the viability of the mule deer (*Odocoileus hemionus*) herd that fawn in these areas. These areas lay Easterly adjacent to the Medicine Bow National Forest (USFS) and run generally North and South. This area is mainly used for cow/calf production, recreation, and grass cattle ranching. It is interspersed Private, Bureau of Land Management (BLM), United States Forest Service, and State of Wyoming lands. The goal of this project is to validate that coyote removal will prove beneficial to mule deer fawn recruitment.

The effort to remove coyotes from the hunt areas and adjacent lands began on 01/01/2013 and continues as the project moves towards the third year. Both ground and aerial hunting methods

will continue throughout the project time frame as funding, weather, recreational hunting use of lands, and time demanded by other WS' Albany County duties allow.

01/01/2013-12/31/2013 (1st year of 3)

A total of 89 coyotes within 18 different agreements were removed from the project area. When GPS waypoints of coyotes taken within the project area could be obtained, they were plotted as GPS points (squares) on the attached topographic map. Also, of the 89 coyotes, 24 were retrieved for comprehensive data collection.

Below is a series of operational, budget and coyote related to the data for the 1st year of the project time period (01/01/2013-12/31/2013).

30.9 hrs.	*($6,573.00 ACPMD)**	Aerial hunting time only (fixed and rotor wing).
96.0 hrs.	(*$2,337.00 ACPMD, $51.62 WS')**	Ground work time only.
26.0 hrs.	*($1,342.12 WS')**	Administrative time only.
89		Coyotes removed from project area.
3		USDA/APHIS/WS personnel involved.

** (approximate costs incurred by ACPMD $8,910.00 and WS' $1,393.74)*

24 of 89 total (27%) coyotes taken verified for sampling and analysis below:

11	Adult male coyotes verified.
11	Adult female coyotes verified.*
1	Pup (female) coyote verified.
1	Pup (male) coyote verified.

* *1 adult female coyote showed evidence of 4 pups whelped.*

Stomach content occurrences on 24 verified coyotes.

10 Rodent	2 Empty	14 Pronghorn	3 Deer

1/1/2014-12/31/2014 (2nd year of 3)

A total of 116 coyotes and 1 den within 17 different agreements were removed from the project area. When GPS waypoints of coyotes taken within the project area could be obtained, they were plotted as GPS points (squares) on the attached topographic map. Also, of the 116 coyotes, 29 were retrieved for comprehensive data collection.

Below is a series of operational, budget and coyote related to the data for the 2nd year of the project time period (01/01/2014-12/31/2014).

54.0 hrs.	*($13,446.00 ACPMD)**	Aerial hunting time only (fixed and rotor wing).
138.0 hrs.	(*$3,563.06 ACPMD, $200.72 WS')**	Ground work time only.
39.0 hrs.	*($1,957.02 WS')**	Administrative time only.
116/1 den		Coyotes removed from project area.
3		USDA/APHIS/WS personnel involved.

** (approximate costs incurred by ACPMD $17,009.08 and WS' $2,157.74)*

29 of 116 total (25%) coyotes taken verified for sampling and analysis below:

12	Adult male coyotes verified.*
13	Adult female coyotes verified.**
3	Pup (female) coyote verified.
1	Pup (male) coyote verified.

** 1 adult male exhibited signs of mange mite. **1 adult female showed evidence of 3 pups whelped. 1 adult female showed evidence of 6 pups whelped.*

Stomach content occurrences on 29 verified coyotes.

15 Rodent 3 Empty 14 Pronghorn 4 Deer 2 Bird

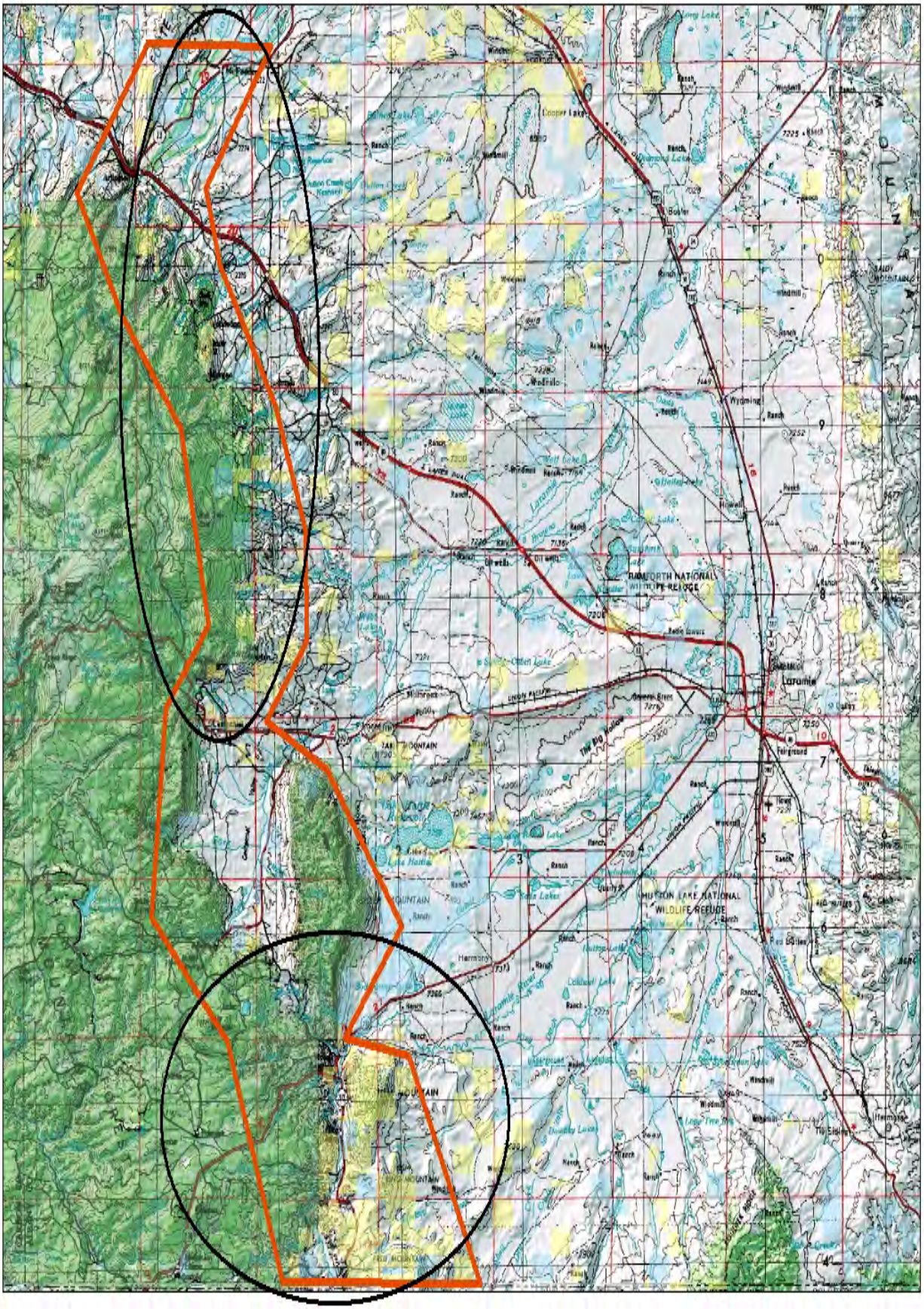
**The following, in sequence, are attached maps/graphs to project report.

1. Sheep Mtn. Hunt Areas/Fawning Areas. Hunt Areas-orange lined area, Fawning Areas-black circles.

2. Coyote Removal Map (01/03/2013-10/01/2013).

3. Coyote Removal Map (10/2/2013-12/31/2014).

3. WGFD Mule Deer Doe/Fawn Ration Graph and Report .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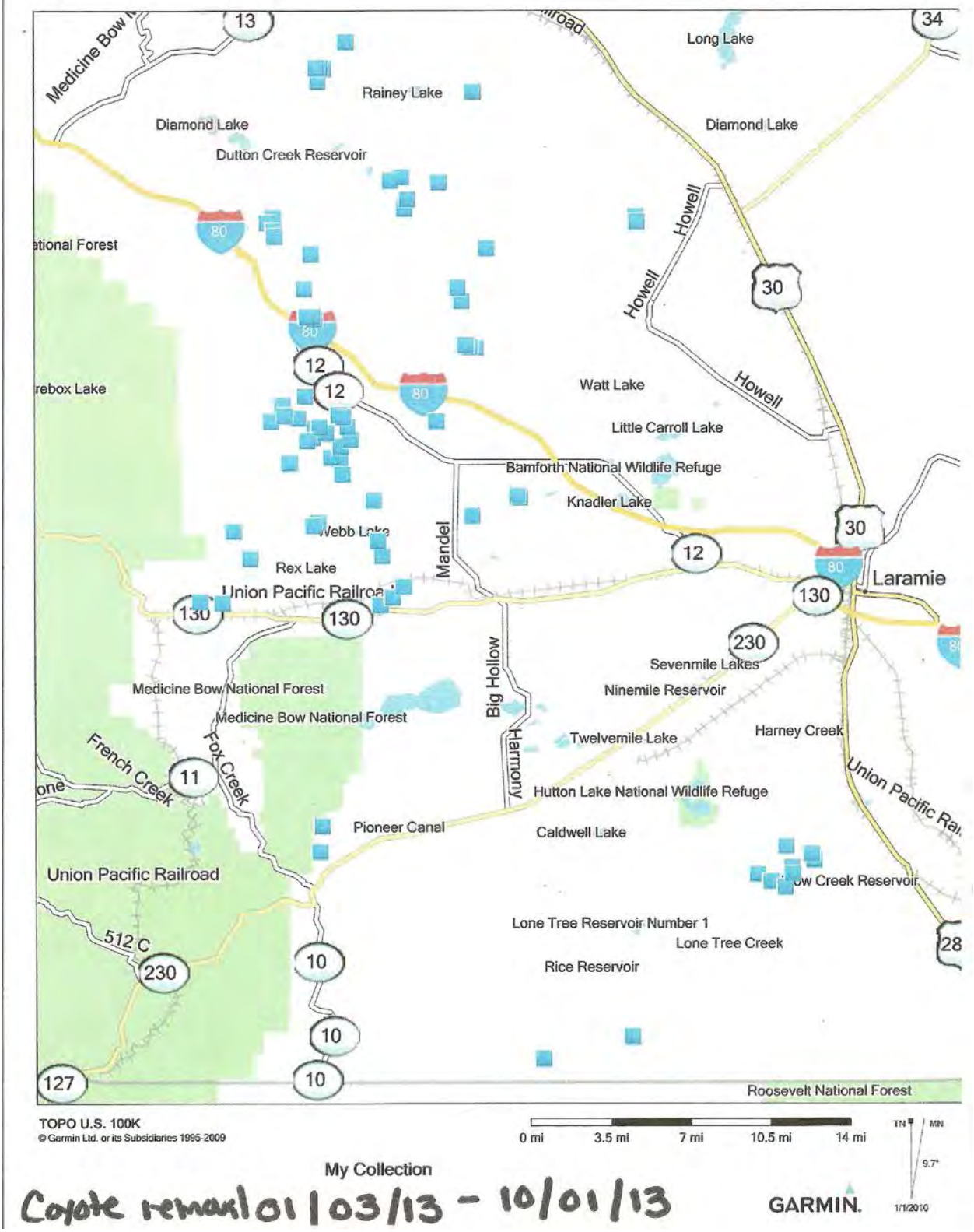
Wydming
Laramie
Fairground
HUTTON LAKE NATIONAL
WILDLIFE REFUGE
Harmony
Red Buttes
Hermosa


Medicine Bow
13
Long Lake
34
Rainey Lake
Diamond Lake
Diamond Lake
Dutton Creek Reservoir
Howell
Howell
80
30
12
12
80
Watt Lake
Howell
Little Carroll Lake
Bamforth National Wildlife Refuge
Knadler Lake
Webb Lake
Mandel
30
12
80
Laramie
Rex Lake
Union Pacific Railroad
130
130
130
230
Sevenmile Lakes
Ninemile Reservoir
Medicine Bow National Forest
Medicine Bow National Forest
Big Hollow
Harmony
Twelvemile Lake
Harney Creek
French Creek
Fox Creek
11
Union Pacific Railroad
Hutton Lake National Wildlife Refuge
Pioneer Canal
Caldwell Lake
Union Pacific Railroad
Lone Tree Reservoir Number 1
Lone Tree Creek
28
512 C
230
10
Rice Reservoir
10
10
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Roosevelt National Forest
TOPO U.S. 100K
© Garmin Ltd. or its Subsidiaries 1995-2009
0 mi
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Coyote remark 01/03/13 - 10/01/13
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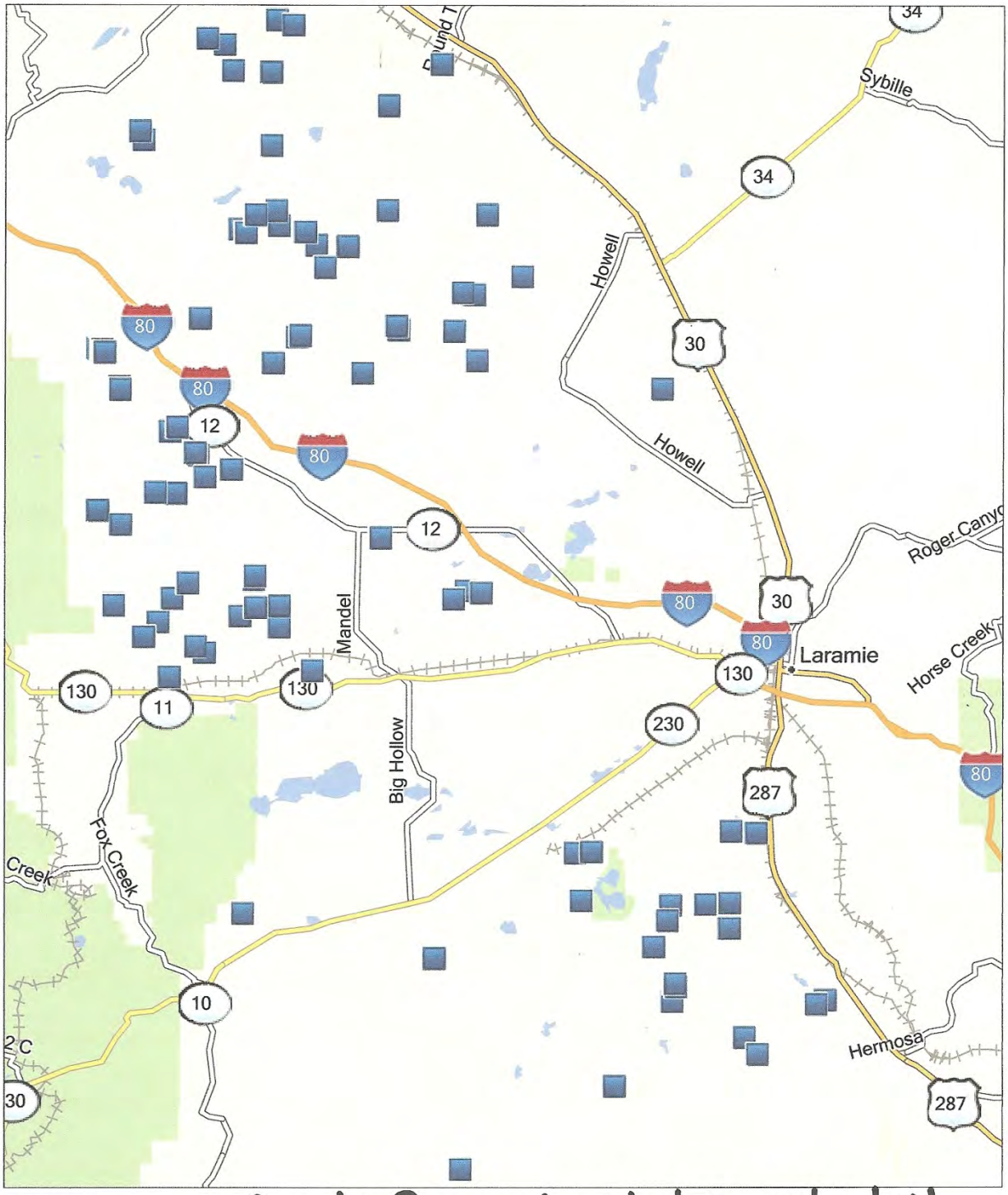
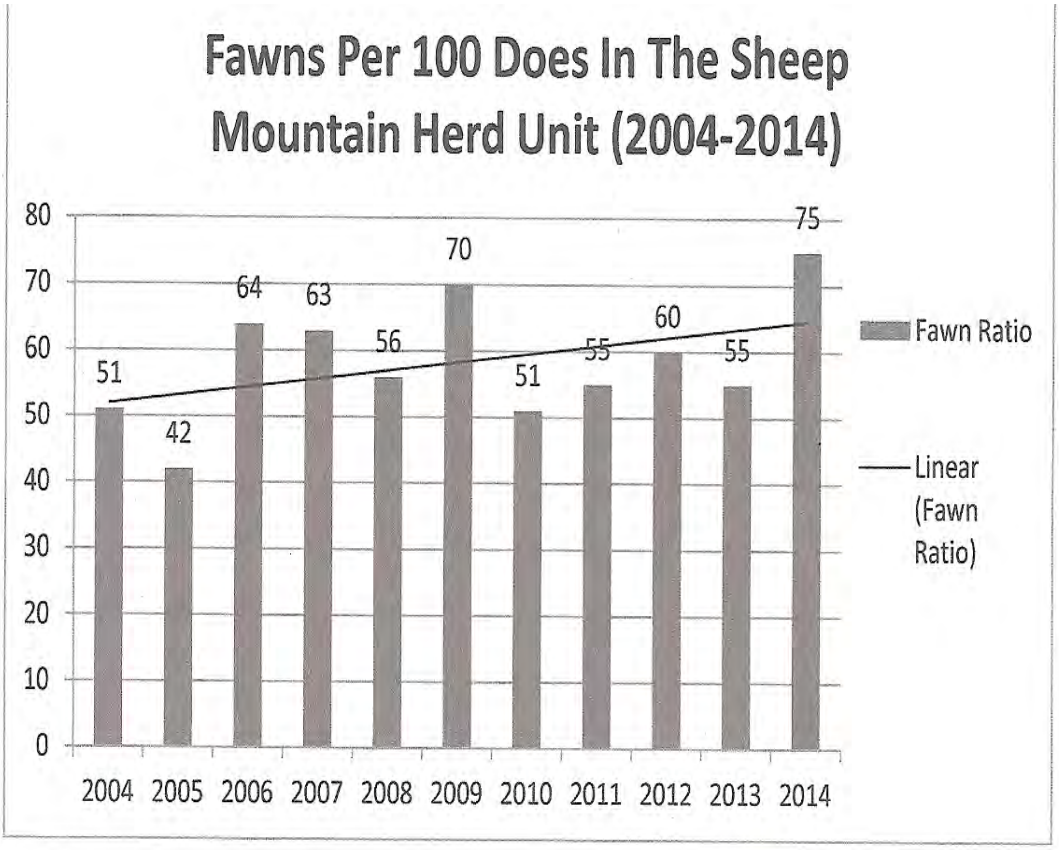


TOPO U.S. 100K
© Garmin Ltd. or its Subsidiaries 1995-2009

Coyote Remoral 10/2/13 - 12/31/14'

My Collection

GARMIN.



The Sheep Mountain Herd Unit encompasses Hunt Areas 61, 74, 75, 76 and 77. Fawn ratios have varied over the last 10 years but they seem to be trending up. During the winters of 2007, 2009 and 2010 we experienced an increase in winter mortalities especially in younger age classes which may also have had an effect on fawn recruitment. Severe drought persisted in the spring of 2012 through the spring of 2013 and may have led to the decrease in the 2013 fawn ratio. Mild winter, above average spring moisture, and 2 years of coyote removal on parturition range has led to the highest fawn ratio in over a decade for this herd in 2014.

As stated on the cover sheet, ground and aerial activities will continue until 12/31/2015 as time and conditions permit. Very few mule deer were observed during the 1st years' work on the project. It appeared that the weather conditions during the last few years are impacting the population. Quite a few mule deer were observed during the 2nd years' work in the same project areas as the previous year. It is our hope that by removing coyotes in this project area coupled with the increase in moisture, the mule deer population will be able to increase or sustain its numbers over the next year/years.

Please feel free to contact me if there are any questions or concerns.

Sincerely,

Craig Acres

Staff Biologist USDA/APHIS/WS'

Cc: Files

1/7/2014

APENDIX B
SHEEP MOUNTAIN MULE DEER HERD UNIT OBJECTIVE REVIEW

SHEEP MOUNTAIN MULE DEER HERD UNIT

AND OBJECTIVE REVIEW

Prepared by: Lee Knox, Laramie Senior Wildlife Biologist

The herd unit concept is based on distinct populations and minimal interchange (≤10%) with neighboring populations. The Sheep Mountain Mule Deer Herd Unit (SMMDHU) occupies an estimated 2,500 square miles in southeastern Wyoming, ranging from the city of Cheyenne west to the Snowy Range divide, and from the Colorado/Wyoming state line north to Highway 287/30 and Interstate 80 (Figure 1). The herd unit encompasses hunt areas 61, 74, 75, 76 and 77. Landownership varies from private lands with limited public access to public lands easily accessible. The current Postseason Population Management Objective was last reviewed in 1987 when it was increased from 10,000 to 15,000 mule deer. The herd unit is managed under recreational guidelines which prescribe to maintain a ratio of 20 to 29 bucks:100 does.

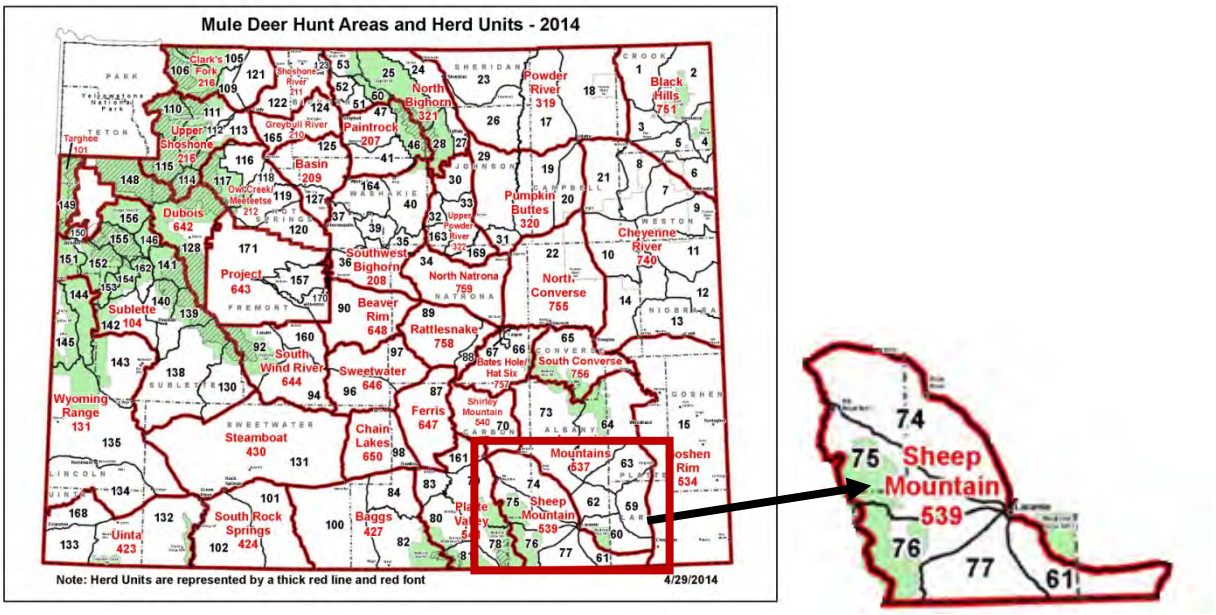


Figure1. 2014 Wyoming mule deer herd units. The Sheep Mountain Mule Deer Herd Unit is highlighted.

POPULATION OBJECTIVE REVIEW

The postseason population objective for this herd unit is currently 15,000 mule deer. The 2014 post-season population estimate was approximately 5,600 mule deer with the population stabilizing after a decline from 7,500 mule deer in 2009 (Figure 2). The postseason population objective is based upon both biological and social factors, including, but not limited to: winter range carrying capacity, hunter needs, landowner needs and tolerance, land status, and competition with other wild and domestic animals. The postseason population estimate is determined by modeling herd dynamics using harvest data and preseason herd classification data.

The SMMDHU population model has been further refined by addition of both adult female and juvenile survival data from research projects conducted in neighboring herds.

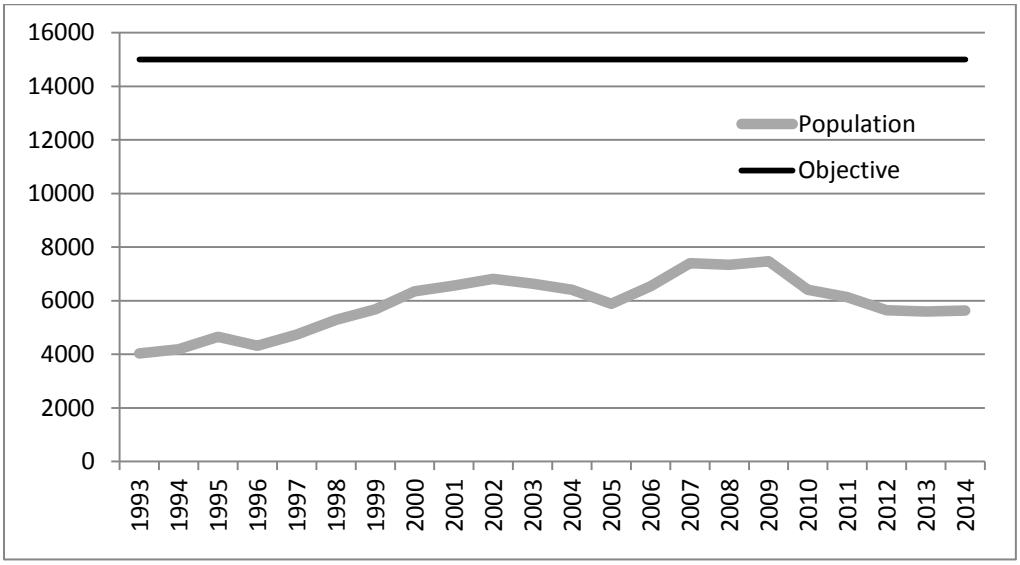


Figure 2. Population estimates and objective for the Sheep Mountain Mule Deer Herd Unit, 1993-2014.

CURRENT HERD UNIT MANAGEMENT STRATEGIES

Hunt areas 61, 74, 75, 76, and 77 are managed through a general season structure and recreational guidelines. Although landownership and habitats differ between hunt areas, the same season structure has been maintained due to the overall population size being below objective which requires a conservative management strategy across all hunt areas in the herd unit.

LANDOWNER AND PUBLIC INVOLVMENT

Surveys were mailed to 107 landowners that owned a minimum of 640 acres in the SMMDHU. Of the 107 letters mailed, 24 completed surveys were returned. At the postseason public meetings in Saratoga, Wheatland, Torrington, Laramie, and Cheyenne, questionnaires were provided to the public, similar to those mailed to the landowners. Only one questionnaire was returned.

Overall, 63% of the landowners that responded were dissatisfied with the current mule deer population (Figure 3). When asked why, 65% of dissatisfied landowners responded that there were too few mule deer, while 5% responded that there were too many mule deer (Figure 4).

