TABLE OF CONTENTS

ACKNOWLEDGEMENTS

PRONGHORN
Red Desert (PR615) - Areas 60, 61, & 64……. 1
Iron Springs (PR630) - Areas 52, 56, & 108……. 13
Wind River (PR631) - Area 84…….. 27
Beaver Rim (PR632) - Areas 65, 66, 67, 68, 69, 74, & 106…….. 35
Badwater (PR634) - Area 75…….. 47
Project (PR635) - Areas 97 & 117……. 59
North Ferris (PR636) - Area 63……. 69
South Ferris (PR637) - Area 62……. 83

MULE DEER
Dubois (MD642) - Areas 128 & 148…….……... 105
Project (MD643) - Areas 157, 170, & 171…… 117
South Wind River (MD644) - Areas 92, 94, & 160…….. 127
Sweetwater (MD646) - Areas 96 & 97……. 141
Ferris (MD647) - Area 87……. 155
Beaver Rim (MD648) - Area 90……... 169
Chain Lakes (MD650) - Area 98…….. 181

ELK
Wiggins Fork (EL635) - Areas 67, 68, & 69…… 189
South Wind River (EL637) - Areas 25, 27, 28, & 99…..... 201
Green Mountain (EL638) - Areas 24 & 128……. 209
Ferris (EL639) - Areas 22 & 111…….. 217
Shamrock (EL643) - Area 118…….. 227

MOOSE
Lander (MO620) - Areas 2, 30, & 39…… 237
Dubois (MO621) - Area 6……. 247

BIGHORN SHEEP
Whiskey Mountain (BS609) - Areas 8, 9, 10, & 23…….. 255
Ferris/Seminoe (BS615) – Area 17…… 269

ACKNOWLEDGEMENT

The field data contained in these reports is the result of the combined efforts of the Lander Region Wildlife Division personnel including District Wildlife Biologists, District Game Wardens, the Habitat Biologist, the Wildlife Management Coordinator and Region Supervisor, and other Department personnel working at check stations. CWD technician, Megan Karsch collected CWD samples throughout the Region. The authors wish to express their appreciation to all those who assisted in data collection.

2013 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2013 - 5/31/2014

HERD: PR615 - RED DESERT

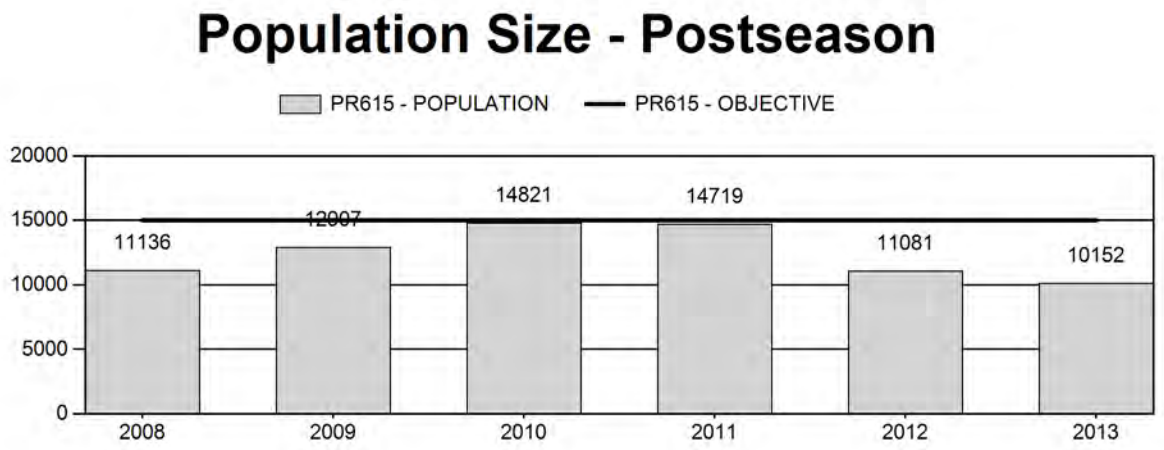
HUNT AREAS: 60-61, 64 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	12,933	10,152	10,237
Harvest:	716	451	340
Hunters:	739	494	375
Hunter Success:	97%	91%	91%
Active Licenses:	798	553	375
Active License Percent:	90%	82%	91%
Recreation Days:	2,109	1,765	1,080
Days Per Animal:	2.9	3.9	3.2
Males per 100 Females	60	58	
Juveniles per 100 Females	60	36	

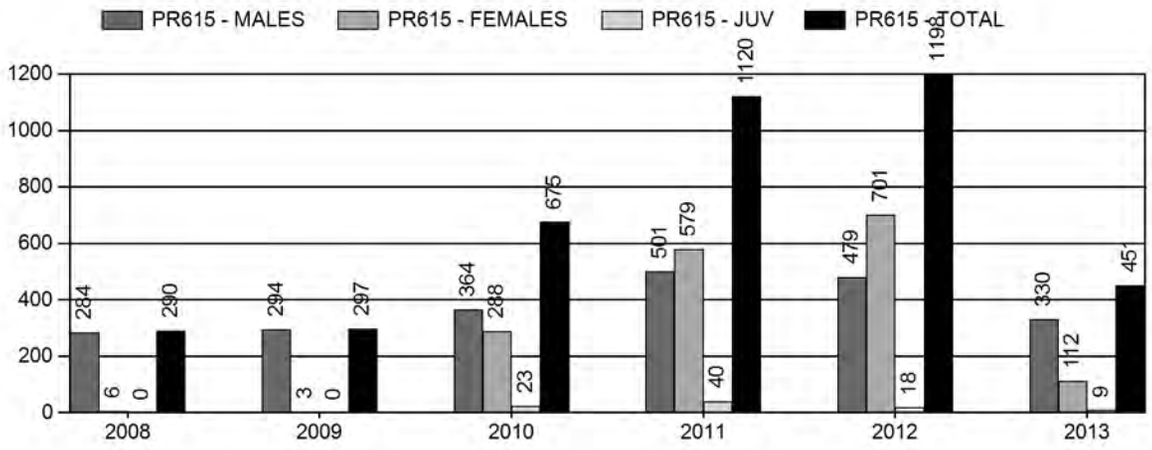
Population Objective:	15,000
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-32.3%
Number of years population has been + or - objective in recent trend:	4
Model Date:	3/5/2014

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

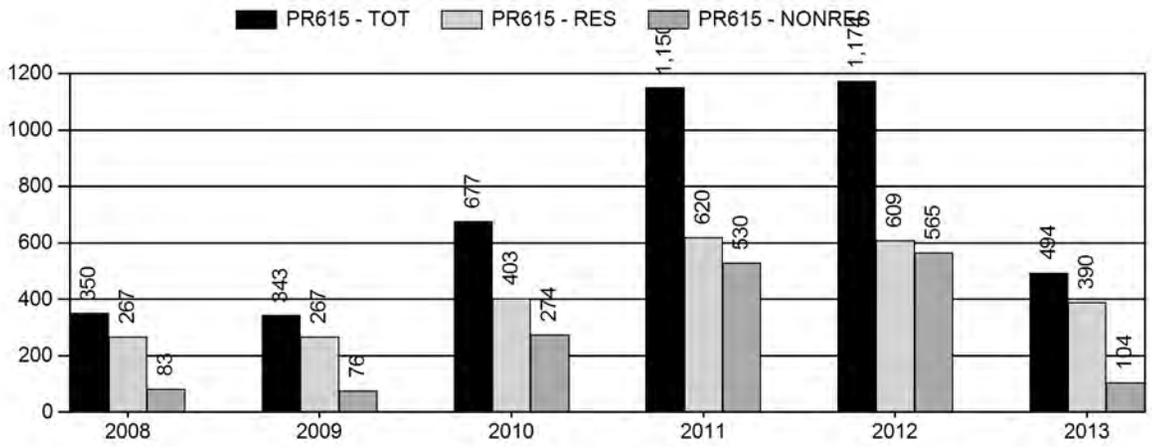
	JCR Year	Proposed
Females ≥ 1 year old:	2.5%	1.5%
Males ≥ 1 year old:	11.2%	8.7%
Juveniles (< 1 year old):	0.1%	0.2%
Total:	4.3%	3.2%
Proposed change in post-season population:	+5.8%	+0.8%



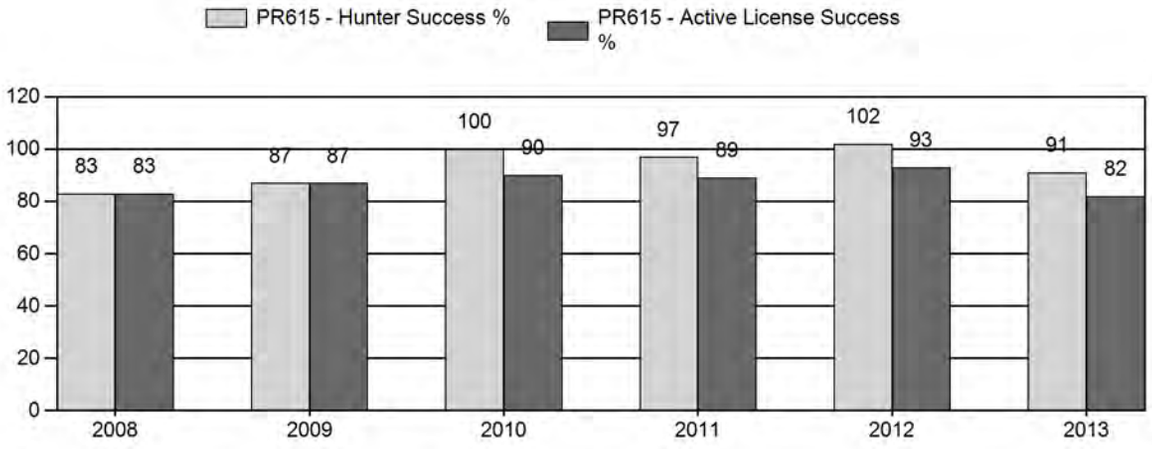
Harvest



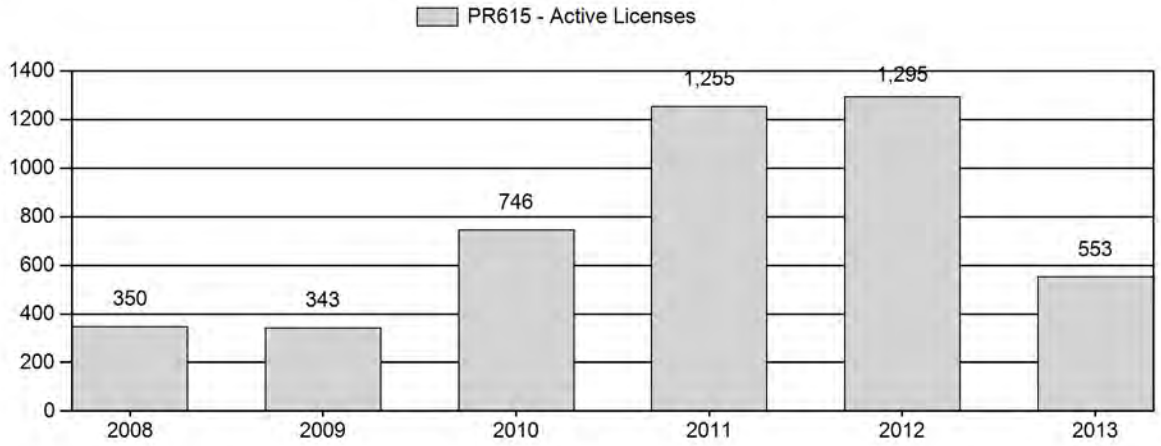
Number of Hunters



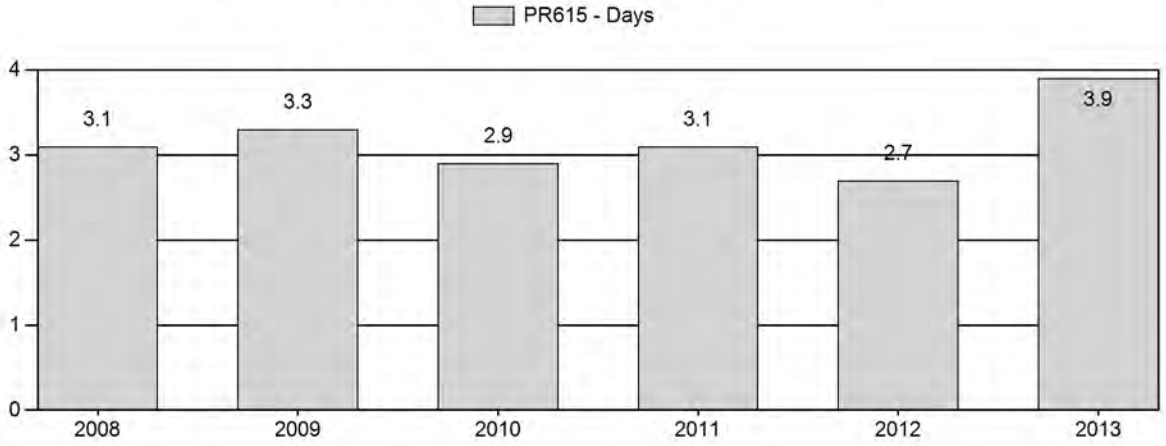
Harvest Success



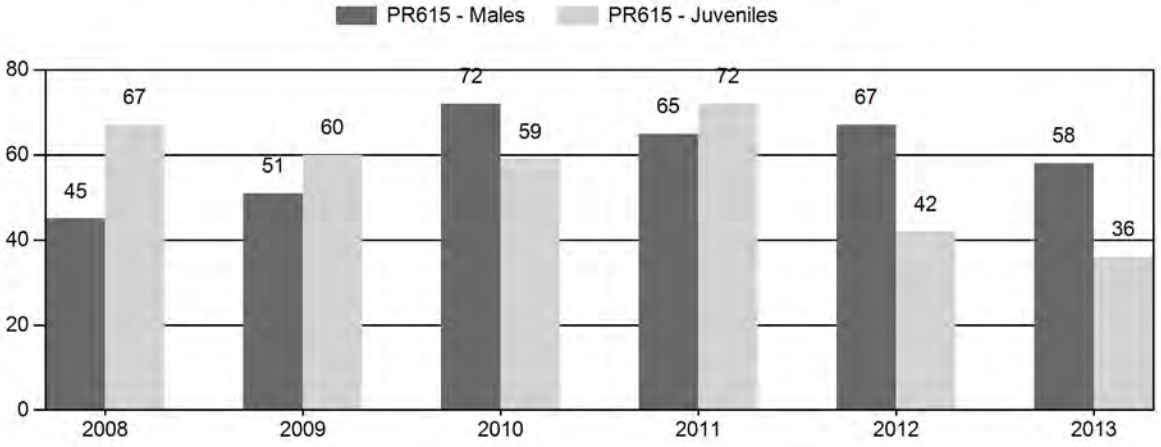
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR615 - RED DESERT

		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
2008	11,455	136	428	564	21%	1,255	47%	842	32%	2,661	2,167	11	34	45	± 3	67	± 4	46
2009	13,234	268	749	1,017	24%	1,987	47%	1,190	28%	4,194	1,907	13	38	51	± 3	60	± 3	40
2010	15,563	361	951	1,312	31%	1,823	43%	1,077	26%	4,212	2,595	20	52	72	± 4	59	± 3	34
2011	15,951	263	736	999	27%	1,540	42%	1,115	31%	3,654	2,650	17	48	65	± 4	72	± 4	44
2012	12,390	177	888	1,065	32%	1,600	48%	667	20%	3,332	2,103	11	56	67	± 4	42	± 3	25
2013	10,648	66	809	875	30%	1,517	52%	539	18%	2,931	1,629	4	53	58	± 3	36	± 2	23

2014 HUNTING SEASONS
RED DESERT PRONGHORN HERD (PR615)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
60	1	Sep. 20	Oct. 22	50	Limited quota; any antelope
	6	Sep. 20	Oct. 22	25	Limited quota; doe or fawn
61	1	Sep. 13	Oct. 14	150	Limited quota; any antelope
	6	Sep. 13	Oct. 14	25	Limited quota; doe or fawn
64	1	Sep. 20	Oct. 22	100	Limited quota; any antelope
	6	Sep. 20	Oct. 22	50	Limited quota; doe or fawn
Archery					
60, 64		Aug. 15	Sep. 19		Refer to Section 3 of this Chapter
61		Aug. 15	Sep. 12		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
60	1	-25
	6	0
61	1	0
	6	-25
64	1	-100
	6	-50
Total	**1**	**-125**
	6	**-75**

<u>Management Evaluation</u>
Current Management Objective: 15,000
Management Strategy: Special
2013 Postseason Population Estimate: ~10,150
2014 Proposed Postseason Population Estimate: ~10,240

The Red Desert pronghorn herd is managed toward a post-hunt population of 15,000, an objective last publicly reviewed in 1994. Population size is estimated using a spreadsheet model developed in 2012 and most recently updated in 2014. The herd is in special management, with harvest quotas designed to maintain pre-hunt buck:doe ratios above 60:100.

Herd Unit Issues

Historically, access in this herd unit has been good. Much of the unit is public land, and hunters have been able to acquire access to most private lands in the checkerboard. The seasonal

distribution map for the herd has not been updated for many years, and it is likely there are crucial winter habitats, particularly in Area 60, that have not yet been delineated.

Habitat issues in this herd unit include continued gas field development, coalbed natural gas development, opening of an *in situ* uranium mine with other mines proposed and possible development of shale oil. Many miles of sheep-tight fences exist in the herd unit, impeding pronghorn movements and migrations, and increasing losses during severe winters.

Weather

Severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, were followed by three severe late winter blizzards in April 2013. Based on low yearling ratios in 2013, losses appeared to be well above normal during the 2012-13 winter. The 2013 summer was also exceptionally dry, reducing browse availability for the 2013-14 winter. Precipitation increased in the fall, providing for some herbaceous plant growth, but appeared to be too late for most forbs and shrubs. The 2013-14 winter had numerous bitter cold spells, and high winds, but those winds also exposed forage on most winter ranges. Losses may still be above average because of the poor body condition of animals going into the winter.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production is expected to have been minimal due to record drought. Only one shrub transect has been established near this herd unit, on the Chain Lakes WHMA, but was not read in 2013.

BP America transferred ownership of two water wells on Chain Lakes WHMA to WGFD. Developed with funds provided by WWNRT, these solar wells provide additional water sources for wildlife and help disperse domestic livestock that graze Chain Lakes WHMA.

Habitat losses to uranium development increased with opening of the Ur *in situ* uranium mine in Area 61, but is not in or near crucial pronghorn ranges. Habitat losses to gas development have slowed due to low gas prices and demand for drilling rigs in the Bakken fields.

Field Data

Fawn production fell to 36:100, the lowest fawn:doe ratio ever recorded for this herd, exceeding the previous record of 42:100 set in 2012. Production was lowest in Area 60 at only 22:100, the second lowest for that arid area. Production in Area 64 was only 34:100, the lowest ever for that Area. Fawn production was highest in Area 61 at 46:100, which was an improvement over production in 2012 for that area.

The herd buck:doe ratio failed to meet the special management criterion of 60:100, largely because of the exceptionally poor yearling buck:doe ratio of 4:100. Yearling recruitment was poorest for Area 64. Both Areas 60 and 61 met the 60:100 criterion, but the buck:doe ratio for Area 64 was only 47:100, the lowest in five years. With the poor production seen this year, yearling buck:doe ratios are unlikely to improve in 2014.

Harvest Data

Hunter success dropped to its lowest level in seven years, at 82 percent, while hunter effort increased to its highest level ever, at 3.9 days per animal. As with the herd ratios, hunter success was best in Area 61 and lower in Areas 60 and 64. The average days of effort required to harvest an animal was high in all three areas. These data suggest the number of pronghorn in the herd has decreased, particularly in the western half.

Population

The Time-Specific Juvenile & Constant Adult Survival (TSJ,CAS) spreadsheet model provided the best fit with observed buck:doe ratios for this herd, behaved predictably when 2013 classification and harvest data were added and is considered a "Fair" model of the herd. Annual adult survival was predicted at 88 percent, a reasonable level. Juvenile survival rates fluctuated within the allowed range but did hover at maximum or minimum values for many years. The CJ,CA and SCJ,SCA models each had slightly lower AIC values, but both models predicted herd sizes well below line transect estimates and generated roughly stable buck:doe estimates that did not track the dips and rises of observed values. Fawn production in 2014 was projected to be near the five-year average and the model was run with median juvenile survival in 2014.

The model predicts the herd has been roughly 30 percent below objective for the past two years. Even with optimistic assumptions on fawn production and survival, the 2014 pre-hunt population should be roughly equal to that seen in 2013 and herd growth will be minimal. Without major improvement in fawn production and survival, proposed reductions in harvest quotas for 2014 will only stabilize the herd near the current size.

Management Summary

This herd was well below objective size following a record harvest and severe winter losses in 1992. Conservative harvests after that winter combined with improved fawn production and survival beginning in 2007 allowed the herd to reach and be maintained at objective size in 2010 and 2011.

According to the spreadsheet model, the combination of heavy harvests and extremely poor fawn production in 2012 and 2013 significantly reduced herd size, estimated at just over 10,000.

With the population estimated to be 30 percent below objective, harvests need to be reduced to allow the herd to recover. Quotas for Type 6 doe/fawn licenses are reduced to minimal numbers in Areas 60 and 61, and reduced by half for Area 64. Quotas for Type 1 licenses are also reduced in Areas 60 and 64. With the highest buck:doe ratio and fawn production, no decrease is recommended for these licenses in Area 61. With the projected harvest of roughly 260 bucks and 80 does and fawns, the model predicts the herd will remain near the current size in 2014. If precipitation improves, raising both fawn production and survival, some minor increase in herd size may occur, but the herd is unlikely to reach objective in two or three years.

INPUT	
Species:	Pronghorn
Biologist:	Greg Hiatt
Herd Unit & No.:	Red Desert
Model date:	03/05/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	145	154	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	143	157	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	67	176	☑ 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	3691	2861	6085	**12637**	3626	2178	5598	**11402**	3550	6663	**10213**				15000
1994	3308	3479	6530	**13317**	3239	2899	6021	**12158**	3022	5851	**8873**				15000
1995	2687	2962	5734	**11383**	2664	2547	5470	**10681**	3045	5703	**8748**				15000
1996	3206	2984	5589	**11779**	3206	2555	5544	**11305**	2749	5494	**8243**				15000
1997	2939	2694	5384	**11018**	2939	2278	5373	**10591**	2460	5304	**7763**				15000
1998	3027	2410	5197	**10635**	3027	1996	5183	**10206**	2916	5843	**8759**	15906	7414		15000
1999	3395	2858	5726	**11978**	3395	2443	5720	**11558**	3718	6726	**10444**				15000
2000	3517	3643	6592	**13753**	3502	3187	6391	**13079**	3356	6281	**9637**				15000
2001	3050	3289	6155	**12494**	3050	2941	6155	**12145**	3083	6028	**9111**	11222	1700		15000
2002	2796	3021	5907	**11724**	2783	2567	5724	**11073**	3100	5984	**9084**				15000
2003	3145	3038	5864	**12047**	3128	2587	5633	**11348**	2757	5535	**8293**				15000
2004	3918	2702	5425	**12045**	3876	2250	5197	**11323**	3758	6447	**10205**				15000
2005	3946	3683	6318	**13947**	3926	3247	6112	**13285**	3476	6091	**9568**				15000
2006	3464	3407	5970	**12840**	3459	2973	5903	**12334**	3163	5852	**9016**				15000
2007	2903	3100	5735	**11738**	2903	2660	5735	**11298**	2796	5626	**8422**	9826	1859		15000
2008	3699	2740	5514	**11953**	3699	2428	5507	**11634**	3474	6292	**9767**				15000
2009	3693	3405	6167	**13265**	3693	3082	6163	**12938**	4442	7264	**11706**				15000
2010	4206	4353	7119	**15678**	4180	3953	6802	**14935**	4155	6739	**10895**	20222	2911		15000
2011	4782	4072	6604	**15459**	4738	3521	5968	**14227**	3877	5918	**9795**				15000
2012	2418	3799	5799	**12016**	2398	3276	5034	**10707**	3432	5484	**8916**				15000
2013	1910	3364	5374	**10648**	1900	3001	5251	**10152**	3040	5064	**8103**				15000
2014	2670	2979	4963	**10611**	2664	2693	4880	**10237**							15000
2015															
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

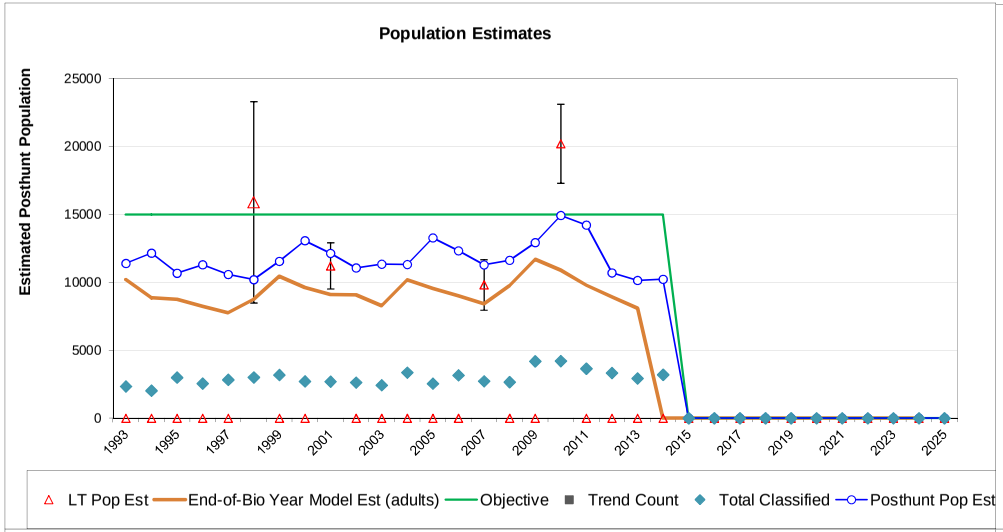
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.89		
1994	0.30			0.89		
1995	0.59			0.89		
1996	0.30			0.89		
1997	0.30			0.89		
1998	0.75			0.89		
1999	0.90			0.89		
2000	0.30			0.89		
2001	0.30			0.89		
2002	0.59			0.89		
2003	0.30			0.89		
2004	0.90			0.89		
2005	0.30			0.89		
2006	0.30			0.89		
2007	0.30			0.89		
2008	0.70			0.89		
2009	0.90			0.89		
2010	0.30			0.89		
2011	0.30			0.89		
2012	0.30			0.89		
2013	0.30			0.89		
2014	0.60			0.89		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

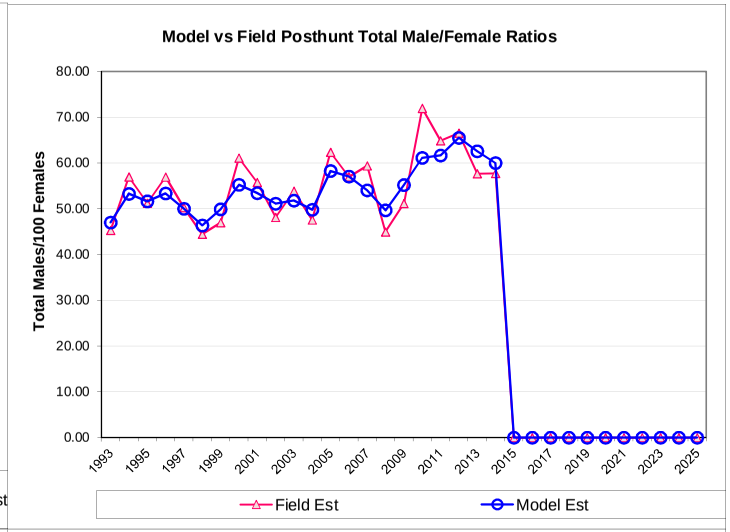
Parameters:	Optim cells
Adult Survival =	0.885
Initial Total Male Pop/10,000 =	0.286
Initial Female Pop/10,000 =	0.608

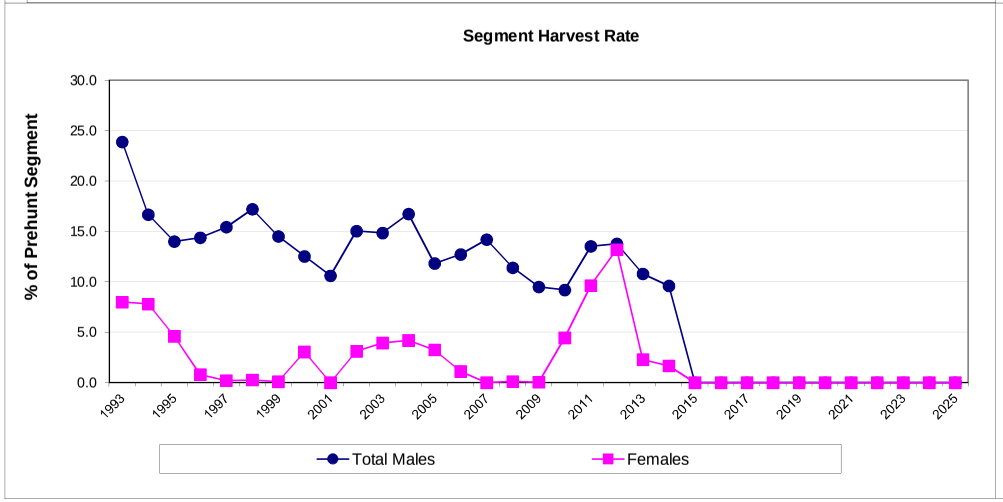
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

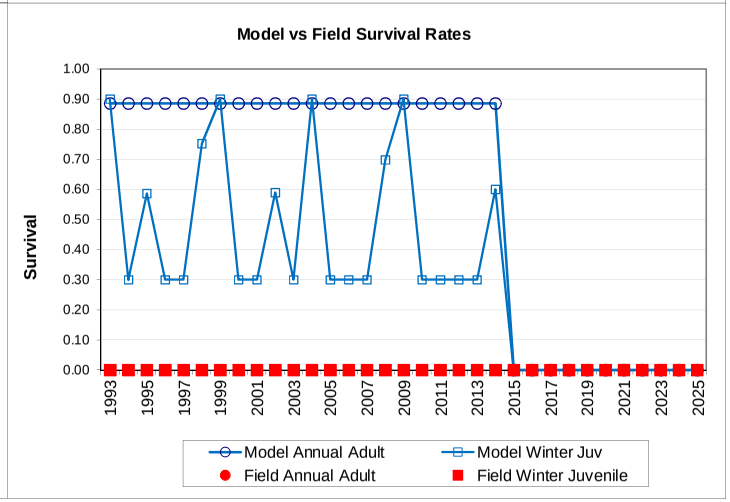
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		60.67	2.93	47.02	45.30	2.40	621	442	59	1122	23.9	8.0
1994		50.66	2.79	53.27	57.00	3.02	527	463	63	1053	16.7	7.8
1995		46.86	2.13	51.66	51.22	2.26	377	240	21	638	14.0	4.6
1996		57.37	2.75	53.39	56.95	2.74	390	41	0	431	14.4	0.8
1997		54.59	2.47	50.03	50.25	2.34	378	10	0	388	15.4	0.2
1998		58.25	2.49	46.38	44.44	2.08	377	13	0	390	17.2	0.3
1999		59.29	2.47	49.91	46.99	2.11	377	5	0	382	14.5	0.1
2000		53.36	2.54	55.27	61.11	2.79	415	183	14	612	12.5	3.1
2001		49.54	2.37	53.44	55.78	2.57	317	0	0	317	10.6	0.0
2002		47.33	2.28	51.14	48.14	2.30	413	167	12	592	15.0	3.1
2003		53.62	2.65	51.80	53.88	2.66	410	210	15	635	14.8	3.9
2004		72.22	2.85	49.81	47.58	2.14	411	207	38	656	16.7	4.2
2005		62.47	2.99	58.29	62.38	2.99	396	187	19	602	11.8	3.3
2006		58.03	2.50	57.07	57.01	2.47	394	61	5	460	12.7	1.1
2007		50.62	2.42	54.05	59.40	2.70	400	0	0	400	14.2	0.0
2008		67.09	2.99	49.70	44.94	2.28	284	6	0	290	11.4	0.1
2009		59.89	2.20	55.22	51.18	1.97	294	3	0	297	9.5	0.1
2010		59.08	2.27	61.15	71.97	2.61	364	288	23	675	9.2	4.5
2011		72.40	2.85	61.66	64.87	2.64	501	579	40	1120	13.5	9.6
2012		41.69	1.92	65.51	66.56	2.63			696	1190	13.8	13.2
2013		35.53	1.78	62.59	57.68	2.45			112	451	10.8	2.3
2014		53.80	2.34	60.03	57.76	2.45			75	340	9.6	1.7
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES

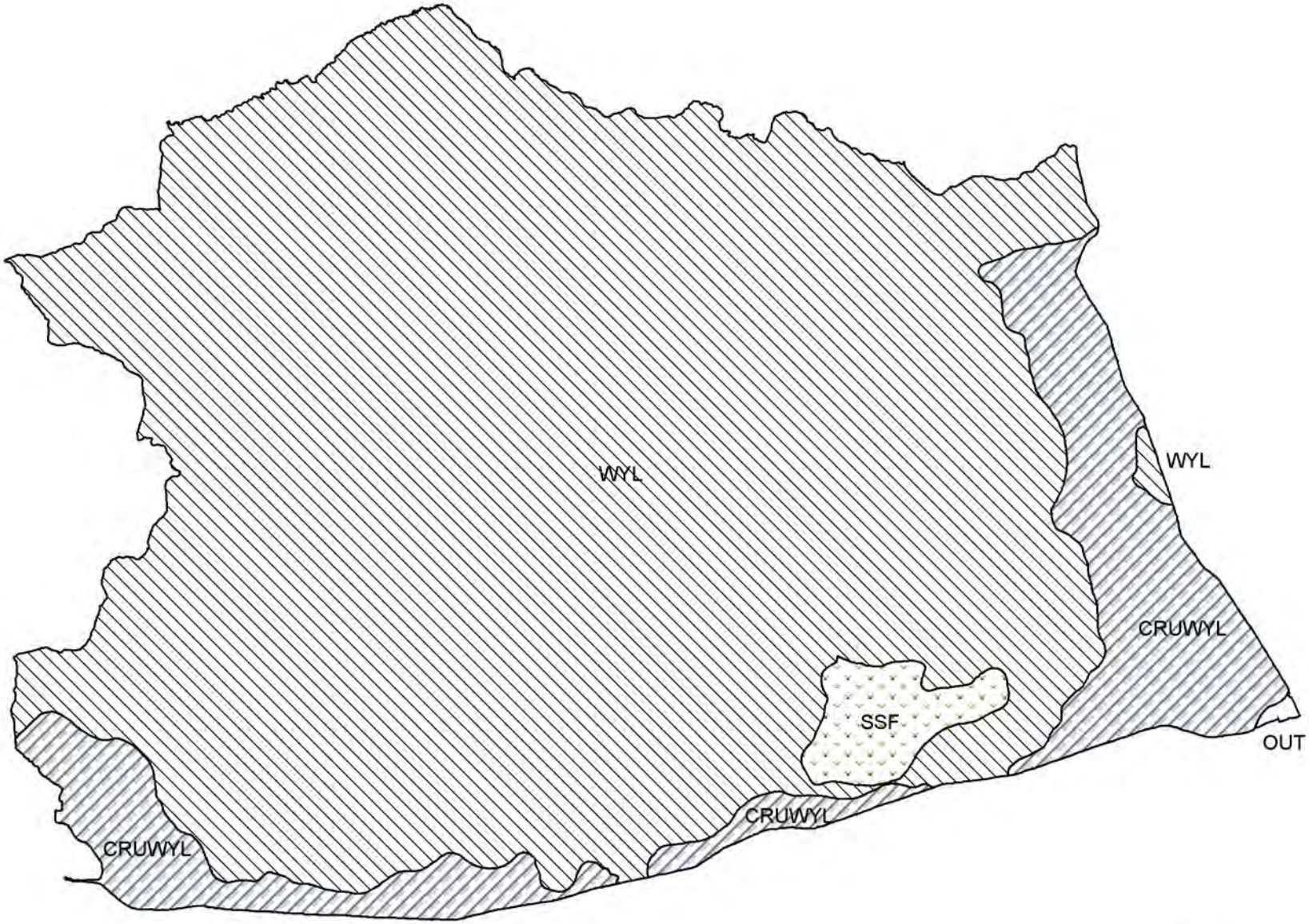








Comments:



PH615 - Red Desert
HA 60, 61, 64
Revised - 3/94

2013 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2013 - 5/31/2014

HERD: PR630 - IRON SPRINGS

HUNT AREAS: 52, 56, 108 | PREPARED BY: GREG HIATT

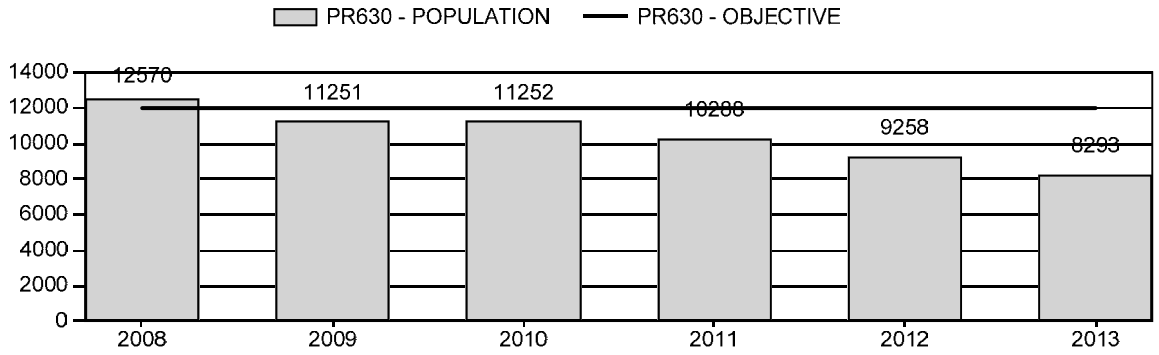
	2008 - 2012 Average	2013	2014 Proposed
Population:	10,924	8,293	7,922
Harvest:	776	717	410
Hunters:	802	722	475
Hunter Success:	97%	99%	86 %
Active Licenses:	898	846	475
Active License Percent:	86%	85%	86 %
Recreation Days:	2,568	2,854	1,500
Days Per Animal:	3.3	4.0	3.7
Males per 100 Females	45	43	
Juveniles per 100 Females	51	50	

Population Objective:	12,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-30.9%
Number of years population has been + or - objective in recent trend:	6
Model Date:	4/19/2014