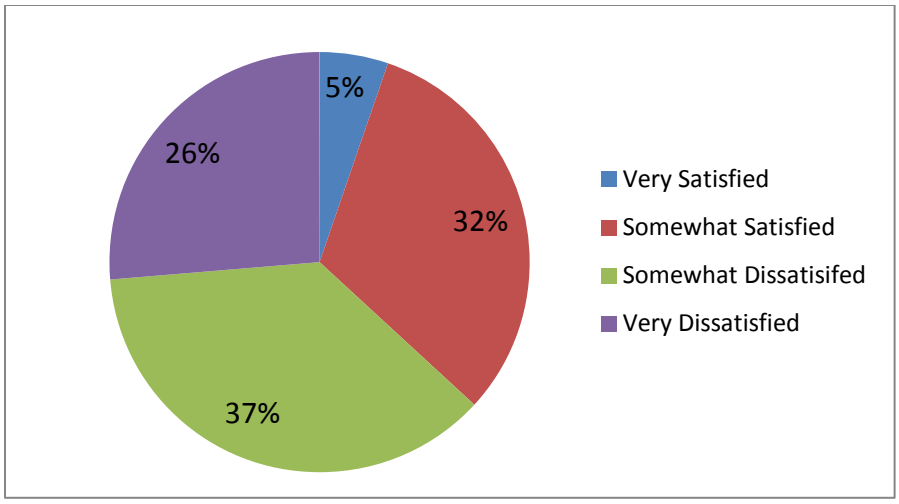


Figure 3. Current landowner satisfaction with the SMMDHU population.

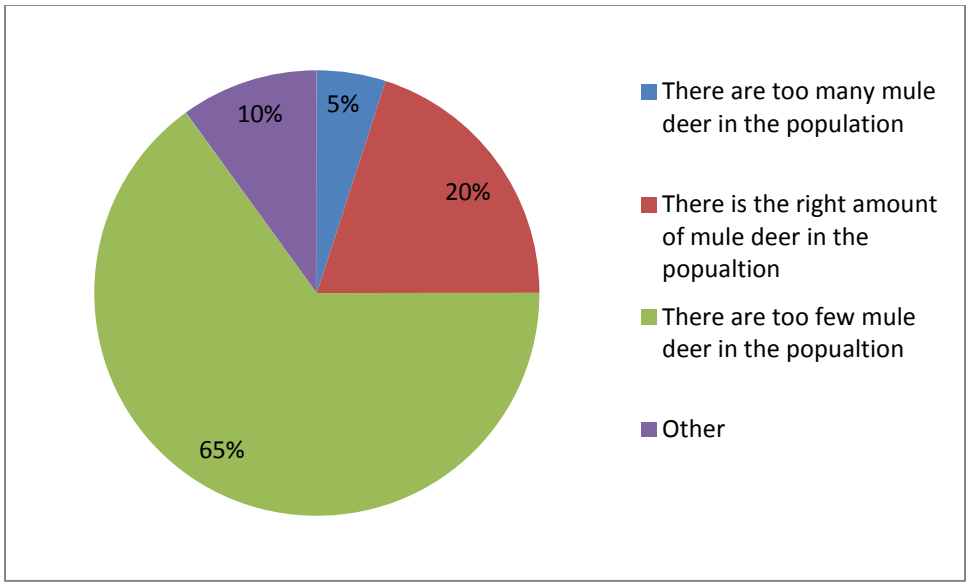


Figure 4. Landowner response as to why they were satisfied/dissatisfied. .

Sixty-seven percent of the landowners surveyed believed that the current population objective of 15,000 mule deer was correct (Figure 5). Only 16% believed it should be lowered. Historically, the population was estimated to be near 15,000 mule deer for only a short period in the early 1990s. Using the current model, the population estimate has not been over 8,000 mule deer at any time during the past 20 years (Figure 2).

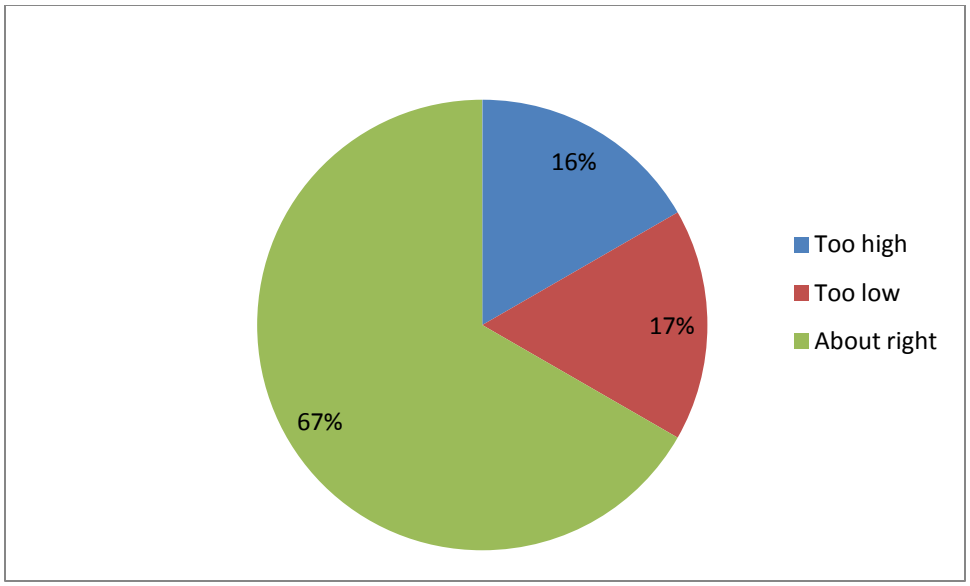


Figure 5. Landowner opinion of the current population objective of 15,000 mule deer.

Harvest has been on a steady decline from 984 mule deer in 2004 to 197 mule deer in 2013. The 2014 harvest saw a slight increase to 290 mule deer (Figure 6). Hunter success has declined precipitously since 2004 (Figure 7). Overall hunter numbers have declined by more than 1,000 over the last decade, indicating low satisfaction with the SMMDHU (Figure 6).

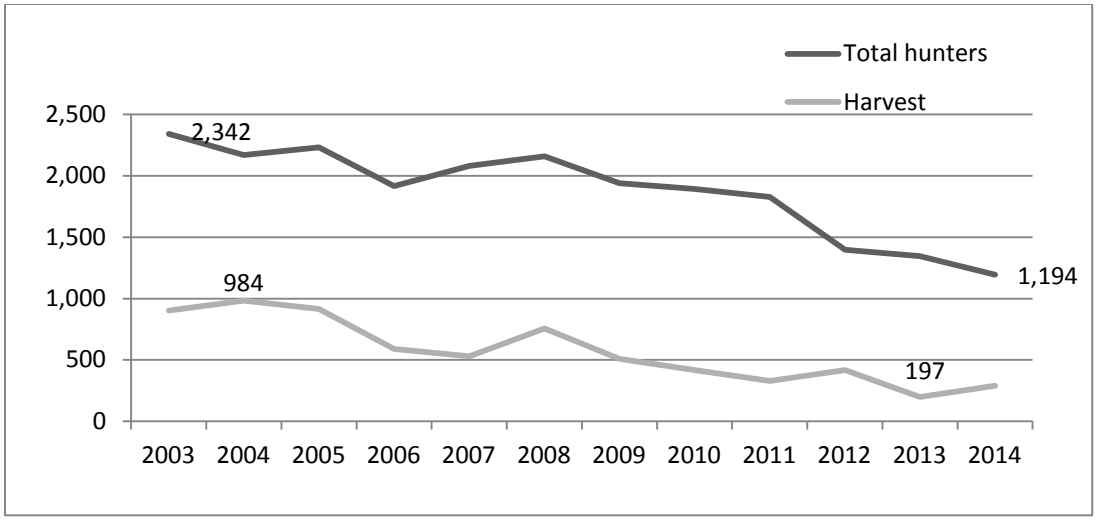


Figure 6. Number of hunters and mule deer harvested in the SMMDHU from 2003-2014.

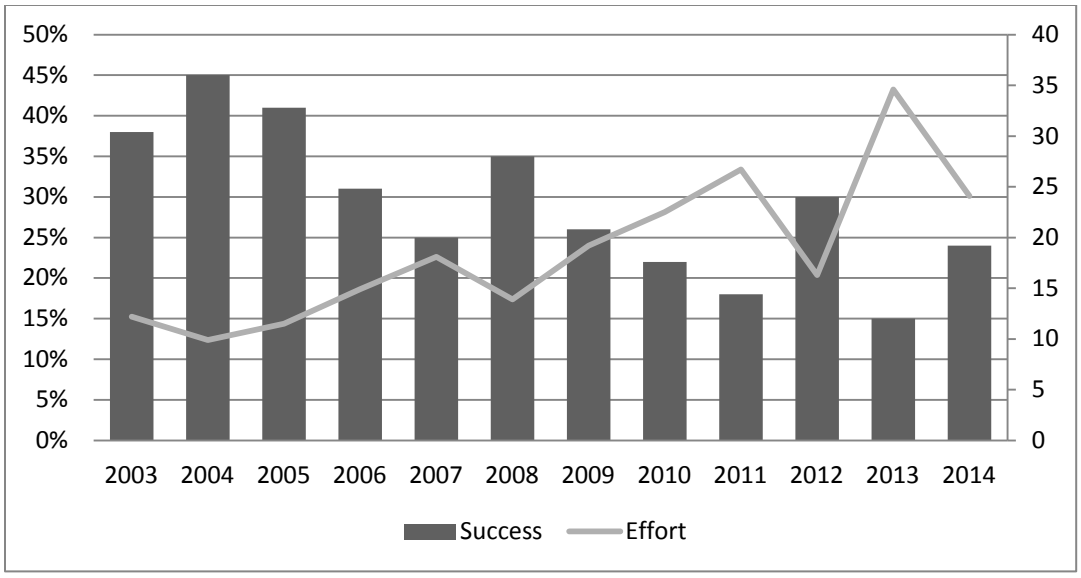


Figure 7. Hunter success and effort, measured as days per harvest, from 2003 to 2014.

RECOMMENDATION

Through the Wyoming Mule Deer Initiative process, public meetins, and landowner meetings, the current population objective and whether it should be lowered to an achievable level has been discussed with the public. The current population objective of 15,000 mule deer is unrealistic considering the current population model estimates and current habitat conditions. Public meetings were held in Wheatland, Laramie, Cheyenne, Saratoga, and Casper to propose a new objective of 10,000 mule deer. A total of 80 members of the public attended the meetings. We received five surveys back, all in favor of reducing the current population objective from 15,000 to 10,000 mule deer. A postseason population objective of 10,000 deer may still be difficult to obtain in five years, especially considering past population trends, but it is more palatable to the landowners and the public. If after five years, the population objective is not attained, this objective should be reviewed again.

Appendix A

List of Landowners Contacted

March 13, 2015

Dear Landowner,

The Wyoming Game and Fish Department (Department) is seeking your assistance in the future management of big game wildlife in your area. During the spring of 2015, the Department will review the herd unit management objectives for several big game herd units including the Sheep Mountain Mule Deer Herd Unit. Enclosed in this letter you will find a short survey for the herd unit your property is located within and postage-paid return envelope. Please complete the survey questions, provide additional comments if you desire, and mail the survey in the enclosed return envelope.

The herd unit management objective is the "goal" which the Department manages big game wildlife towards. For most big game herd units in Wyoming, the Department manages big game wildlife towards a numeric management objective, usually identified as a postseason population estimate.

Many of Wyoming's big game wildlife rely on habitat located on private lands. Therefore, landowner opinions on herd unit management objectives are important to Department. The comments we receive from your completed surveys will be used in part to formulate Department recommendations for the future herd unit management objectives. Changes in the herd unit management objective could result in increasing harvest opportunities to decrease the number of big game animals, or conversely, changes could result in reducing harvest opportunities in order to increase the number of big game animals. For planning purposes, the Department would like to identify management objectives which are considered biologically achievable within the next five years.

Thank you for taking the time to share your thoughts and opinions with us. If you have any questions please contact Lee Knox (307) 760-7348. We look forward to receiving your survey and working with you on the future management of Wyoming's Wildlife.

Sincerely,

Lee Knox
Laramie Wildlife Biologist
LK/lk

LANDOWNER	CITY	STATE
Ralph Brokaw	MC FADDEN	WY
4L LAND & CATTLE CO LTD	LARAMIE	WY
9H RANCH LLC, A WY LLC	LARAMIE	WY
ABSAROKA CONSOLIDATED ENTERPRISES, LLC	CHEYENNE	WY
ARTHUR, STEPHEN L; RUTH D	CHEYENNE	WY
AVERY, RICHARD; CINDY	LARAMIE	WY
BAR LAZY C BAR, LLC, A WY LLC	LARAMIE	WY
BASIN RANCH CO	ELK MOUNTAIN	WY
BATH FAMILY LTD	TIE SIDING	WY
BATH LAND COMPANY	LARAMIE	WY
BEAR CREEK CATTLE COMPANY	MC FADDEN	WY
BERTHEL LAND & LIVESTOCK, A	CHEYENNE	WY
GAY H. SHORE	DENVER	CO
BOOTH LAND & LIVESTOCK LLC, A CO LLC	LUCERNE	CO
BOWEN ROLAND E AND CHERYL J	ELK MOUNTAIN	WY
BUTTERS, CAROLINE A TRUST	LOVELL	WY
CENTENNIAL 91 RANCH, LLC	CENTENNIAL	WY
COTTON HOLDINGS, LLC, A WY LLC	LARAMIE	WY
CRAIG, DENNIS P; CARLA LIV TRUST	FORT COLLINS	CO
CROONBERG RANCH INC	LARAMIE	WY
DALLAROSA-HANDRICH, DYLAN	LARAMIE	WY
DEERWOOD RANCH LLC	LARAMIE	WY
DOLAN, REX L REV TR ET AL	CHEYENNE	WY
DOUBLE UNDERBIT LLC	LARAMIE	WY
DUCK CREEK GRAZING ASSOC INC	EATON	CO
DUMIRE LES AND SHELLY CO TRUSTEES	MC FADDEN	WY
DUNMIRE RANCH CO OF WY	MCFADDEN	WY
DUNN, RANDY J	LARAMIE	WY
DUNN, THOMAS G; NANCY J REV TR	LARAMIE	WY
EAST CANYON RANCH INC	WELLINGTON	CO
FAESSLER FARMS LTD, A NE LTD PTRNSHP	CHEYENNE	WY
FISCHER, GENE E; MARYLYNN A	FORT COLLINS	CO
FISH CREEK RANCH PRESERVE	TIE SIDING	WY
FLYING HEART RANCH LLC. A WY LLC	LARAMIE	WY
FLYING Z ENTERPRISES, LLC	LARAMIE	WY
GARDNER, DANIEL R; JACQUELYN G	PARACHUTE	CO
GOEMAN, DONALD L REV TRUST	TIE SIDING	WY
GREEN, ROBERT E ET UX	GRANITE CANON	WY
HAMAKER, J D & CANDIS L	CENTENNIAL	WY
HANSEN DOUBLE X RNCH LTD PTNRSHP	CHEYENNE	WY
HARNDEN, PAT	TIE SIDING	WY
HARRIS RANCH LLC, A WY LLC	BOSLER	WY
HERMAN DARLENE G AND ROBERTA L AND	ELK MOUNTAIN	WY

HI ALLEN RANCH LLC	MEDICINE BOW	WY
IRON BAR HOLDINGS LLC	ELK MOUNTAIN	WY
JANKOVSKY'S ROCK RIVER RNCH, LLC	ARLINGTON	WY
JOHNSON 99 RANCH, LIMITED	LARAMIE	WY
JOHNSON ROBERT JOHN JR AND	ELK MOUNTAIN	WY
JOHNSON, MARK E; MARGARET	LARAMIE	WY
KAY, SHIRLEY; KAY,MATTHEW J	LARAMIE	WY
KEMP, JOHN L & LOIS KAY	LARAMIE	WY
KILPATRICK, WM C REV TRUST	TIE SIDING	WY
KING RANCH COMPANY LP	CHEYENNE	WY
LARAMIE RIVER HOLDINGS, LLC,	LARAMIE	WY
LEWIS RANCHES LLC	LARAMIE	WY
LINDSTROM, GRANT L	LARAMIE	WY
LISTEN LAND LLLP	LARAMIE	WY
LOGAN, WILLIAM J, JR	FORT COLLINS	CO
LONE TREE RANCH INC	LIVERMORE	CO
MARIAH LAND HOLDINGS, LLC, A WY LLC	LARAMIE	WY
MC GILL JOHN M AND JOAN W TRUSTEES	LARAMIE	WY
MC LOUGHLIN HOLDINGS LLC	CHEYENNE	WY
MCKINSEY, RAYMOND L LIV TRUST	LARAMIE	WY
MEDICINE BOW RIVER RNCH OF WY LLC	FORT WAYNE	IN
MENKE RANCH	ELK MOUNTAIN	WY
MISTERLY LEWIS E JR AND GAYLE ANN	BREA	CA
NEVPET BOSWELL RANCH LLC	CHEYENNE	WY
NUNN, JUSTIN T REVOCABLE TRUST	LARAMIE	WY
OVERLAND TRAIL CORPORATION	AURORA	CO
OWENS, JULIE A REVOCABLE LIVING TRUST	CHEYENNE	WY
PAGE FAMILY LTD PARTNERSHIP	LARAMIE	WY
PARKER, JOHN B & SHAARON B FAMILY TRUST	KEENESBURG	CO
PETERS, PETER JOHN	LAPORTE	CO
PETERSEN, BRENT R	EVANSTON	WY
PITCHER, TIMOTHY	LARAMIE	WY
PRINCE, ELEANOR FRACKER	BUFORD	WY
RAY, MICHAEL	LAKEWOOD	CO
REMOUNT RANCH LLC	DENVER	CO
REYES, JUAN D; JONI S	WHEATLAND	WY
RICHARDSON ALBERT SHORTY WILLING TRUSTEE	ELK MOUNTAIN	WY
RICHARDSON JOANN KAY	LANDER	WY
ROCK RIVER RANCHES INC	ROCK RIVER	WY
ROGERS, JAMES P; LEONA GAY REV TR	LARAMIE	WY
RUGGLES, RAYMOND LAWRENCE &	LARAMIE	WY
SCHERER ROBERT L II	LARAMIE	WY
SEYMOUR NANCY L AND	MEDICINE BOW	WY
SHIMMERHORN RANCH LLC, AN AZ LLC	CHEYENNE	WY
SHOPNECK, ROBERT M & CATHERINE	DENVER	CO
SIMON, JAMES E., CO, A WY CORP	LARAMIE	WY
SIMS LAND AND LIVESTOCK INC	ROCK RIVER	WY

SMITH FAMILY PROPERTIES LLC, A WY LLC	LARAMIE	WY
SPEISER, DAVID T & KATHLEEN T REV TRUST	LARAMIE	WY
SPIEGELBERG, GARY W; JOANN K LIV TRUST	LARAMIE	WY
STAGE LAND CO, LLC	LARAMIE	WY
STEWART, EARLE W LIVING TRUST	CHEYENNE	WY
SWAN RANCH LLC	CHEYENNE	WY
SWANSON REVOCABLE LIVING TRUST	LARAMIE	WY
TALBOTT RANCH, INC, A WY CORP	LARAMIE	WY
T-K RANCH	LARAMIE	WY
UL RANCH CO	ELK MOUNTAIN	WY
WAGON TRAIL RANCH, LLC, A WY LLC	DENVER	CO
WEAR, JAMES C; SILVYA A	LARAMIE	WY
WEAVER RANCH, INC	FORT COLLINS	CO
WENBURG TRUST	LARAMIE	WY
WILLADSEN, HELEN MARIA	GREELEY	CO
WOOLF RANCH INC ETAL	LARAMIE	WY
WYOHERZ, LLC	LARAMIE	WY

Appendix B

Surveys and

Tallies of Survey responses

Sheep Mountain Mule Deer Herd Unit Objective Review

1. How satisfied are you with the current Sheep Mountain mule deer population (please circle):

   Very Satisfied Somewhat Satisfied Somewhat Dissatisfied Very Dissatisfied

1. Please indicate why you selected the response you did for question 1.
   - ☐ There are too many mule deer in the population
   - ☐ There is the right amount of mule deer in the population
   - ☐ There are too few mule deer in the population
   - ☐ Other _____

2. Do you think the current post-season population objective of 15,000 mule deer is:
3. Too high (we would bring it down to a biologically achievable number)
4. Too low (increase it even though it would not be achievable)
5. About right (continue to use the current objective even though the population has not been within 20% of the objective in 20 years)

If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your email address below.

_____

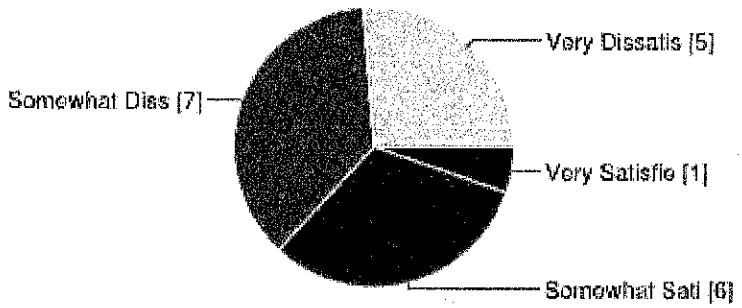
THANK YOU for your participation!

24 responses

View all responses Publish analytics

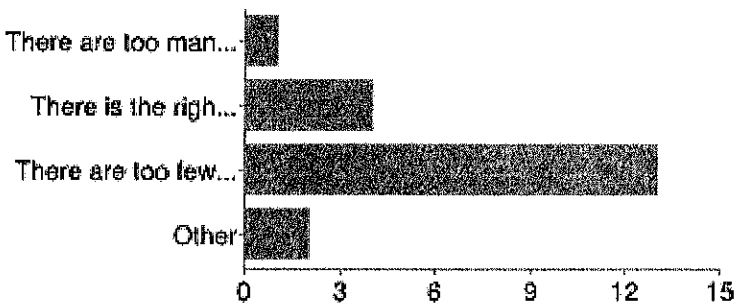
Summary

How satisfied are you with the current Sheep Mountain mule deer population



Very Satisfied	**1**	4.2%
Somewhat Satisfied	**6**	25%
Somewhat Dissatisfied	**7**	29.2%
Very Dissatisfied	**5**	20.8%

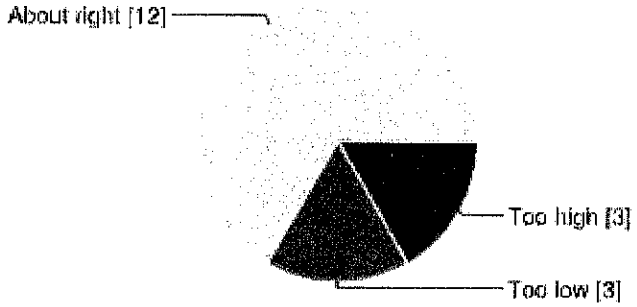
Please Indicate why you selected the response you did for question 1



There are too many mule deer in the population	**1**	4.2%
There is the right amount of mule deer in the population	**4**	16.7%
There are too few mule deer in the population	**13**	54.2%
Other	**2**	8.3%

Do you think the current post-season population objective of 15,000 mule deer

is:



Too high	**3**	12.5%
Too low	**3**	12.5%
About right	**12**	50%

Additional comments

We don't own any ground in this management area.

Please don't waste your postage and printing costs- Our opinion as landowners matter not on what you do.

I know very little about the mule deer population on Sheep Mountain. My guess is that your management area extends to the Rock Creek valley and that is why you sent this to me. As for the McFadden area where we live, there is nothing to talk about. The whitetail deer have pushed all the mule deer out of here. We see a small herd at Rock River.

Not familiar enough with deer in targeted area to make a valid opinion. Earle Steward 1917 S. Second Ave Cheyenne, WY 82007

1. The deer have not recovered from wasting disease and slaughter by Colorado Game dept. I used to have hundreds here thru the winter. Now I'm fortunate if I see 5 or 6. 2. This area should return to "restricted" area (6)-- drawing only. Since becoming a "general area" hunters are driving me crazy!! I can hardly get any work done and I dare not leave from Oct to Feb. Trespassing, gates open, fences cut, pastures smashed, wounded animals left to die, property damage or missing. We are too close to major population areas to allow general area hunting! General area=open to all (to many!!!) -Robert Green

I attended a couple of your meetings. You talk about habitation private land being important, but you have no private land habitat program. In fact i read and heard a negative attitude about working with private landowners. You talk about working with USFS but openly express how hopeless it is to more USFS. So- I wonder if you are in there to win or just look good losing.

We have noticed an increase in the number of deer during the last two years. The Remount Ranch is only 4000 acres so I don't know if that reflects the deer population for

all of our area. We don't allow hunting on the property and that may be the reason for the increase.

This past year is the most deer i have seen on our land but we don't think it to much as of right now.

Lets be realistic about the numbers. 15000 is too high, unachievable and not a number that could be maintained. Our elk are gone and the deer are returning. I am more pleased to share the land with the deer than the elk.

Have a reasonable and achievable objective to meet, and continue to grow herd.

They are gone.... NONE. As a species they probably wont survive, wouldn't that be sad!

They consume a lot of our grass. Thank you for your efforts.

In the 20 years we have owned the ranch, I have not heard any mountain on or near our property referred to as Shirley Mountain, so I guess I can't answer any questions about the Shirley Mountain mule deer population. If it helps you, in the 20 years we have owned the ranch we have only taken two mule deer bucks, and there appears to be fewer deer today. Berthel Land & Livestock 307-630-5453

We are in the middle of a 30 year dry cycle. How much hast that affected the population? Predators need to be kept in check. To many elk competing for habitat.

Hi Lee this is Gary Browning love to help Game and Fish, and mule deer. Call at 307-760-0966 or stop by 120 Hart Rd and we can visit.

Mule deer population on Chimney Rock Ranch is very low- Bruce Lewis

Make all snowy range areas limited quota's for mule deer! NO general license to close to urban populations.

We have experienced a subjective decrease in mule deer over the last 25 years on our meadow lands. I would like to see a few more deer and a few less antelope. We do have an increase in whitetail.

Email

scottnapril@carbonpower.net

wyoherz@msn.com

nlbath@hotmail.com

lsbb1@yahoo.com

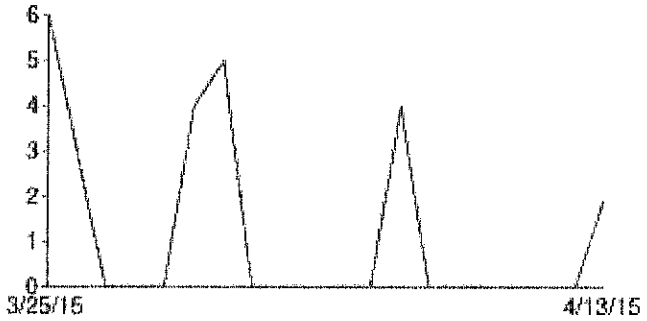
jsdingo@yahoo.com

sbangert@cobizfinancial.com

sigel_a@yahoo.com

laramieridge@gmail.com

Number of daily responses 332


6
5
4
3
2
1
0
3/25/15
4/13/15

Sheep Mountain Mule Deer Herd Unit Objective Review

1. Do you think the current post-season population objective of 15,000 mule deer is:

   - ❑ Too high (we would bring it down to a biologically achievable number)
   - ❑ Too low (increase it even though it would not be achievable)
   - ❑ About right (continue to use the current objective even though the population has not been within 20% of the objective in 20 years)

If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your email address below.

_____

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

wgfd.wyo.gov

GOVERNOR
MATTHEW H. MEAD

DIRECTOR
SCOTT TALBOTT

COMMISSIONERS
RICHARD KLOUDA – President
CHARLES PRICE – Vice President
MARK ANSELMI
AARON CLARK
KEITH CULVER
MIKE HEALY
T. CARRIE LITTLE

Sheep Mountain Mule Deer Herd Unit Objective Review

1. How satisfied are you with the current Sheep Mountain mule deer population:
☐ Very Satisfied ☐Somewhat Satisfied ☐Somewhat Dissatisfied ☒Very Dissatisfied

2. Please indicate why you selected the response you did for question 1.
☐ There are too many animals in the population
☐ There is the right amount of animals in the population
☒ There are too few animals in the population
☐ Other _____

3. What do you think about the current post-season population objective of 15,000 (12,000-18,000) mule deer?

☐ Current Herd Objective Needs to Increase
☒ Current Herd Objective Needs to Decrease
☐ Current Herd Objective is Acceptable

4. If you have additional comments, please share them in the space below:

_____
_____
_____
_____
_____
_____
_____
_____

If, in the future, you would like to be contacted through email please provide your email address below.

_____

THANK YOU for your participation!

Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason. *(Current population estimate is* ***~ 5,600)***

___ I support this proposal

___ I do not support this proposal

Comments:

If, in the future, you would like to be contacted through email please provide your email address below.

_____

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

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Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason.
(Current population estimate is ~ ***5,600)***

X I support this proposal

___ I do not support this proposal

Comments:

It is so far below objective towards it to 10,100 is OK.

Make the RMEF projects money good for all species - elk, mule deer, moose, etc. — not just elk.

If, in the future, you would like to be contacted through email please provide your email address below.

3/25/15

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

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Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason.
(Current population estimate is ~ ***5,600)***

X I support this proposal

___ I do not support this proposal

Comments: I support the Biologists recomendations

If, in the future, you would like to be contacted through email please provide your email address below.

_____

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

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Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason. *(Current population estimate is ~ **5,600**)*

✓ I support this proposal

___ I do not support this proposal

Comments:

If, in the future, you would like to be contacted through email please provide your email address below.

amaj7@uwyo.edu

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

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Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason.
(Current population estimate is ~ ***5,600)***

X I support this proposal

___ I do not support this proposal

Comments: Need To Revisite objective In 5 years + Maybe Raise IT

Do we Need To Change IT To Limited Quota Seasons?

If, in the future, you would like to be contacted through email please provide your email address below.
Mee Ha. 2005 @ Gmail.com

THANK YOU for your participation!

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Sheep Mountain Mule Deer Herd Unit Objective Review
Sportsman's Survey

We propose to decrease the management objective from 15,000 to 10,000 mule deer postseason.
(Current population estimate is ~ ***5,600)***

✓ I support this proposal

___ I do not support this proposal

Comments: Why? What's the point of the objective change? If the highest the population has been (since 1993) is 8k, why would the objective change be needed?

* Question answered.

If, in the future, you would like to be contacted through email please provide your email address below. PDenton01@hotmail.com

THANK YOU for your participation!

Appendix C

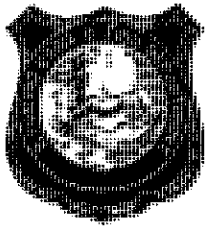
Hunter Satisfaction Survey

MULE DEER
HUNTER SATISFACTION WITH OVERALL QUALITY OF HUNT
BY HERD UNIT
UNWEIGHTED
2014

HERD	RESIDENCY	NUMBER OF HUNTERS	SATISFACTION WITH OVERALL QUALITY OF HUNT *				
			VERY SATISFIED	SATISFIED	NEUTRAL	DISSATISFIED	VERY DISSATISFIED
539. Sheep Mountain	Nonresident	33	33.3%	48.5%	15.2%	3.0%	0.0%
	Resident	300	15.3%	30.3%	24.3%	21.3%	8.7%
	Total	333	17.1%	32.1%	23.4%	19.5%	7.8%

Appendix D

Objective Review Sign in Sheets



Post Hunting Season Meeting
Laramie, Jan. 16, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Michell Anderson	michell.k.anderson@gmail.com	307-399-3628	11 Burro Ln, Laramie 82072
2. Eric Anderson	eric.anderson@wyo.gov	307-760-4448	11 Burro LN, Laramie, 82072
3. Zack Koch	ZeKoch001@yahoo.com	307-742-4251	1235 Colorado Ave Laramie
4. Bill Turner	WYBowhuntr@gmail.com	(307) 760-8997	1517 Shetland Dr. Laramie
5. Buzz Hettick	buzzandpat@msn.com	(307) 760-8683	1778 Eagle Crest CT / Laramie
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Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Paul Wood	PRW wood@Gmail.com	630-7671	6030 Syracuse Rd 82009
2. Jim Mallon	JMS76@AOL.com	635-1314	2115 Phillips Pl
3. Phoenix Burt		635-1314	6200 Ridge Rd
4. Brian Tanllie	briant1985@Gmail.com	307-214-1071	1411 Gettysburg Drive
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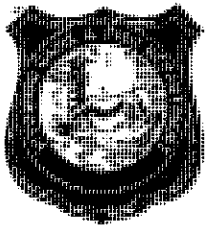

Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Bruce Nelson	pothook64@yahoo.com	307 245 9276	1299 Hwy 215 Pine Bluffs
2. Jim Trussler	JimTruss@bresnan.net	308-749-2348	3107 Green Valley Rd Cheyenne 82001
3. Mike DeMartin	michael.demartin@HollyFrontier.com	307-637-5[illegible]	7241 Fox Tail Rd Cheyenne 82005
4. Tony Rutherford	SEWYOMING@MULEYFANATIC.COM	631-1418	1508 Barberry Ridge Cheyenne 82009
5. Neal Perkins	buglike@aol.com	307 286 3456	2415 Channell Dr Chey Wy 82009
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Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. GD EVANS	GAMGETR@HOTMAIL	541 941 5587	6090 CR 212 PINE BLUFFS
2. JEFF GEYER	jeff.geyer@wyo.gov	307-637-5378	7534 Legacy Pkwy CHEYENNE
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Post Hunting Season Meeting
Torrington – Jan. 12. 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Pat Pyle			
2. Larry Pyle			
3. Craig Marsh			
4. Bud Patterson	budpcross@gmail.com	307-620-1106	
5. Corey Steinmetz	cochece1998@wyomail.com	307-534-5870	8498 Cemetery Rd Lingle WY 82223
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Post Hunting Season Meeting
Wheatland, Jan. 17, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Myron Wakkuri	wakkuri@q.com	307 322 3220	3056 W walnut Wheatland Wy 82201
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Post Hunting Season Meeting
Hanna – Jan. 14, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. DAVID ZANCANELLA	ugly turkey_101@yahoo.com	(307) 760-5306	4 YORK RANCH RD Douglas
2. Robert Patton	bobpatton@gmail.com	307 325-9878	Box 470 Hanna, 82327 82432
3. Karen Patton	" " "	" " "	" " " "
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& Wheatland & Torrington

Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Wheatland

	NAME	CITY
1.	Freddie L Goetz	Wheatland Wyo
2.	Dale Widrich	Guernsey WY
3.	MAX Garner	Guernsey WY
4.	John Castle	Guernsey, WY
5.	KENT YARBROUGH	WHEATLAND, WYO
6.	Daryl Tiltrum	Wheatland Wyo
7.	Myron Markwell	Wheatland
8.	Bob Wilson	Wheatland
9.	Jerry Loeffelbein	Wheatland
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Wheatland

	NAME	CITY
1.	Ray Lane	
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 24, 2015 Meeting Location: Torrington

	NAME	CITY
1.	Larry Pyle	
2.	Pat Pyle	
3.	Dusty Southworth	
4.	Tara Southworth	
5.	Art Davis	Torrington
6.	Bud Patterson	Veteran
7.	Bob Fentsch	Lingle WY.
8.	Timothy Barkman	Lingle WY
9.	ALAN BESKE	HAWK SPRINGS
10.	JOHN RINEHART	LaGRANGE
11.	Dennis Yost	Torrington
12.	Butch DVORAK	Torrington, Wy
13.	Cory Rinehart	LA Grange
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Page 2 of 2

Date: March 24, 2015 Meeting Location: Torrington

	NAME	CITY
1.	Pearl Dickens	Torrington
2.	MT Dickens	"
3.	Craig Marsh	Torr Wy
4.	Robert Glaub	Torrington
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 26, 2015 Meeting Location: Cheyenne

	NAME	CITY
1.	HUFF DAVID J.	CHEYENNE,
2.	Dan Conrad	Cheyenne
3.	Neal Perkins	Cheyenne
4.	DAVID HAYS	Chey
5.	MARION RUPERT	CHEY
6.	JIM BURNEY	Chey
7.	Don & Roy Stewart	Cheyenne
8.	Paul Wood	Cheyenne
9.	Scott Karban	Cheyenne
10.	JOSHUA KARBAN	Cheyenne
11.	Clay Rouse	Cheyenne
12.	Dale Critchfield	Cheyenne
13.	Dick Merklin	Cheyenne
14.	Randy Berkis	Cheyenne
15.	JIM FICHTER	CHEYENNE
16.	Jeff Renner	Cheyenne
17.	Rick Miller	Cheyenne
18.	[illegible]	Cheyenne
19.	Don Magnuson	Eaton, Co
20.	STEVE ECKERT	Cheyenne
21.	Ron Lydia	Cheyenne
22.	Kelly [illegible]	Cheyenne
23.	Kathy [illegible]	Cheyenne
24.	Chris Cox	Cheyenne
25.	Brian Foster	Pine Bluffs

Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 26, 2015 Meeting Location: Cheyenne

	NAME	CITY
1.	Craig Ocranak	Cheyenne
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Saratoga

	NAME	CITY
1.	Dave Sturm	Saratoga
2.	Larry Lowdy	Encampment
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4.	Will Ward	Saratoga
5.	PAT Pollison	SARATOGA
6.	Tim Ney	Rawlins
7.	Randy Smith	Saratoga
8.	Bill Grudesi	SARATOGA
9.	Mark Conlick	Saratoga
10.	Ron Roty	Encampment
11.	Scott Kerbs	Saratoga
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Saratoga

	NAME	CITY
1.	Leonard Thomson	Saratoga
2.	Pat Malone	Saratoga
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: 3/26, 2015 Meeting Location: Laramie

	NAME	CITY
1.	Pete Kontaxes	Laramie Wy
2.	Chris Wood	Laramie Wy
3.	Alex May	Laramie WY
4.	Buzz Hefflick	Laramie WY
5.	ERIC ANDERSON	LARAMIE WY
6.	Michell Anderson	Laramie, WY
7.	DAVE MULLENS	LARAMIE, WY
8.	Wade Roberts	Laramie, WY
9.	Tyler Sims	McFadden, WY
10.	Kelby Scott	Laramie WY
11.	RAY GARSON	Baggs, WY
12.	TERRY DAYTON	Laramie, WY
13.	Sidney Barker	Laramie Wy
14.	DICK NAUMANN	Laramie WY
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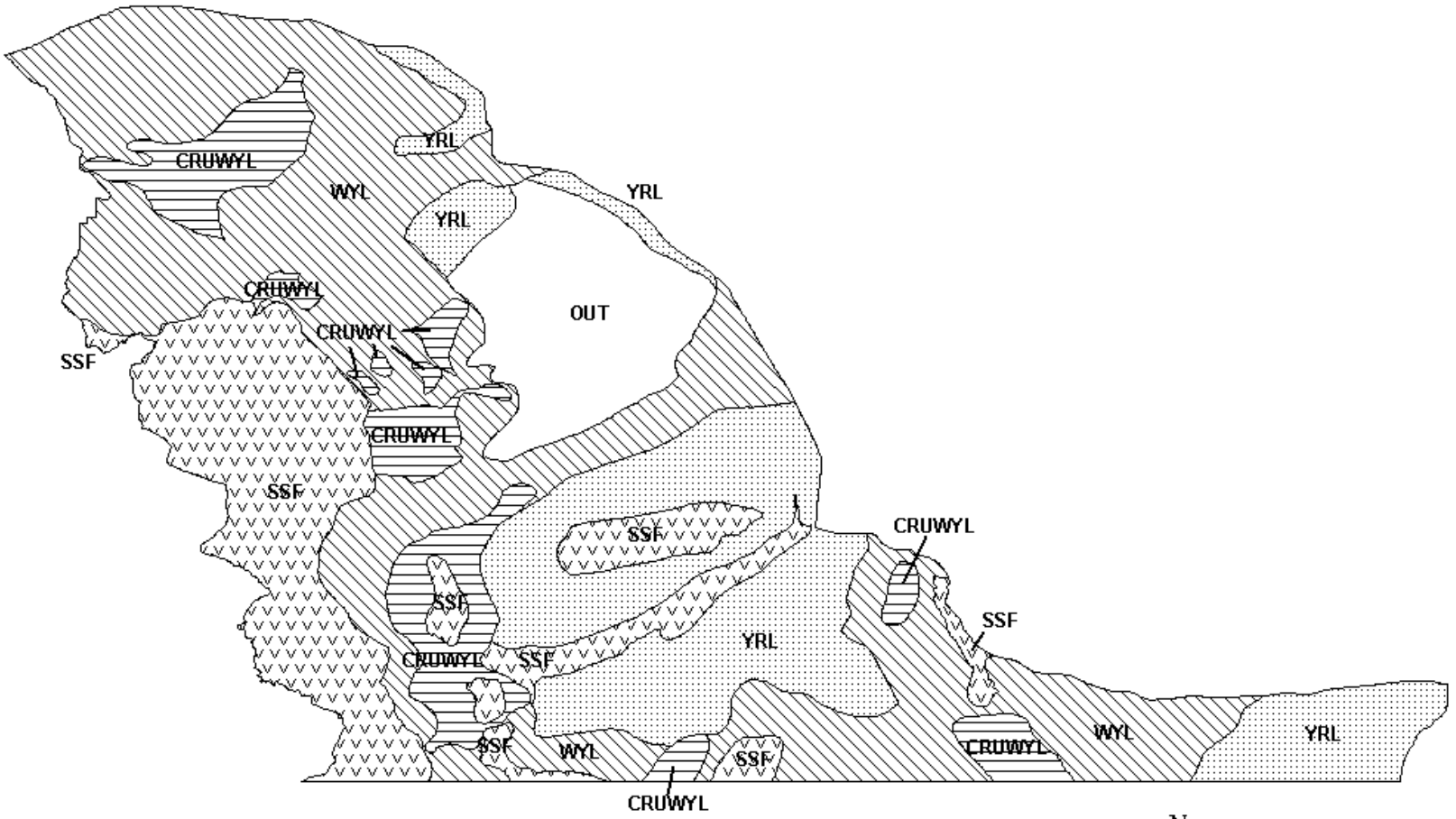


Mule Deer (MD539) - Sheep Mountain
HA 61, 74-77
Revised - 8/88

2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD540 - SHIRLEY MOUNTAIN

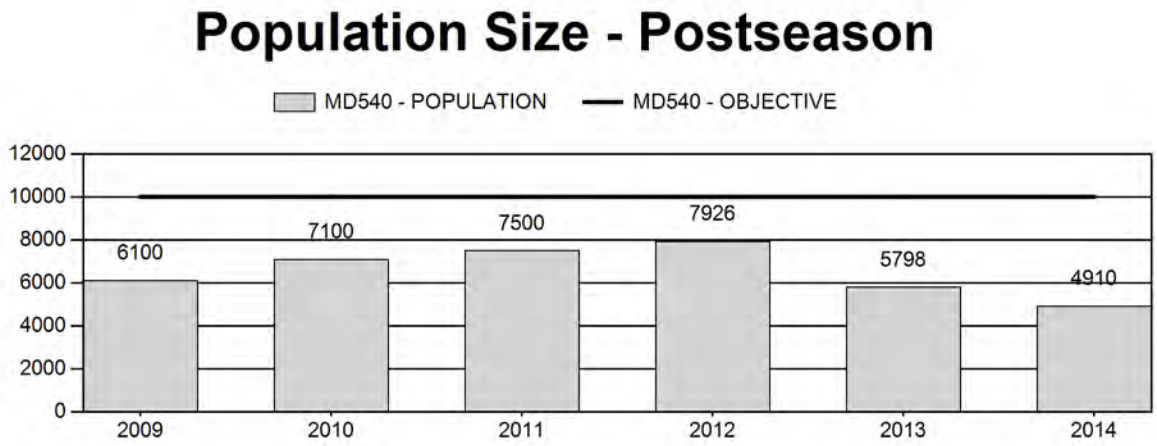
HUNT AREAS: 70
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	6,885	4,910	5,000
Harvest:	342	207	236
Hunters:	759	557	600
Hunter Success:	45%	37%	39%
Active Licenses:	769	567	600
Active License Success:	44%	37%	39%
Recreation Days:	3,042	2,134	2,134
Days Per Animal:	8.9	10.3	9.0
Males per 100 Females	28	30	
Juveniles per 100 Females	57	50	

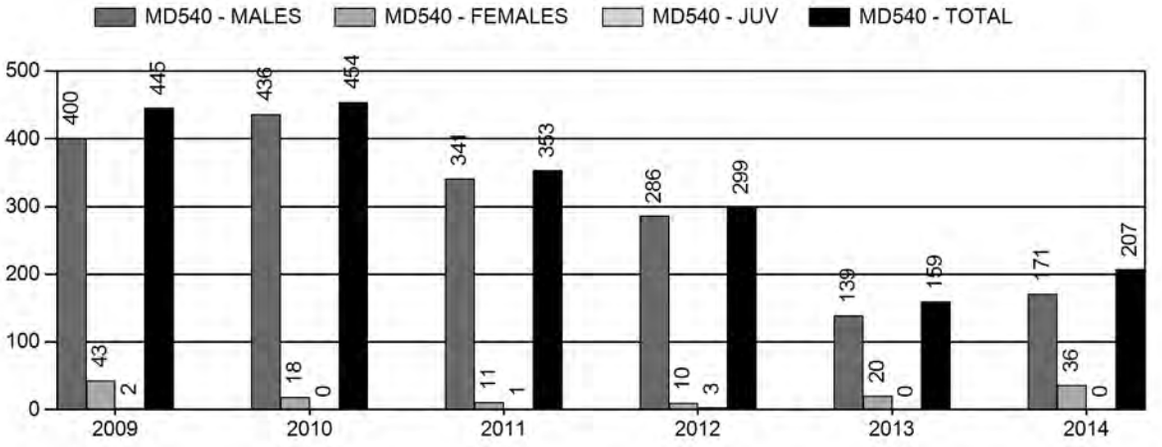
Population Objective (± 20%) :	10000 (8000 - 12000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-50.9%
Number of years population has been + or - objective in recent trend:	20
Model Date:	5/11/2015

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

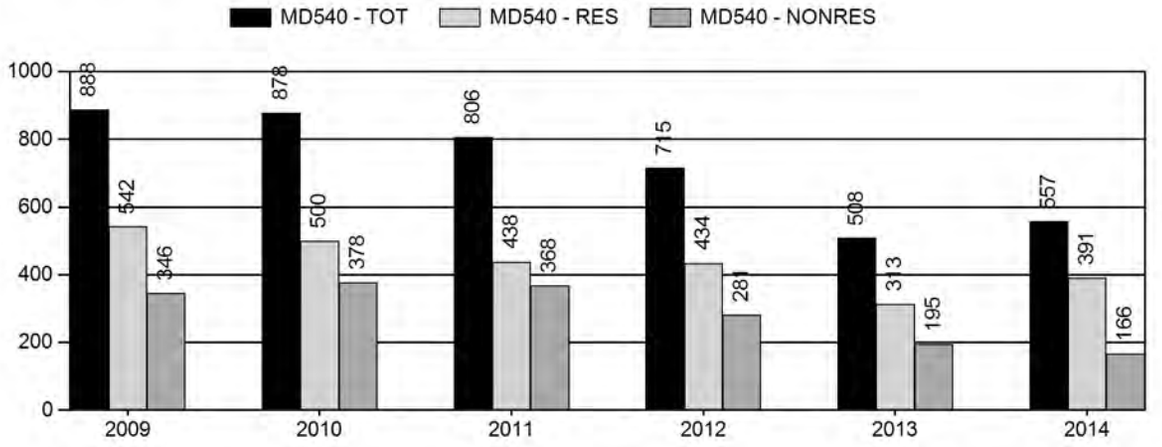
	JCR Year	Proposed
Females ≥ 1 year old:	0.8%	1%
Males ≥ 1 year old:	22.7%	17%
Juveniles (< 1 year old):	0.2%	0%
Total:	4.4%	4%
Proposed change in post-season population:	-4.9%	1%



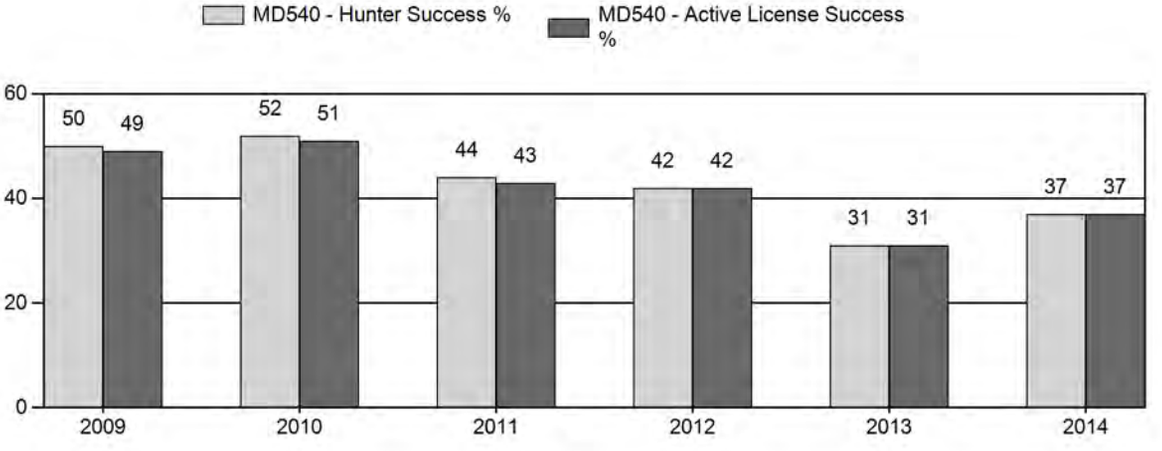
Harvest



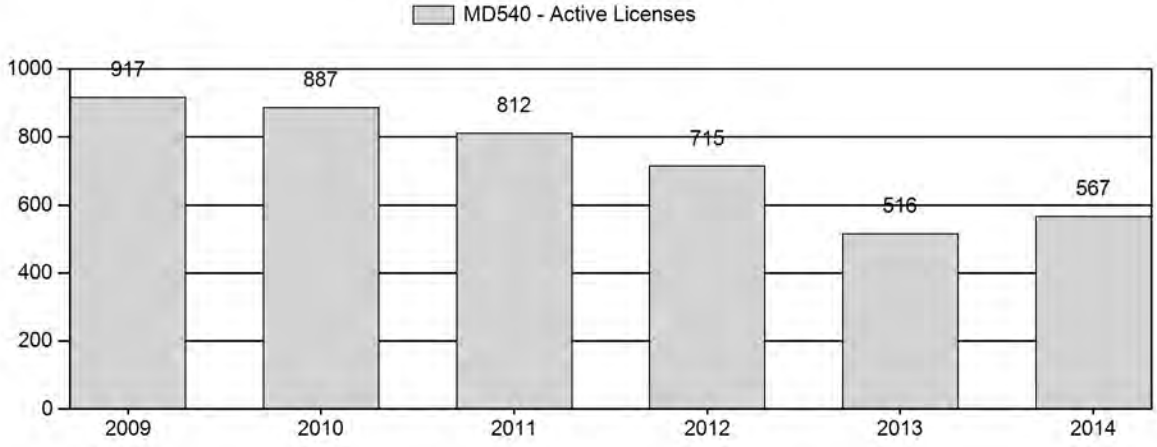
Number of Hunters



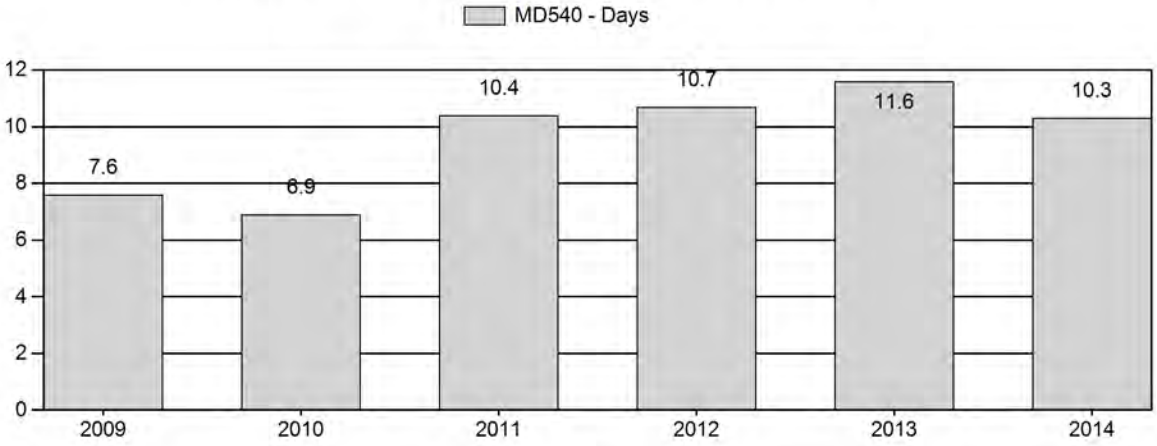
Harvest Success



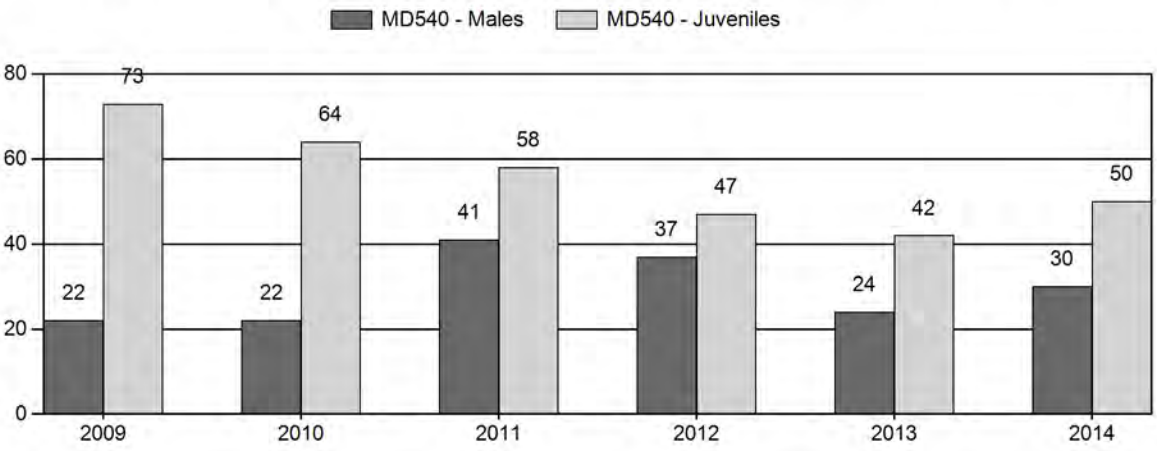
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD540 - SHIRLEY MOUNTAIN

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	6,100	10	0	0	0	38	48	11%	216	51%	157	37%	421	913	5	18	22	± 4	73	± 9	59
2010	7,100	24	0	0	0	18	42	12%	190	54%	122	34%	354	958	13	9	22	± 5	64	± 9	53
2011	7,500	29	0	0	0	37	66	20%	162	50%	94	29%	322	1,079	18	23	41	± 7	58	± 9	41
2012	7,926	16	0	0	0	39	55	20%	149	54%	70	26%	274	1,033	11	26	37	± 7	47	± 9	34
2013	5,798	26	0	0	0	32	58	14%	246	60%	103	25%	407	997	11	13	24	± 4	42	± 6	34
2014	5,589	20	21	9	1	0	51	17%	170	56%	85	28%	306	915	12	18	30	± 6	50	± 8	38

Shirley Mountain Mule Deer (MD540)
Hunt Area 70
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
70		Oct. 15	Oct. 21		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
	6	Oct. 15	Nov. 30	25	Limited quota	Doe or fawn valid on private land

Nonresident Region D Quota: 400

Hunt Area	Type	Quota change from 2014
Herd Unit Total		**None**

Management Evaluation
Current Management Objective: 10,000 (8,000-12,000)
Management Strategy: Recreational
2014 Postseason Population Estimate: 4,900
2015 Proposed Postseason Population Estimate: 5,000
2014 Hunter Satisfaction: 51% Satisfied, 22% Neutral, 27% Dissatisfied

Mule deer in the Shirley Mountain herd unit are managed toward a numeric objective of 10,000. The population was estimated using a spreadsheet model developed in 2012 and update in 2014. The herd is managed for recreational opportunity. The objective was reviewed in 2015 and the final proposal will be reviewed by the Game and Fish Commission in July of 2015.