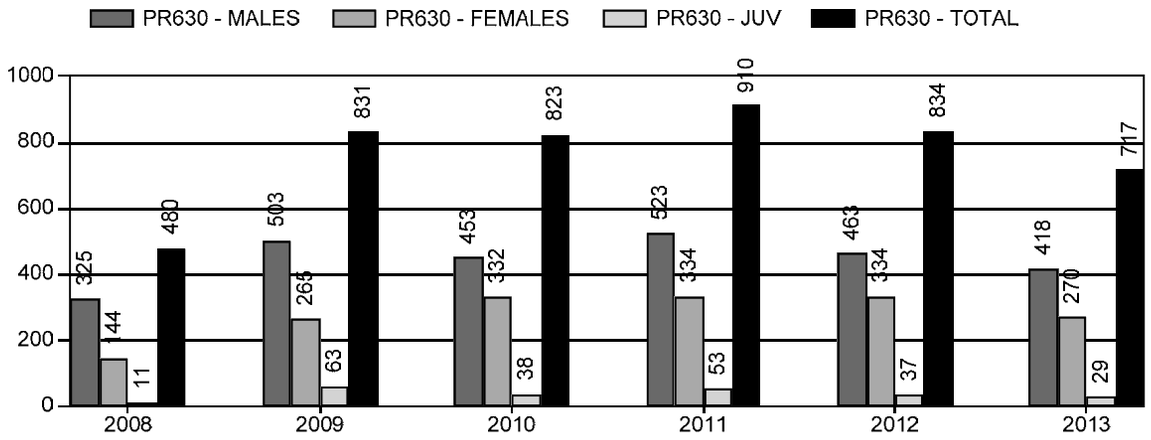
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	6.4%	3.1%
Males ≥ 1 year old:	19.6%	13.9%
Juveniles (< 1 year old):	1.2%	0.7%
Total:	8.1%	4.9%
Proposed change in post-season population:	-8.2%	-4.5%

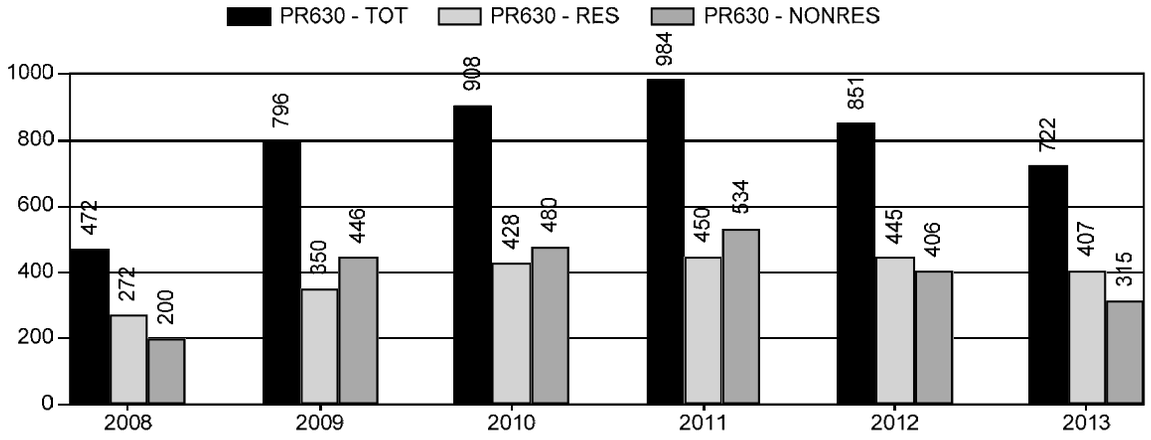
Population Size - Postseason



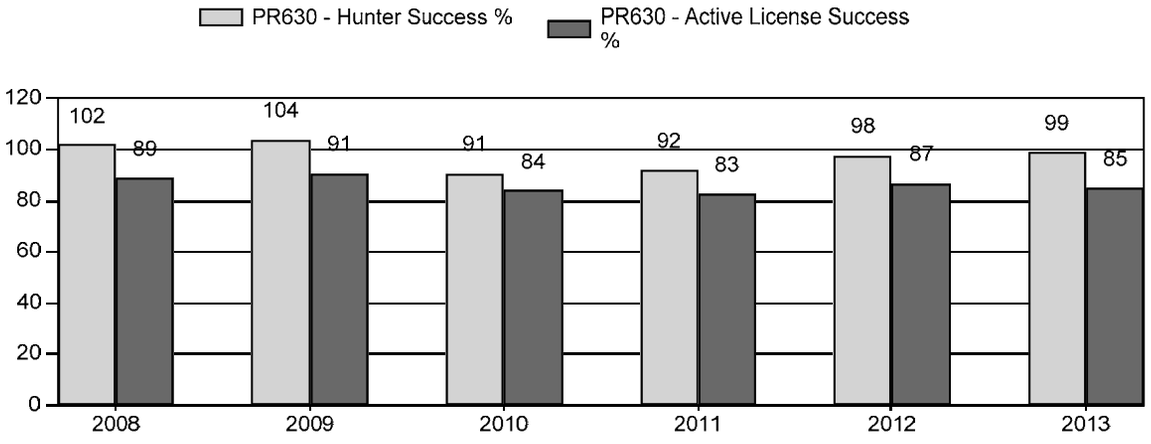
Harvest



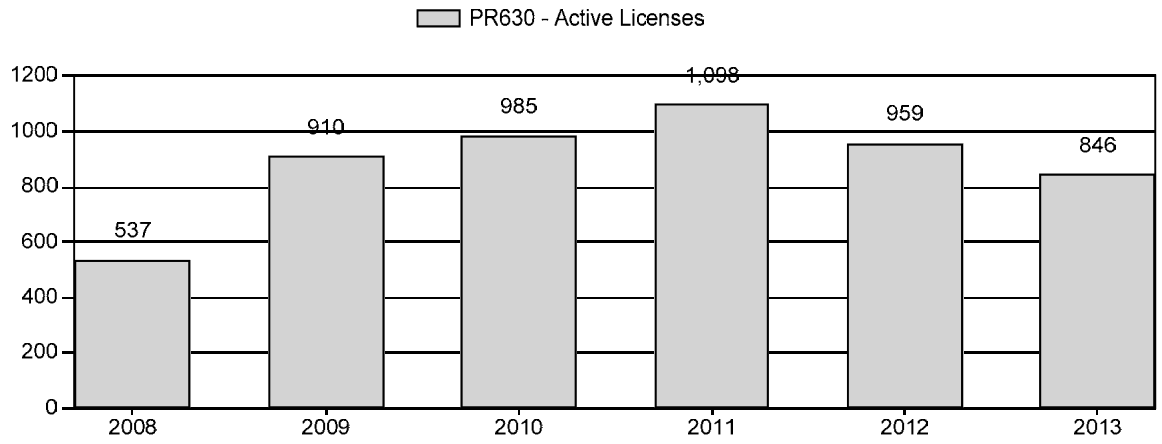
Number of Hunters



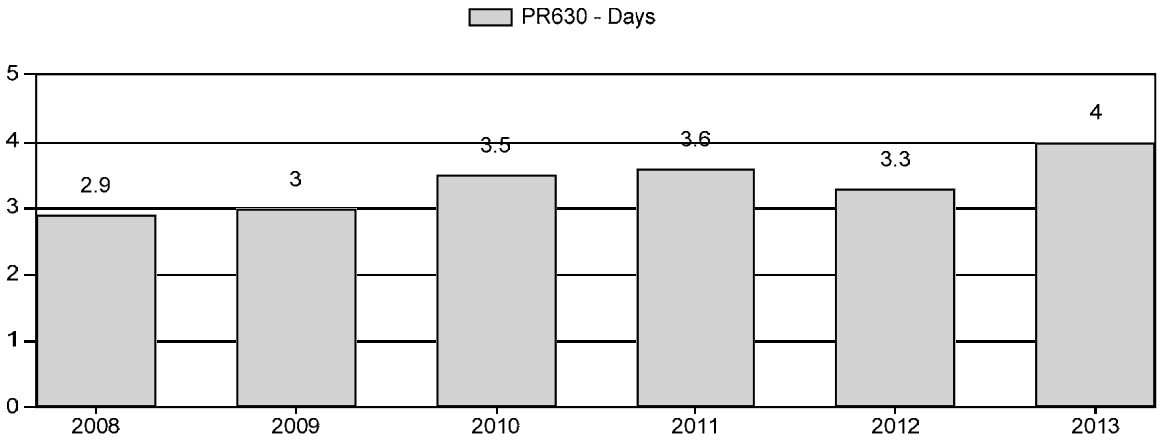
Harvest Success



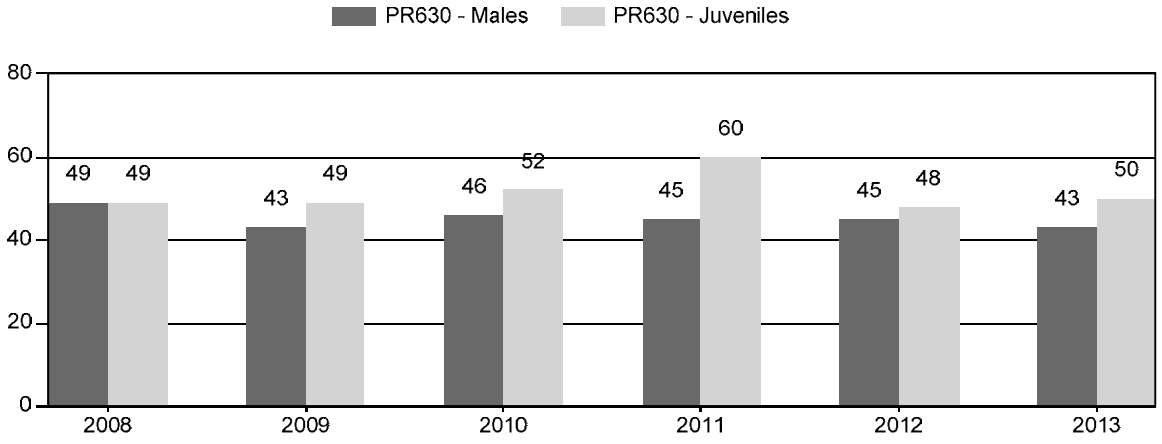
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR630 - IRON 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
2008	13,098	204	637	841	25%	1,734	51%	844	25%	3,419	1,373	12	37	49	± 3	49	± 3	33
2009	12,165	225	525	750	22%	1,764	52%	861	26%	3,375	1,343	13	30	43	± 3	49	± 3	34
2010	12,157	159	710	869	23%	1,874	50%	968	26%	3,711	1,477	8	38	46	± 3	52	± 3	35
2011	11,289	150	576	726	22%	1,627	49%	984	29%	3,337	1,791	9	35	45	± 3	60	± 3	42
2012	10,153	212	604	816	23%	1,801	52%	863	25%	3,480	1,295	12	34	45	± 3	48	± 3	33
2013	9,082	131	514	645	22%	1,488	52%	746	26%	2,879	1,336	9	35	43	± 3	50	± 3	35

2014 HUNTING SEASONS
IRON SPRINGS PRONGHORN HERD (PR630)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
52	1	Sep. 16	Oct. 31	100	Limited quota; any antelope
	2	Sep. 16	Nov. 14	100	Limited quota; any antelope valid south of North Spring Creek
	6	Sep. 16	Oct. 31	75	Limited quota; doe or fawn
	7	Sep. 16	Nov. 14	100	Limited quota; doe or fawn valid south of North Spring Creek
56	1	Sep. 20	Oct. 31	50	Limited quota; any antelope
108	1	Sep. 20	Oct. 31	75	Limited quota; any antelope
	6	Sep. 20	Oct. 31	50	Limited quota; doe or fawn
Archery					
52		Aug. 15	Sep. 15		Refer to Section 3 of this Chapter
56, 108		Aug. 15	Sep. 19		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
52	1	-50
	2	-100
	6	-75
	7	-150
56	1	-25
108	1	-25
	6	-25
Total	**1&2**	**-200**
	6&7	**-250**

<u>Management Evaluation</u>
Current Management Objective: 12,000
Management Strategy: Recreation
2013 Postseason Population Estimate: ~8,300
2014 Proposed Postseason Population Estimate: ~7,925

The Iron Springs pronghorn herd is managed toward a post-hunt population of 12,000, an objective last publicly reviewed in 1994. Population size is estimated using a spreadsheet model developed in 2012 and updated in 2014. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

Herd Unit Issues

Construction of the proposed Chokecherry and Sierra Madre wind farms, consisting of roughly 1,000 turbines and the associated road network, could have significant impacts on important habitats in large portions of Areas 56 and 108, as well as the north portion of Area 52. Construction of several large, trans-continental powerlines would cross important winter habitats at the north edge of Area 56.

Access remains an issue in this herd unit, particularly in the checkerboard in association with the proposed Chokecherry and Sierra Madre wind farms. The Walk-In program has opened access to large blocks of private land, primarily in Area 52, which helped address concerns over large numbers of pronghorn residing on irrigated croplands during summer and fall.

The seasonal distribution map was last revised in March 1994 and no changes have been made since that review. Observations during winters since 1994 indicate consideration should be given to delineating crucial winter ranges south of Saratoga, southeast of Chokecherry Knob and near Fort Steele. The southern boundary between Area 108 and Area 53 of the Baggs herd was moved further south onto more easily recognized county roads in 2011 and the herd unit boundary should be expanded to align with the new hunt area boundary. Fences continue to pose barriers to pronghorn movements throughout much of the herd unit, increasing mortality during tough winters. Sheep-tight fences may also contribute to low fawn survival in pastures with limited water sources during dry summers.

Small acreages of crucial winter range have been lost to subdivision of deeded lands, primarily in the southern portion of the herd, and along Interstate Highway 80 in Area 56. Increased subdivision of these habitats, especially if these tracts are fenced, could seriously degrade the quality and utility of some winter ranges and migration routes. Development, partitioning, and fencing of these lands could have more deleterious effects on pronghorn migrations and habitat than some energy developments. Segregating land ownership among dozens of owners also deters recreational use of those divided lands and inter-mixed public lands.

Losses to EHD were confirmed in the South Ferris herd immediately north of Area 56 in late summer 2013 and the disease probably struck pronghorn in this herd as well. A mule deer fawn died of EHD at the southern tip of Antelope Area 108 so it is likely the disease spanned at least the northern half of the Iron Springs herd unit.

Weather

Severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, were followed by three severe late winter blizzards in April 2013. Losses appeared to be above normal during the 2012-13 winter. The 2013 summer was also exceptionally dry, reducing browse availability for the 2013-14 winter. Precipitation increased in the fall, providing for some herbaceous plant growth, but appeared to be too late for most forbs and shrubs. The 2013-14 winter had numerous bitter cold spells, and high winds, but those winds also exposed forage on most winter ranges. Losses this winter may still be above average because of the poor body condition of animals going into the winter.

Habitat

This herd unit overlaps most of the western half of the Platte Valley Mule Deer herd, and habitats for pronghorn suffer the same low productivity due to overuse, decadent shrubs and drought. Treatments designed to improve habitat for mule deer through the Platte Valley Habitat Partnership are likely to improve habitats for pronghorn as well. Recent tebuthiuron treatments on top of Miller Hill in Area 108 and prescribed burns in Area 52 should improve summer ranges for pronghorn, at least in the short term.

Oil and gas drilling activity has tapered off in the herd unit, as most drilling rigs are active in more productive fields elsewhere in the country, but a successful shale oil well a few miles east of the herd unit may lead to increased interest here. Proposed strip mining of coal in Kindt Basin in Area 56 could damage winter habitats, but is unlikely to occur in the near future because of more competitive coal reserves elsewhere in the state and conflict with the Chokecherry wind farm. Increased interest in developing coalbed methane resources in southern Wyoming may lead to proposals to develop well fields to extract the methane from these coal seams.

Construction of the 1,000 turbine Chokecherry and Sierra Madre wind farms is predicted to begin next year. Planned revegetation of the massive road network necessary for this project is likely to improve summer forage for pronghorn, but will permanently remove browse in winter ranges and provide avenues for expansion of noxious weeds, as seen in gas fields to the west. Wind turbines have been shown to reduce soil moisture in their wind shadow and the large number of turbines in already arid habitats may remove the benefits gained from revegetation of roads and pads.

Field Data

Classification sample size dropped to its lowest level in 10 years in 2013. Classification sample size declined again in Area 56 for the fourth year, and was the smallest sample in over 30 years. The 2013 sample size was less than 30 percent of the 2007 sample. In Area 52, the 2013 sample was the smallest in ten years and 25 percent less than that of 2012. Only in Area 108 have sample sizes remained relatively stable over recent years.

As a consequence of extreme drought, fawn production dropped to 48:100 in 2012 and remained low in 2013, at only 50:100, the second lowest in 16 years. Fawn production was lowest in Area 56, at only 15:100. Production improved slightly in Area 52 in 2013, to 59:100, but was still the second lowest ratio in 10 years for that area. Fawn production in Area 108 remained stable at 42:100, which was above the five-year average for that area.

The buck:doe ratio dropped slightly in 2013, mostly from a reduced number of yearling bucks in the sample. The yearling buck:doe ratio for this herd was not unusually low, especially considering the low fawn crop in 2012. Either losses during the April 2013 blizzards were less extreme in this herd, or mortalities also affected doe age classes. Yearling buck:doe ratios were similar for the three hunt areas. Surprisingly, the supply of mature bucks was highest in Area 52, at 38:100. The buck:doe ratio in Area 56 declined again, despite the limited access for hunters. If access continues to be denied after the wind project is constructed, buck:doe ratios will be

expected to rise in this area and may exceed the maximum for recreational management. The adult buck:doe ratio declined in Area 108, but was within the recent range for this area. Overall, buck:doe ratios for this herd over the past seven years have been less than would be desired in areas with large blocks of public land.

Harvest Data

Hunter success declined in 2013, for almost all license types in each of the three areas. Success was lowest for the Type 7 licenses in southern Area 52, at only 75 percent. Similarly, the average number of days of effort required to harvest an animal increased for most license types, but was highest for Type 7 license holders in Area 52. This average was also high for the Type 2 hunters in Area 52, again those restricted to the southern half of the area.

Population

This herd was more than 10 percent below objective size following severe losses during the 1992-93 winter and remained below objective size for the rest of that decade due to poor fawn production. Fawn production began to improve in 1999, particularly in Area 52, allowing the herd to quickly reach objective size and then exceed it by ~35 percent by 2002. Most of the population growth was associated with irrigated croplands in the southern portion of Area 52. Harvests were increased, especially with the addition of Type 2 and 7 licenses limited to the southern portion of Area 52. Harvest statistics and landowners' comments about low numbers of pronghorn in their fields indicate that strategy was successful.

Losses in the northern portion of the herd unit were high again during the 2007-08 winter and pronghorn densities in that portion of the herd have not recovered due to repeated poor fawn production in low desert habitats in Areas 56 and 108. Losses were not exceptional in Area 52 during that winter and fawn production remained adequate in that portion of the herd until 2012.

Prior to the development of a reasonable spreadsheet model in mid-2012, population estimates suggested this herd was roughly at objective size up until 2011. According to the spreadsheet model and a line transect survey flown in spring of 2012, the herd was actually 15 percent below objective as early as 2010. The combination of continued doe/fawn harvest and extremely poor fawn production in 2012 and 2013 significantly reduced herd size, estimated at about 8,300 animals in 2013, more than 30 percent below objective.

The Time-Specific Juvenile & Constant Adult Survival (TSJ/CAS) spreadsheet model provided the best fit with observed buck:doe ratios for this herd, behaved predictably when 2013 classification and harvest data were added and is considered a "Fair" model of the herd. Annual adult survival was predicted at 88 percent, a reasonable level. Juvenile survival rates fluctuated within the allowed range and did not hover at maximum or minimum values for most years. The CJ,CA and SCJ,SCA models each had slightly lower AIC values, but both models predicted herd sizes well below the confidence interval of the most recent line transect estimate and generated roughly stable buck:doe estimates that did not track major dips and rises of observed values. The SCJ,SCA model also overestimated observed buck:doe ratios for each of the past three years. Due to the poor condition of animals going into this winter, fawn production in 2014 was

projected to be similar to that seen in 2013. The model was run using a median to low juvenile survival in 2014.

Management Evaluation

With the population estimated to be more than 30 percent below objective, harvests should be reduced to allow the herd to recover. Recommended quotas were reduced for all license types in Area 52, particularly for the Type 2 and Type 7 licenses which are restricted to the southern portion. These licenses are intended to direct harvest to irrigated hayfields, and even those landowners have been expressing concern over low pronghorn numbers. License quota for Area 56 is reduced to compensate for the extremely low fawn production in 2013. License quotas in Area 108 have also been reduced because of low numbers and poor buck:doe ratios, but doe/fawn licenses intended primarily to address landowner concerns over high pronghorn numbers on one ranch that allows public hunting have been retained.

If fawn production remains low, the expected harvest of roughly 260 bucks and 150 does and fawns from the 2014 season quotas should still slightly reduce herd size, projected to be roughly 7,900 at post-hunt 2014. If fawn production improves, the recommended quotas should allow for a small increase in herd size. When weather and range conditions allow for growth of this population towards objective size, the most desired areas for that growth would be in the northern portion of Area 52 and southern portion of Area 108 where access is available and numbers of pronghorn on private lands has been less of an issue.

Opening dates for all areas and types are consistent with the application booklets. Opening dates for licenses in Area 52 are the same as in 2013 and coincide with seasons in neighboring Areas 50 and 51. As in 2013, the Type 2 and 7 licenses in the southern portion of this area are valid for an additional two weeks into November. The season in area 52 entirely overlaps local deer and elk general license seasons. Opening dates for areas 56 and 108 are the same as in the previous 15 years and coincide with neighboring areas 53 and 55 of the Baggs herd. Closing dates for areas 56 and 108 are extended to the end of October. Archery seasons use standardized opening dates and close the day before the regular season opens for each area.

If significant portions of the herd unit remain closed to hunting, buck:doe ratios for the herd may have to exceed 60:100 in order to maintain reasonable levels of buck quality on the portions where harvest occurs.

INPUT	
Species:	Pronghorn
Biologist:	Greg Hiatt
Herd Unit & No.:	630 = Iron Springs
Model date:	04/19/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	93	102	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	121	141	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	20	139	☑ 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	2819	3038	6006	**11863**	2740	2254	5541	**10535**	3185	6179	**9364**				12000
1994	3527	3121	6055	**12703**	3425	2430	5600	**11455**	2854	5732	**8585**				12000
1995	2299	2797	5617	**10713**	2221	2135	5214	**9570**	2403	5203	**7606**				12000
1996	2914	2355	5099	**10367**	2860	1819	4914	**9593**	2669	5494	**8163**				12000
1997	2268	2616	5384	**10267**	2235	2152	5288	**9674**	2208	5072	**7280**				12000
1998	2848	2164	4971	**9983**	2824	1706	4909	**9439**	2675	5602	**8277**				12000
1999	3578	2621	5490	**11689**	3564	2174	5403	**11141**	3335	6282	**9616**				12000
2000	3729	3268	6156	**13153**	3719	2821	6072	**12613**	3756	6722	**10478**				12000
2001	4063	3681	6588	**14332**	4046	3246	6512	**13805**	4722	7702	**12424**				12000
2002	4627	4628	7548	**16802**	4610	4168	7421	**16200**	4391	7355	**11746**				12000
2003	3947	4303	7208	**15458**	3924	3609	7015	**14547**	3752	6874	**10627**				12000
2004	4385	3677	6737	**14799**	4364	2963	6566	**13894**	3237	6543	**9780**				12000
2005	4184	3173	6412	**13769**	4165	2422	6216	**12804**	3998	7476	**11474**				12000
2006	4183	3918	7326	**15427**	4150	3092	7108	**14350**	3481	7165	**10645**				12000
2007	4183	3411	7021	**14615**	4152	2693	6811	**13656**	3124	6888	**10012**				12000
2008	3285	3061	6750	**13097**	3273	2704	6592	**12569**	2884	6403	**9287**				12000
2009	3063	2826	6275	**12163**	2993	2273	5983	**11249**	2899	6267	**9166**				12000
2010	3172	2842	6141	**12155**	3130	2343	5776	**11250**	2510	5612	**8122**				12000
2011	3326	2460	5500	**11286**	3268	1885	5132	**10285**	2459	5341	**7801**	8736	884		12000
2012	2508	2410	5235	**10153**	2466	1905	4876	**9248**	2081	4786	**6867**				12000
2013	2352	2040	4691	**9082**	2320	1580	4394	**8293**	1904	4427	**6330**				12000
2014	2169	1865	4338	**8373**	2153	1579	4190	**7922**							12000
2015															12000
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

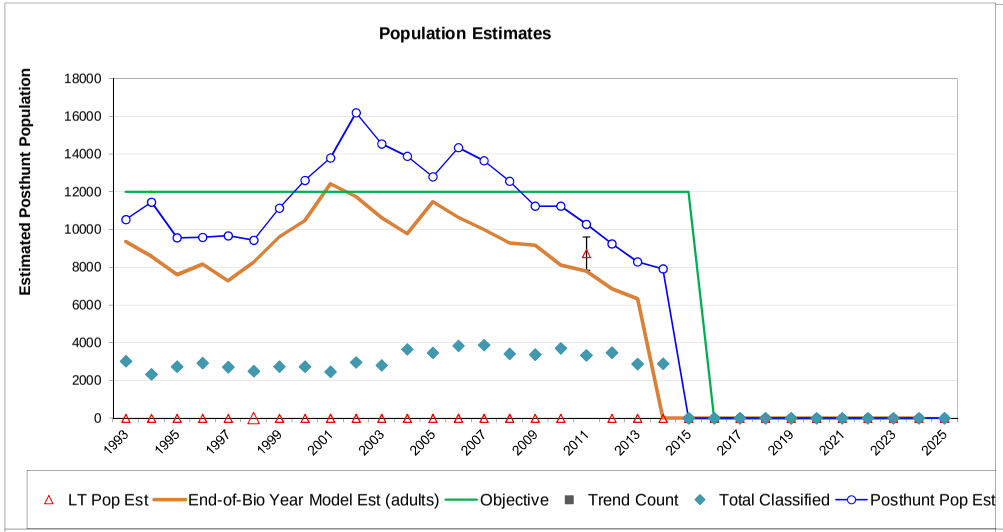
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.88		
1994	0.45			0.88		
1995	0.52			0.88		
1996	0.76			0.88		
1997	0.30			0.88		
1998	0.83			0.88		
1999	0.79			0.88		
2000	0.67			0.88		
2001	0.90			0.88		
2002	0.30			0.88		
2003	0.30			0.88		
2004	0.30			0.88		
2005	0.90			0.88		
2006	0.38			0.88		
2007	0.38			0.88		
2008	0.30			0.88		
2009	0.61			0.88		
2010	0.30			0.88		
2011	0.45			0.88		
2012	0.30			0.88		
2013	0.30			0.88		
2014	0.50			0.88		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

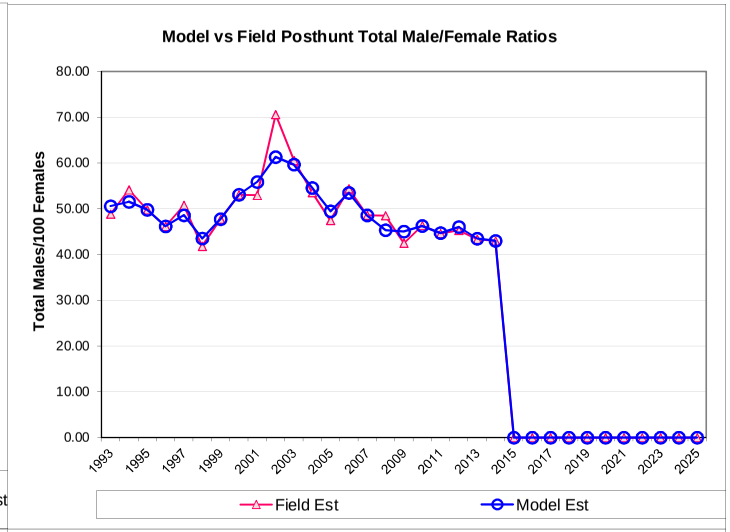
Parameters:	Optim cells
Adult Survival =	0.881
Initial Total Male Pop/10,000 =	0.304
Initial Female Pop/10,000 =	0.601

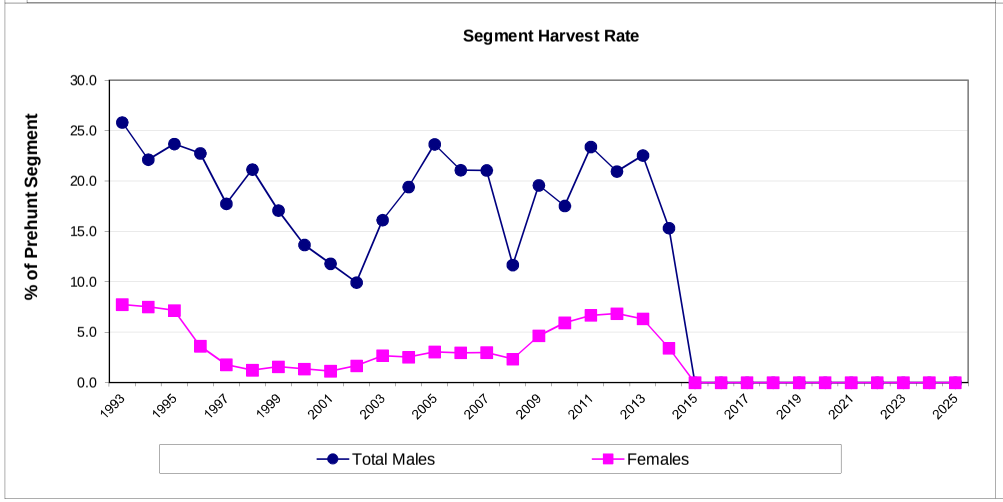
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

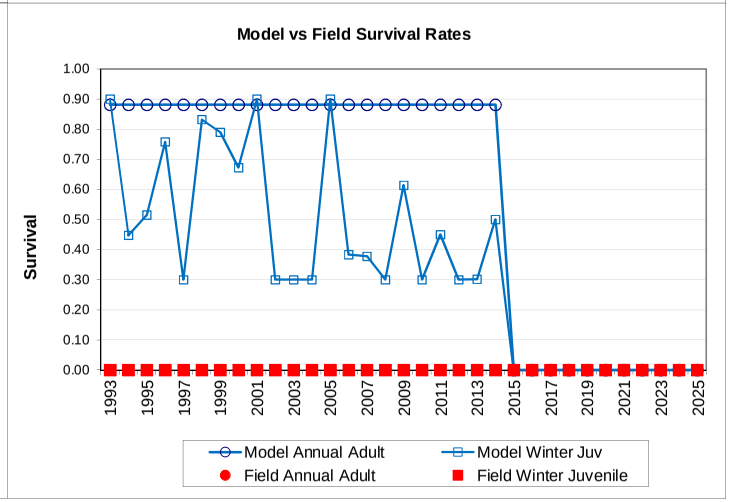
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		46.93	2.11	50.58	48.87	2.17	713	423	71	1207	25.8	7.7
1994		58.25	2.90	51.54	54.15	2.76	628	414	93	1135	22.1	7.5
1995		40.93	2.01	49.79	49.79	2.28	602	366	71	1039	23.7	7.2
1996		57.15	2.50	46.18	46.18	2.17	487	168	49	704	22.7	3.6
1997		42.12	2.06	48.59	50.78	2.33	422	87	30	539	17.7	1.8
1998		57.29	2.68	43.53	41.83	2.17	416	56	22	494	21.1	1.2
1999		65.16	2.89	47.74	47.74	2.34	407	79	12	498	17.1	1.6
2000		60.58	2.76	53.08	53.08	2.52	406	76	9	491	13.7	1.4
2001		61.67	2.95	55.87	52.96	2.66	395	69	15	479	11.8	1.2
2002		61.30	2.78	61.32	70.60	3.07	418	115	15	548	9.9	1.7
2003		54.75	2.55	59.69	60.58	2.73	631	176	21	828	16.1	2.7
2004		65.09	2.53	54.58	53.56	2.22	649	155	19	823	19.4	2.5
2005		65.26	2.57	49.48	47.49	2.07	682	178	17	877	23.6	3.1
2006		57.10	2.22	53.48	54.40	2.15	751	198	30	979	21.1	3.0
2007		59.57	2.26	48.58	48.58	1.97	653	191	28	872	21.1	3.0
2008		48.67	2.04	45.35	48.50	2.04	325	144	11	480	11.7	2.3
2009		48.81	2.03	45.04	42.52	1.85	503	265	63	831	19.6	4.6
2010		51.65	2.04	46.27	46.37	1.90	453	332	38	823	17.5	5.9
2011		60.48	2.44	44.73	44.62	1.99	523	334	53	910	23.4	6.7
2012		47.92	1.98	46.04	45.31	1.91			326	823	20.9	6.9
2013		50.13	2.25	43.48	43.35	2.04			270	717	22.5	6.3
2014		50.00	2.24	43.00	43.00	2.02			135	410	15.3	3.4
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES

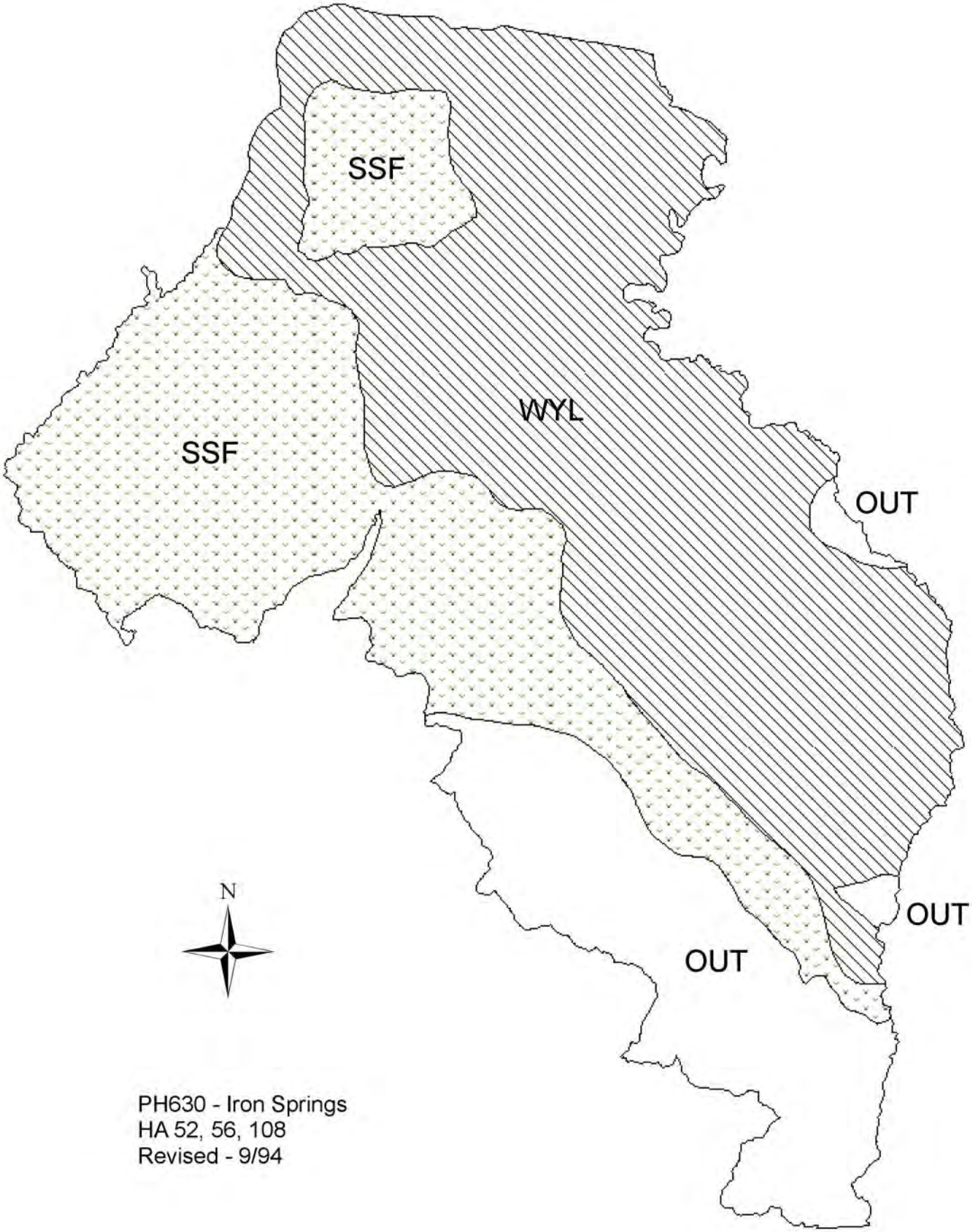








Comments:


SSF
SSF
WYL
OUT
OUT
OUT
N
PH630 - Iron Springs
HA 52, 56, 108
Revised - 9/94

2013 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2013 - 5/31/2014

HERD: PR631 - WIND RIVER

HUNT AREAS: 84

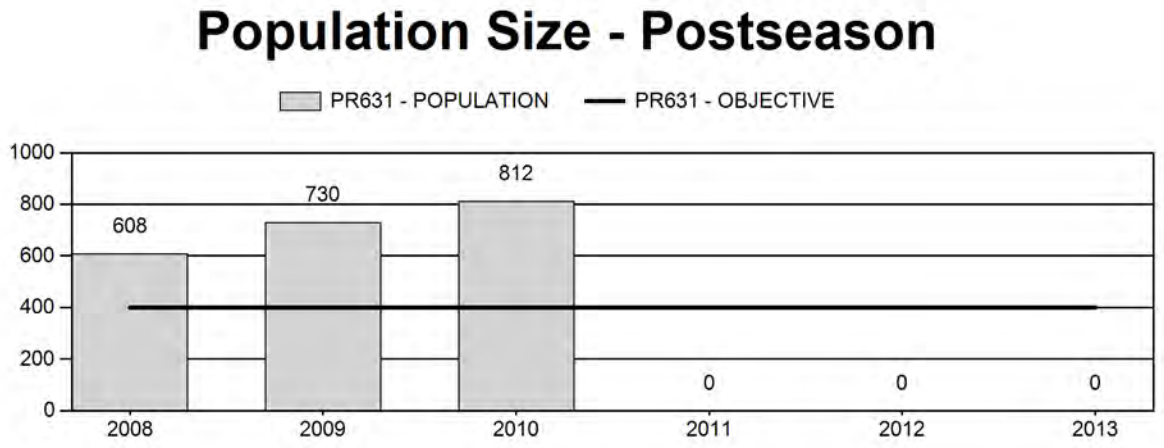
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	430	N/A	N/A
Harvest:	99	94	100
Hunters:	97	102	115
Hunter Success:	102%	92%	87 %
Active Licenses:	119	138	130
Active License Percent:	83%	68%	77 %
Recreation Days:	537	567	575
Days Per Animal:	5.4	6.0	5.8
Males per 100 Females	34	40	
Juveniles per 100 Females	49	25	