Herd Unit Issues
The Shirley Mountain herd unit is comprised of a mixture of habitat and landownership types. Hunter access to public lands containing mule deer habitat is considered good. Small groups of mule deer are considered nuisances and create damage in a localized area on the west side of Shirley Mountain, along Lost and Sage Creeks. Trends in mule deer numbers are in decline while interest from both residents and nonresidents in hunting in this herd unit have increased over the past 5 years. Expansion of wind farms in the eastern half of this herd unit is eminent.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and

preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on mule deer. Mild fall temperatures and lack of persistent snows allowed for mule deer to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Shirley Mountain herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunk brush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data

2014 Postseason classifications were conducted from the ground in late November. A less than adequate sample size (n=306) was 25% lower than the 2013 sample size. Yearling buck ratios increased by 1 buck to 12/100 does. However, a significant increase in the yearling buck ratios usually observed after the implementation of a 3-points or more on either antler limitation has not been realized in this herd unit. The adult buck ratio increased 28% in 2014 to 18/100 does. The overall buck ratios increased from 26/100 does in 2013 to 30/100 does in 2014. This increase was attributed to reducing the nonresident Region D quota in 2014.

Fawn ratios increased from 42/100 does in 2013, which was the lowest fawn ratio observed during the past 25 years, to 50/100 does in 2014. This increase was attributed to mild winter conditions experienced by pregnant does and timely spring and summer precipitation which resulted in improved nutrition for lactating does. However, the observed fawn ratio was below the trend for this herd unit and did not result in an increased population estimate for 2014.

Harvest Data

Overall, harvest and satisfaction rates increased in 2014. This marked the second year of the 3-points or more on either antler limitation in this herd unit. The antler point restriction was implemented as an additional protection specifically for yearling bucks. General season lengths had already been incrementally reduced to the current 7-day season during previous years to protect overall buck numbers. The final 2014 WGFD deer harvest survey report indicated 557 active general licensed hunters' harvested 207 mule deer for an overall success rate of 37%. General season buck harvest increased 18% and hunter numbers increased 10%, as compared with the 2013 hunting season statistics. The percentage of hunters with harvest survey satisfaction ratings of satisfied, or very satisfied, increased 10% to 51% in 2014.

Population

In 2014, we selected to use the TSJ,CA model. Although the TSJ,CA model had the highest AICc score at 142, when compared with the CJ,CA, and SCJ, SCA model scores, (95 and 91 respectively), it allowed for better alignment of the predicted buck ratios with the observed buck ratios. It also produced the lowest and most biologically plausible postseason population estimate for 2014. The TSJ,CA models tend to simulate mule deer population dynamics better than the other models because fawn survival rates are allowed to fluctuate on an annual basis with great variability, similar to survival rates that have been documented in numerous investigations (Andy Holland, Colorado Division of Parks & Wildlife, pers. comm.). We also incorporated 3 abundance estimates into this model (Strickland, et. al 1994).

We rated this model as poor, and not biologically defensible. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model, and primarily due to less than adequate sample sizes for postseason classification counts (Morrison 2012).

This herd unit is considered to contain significantly less mule than the spreadsheet models estimate. Given the openness of the landscape, and well defined herd unit boundaries, we consider the observed harvest rates and classification sample sizes were not representative of a population estimated at this magnitude. The declining trend depicted in the spreadsheet model's population estimates does appear to be representative of the observed mule deer abundance in this herd unit. Without other information such as a recent independent population estimate or long-term survival data to incorporate into the models, accuracy of estimates will continue to be unknown.

Management Summary

The 2015 hunting season included a 7-day General season for antlered mule deer, 3 points or more on either antler, or any white-tailed deer hunting. The point restriction continued to provide protection for yearling buck mule deer. Type 6, private land doe or fawn licenses were prescribed to reduce damage and nuisance deer issues in the Lost and Sage Creek areas.

The Region D nonresident quota was retained at 400 licenses to align hunter opportunity with the current mule deer resource. This will also improve hunter satisfaction for both nonresidents and resident hunters alike.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

McDaniel G. W., F. G. Lindzey. 1991. Seasonal Movements, Population Characteristics and Habitat Use of Mule Deer in the Shirley Mountain Area, Central Wyoming. Wyoming Cooperative Fishery and Wildlife Research Unit. University of Wyoming, Laramie. 64 pp.

Strickland, D., L.L. McDonald, G. Johnson, W. Erickson, D. Young Jr., and J. Kern. 1994. An Evaluation of Mule Deer Classifications From Helicopter and Ground Surveys. Western Ecosystems Technology, Inc. Cheyenne. 61pp.

INPUT	
Species:	MULE DEER
Biologist:	SCHULTZ
Herd Unit & No.:	SHIRLEY MD540
Model date:	5/112015

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	97	106	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	97	106	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	36	142	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1991	7991	1552		2364	1646	3454	7464	2350	998	3229	6578	10,000
1992	5796	1959		1719	1699	3585	7003	1660	963	3026	5649	10,000
1993	4540	1075		742	1146	2889	4778	692	586	2290	3568	10,000
1994				1175	772	2212	4159	1175	448	2212	3834	10,000
1995				1591	613	2104	4309	1591	387	2104	4082	10,000
1996				1464	645	2097	4205	1464	395	2097	3956	10,000
1997				1307	801	2239	4347	1307	627	2239	4173	10,000
1998				1415	802	2165	4383	1415	597	2165	4177	10,000
1999				1335	912	2237	4484	1335	531	2237	4104	10,000
2000				1487	983	2425	4895	1487	653	2425	4565	10,000
2001				1196	849	2347	4392	1196	481	2347	4023	10,000
2002				1675	885	2462	5022	1675	570	2462	4707	10,000
2003				1656	928	2527	5111	1656	581	2527	4764	10,000
2004				1705	900	2545	5150	1705	601	2545	4851	10,000
2005				1314	1190	2833	5336	1311	817	2804	4933	10,000
2006				1558	1215	2895	5668	1555	810	2846	5211	10,000
2007				1735	1307	3028	6069	1730	745	2968	5443	10,000
2008				1797	1296	3175	6268	1787	914	3102	5804	10,000
2009				2134	1130	2980	6243	2131	690	2932	5754	10,000
2010				1948	1159	3054	6162	1948	679	3034	5662	10,000
2011				1934	1354	3344	6632	1933	979	3332	6244	10,000
2012				1503	1214	3203	5919	1499	894	3192	5585	10,000
2013				1246	1055	2997	5298	1246	902	2975	5123	10,000
2014				1362	1012	2764	5138	1362	824	2724	**4,910**	10,000
2015				1357	1147	2753	5257	1357	927	2714	4997	10,000
2016												10,000
2017												10,000
2018												10,000
2019												10,000
2020												10,000
2021												10,000
2022												10,000
2023												10,000

Survival and Initial Population Estimates

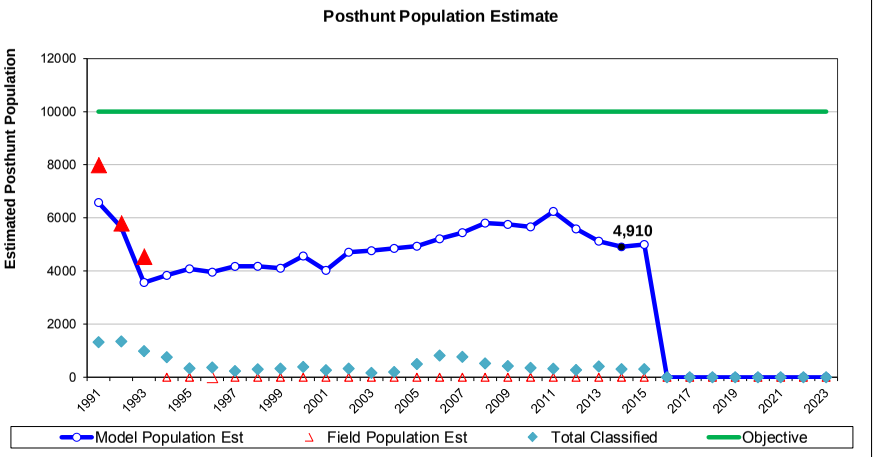
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1991	0.73			0.85		
1992	0.40			0.85		
1993	0.80			0.85		
1994	0.40			0.85		
1995	0.40			0.85		
1996	0.64			0.85		
1997	0.42			0.85		
1998	0.58			0.85		
1999	0.80			0.85		
2000	0.40			0.85		
2001	0.80			0.85		
2002	0.53			0.85		
2003	0.49			0.85		
2004	0.80			0.85		
2005	0.80			0.85		
2006	0.80			0.85		
2007	0.77			0.85		
2008	0.40			0.85		
2009	0.54			0.85		
2010	0.80			0.85		
2011	0.40			0.85		
2012	0.40			0.85		
2013	0.40			0.85		
2014	0.66			0.85		
2015	0.66			0.85		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						

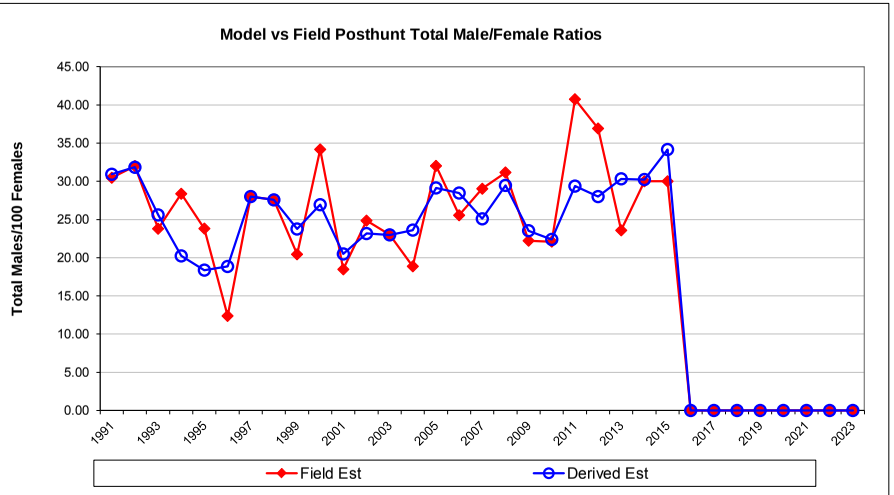
Parameters:	Optim cells
Adult Survival =	0.845
Initial Total Male Pop/10,000 =	0.100
Initial Female Pop/10,000 =	0.323

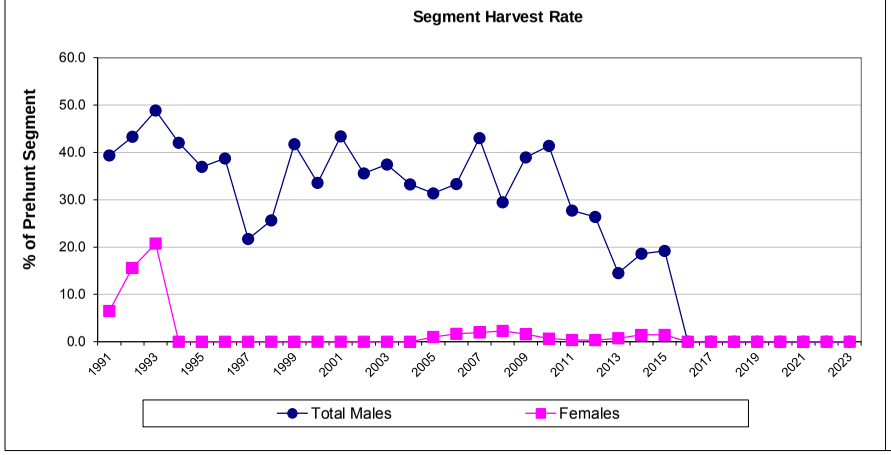
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

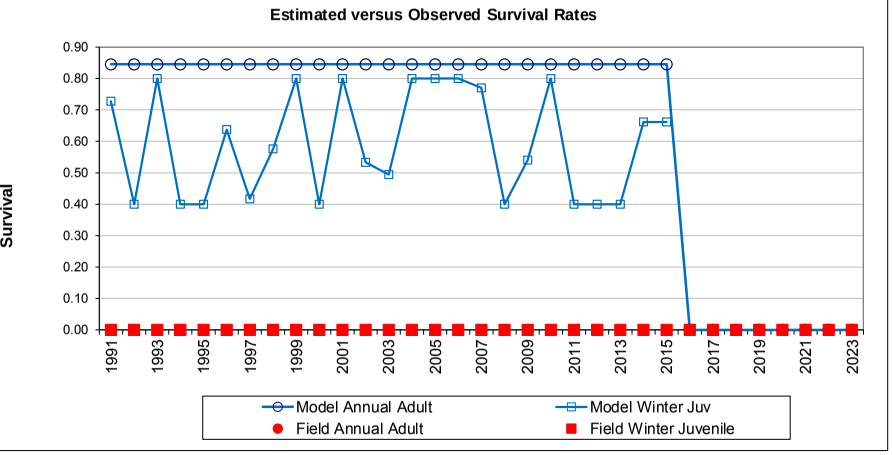
	Classification Counts										Harvest	
	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
Year	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1991		72.77	4.40	30.92	30.46	2.47	13	589	204	806	39.4	6.5
1992		54.85	3.43	31.83	31.99	2.42	54	669	508	1231	43.3	15.6
1993		30.20	2.48	25.60	23.79	2.15	46	509	545	1100	48.9	20.7
1994		53.13	4.42	20.23	28.37	2.96	0	295	0	295	42.0	0.0
1995		75.60	8.89	18.37	23.81	4.19	0	206	0	206	37.0	0.0
1996		69.80	7.66	18.85	12.38	2.62	0	227	0	227	38.7	0.0
1997		58.40	8.60	28.00	28.00	5.35	0	158	0	158	21.7	0.0
1998		65.38	8.33	27.57	27.56	4.75	0	187	0	187	25.6	0.0
1999		59.67	7.26	23.75	20.44	3.69	0	346	0	346	41.7	0.0
2000		61.31	7.05	26.94	34.17	4.80	0	300	0	300	33.6	0.0
2001		50.96	7.00	20.49	18.47	3.73	0	335	0	335	43.4	0.0
2002		68.05	8.23	23.16	24.85	4.28	0	286	0	286	35.6	0.0
2003		65.52	11.16	22.99	22.99	5.70	0	316	0	316	37.4	0.0
2004		66.98	10.27	23.61	18.87	4.60	0	272	0	272	33.2	0.0
2005		46.76	4.97	29.13	32.01	3.90	2	339	26	367	31.3	1.0
2006		54.63	4.31	28.46	25.55	2.66	3	368	44	415	33.3	1.7
2007		58.29	4.74	25.09	29.02	3.02	4	511	54	569	43.0	2.0
2008		57.61	5.74	29.46	31.16	3.85	9	347	66	422	29.5	2.3
2009		72.69	7.62	23.53	22.22	3.55	2	400	43	445	38.9	1.6
2010		64.21	7.45	22.39	22.11	3.77	0	436	18	454	41.4	0.6
2011		58.02	7.52	29.37	40.74	5.95	1	341	11	353	27.7	0.4
2012		46.98	6.81	28.00	36.91	5.82	3	291	10	304	26.4	0.3
2013		41.87	4.91	30.32	23.58	3.44	0	139	20	159	14.5	0.7
2014		50.00	6.64	30.23	30.00	4.79	0	171	36	207	18.6	1.4
2015		50.00	6.64	34.16	30.00	4.79	0	200	36	236	19.2	1.4
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												

FIGURES









Comments:

Source of 1991-1993 abundance estimates: Strickland, D., L.L. McDonald, G. Johnson, W. Erickson, D. Young Jr., and J. Kern. 1994. An Evaluation of Mule Deer Classifications From Helicopter and Ground Surveys. Western Ecosystems Technology, Inc. Cheyenne. 61pp.

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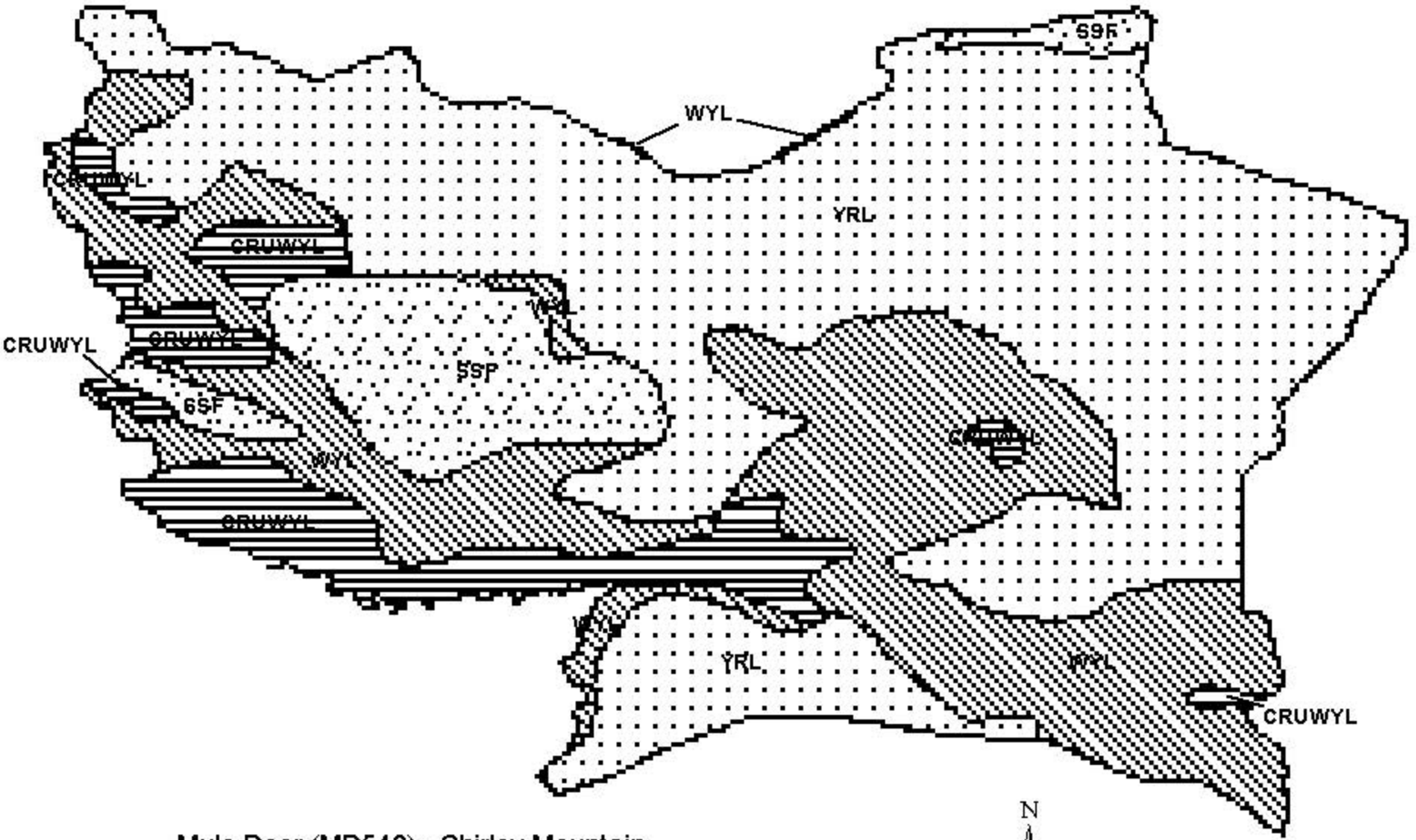


Mule Deer (MD540) - Shirley Mountain
HA 70
Revised - 12/87

2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD541 - PLATTE VALLEY

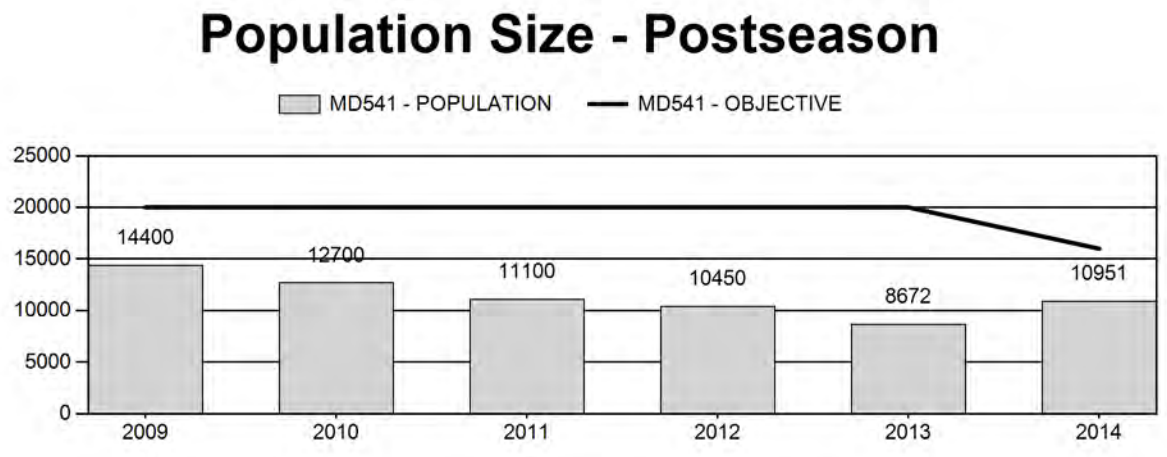
HUNT AREAS: 78-81, 83, 161
PREPARED BY: WILL SCHULTZ

	2009 - 2013 Average	2014	2015 Proposed
Population:	11,464	10,951	10,981
Harvest:	687	528	528
Hunters:	2,371	934	934
Hunter Success:	29%	57%	57 %
Active Licenses:	2,413	934	934
Active License Success:	28%	57%	57 %
Recreation Days:	12,876	5,388	5,388
Days Per Animal:	18.7	10.2	10.2
Males per 100 Females	28	36	
Juveniles per 100 Females	55	63	

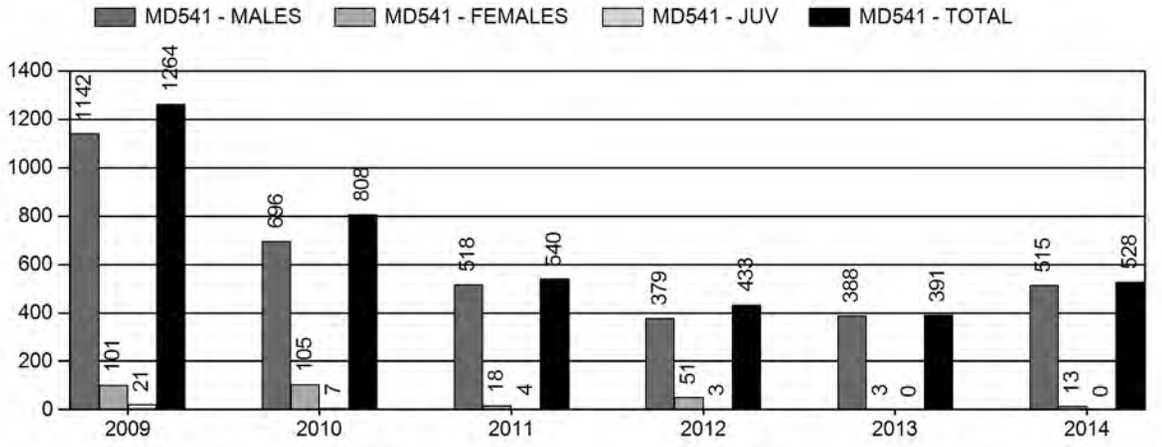
Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-31.6%
Number of years population has been + or - objective in recent trend:	8
Model Date:	2/19/2015

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

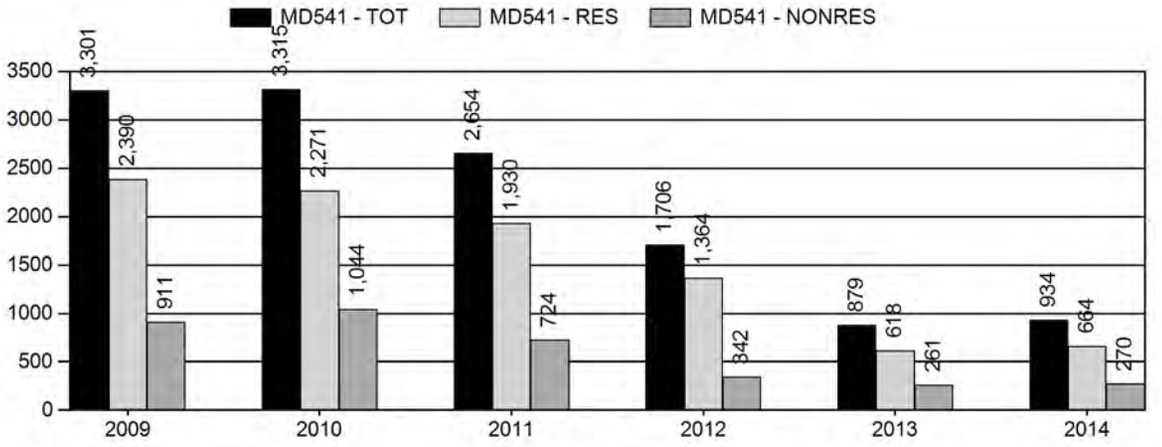
	JCR Year	Proposed
Females ≥ 1 year old:	0.1%	0.1%
Males ≥ 1 year old:	26.4%	19%
Juveniles (< 1 year old):	0%	0%
Total:	4.6%	5%
Proposed change in post-season population:	-5.1%	0.03%