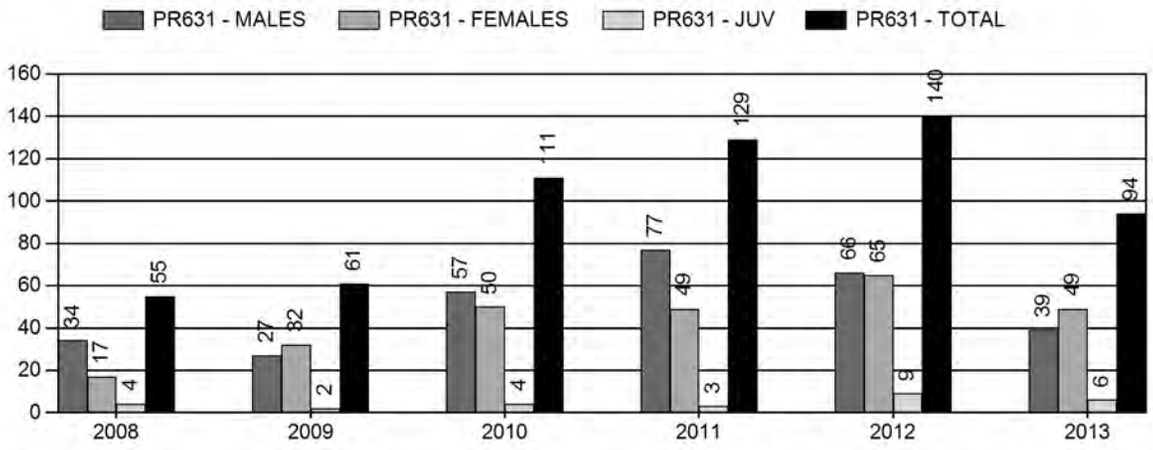
Population Objective:	400
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

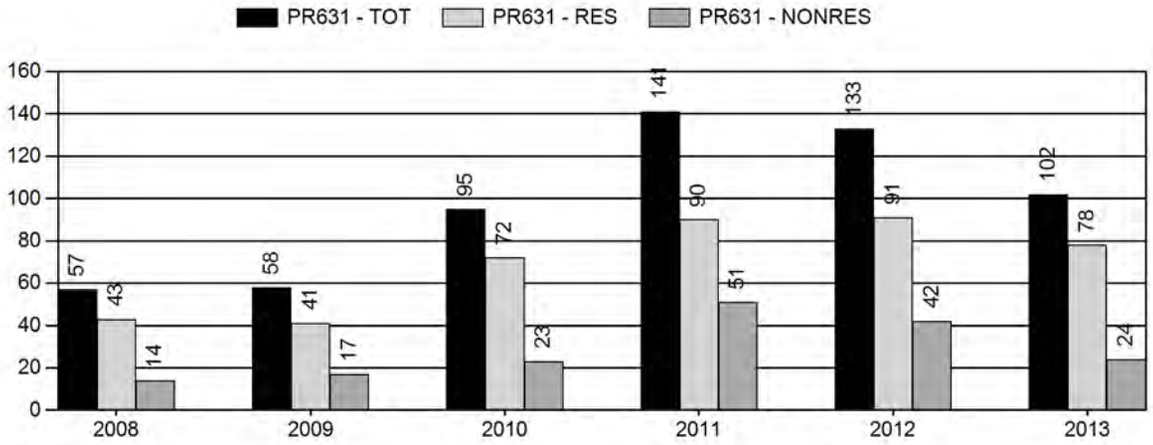
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



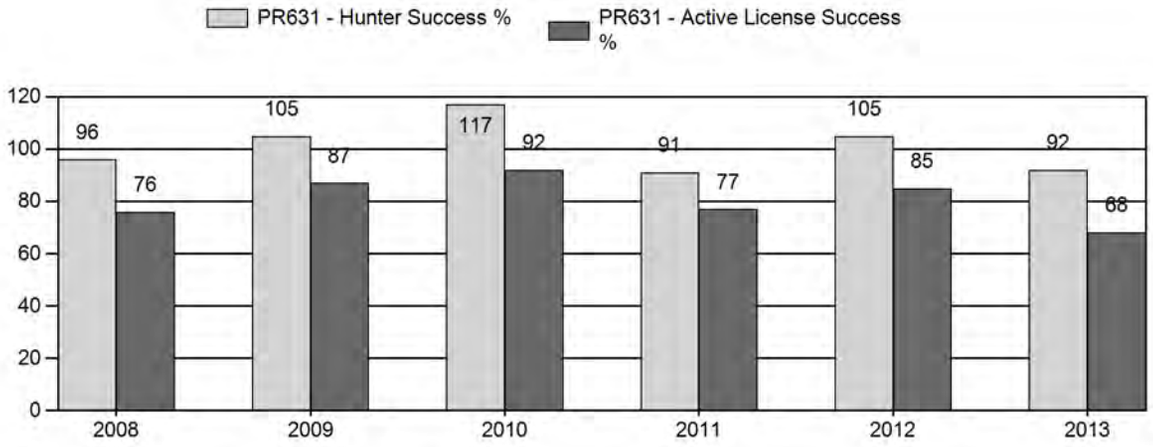
Harvest



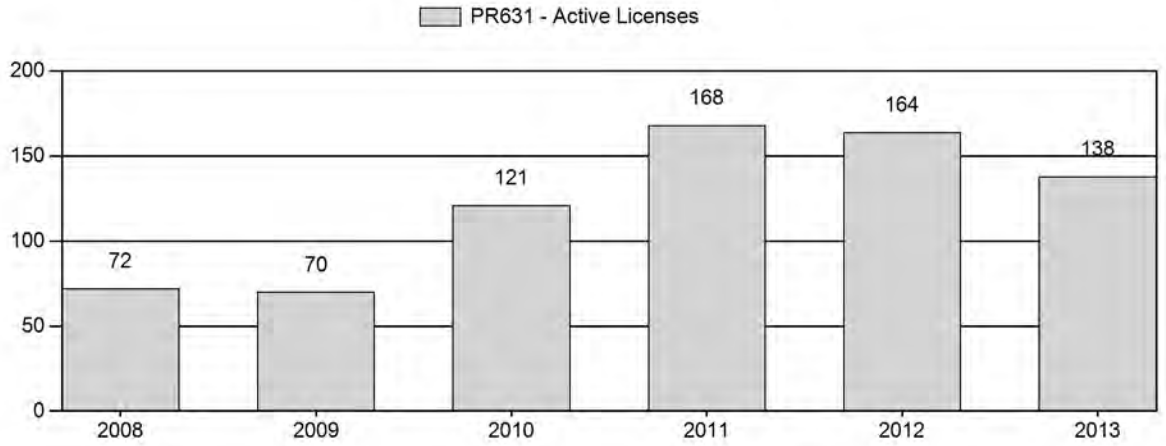
Number of Hunters



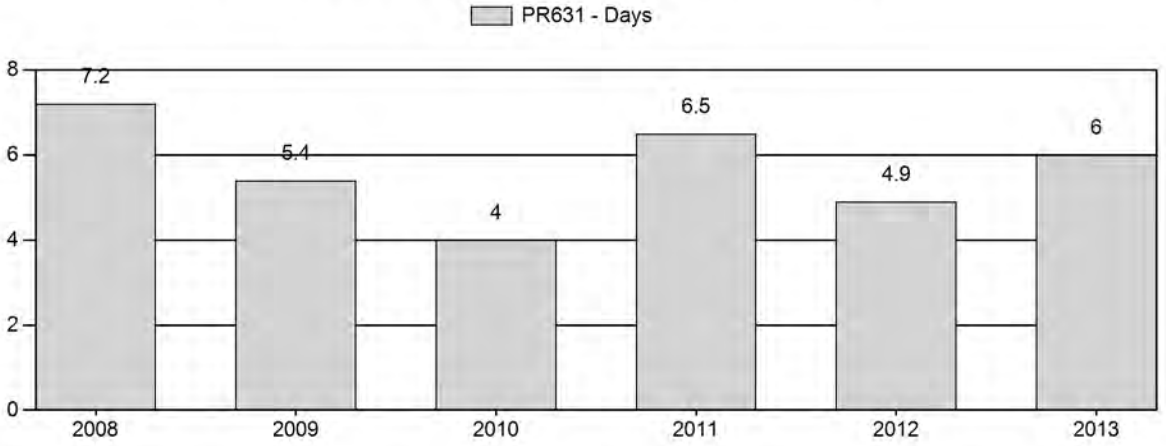
Harvest Success



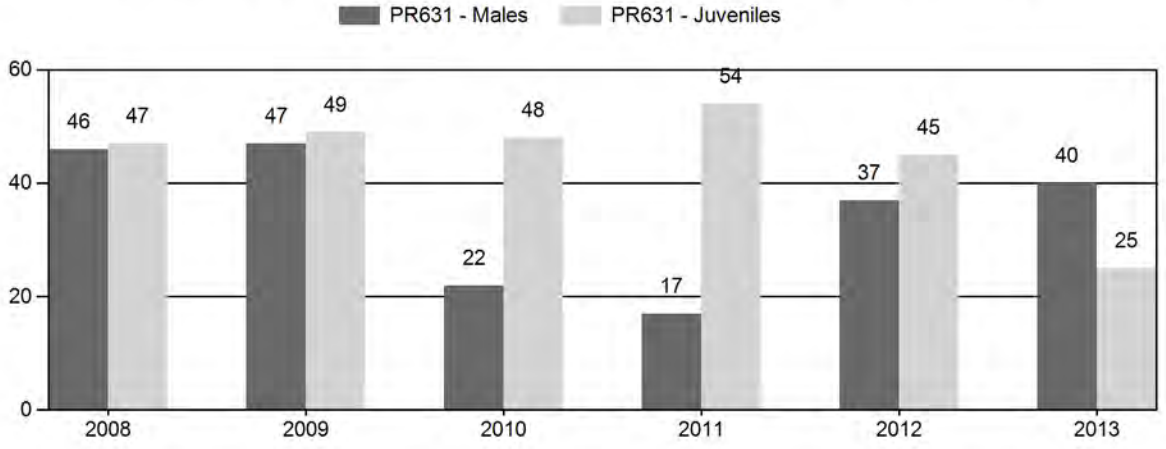
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR631 - WIND RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	663	0	0	103	24%	223	52%	105	24%	431	453	0	0	46	± 0	47	± 0	32
2009	790	0	0	123	24%	262	51%	129	25%	514	523	0	0	47	± 0	49	± 0	34
2010	923	0	0	79	13%	352	59%	169	28%	600	541	0	0	22	± 0	48	± 0	39
2011	0	4	17	21	10%	124	58%	67	32%	212	0	3	14	17	± 0	54	± 0	46
2012	0	7	29	36	20%	97	55%	44	25%	177	0	7	30	37	± 0	45	± 0	33
2013	0	7	14	21	24%	52	60%	13	15%	86	0	13	27	40	± 0	25	± 0	18

2014 HUNTING SEASONS
WIND RIVER PRONGHORN (PR 631)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
84	1	Sep. 20	Oct. 22	75	Limited quota; any antelope
	6	Sep. 20	Oct. 22	75	Limited quota; doe or fawn
Archery		Aug. 15	Sep. 19		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
84		
Total		

Management Evaluation
Current Management Objective: 400
Management Strategy: Recreational
2013 Postseason Population Estimate: unknown
2014 Proposed Postseason Population Estimate: unknown

Management Issues
The Wind River pronghorn herd has a management objective of 400 with a recreational management strategy. This objective has been in place since 1994. Despite the length of time the numerical objective has been on record, personnel have never been able to effectively estimate the population based on interchange with the Wind River Reservation (WRR) and difficulty collecting adequate demographic data in the mountainous terrain throughout the herd unit. Over the next year, the Lander Region plans to adopt a suitable alternative objective.

Habitat/Weather
This pronghorn population occupies the upper Wind River basin west of the WRR. Much of the habitat throughout the herd unit is marginal or unsuitable. Pronghorn densities are highest on the east end of the herd unit where they occupy deer and elk winter range throughout the summer months. Some pronghorn winter on bare slopes in the mountain foothills, but many migrate east down the Wind River onto the WRR. Available habitat and climatic conditions seem to be the biggest factors limiting this population.

The past year was characterized by extreme drought throughout the herd unit. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was approximately 55% of the previous 5 year average.

Herbaceous production was even lower than in 2012 which was also a very dry year. No shrub data is collected in the herd unit, but the dry conditions undoubtedly resulted in poor browse production. Casual observations of shrub conditions in the herd unit did indicate growth was poor. Given the majority of antelope spend much of the year on elk winter range, they subsisted on very poor feed in 2013 and undoubtedly entered winter in poor shape. In contrast to low precipitation during the growing season, there was unusually high precipitation throughout the herd unit starting in September. Much of the precipitation was snow and appeared to force some antelope out of the herd unit onto the WRR during the hunt season. With average winter conditions, overwinter antelope mortality may be higher than normal due to the poor condition of animals entering winter.

Field/Harvest Data/Population

Classification samples have been collected from the ground and have been low over the past 3 years. Prior to that classification data was collected aerially and sample sizes were much higher. In 2013 the classification sample was very low at 86 antelope. Personnel were involved in other duties in August, 2013 so the low sample size is more an artifact of effort than a population change. That said, the classification sample yielded a very low fawn/doe ratio at 25/100. The buck/doe ratio was also extremely low at 18/100. Given poor weather conditions over the past 2 years it is certainly possible recruitment was low and the buck/doe ratio declined. However, the magnitude of the declines in both ratios for 2013 should be viewed with caution given the low sample size.

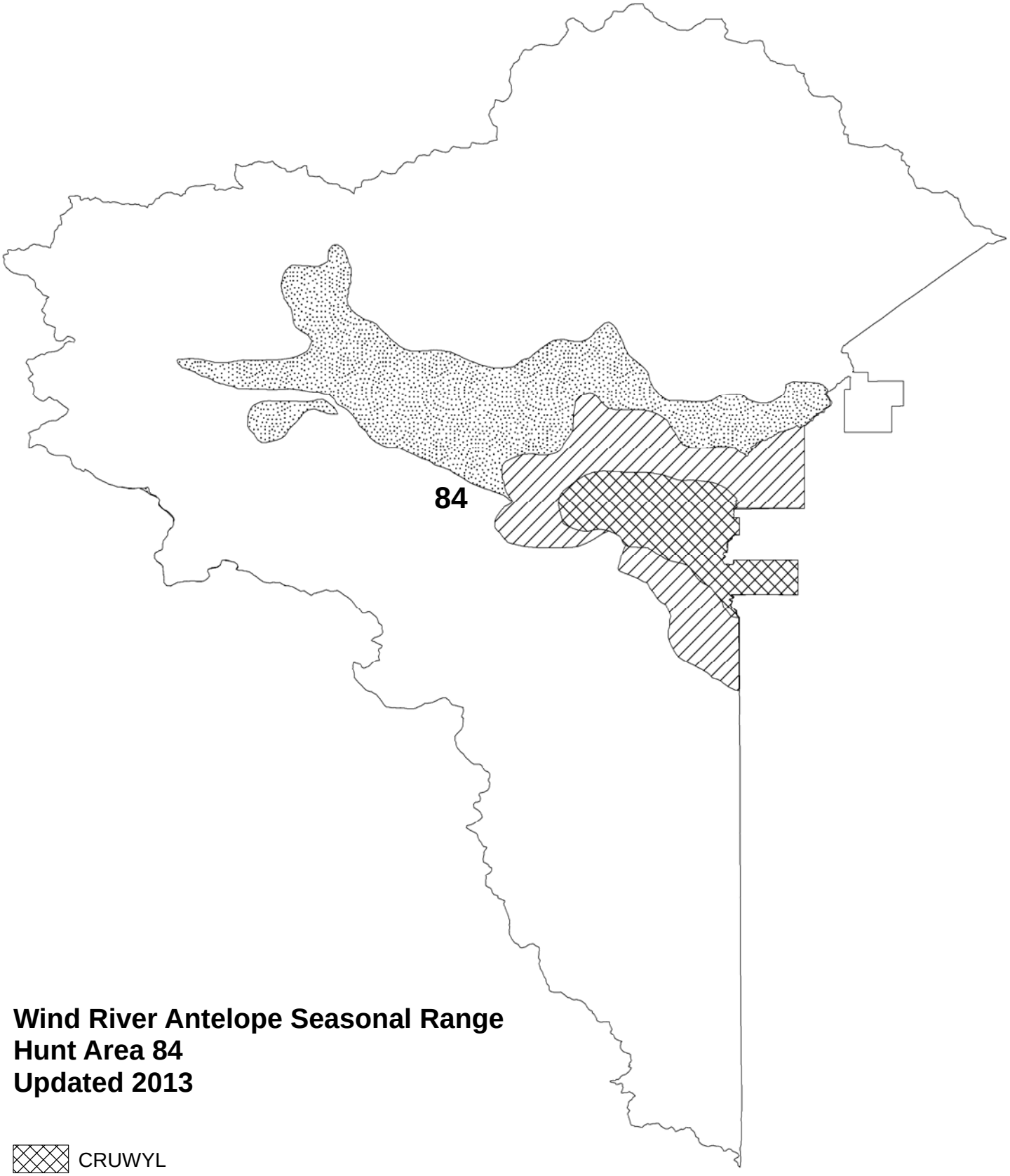
Similar to classification data, harvest statistics for 2013 indicate low buck numbers. The Type 1 license success rate was only 61%. Hunter success tends to be lower in this herd than many antelope herds with a 10 year average of 83%. That said, 61% success in 2013 is quite low even for this herd unit. While the low success rate is indicative of poor hunting, it is not necessarily related to a population decline. As mentioned previously, there was abnormally high snowfall and rain throughout the herd unit in the fall. Weather conditions are likely to have resulted in decreased antelope hunter effort. In addition, casual observations suggest some antelope moved onto the WRR along the Wind River as a result of the early winter conditions during the hunt season. These animals subsequently moved back into the herd unit as conditions moderated in mid-winter.

While both classification data and harvest statistics indicate a significant population decline in 2013, the data is suspect for the reasons mentioned above. It is likely the population did decline some over the past 2 years as a result of poor environmental conditions, but it is doubtful the magnitude of decline is as great as indicated by 2013 data. If classification data and harvest statistics for 2014 are similar to 2013 values the possibility of a larger population decline should be considered.

Management Summary

Given scarce demographic data it is difficult to make strong statements regarding population trend in this herd unit. Anecdotally, based on public and personnel observations, it appears this population grew substantially from the middle to end of the past decade. Following a harsh winter in 2010 and extreme drought in 2012 and 2013 it seems the population declined somewhat, but not as dramatically as indicated by the 2013 data. License numbers were reduced

in 2013 in response to the perceived decline. For 2014, license numbers will remain unchanged since the numbers are low enough to have little effect on the overall population.



Wind River Antelope Seasonal Range
Hunt Area 84
Updated 2013

CRUWYL
OUT
SSF
WYL
YRL

N

2013 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2013 - 5/31/2014

HERD: PR632 - BEAVER RIM

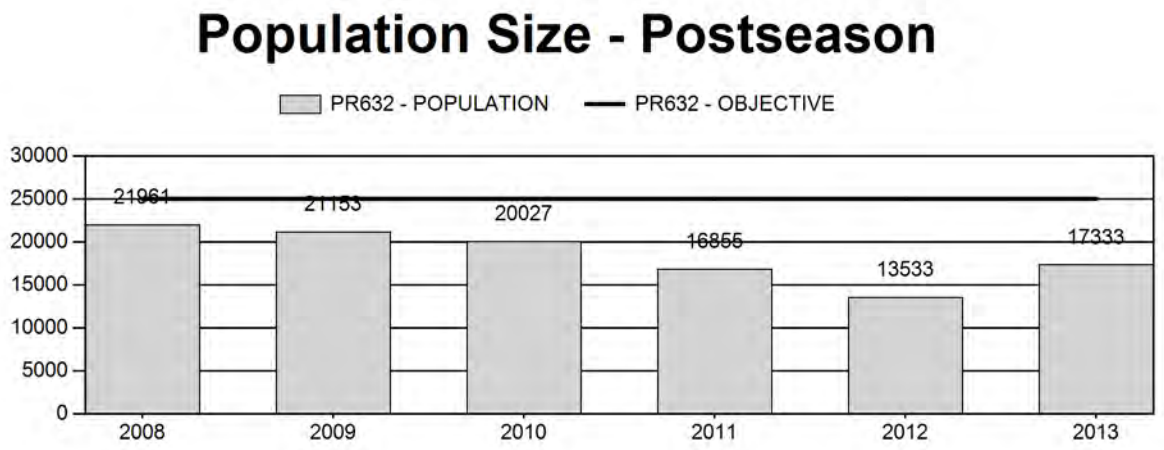
HUNT AREAS: 65-69, 74, 106 | PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	18,706	17,333	16,880
Harvest:	2,570	1,115	1,125
Hunters:	2,587	1,272	1,200
Hunter Success:	99%	88%	94 %
Active Licenses:	2,924	1,366	1,325
Active License Percent:	88%	82%	85 %
Recreation Days:	8,180	3,889	3,800
Days Per Animal:	3.2	3.5	3.4
Males per 100 Females	56	46	
Juveniles per 100 Females	59	54	

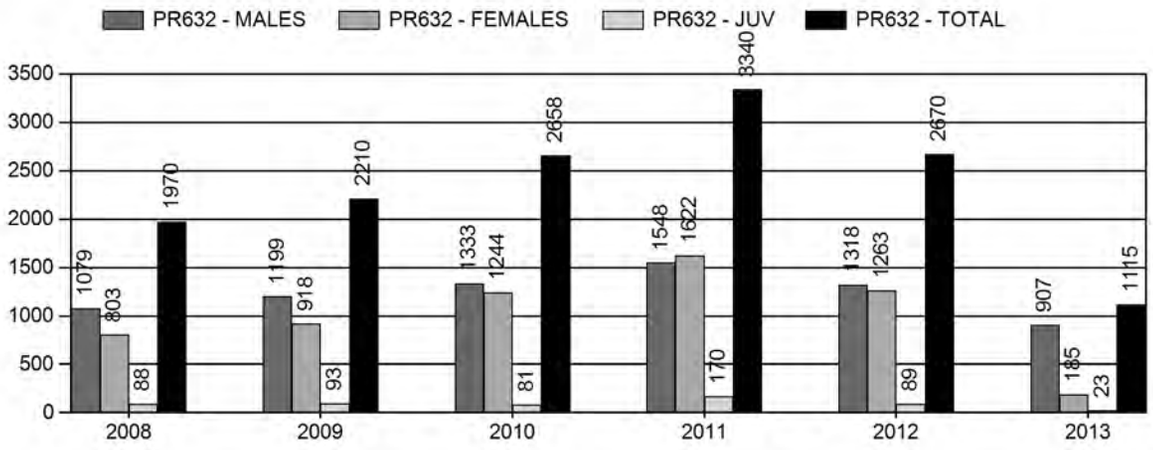
Population Objective:	25,000
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-30.7%
Number of years population has been + or - objective in recent trend:	7
Model Date:	3/3/2014

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

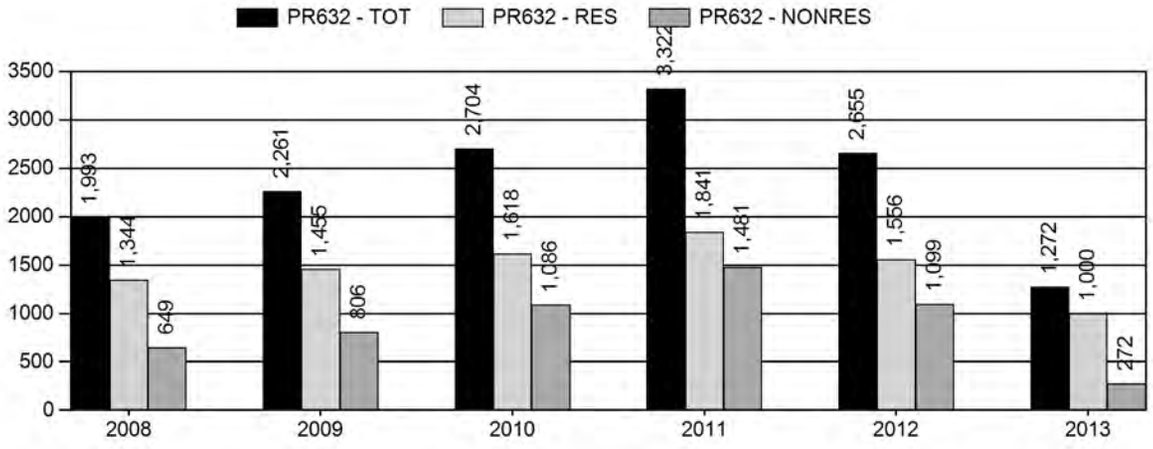
	JCR Year	Proposed
Females ≥ 1 year old:	2.3%	2.4%
Males ≥ 1 year old:	21.4%	22.3%
Juveniles (< 1 year old):	0.1%	0.1%
Total:	6.0%	6.2%
Proposed change in post-season population:	+11.8%	-2.6%



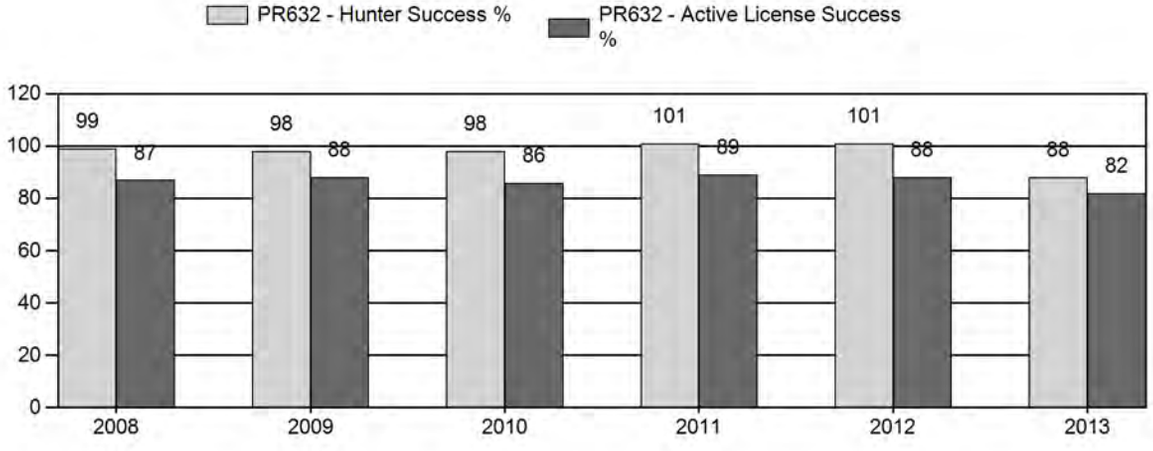
Harvest



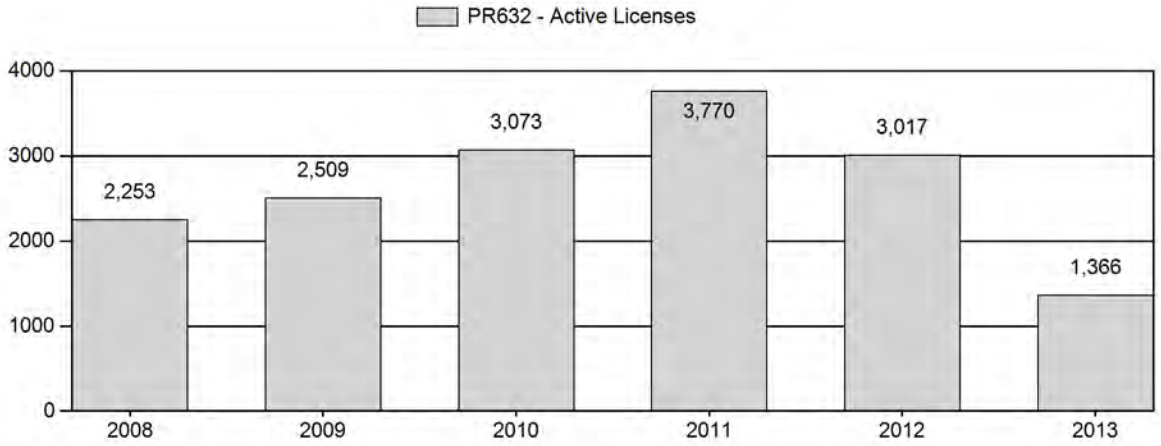
Number of Hunters



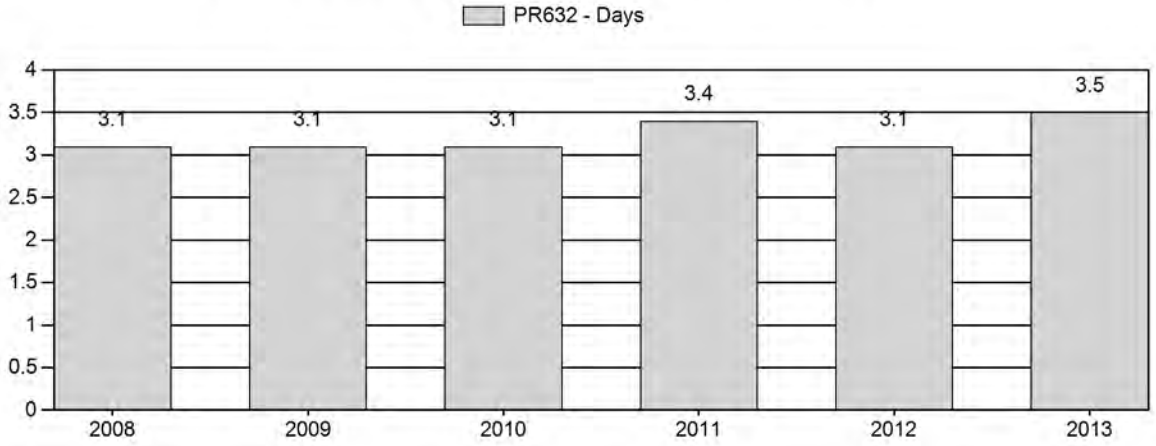
Harvest Success



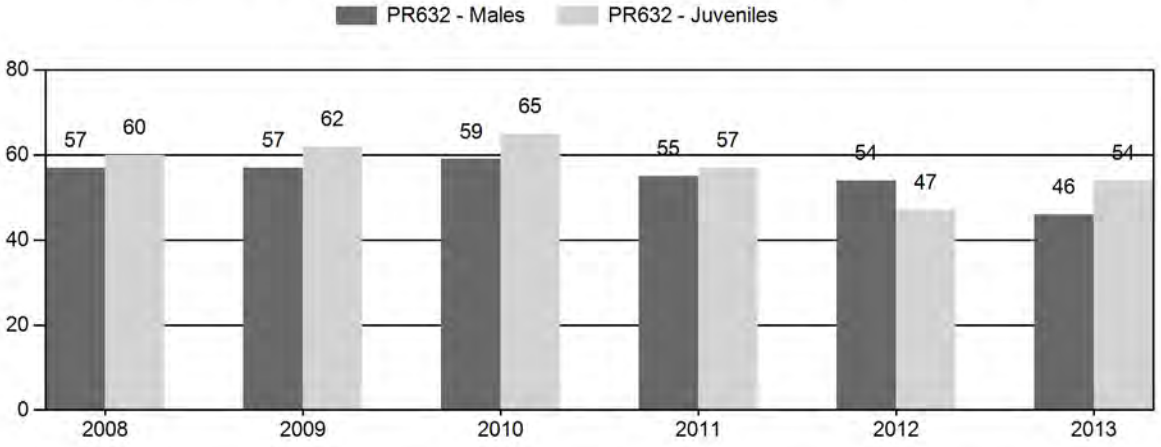
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR632 - BEAVER RIM

		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
2008	24,128	687	1,447	2,134	26%	3,747	46%	2,232	28%	8,113	2,064	18	39	57	± 2	60	± 2	38
2009	23,584	649	1,673	2,322	26%	4,109	46%	2,529	28%	8,960	2,190	16	41	57	± 2	62	± 2	39
2010	22,951	778	1,745	2,523	26%	4,278	45%	2,800	29%	9,601	2,381	18	41	59	± 2	65	± 2	41
2011	20,529	521	1,413	1,934	26%	3,544	47%	2,011	27%	7,489	1,893	15	40	55	± 2	57	± 2	37
2012	16,470	317	1,234	1,551	27%	2,867	50%	1,350	23%	5,768	1,766	11	43	54	± 2	47	± 2	31
2013	18,560	149	1,314	1,463	23%	3,199	50%	1,725	27%	6,387	1,608	5	41	46	± 2	54	± 2	37

2014 HUNTING SEASONS
Beaver Rim Pronghorn Herd Unit (PR 632)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	Quota	LIMITATIONS
65	1	Sept. 20	Oct. 22	75	Limited quota; any antelope
	6	Sept. 20	Oct. 22	25	Limited quota; doe or fawn
	7	Sept. 1	Oct. 31	75	Limited quota; doe or fawn valid north of the Little Popo Agie River
66	1	Sept. 20	Oct. 22	75	Limited quota; any antelope
	6	Sept. 20	Oct. 22	75	Limited quota; doe or fawn
67	1	Sept. 20	Oct. 22	250	Limited quota; any antelope
	6	Sept. 20	Oct. 22	25	Limited quota; doe or fawn
68	1	Sept. 20	Oct. 22	250	Limited quota; any antelope
	6	Sept. 20	Oct. 22	25	Limited quota; doe or fawn
69	1	Sept. 15	Oct. 31	75	Limited quota; any antelope
	6	Sept. 15	Oct. 31	25	Limited quota; doe or fawn
74	1	Sept. 20	Oct. 22	200	Limited quota; any antelope
	6	Sept. 20	Oct. 22	25	Limited quota; doe or fawn
106	1	Sept. 20	Oct. 22	100	Limited quota; any antelope
	6	Sept. 20	Oct. 22	25	Limited quota; doe or fawn

Hunt Area	Type	Change from 2013
65	6	-25
	7	+75
67	1	-50
68	1	-50
	6	-25
69	1	-25
106	1	-25
	6	-25
	1	**-125**
	6 & 7	**0**
Total PR 632		**-125**

MANAGEMENT EVALUATION

Current Management Objective: 25,000
Management Strategy: Special (60-70 bucks/100 does)
2013 Post-season Population Estimate: ~17,300
2014 Post-season Population Estimate: ~16,900

Herd Unit Issues

Habitats are relatively intact with localized energy development and agricultural developments scattered throughout the herd unit, and urban/rural residential development occurring primarily near Lander. This population fluctuated below objective in the 1990s, approached the objective in the mid-2000s, and has subsequently declined to a 2013 post-season population of about 17,300 pronghorn, about 31% below objective.

Weather/Habitat

Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced heavy snow through early May throughout the herd unit. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.34 and 0.2 inches of precipitation recorded in Lander and Jeffrey City respectively from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Thus, poor body condition was observed in many pronghorn by late-summer, especially lactating females. Many does were observed in late-August and September with backbones and ribs showing. Rain and snow returned to the area in September and October 2013, with nearly 300% of normal precipitation recorded in Lander and Jeffrey City with warm temperatures between early storms. This led to improvement in vegetation condition, primarily grasses. Consequently, many pronghorn were observed with apparent improvement in body condition in fall and early-winter compared with those observed in late-summer. In spite of fairly mild winter conditions in 2013-14, late winter mortality may still be above average due to the poor condition of winter range shrubs following long-term drought.

Field Data

Fawn/doe ratios have declined the past 3 years, but increased to 54J/100F in 2013. Buck/doe ratios continued to decline to 46M/100F in 2013. As expected following an 18-year low fawn/doe ratio in 2012, the yearling buck/doe ratio fell dramatically to 5YM/100F in 2013. This was also likely due in part to the extensive late-winter blizzard conditions experienced in April 2013 causing mortality among many species. With the lingering effects of drought on sagebrush and other shrubs throughout the herd unit, we don’t anticipate rapid recovery of this population or buck/doe ratios.

Harvest Data

With declines in pronghorn numbers, 2013 hunting seasons had dramatic reductions in license quotas. Yet, harvest statistics indicated some hunters still had difficulty finding pronghorn or were less satisfied with quality, especially adult buck quality. Hunter success in 2013 dropped from 101% to 88%, along with active license success decreasing from 88% to 82%. In all, it took 3.5 days of hunting for each animal harvested. This statistic was the highest since 1994, albeit barely above the 3.4 days/animal needed in some years. However, this is a large herd unit and success rates were more variable between hunt areas (range of 49% to 100% for Type 6 doe/fawn licenses and 67% to 92% for Type 1 any antelope licenses). Concerns about low pronghorn numbers were heard from hunters in several areas. Adjustments to the 2014 season structure have been made considering these variables, combined with variations in classification data to best fit harvest to individual hunt areas.

Population

A spreadsheet model was developed for this population in 2012, and updated utilizing 2013 pre-season classification and 2013 harvest data. The CJ, CA model was selected because it had the lowest Relative AICc value and generated population estimates that are either closely aligned with the LT point estimate or lie within the 95% confidence intervals (CI) for 5 of 6 LT estimates. Therefore, the model is considered Good. The latest LT survey was conducted in bio-year 2010, with a resultant end-of-year population estimate of almost 20,000. The spreadsheet model simulates the 2010 end-of-year trend just below the CI for that LT, but the 2013 model aligns closer to this CI than did the 2012 version. Regardless, the model appears to consistently follow perceived population trends. The initial model in 2012 showed a much lower population throughout the past decade than the 2013 version and did not align as well with all LT estimates. In addition, another LT survey is planned for the end of the current bio-year (2013). Therefore, we anticipate the need to adjust population data in the JCR database once the LT is completed to reflect the model as it incorporates the new LT. We predict this model will then "settle in" and don't anticipate such dramatic changes will be needed in the future.

Management Summary

For 2014, adjustments in license numbers were made to control limited private land damage situations, while providing hunter opportunity. Due to very low yearling buck/doe ratios and overall lower buck numbers, the number of Type 1 licenses was reduced again in some areas, especially where buck/doe ratios fell or were already low. The overall buck/doe ratio is about 23% below the minimum of 60M/100F needed to keep this population within the Department's Special Management criteria. Reductions made in 2013 and continued adjustments for 2014 are consistent with public comments received during hunting seasons and at public meetings.

The seasons outlined should curb population decline if drought lessens and fawn production levels improve. Doe/fawn licenses remain a part of the 2014 hunting season structure to address localized damage to private land hay crops. Growing numbers of pronghorn in the Lander Foothills have prompted an increase in the number of Hunt Area 65 Type 7 licenses available, and at the request of one landowner who will provide access, the season length for that license has been changed to open early (Sept. 1 compared to Sept. 20 as advertised online) and close later (end of October). A total of 1,025 any antelope and 300 doe/fawn licenses will be available for 2014, and should result in a harvest of approximately 1,100 animals. With average survival in combination with our harvest, we anticipate the population to remain relatively stable at just under 17,000 pronghorn.