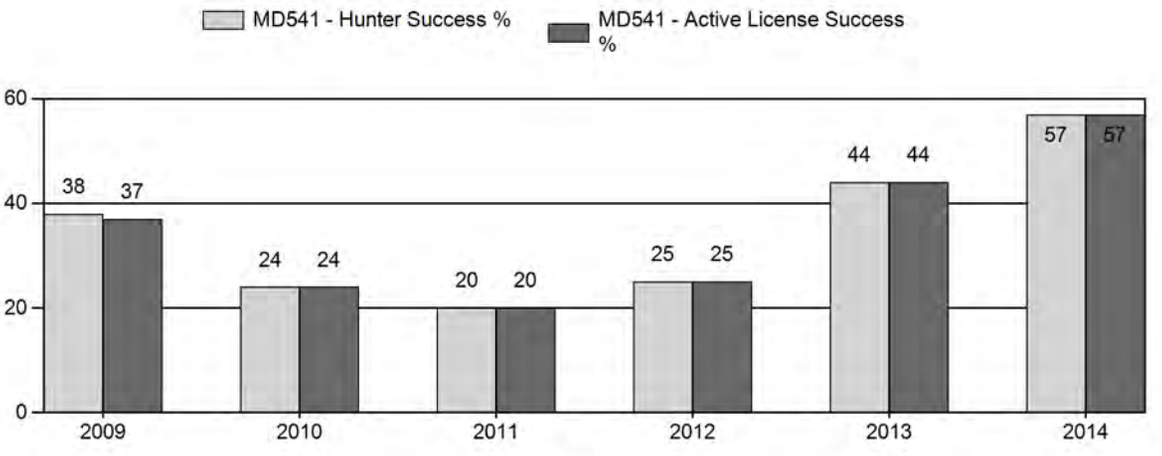
Harvest



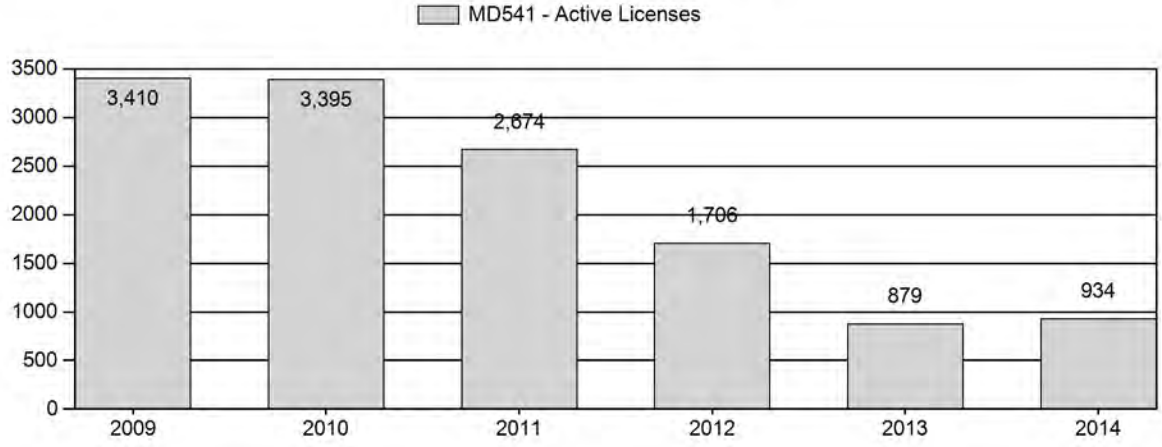
Number of Hunters



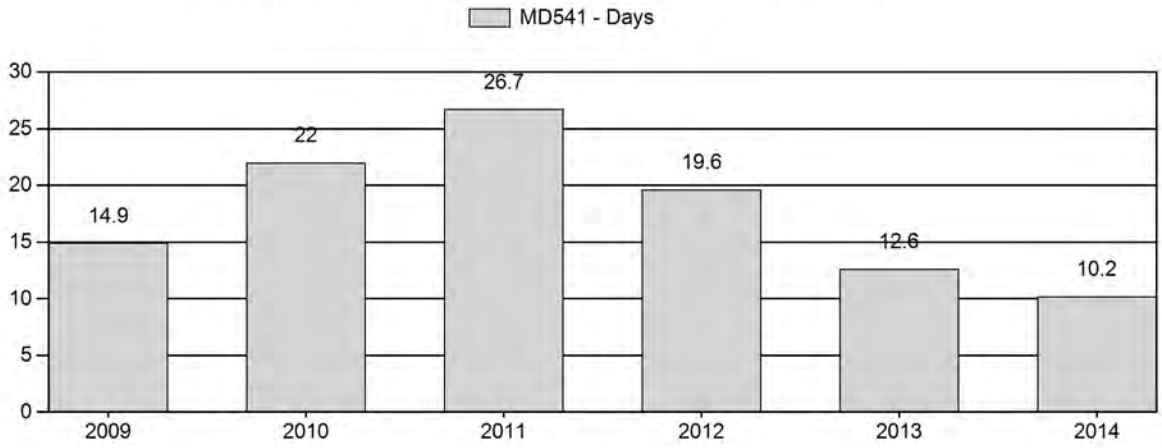
Harvest Success



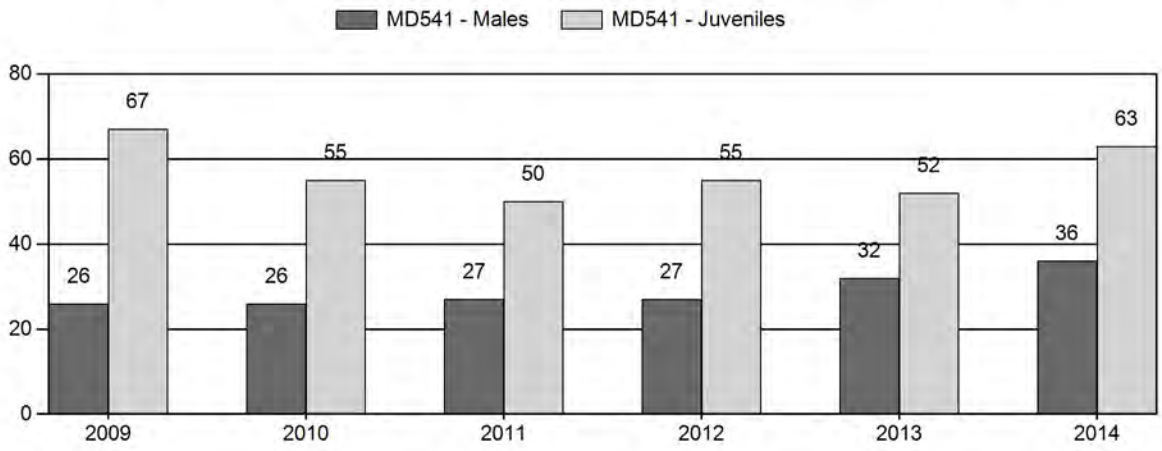
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD541 - PLATTE VALLEY

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	14,400	65	0	0	0	207	272	13%	1,047	52%	700	35%	2,019	1,053	6	20	26	± 2	67	± 4	53
2010	12,700	111	0	0	0	222	333	14%	1,265	55%	701	30%	2,299	1,094	9	18	26	± 2	55	± 3	44
2011	11,100	125	0	0	0	392	517	15%	1,895	56%	947	28%	3,359	999	7	21	27	± 1	50	± 2	39
2012	10,450	70	0	0	0	143	213	15%	794	55%	438	30%	1,445	980	9	18	27	± 2	55	± 4	43
2013	8,672	136	0	0	0	209	345	17%	1,092	55%	565	28%	2,002	937	12	19	32	± 2	52	± 3	39
2014	10,951	85	549	448	151	0	319	18%	888	50%	560	32%	1,767	964	10	26	36	± 3	63	± 4	46

Platte Valley Mule Deer (MD541)
Hunt Areas 78-81, 83 & 161
2015 Hunting Seasons

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
78	1	Oct. 1	Oct. 14	300	Limited quota	Antlered mule deer or any white-tailed deer
79	1	Oct. 1	Oct. 14	300	Limited quota	Antlered mule deer or any white
80, 83	1	Oct. 1	Oct. 14	200	Limited quota	Antlered mule deer or any white
81	1	Oct. 1	Oct. 14	200	Limited quota	Antlered mule deer or any white
161	1	Oct. 1	Oct. 14	25	Limited quota	Antlered mule deer or any white

Hunt Area	Type	Quota change from 2014
Herd Unit Total		**None**

Management Evaluation
Current Management Objective: 16,000 (12,800 – 19,200)
Management Strategy: Recreational
2014 Postseason Population Estimate: 11,000
2015 Proposed Postseason Population Estimate: 11,000
2014 Hunter Satisfaction: 62% Satisfied, 21% Neutral, 17% Dissatisfied

Mule deer in the Platte Valley herd unit are managed toward a numeric objective of 16,000. The population was estimated using a spreadsheet model developed in 2012 and updated in 2014. The herd is managed for recreation opportunity. The objective was reviewed in 2014 and reduced to a postseason population estimate of 16,000 mule deer (Appendix A).

Herd Unit Issues
Fieldwork for several Platte Valley Habitat Partnership projects was initiated during this past year in this herd unit. The University of Wyoming Cooperative Unit continued to analyze data from the Platte Valley sightability survey evaluation and telemetry projects. A meeting was held in February, in Saratoga, to update the public about Platte Valley Mule Deer Mule Deer Plan accomplishments.

Efforts to reduce predators of mule deer in the Platte Valley were continued during this period. Carbon County Predator Management District completed the second year of a 3-year coyote removal project.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit. No significant prolonged periods of extreme heat or cold temperatures were observed or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on mule deer. Mild fall temperatures and lack of persistent snows allowed for mule deer to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been over utilized. For specific meteorological information for the Platte Valley herd unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat

Habitat conditions improved in 2014 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. 2012 has been recognized as one of the worst droughts on record, and annual growth of key forages monitored finally returned to levels seen prior to 2012. Utilization rates of key winter range shrubs documented in the spring of 2014 was within acceptable use limits in most areas. Shrub habitats receiving treatments thru prescribed fire or mowing continue to outperform areas not receiving treatment from an overall production standpoint.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie. The vast majority of shrub habitats are still in need of treatment to improve nutritive content and overall leader production potential.

Shrub communities within the Laramie Region that are annually assessed by game wardens, wildlife biologists, and terrestrial habitat biologists, include: true mountain mahogany, antelope bitterbrush, skunk brush sumac, big sagebrush, and four-wing saltbush. A majority of these transects were established approximately 12–13 years ago. Transects were established for several different reasons, including: measuring habitat response prior to or following treatments (i.e. prescribed fire, wildfire, mowing), concern over historic or current domestic livestock or wild ungulate utilization levels, selection of, "Representative habitats," utilized by wildlife on identified winter ranges, and to compare present results with historic data sets.

Field Data
The 2013 Platte Valley Herd Unit postseason classification ratios were 36 bucks and 63 fawns/100 does; based on an adequate sample of 1,767 mule deer. The buck ratio increased 11% in 2014. This increase was attributed to the combination of both a conservative limited quota hunting season and greater over winter survival than in recent years. The observed fawn ratio at 63 fawns/100 does was 17% greater than the previous year. A mild winter and timely precipitation contributed to providing improved habitat conditions and increased nutrition for mule deer.

Harvest Data
2014 marked the second year for limited quota hunting in the Platte Valley herd unit. Each hunt area was prescribed a license quota specific to that hunt area. The same quotas from 2013 were retained in 2014 as they had permitted harvest success to attain the PVMDI Mule Deer Plan goal of at least 40%. A total of 934 active licensed hunters harvested 515 bucks and 13 does. Overall harvest success increased from 44% in 2013 to 57% in 2014 and buck harvest increased 11% to 55%. Similarly to the 2013 harvest rate, the 2014 harvest rate was attributed to the increased survival rates, a season length of 14-days, and perhaps most importantly, a reasonable alignment of hunter numbers with the current mule deer resource. The increased harvest success rate translated into an increase in the number hunters who selected a harvest survey satisfaction rating of satisfied, or very satisfied. Hunter satisfaction increased from 57% in 2013, to 62% in 2014.

Harvest rates of yearling bucks increased in 2014. Yearling bucks made up 26% of the buck harvest. This was an increase of 14% over 2013. Field checked harvest data from previous years indicated on average, greater than 25% of the buck harvest consisted of yearling bucks. The increased number of yearling bucks observed in 2014 harvest was attributed to more yearlings being conspicuously available due to increased survival for the 2013 fawn cohort due to the mild over-winter conditions.

Population
We continued the use of the TSJ,CA spreadsheet model in 2014. This model provided the balance of allowing juvenile survival rates to be optimized for alignment with observed population dynamics, while maintaining a constant survival rate for adult mule deer in model simulations. The TSJ,CA model also offered the best AICc score of the suite of spreadsheet models. TSJ,CA model aligned very well with abundance estimates for this herd unit and corroborated with the observations from field managers and the public.

We rated this model as fair, and biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

Management Summary

In 2015, the limited quota licenses numbers and season length will remain the same as in 2014. This hunting season framework will continue to support the goals identified in the Platte Valley Mule Deer Plan. Overall, hunters and other stakeholders appear to be very satisfied with the improvements we have made in mule deer management in this herd unit. Predator management and habitat improvement projects will also continue in 2015 as means to improve and sustain mule deer and their habitat in the Platte Valley herd unit. In 2016, we will conduct an in depth collaborative review and analysis of the Platte Valley Mule Deer Plan, including the limited quota hunting season framework.

Literature Cited

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

Newman, J. 1968. Deer Distribution and Movement Studies. Final Report. Wyoming Game and Fish Department, Cheyenne.

Strickland, M. D. 1975. An investigation of the factors affecting the management of a migratory mule deer herd in southeastern Wyoming – the Snowy Range. Ph.D. Dissertation, University of Wyoming, Laramie. 171 pp.

Yost, J. 2009. North Park Deer Movement and Distribution Study Update - March, 2009. Colorado Division of Wildlife, Steamboat Springs. 4 pp.

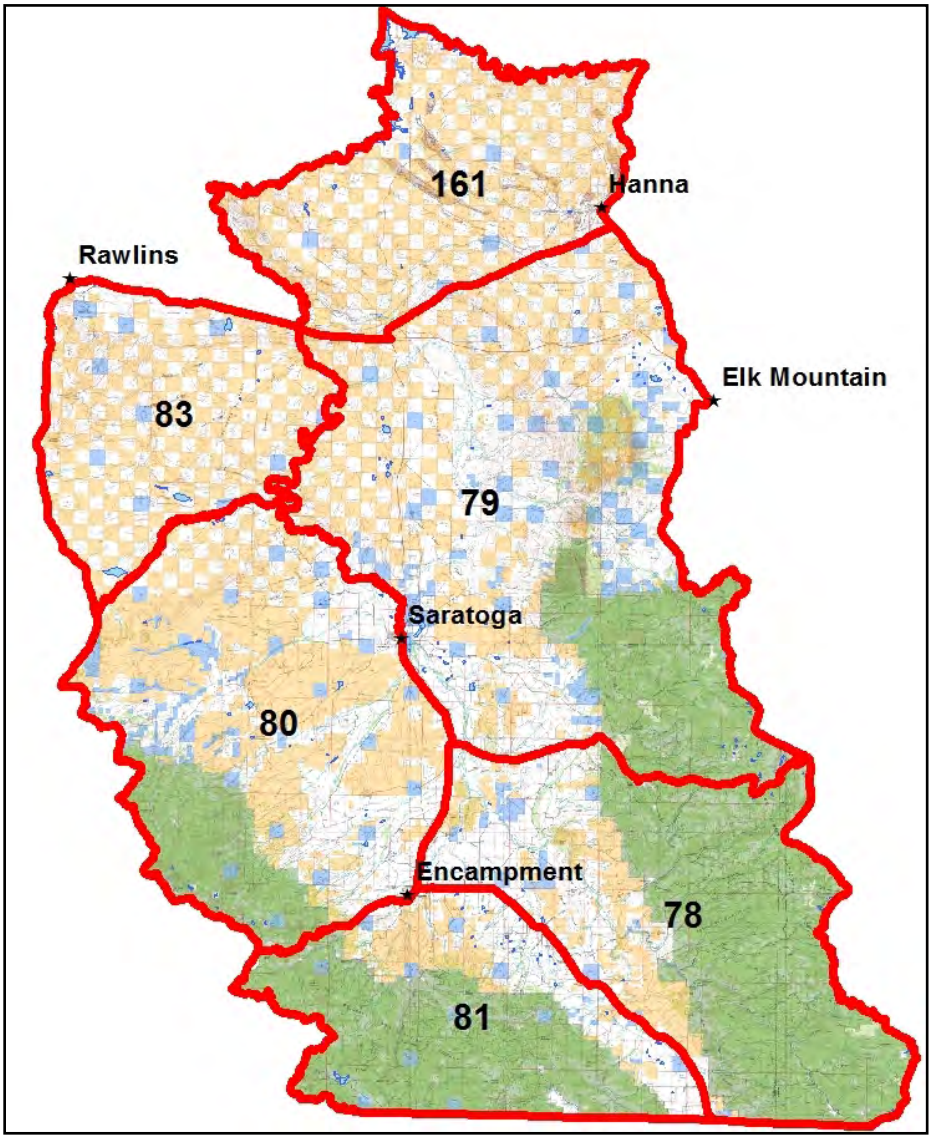
Wyoming Game and Fish Dept. 2012. 2012 v.110512 Platte Valley Mule Deer Plan. Wyoming Game and Fish Department, Cheyenne. 90 pp.

2014 PLATTE VALLEY MULE DEER HERD UNIT AND POPULATION OBJECTIVE REVIEW

Prepared by: Will Schultz, Saratoga Wildlife Biologist

The Platte Valley mule deer herd unit is located in south central Wyoming and consists of deer Hunt Areas 78, 79, 80, 81, 83, and 161 (Figure 1). Hunt Areas 78 and 79 are located on the west slope of the Snowy Range, and Hunt Areas 80 and 81 are located on the east slope of the Sierra Madre Range, in the Medicine Bow Mountains. Hunt Areas 83 and 161 are located immediately adjacent in the northern portion of the herd unit and contain drier and less productive habitats. Hunt Areas 83 and 161 are included in the herd unit because mule deer that summer in high elevation mountain habitat in the southern portion of the herd unit migrate to winter ranges in these hunt areas during winter (Ward et al. 1976).

Figure 1. A map of the Platte Valley mule deer herd unit and hunt areas located in south central Wyoming.



The Platte Valley herd unit contains 7,045 km^2 of delineated seasonal mule deer range. Elevations range from 1,951 m along the North Platte River to just over 3,658 m at Medicine Bow Peak. Habitat types include alpine meadows, subalpine and montane forests, mountain shrub, sagebrush-grasslands, grasslands, cottonwood riparian, and agricultural croplands. Landownership in the herd unit is a mixture consisting of 41% private, 28% US Forest Service, 25% Bureau of Land Management, 5% State Land and Investment Board, and 1% Wyoming Game and Fish Commission.

POPULATION OBJECTIVE REVIEW

Wyoming Game and Fish Department (WGFD) uses postseason population objectives as a guide for mule deer management at the herd unit level. The postseason population objective is the desired number of mule deer remaining in the herd unit after the annual hunting season has been completed. Generally, if the population estimate is above the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will increase harvest and reduce the number of mule deer toward the population objective. Conversely, if the population estimate is below the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will decrease harvest and increase the number of mule deer toward the population objective.

An actual count of all mule deer in a herd unit would be, for all practical purposes, impossible to complete. Therefore, WGFD develops herd unit population estimates using a computer-based population model. Data collected annually through hunter-harvest surveys and postseason mule deer sex and age classification surveys are incorporated into the population models. The population estimate produced by the computer-based population model is used to determine where the herd unit's mule deer population is at in relation to the established population objective.

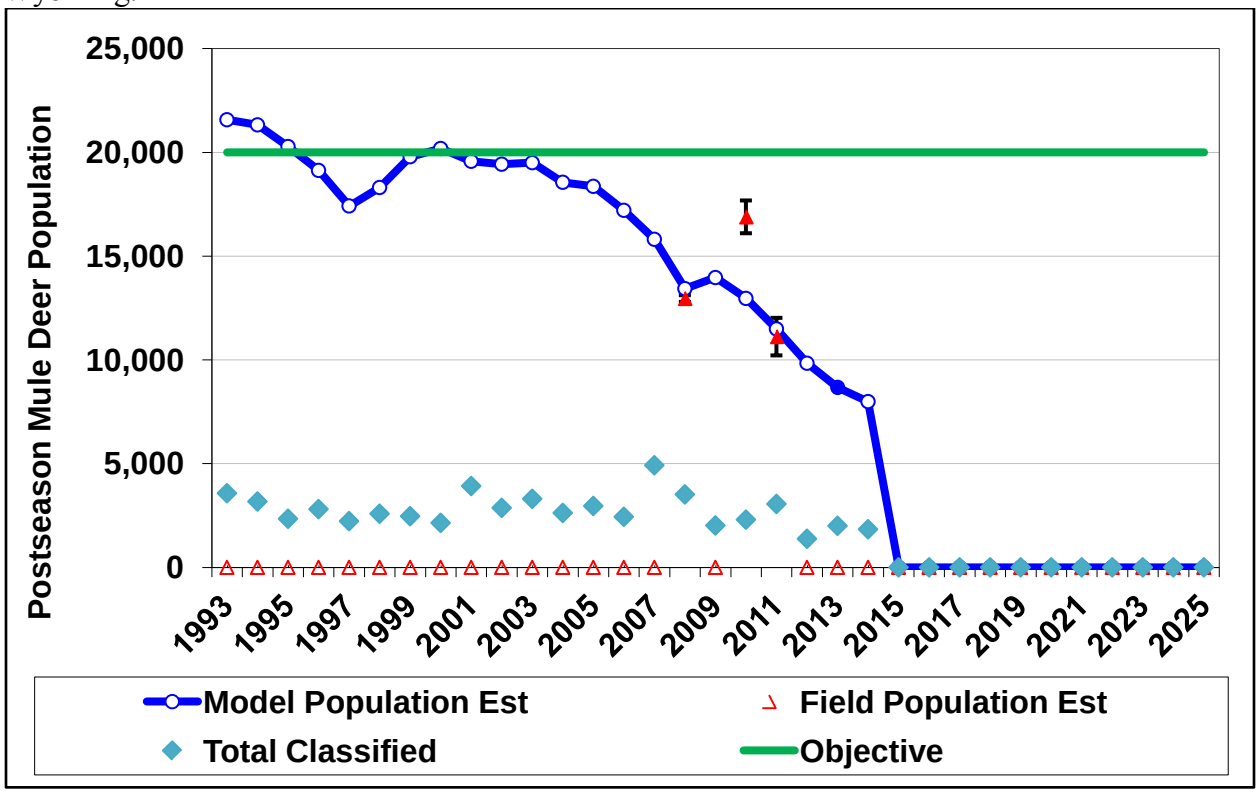
Annual population estimates for the Platte Valley herd unit are currently produced using a computer-based, spreadsheet population model (Morrison 2012). Hunter-harvest surveys and postseason mule deer sex and age clasification survey sample sizes have been adequate for producing estimates with acceptable 80% confidence intervals. Retrospective comparisons of population estimates produced by the spreadsheet model are lower than those previously reported using the POP-II population model. Generally, the spreadsheet model's estimates are considered more accurate than the previous POP-II population model. Additionally, WGFD has conducted 3 mule deer sightability surveys (Unsworth et. al.1999) in this herd unit. Abundance estimates from these sightability surveys were incorporated into the spreadsheet model to improve the population estimate's accuracy.

Postseason mule deer population objectives for the Platte Valley herd unit have been adopted and subsequently changed following periodic reviews of both biological and social considerations. These considerations have included, but were not limited to: changes in the herd unit boundary delineation, changes in quantity and quality of habitat, sportsmen desires, and landowner desires/tolerance.

A postseason population objective of 20,000 mule deer was first established for the Platte Valley herd unit in the late 1970s. In 1982, the population objective was decreased to 15,000 mule deer due to the removal of the South Ferris area (Hunt Area 86) from the herd unit. It was returned to 20,000 again in 1987 because stakeholders desired seeing the population maintained at what was estimated at that time to be approximately 20,000 mule deer. The population objective has been retained at 20,000 since 1987.

The 2013 postseason population estimate was 8,700 mule deer. Since 2004, the annual population estimates have declined precipitously in trend (Figure 2). Although there are many factors believed to be contributing cumulatively to the decline, the direct and indirect impacts from severe winters and drought are considered to be the most significant factors.

Figure 2. 1993-2013 Platte Valley herd unit postseason mule deer population estimates, Wyoming.



CURRENT MANAGEMENT STRATIGIES BY HUNT AREA

All hunt areas in the Platte Valley herd unit are managed under the recreational management strategy. This strategy directs WGFD to manage harvest opportunity to maintain 20-29 bucks/100 does in the herd unit postseason.

In 2012, WGFD collaboratively developed the Platte Valley Mule Deer Plan (WGFD 2012) and subsequently began to implement additional strategies identified in this plan to improve the quality of the hunting experience in this herd unit. These strategies included: a.) changing

hunting season structure from traditional general seasons to limited quota seasons; b.) set a goal to achieve a buck harvest success rate of 40%; c.) set a goal of at least 20% of field-checked harvested bucks meeting an antler spread of 24" or more; and d.) set a goal of at least 60% of the harvest survey respondents replying they were "satisfied" or "very satisfied" with their hunting experience. These additional management strategies will be reviewed collaboratively in 2016 to determine if they have improved the quality of the hunt to a satisfactory level, and whether or not to continue their use.

RECOMMENDED HERD UNIT OBJECTIVE AND MANAGEMENT STRATIGIES BY HUNT AREA

WGFD recommends the population objective for the Platte Valley herd unit be reduced to a level which is presently considered both biologically achievable, and sustainable. We recommend reducing the postseason population objective from 20,000 mule deer to 16,000 mule deer. We also recommend maintaining the recreational management strategy for all hunt areas in the Platte Valley herd unit.

Two years ago, WGFD began the long overdue task of reviewing objectives for all big game herd units in Wyoming, to be completed over the course of the next 5-years. At the root of this effort was a genuine need to update the objectives with goals which were both biologically achievable, and sustainable. Much has changed since many of these herd unit objectives were last reviewed. Most notably, changes in the ability of the habitat to sustain the population levels which had been previously met in many herd units.

An indicator of the habitat's inability to continue to support mule deer population levels previously observed in many herd units has been reduced recruitment rates for mule deer. A declining trend in recruitment has been documented in almost every herd unit in Wyoming, as well as in many areas across the west. This declining trend has been primarily attributed to changes in the ability of habitat to provide the specific forage, cover, and security required by mule deer. Changes in seral stages of vegetative communities to less productive stages, severe drought which has reduced annual forage production, and the conversion of habitat to residential and energy development, all have cumulatively reduced habitat for mule deer.

While the recommended population objective is 20% less than the current objective of 20,000 mule deer, 16,000 mule deer is 46% greater than the current population estimate of 8,700 mule deer. In an effort to halt the mule deer decline and reverse the population trend, WGFD has recently implemented several efforts which should enhance the ability of the Platte Valley herd unit to sustain mule deer. WGFD has begun to implement several landscape scale habitat improvement projects under the Platte Valley Habitat Partnership (WGFD 2013). WGFD has supported efforts to reduce large carnivore and predator populations in this herd unit in an attempt to increase mule deer recruitment. While the benefits of these and other efforts may not be immediately realized, we believe they will assist in the recovery of mule deer.