INPUT	
Species:	Pronghorn
Biologist:	Stan Harter
Herd Unit & No.:	Beaver Rim (PR632)
Model date:	03/03/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	113	122	☑ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	113	122	☐ SCJ,SCA Mode	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	96	196	☐ 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		
1994	4571	3758	9242	**17571**	4487	2908	8332	**15727**	3719	8681	**12400**				25000
1995	3781	3645	8507	**15933**	3781	3037	8488	**15307**	3701	8755	**12456**	12460	1658		25000
1996	5569	3627	8580	**17775**	5569	2979	8558	**17105**	4108	9282	**13390**				25000
1997	4826	4025	9096	**17948**	4805	3375	9068	**17248**	4267	9545	**13812**				25000
1998	5609	4181	9354	**19145**	5608	3522	9260	**18390**	4614	9928	**14542**	15290	2692		25000
1999	5570	4522	9729	**19821**	5559	3754	9688	**19001**	4799	10311	**15110**				25000
2000	5578	4703	10104	**20385**	5558	3927	10019	**19503**	4954	10606	**15560**				25000
2001	5275	4855	10394	**20524**	5268	4202	10368	**19839**	5147	10861	**16008**	14650	2577		25000
2002	5278	5044	10644	**20966**	5273	4365	10570	**20207**	5295	11042	**16337**				25000
2003	6165	5189	10821	**22175**	6164	4401	10692	**21257**	5550	11380	**16930**				25000
2004	7786	5439	11153	**24378**	7760	4700	10932	**23391**	6237	11998	**18235**	19677	2176		25000
2005	7718	6112	11758	**25588**	7692	5340	11432	**24463**	6802	12428	**19229**				25000
2006	7275	6666	12179	**26120**	7228	5657	11621	**24506**	6942	12452	**19393**				25000
2007	7312	6803	12203	**26318**	7238	5470	11395	**24103**	6732	12214	**18947**	17919	2347		25000
2008	7130	6598	11970	**25698**	7033	5411	11087	**23531**	6635	11865	**18500**				25000
2009	7156	6502	11628	**25286**	7054	5183	10618	**22855**	6417	11426	**17843**				25000
2010	7329	6288	11198	**24815**	7240	4822	9829	**21891**	6122	10718	**16840**	19965	2762		25000
2011	5960	5999	10504	**22463**	5773	4296	8719	**18789**	5210	9253	**14463**				25000
2012	4270	5106	9068	**18443**	4172	3656	7678	**15506**	4768	9206	**13974**				25000
2013	4865	4672	9022	**18560**	4840	3675	8819	**17333**	4533	9303	**13836**				25000
2014	4558	4442	9117	**18118**	4531	3452	8897	**16880**							25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000
0															25000

Survival and Initial Population Estimates

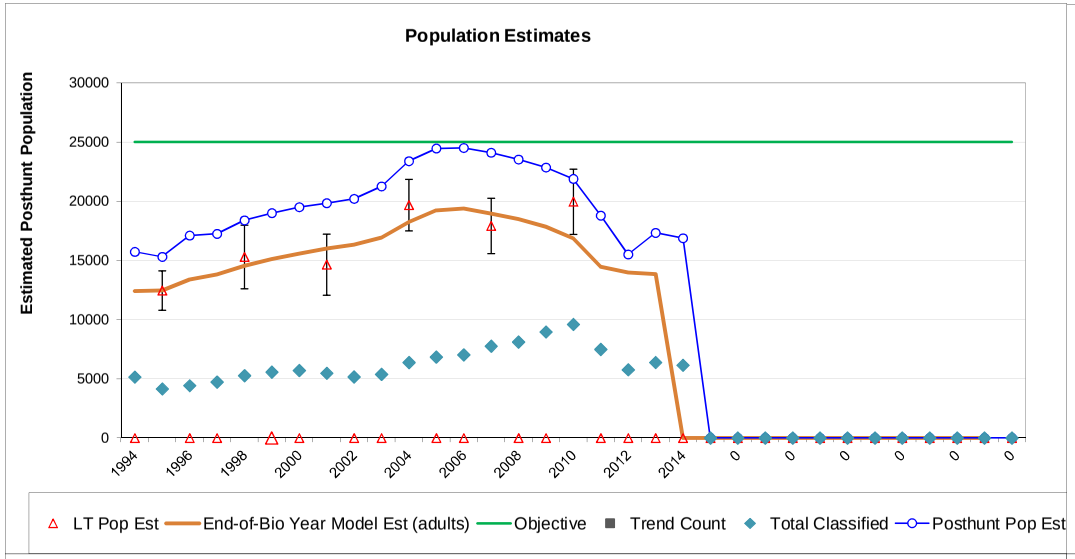
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1994	0.51			0.90		
1995	0.51			0.90		
1996	0.51			0.90		
1997	0.51			0.90		
1998	0.51			0.90		
1999	0.51			0.90		
2000	0.51			0.90		
2001	0.51			0.90		
2002	0.51			0.90		
2003	0.51			0.90		
2004	0.51			0.90		
2005	0.51			0.90		
2006	0.51			0.90		
2007	0.51			0.90		
2008	0.51			0.90		
2009	0.51			0.90		
2010	0.51			0.90		
2011	0.51			0.90		
2012	0.51			0.90		
2013	0.51			0.90		
2014	0.51			0.90		
0						
0						
0						
0						
0						
0						
0						
0						
0						
0						
0						
0						

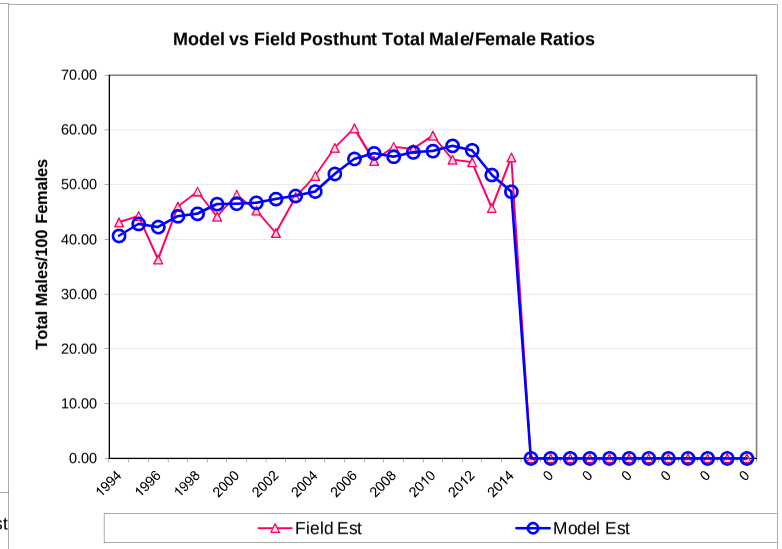
Parameters:	Optim cells
Juvenile Survival =	0.509
Adult Survival =	0.898
Initial Total Male Pop/10,000 =	0.376
Initial Female Pop/10,000 =	0.924

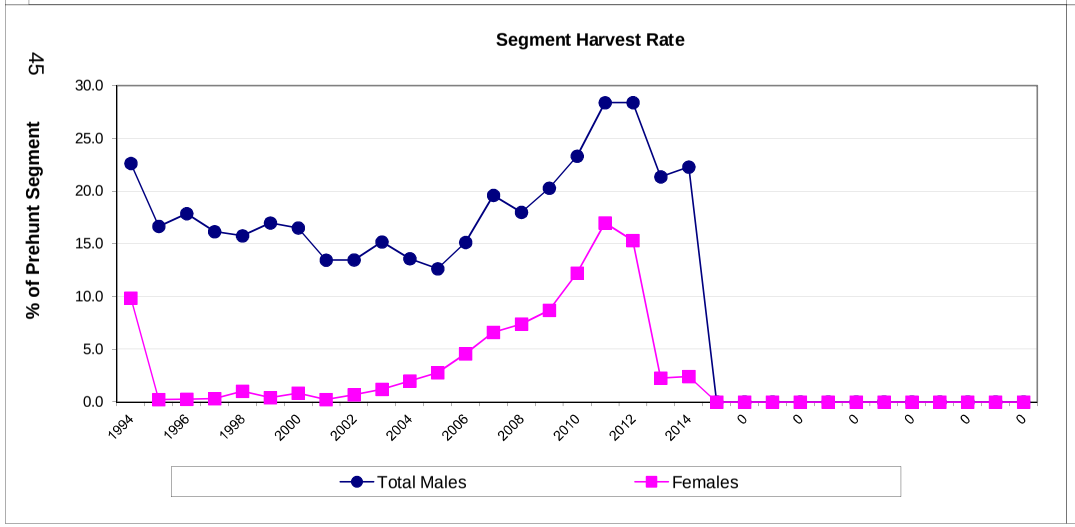
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

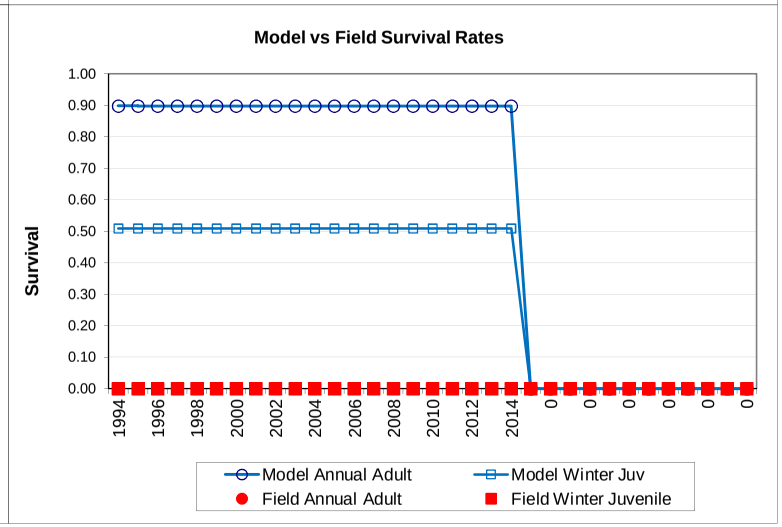
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Males	Females	Juveniles	Total Harvest	Total Males	Females
1994		49.46	1.66	40.66	43.14	1.52	773	828	76	1677	22.6	9.9
1995		44.45	1.71	42.84	44.31	1.71	552	17	0	569	16.7	0.2
1996		64.91	2.21	42.27	36.32	1.50	589	20	0	609	17.9	0.3
1997		53.06	1.85	44.25	45.98	1.68	591	26	19	636	16.2	0.3
1998		59.96	1.95	44.70	48.77	1.70	599	86	1	686	15.8	1.0
1999		57.25	1.80	46.48	44.16	1.52	698	37	10	745	17.0	0.4
2000		55.20	1.75	46.55	48.18	1.59	706	78	18	802	16.5	0.8
2001		50.75	1.66	46.71	45.31	1.54	594	23	6	623	13.5	0.2
2002		49.59	1.66	47.39	41.20	1.47	618	67	5	690	13.5	0.7
2003		56.97	1.84	47.95	47.74	1.64	716	117	1	834	15.2	1.2
2004		69.81	2.03	48.77	51.63	1.65	672	201	24	897	13.6	2.0
2005		65.64	1.88	51.98	56.74	1.70	702	297	24	1023	12.6	2.8
2006		59.74	1.73	54.73	60.33	1.74	917	507	43	1467	15.1	4.6
2007		59.92	1.63	55.75	54.37	1.52	1212	734	67	2013	19.6	6.6
2008		59.57	1.59	55.12	56.95	1.54	1079	803	88	1970	18.0	7.4
2009		61.55	1.56	55.92	56.51	1.47	1199	918	93	2210	20.3	8.7
2010		65.45	1.59	56.16	58.98	1.48	1333	1244	81	2658	23.3	12.2
2011		56.74	1.58	57.12	54.57	1.54	1548	1622	170	3340	28.4	17.0
2012		47.09	1.55	56.31	54.10	1.71	1318	1263	89	2670	28.4	15.3
2013		53.92	1.61	51.79	45.73	1.44	907	185	23	1115	21.4	2.3
2014		50.00	1.58	48.73	55.00	1.69	900	200	25	1125	22.3	2.4
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												

FIGURES



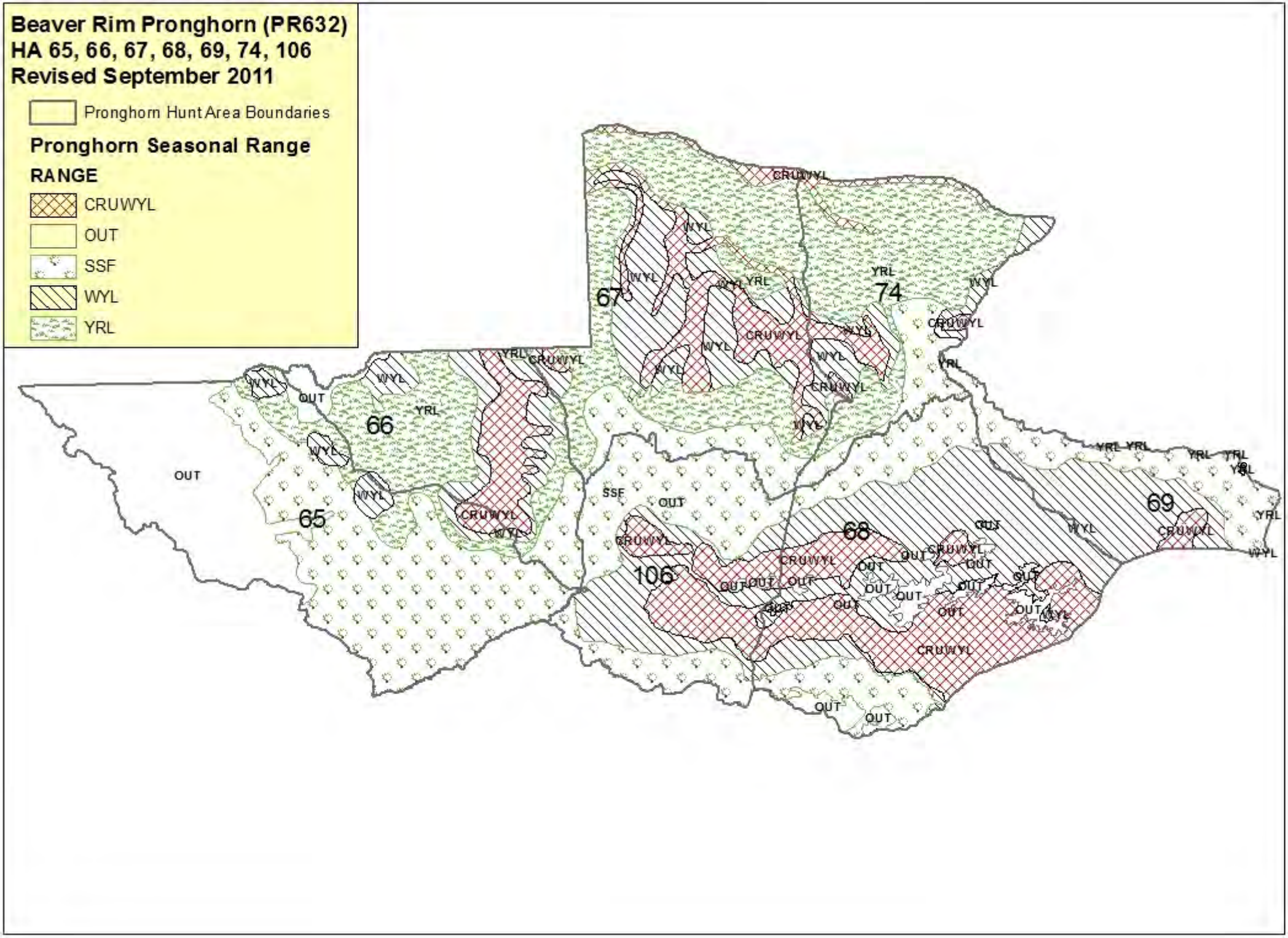






Comments:

END


Beaver Rim Pronghorn (PR632)
HA 65, 66, 67, 68, 69, 74, 106
Revised September 2011
Pronghorn Hunt Area Boundaries
Pronghorn Seasonal Range
RANGE
CRUWYL
OUT
SSF
WYL
YRL
65
66
67
68
69
74
106

2013 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2013 - 5/31/2014

HERD: PR634 - BADWATER

HUNT AREAS: 75

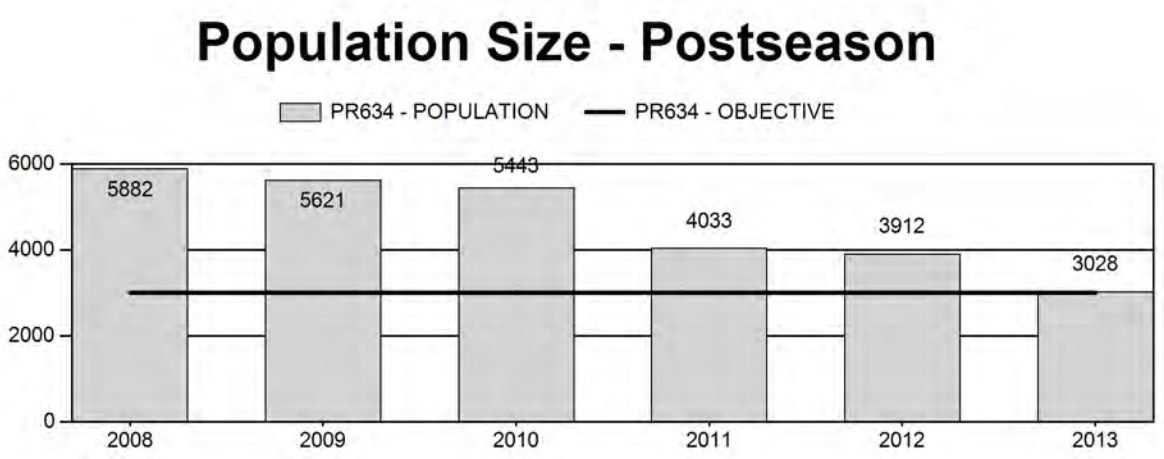
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	4,978	3,028	2,956
Harvest:	664	536	295
Hunters:	697	519	300
Hunter Success:	95%	103%	98%
Active Licenses:	749	585	325
Active License Percent:	89%	92%	91%
Recreation Days:	2,280	1,376	900
Days Per Animal:	3.4	2.6	3.1
Males per 100 Females	64	50	
Juveniles per 100 Females	51	44	

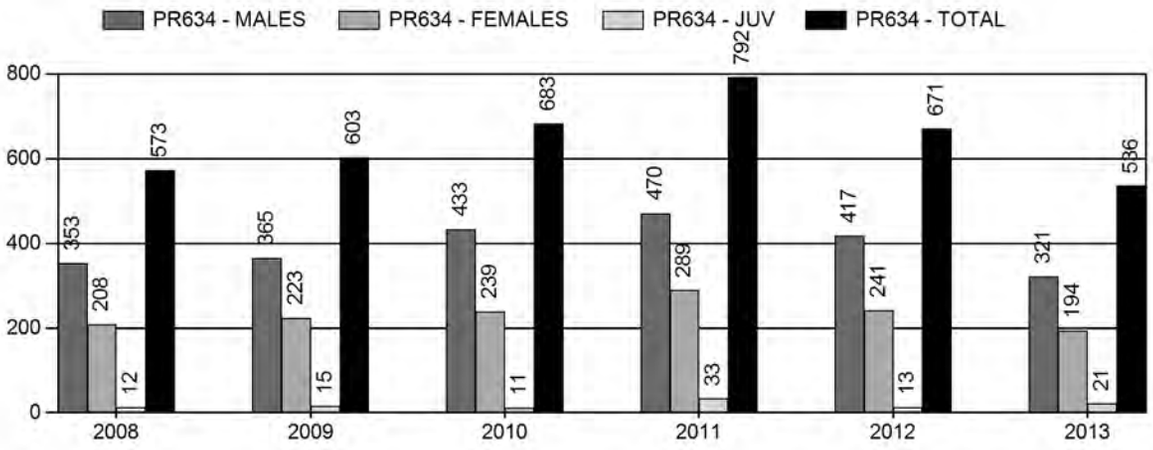
Population Objective:	3,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	1%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/13/2014

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

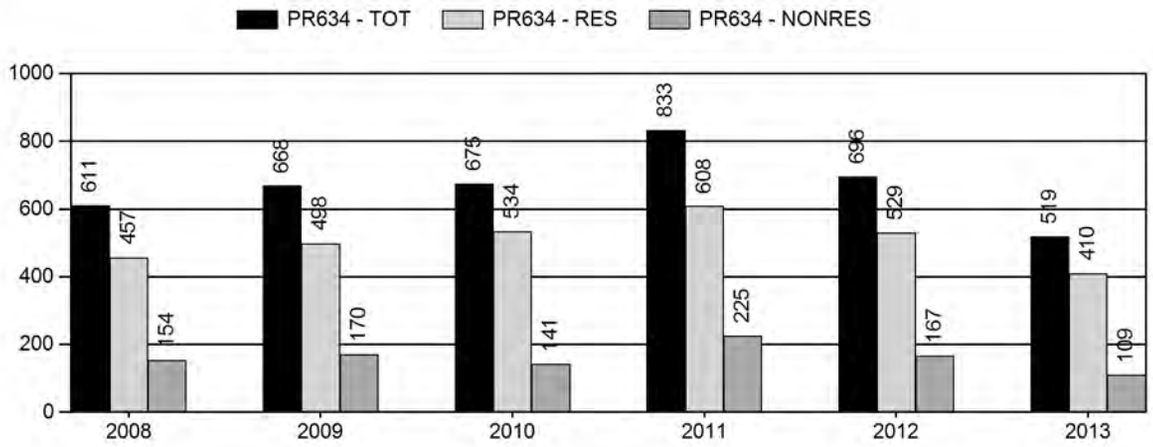
	JCR Year	Proposed
Females ≥ 1 year old:	12%	3%
Males ≥ 1 year old:	45%	41%
Juveniles (< 1 year old):	1%	1%
Total:	15%	8%
Proposed change in post-season population:	-20%	-2%



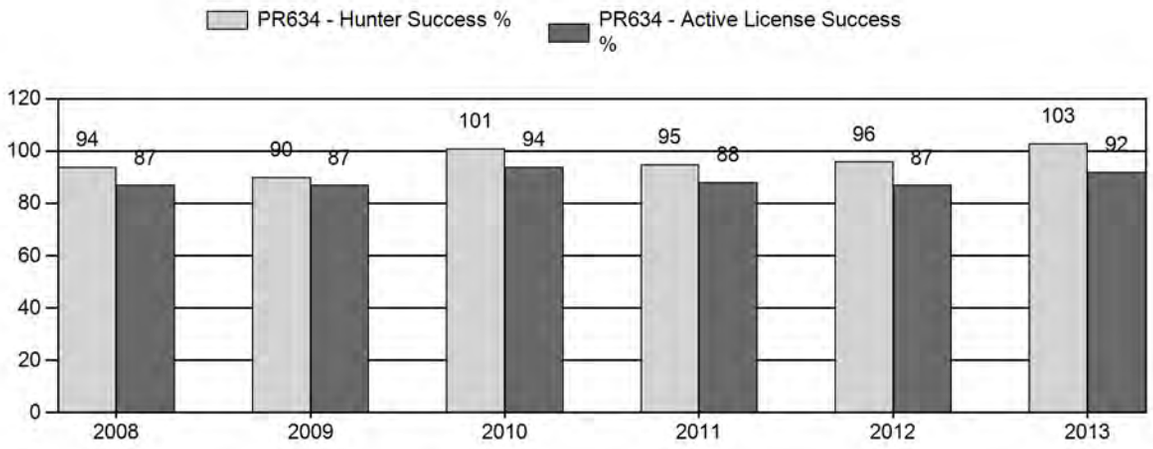
Harvest



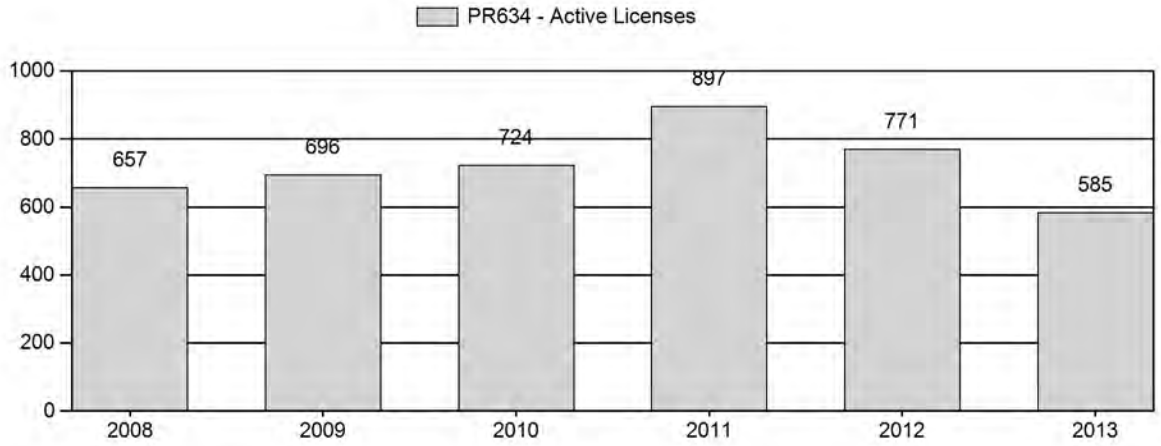
Number of Hunters



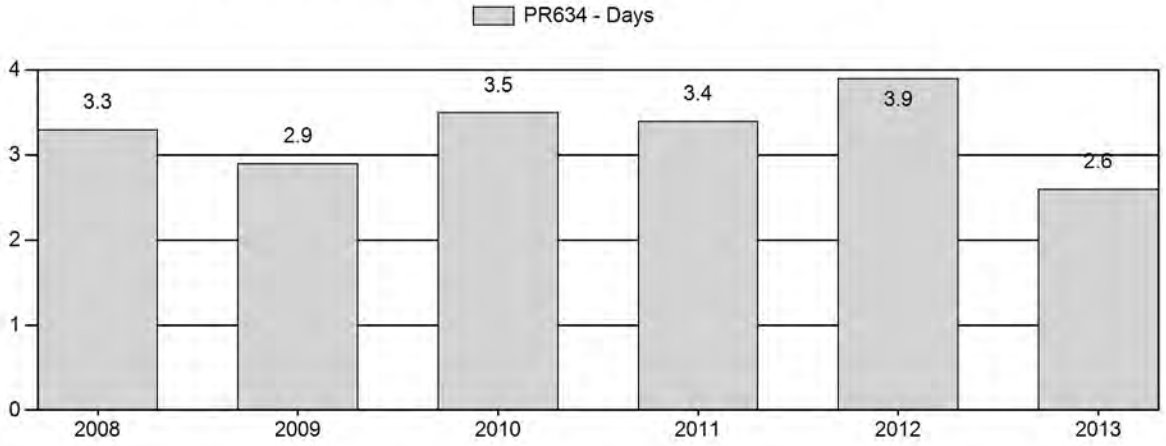
Harvest Success



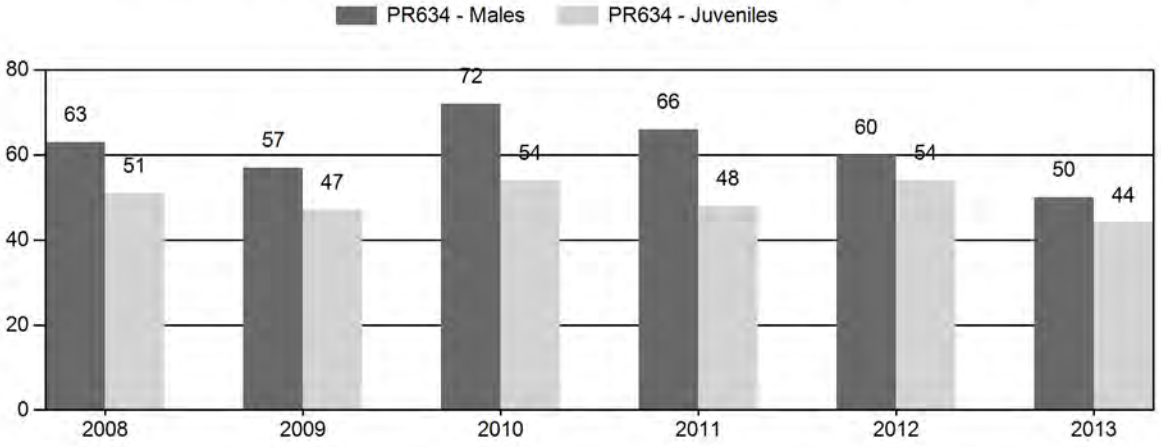
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR634 - BADWATER

		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
2008	6,512	176	361	537	29%	858	47%	439	24%	1,834	1,489	21	42	63	± 5	51	± 4	31
2009	6,285	164	360	524	28%	923	49%	433	23%	1,880	1,279	18	39	57	± 4	47	± 4	30
2010	6,195	191	425	616	32%	860	44%	464	24%	1,940	1,955	22	49	72	± 5	54	± 4	31
2011	4,904	113	468	581	31%	875	47%	421	22%	1,877	1,689	13	53	66	± 5	48	± 4	29
2012	4,650	83	296	379	28%	631	47%	339	25%	1,349	1,522	13	47	60	± 5	54	± 5	34
2013	3,617	58	268	326	26%	646	51%	285	23%	1,257	1,098	9	41	50	± 5	44	± 4	29

2014 HUNTING SEASONS
BADWATER PRONGHORN (PR 634)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
75	1	Sep. 20	Oct. 22	300	Limited quota; any antelope
	6	Sep. 20	Oct. 22	25	Limited quota; doe or fawn
Archery		Aug. 15	Sep. 19		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
75	1	-100
	6	-225
Total	**1**	**-100**
	6	**-225**

Management Evaluation
Current Management Objective: 3,000
Management Strategy: Recreational
2013 Postseason Population Estimate: ~3,000
2014 Proposed Postseason Population Estimate: ~3,000

Management Issues
The Badwater pronghorn herd is managed toward a numerical objective of 3,000. The population is estimated using a spreadsheet model developed in 2012 and updated in 2014. The herd is managed for recreational opportunity. The objective was last reviewed in 1994.

This pronghorn population inhabits a heavily industrialized area in central Wyoming. Much of the herd unit has or will soon be designated as a special management area emphasizing oil and gas production in both the Casper and Lander BLM RMPs. The Lander BLM is currently analyzing a proposal by EnCana to develop approximately 4,200 oil/gas wells in the central part of the herd unit. Given the commodities production emphasis in the area, it is likely a significant amount of pronghorn habitat will we lost or degraded over the next 20 years.

Habitat/Weather
Over the past 2 years, drought conditions were extreme in this herd unit. Virtually no vegetation grew throughout the herd unit for the past 2 years. The exception being some early fall green-up in September, 2013. This late season green-up helped antelope entering winter but they remained in generally poor body condition. Given the poor feed resource, pronghorn body condition in the herd unit was quite poor in 2013. This was particularly true for reproductively successful does that succeeded in raising fawns through early fall. Despite relatively mild winter

conditions in 2013/14 it is likely winter mortality was above average due to the poor body condition of many animals in the fall.

Field Data

Personnel observed significantly fewer pronghorn along classification routes in 2013. The number of antelope seen along designated classification routes declined from a high of 1,940 in 2010 to 1,257 in 2013. Additionally, the buck/doe ratio in the area has steadily declined over the past 4 years from 72/100 in 2010 to 50/100 in 2013. Fawn recruitment was very low in 2013 with a fawn/doe ratio of 44/100. Compounding the impacts of very low fall recruitment, it is likely winter fawn survival will be lower than average over the 2013/14 winter due to lack of feed resources. All of the classification data from the past several years indicate the population has declined.

Harvest Data

Harvest statistics were unremarkable in 2013 with a Type 1 license success of 92%. This was higher than the 5-year average of 87%. Some of the increase could be attributable to fewer hunters in the field given a reduction in Type 1 licenses from 2012 to 2013. The days/animal for Type 1 license holders also declined from 3.7 in 2012 to 2.8 in 2013. Again, while 2013 harvest statistics are not remarkable, classification data, the population model, and comments from the public all indicate the population declined significantly over the past several years.

Population

The population estimate for 2013 is approximately 3,000 pronghorn. The population is at objective. This population increased steadily in the late 1990's through the mid 2000's. The population peaked around 2007 at approximately 5,900 animals according the most recent population model. Over the past 6 years the population has declined dramatically and reached objective in 2013. The long-term population decline is a result of extended, poor environmental conditions combined with increased harvest designed to reduce the population to objective.

In 2012, a spreadsheet model was developed for this population. The model behaved predictably with the addition of 2013 data and appears to track population trends reliably. For 2013, the SCJ/SCA version of the model was selected to simulate the population. The SCJ/SCA model had a slightly higher AIC value than the CJ/CA model, but the CJ/CA version models a population increase over the past several years and is not biologically defensible. The TSJ/CA had a significantly higher AIC value but produced similar trends to the SCJ/SCA version. Annual juvenile survival in the selected model is 0.9 and considered reasonable for the area. The SCJ/SCA model has 3 years with modified juvenile survival to account for extreme winter conditions in 2010 and extreme drought conditions in 2012 and 2013. Juvenile survival for these years is fixed at 0.4, 0.4, and 0.5 respectively. This model version produces population estimates mirroring field personnel impressions and supported by harvest statistics. The model attempts to track 6 line transect estimates over the past 20 years. The estimates from 2007 and 2010 were vastly different and the model is unable to track through the CIs of the estimates effectively. Nevertheless, the model produces a peak estimate in 2007 and shows a significant population decline over the past 6 years with a marked reduction over the past 3 years. The model appears to track population trends in the herd unit well and estimates from the past several years are

supported by trends in classification data as well as harvest statistics. Due to the lack of survival estimates, the model is considered a fair simulation.

Management Summary

Given the population decline over the past several years, expected low survival over the 2013/14 winter, and the fact the population is at objective, Type 6 licenses will be reduced significantly in 2014. Type 1 licenses will also be reduced given the recent, marked decline in the buck/doe ratio. Given average survival over the next year combined with the proposed hunting season, the population is expected to remain stable at 3,000 in 2014. Although this population has been managed toward the objective of 3,000 over the past several years, public comments indicate the Department may need to review the population objective for the herd. Field personnel have received numerous complaints over the past several years from the public concerned about the decline in antelope numbers and buck quality in the herd unit.