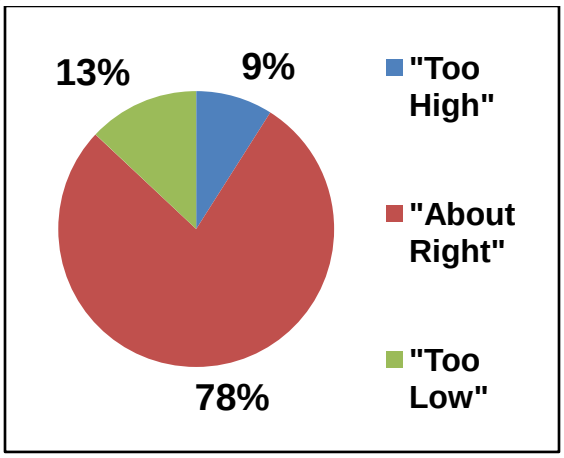
LANDOWNER, AGENCY, AND PUBLIC INVOLVEMENT

WGFD made a concerted effort to provide stakeholders with an opportunity to be involved in the review of the Platte Valley mule deer herd unit population objective, and to provide comment on the recommendations. Mule deer are a species of great concern for many of the stakeholders who participated in the review process. There was almost a unanimous desire by all stakeholders during this process to see the current number of mule deer (estimate = 8,700) increased. However, opinions varied on what population objective should be recommended for a future management goal.

Landowner Involvement

In February of 2014, a letter describing objective review process and a survey were sent to all landowners (n=123) who owned at least 160 acres in the Platte Valley herd unit (ATTACHMENT A). We received completed surveys from 36 landowners; for a return rate of 29% (ATTACHMENT B). Seventy-eight percent (78%) of the landowners indicated they thought the current population objective was "About Right." Nine percent (9%) of the landowners indicated the population objective was, "Too High," (Figure 3.)

Figure 3. Platte Valley herd unit landowner survey responses to the question, "Do you think the population objective of 20,000 mule deer is:"



In May of 2014, WGFD sent a postcard to these same landowners describing the recommendation to reduce the population objective from 20,000 mule deer to 16,000 mule deer (ATTACHMENT C). The postcard included an invitation to the landowners to attend upcoming objective recommendation meetings. The postcard also listed an email address where landowners could send their comments electronically. No comments were received from the landowners.

Agency Involvement

In May of 2014, WGFD met with representatives from the US Forest Service (Wendy Haas - Medicine Bow/Routt National Forest); Bureau of Land Management (Heath Cline - Rawlins Field Office); USDA/Natural Resource Conservation Service (Mark Shirley - Saratoga District); and the Saratoga, Encampment, Rawlins Conservation District (Jack Berger and Joe Parsons). WGFD presented a review of the Platte Valley herd unit population objective and the

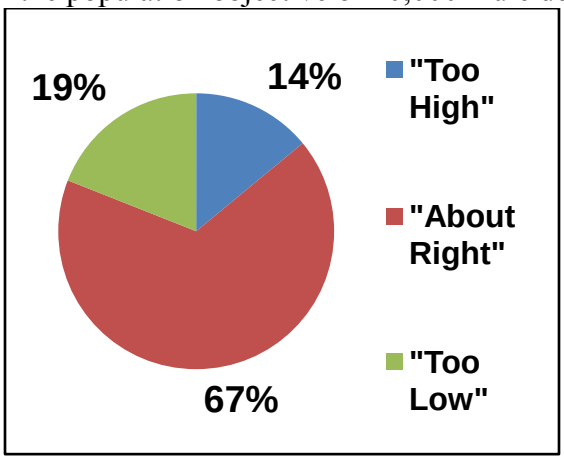
recommendation. This discussion lasted approximately 2 hours. Agency personnel appeared to be supportive of the recommendation.

A letter was received from the Carbon County Predator Management District Board expressing they did not support the recommendation to reduce the population objective from 20,000 mule deer to 16,000 mule deer (ATTACHMENT D).

Public Involvement

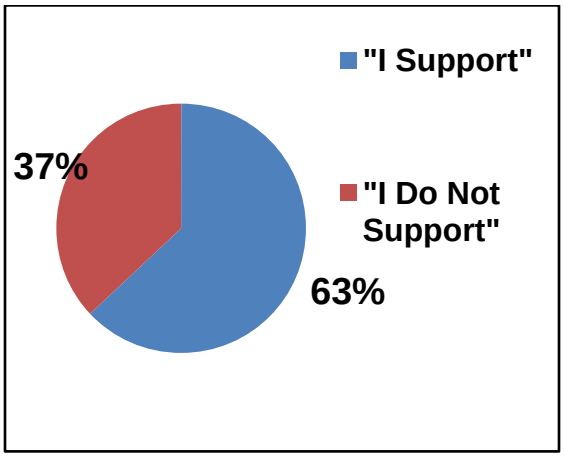
In March of 2014, population objective review meetings were held in conjunction with season-setting public information gathering meetings in Cheyenne, Laramie, and Saratoga. Meeting attendees were asked to fill out sportsperson surveys regarding their attitudes towards current mule deer numbers and the current population objective (ATTACHMENT E). A total of 110 people attended these meetings and we received 21 completed surveys, for a return rate of 19% (ATTACHMENT F). Sixty-seven percent (67%) of the survey respondents indicated they thought the current population objective was "About Right," and 14% thought the population objective was, "Too High," (Figure 4.)

Figure 4. Platte Valley herd unit public objective review meeting attendee survey responses to the question, "Do you think the population objective of 20,000 mule deer is:"



In May of 2014, population objective recommendation meetings were held in Cheyenne, Laramie, Saratoga, and Wheatland. Meeting attendees were asked to fill out surveys indicating whether or not they supported the proposed population objective recommendation. A total of 21 people attended these 4 meetings and we received 8 completed surveys; for a return rate of 38% (ATTACHMENT G). Sixty-three percent (63%) of the survey respondents indicated they supported the recommendation to reduce the population objective from 20,000 mule deer to 16,000 mule deer (Figure 5).

Figure 5. Platte Valley herd unit public objective reccomendation meeting attendee survey responses to the statement, "Propose to decrease the population objective from 20,000 to 16,000 mule deer for the next 5-years."



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Unsworth, J. W., F. A. Leban, E. O. Garton, D. J. Leptich, and P. Zager. 1999. Aerial Survey: User's Manual. Electronic Edition. Idaho Department of Fish & Game, Boise, Idaho. USA.

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Wyoming Game and Fish Department [WGFD]. 2012. 2012 v.110512 Platte Valley Mule Deer Plan. Wyoming Game and Fish Department, Cheyenne. USA. 90 pp.

_____. 2013. Platte Valley Habitat Partnership's (PVHP) Mule Deer Habitat Plan, May 22, 2013. Wyoming Game and Fish Department, Cheyenne. USA. 99 pp.

14 March 2014

Dear Landowner,

The Wyoming Game and Fish Department (WGFD) is seeking your assistance in the future management of big game wildlife in your area. During the spring of 2014, WGFD will review the herd unit management objectives for several big game herd units such as Platte Valley mule deer, Elk Mountain pronghorn, and Big Creek pronghorn. Enclosed in this letter you will find a short survey for each herd unit your property is located in, and postage-paid return envelope. Please complete the survey questions, provide additional comments if you desire, and mail the survey in the return envelope.

The herd unit management objective is the "benchmark" which WGFD manages big game wildlife towards. For most big game herd units in Wyoming, WGFD manages big game wildlife towards a numeric management objective, usually identified as a specific postseason population estimate.

Many of Wyoming's big game wildlife rely on habitat located on private lands. Therefore, landowner opinions on herd unit management objectives are important to WGFD. The comments we receive from your completed surveys will be used in part to formulate WGFD recommendations for the future herd unit management objectives. Changes in the herd unit management objective could result in increasing harvest opportunities to decrease big game numbers, or conversely, changes could result in reducing harvest opportunities in order to increase big game numbers.

We also would like to invite you to one of the upcoming public meetings to discuss herd unit management objectives. Locations and dates are listed below:

- Saratoga Town Hall, March 26, 7:30 p.m.
- Laramie Fire Hall #3, March 27, 7:30 p.m.

Thank you for taking the time to share your thoughts and opinions with us. We hope to see you at one of the upcoming meetings. If you have any questions please contact Will Schultz at 307-326-3020. We look forward to receiving your survey and working with you on the future management of Wyoming's Wildlife.

Sincerely,

Will Schultz
Saratoga Wildlife Biologist
WS/ws

Platte Valley Mule Deer Herd Unit

Deer Hunt Areas: 78, 79, 80, 81, 83, & 161
Management Objective: 20,000 mule deer
2013 Postseason Population Estimate: 8,800 mule deer
Last Management Objective Review: 1987

1. Please circle the hunt area where the majority of your property is located (see map on back):

   Hunt Area 78 79 80 81 83 161

2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (current estimate is 8,800 mule deer):

   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many mule deer in the herd unit
   ❑ There are too few mule deer in the herd unit
   ❑ Other _____

4. Do you think the herd unit management objective of 20,000 mule deer is:

   ❑ Too high
   ❑ Too low
   ❑ About right

5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?

   ❑ Yes
   ❑ No
   ❑ I am neither for or against

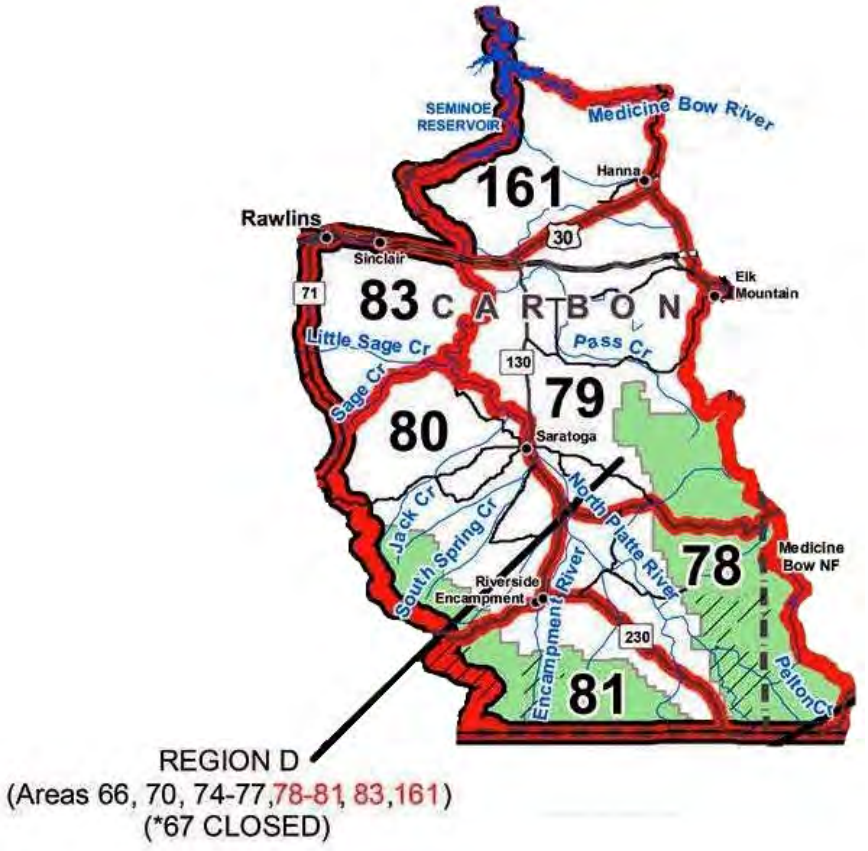
6. Would you support dividing Hunt Area 161 along the Big Ditch? This would result in the southern portion of Hunt Area 161 being combined into Hunt Area 79 and the northern portion of Hunt Area 161 being combined into Hunt Area 70, for future hunting seasons.

   ❑ Yes
   ❑ No
   ❑ I am neither for or against

SURVEY IS CONTINUED ON BACK

7. If you have additional comments, please share them in the space below:

If, in the future, you would like to be contacted through email please provide your name and email address below.



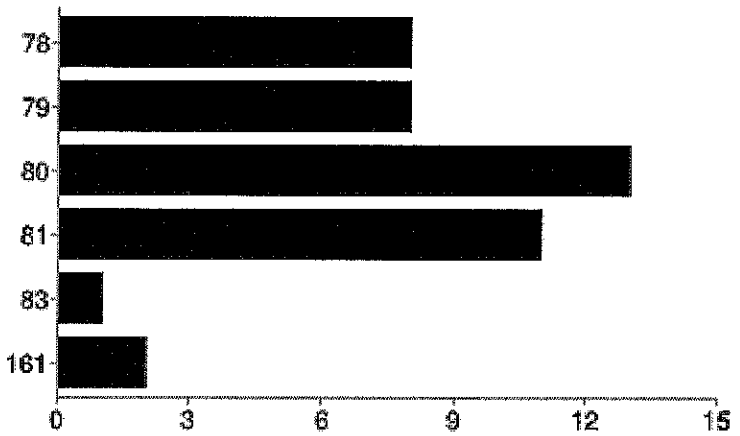
THANK YOU for your participation!

36 responses Platte Valley MD

View all responses Publish analytics

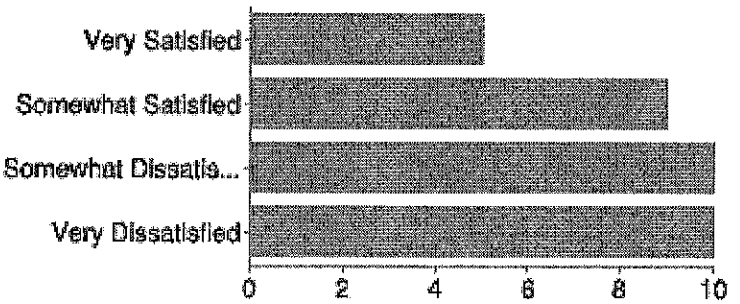
Summary

Please circle the hunt area where the majority of your property is located



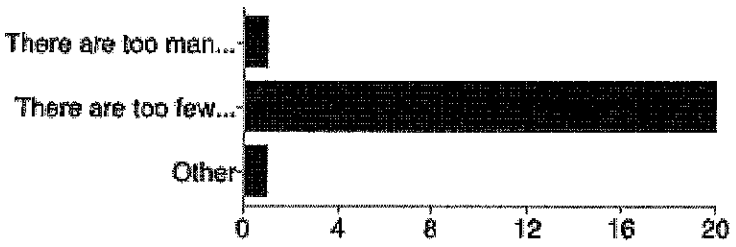
78	**8**	19%
79	**8**	19%
80	**13**	30%
81	**11**	26%
83	**1**	2%
161	**2**	5%

How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit



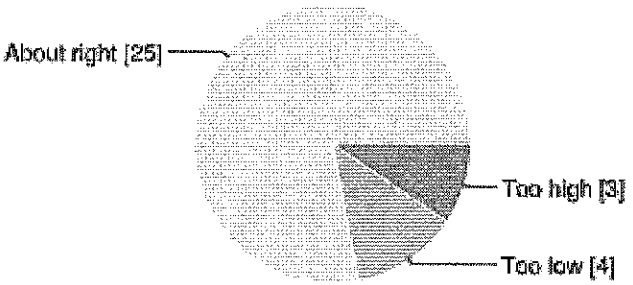
Very Satisfied	**5**	15%
Somewhat Satisfied	**9**	26%
Somewhat Dissatisfied	**10**	29%
Very Dissatisfied	**10**	29%

3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why



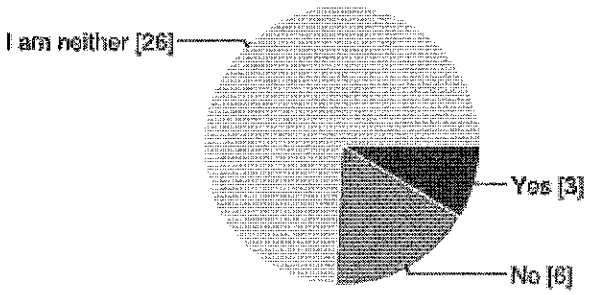
There are too many mule deer in the herd unit	**1**	5%
There are too few mule deer in the herd unit	**20**	91%
Other	**1**	5%

Do you think the herd unit management objective of 20,000 mule deer is



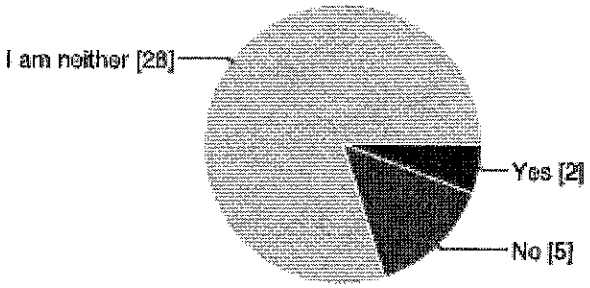
Too high	**3**	9%
Too low	**4**	13%
About right	**25**	78%

Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons



Yes	**3**	9%
No	**6**	17%
I am neither for or against	**26**	74%

Would you support dividing Hunt Area 161 along the Big Ditch? This would result in the southern portion of Hunt Area 161 being combined into Hunt Area 79 and the northern portion of Hunt Area 161 being combined into Hunt Area 70, for future hunting seasons.

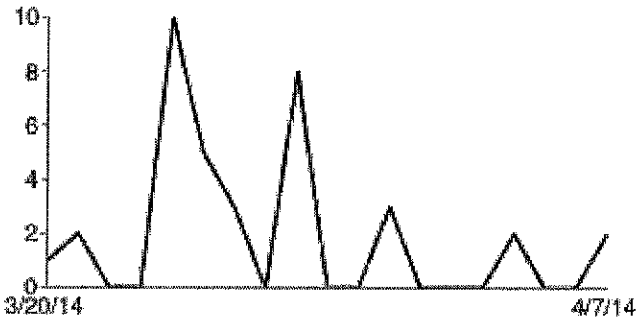


Yes	**2**	6%
No	**5**	14%
I am neither for or against	**28**	80%

Comments

We trust your judgement on this! **I hope the G&F continues to search for the reasons for the deer population decline.** **In reference to question 5 & 6: Why? For what reason?: And why was the last management objective review done in 1987?!!?! Why are you always 5-10 years behind in your management goals! This may be the reason why WY G&F needs to be more pro-active on their management and in a more timely fashion. By the time G&F reacts it is usually too late. Poor game management!** **Probably better to keep 79 separate.** **As an out of state property owner (the property was a family homestead) Conservation of water is my primary concem. Thank you. -Shirlee Bumpass **I believe at the present time you(G&F) are trying to improve these herd numbers & quality, Keep up the good work!** **Like to see the white tail different than mule deer so numbers are not completely destroyed.** **Will: We had quite a few nice bucks in the yard in November. Not any where near the numbers during the winter that we had 10 years ago. We do not see as many but we will have 6-8 pairs during the summer. -Dick Gray PS-Back in May** **Too many hunter's and Mountain Lions.** **I think the G&F does a good job managing all our wildlife.** **I think hunting pressure is too high quota system would provide a better hunting experience and allow for more trophy animals. The lower county north of Sage Creek is better winter habitat and should not be managed the same as higher elevation areas. Good Luck** **How do wintering numbers of mule deer in Platte Valley translate to summer numbers in the higher elevations of hunt areas 80 & 81? (The summer numbers on our property seem very low)** **Don't understand your antelope policy. Have resident herd of 75+or- at all times and I have no say in who I can allow in to hunt them. -DHanson PO Box 388 Saratoga** **The mule deer are being out-competed by the elk. Reduce the elk population & the mule deer population will increase.**

Number of daily responses



Meeting Dates

Cheyenne, May 6th, 6:00 p.m., WGFD Office Building, Elk Room

Laramie, May 8th, 6:00 p.m., Fire Hall #3

Saratoga, May 22th, 6:00 p.m., Town Hall

Herds Covered

Big Creek Pronghorn
(Hunt Area 51)

Elk Mountain Pronghorn
(Hunt Area 50)

Platte Valley Mule Deer
(Hunt Areas 78,79,80,81,83,161)

WGFD Public Meeting

Wyoming Game and Fish Department wants to invite you to attend one of the upcoming meetings to discuss herd unit management objective proposals. Earlier this year, we held meetings in these communities asking for your input. Now, we would like to present to you the proposals we developed with the help of your earlier input:

- Recommend increasing the management objective to 800 pronghorn from 600 pronghorn for the Big Creek Pronghorn Herd Unit.
- Recommend maintaining the current management objective of 5,000 pronghorn for the Elk Mountain Pronghorn Herd Unit.
- Recommend decreasing the management objective to 16,000 mule deer from 20,000 mule deer for the Plate Valley Mule Deer Herd Unit.

Your input at these upcoming meetings is important to us! Recommendations, and your input from these meetings, will be presented to the Wyoming Game and Fish Commission in July

For more information please contact:
Saratoga Wildlife Biologist, Will Schultz, 307-326-3020
Contact us via email at wgflaramiecomments@wyo.gov

May 21, 2014

Carbon County Predator Management District

814 Illinois Street

Rawlins, WY 82301

Wyoming Game and Fish Department

Laramie Regional Office

528 S. Adams

Laramie, WY 82070

Today at our regular board meeting we discussed the proposal to decrease the Platte Valley Mule Deer objective from 20,000 to 16,000. In light of the predator control work we have done on the Big Creek antelope project, and the ongoing Platte Valley mule deer fawning area project we are not in favor of the reduction. The Big Creek project has had very favorable results (in fact allowing for a proposed increase of the area 51 antelope objective) and we are hoping that the mule deer project will also be successful enough that it can be expanded. We feel that it is pre-mature to reduce the objective on mule deer at this time. There has been a huge effort to increase this population and a decrease in the objective does not send the proper message. The mule deer is a very important component to the economics of the Platte Valley and we would like to keep the objective at the current level of 20,000.

Roger Cox

Roger Cox, President

Sportsperson Survey

Platte Valley Mule Deer Herd Unit

1. Please circle the hunt area where you spend the majority of your time hunting mule deer:
   Hunt Area 78 79 80 81 83 161 elsewhere

2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (current estimate is 8,800 mule deer):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

   ❑ There are too many mule deer in the herd unit
   ❑ There are too few mule deer in the herd unit
   ❑ Other _____

4. Do you think the herd unit management objective of 20,000 mule deer is:

   ❑ Too high
   ❑ Too low
   ❑ About right

5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

6. Would you support dividing Hunt Area 161 along the Big Ditch? This would result in the southern portion of Hunt Area 161 being combined into Hunt Area 79 and the northern portion of Hunt Area 161 being combined into Hunt Area 70, for future hunting seasons.
   ❑ Yes
   ❑ No
   ❑ I am neither for or against

Elk Mountain and Big Creek Pronghorn Herd Unit

7. Please circle the hunt area where you spend the majority of your time hunting pronghorn:
   Hunt Areas 50 51 elsewhere

8. How satisfied are you with the current number of pronghorn in the **Elk Mountain herd unit** (current estimate is 3,800 pronghorn):
   ❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

SURVEY IS CONTINUED ON BACK

9. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

10. Do you think the herd unit management objective of 5,000 pronghorn in the **Elk Mountain herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

11. How satisfied are you with the current number of pronghorn in the **Big Creek herd unit** (current estimate is 800 pronghorn):

❑ Very Satisfied ❑ Somewhat Satisfied ❑ Somewhat Dissatisfied ❑ Very Dissatisfied

12. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.

- ❑ There are too many pronghorn in the herd unit
- ❑ There are too few pronghorn in the herd unit
- ❑ Other _____

13. Do you think the herd unit management objective of 600 pronghorn in the **Big Creek herd unit** is:

- ❑ Too high
- ❑ Too low
- ❑ About right

Comments - If you have additional comments, please share them in the space below:

_____

_____

_____

_____

_____

_____

_____

If, in the future, you would like to be contacted through email please provide your name and email address below.

_____

THANK YOU for your participation!

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
1. Please circle the hunt area where you spend the majority of your time hunting mule deer:			
78	4	4	**8**
79	4	4	**8**
80	4	4	**8**
81	2	3	**5**
83			**0**
161			**0**
Elsewhere	1	3	**4**
2. How satisfied are you with the current number of mule deer wintering in the Platte Valley herd unit (8,800 mule deer):			
Very Satisfied			
Somewhat Satisfied		1	**1**
Somewhat Dissatisfied	3	4	**7**
Very Dissatisfied	4	7	**11**
3. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.			
Too Many			**0**
Too Few	8	12	**20**
Other			**0**
4. Do you think the herd unit management objective of 20,000 mule deer is:			
Too High	0	3	**3**
Too Low	1	2	**3**
About Right	7	7	**14**
5. Would you support combining Hunt Area 80 and Hunt Area 83 into one hunt area for future hunting seasons?			
Yes	2	4	**6**
No	2	2	**4**
Neither	4	6	**10**

SPORTSPERSON SURVEY	9 Surveys Saratoga PIGM	12 Surveys Lar & Chey PIGMs	21 Surveys ALL PIGMs
6. Would you support dividing Hunt Area 161 along the Big Ditch?			
Yes	3	6	**9**
No	0		**0**
Neither	5	6	**11**

Herd Unit Management Objective Proposal Meeting
Saratoga Town Hall – 6:00 PM, 22 May 2014

Platte Valley Mule Deer

Current population estimate = 8,800 mule deer
Propose to decrease the management objective from 20,000 to 16,000 mule deer for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Elk Mountain Pronghorn

C*urrent population estimate = 3,800 pronghorn*
Propose to maintain the management objective of 5,000 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Big Creek Pronghorn

Current population estimate = 800 pronghorn
Propose to increase the management objective from 600 to 800 pronghorn for the next 5-years.