INPUT	
Species:	Pronghorn
Biologist:	Greg Anderson
Herd Unit & No.:	Badwater
Model date:	02/13/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	78	87	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	88	100	☑ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	62	166	☐ 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	818	1018	1456	**3292**	769	562	1125	**2456**	751	1251	**2002**				3000
1994	650	736	1226	**2613**	634	384	990	**2008**	557	1092	**1649**				3000
1995	681	546	1070	**2297**	658	300	944	**1901**	514	1082	**1596**				3000
1996	969	504	1060	**2534**	969	312	1053	**2334**	678	1339	**2018**				3000
1997	730	665	1313	**2707**	730	443	1297	**2470**	674	1436	**2110**				3000
1998	928	660	1407	**2996**	925	468	1407	**2800**	790	1622	**2412**				3000
1999	1103	774	1589	**3466**	1103	605	1580	**3288**	992	1849	**2841**				3000
2000	969	972	1812	**3753**	969	791	1809	**3568**	1087	1983	**3070**	3090	751		3000
2001	850	1065	1944	**3859**	850	882	1940	**3673**	1110	2041	**3151**	2766	586		3000
2002	924	1088	2000	**4011**	924	907	1990	**3821**	1166	2115	**3281**				3000
2003	1116	1142	2073	**4331**	1116	937	2073	**4126**	1274	2276	**3550**				3000
2004	1570	1249	2231	**5050**	1570	1053	2226	**4850**	1584	2614	**4198**	3760	796		3000
2005	1798	1552	2562	**5912**	1796	1273	2493	**5561**	1860	2933	**4793**				3000
2006	1491	1823	2875	**6188**	1487	1480	2698	**5664**	1883	2947	**4830**				3000
2007	1820	1845	2888	**6554**	1805	1481	2660	**5945**	2026	3052	**5078**	2764	507		3000
2008	1530	1986	2991	**6506**	1517	1597	2762	**5876**	1989	3007	**4995**				3000
2009	1382	1949	2946	**6278**	1366	1548	2701	**5614**	1875	2883	**4757**				3000
2010	1524	1837	2825	**6186**	1512	1361	2562	**5435**	1382	2440	**3822**	5256	931		3000
2011	1150	1354	2391	**4895**	1114	837	2073	**4024**	1212	2292	**3504**				3000
2012	1207	1188	2246	**4640**	1192	729	1981	**3902**	897	1939	**2836**	2303	527		3000
2013	838	879	1900	**3617**	815	525	1687	**3028**	681	1786	**2466**				3000
2014	864	667	1750	**3281**	858	392	1706	**2956**							3000
2015															
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

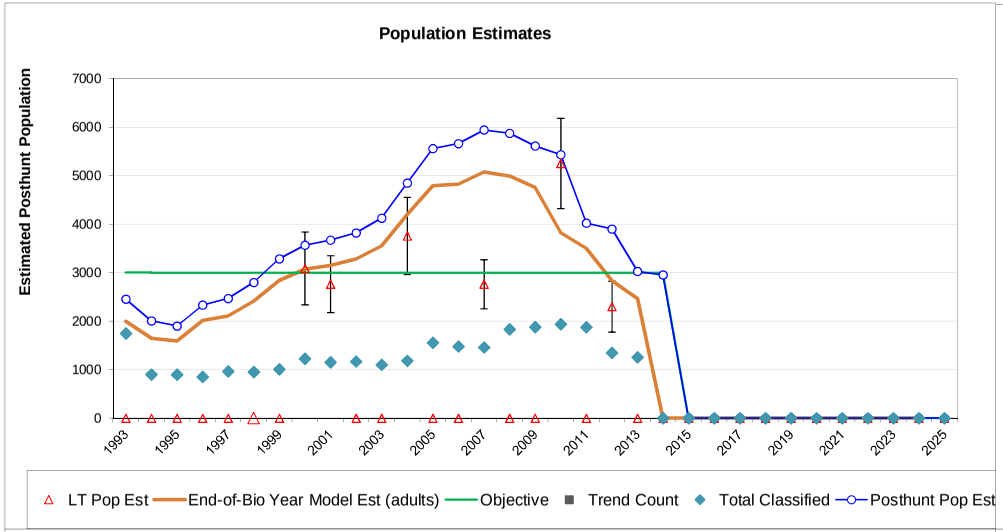
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.83		
1994	0.90			0.83		
1995	0.90			0.83		
1996	0.90			0.83		
1997	0.90			0.83		
1998	0.90			0.83		
1999	0.90			0.83		
2000	0.90			0.83		
2001	0.90			0.83		
2002	0.90			0.83		
2003	0.90			0.83		
2004	0.90			0.83		
2005	0.90			0.83		
2006	0.90			0.83		
2007	0.90			0.83		
2008	0.90			0.83		
2009	0.90			0.83		
2010	0.40			0.83		
2011	0.90			0.83		
2012	0.40			0.83		
2013	0.50			0.83		
2014	0.90			0.83		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

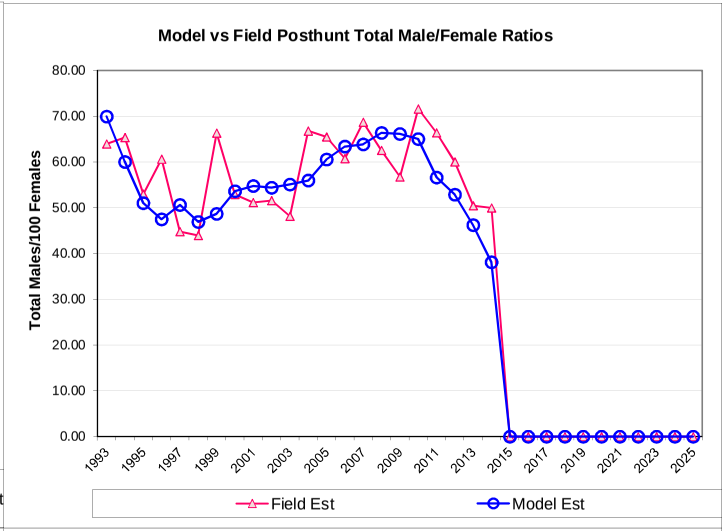
Parameters:	Optim cells
Juvenile Survival =	0.900
Adult Survival =	0.834
Initial Total Male Pop/10,000 =	0.102
Initial Female Pop/10,000 =	0.146

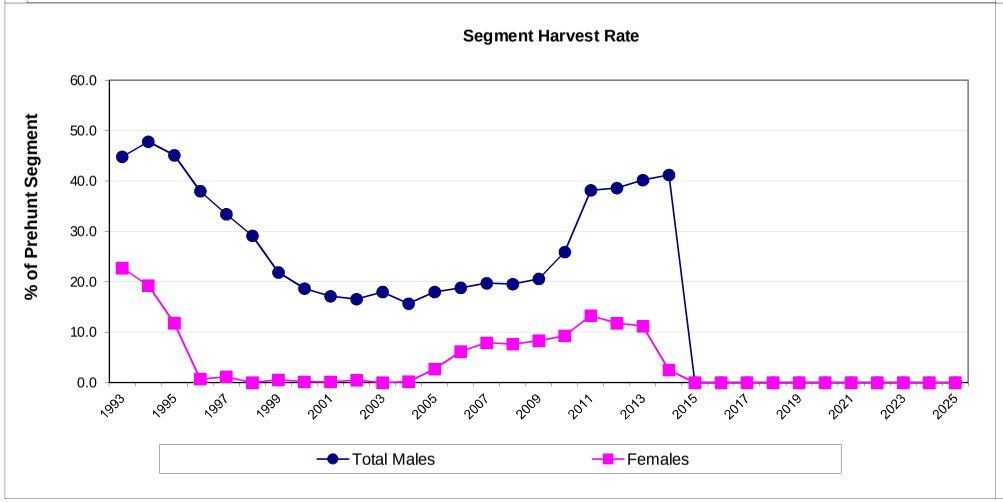
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

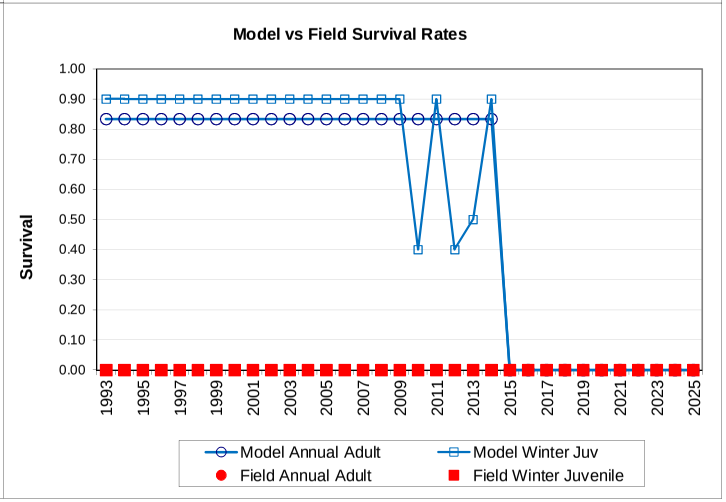
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		56.17	3.32	69.96	63.98	3.64	44	415	301	760	44.8	22.7
1994		53.03	4.43	60.04	65.38	5.12	15	320	215	550	47.8	19.3
1995		63.61	5.01	51.03	53.01	4.42	21	224	115	360	45.1	11.8
1996		91.42	7.20	47.50	60.65	5.37	0	174	7	181	38.0	0.7
1997		55.60	4.24	50.64	44.81	3.67	0	202	14	216	33.4	1.2
1998		65.93	4.90	46.93	43.96	3.73	3	175	0	178	29.1	0.0
1999		69.39	5.24	48.70	66.36	5.08	0	154	8	162	21.9	0.6
2000		53.45	3.71	53.64	52.94	3.69	0	165	3	168	18.7	0.2
2001		43.75	3.26	54.79	51.18	3.62	0	166	3	169	17.1	0.2
2002		46.19	3.38	54.40	51.61	3.64	0	164	9	173	16.6	0.5
2003		53.85	3.90	55.10	48.17	3.62	0	187	0	187	18.0	0.0
2004		70.40	4.90	55.99	66.80	4.72	0	178	4	182	15.7	0.2
2005		70.20	4.25	60.58	65.51	4.05	2	254	63	319	18.0	2.7
2006		51.87	3.36	63.41	60.78	3.75	4	312	161	477	18.8	6.2
2007		63.02	4.04	63.88	68.73	4.29	14	331	208	553	19.7	7.9
2008		51.17	3.00	66.39	62.59	3.44	12	353	208	573	19.6	7.7
2009		46.91	2.73	66.15	56.77	3.11	15	365	223	603	20.6	8.3
2010		53.95	3.11	65.04	71.63	3.78	11	433	239	683	25.9	9.3
2011		48.11	2.85	56.63	66.40	3.55	33	470	289	792	38.2	13.3
2012		53.72	3.62	52.89	60.06	3.90	13	417	241	671	38.6	11.8
2013		44.12	3.14	46.23	50.46	3.43	21	321	194	536	40.2	11.2
2014		49.36	3.09	38.12	50.00	3.55	5	250	40	295	41.2	2.5
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES

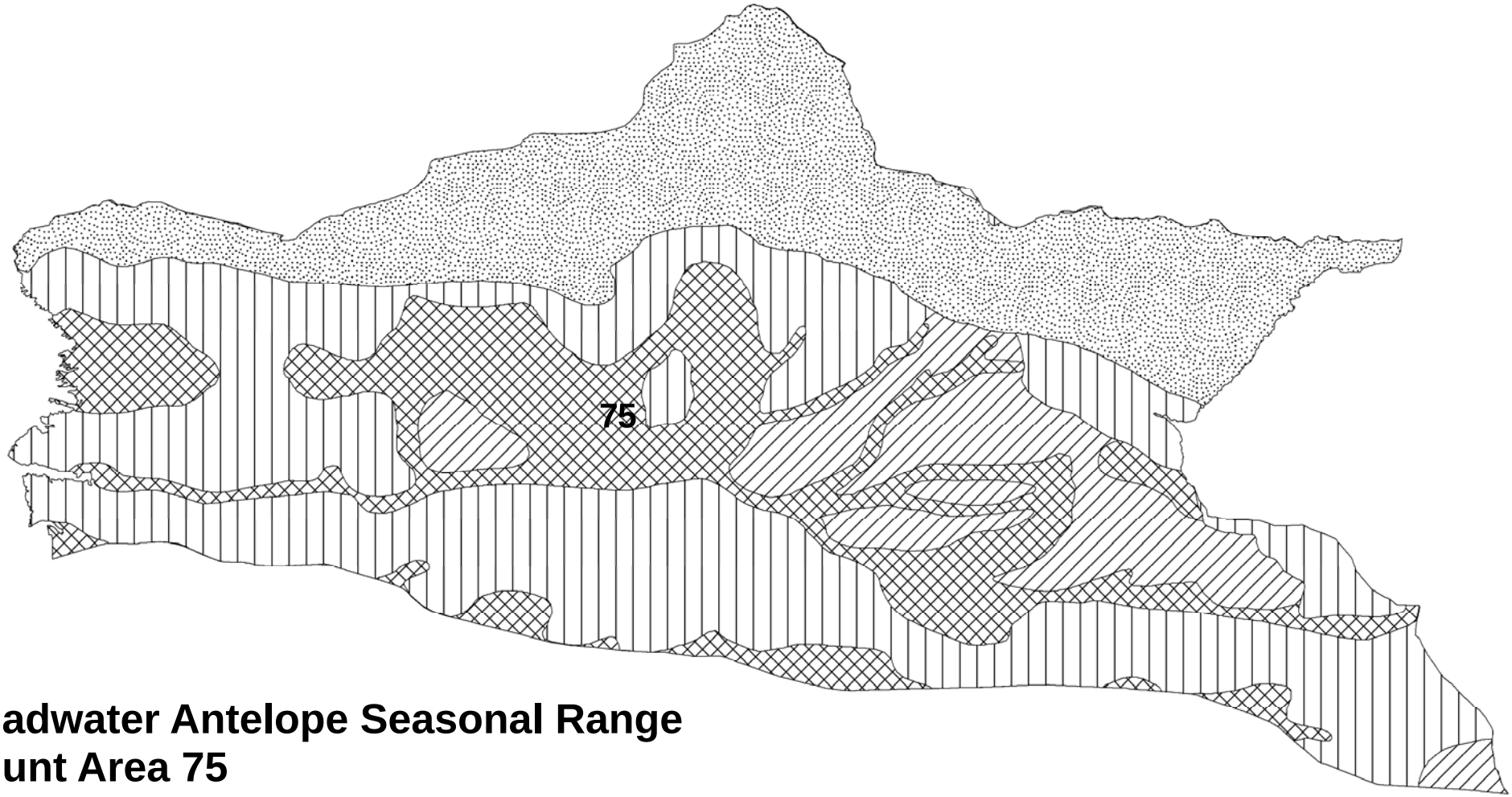








Comments:



Badwater Antelope Seasonal Range
Hunt Area 75
Updated 2013

- CRUWYL
- OUT
- SSF
- WYL
- YRL

N

2013 - JCR Evaluation Form

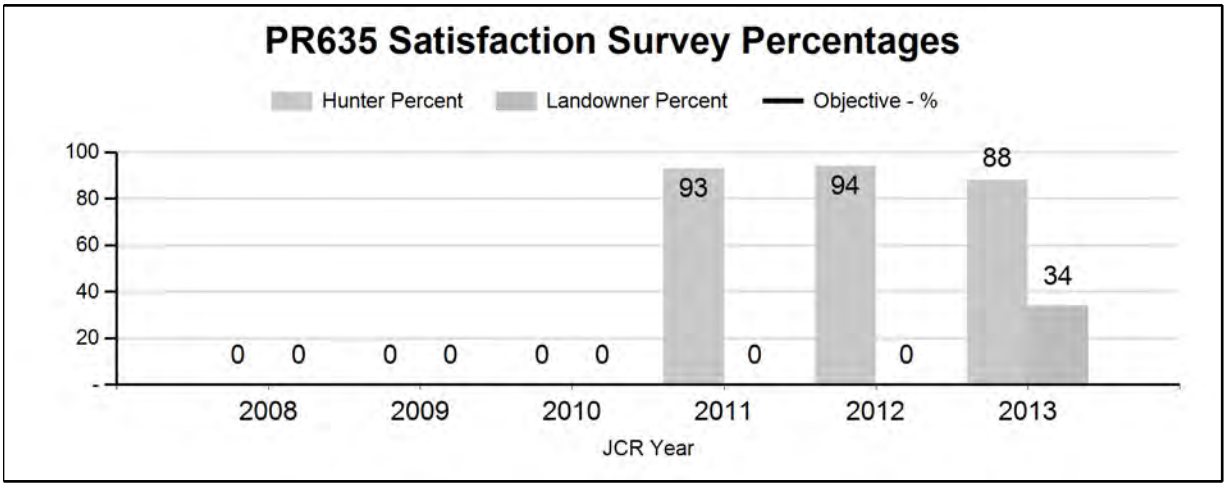
SPECIES: Pronghorn
HERD: PR635 - PROJECT
HUNT AREAS: 97, 117

PERIOD: 6/1/2013 - 5/31/2014

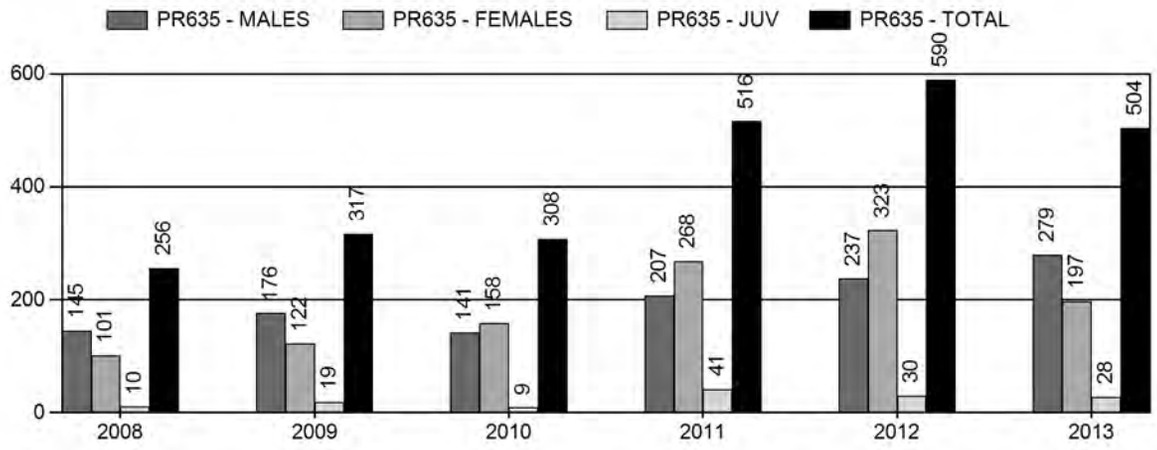
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Hunter Satisfaction Percent	94%	88%	85%
Landowner Satisfaction Percent	0%	34%	40%
Harvest:	397	504	475
Hunters:	340	470	450
Hunter Success:	117%	107%	106%
Active Licenses:	442	87%	500
Active License Percentage:	90%	87%	95%
Recreation Days:	1,281	1,434	1,300
Days Per Animal:	3.2	2.8	2.7
Males per 100 Females:	58	70	
Juveniles per 100 Females	65	55	

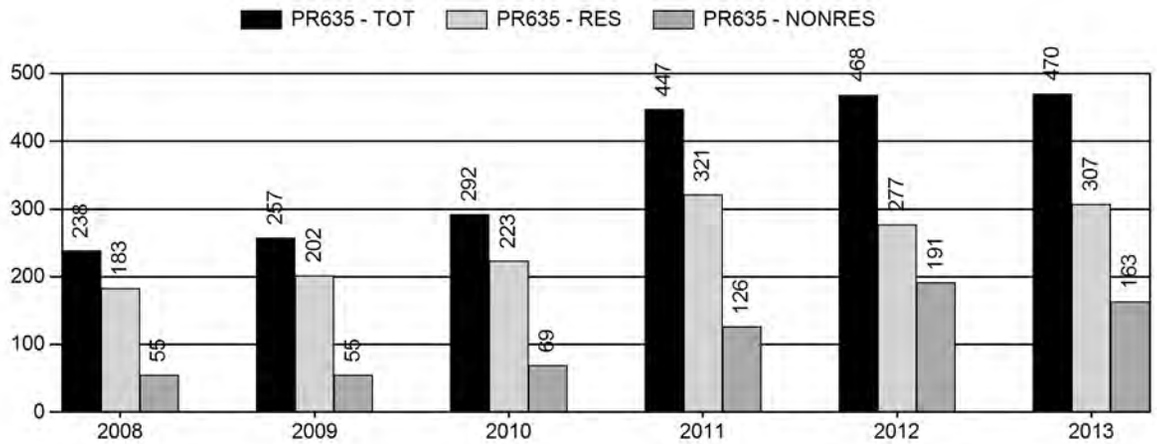
Satisifaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	1%
Number of years population has been + or - objective in recent trend:	1



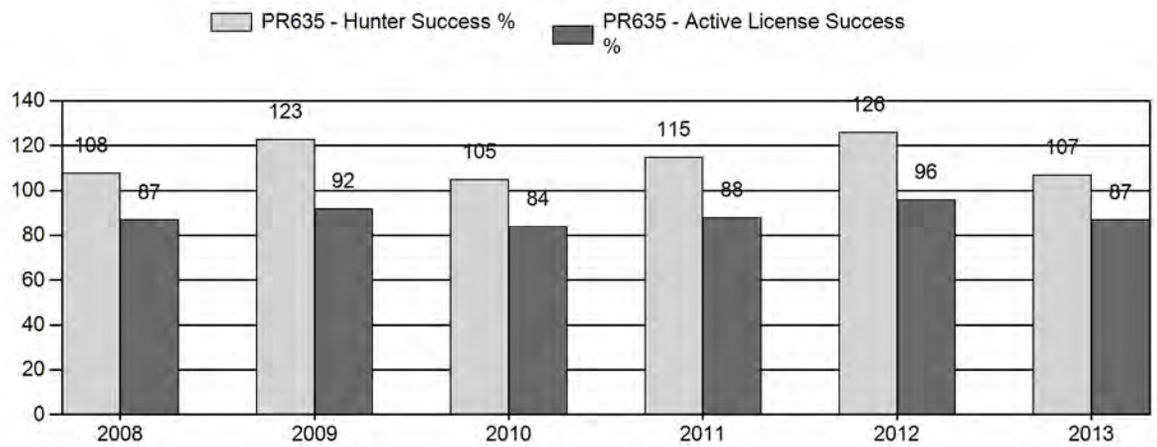
Harvest



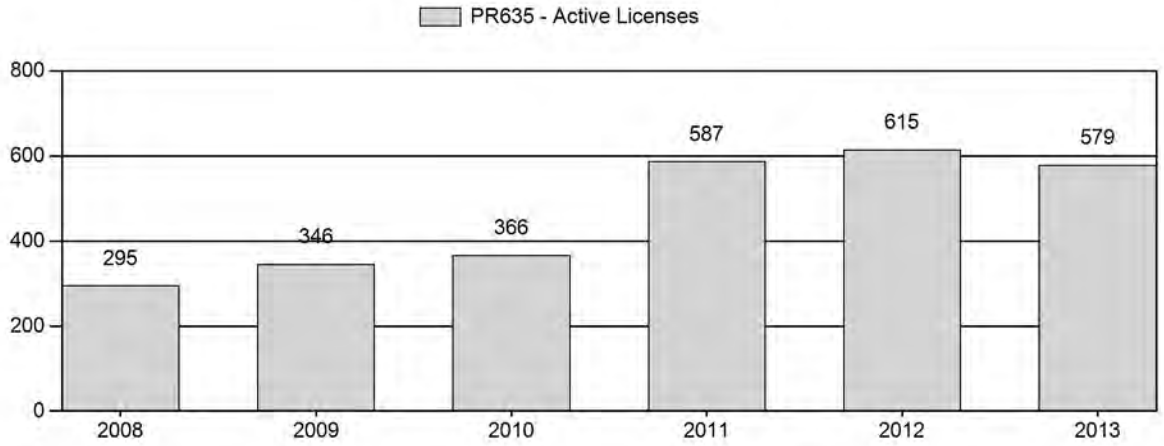
Number of Hunters



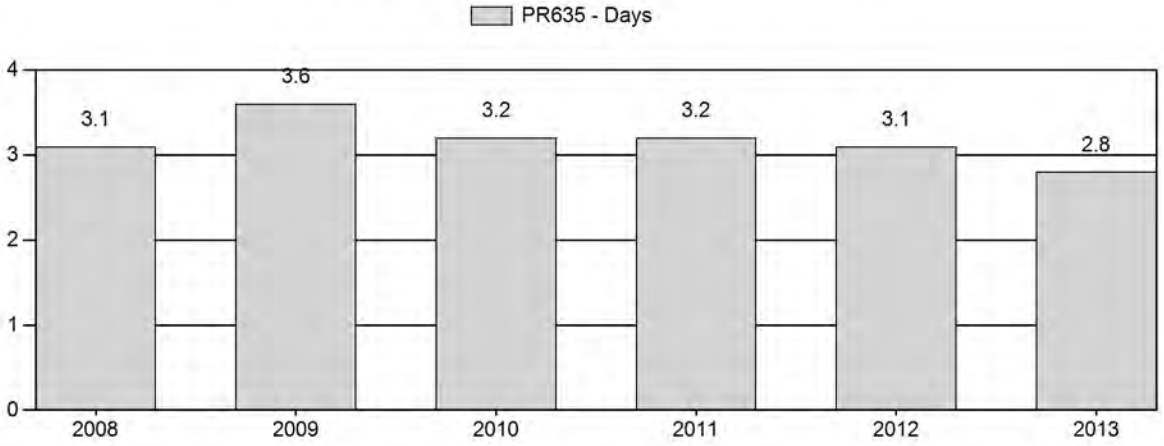
Harvest Success



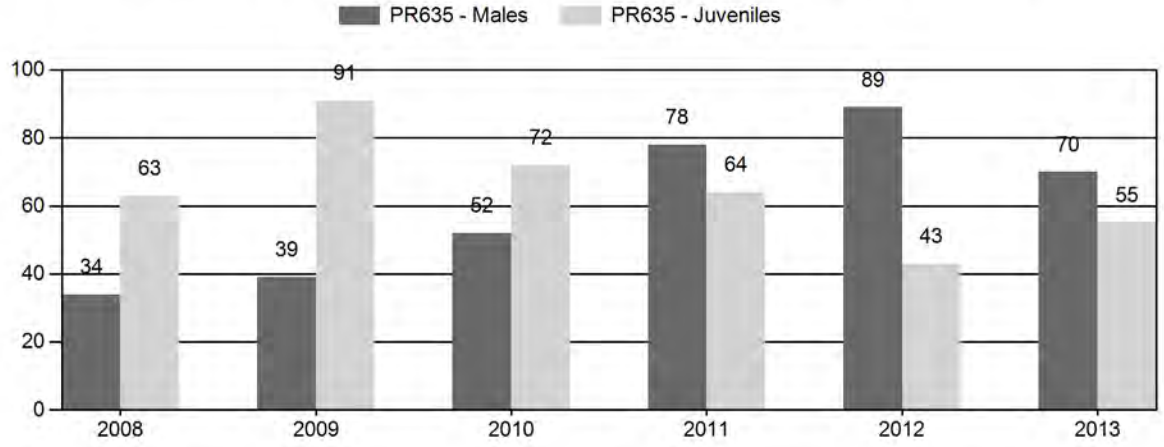
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR635 - PROJECT

		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
2008	563	0	0	78	17%	229	51%	144	32%	451	450	0	0	34	± 0	63	± 0	47
2009	429	0	0	58	17%	149	43%	136	40%	343	391	0	0	39	± 0	91	± 0	66
2010	634	0	0	118	23%	226	45%	163	32%	507	524	0	0	52	± 0	72	± 0	47
2011	0	45	89	134	32%	171	41%	109	26%	414	0	26	52	78	± 0	64	± 0	36
2012	0	67	112	179	38%	202	43%	86	18%	467	0	33	55	89	± 0	43	± 0	23
2013	0	28	125	153	31%	219	45%	120	24%	492	0	13	57	70	± 0	55	± 0	32

2014 SEASONS
PROJECT PRONGHORN (PR 635)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
97, 117	1	Sep. 20	Oct. 22	300	Limited quota; any antelope
	2	Aug. 15	Oct. 22	50	Limited quota; any antelope valid in Area 97 south of U.S. Highway 26 and in all of Area 117
	6	Sep. 20	Oct. 22	150	Limited quota; doe or fawn
	7	Aug. 15	Oct. 22	75	Limited quota; doe or fawn valid in Area 97 south of U.S. Highway 26 and in all of Area 117
Archery 97, 117		Aug. 15	Sep. 19		Refer to section 3 of this chapter

Hunt Area	Type	Quota change from 2013
97, 117	1	+50
	2	-50
	7	-75
Total	**1**	**+50**
	2	**-50**
	7	**-75**

<u>Management Evaluation</u>
Current Management Objective: Hunter/Landowner Satisfaction 60%
Management Strategy: Recreational
2013 Hunter Satisfaction: 88%
2013 Landowner Satisfaction: 34% (71% very satisfied, satisfied, or neutral)
3 year Average Hunter Satisfaction: 92%
3 year Average Landowner Satisfaction: unknown

Management Issues
In 2013 the Department conducted an objective review for the Project pronghorn herd unit. Previously the herd had a population objective of 400 pronghorn. The population objective was impractical because personnel were unable to collect adequate demographic data due to extensive interchange with the neighboring Wind River Reservation (WRR). Following an internal review, a public meeting and contact with numerous landowners the objective was changed in 2013 to manage for 60% hunter and 60% landowner satisfaction. Hunter satisfaction is taken directly from the harvest survey while landowner satisfaction in 2013 was determined by mailing a survey (Appendix A) to a number of landowners in the herd unit.

Habitat/Weather
This herd occupies a heavily agricultural area in central Wyoming as well as lands interspersed with the WRR. Land ownership patterns and extensive border with the WRR make it cost prohibitive to collect adequate demographic data in the herd unit. The highest densities of pronghorn are found along the northern portion of hunt area 97 and commonly move between the herd unit and the WRR. Drought conditions were extreme throughout the region in 2013, but adult pronghorn were not severely impacted due to the extensive agricultural feed resource in the area. Anecdotally there appears to have been a bit of a distribution shift over the past several years in response to drought conditions. There appear to be fewer antelope inhabiting the Muddy Ridge area and more antelope congregating further west along Muddy Creek closely associated with irrigated fields.

Field/Harvest Data/Population
The fawn/doe ratio in hunt area 97 was 55/100 in 2013. This was well below the 5 year average of 67/100. Taken in combination with a fawn/doe ratio of 43/100 in 2012, it demonstrates even animals in this area with extensive agriculture are not immune to impacts from harsh drought. The last 2 years of low recruitment likely resulted in a population decrease. This is also evidenced by a decrease in the buck/doe ratio from 89/100 in 2012 to 70/100 in 2013. Regardless of any recent population changes, the buck/doe ratio remains quite high and harvest success on Type 1 licenses in 97 was 90% in 2013. Combined with a days/animal statistic of 2.2, indications are recreational hunt quality continues to be good in the herd.

The population is considered to be at objective in 2013. Hunter satisfaction (satisfied or very satisfied) decreased from 94% in 2012 to 88% in 2013. This still represents a high rate of satisfaction and in combination with a 90% Type 1 success rate indicates hunt quality was good. This was the first year the landowner satisfaction survey was conducted so it is not possible to compare with previous years. While only 34% of landowners were satisfied or very satisfied with antelope numbers, 71% were satisfied, very satisfied, or neutral. In contrast only 29% were dissatisfied or very dissatisfied with numbers. Of dissatisfied landowners, 50% desired more antelope and 50% desired fewer antelope. Given the even split between landowners wishing for more or less antelope combined with a majority of satisfied hunters and landowners overall, the population is deemed to be at objective and management in 2014 will maintain the current population.

Management Summary

Given fairly low recruitment in 2013, the number of Type 6 licenses will remain unchanged in 2014. This number of licenses should provide adequate harvest for landowners who desire fewer antelope without significantly impacting the overall population. Type 1 licenses will be increased by 50 to provide a bit more recreational opportunity. Despite a decrease in the buck/doe ratio from 2012 to 2013, the ratio remains quite high at 70/100 and well above the desired level for a recreationally managed herd. Type 2 and 7 licenses will each be reduced by 50%. These licenses are issued to address specific damage problems in the herd unit and the affected landowners felt a reduction from 2013 levels was warranted. This management is intended to keep the population at the current level through 2014.

Appendix A
2013 landowner letter and satisfaction survey

December 12, 2013

Dear Landowner,

Starting in 2014, the Wyoming Game and Fish Department (Department) will begin utilizing landowner and hunter satisfaction surveys to manage deer (mule deer and white-tailed deer) in hunt areas 157 and 170 and antelope hunt areas 97and 117.

You are being asked to participate in this survey because you have allowed deer or antelope hunting on your property in the past (as indicated by your submission of landowner coupons). If you have an interest in deer and antelope management in these hunt areas, please take a minute to complete the survey below. Your answers, in combination with other landowners and hunters, will be considered when we develop hunt season structure for the coming year. If surveys indicate a majority of respondents are satisfied with deer and antelope numbers, it is likely upcoming hunting seasons will be very similar to last year's. If the majority of respondents feel there are too many or too few deer or antelope, we will likely recommend the Wyoming Game and Fish Commission consider issuing more or fewer licenses respectively.

Finally, if you have too many deer or antelope on your property and would like to see some reduction in numbers through doe/fawn harvest, please let us know and the Department will contact you to discuss potential options. If you have any questions, please contact your local game wardens, Allen Deru (856-4982) or Brad Gibb (856-9005), or wildlife biologist Greg Anderson (332-2688).

Please help us manage mule deer and white-tailed deer in hunt areas 157 and 170 and antelope in hunt areas 97and 117 by filling out the enclosed survey and returning it in the self-addressed envelope by ***January 31, 2014***.

The Department sincerely values your input, and we thank you for your time.

Sincerely,

Greg Anderson

Wildlife Biologist, North Lander

Mule Deer and White-tailed Deer – Hunt Areas 157 and 170
Antelope - Hunt Areas 97and 117

1. What is your level of satisfaction with mule deer numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

2. If you are not satisfied with mule deer numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

3. What is your level of satisfaction with white-tailed deer numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

4. If you are not satisfied with white-tailed deer numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

5. What is your level of satisfaction with antelope numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

6. If you are not satisfied with antelope numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

7. Would you like to be contacted by the Department to discuss hunter access and increased doe/fawn deer or antelope harvest for the 2014 hunting season?

   Yes No

   If YES, please list your name, phone number, what hunt areas you own property in, and indicate the species you are interested in:

   ☐ Antelope ☐ White-tailed Deer ☐ Mule Deer

   Name _____

   Phone number _____

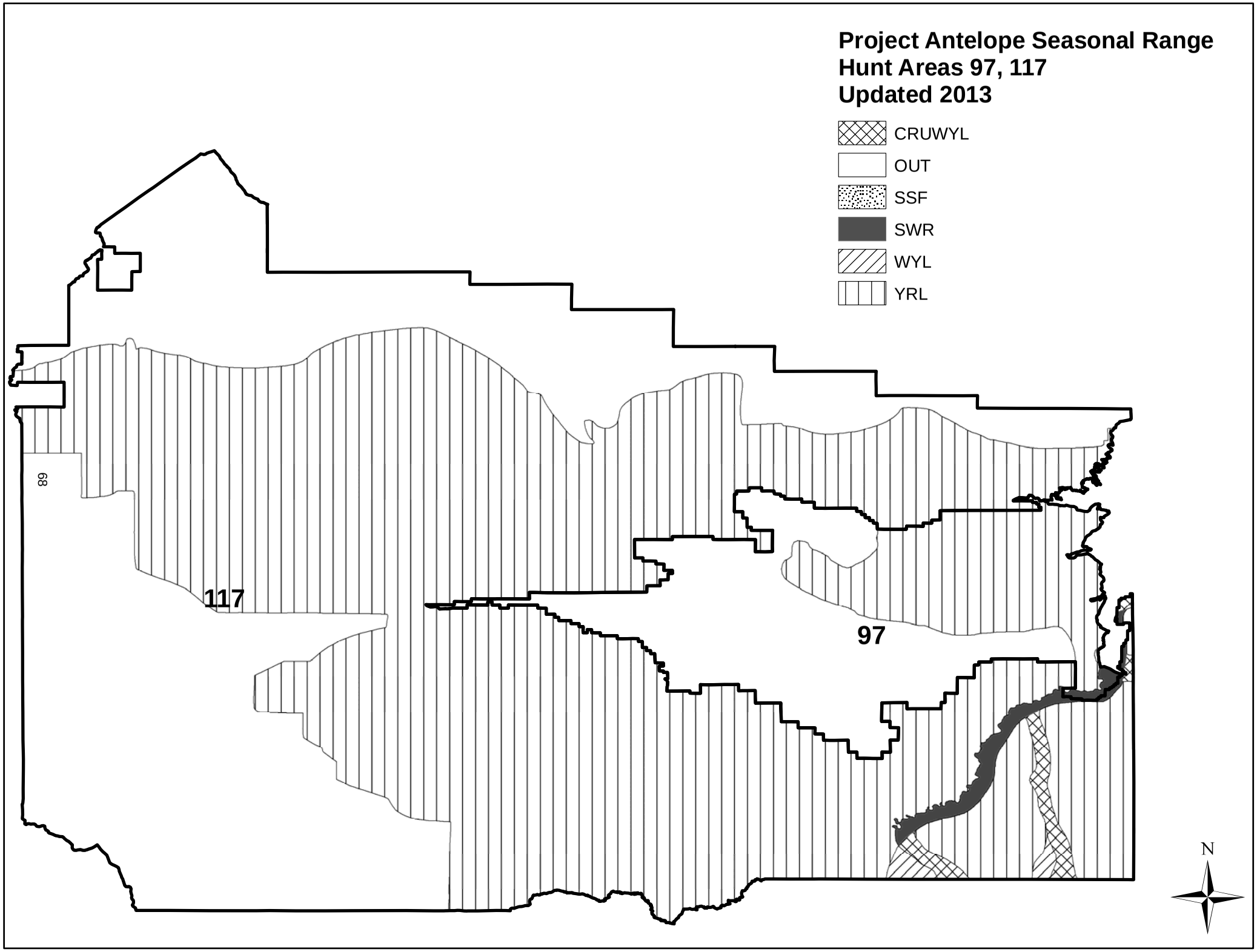
   In what antelope hunt area(s) is your property? _____

   In what deer hunt area(s) is your property? _____

In future years, we plan to conduct this survey electronically to reduce costs. Accordingly, if you have an interest in future participation, please provide us with an e-mail address. We will not share your e-mail address with any other entity.

Name _____

E-mail _____


Project Antelope Seasonal Range
Hunt Areas 97, 117
Updated 2013
CRUWYL
OUT
SSF
SWR
WYL
YRL
117
97
68
N

2013 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2013 - 5/31/2014

HERD: PR636 - NORTH FERRIS

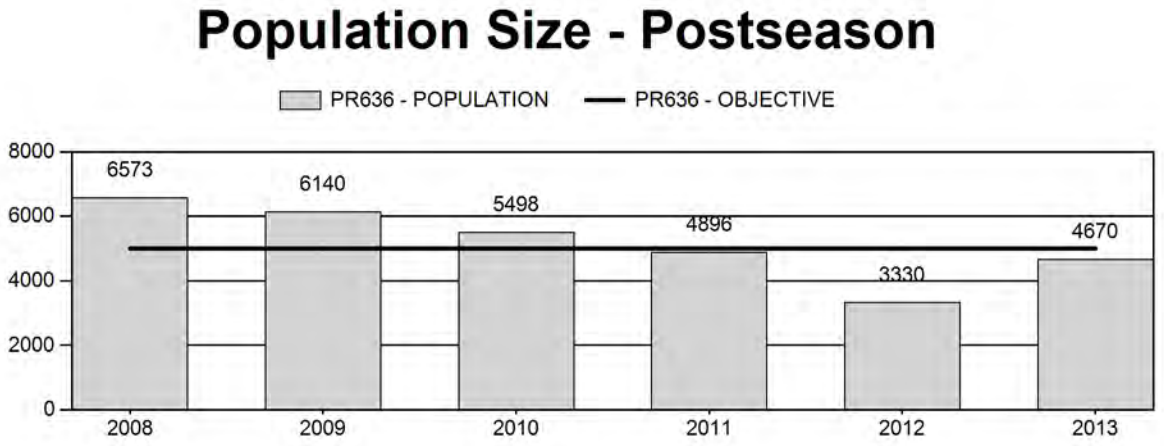
HUNT AREAS: 63 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	5,287	4,670	4,852
Harvest:	716	247	225
Hunters:	752	314	280
Hunter Success:	95%	79%	80 %
Active Licenses:	812	343	280
Active License Percent:	88%	72%	80 %
Recreation Days:	2,243	894	670
Days Per Animal:	3.1	3.6	3.0
Males per 100 Females	68	59	
Juveniles per 100 Females	53	45	

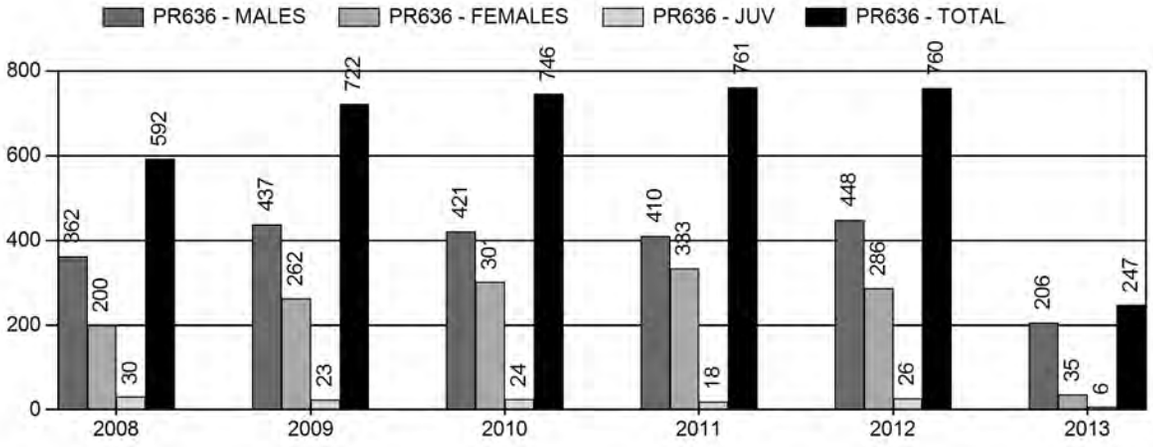
Population Objective:	5,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-6.6%
Number of years population has been + or - objective in recent trend:	3
Model Date:	3/5/2014

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

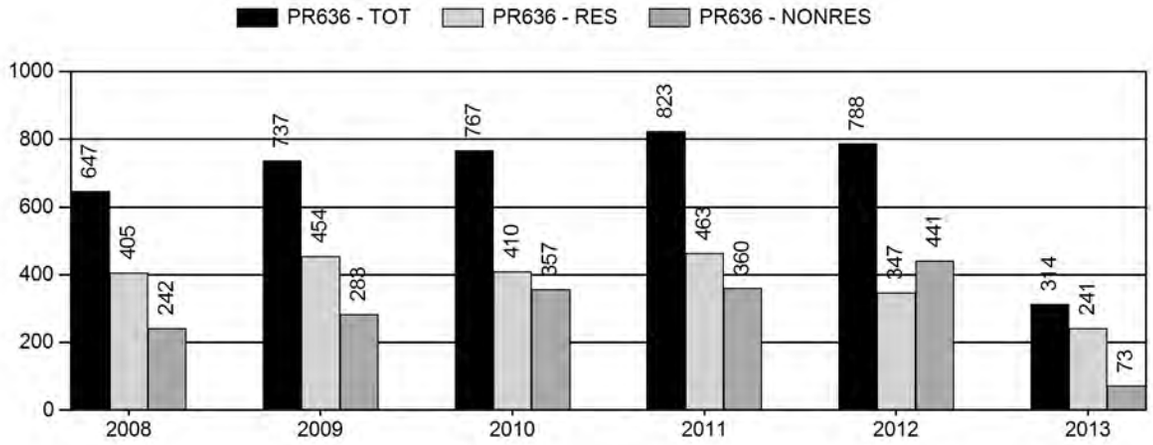
	JCR Year	Proposed
Females ≥ 1 year old:	2.2%	0%
Males ≥ 1 year old:	26.1%	16.0%
Juveniles (< 1 year old):	0.5%	0%
Total:	7.7%	4.4%
Proposed change in post-season population:	+1.7%	+3.9%



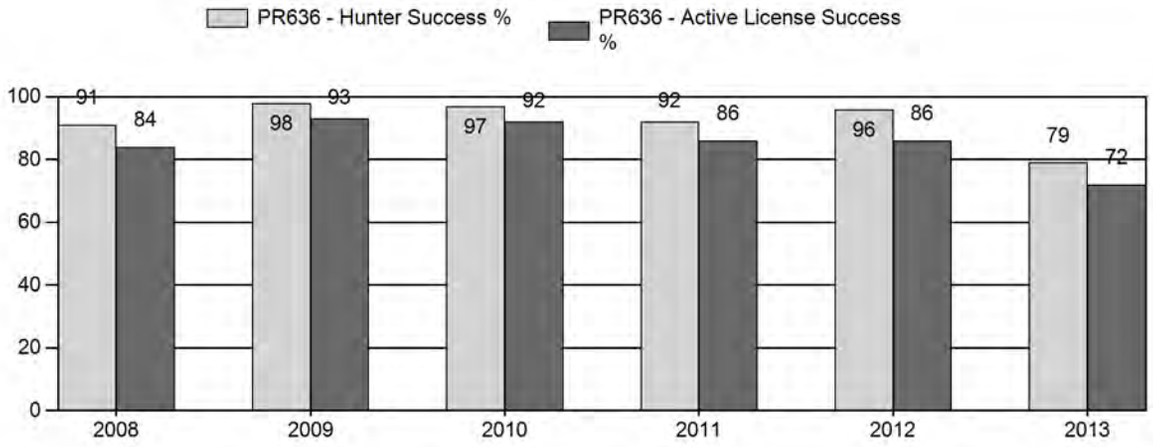
Harvest



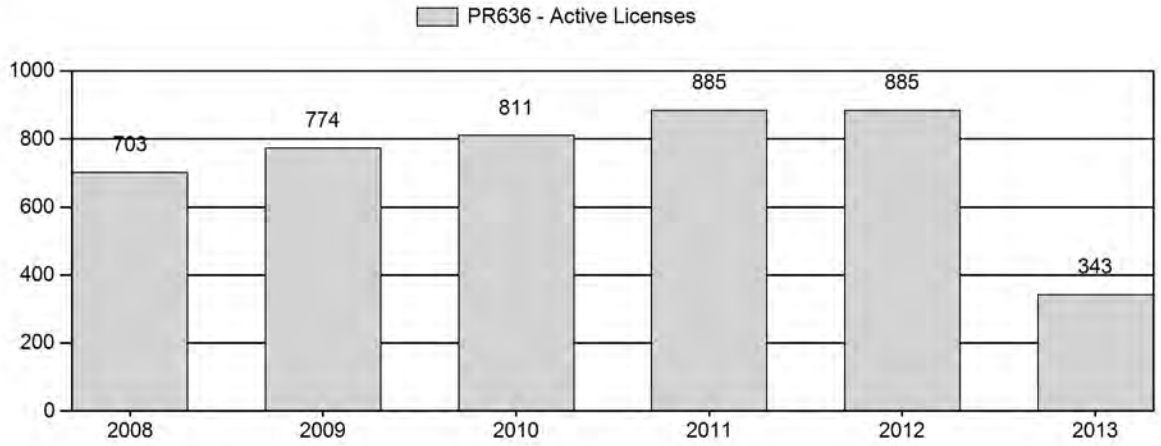
Number of Hunters



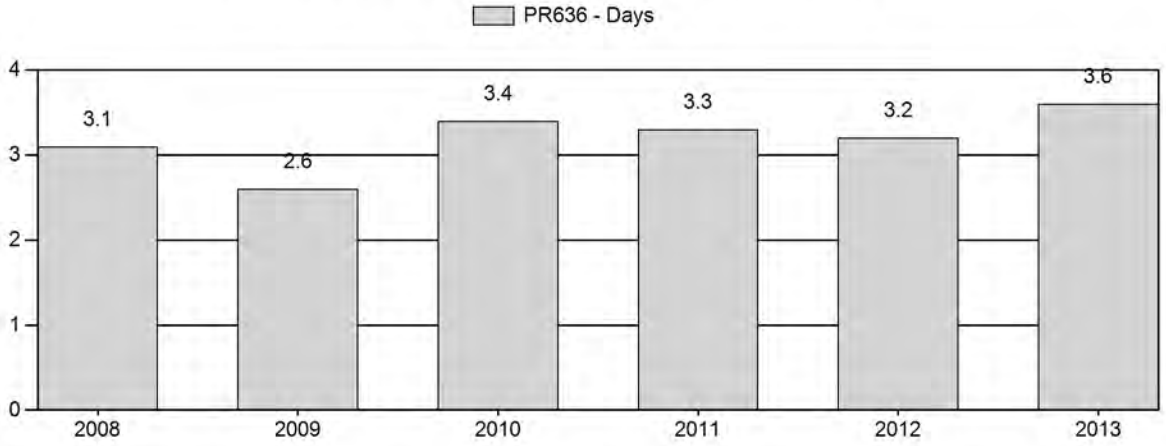
Harvest Success



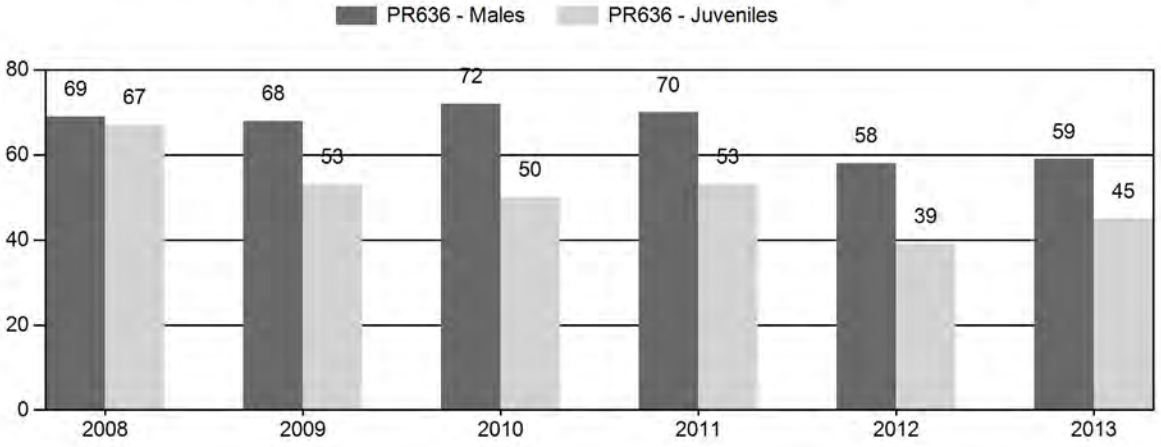
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR636 - NORTH FERRIS

		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
2008	7,224	166	370	536	29%	775	42%	522	28%	1,833	2,190	21	48	69	± 6	67	± 5	40
2009	6,935	240	573	813	31%	1,192	45%	627	24%	2,632	2,040	20	48	68	± 4	53	± 3	31
2010	6,318	99	274	373	32%	519	45%	257	22%	1,149	2,145	19	53	72	± 7	50	± 6	29
2011	5,733	72	288	360	31%	516	45%	275	24%	1,151	1,914	14	56	70	± 7	53	± 6	31
2012	4,158	55	253	308	29%	534	51%	208	20%	1,050	1,330	10	47	58	± 6	39	± 5	25
2013	4,951	57	216	273	29%	459	49%	205	22%	937	1,460	12	47	59	± 7	45	± 6	28

2014 HUNTING SEASONS
NORTH FERRIS PRONGHORN HERD (PR636)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
63	1	Sep. 20	Oct. 31	100	Limited quota; any antelope
	2	Sep. 20	Oct. 31	200	Limited quota; any antelope valid east of the Buzzard Road (Natrona County Road 410 – Carbon County Road 497)
Archery 63		Aug. 15	Sep. 16		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
63	1	0
	2	0
	6	-25
	7	-25
Total	**1 & 2**	**0**
	6 & 7	**-50**

Management Evaluation
Current Management Objective: 5,000
Management Strategy: Recreation
2013 Postseason Population Estimate: ~4,670
2014 Proposed Postseason Population Estimate: ~4,850

The North Ferris pronghorn herd is managed toward a post-hunt population of 5,000, an objective last publicly reviewed in 1994. Population size is estimated using a spreadsheet model developed in 2012 and updated in 2013. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100. Public review of the management objectives for this herd is scheduled for 2014.

Herd Unit Issues

Historically, access has not been an issue in this herd unit which is mostly public lands, but access to some blocks of private land has become more difficult in recent years and may affect management ability to attain adequate harvests in the future. Potential for economic wind power exists within the herd unit, but appears unlikely when other resource issues such as T&E species

and sage-grouse Core Area are considered. Many miles of sheep-tight fences still stand in the herd unit, impeding pronghorn movements.

Weather

Following severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, body condition of pronghorn checked in 2012 was poor. Given the poor condition of animals at the end of fall, mortality was expected to be above average during the 2012-13 winter, particularly following three severe winter storms in April. However, yearling buck:doe ratios in 2013 did not reflect unusual fawn losses that winter. Drought continued into 2013, reducing forage quantity and quality for a second year. Improved precipitation in late fall provided for some herbaceous plant growth, but was probably too late to improve production by forbs and shrubs.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production is expected to have been minimal due to record drought. Two shrub transects have been established within this herd unit, primarily to monitor mule deer winter forage. One of these, on the Morgan Creek WHMA, was burned in the 2012 fires and the second was not read in 2013. New owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in looking for opportunities for improving habitat conditions for wildlife, possibly as mitigation for wind power projects in other parts of the state. Habitat issues that would benefit pronghorn include shrub treatment on winter ranges, adjustments of grazing use, and modification of sheep-tight fences.

Field Data

Classification sample size declined again for the fourth year, was the smallest sample in over 30 years, and was only 35 percent the size of the sample from 2009. These data are collected from the ground along routes that have had only minor changes over the past two decades. Higher densities of pronghorn were again found in the eastern half of the area near Pathfinder Reservoir and along irrigated hayfields on the Buzzard and Sand Creek Ranches. Fawn production improved slightly, but was still the second lowest ratio in 20 years, a direct result of the exceptionally dry spring and summer.

Following exceptionally high recruitment of yearlings in 2005, buck:doe ratios exceeded the 60:100 maximum criterion for recreational management in this herd. Buck harvests were increased for the following seven years, often double or triple historic levels, and surplus bucks were successfully harvested prior to 2012 when the buck:doe ratio returned to an acceptable 58:100. The ratio recorded in 2013 was little changed, at 59:100. Much of this decline was in the supply of adult bucks, with that ratio dropping to its lowest level in eight years. As expected, hunter complaints about poor quality of bucks were common and the buck:doe ratio is expected to continue to decline in 2014.

Pronghorn herds to the south and west showed dramatically low yearling buck:doe ratios in 2013, suggesting fawn losses were high in the 2012-13 winter and April blizzards, but this ratio

was at 12:100 in Area 63, which is low for this herd but not surprising given the record low fawn production in 2012. It would appear winter survival was not unusually low in this herd that winter.

Harvest Data

Success for hunters with Type 1 licenses dropped again to its lowest level in 11 years, at just 78 percent, a consequence of both reduced numbers of pronghorn and the lowered buck:doe ratio. Success for hunters with Type 2 licenses was even worse, at only 71 percent. Doe/fawn hunters had the poorest success since doe/fawn licenses were reintroduced in this herd in 2006, again a result of fewer pronghorn in the herd. Success was markedly different between the Type 6 and Type 7 licenses. Field contacts suggest a large proportion of hunters with the Type 6 tags use them in the western portion of the area, and these hunters had only 38 percent success. Those with Type 7 licenses, which restricted them to the eastern portion where pronghorn densities are higher, had 79 percent success, which was still a record low.

The average effort required to harvest a pronghorn also indicates numbers are historically low, especially in the western portion where doe/fawn hunters averaged 8.5 days hunting for each pronghorn harvested.

Population

This herd was below objective size for most of the decade following the 1992-93 winter, occasionally by as much as 20 percent or more, a consequence of low fawn production and poor recruitment. High fawn production followed by an unusually mild winter in 2004 provided the first significant growth in herd size.

Prior to the development of a reasonable spreadsheet model in mid-2012, population estimates suggested this herd was well above objective size from 2006 up until 2012, and harvests were increased accordingly. The 2013 spreadsheet model predicts the increased harvests successfully reduced the herd to within 20 percent of objective by 2011 and dropped below objective in 2012. This revised model, however aligns with the maximum limit of the confidence interval on the most recent line transect survey and is probably over-estimating herd size. Hunter comments, classification data and harvest statistics all suggest there has been a greater decline in herd size than predicted by the latest model.

The Time-Specific Juvenile & Constant Adult Survival (TSJ,CAS) spreadsheet model provided the best fit with observed buck:doe ratios for this herd, particularly for the most recent seven years. The model behaved well when 2013 classification and harvest data were added and is considered a “Fair” model of the herd. Annual adult survival was predicted at 82 percent, a level slightly lower than models for some nearby pronghorn herds. Juvenile survival rates fluctuated within the allowed range but frequently hovered at maximum or minimum allowed values. The CJ,CA and SCJ,SCA models each had lower AIC values, but both models predicted herd sizes greatly exceeding past trend counts, without following count trends, and generated roughly stable buck:doe estimates that did not follow dips and rises in observed values. Estimated buck:doe ratios of these two models approximated observed values in only four or five of the past 20 years.

Due to the poor condition of animals going into this winter and poor browse conditions following two years of drought, fawn production in 2014 was projected to be similar to that seen in 2012 and 2013. The model was run using a median juvenile survival in 2014.

Losses to EHD were documented in pronghorn herds south and west of North Ferris in 2013, and reports of carcasses in Area 63 suggests the disease was here as well. Significant losses in late summer and early fall 2013 would have affected harvest statistics but would not yet affect estimates in the herd model, so it may be over-estimating herd size.

Management Summary

With record low fawn production and the herd estimated to be below objective, harvests need to be reduced to prevent further reduction in herd size. Since buck:doe ratios are at the maximum for recreational management, no reduction is recommended for either the Type 1 or Type 2 license quotas. But the recommendation is to eliminate the Type 6 and Type 7 doe/fawn licenses, which were at minimal quotas in 2013.

The expected harvest of roughly 225 bucks from the 2014 license quotas should provide only a minimal increase (<4 percent) in herd size, projected to be ~4,850 at post-hunt 2014. This assumes average survival through the 2013-14 winter and fawn production similar to the low level seen in 2012 and 2013. If either winter survival or fawn production exceeds expectations in 2014, the increase would be improved, and doe/fawn harvests from this herd would need to be restored.

Opening date is shifted back four days to fall on a Saturday for the first time in decades, synchronizing with Area 68 to the north. This change is compatible with the application booklet and, as opposed to the traditional day, will increase crowding on opening weekend. The closing date is the same as in 2012 and 2013 and extends to the closing of the local deer season. Archery season uses a standardized opening date and closes the day before the opening of the regular season.

INPUT	
Species:	Pronghorn
Biologist:	Greg Hiatt
Herd Unit & No.:	North Ferris 636
Model date:	03/05/14

☐ 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**	80	94	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	23	135	☑ 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	928	1565	3466	**5960**	928	1365	3464	**5757**	1535	3333	**4868**				5000
1994	1492	1505	3266	**6263**	1492	1321	3262	**6075**	1760	3422	**5182**				5000
1995	1533	1725	3353	**6611**	1533	1534	3346	**6412**	1956	3510	**5467**				5000
1996	2305	1917	3440	**7662**	2305	1737	3440	**7482**	1942	3404	**5346**				5000
1997	1622	1903	3336	**6861**	1622	1716	3333	**6671**	1655	3045	**4699**				5000
1998	2029	1621	2984	**6634**	2029	1349	2979	**6357**	1393	2810	**4203**				5000
1999	1748	1365	2754	**5867**	1748	1177	2752	**5677**	1221	2577	**3798**				5000
2000	1309	1197	2525	**5031**	1306	1025	2525	**4856**	1039	2328	**3367**				5000
2001	1676	1018	2282	**4976**	1676	854	2280	**4810**	1000	2225	**3225**				5000
2002	1543	980	2181	**4703**	1543	809	2181	**4533**	1272	2454	**3726**				5000
2003	1643	1247	2405	**5294**	1643	1062	2402	**5106**	1612	2769	**4381**				5000
2004	1923	1580	2714	**6217**	1923	1412	2714	**6050**	2038	3161	**5199**				5000
2005	2163	1998	3098	**7258**	2163	1828	3090	**7081**	2497	3585	**6081**				5000
2006	2110	2447	3513	**8070**	2110	2196	3470	**7777**	2767	3874	**6640**	6464	1033		5000
2007	2629	2711	3796	**9136**	2623	2370	3677	**8671**	2551	3688	**6239**				5000
2008	2434	2500	3614	**8548**	2401	2101	3394	**7897**	2677	3794	**6471**				5000
2009	1956	2623	3718	**8298**	1931	2143	3430	**7504**	2596	3712	**6308**	7186	1243		5000
2010	1801	2544	3638	**7983**	1775	2081	3306	**7163**	2148	3200	**5349**				5000
2011	1671	2105	3136	**6913**	1652	1654	2770	**6076**	1520	2573	**4092**				5000
2012	982	1489	2521	**4992**	956	997	2212	**4164**	1435	2493	**3929**	3367	539		5000
2013	1091	1407	2443	**4941**	1085	1180	2405	**4670**	1430	2552	**3982**				5000
2014	1196	1402	2501	**5098**	1196	1155	2501	**4852**							5000
2015															
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

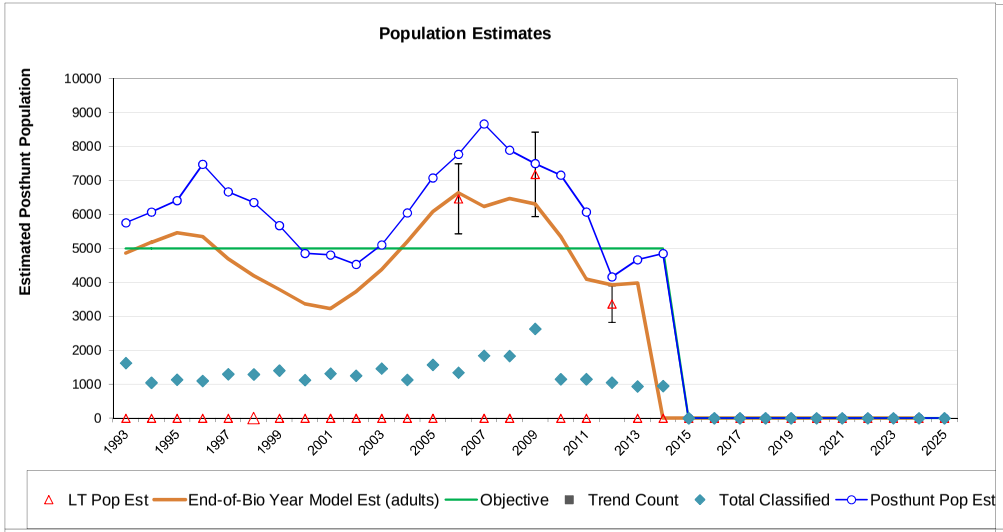
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.82		
1994	0.90			0.82		
1995	0.90			0.82		
1996	0.44			0.82		
1997	0.30			0.82		
1998	0.30			0.82		
1999	0.30			0.82		
2000	0.32			0.82		
2001	0.37			0.82		
2002	0.79			0.82		
2003	0.90			0.82		
2004	0.90			0.82		
2005	0.90			0.82		
2006	0.90			0.82		
2007	0.47			0.82		
2008	0.81			0.82		
2009	0.90			0.82		
2010	0.54			0.82		
2011	0.30			0.82		
2012	0.83			0.82		
2013	0.90			0.82		
2014	0.60			0.82		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

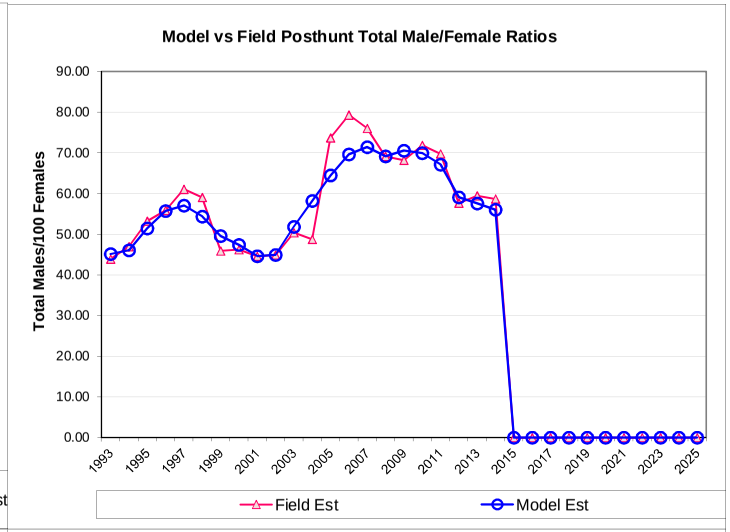
Parameters:	Optim cells
Adult Survival =	0.822
Initial Total Male Pop/10,000 =	0.156
Initial Female Pop/10,000 =	0.347

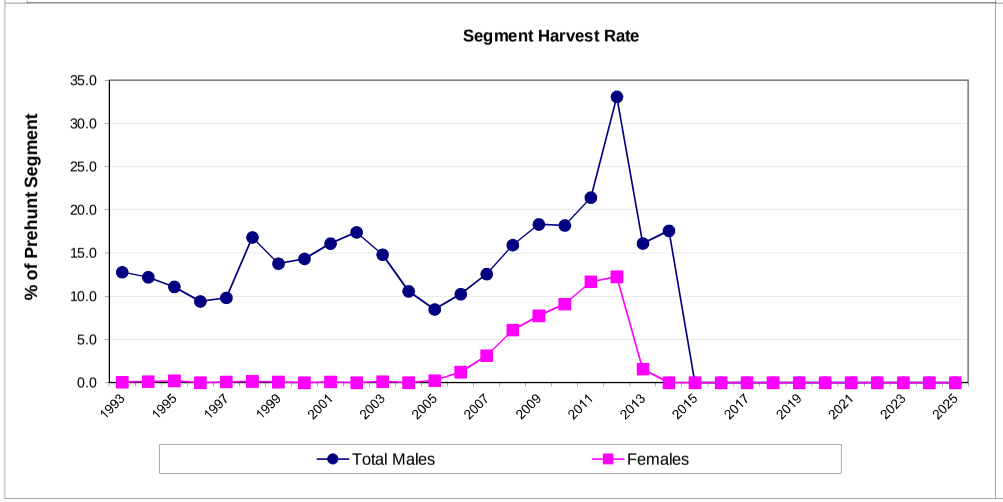
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

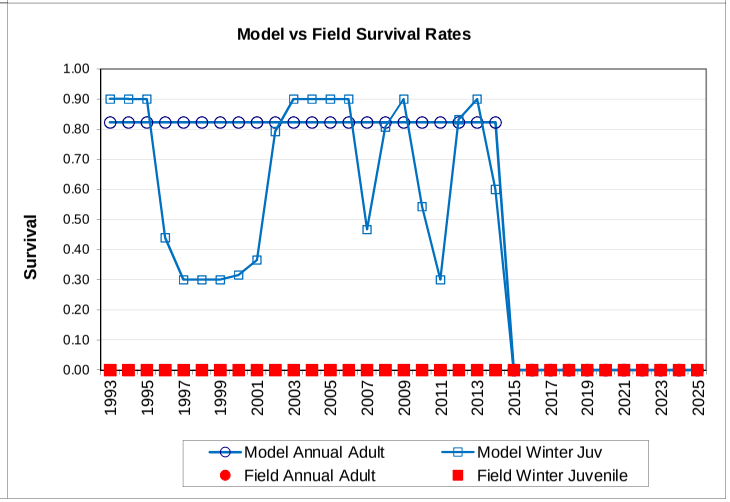
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		26.79	1.89	45.15	43.91	2.58	182	2	0	184	12.8	0.1
1994		45.67	3.50	46.07	46.96	3.57	167	4	0	171	12.2	0.1
1995		45.71	3.42	51.45	53.24	3.78	174	7	0	181	11.1	0.2
1996		67.00	4.76	55.73	55.87	4.20	164	0	0	164	9.4	0.0
1997		48.63	3.42	57.05	61.07	3.99	170	3	0	173	9.8	0.1
1998		68.01	4.48	54.35	59.05	4.06	248	4	0	252	16.8	0.1
1999		63.49	3.93	49.57	45.90	3.16	171	2	0	173	13.8	0.1
2000		51.85	3.73	47.40	46.21	3.45	156	0	3	159	14.3	0.0
2001		73.47	4.60	44.61	44.61	3.27	149	2	0	151	16.1	0.1
2002		70.74	4.56	44.92	44.92	3.35	155	0	0	155	17.4	0.0
2003		68.31	4.15	51.83	50.37	3.36	168	3	0	171	14.8	0.1
2004		70.87	4.85	58.21	48.74	3.75	152	0	0	152	10.6	0.0
2005		69.81	4.28	64.49	73.68	4.45	154	7	0	161	8.5	0.2
2006		60.07	4.14	69.64	79.32	5.04	228	39	0	267	10.3	1.2
2007		69.24	3.95	71.42	76.03	4.22	310	108	5	423	12.6	3.1
2008		67.35	3.81	69.16	69.16	3.89	362	200	30	592	15.9	6.1
2009		52.60	2.59	70.55	68.20	3.10	437	262	23	722	18.3	7.8
2010		49.52	3.78	69.95	71.87	4.88	421	301	24	746	18.2	9.1
2011		53.29	3.98	67.13	69.77	4.79	410	333	18	761	21.4	11.7
2012		38.95	3.18	59.08	57.68	4.13			281	753	33.1	12.3
2013		44.66	3.75	57.58	59.48	4.55			35	247	16.1	1.6
2014		47.83	3.92	56.05	58.70	4.50			0	224	17.6	0.0
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES

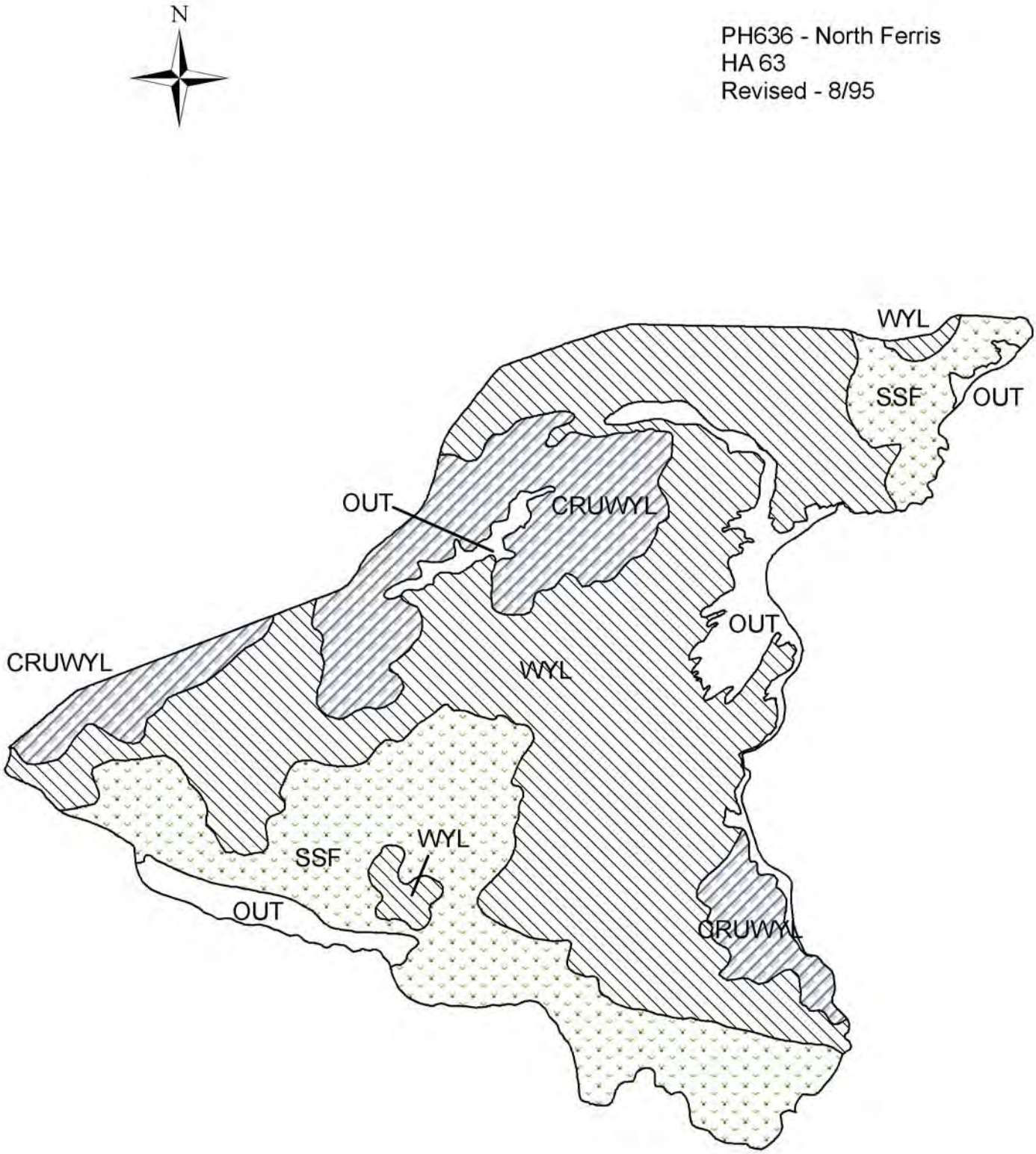








Comments:


N
PH636 - North Ferris
HA 63
Revised - 8/95
WYL
SSF
OUT
OUT
CRUWYL
OUT
CRUWYL
WYL
WYL
SSF
OUT
CRUWYL

2013 - JCR Evaluation Form

SPECIES: Pronghorn | PERIOD: 6/1/2013 - 5/31/2014

HERD: PR637 - SOUTH FERRIS

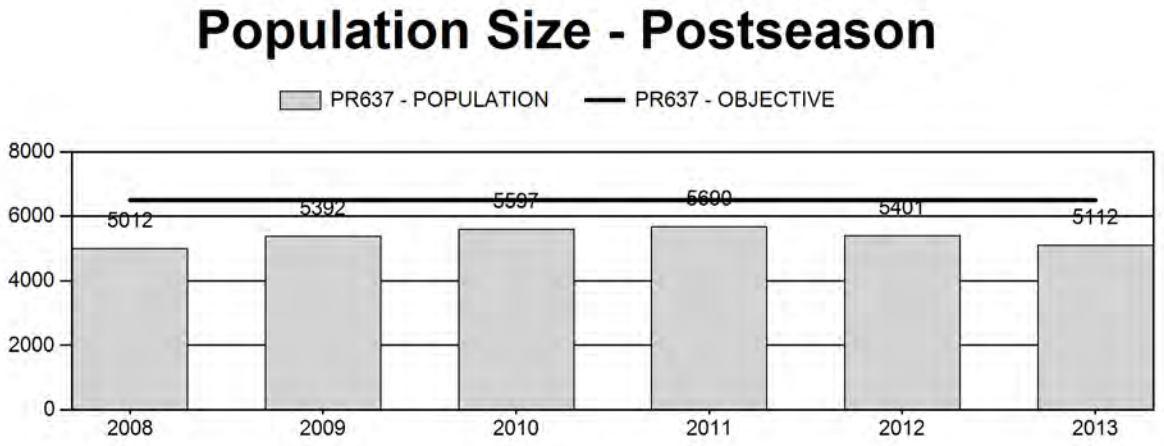
HUNT AREAS: 62 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	5,418	5,112	4,811
Harvest:	228	180	105
Hunters:	261	196	125
Hunter Success:	87%	92%	84 %
Active Licenses:	270	218	125
Active License Percent:	84%	83%	84 %
Recreation Days:	740	586	380
Days Per Animal:	3.2	3.3	3.6
Males per 100 Females	61	48	
Juveniles per 100 Females	42	42	

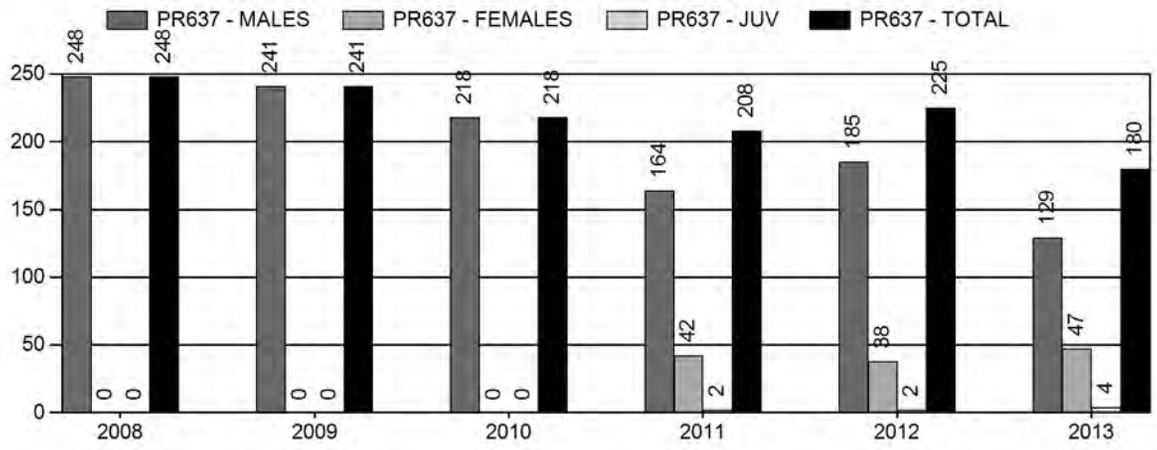
Population Objective:	6,500
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-21.4%
Number of years population has been + or - objective in recent trend:	3
Model Date:	3/5/2014

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

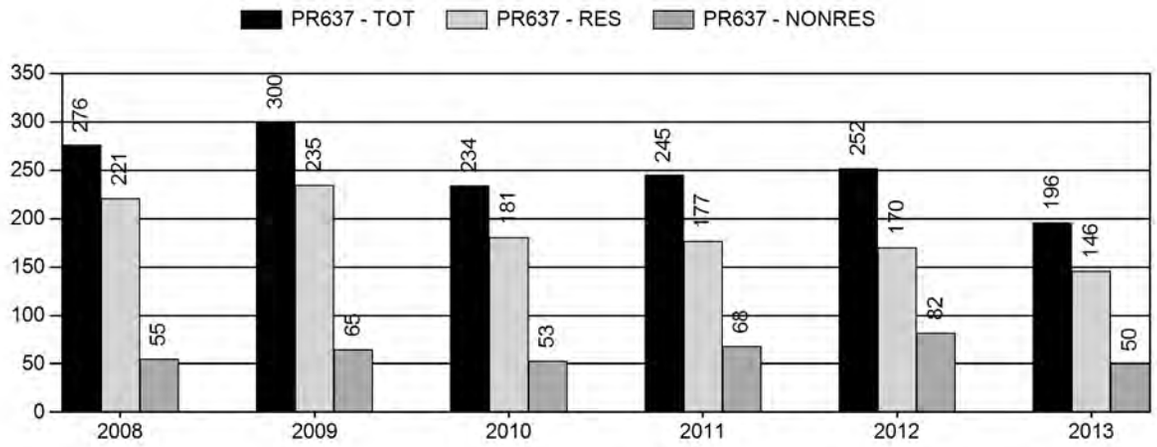
	JCR Year	Proposed
Females ≥ 1 year old:	1.7%	0.8%
Males ≥ 1 year old:	9.4%	6.6%
Juveniles (< 1 year old):	0%	0%
Total:	3.4%	2.1%
Proposed change in post-season population:	-8.3%	-7.2%



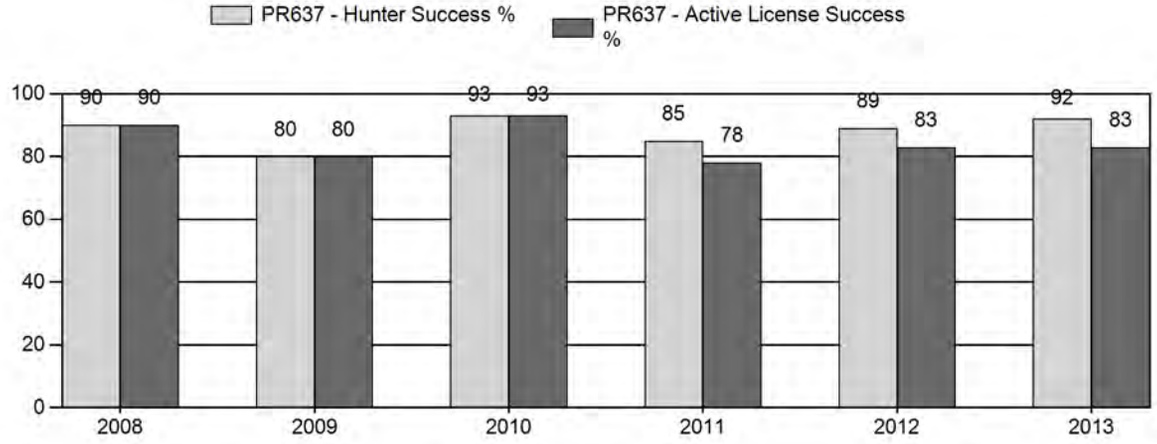
Harvest



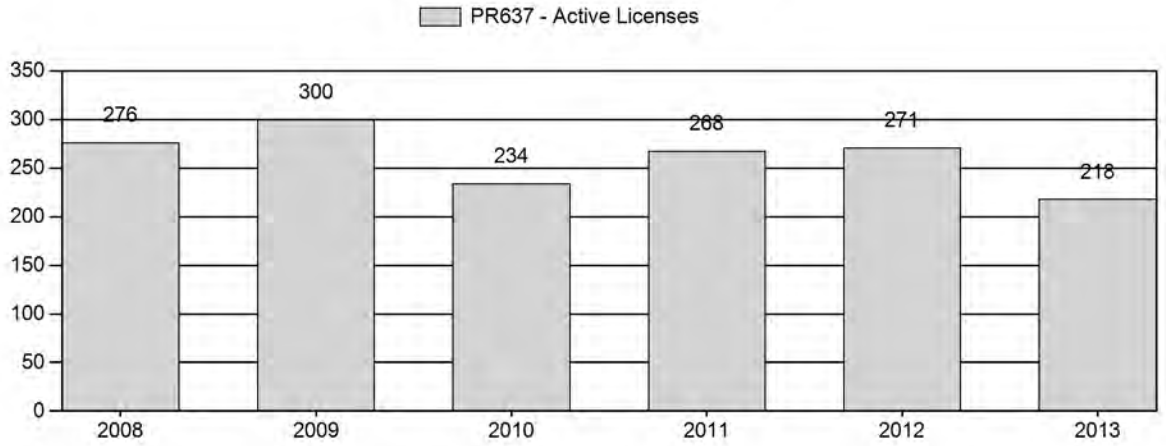
Number of Hunters



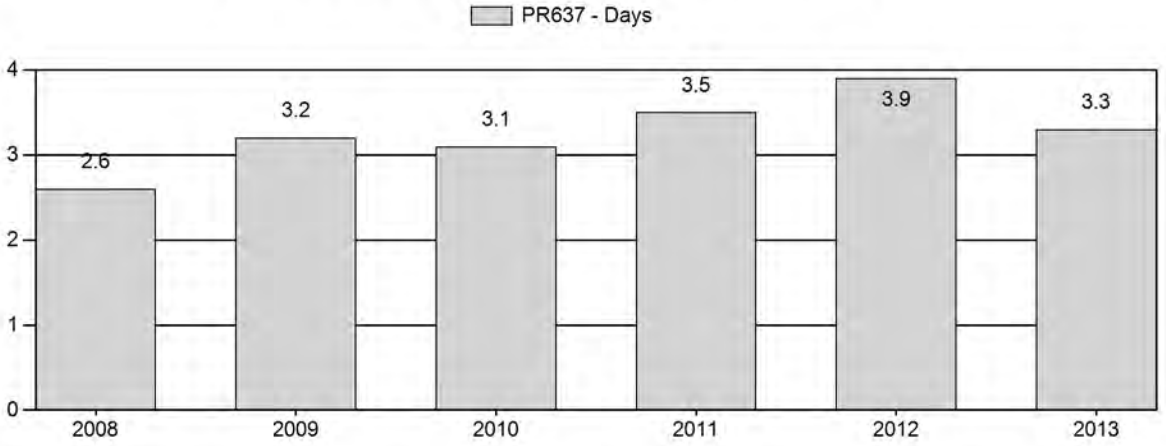
Harvest Success



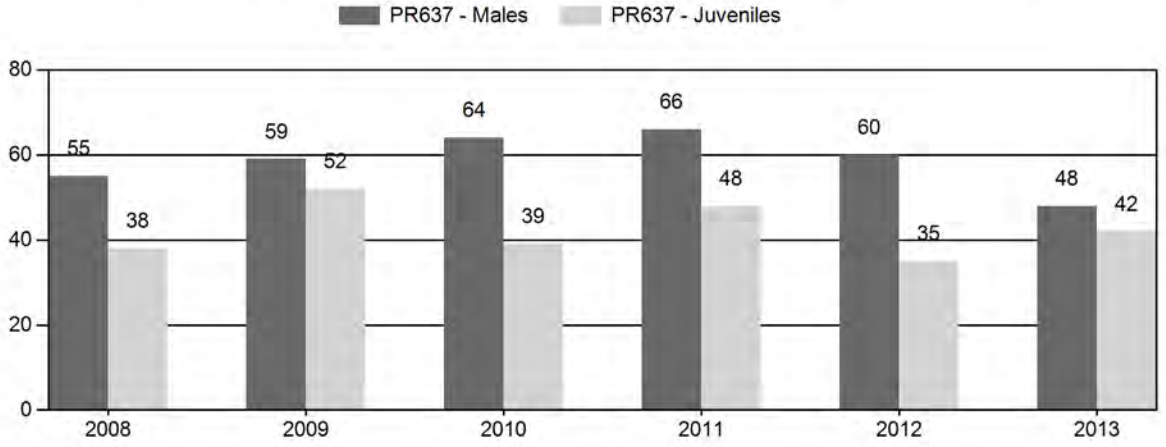
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Pronghorn Herd PR637 - SOUTH FERRIS

		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
2008	5,285	171	440	611	28%	1,116	52%	419	20%	2,146	1,157	15	39	55	± 3	38	± 3	24
2009	5,657	127	495	622	28%	1,049	47%	543	25%	2,214	1,553	12	47	59	± 0	52	± 0	32
2010	5,836	209	578	787	31%	1,234	49%	481	19%	2,502	1,652	17	47	64	± 3	39	± 2	24
2011	5,919	144	477	621	31%	943	47%	451	22%	2,015	1,776	15	51	66	± 5	48	± 4	29
2012	5,790	47	452	499	31%	827	51%	293	18%	1,619	1,502	6	55	60	± 5	35	± 3	22
2013	5,310	53	312	365	25%	766	53%	319	22%	1,450	1,145	7	41	48	± 4	42	± 4	28

2014 HUNTING SEASONS
SOUTH FERRIS PRONGHORN HERD (PR637)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
62	1	Sep. 13	Oct. 31	40	Limited quota; any antelope
	2	Sep. 13	Oct. 31	75	Limited quota; any antelope valid east of the Continental Divide and north of Wise Dugout Draw
	7	Aug. 15	Oct. 31	25	Limited quota; doe or fawn valid on private lands in the Muddy Creek drainage
Archery 62		Aug. 15	Sep. 12		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
62	1	-35
	2	-25
	6	-50
	7	0
Total	**1 & 2**	**-60**
	6 & 7	**-50**

<u>Management Evaluation</u>
Current Management Objective: 6,500
Management Strategy: Recreation
2013 Postseason Population Estimate: 5,300
2014 Proposed Postseason Population Estimate: 4,930

The South Ferris pronghorn herd is managed toward a post-hunt population of 6,500, an objective last publicly reviewed in 1994. Population size is estimated using two spreadsheet models developed in 2014, one each for the western and eastern portions of the herd unit. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100. Public review of the management objectives for this herd is scheduled for 2014.