_____ I support this proposal
_____ I do not support this proposal

Comments: _____

_____

_____

_____

_____

_____

_____

_____

INPUT	
Species:	MULE DEER
Biologist:	WILL SCHULTZ
Herd Unit & No.:	PLATTE MD541
Model date:	02/19/15

MODEL EVALUATION: FAIR

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	590	599	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	258	287	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	180	275	☑ TSJ,CA Model	*Best fit & AICc score, juvenile survival constrained to* ≥0.40 - ≤0.70

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1993				5953	3415	14099	23467	5925	2276	13379	21580	20000
1994				7250	3018	11962	22230	7250	2118	11962	21330	20000
1995				6675	3156	11085	20916	6675	2524	11085	20283	20000
1996				6378	3368	10264	20010	6378	2489	10264	19131	20000
1997				5150	3280	9543	17974	5150	2722	9543	17415	20000
1998				5587	3995	9489	19071	5587	3225	9489	18301	20000
1999				6928	4553	9599	21079	6928	3255	9599	19781	20000
2000				7023	5046	10156	22226	7023	2994	10156	20173	20000
2001				5934	4794	10563	21290	5934	3073	10563	19570	20000
2002				6740	4552	10585	21877	6701	2564	10161	19426	20000
2003				6580	4411	10530	21521	6512	2889	10095	19495	20000
2004				5956	4606	10411	20973	5937	2662	9949	18548	20000
2005				6119	4222	10092	20433	6093	2468	9787	18348	20000
2006				5411	4121	10016	19547	5349	2507	9334	17190	20000
2007				4761	3774	9273	17808	4703	2443	8663	15809	20000
2008	12955	163		3989	2908	7919	14816	3940	1916	7573	13429	20000
2009				4949	2922	7479	15351	4926	1666	7368	13960	20000
2010	16892	790		3983	2696	7288	13967	3975	1930	7173	13078	20000
2011	11120	905		3279	2349	6573	12201	3275	1780	6553	11607	20000
2012				3289	2088	5933	11311	3286	1668	5883	10837	20000
2013				2920	2252	5646	10818	2920	1825	5643	10387	20000
2014				3473	2492	5567	11532	3473	1925	5553	**10951**	16000
2015				3449	2558	5480	11487	3449	2063	5469	10981	16000
2016												16000
2017												16000
2018												16000
2019												16000
2020												16000
2021												16000
2022												16000
2023												16000
2024												16000
2025												16000

Survival and Initial Population Estimates

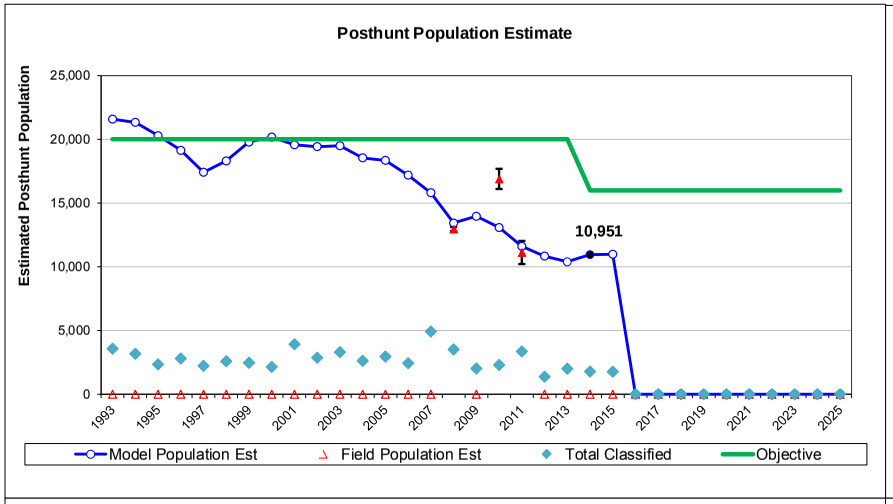
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.81		
1994	0.40			0.81		
1995	0.40			0.81		
1996	0.40			0.81		
1997	0.70			0.81		
1998	0.70			0.81		
1999	0.70			0.81		
2000	0.68			0.81		
2001	0.70			0.81		
2002	0.70			0.81		
2003	0.70			0.81		
2004	0.70			0.81		
2005	0.70			0.81		
2006	0.66			0.81		
2007	0.40			0.81		
2008	0.70			0.81		
2009	0.55			0.81		
2010	0.40			0.81		
2011	0.40			0.81	0.73	0.06
2012	0.55			0.81	0.79	0.05
2013	0.70			0.81		
2014	0.58			0.81		
2015	0.58			0.81		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

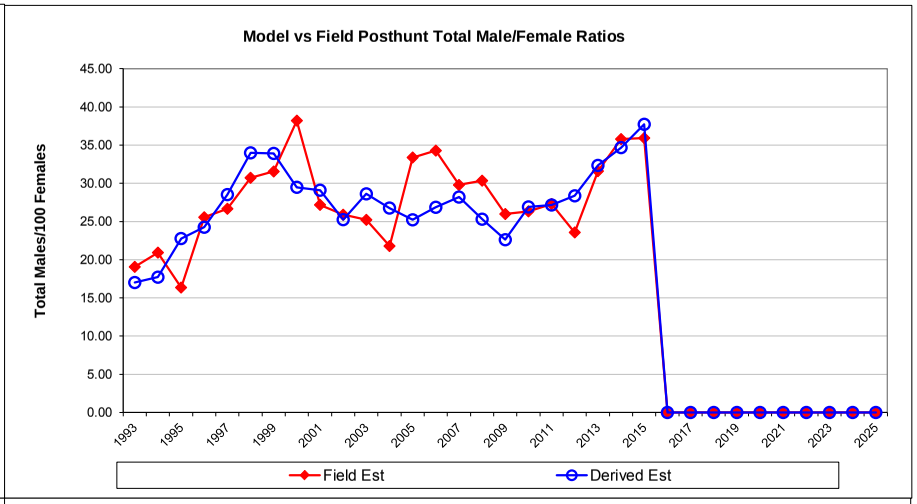
Parameters:	Optim cells
Adult Survival =	0.805
Initial Total Male Pop/10,000 =	0.228
Initial Female Pop/10,000 =	1.338

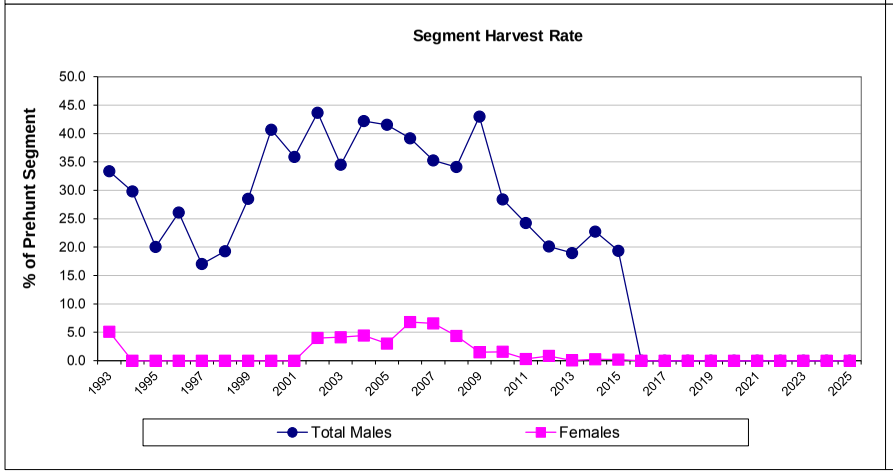
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

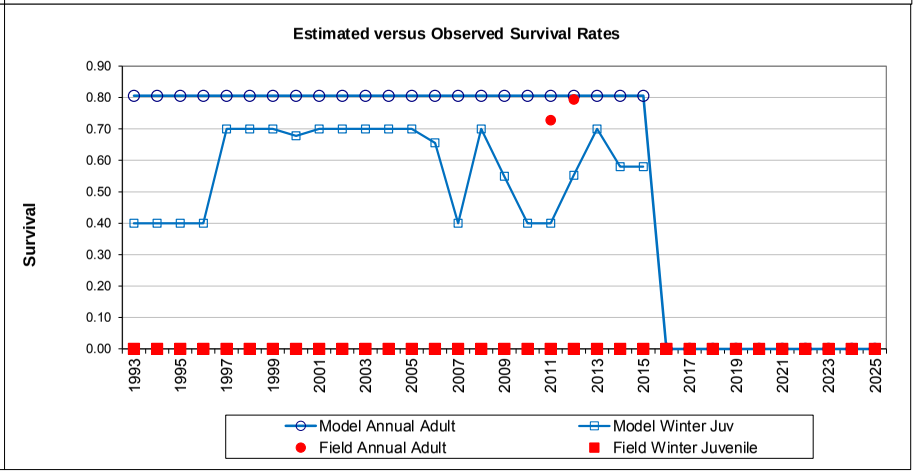
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		44.29	1.71	17.01	19.06	1.02	25	1036	654	1715	33.4	5.1
1994		60.61	2.36	17.71	20.93	1.20	0	818	0	818	29.8	0.0
1995		60.21	2.70	22.77	16.35	1.20	0	575	0	575	20.0	0.0
1996		62.14	2.60	24.25	25.55	1.46	0	799	0	799	26.1	0.0
1997		53.97	2.60	28.52	26.66	1.65	0	508	0	508	17.0	0.0
1998		58.87	2.62	33.98	30.72	1.72	0	700	0	700	19.3	0.0
1999		72.17	3.20	33.91	31.54	1.85	0	1180	0	1180	28.5	0.0
2000		69.15	3.36	29.48	38.20	2.26	0	1866	0	1866	40.7	0.0
2001		56.17	2.03	29.09	27.17	1.27	0	1564	0	1564	35.9	0.0
2002		65.95	2.71	25.24	25.89	1.48	35	1807	386	2228	43.7	4.0
2003		64.50	2.47	28.61	25.22	1.35	62	1384	395	1841	34.5	4.1
2004		59.68	2.57	26.76	21.78	1.35	17	1767	420	2204	42.2	4.4
2005		62.26	2.58	25.22	33.38	1.72	23	1595	277	1895	41.6	3.0
2006		57.31	2.66	26.86	34.28	1.90	56	1467	620	2143	39.2	6.8
2007		54.28	1.77	28.20	29.78	1.20	53	1210	554	1817	35.3	6.6
2008		52.02	2.03	25.30	30.34	1.43	45	902	314	1261	34.1	4.4
2009		66.86	3.26	22.61	25.98	1.77	21	1142	101	1264	43.0	1.5
2010		55.42	2.61	26.91	26.32	1.62	7	696	105	808	28.4	1.6
2011		49.97	1.99	27.16	27.28	1.35	4	518	18	540	24.3	0.3
2012		55.86	3.37	28.36	23.57	1.95	3	382	46	431	20.1	0.9
2013		51.74	2.68	32.34	31.59	1.95	0	388	3	391	19.0	0.1
2014		62.54	3.37	34.67	35.79	2.33	0	515	13	528	22.7	0.3
2015		63.06	3.40	37.72	35.92	2.34	0	450	10	460	19.4	0.2
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES





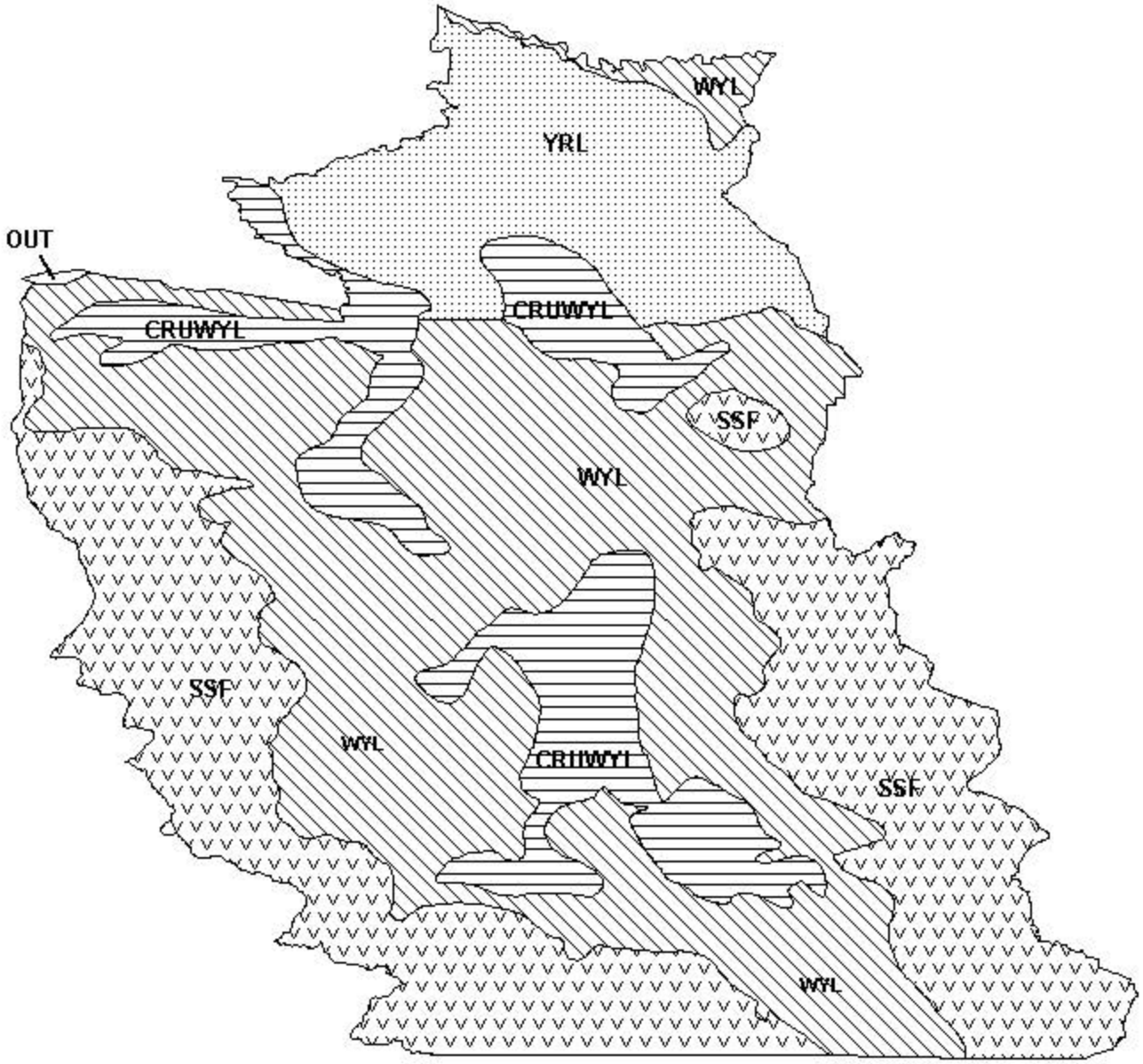




Comments:

The TSJ,CA model was selected to produce the 2014 postseason population estimate. TSJ,SC model aligns very well with the abundance estimates for this herd unit and provides for an excellent "anchor" for future model development.

END



Mule Deer (MD541) - Platte Valley
HA 78-81, 83, 161
Revised - 12/87

N

2014 - JCR Evaluation Form

SPECIES: White tailed Deer | PERIOD: 6/1/2014 - 5/31/2015

HERD: WD504 - SOUTHEAST WYOMING

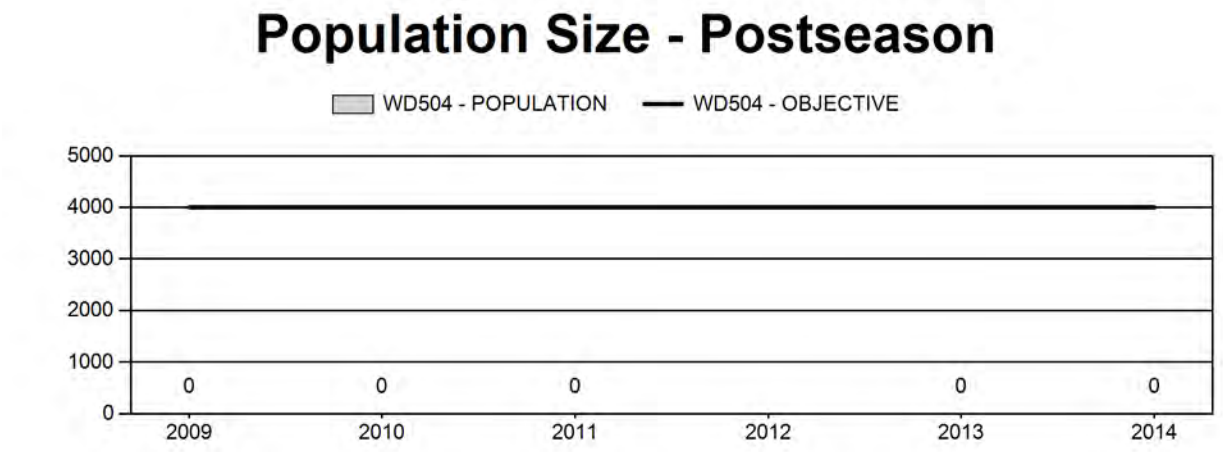
HUNT AREAS: 15, 59-64, 70, 73-81, 83, 161 | PREPARED BY: MARTIN HICKS

	2009 - 2013 Average	2014	2015 Proposed
Population:	0	N/A	N/A
Harvest:	742	728	750
Hunters:	1,956	1,967	2,000
Hunter Success:	38%	37%	38 %
Active Licenses:	2,115	2,232	2,250
Active License Success:	35%	33%	33 %
Recreation Days:	7,799	9,808	9,800
Days Per Animal:	10.5	13.5	13.1
Males per 100 Females	39	39	
Juveniles per 100 Females	67	89	

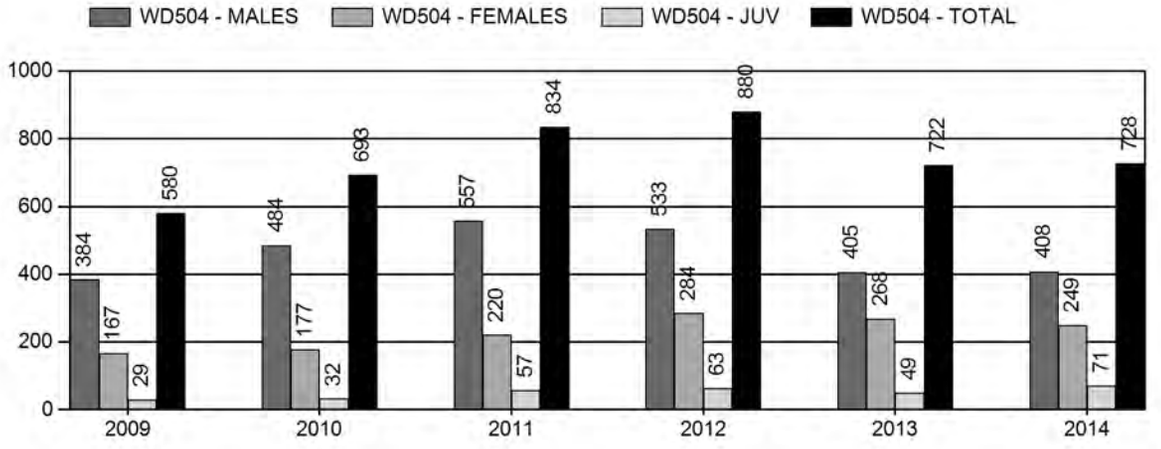
Population Objective (± 20%) :	0 (0 - 0)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

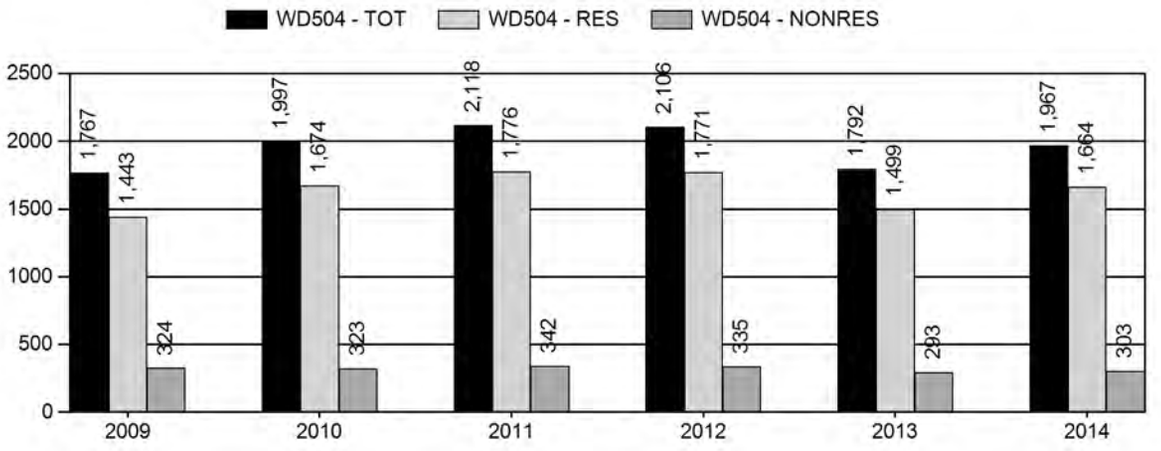
	JCR Year	Proposed
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



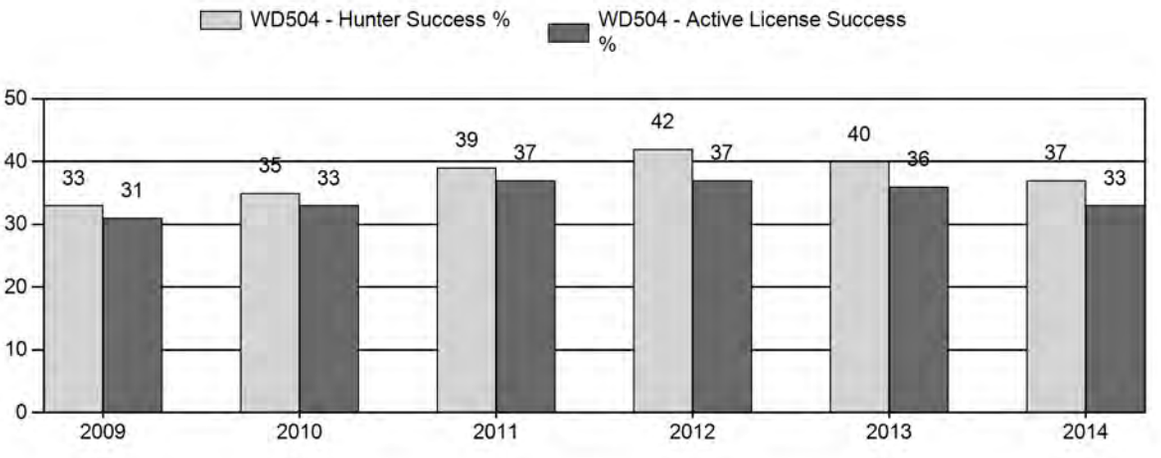
Harvest



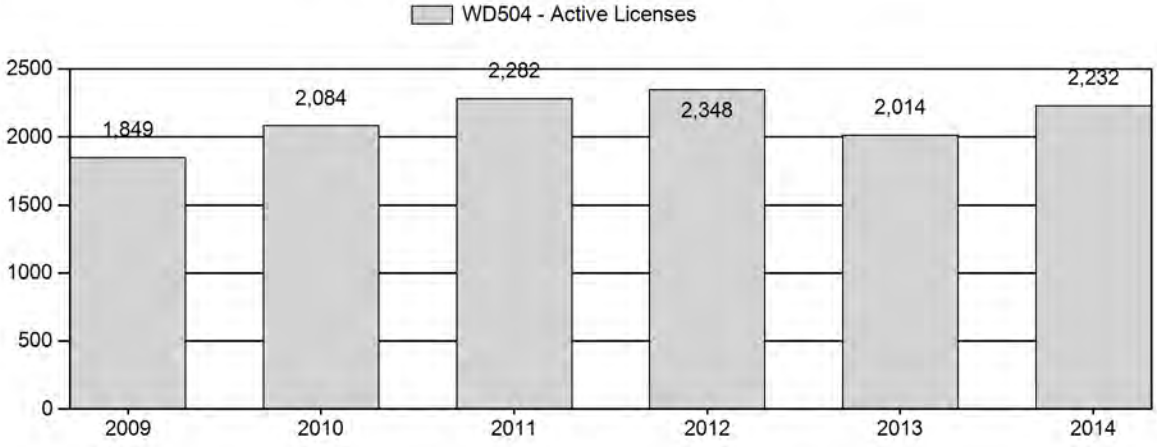
Number of Hunters



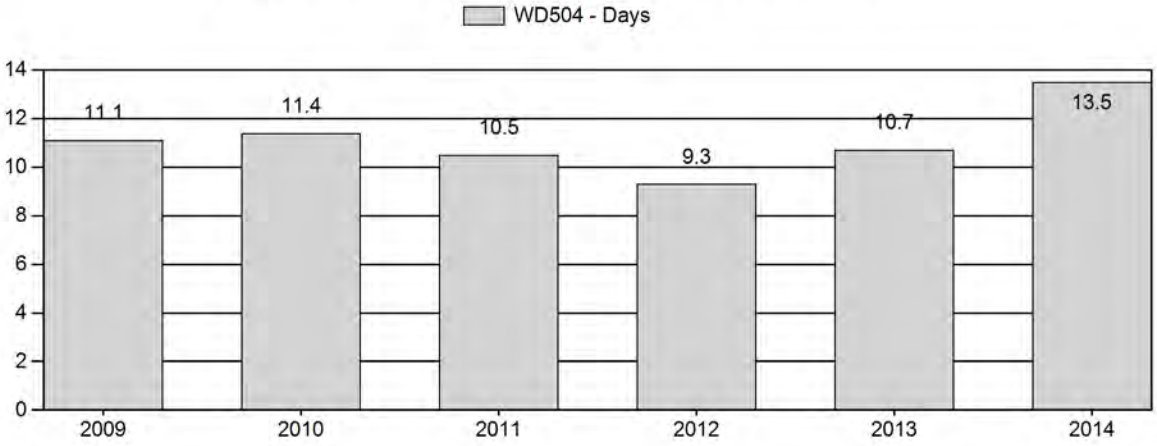
Harvest Success



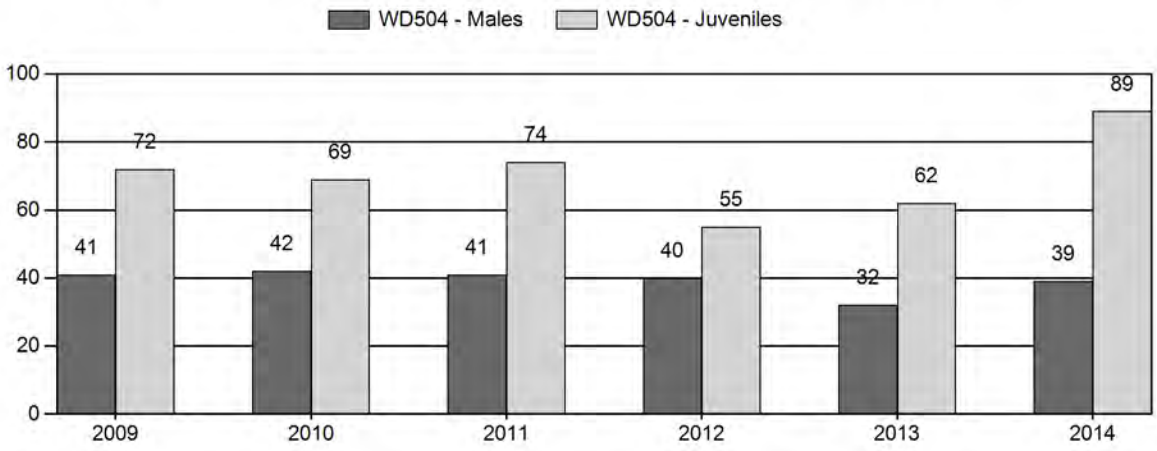
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for White tailed Deer Herd WD504 - SOUTHEAST WYOMING

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	0	50	96	146	19%	358	47%	257	34%	761	0	14	27	41	± 0	72	± 0	51
2010	0	38	72	110	20%	265	47%	183	33%	558	1,165	14	27	42	± 0	69	± 0	49
2011	0	54	148	202	19%	497	47%	367	34%	1,066	1,070	11	30	41	± 0	74	± 0	53
2012	0	38	93	131	21%	324	51%	179	28%	634	1,088	12	29	40	± 0	55	± 0	39
2013	0	34	75	109	17%	336	51%	208	32%	653	0	10	22	32	± 0	62	± 0	47
2014	0	20	46	66	17%	168	44%	150	39%	384	0	12	27	39	± 0	89	± 0	64

2015 HUNTING SEASONS
SOUTHEAST WYOMING WHITE-TAILED DEER HERD (WTD504)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
15	3	Nov. 1	Nov. 30	275	Limited quota; any white-tailed deer
		Dec. 1	Dec. 31		Unused Area 15 Type 3 licenses valid for doe or fawn white-tailed deer
	8	Oct. 1	Dec. 31	300	Limited quota; doe or fawn white-tailed deer
59,60, 64	3	Nov. 1	Nov. 30	150	Limited quota; any white-tailed deer, all lands within Curt Gowdy State Park, archery only; the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille (Sybille Wildlife Research Unit) south of Wyoming Highway 34 shall be closed
		Dec. 1	Dec. 31		Unused Area 59, 60, 64 Type 3 licenses valid for doe or fawn white-tailed deer in Area 63 and Area 64
59,60, 64	8	Nov. 1	Dec. 31	125	Limited quota; doe or fawn white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille (Sybille Wildlife Research Unit) south of Wyoming Highway 34 shall be closed; all lands within Curt Gowdy State Park, archery only
70, 74	3	Oct. 1	Nov. 30	25	Limited quota; any white-tailed deer
75,76,77	3	Oct. 1	Nov. 30	25	Limited quota; any white-tailed deer
78,79,80, 81, 161	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
	8	Sept. 1	Dec. 15	25	Limited quota; doe or fawn white-tailed deer
Archery		Sept. 1	Sept. 30		Refer to Section 3 of this Chapter.

Hunt Area	Type	Quota change from 2014
15	3	0
15	8	+50
59,60,64	3	0
59,60,64	8	0
70, 74	3	0
75,76,77	3	0
78-81,161	3	0
78-81, 161	8	0
Total	**3**	**0**
	8	**+50**

Management Evaluation
Current Management Objective: 4,000
2014 Post-season Population Estimate: NA
2015 Post-season Population Estimate: NA
Management Strategy: Recreational
Hunter Satisfaction Survey: 60% Satisfied, 19% Neutral, 21% Dissatisfied

The management objective for the Southeast Wyoming Herd Unit is a post-season population objective of 4,000 white-tailed deer. The management strategy is recreational management. The objective and management strategy were last revisited in 1999 and was reviewed in 2015. Current recommendations are to remove the numeric objective and replace it with hunter/landowner satisfaction survey (Appendix A). This herd objective will be presented to the Game and Fish Commission in July 2015.

Currently there is not a reliable post-season population estimate. This is an open herd with Colorado and Nebraska so trying to model this herd would violate the assumption that it is closed. Seasons are designed to provide opportunity during the mating period when male deer are more vulnerable to harvest. Management is driven primarily by local Department personnel's perception of population trend and landowner tolerance for this species.

Weather
Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were average, to slightly above average at all elevations throughout the herd unit for white-tailed deer. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. Weather patterns most likely had a positive influence on white-tailed deer. Mild fall temperatures and lack of persistent snows allowed for white-tailed deer to spend greater amounts of time on summer and fall transition ranges providing additional relief for winter ranges that have historically been overutilized. For specific meteorological information for the Southeast Wyoming White-tailed Deer Herd Unit the reviewer is referred to the following link: http://www.ncdc.noaa.gov/cag/

Habitat
There are no established habitat transects developed for this herd since their main source of diet comes from native rangelands that have been converted to croplands.

Field/Harvest Data
This herd will grow rapidly until densities become too high, then seasons are adjusted to try and decrease the population, or an EHD outbreak occurs that reduces densities. Hunter success is typically around 35% with hunter effort running about 11 days per harvest. Hunting opportunity is limited to private land. Low success and high effort rates are attributed to hunters trying to find a white-tailed deer on public land or trying to harvest a deer during the general season when they are less vulnerable to harvest. Chronic wasting disease is found throughout the herd unit, but to what extent it has on this herd unit is unknown. The long-term prevalence rate average is around 20%, but with a small sample size. There are a limited number of tooth samples so a reliable inference into population performance is not available.

The hunter satisfaction survey showed that 60% of the hunters were either satisfied or very satisfied, which is plausible given the late season opportunity for male deer.

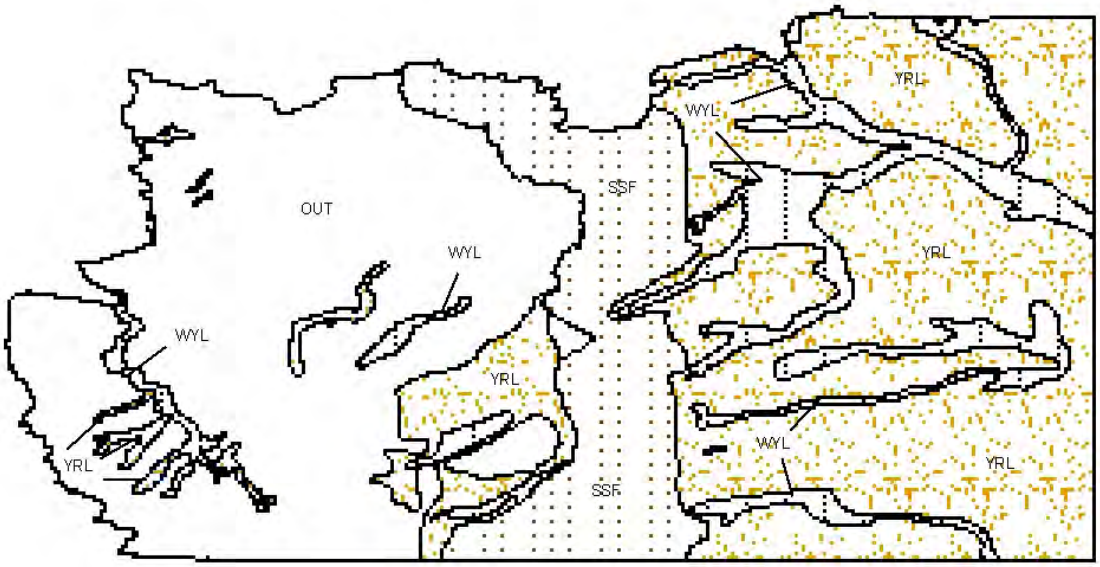
Population

There is not a reliable post-season population estimate. This is an open herd with Colorado and Nebraska so trying to model this herd would violate the assumption that it is closed. Seasons are designed to provide opportunity during the mating period when male deer are more vulnerable to harvest. Management is driven primarily by local Department personnel's perception of population trend and landowner tolerance for this species. There is not enough tooth samples collected in the field to infer any population dynamics.

Management Summary

Population trend varies on weather conditions and disease outbreaks. As densities become too high, the population will typically crash from an EHD outbreak. Severe winter conditions will reduce white-tailed deer numbers if they go into the winter in poor condition. There have been no reports of winter mortalities. There was an EHD outbreak in 2012 that prompted a decrease in Type 8 licenses. However, given the nature of white-tailed deer to rebound quickly from an EHD outbreak, the number of Type 8 licenses in Hunt Area 15 will increase by 50. Based on the Laramie Mountains Herd Unit objective review, Hunt Areas 59,62,63 were combined into Hunt Area 59, and Hunt Areas 64,73 were combined into Hunt Area 64.

For the 2015 season we will try to attain a harvest of around 750 white-tailed deer. Our objective is to provide opportunity and minimize damage.



White-tailed Deer (WT504) - Southeast Wyoming
HA 16, 55, 57, 59-64, 70, 73-81, 83, 161
Revised 10/99

N

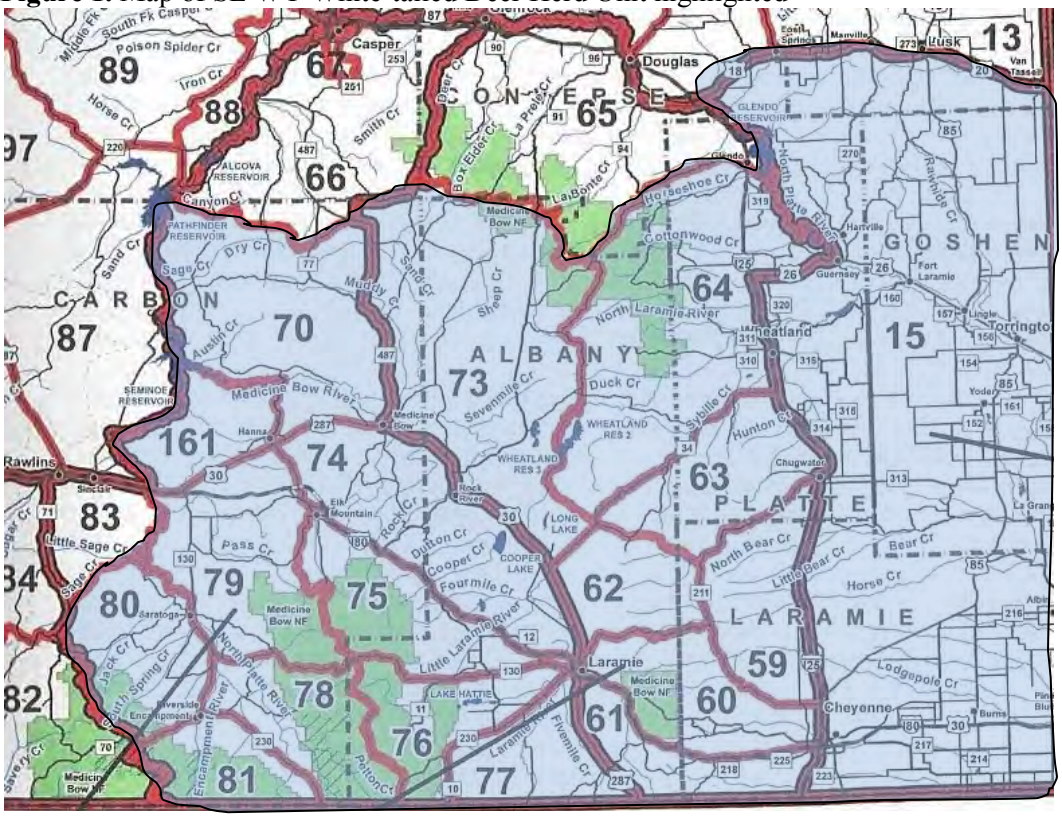
Appendix A
Herd
Objective
Review

SOUTHEAST WYOMING WHITE-TAILED DEER HERD UNIT
AND POPULATION OBJECTIVE REVIEW

Prepared by: Martin Hicks, Wheatland Wildlife Biologist
Current Herd Objective: Post Season Population 4,000 ±20% (3,200 – 4,800)
Current Herd Management Strategy: Recreational Management (buck ratio 20-29)
Proposed Herd Objective: Satisfaction Based objective ≥ 60% landowner/sportsmen satisfaction
Proposed Herd Management Strategy: Recreational Management (buck ratio 20-29)

The Southeast Wyoming White-Tailed Deer Herd Unit contains Hunt Areas 15, 59, 60, 64, 70, 73-81,161 is located in southeastern Wyoming (Figure 1.). The management objective for the Southeast Wyoming Herd Unit is a post-season population objective of 4,000 white-tailed deer. The management strategy is recreational management with a post-season male: female range of 20-29 bucks: 100 does. The objective and management strategy were last revisited in 1998.

Figure 1. Map of SE WY White-tailed Deer Herd Unit highlighted



Population Objective Review:

The postseason population objective is developed based upon both biological and social factors, including, but not limited to: winter range carrying capacity, hunter desires, landowner desires and tolerance, land status, and competition with other wild and domestic animals. From 1976-1996 this herd unit was labeled the Laramie River White-tailed Deer Herd Unit, comprised of Hunt Areas 70-81,83,161 with a initial objective of 200, then increased to 1,000 in 1986. In 1998 Hunt Areas 15,16,55,57 (combined into Hunt Area 15 in 2014) 59-64 (Hunt Areas 59,62,63 will be combined into Hunt Area 59 and Hunt Areas 64 and 73 will be combined into Hunt Area 64 for the 2015 season) were added to create the SE WY WTD Herd Unit with a new objective of 4,000.

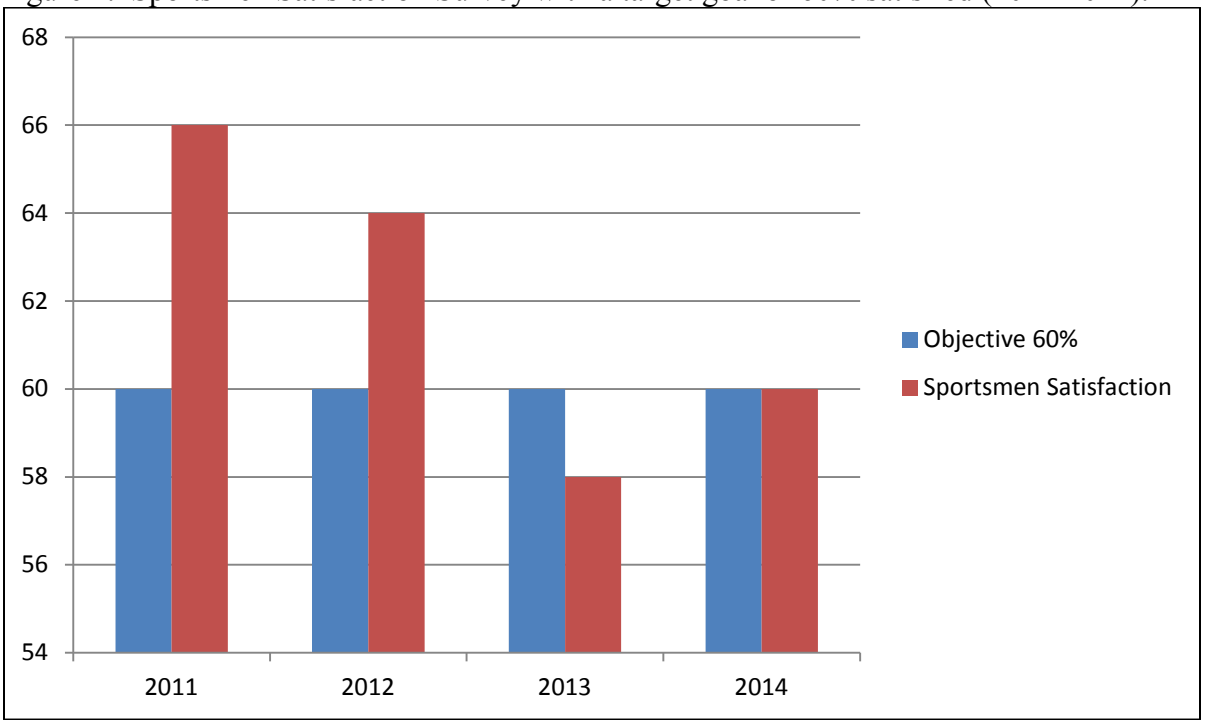
Current Management Strategy:

There is not a reliable post-season population estimate. This is an open herd with Colorado and Nebraska, so trying to model this herd would violate the assumption that the population is closed. Seasons are designed to provide opportunity during the mating period when male deer are more vulnerable to harvest. Management is driven primarily by local Department personnel perception of population trend and landowner tolerance for this species.

Recommended Hunt Unit Objective and Management Strategies by Herd Unit:

Due to our inability to manage this herd unit and lack of adequate population data to derive a post-season population objective we recommend changing the post season population objective of 4,000 white-tailed deer to a satisfaction based objective. This objective uses a sportsmen/landowner surveys to determine levels of satisfaction and has a target goal of 60% or greater satisfaction level. Satisfaction surveys have been conducted for the past 4 years for big game herd units (Figure 2). The four-year average for sportsmen satisfaction is 62%. Key landowners that provide habitat for the majority of white-tailed deer will be mailed a satisfaction survey to gauge their level of satisfaction with white-tailed deer herds that occupy their property.

Figure 2. Sportsmen Satisfaction Survey with a target goal of 60% satisfied (2011-2014).



Landowner, Agency, and Public Involvement:

A power point presentation was prepared on the background of the Southeast Wyoming White-tailed Deer Herd Unit and presented at the following public meetings: Wheatland, Torrington, Laramie and Cheyenne in January 2015. In addition a survey requesting input on the future management of this herd was handed out to the attendees. There were a total of 17 people in attendance at the four public meetings. There was very little interest or concern in the future management of the SE WY WTD Herd Unit gathered from the public at the meetings and no surveys were returned. At these meetings the public was informed about herd objectives and the alternative and secondary objectives available as provided by Wildlife Administration. Department personnel preferred to abandon the current objective of 4,000 white-tailed deer and adopt an alternative objective of sportsmen/landowner satisfaction survey. No federal or state agencies were involved because the majority of occupied habitat is on private land. A copy of comments, public meeting attendants and the survey can be found in Appendix A.

An additional four public meetings were held the week of March 23, 2015 during the Public Information Gathering Meeting process for the 2015 hunting season proposal. Meetings were held in Wheatland, Torrington, Cheyenne and Laramie. In total there were 67 people in attendance (Appendix B), again there was little concern or comments regarding the future management of the Southeast Wyoming White-tailed Deer Herd Unit. Three surveys were returned (Appendix B), two were in support of the proposed objective and one was neutral.

Landowner/Sportsmen Survey:

Notification was sent to all local newspapers along with posters distributed throughout the different communities inviting the public to attend one of four public meetings that were held in January and March. No surveys were returned from the January meetings and three were returned from the March meetings.

Recommendation:

In summary we propose to eliminate the numeric objective of 4,000 white-tailed deer and go with an alternative objective of a landowner/sportsmen survey. Surveys will be mailed to landowners that have larger acres (>160 acres) of contiguous white-tailed deer habitat in Platte, Goshen, Laramie, Albany and Carbon counties. The secondary objectives of habitat indices, male "quality" and harvest statistics do not appear to be a reliable indicator of population performance for the following reasons. There are currently or planned habitat transect associated with white-tailed deer forage needs. The sample size of buck "quality" is well below an adequate sample size to derive any inferences to population performance. A target for harvest success would be difficult to gauge or determine given success typically runs around 30%. What a realistic goal should be would be a guess and not have any relevance on how this herd would be managed. Trends in success and effort would still be a tool to assist in determining license numbers and season length.

This recommendation is based upon a lack of adequate population data to derive reliable population estimate. Based on the outreach effort and past comments from landowners and sportsmen there is less emphasis of concern placed on white-tailed deer compared to other big game species in southeast Wyoming.

Appendix A

Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Paul Wood	PRWwood@Gmail.com	630-7671	6030 Syracuse Rd 82009
2. Jim Mallon	JMS76@AOL.com	635-1314	2115 Phillips Pl
3. Phoenix Burt		635-1314	6200 Ridge Rd
4. Brian Tanllie	briant1985@Gmail.com	307-214-1071	1411 Gettysburg Drive
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Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Bruce Nelson	pothook64@yahoo.com	307 245 9276	1299 Hwy 215 Pine Bluffs
2. Jim Trussler	JimTruss@bresnan.net	308-249-2348	3107 Green Valley Rd Cheyenne 8200
3. Mike DeMartin	michael.demartin@HollyFrontier.com	307-637-5[illegible]	7241 Fox Tail Rd Cheyenne 8200
4. Tony Rutherford	SEWYOMING@MULEYFANATIC.COM	631-1418	1588 Barberry Ridge Cheyenne 8200
5. Meal Perkins	buglelke@aol.com	307 286 3456	2415 Channell Dr Chey Wy 82009
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Post Hunting Season Meeting
Cheyenne – Jan. 15, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. G.D. EVANS	GAMGETR@HOTMAIL	541 941 5587	6090 CR 212 PINE BLUFFS
2. JEFF GEYER	jeff.geyer@wyo.gov	307-637-5378	7534 Legacy Pkwy CHEYENNE
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Post Hunting Season Meeting
Torrington – Jan. 12. 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Pat Pyle			
2. Larry Pyle			
3. Craig Marsh			
4. Bud Patterson	budpcross@gmail.com	307-620-1106	
5. Corey Steinmetz	cochece1998@wyomail.com	307-534-5870	8498 Cemetery Rd Lingle WY 82223
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Post Hunting Season Meeting
Wheatland, Jan. 17, 2015

Please Sign In

Name	Email	Phone	Mailing Address
1. Myron Wakkuri	wakkuri@q.com	307 322 3220	3056 W Walnut Wheatland Wy 82201
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February 25, 2015

The following comments were gathered from 4 PIGMs held throughout January 2015 regarding management of the Southeast Wyoming White-tailed Deer Herd Unit

Torrington, January 14, 2015

Comments:

1) Have you had any trouble with Chronic wasting disease? We don't test as many white-tails. But they seem to replace themselves easily. Blue tongue is the thing that seems to kill white-tails.
2) Does blue tongue kill both mule deer and white-tail?
3)One guy has 160 acres and cannot get a landowner's permit. The bucks we see look like big jackrabbits. We've been seeing more mule deer because there are fewer white-tails.
4)How is the antler point restriction coming along near Miracle Mile? Corey said there are not a lot of immediate or great results from the point restrictions.
5)How many people applied for the 500 Type 3 licenses? Martin said these are very popular licenses and they all go in the draw. I don't have any white-tail left on my land because they cut down all the Russian olive trees. Can landowners get a preference license? You would have to get a general license.
6)You don't know if you have 4,000 deer? There is not a lot of money to monitor white-tailed deer. They reproduce easier than mule deer. They are not as sensitive to environment changes like mule deer are.
7)How many licenses will be available for 2015? We will have a meeting in March to determine the upcoming season structures.

Cheyenne, January 15, 2015

Comment:

1)I keep hearing there are so many white-tailed deer (near Casper Mountain) but I have only seen a few in the past four years. Where are they? Torrington and Lusk is white-tailed habitat.

Laramie, January 16, 2015

1)Area 79, the population is going down. You rarely see any deer anymore. The lion and bear populations are also hurting these deer.

Wheatland, January 17, 2015

Comment:

1)We had one white-tailed deer hunter this year because we didn't have any deer. The coyotes are unreal in Cottonwood area. I saw 3 coyotes take a 10-point buck. We are going to back off on white-tails the way it is looking.

Southeastern WY white-tailed deer Herd Unit Objective Review

1. How satisfied are you with the current SE WY White-tailed deer population:
□ Very Satisfied □Somewhat Satisfied □Somewhat Dissatisfied □Very Dissatisfied

2. If you answered somewhat dissatisfied or very dissatisfied, please indicate why.
□ There are too many animals in the population
□ There are too few animals in the population
□ Other _____

3. What do you think about the current post-season population objective of 4,000 (3,200-4,800) white-tailed deer?

□ Current Herd Objective Needs to Increase
□ Current Herd Objective Needs to Decrease
□ Current Herd Objective is Acceptable
□ Current Objective needs to Change to Satisfaction based Objective

4. If you have additional comments, please share them in the space below:
_____
_____
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If, in the future, you would like to be contacted through email please provide your email address below._____

Please Mail To: WGFD, 528 South Adams, Laramie, WY 82070

THANK YOU for your participation!

Appendix B

& Wheatland & Torrington

Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Wheatland

	NAME	CITY
1.	Freddie L Goetz	Wheatland Wyo
2.	Dale Widrich	Guernsey WY
3.	MAX Garner	Guernsey WY
4.	John Castle	Guernsey, WY
5.	KENT YARBROUGH	WHEATLAND, WYO
6.	Daryl Tiltrum	Wheatland Wyo
7.	Myron Blackwell	Wheatland
8.	Bob Wilson	Wheatland
9.	Jerry Loeffelbein	Wheatland
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 23, 2015 Meeting Location: Wheatland

	NAME	CITY
1.	Ray Lane	
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 24, 2015 Meeting Location: Torrington

	NAME	CITY
1.	Larry Pyle	
2.	Pat Pyle	
3.	Dusty Southworth	
4.	Tara Southworth	
5.	Art Davis	Torrington
6.	Bud Patterson	Veteran
7.	Bob Fentsch	Lingle WY.
8.	Timothy Barkman	Lingle WY
9.	ALAN BESKE	HAWK SPRINGS
10.	JOHN RINEHART	LaGRANGE
11.	Dennis Yost	Torrington
12.	Butch DVORAK	Torring Ton, Wy
13.	Cory Rinehart	LA Grange
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Page 2 of 2

Date: March 24, 2015 Meeting Location: Torrington

	NAME	CITY
1.	Pearl Dickens	Torrington
2.	MT Dickens	"
3.	Craig Marsh	Torr Wy
4.	Robert Glaub	Torrington
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 26, 2015 Meeting Location: Cheyenne

	NAME	CITY
1.	HUFF DAVID J.	CHEYENNE,
2.	Dan Conrad	Cheyenne
3.	Neal Perkins	Cheyenne
4.	DAVID HAYS	Chey
5.	MARION RUPERT	CHEY
6.	JIM BURNEY	Chey
7.	Don & Roy Stewart	Cheyenne
8.	Paul Wood	Cheyenne
9.	Scott Karban	Cheyenne
10.	JOSHUA KARBAN	Cheyenne
11.	Clay Rouse	Cheyenne
12.	Dale Critchfield	Cheyenne
13.	Dick Merklin	Cheyenne
14.	Randy Berkis	Cheyenne
15.	JIM FICHTER	CHEYENNE
16.	Jeff Renner	Cheyenne
17.	Rick Miller	Cheyenne
18.	[illegible]	Cheyenne
19.	Don Magnuson	Eaton, Co
20.	STEVE ECKERT	Cheyenne
21.	Ron Lydia	Cheyenne
22.	Kelly [illegible]	Cheyenne
23.	Kathy [illegible]	Cheyenne
24.	Chris Cox	Cheyenne
25.	Brian Foster	Pine Bluffs

Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: March 26, 2015 Meeting Location: Cheyenne

	NAME	CITY
1.	Craig Ocranak	Cheyenne
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Wyoming Game and Fish Department
Season Setting and Chapter 23
Public Information Meeting/Open House
Sign-in Form

Date: 3/26, 2015 Meeting Location: Laramie

	NAME	CITY
1.	Pete Kontaxes	Laramie Wy
2.	Chris Wood	Laramie Wy
3.	Alex May	Laramie WY
4.	Buzz Hefflick	Laramie WY
5.	ERIC ANDERSON	LARAMIE WY
6.	Michell Anderson	Laramie, WY
7.	DAVE MULLENS	LARAMIE, WY
8.	Wade Roberts	Laramie, WY
9.	Tyler Sims	McFadden, WY
10.	Kelby Scott	Laramie WY
11.	RAY GARSON	Baggs, WY
12.	TERRY DAYTON	Laramie, WY
13.	Sidney Barker	Laramie Wy
14.	DICK NAUMANN	Laramie WY
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WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

wgfd.wyo.gov

GOVERNOR
MATTHEW H. MEAD

DIRECTOR
SCOTT TALBOTT

COMMISSIONERS
RICHARD KLOUDA – President
CHARLES PRICE – Vice President
MARK ANSELMI
PATRICK CRANK
KEITH CULVER
T. CARRIE LITTLE
DAVID RAEL

2015 Herd Unit Management Objective Proposal Sportsmen Survey

Southeast Wyoming White-tailed Deer Herd Unit

Current population estimate = unknown
Management Strategy: Recreational

Propose to change herd objective strategy from a numeric objective of 4,000 WTD to a landowner/sportsmen satisfaction survey (target goal of ≥ 60% satisfied)

✓ I support this proposal
_____ I do not support this proposal

Comments:

Sounds good to me.

Can you get estimates on WTD based on deer harvest surveys in WY? For instance, could you ask on general deer hunting surveys if people harvested a WTD, and if so where (unit/drainage etc) it was harvested? This may not be real accurate but it's a start.

If, in the future, you would like to be contacted through email please provide your email address below.

PDayton01@hotmail.com

THANK YOU for your participation!

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

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Propose to change herd objective strategy from a numeric objective of 4,000 WTD to a landowner/sportsmen satisfaction survey (target goal of ≥ 60% satisfied)

✓ I support this proposal
_____ I do not support this proposal

Comments:

If, in the future, you would like to be contacted through email please provide your email address below.

amay7@uwyo.edu

THANK YOU for your participation!

"Conserving Wildlife - Serving People"

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

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Current population estimate = unknown
Management Strategy: Recreational

Propose to change herd objective strategy from a numeric objective of 4,000 WTD to a landowner/sportsmen satisfaction survey (target goal of ≥ 60% satisfied)

_____ I support this proposal
_____ I do not support this proposal) Neutral on this - see comments

Comments:

However they are managed, harvest should be increased on whitetails.
Basically work to lower WTD numbers.

If, in the future, you would like to be contacted through email please provide your email address below.

_____

3/25/15

THANK YOU for your participation!