Herd Unit Issues

Prior to 2012, population size was estimated using a Pop-II model with reasonable confidence. Attempts to develop a spreadsheet model for the entire herd since 2012 have been unsuccessful, presumably because buck:doe ratios vary widely between the lightly hunted eastern half and publicly accessible lands in the western half of the herd unit. Hunter access to much of the

eastern half of the herd has been severely limited by private landowners since the mid-1990s and has resulted in buck:doe ratios and pronghorn densities greatly skewed between the western and eastern portions.

Fawn crops have only ranged from 28 to 55:100 over the past 13 years, averaging ~40:100. In addition to limited access for much of the herd, poor production and recruitment has reduced harvest levels the herd can support.

The large Peterson Ranch in the south-central portion of the herd has changed hands twice in as many years, and it is not known how the newest owners will handle hunter access, or the large Walk-In area along US287.

Weather

Severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, were followed by three severe late winter blizzards in April 2013. Based on low yearling ratios in 2013, losses appeared to be well above normal during the 2012-13 winter. The 2013 summer was also exceptionally dry, reducing browse availability for the 2013-14 winter. Precipitation increased in the fall, providing for some herbaceous plant growth, but appeared to be too late for most forbs and shrubs. The 2013-14 winter had numerous bitter cold spells, and high winds, but those winds also exposed forage on most winter ranges. Losses may still be above average because of the low browse production and poor body condition of animals going into the winter.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production is expected to have been minimal due to record drought. Only one shrub transect has been established near this herd unit, on the Morgan Creek WHMA. This transect monitored bitterbrush growth and utilization in the Seminoe Mountains but was burned in the 2012 fires. Owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in looking for opportunities for improving habitat conditions for wildlife, possibly as mitigation for wind power projects in other parts of the state. Habitat issues that would benefit pronghorn include treatment of browse on winter ranges, adjustments of grazing use, and modification of sheep-tight fences.

Field Data

Classification sample size declined again for the fourth year, to the smallest sample since 1979. Fawn production improved slightly, to 42:100, but was still well below normal. Fawn production was similar between the east and west portions of the herd, at 44:100 and 40:100 respectively.

Buck:doe ratio dropped from 60:100 in 2012 to only 48:100 in 2013. Not all of the decline was due to a shortage of yearlings, as the mature buck:doe ratio fell from 55:100 to 41:100. Buck:doe ratios have exceeded the 60:100 maximum criterion for recreational management in three of the past six years, but always due to high ratios in the east half of the herd which is largely unavailable to most hunters. Buck:doe ratios in the western portion only averaged 43:100 over

the previous five years, and remained poor at 40:100 in 2013, generating complaints of poor buck numbers and quality by hunters. Buck:doe ratios in the eastern portion, however, averaged 78:100 over those five years, dropping to 55:100 in 2013. The Type 2 licenses introduced in 2012 to address the disparity between buck densities between the two portions of the area have apparently been moderately successful. Not surprisingly, yearling buck:doe ratios were similar between the east and west portions, at 7:100. The eastern portion still has a significantly higher supply of mature bucks at 48:100 compared to 33:100 in the west.

Harvest Data

The difference in supply of bucks between the two halves of the herd unit was also apparent when looking at hunter success for the Type 2 licenses in 2012. Hunters with these tags, restricted to the eastern third of the area with limited public access, enjoyed 94 percent success, compared to only 73 percent for hunters with Type 1 tags that were valid for the entire area. In 2013, however, success for the Type 2 hunters declined. This could indicate success in harvesting surplus bucks from that segment of the herd, but it is more likely that hunter success was affected by significant losses to EHD in that part of the herd, documented in late summer. With the reduction in license quota in 2013, success for hunters with Type 1 licenses improved in 2013 and the average number of days hunted for each animal harvested returned to a more normal level of 3.3 days.

Type 7 doe/fawn licenses were introduced in this area in 2013 to address complaints about high concentrations of pronghorn on irrigated fields along Muddy Creek. It appears few hunters took advantage of the early opening date for those licenses, but 19 does were removed. Fewer pronghorn were found on the fields, but it is not known if that was due to harvest, hunter activity, EHD losses, or more forage opportunities on native ranges because of lessening of the drought.

Population

Efforts to develop a reasonable spreadsheet model for this herd have failed, presumably due to the highly skewed buck:doe ratios between the eastern and western portions of the herd unit. In 2012, the buck:doe ratio in the publicly available portion of the herd was only 36:100, whereas the portion with limited access had 89:100. Until 2012, half the herd unit has essentially been unhunted. As a result, when classification samples for the two halves are combined to determine herd ratios, changes in harvests do not necessarily result in predictable changes in buck:doe ratios, the key parameter used for running spreadsheet models.

A line transect survey in spring of 2013 estimated only 4,610 pronghorn in this herd, well below predictions of the best available spreadsheet model, and again found a noticeable disparity in pronghorn densities between the east and west portions.

Two separate spreadsheet models were created for the East and West portions of this herd. Classification data were sorted by drive routes, which have been relatively constant for more than 20 years. Harvests for the two halves were estimated assuming 90 percent of the area-wide harvest went to the west, and only 10 percent came from the east where access is greatly restricted. Where license restrictions limited hunters to one half or the other, all harvest from that

type went to that half. Unfortunately, splitting the herd eliminates the model's ability to use LT estimates to keep modeled herd size tied to independent estimates.

The resultant models are attached, along with a compilation of the two. The Time-Specific Juvenile & Constant Adult Survival (TSJ,CA) spreadsheet models were chosen for both halves of the herd unit. CJ,CA models for the East and West portions of the herd were rejected because each had high (>800) AICc values, did not track trends in observed buck:doe ratios and provided population estimates that were two to three times as large as the most recent LT estimate for the entire herd. SCJ,SCA models had the lowest AICc values (105 for East and 97 for West) and provided lower population estimates, but population estimates from the East model were sometimes lower than classification sample sizes. Neither SCJ,SCA model tracked well with buck:doe ratios. AICc values for the TSJ,CAS models were "Fair", at 162 and 158 respectively. The East TSJ,CAS model tracked classification sample sizes well and had excellent fit with buck:doe ratios for the first half of the 20-year model. The last 10 years followed observed trends, but did not match observed extremes. The West TSJ,CAS model tracks well with 20 years of observed buck:doe ratios, but greatly exceeds trends in classification sample sizes. It does mimic the observed downward trend in pronghorn numbers seen in LT data.

Fawn production in 2014 was projected to be similar to low 2012 and 2013 ratios for both the East and West models. Models were run with fawn survival values near the low end of their range.

Once population estimates of the two models are combined they track well with four trend counts and two of three line transect surveys, including the most recent in 2013.
The combined model also tracks well with observed buck:doe ratios for the first fifteen years of the model. For the most recent six years, observed values exceed simulated values, which would be expected if classification samples were truly skewed by high ratios in the lightly hunted eastern portion. These combined models predict the herd was about 18 percent below objective in 2013. Assuming continued low fawn production in 2014, these models predict the herd will continue to decline in size, despite the reduction in harvests proposed for 2014.

Neither herd model can yet address losses to EHD that were documented in this herd in 2013. By the number of reported and observed carcasses, losses appeared to be greatest along the west shore of Seminoe Reservoir, but spanned down to Rawlins and up towards Lamont.

Management Summary

With the population apparently well below objective, harvests need to be reduced to allow the herd to recover. The 2014 quota for Type 1 licenses, most of which are expected to be filled on public lands or Walk-In areas in the western portion of the area, is reduced by almost 50 percent. The quota for Type 2 licenses is reduced by 25 percent and the Type 6 licenses are eliminated. While no doe harvest is needed, the Type 7 doe/fawn licenses on private lands along Muddy Creek are retained to address high numbers of pronghorn on irrigated croplands in the northwestern corner of the herd. Most of these lands are enrolled in the Department's Walk-In program, so access to these private lands should not be a concern.

The expected harvest of roughly 85 bucks and 20 does and fawns from the proposed license quotas should allow some increase in herd size if fawn production or survival improves, otherwise the herd is likely to continue to decline. This herd is unlikely to reach objective size for several years without significant improvement in fawn production and survival.

Opening date falls on the traditional day of the week, is compatible with the application booklet and will synchronize with neighboring Area 61. The closing date is the same as in 2012 and 2013 and extends to the closing of the local deer season. A standardized opening date is used for the archery season, which closes the day before the opening of the regular season.

INPUT	
Species:	Pronghorn
Biologist:	Greg Hiatt
Herd Unit & No.:	637=S.Ferris=EastOnly
Model date:	03/05/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	799	808	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	71	105	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	39	162	☑ 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	366	736	1482	**2584**	365	697	1473	**2534**	662	1366	**2028**				6500
1994	407	648	1339	**2394**	407	620	1331	**2358**	598	1243	**1841**				6500
1995	427	586	1218	**2231**	427	567	1218	**2213**	554	1144	**1698**				6500
1996	440	543	1121	**2104**	440	524	1120	**2084**	516	1057	**1573**				6500
1997	503	506	1035	**2044**	503	487	1035	**2025**	489	987	**1476**				6500
1998	429	479	967	**1875**	429	454	967	**1850**	451	917	**1368**				6500
1999	475	442	899	**1816**	475	418	899	**1792**	585	1023	**1608**				6500
2000	374	574	1002	**1949**	374	552	997	**1922**	649	1053	**1701**				6500
2001	296	636	1032	**1963**	296	617	1032	**1944**	691	1068	**1758**				6500
2002	355	677	1046	**2078**	355	650	1046	**2051**	747	1108	**1855**				6500
2003	309	732	1086	**2127**	309	707	1086	**2103**	778	1123	**1901**				6500
2004	569	763	1101	**2433**	569	732	1101	**2402**	716	1052	**1768**				6500
2005	542	701	1031	**2274**	542	663	1031	**2236**	650	987	**1636**				6500
2006	271	637	967	**1874**	271	607	966	**1844**	605	932	**1537**				6500
2007	346	593	914	**1853**	346	560	914	**1820**	661	984	**1645**				6500
2008	281	647	965	**1893**	281	620	965	**1866**	686	1000	**1686**				6500
2009	384	672	980	**2037**	384	646	980	**2010**	757	1062	**1819**				6500
2010	368	741	1041	**2151**	368	717	1041	**2127**	814	1109	**1924**				6500
2011	532	798	1087	**2417**	532	780	1083	**2395**	675	994	**1669**				6500
2012	344	662	974	**1979**	342	564	932	**1837**	551	883	**1434**				6500
2013	378	540	866	**1783**	374	460	835	**1668**	461	821	**1282**				6500
2014	322	452	804	**1578**	322	388	804	**1514**							6500
2015															6500
2016															6500
2017															6500
2018															6500
2019															6500
2020															6500
2021															6500
2022															6500
2023															6500
2024															6500
2025															6500

Survival and Initial Population Estimates

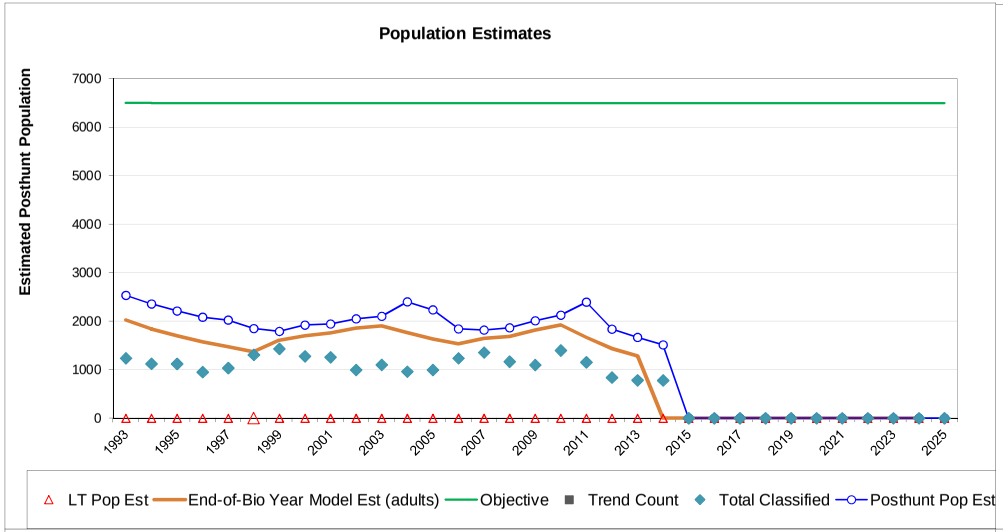
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.20			0.89		
1994	0.20			0.89		
1995	0.20			0.89		
1996	0.20			0.89		
1997	0.20			0.89		
1998	0.20			0.89		
1999	0.87			0.89		
2000	0.80			0.89		
2001	0.90			0.89		
2002	0.90			0.89		
2003	0.90			0.89		
2004	0.20			0.89		
2005	0.20			0.89		
2006	0.43			0.89		
2007	0.90			0.89		
2008	0.90			0.89		
2009	0.90			0.89		
2010	0.90			0.89		
2011	0.20			0.89		
2012	0.20			0.89		
2013	0.20			0.89		
2014	0.40			0.89		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

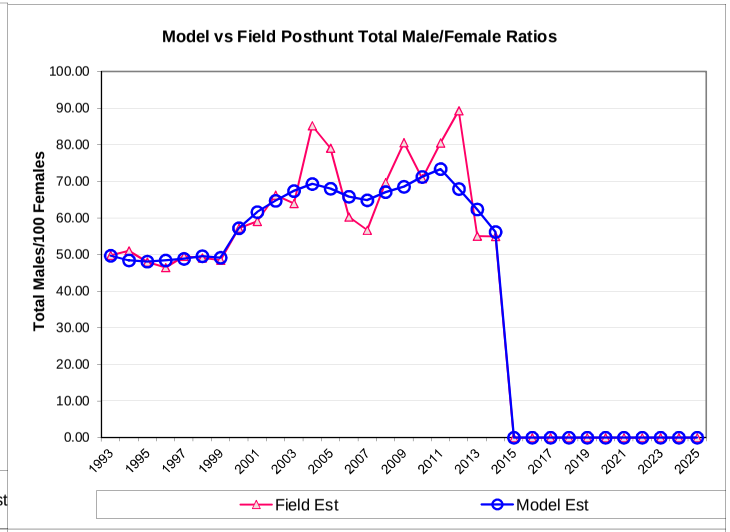
Parameters:	Optim cells
Adult Survival =	0.885
Initial Total Male Pop/10,000 =	0.074
Initial Female Pop/10,000 =	0.148

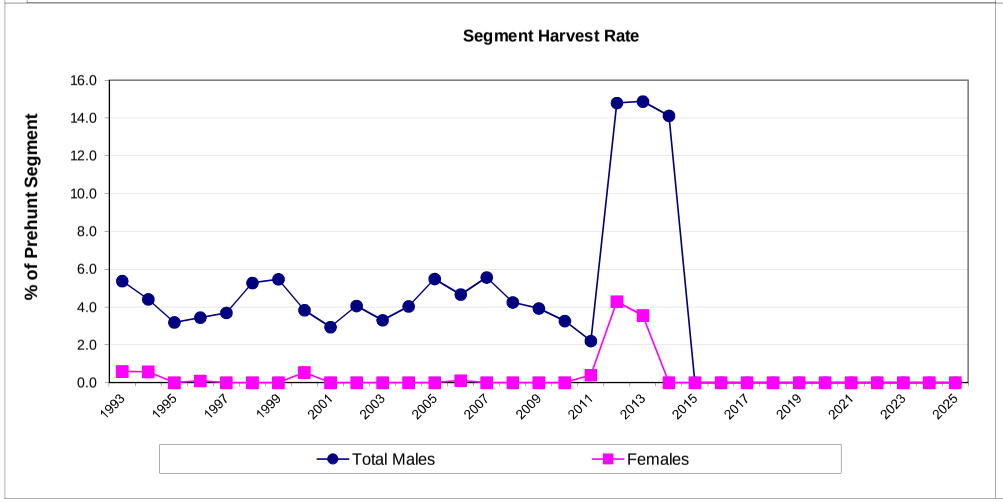
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

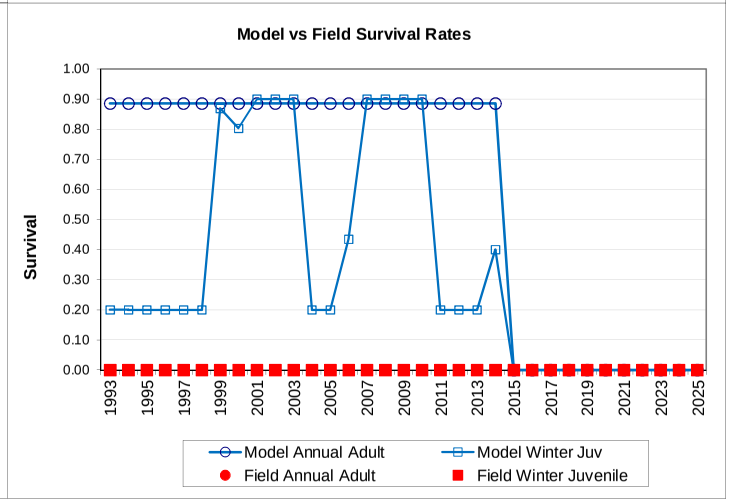
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		24.68	2.08	49.71	49.79	3.24	36	8	1	45	5.4	0.6
1994		30.37	2.53	48.43	51.05	3.53	26	7	0	33	4.4	0.6
1995		35.07	2.78	48.11	47.96	3.40	17	0	0	17	3.2	0.0
1996		39.26	3.27	48.42	46.48	3.65	17	1	0	18	3.4	0.1
1997		48.57	3.71	48.85	49.52	3.76	17	0	0	17	3.7	0.0
1998		44.38	3.08	49.58	49.11	3.29	23	0	0	23	5.3	0.0
1999		52.88	3.37	49.17	48.52	3.18	22	0	0	22	5.5	0.0
2000		37.29	2.79	57.23	57.23	3.70	20	5	0	25	3.8	0.5
2001		28.66	2.35	61.62	59.10	3.75	17	0	0	17	2.9	0.0
2002		33.94	3.02	64.71	66.27	4.70	25	0	0	25	4.1	0.0
2003		28.50	2.53	67.37	63.99	4.28	22	0	0	22	3.3	0.0
2004		51.72	4.40	69.30	85.22	6.24	28	0	0	28	4.0	0.0
2005		52.56	4.32	68.01	79.07	5.74	35	0	0	35	5.5	0.0
2006		28.01	2.34	65.82	60.27	3.83	27	1	0	28	4.7	0.1
2007		37.88	2.74	64.85	56.67	3.57	30	0	0	30	5.6	0.0
2008		29.13	2.53	67.10	69.68	4.49	25	0	0	25	4.2	0.0
2009		39.20	3.30	68.54	80.60	5.40	24	0	0	24	3.9	0.0
2010		35.40	2.66	71.23	70.80	4.22	22	0	0	22	3.3	0.0
2011		48.91	3.81	73.39	80.52	5.38	16	4	0	20	2.2	0.4
2012		35.29	3.57	67.94	89.30	6.72			38	129	14.8	4.3
2013		43.65	3.99	62.36	55.08	4.66			28	105	14.9	3.6
2014		40.00	3.74	56.19	55.00	4.62			0	58	14.1	0.0
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

INPUT	
Species:	Pronghorn
Biologist:	Greg Hiatt
Herd Unit & No.:	637=S.Ferris=West-90%,ff>50%
Model date:	03/05/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	828	837	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	63	97	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	36	158	☑ 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	1654	2028	3284	**6967**	1641	1637	3194	**6472**	1823	3168	**4992**				6500
1994	1640	1787	3105	**6532**	1636	1502	3025	**6162**	1937	3234	**5171**				6500
1995	1859	1898	3170	**6926**	1859	1705	3169	**6733**	1846	3092	**4938**				6500
1996	1911	1809	3030	**6750**	1911	1626	3024	**6561**	1796	2984	**4780**				6500
1997	1645	1760	2925	**6330**	1645	1567	2919	**6132**	1677	2831	**4508**				6500
1998	1197	1644	2774	**5615**	1197	1390	2768	**5355**	1404	2592	**3996**				6500
1999	1401	1376	2540	**5317**	1401	1137	2534	**5073**	1537	2736	**4273**				6500
2000	1469	1506	2681	**5656**	1465	1283	2622	**5370**	1689	2828	**4517**				6500
2001	1031	1655	2771	**5458**	1031	1463	2771	**5265**	1645	2763	**4408**				6500
2002	1107	1612	2708	**5427**	1107	1339	2708	**5154**	1562	2746	**4308**				6500
2003	722	1531	2691	**4944**	722	1284	2691	**4697**	1253	2463	**3715**				6500
2004	1195	1228	2413	**4836**	1195	919	2408	**4521**	1248	2537	**3785**				6500
2005	1409	1223	2486	**5118**	1409	840	2486	**4735**	1267	2701	**3968**				6500
2006	800	1241	2647	**4688**	789	943	2607	**4338**	920	2344	**3264**				6500
2007	1047	901	2297	**4245**	1047	566	2297	**3910**	883	2379	**3262**				6500
2008	1093	865	2331	**4289**	1093	592	2331	**4016**	938	2428	**3366**				6500
2009	1504	920	2379	**4803**	1504	654	2379	**4538**	1180	2656	**3836**				6500
2010	1128	1156	2603	**4888**	1128	916	2603	**4648**	998	2439	**3437**				6500
2011	1114	979	2390	**4482**	1111	798	2344	**4253**	885	2216	**3101**				6500
2012	772	867	2172	**3811**	770	664	2130	**3563**	851	1970	**2821**				6500
2013	763	834	1931	**3527**	763	772	1910	**3445**	851	1767	**2618**				6500
2014	785	834	1732	**3351**	785	802	1710	**3297**							6500
2015															6500
2016															6500
2017															6500
2018															6500
2019															6500
2020															6500
2021															6500
2022															6500
2023															6500
2024															6500
2025															6500

Survival and Initial Population Estimates

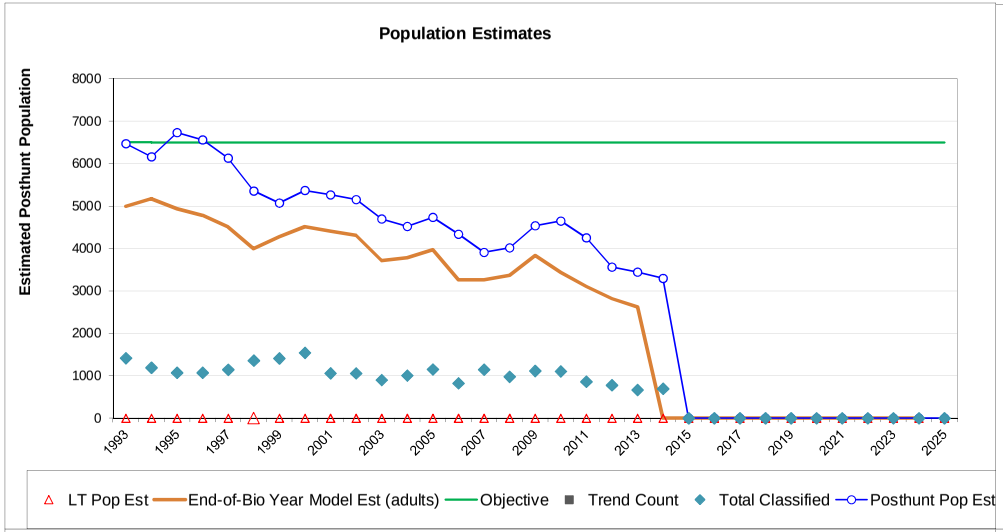
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.66			0.81		
1994	0.90			0.81		
1995	0.50			0.81		
1996	0.50			0.81		
1997	0.50			0.81		
1998	0.50			0.81		
1999	0.90			0.81		
2000	0.90			0.81		
2001	0.90			0.81		
2002	0.90			0.81		
2003	0.65			0.81		
2004	0.90			0.81		
2005	0.90			0.81		
2006	0.50			0.81		
2007	0.90			0.81		
2008	0.90			0.81		
2009	0.90			0.81		
2010	0.50			0.81		
2011	0.50			0.81		
2012	0.50			0.81		
2013	0.50			0.81		
2014	0.50			0.81		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

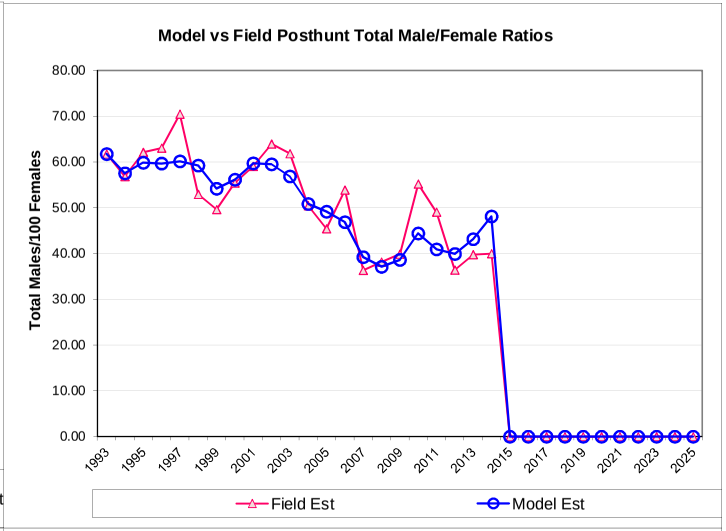
Parameters:	Optim cells
Adult Survival =	0.810
Initial Total Male Pop/10,000 =	0.203
Initial Female Pop/10,000 =	0.328

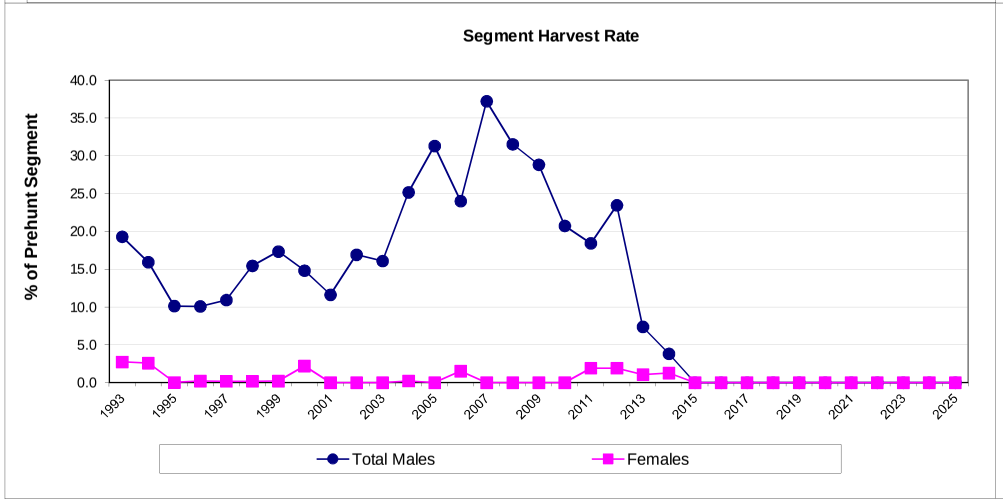
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult surviva	98%

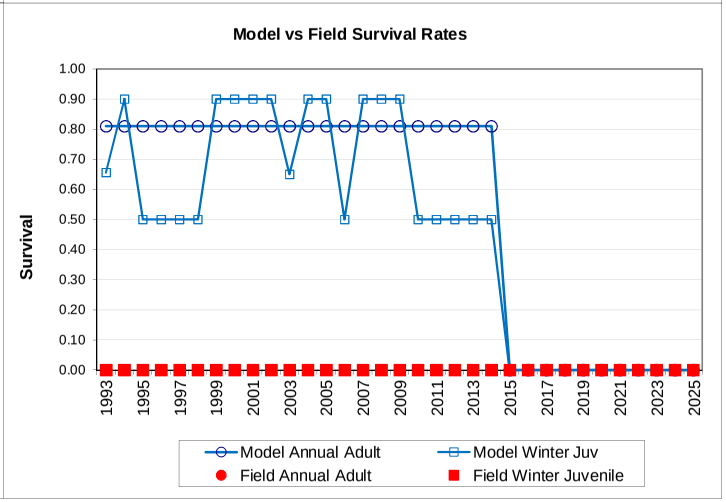
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		50.37	3.37	61.77	61.77	3.87	356	82	12	450	19.3	2.7
1994		52.82	3.77	57.55	56.87	3.96	259	73	4	336	15.9	2.6
1995		58.64	4.38	59.88	62.14	4.55	175	1	0	176	10.1	0.0
1996		63.08	4.66	59.70	63.08	4.66	166	6	0	172	10.1	0.2
1997		56.24	4.17	60.17	70.50	4.88	175	5	0	180	10.9	0.2
1998		43.15	2.99	59.26	52.96	3.42	231	5	0	236	15.5	0.2
1999		55.15	3.52	54.18	49.64	3.28	217	5	0	222	17.3	0.2
2000		54.77	3.40	56.16	55.45	3.43	203	54	3	260	14.8	2.2
2001		37.22	3.08	59.74	59.07	4.17	175	0	0	175	11.6	0.0
2002		40.89	3.34	59.53	63.95	4.51	248	0	0	248	16.9	0.0
2003		26.83	2.67	56.88	61.84	4.58	224	0	0	224	16.1	0.0
2004		49.50	3.84	50.87	50.50	3.89	281	5	0	286	25.2	0.2
2005		56.67	3.95	49.17	45.44	3.40	348	0	0	348	31.3	0.0
2006		30.20	2.97	46.89	53.91	4.31	271	37	10	318	24.0	1.5
2007		45.56	3.24	39.23	36.35	2.80	305	0	0	305	37.2	0.0
2008		46.88	3.61	37.12	38.19	3.16	248	0	0	248	31.5	0.0
2009		63.21	4.33	38.65	39.89	3.19	241	0	0	241	28.8	0.0
2010		43.35	3.34	44.41	55.22	3.93	218	0	0	218	20.7	0.0
2011		46.59	3.94	40.94	49.09	4.08	164	42	2	208	18.4	1.9
2012		35.54	3.26	39.93	36.42	3.31			38	225	23.5	1.9
2013		39.52	3.85	43.18	39.78	3.87			19	75	7.4	1.1
2014		45.33	4.19	48.14	40.00	3.86			20	49	3.8	1.3
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



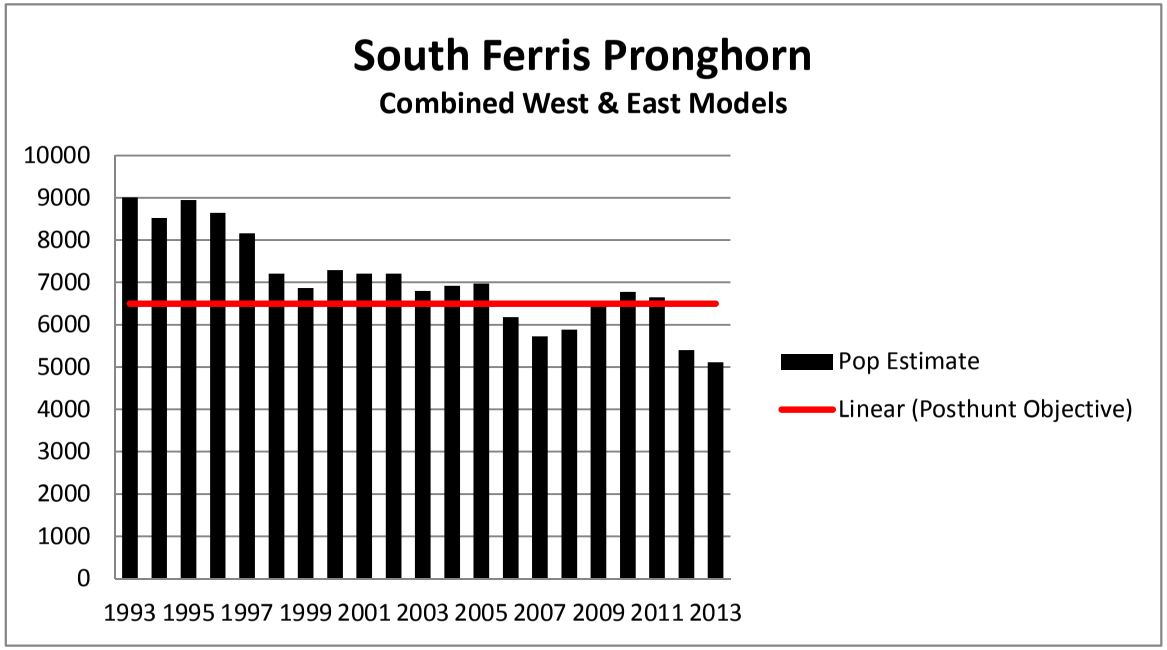


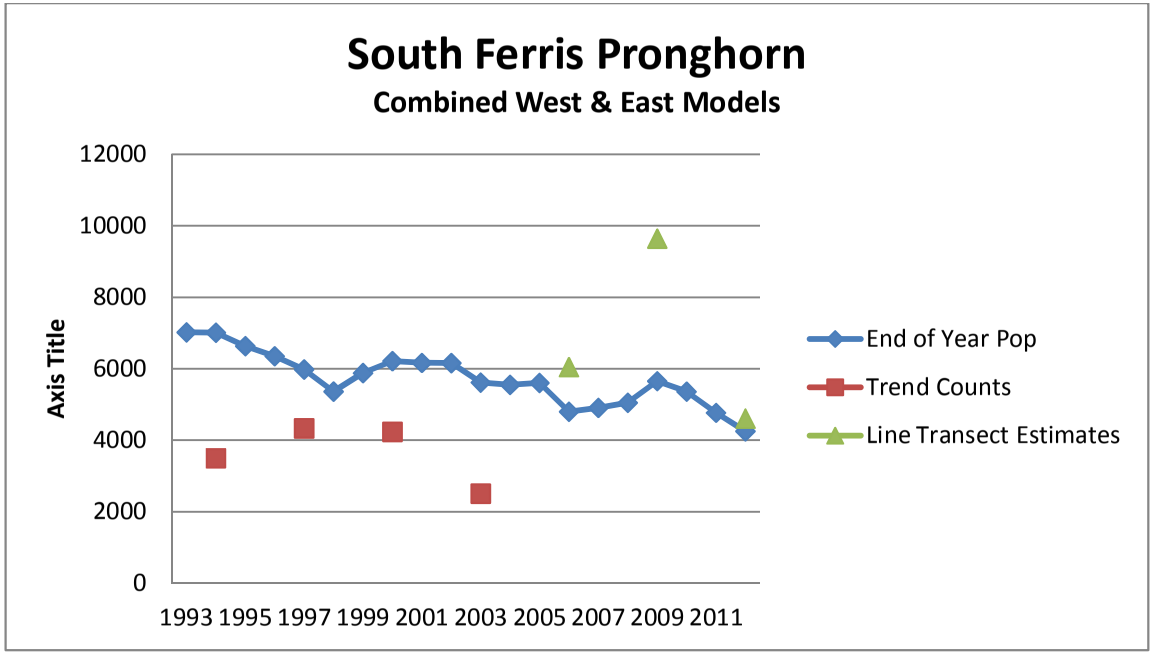


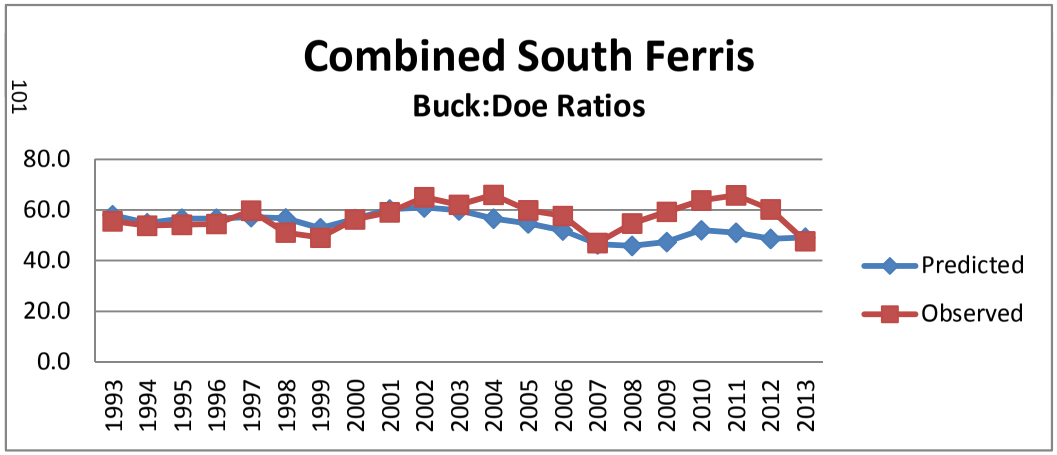


Comments:

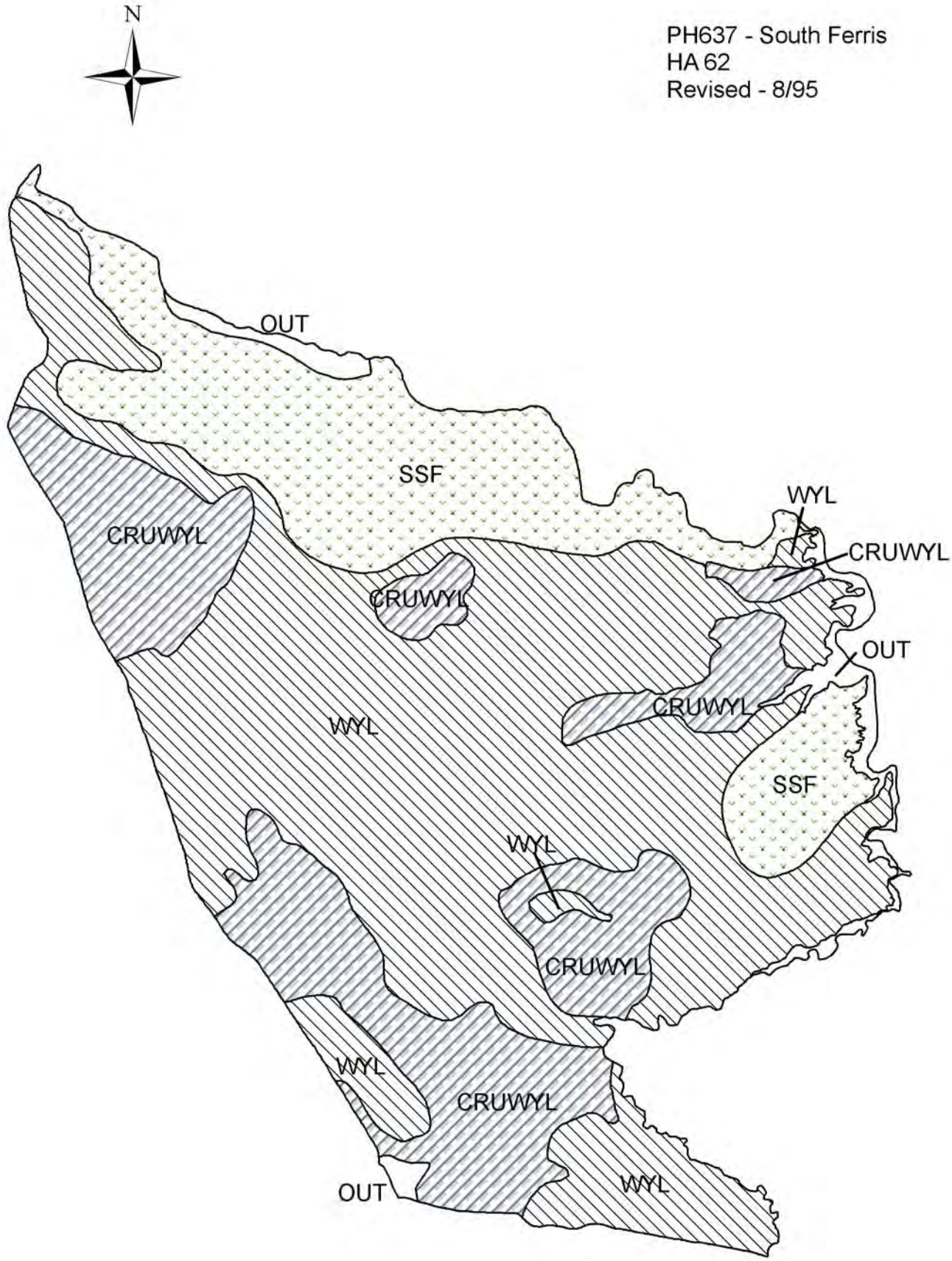
	West Model						East Model						Combined Models					
					10-Feb-14 AICc=149						27-Jan-14 AICc=158							
		PreSeason			Postseason	End-of-Year		PreSeason			Postseason	End-of-Year		PreSeason			Postseason	End-of-Year
Year	Fawn	Buck	Doe	Total	Population	Population	Fawn	Buck	Doe	Total	Population	Population	Fawn	Buck	Doe	Total	Population	Population
1993	1654	2028	3284	6967	6472	4992	366	736	1482	2584	2534	2028	2020	2765	4766	9551	9006	7020
1994	1640	1787	3105	6532	6162	5171	407	648	1339	2394	2358	1841	2047	2435	4444	8926	8520	7012
1995	1859	1898	3170	6926	6733	4938	427	586	1218	2231	2213	1698	2286	2484	4388	9158	8945	6636
1996	1911	1809	3030	6750	6561	4780	440	543	1121	2104	2084	1573	2352	2352	4151	8855	8646	6353
1997	1645	1760	2925	6330	6132	4508	503	506	1035	2044	2025	1476	2148	2266	3960	8374	8157	5984
1998	1197	1644	2774	5615	5355	3996	429	479	967	1875	1850	1368	1626	2123	3741	7490	7205	5364
1999	1401	1376	2540	5317	5073	4273	475	442	899	1816	1792	1608	1876	1818	3439	7133	6864	5881
2000	1469	1506	2681	5656	5370	4517	374	574	1002	1949	1922	1701	1842	2079	3684	7605	7292	6218
2001	1031	1655	2771	5458	5265	4408	296	636	1032	1963	1944	1758	1327	2291	3803	7421	7209	6166
2002	1107	1612	2708	5427	5154	4308	355	677	1046	2078	2051	1855	1462	2289	3754	7505	7205	6162
2003	722	1531	2691	4944	4697	3715	309	732	1086	2127	2103	1901	1032	2262	3777	7071	6800	5617
2004	1195	1228	2413	4836	4521	3785	569	763	1101	2433	2402	1768	1764	1990	3514	7268	6923	5553
2005	1409	1223	2486	5118	4735	3968	542	701	1031	2274	2236	1636	1951	1924	3518	7392	6971	5604
2006	800	1241	2647	4688	4338	3264	271	637	967	1874	1844	1537	1070	1878	3614	6562	6182	4801
2007	1047	901	2297	4245	3910	3262	346	593	914	1853	1820	1645	1393	1494	3211	6098	5729	4906
2008	1093	865	2331	4289	4016	3366	281	647	965	1893	1866	1686	1374	1513	3296	6182	5882	5052
2009	1504	920	2379	4803	4538	3836	384	672	980	2037	2010	1819	1888	1592	3360	6840	6548	5655
2010	1128	1156	2603	4888	4648	3437	368	741	1041	2151	2127	1924	1497	1898	3644	7039	6775	5361
2011	1114	979	2390	4482	4253	3101	532	798	1087	2417	2395	1669	1645	1776	3477	6899	6648	4770
2012	772	867	2172	3811	3563	2821	344	662	974	1979	1837	1434	1116	1529	3146	5790	5401	4255
2013	763	834	1931	3527	3445	2618	378	540	866	1783	1668	1282	1141	1373	2796	5310	5112	3900
2014	785	834	1732	3351	3297		322	452	804	1578	1514		1107	1286	2536	4929	4811	0




South Ferris Pronghorn
Combined West & East Models
Axis Title
12000
10000
8000
6000
4000
2000
0
1993 1995 1997 1999 2001 2003 2005 2007 2009 2011
End of Year Pop
Trend Counts
Line Transect Estimates


Combined South Ferris
Buck:Doe Ratios
80.0
60.0
40.0
20.0
0.0
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
Predicted
Observed

Trend Counts	LT Estim.	Buck/doe Ratios Predicte	Obs	Pop Obj
		58.0	55.6	6500
3499		54.8	53.8	6500
		56.6	54.2	6500
		56.7	54.5	6500
4336		57.2	59.8	6500
		56.8	51.1	6500
		52.9	49.1	6500
4238		56.5	56.3	6500
		60.2	59.1	6500
		61.0	65.1	6500
2511		59.9	62.1	6500
		56.6	66	6500
		54.7	59.9	6500
	6050	52.0	57.7	6500
		46.5	47	6500
		45.9	54.7	6500
	9642	47.4	59.3	6500
		52.1	63.8	6500
		51.1	65.8	6500
	4610	48.6	60.3	6500
		49.1	47.7	6500
		50.7		6500


N
PH637 - South Ferris
HA 62
Revised - 8/95
OUT
SSF
CRUWYL
CRUWYL
WYL
CRUWYL
OUT
CRUWYL
WYL
SSF
WYL
CRUWYL
WYL
CRUWYL
OUT
WYL

2013 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2013 - 5/31/2014

HERD: MD642 - DUBOIS

HUNT AREAS: 128, 148

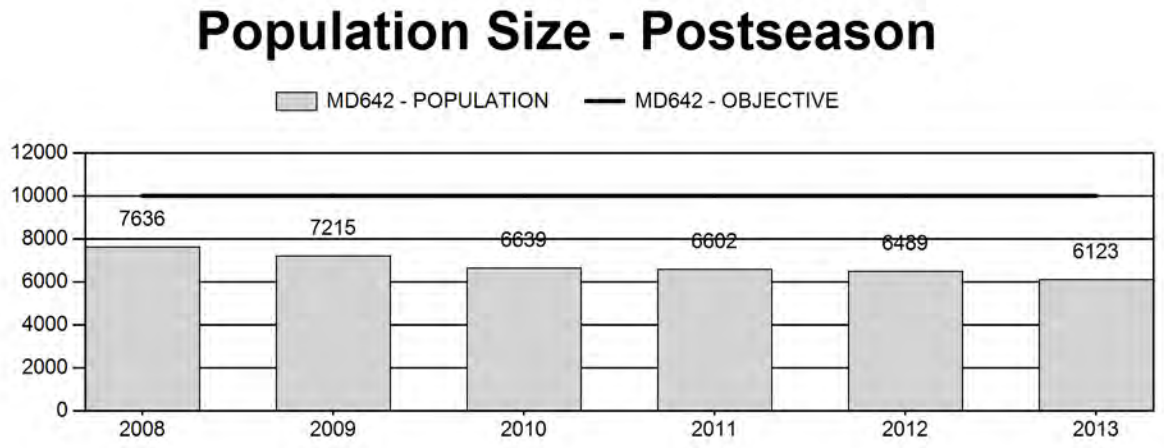
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	6,916	6,123	7,111
Harvest:	520	727	275
Hunters:	1,246	1,341	1,200
Hunter Success:	42%	54%	23 %
Active Licenses:	1,329	1,389	1,200
Active License Percent:	39%	52%	23 %
Recreation Days:	7,532	6,913	5,000
Days Per Animal:	14.5	9.5	18.2
Males per 100 Females	25	29	
Juveniles per 100 Females	59	65	

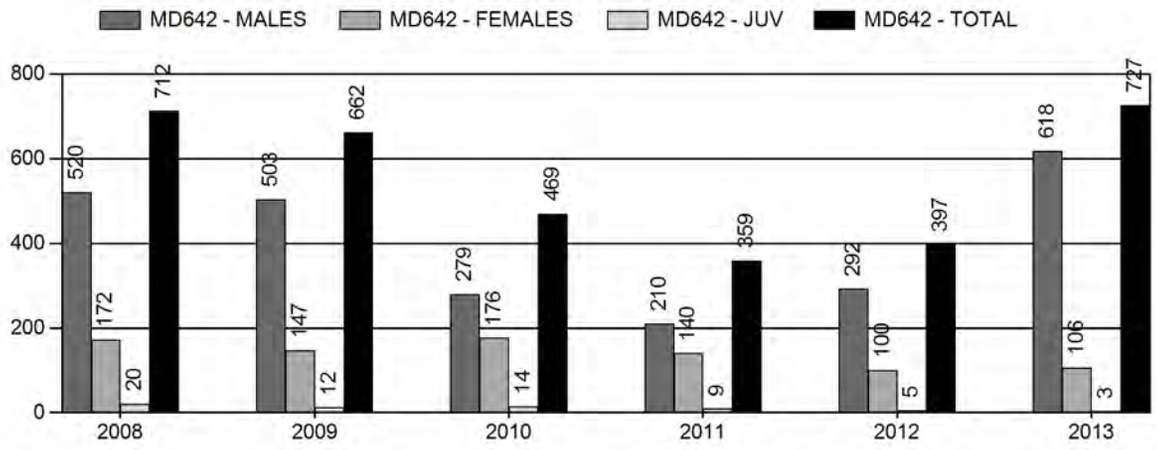
Population Objective:	10,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-38.8%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/21/2014

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

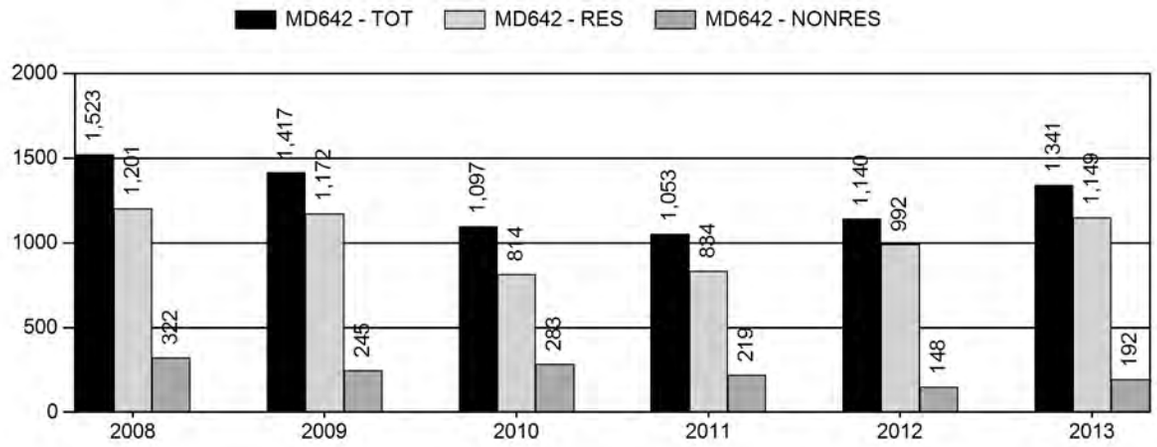
	JCR Year	Proposed
Females ≥ 1 year old:	3%	1%
Males ≥ 1 year old:	48%	18%
Juveniles (< 1 year old):	1%	1%
Total:	10%	4%
Proposed change in post-season population:	-6%	+16%



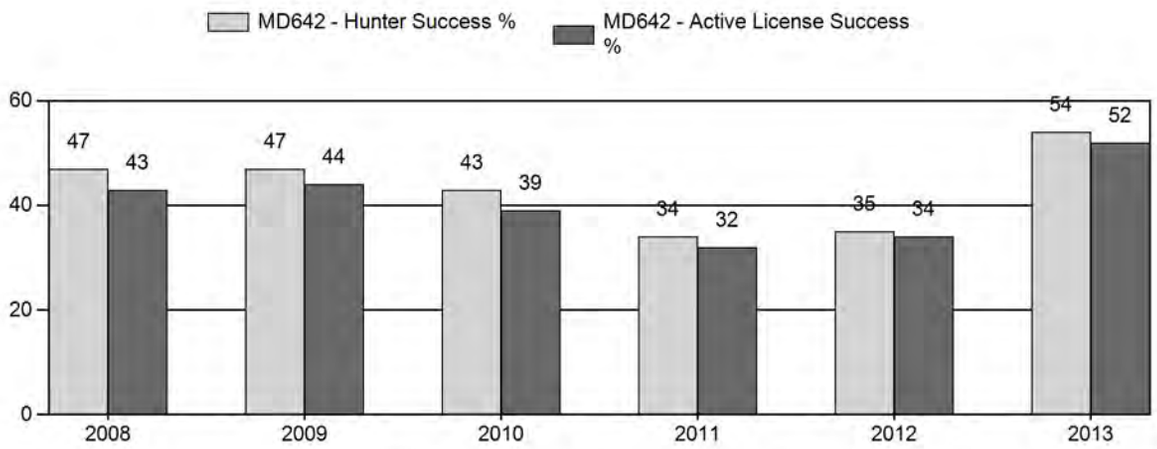
Harvest



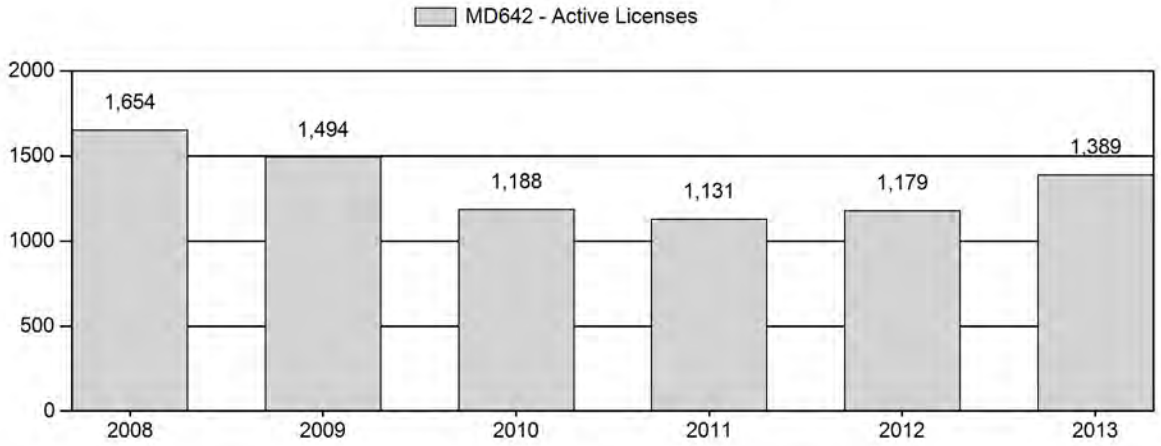
Number of Hunters



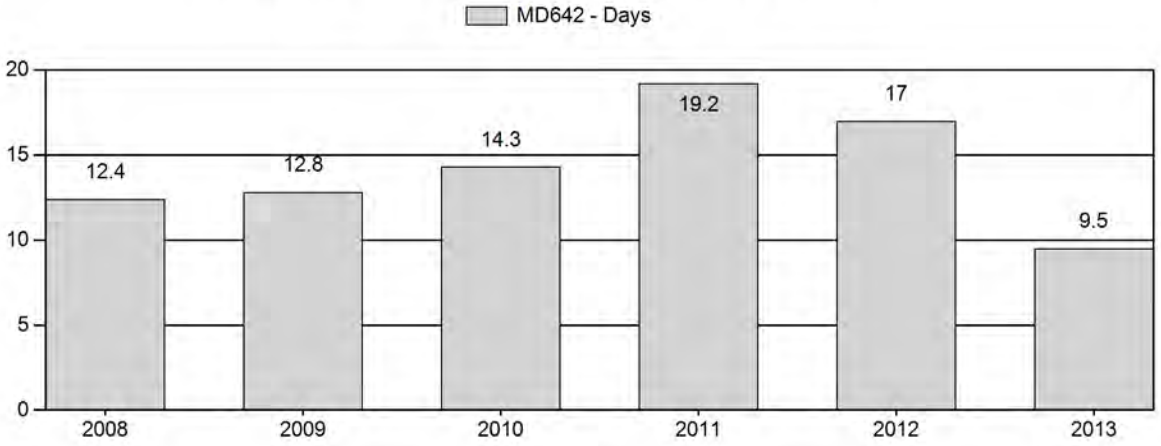
Harvest Success



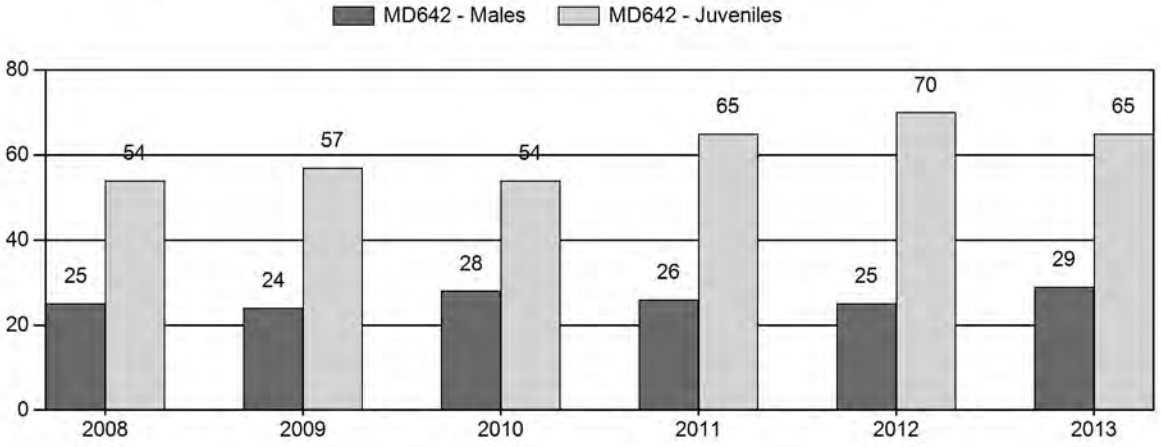
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD642 - DUBOIS

		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
2008	7,636	54	86	140	14%	556	56%	302	30%	998	852	10	15	25	± 3	54	± 5	43
2009	7,215	64	117	181	13%	765	55%	434	31%	1,380	928	8	15	24	± 2	57	± 4	46
2010	6,639	61	128	189	15%	683	55%	370	30%	1,242	876	9	19	28	± 3	54	± 4	42
2011	6,602	36	52	88	14%	340	52%	221	34%	649	1,073	11	15	26	± 4	65	± 7	52
2012	6,489	26	78	104	13%	415	51%	291	36%	810	1,232	6	19	25	± 3	70	± 6	56
2013	6,123	73	102	175	15%	605	51%	395	34%	1,175	1,117	12	17	29	± 3	65	± 5	51

2014 HUNTING SEASONS
DUBOIS MULE DEER (MD 642)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
128		Oct. 1	Oct. 15		General; antlered mule deer or any white-tailed deer
	1	Nov. 1	Nov. 20	50	Limited quota; any deer
	3	Nov. 1	Nov. 20	50	Limited quota; any white-tailed deer
	7	Nov. 1	Nov. 20	25	Limited quota; doe or fawn valid on private land
148		Sep. 15	Oct. 25		General; antlered deer
Archery					
128		Sep. 1	Sep. 30		General; any deer. Limited quota; refer to license type.
148		Sep. 1	Sep. 14		General; any deer

Hunt Area	Type	Quota change from 2013
128	6	-25
	7	-75
Total	**6**	**-25**
	7	**-75**

<u>Management Evaluation</u>
Current Management Objective: 10,000
Management Strategy: Recreational
2013 Postseason Population Estimate: ~6,100
2014 Proposed Postseason Population Estimate: ~7,100

Management Issues
The Dubois mule deer herd has an objective of 10,000 and a recreational management strategy. The objective has been in place since 1994.

Deer in this herd unit winter in hunt area 128. It is known many of the deer migrate out of the herd unit in late spring and do not return until early winter. Migration routes and the extent of summer range are unknown. Deer that do remain in the herd unit generally spend summers at high elevation sites. Much of the winter range utilized by deer overlaps elk and bighorn sheep winter range and remains relatively untouched by development.

Habitat/Weather

The past year was characterized by extreme drought throughout the herd unit. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was approximately 55% of the previous 5 year average. Herbaceous production was even lower than in 2012 which was also a very dry year. No shrub data is collected in the herd unit, but the dry conditions undoubtedly resulted in poor browse production. Casual observations of shrub conditions in the herd unit did indicate growth was poor. Although no vegetation data is collected at high elevation summer range, observations suggest vegetation growth was low on summer range as well. Given the low forage production, deer entered the winter in poor body condition. In contrast to low precipitation during the growing season, there was unusually high precipitation throughout the herd unit starting in September. Much of the precipitation was snow and forced deer onto winter range nearly 2 months earlier than normal. The early presence of deer on winter range resulted in unusually high deer harvest during the general season in October. With average winter conditions, overwinter deer mortality may be higher than normal due to the poor condition of animals entering winter.

Field/Harvest Data/Population

Despite poor feed conditions, the fawn/doe ratio in 2013 was typical for the herd at 65/100. This was slightly higher than the 5 year average of 59/100. The buck/doe ratio in the herd has been remarkably stable for many years. In 2013 the buck/doe ratio was 29/100. This was also slightly higher than the 5 year average of 25/100. Both the fawn/doe and buck/doe ratios were within the usual range of variability in the herd. The population is suspected to have declined steadily over the past several years. The 2013 population estimate is approximately 6,100 deer.

Hunter success during the general, October season tends to be quite low and is related to the fact many deer are not in the herd unit during that period. Deer typically migrate into the herd unit in late October and are present for the limited quota season in November. Due to the extensive immigration, success rates for November license holders are usually quite high.
In 2013, hunter success during the general, October season was well above any level seen during the past 30 years. General hunters had a 53% success rate in hunt area 128. This was nearly double the previous 10 year average. In conjunction with the high success, the days/animal was the lowest on record for the past 30 years. Both these statistics indicate hunters had an exceptionally easy time harvesting buck deer during the general season. Observations from field personnel during the hunting season also indicate harvest in October was unusually high. Observations in September and October unequivocally indicate large numbers of deer migrated into the herd unit from dispersed summer range as much as 2 months earlier than normal. The early migration is directly attributable to unprecedented, early snowfall in the high country. The historically high buck harvest in October is thus directly linked to environmental conditions and early migration onto winter range and in no way attributable to population growth in the herd.

A new spreadsheet model was developed for the population in 2012. The model did not exhibit any erratic behavior with the addition of data in 2013. For 2013, the TSJ/CA version of the model was selected to track the population. The model AIC value was higher than the other 2 comparative models but the fit was also much better. Also the other 2 models produce estimates nearly 3 times as high as the TSJ/CA or other historical models for the herd. The selected model simulates a significant population decline over the past 5 years. The modeled decline is supported by the harvest statistics from the previous 5 years with the exception of 2013 for reasons mentioned above. The model appears to offer a fair approximation of the population given parameters selected by the model seem reasonable and it tracks suspected population trends closely up to 2013. It should be noted the model predicts 16% growth in 2014 to 7,100 deer. Given poor habitat conditions and average recruitment growth seems unlikely. It is possible the model projects a higher population in response to the abnormally high buck harvest in 2013. As explained above, the buck harvest was related to environmental conditions and should not be taken as an indication of population growth.

Management Summary

The 2014 hunting season is designed to maintain recreational opportunity at the same level as the 2013 season. Regardless of the season structure, harvest in 2014 is expected to decline significantly since 2013 environmental conditions were an anomaly that significantly increased deer vulnerability. Due to the extended population decline indicated in the model, minimal doe/fawn harvest is warranted in 2014. Thus, Type 6 licenses are eliminated and Type 7 licenses are reduced. Type 7 licenses are also restricted to use on private lands in 2014. Given restricted use to private lands, a minimal number of Type 7 licenses will be issued in 2014. Given average winter conditions, the population model predicts the population will increase some but remain below objective at 7,100 deer in 2014.

INPUT	
Species:	Mule Deer
Biologist:	Greg Anderson
Herd Unit & No.:	Dubois Mule Deer
Model date:	02/21/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	99	108	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	99	108	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	19	130	☑ 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		
1993				2061	1236	3670	6967	1975	734	3022	5731	10000
1994				2264	1517	3474	7255	2251	636	3395	6282	10000
1995				2324	1415	3775	7514	2320	1064	3709	7094	10000
1996				2654	1462	3725	7841	2648	790	3650	7087	10000
1997				2292	1205	3652	7149	2285	878	3553	6716	10000
1998				2443	1208	3496	7148	2438	842	3469	6749	10000
1999				2235	1298	3545	7077	2235	820	3473	6528	10000
2000				2298	1613	3883	7794	2295	936	3798	7030	10000
2001				1952	1380	3829	7161	1950	728	3742	6420	10000
2002				1698	1193	3771	6662	1693	747	3669	6109	10000
2003				1893	1066	3566	6524	1882	661	3461	6004	10000
2004				2064	1412	3808	7284	2056	845	3734	6635	10000
2005				2256	1648	4120	8024	2254	947	4060	7261	10000
2006				2691	1688	4352	8731	2687	984	4282	7954	10000
2007				2407	1380	4201	7987	2392	760	4034	7186	10000
2008				2333	1643	4443	8419	2311	1071	4254	7636	10000
2009				2296	1462	4185	7943	2283	909	4024	7215	10000
2010				2022	1234	3899	7155	2007	927	3705	6639	10000
2011				2231	1195	3571	6996	2221	964	3417	6602	10000
2012				2290	1269	3367	6925	2284	947	3257	6489	10000
2013				2135	1406	3382	6923	2132	726	3265	6123	10000
2014				2270	1486	3658	7414	2264	1211	3636	7111	10000
2015												10000
2016												10000
2017												10000
2018												10000
2019												10000
2020												10000
2021												10000
2022												10000
2023												10000
2024												10000
2025												10000

Survival and Initial Population Estimates

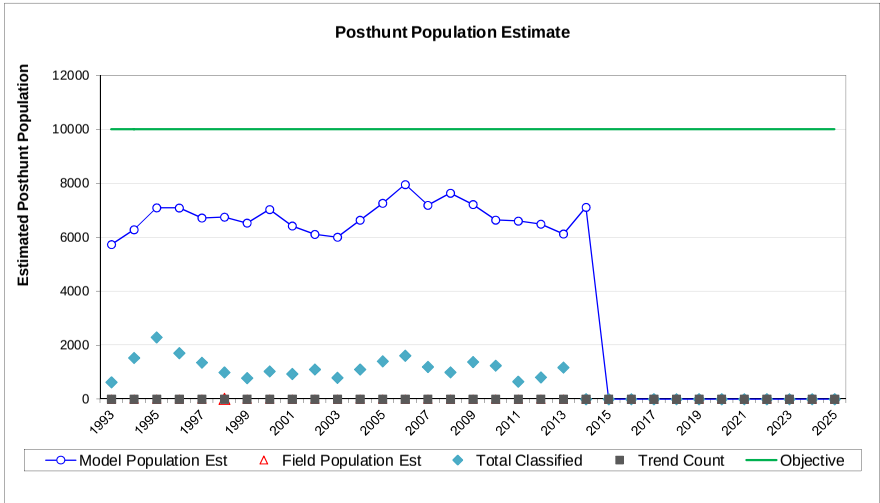
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.86		
1994	0.77			0.86		
1995	0.48			0.86		
1996	0.40			0.86		
1997	0.40			0.86		
1998	0.47			0.86		
1999	0.82			0.86		
2000	0.50			0.86		
2001	0.58			0.86		
2002	0.50			0.86		
2003	0.90			0.86		
2004	0.90			0.86		
2005	0.78			0.86		
2006	0.40			0.86		
2007	0.83			0.86		
2008	0.47			0.86		
2009	0.40			0.86		
2010	0.40			0.86		
2011	0.40			0.86		
2012	0.52			0.86		
2013	0.81			0.86		
2014	0.65			0.86		
2015	0.65					
2016	0.65					
2017	0.65					
2018	0.65					
2019	0.65					
2020	0.65					
2021	0.65					
2022	0.65					
2023	0.65					
2024	0.65					
2025	0.65					

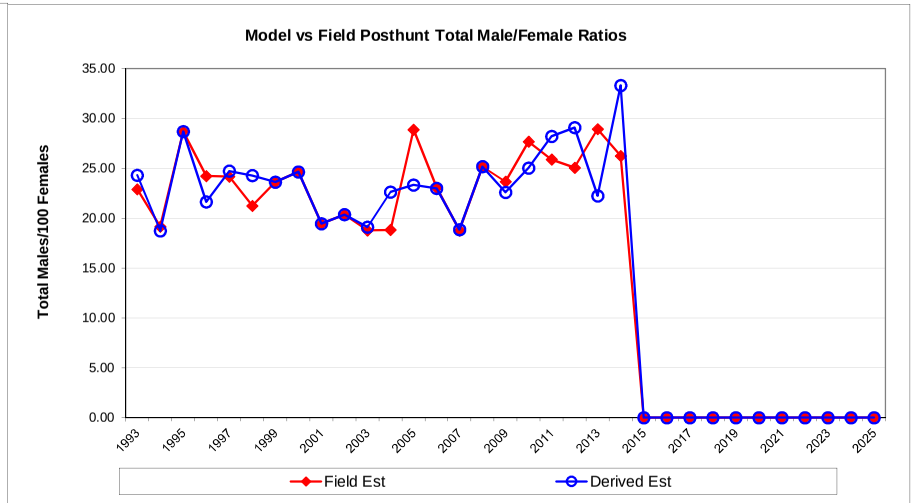
Parameters:	Optim cells
Adult Survival =	0.855
Initial Total Male Pop/10,000 =	0.073
Initial Female Pop/10,000 =	0.302

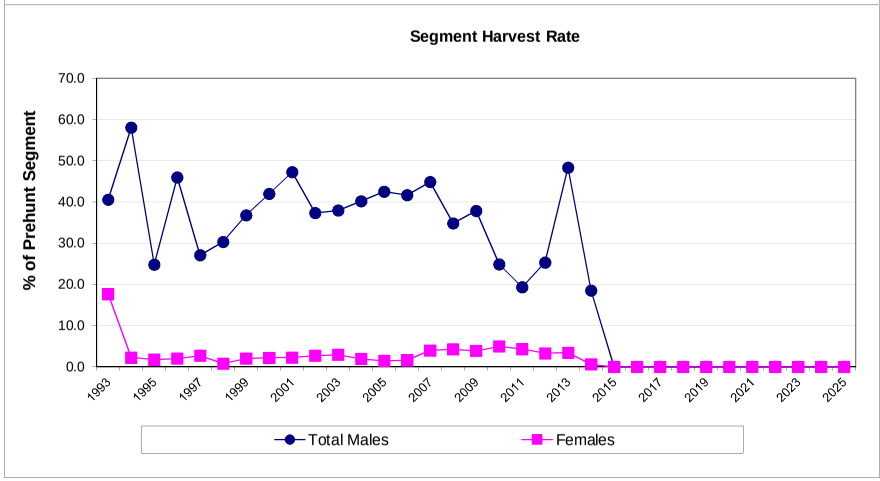
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

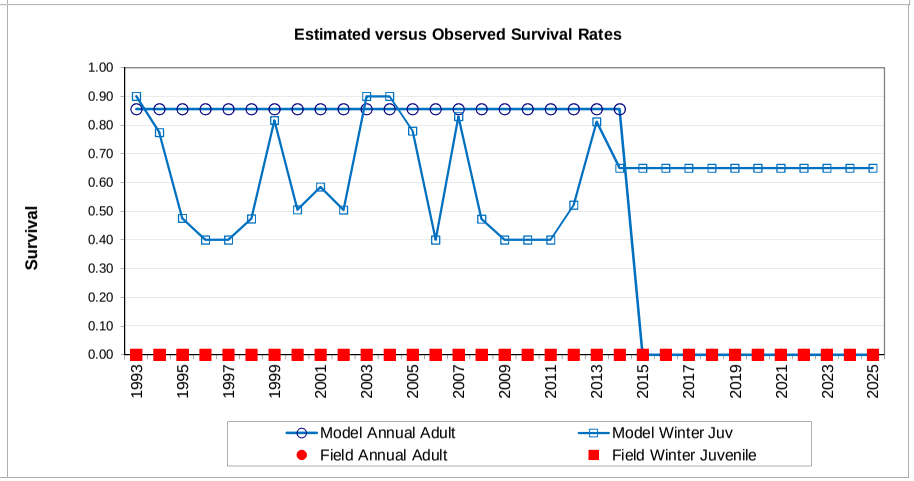
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		65.36	5.71	24.30	22.89	2.91	78	456	589	1123	40.6	17.7
1994		66.30	3.66	18.73	19.15	1.66	12	801	72	885	58.1	2.3
1995		62.55	2.91	28.69	28.69	1.75	3	319	60	382	24.8	1.7
1996		72.55	3.80	21.64	24.22	1.86	6	611	68	685	46.0	2.0
1997		64.31	3.83	24.72	24.17	2.04	7	297	90	394	27.1	2.7
1998		70.27	4.81	24.28	21.24	2.23	5	333	25	363	30.3	0.8
1999		64.34	5.05	23.61	23.61	2.65	0	434	65	499	36.8	2.0
2000		60.43	4.18	24.64	24.64	2.35	2	616	77	695	42.0	2.2
2001		52.11	3.81	19.45	19.45	2.06	2	593	79	674	47.3	2.3
2002		46.15	3.19	20.36	20.36	1.92	4	405	93	502	37.4	2.7
2003		54.37	4.28	19.10	18.78	2.21	10	368	95	473	38.0	2.9
2004		55.06	3.68	22.63	18.83	1.88	7	516	67	590	40.2	1.9
2005		55.51	3.37	23.33	28.87	2.21	2	637	54	693	42.5	1.4
2006		62.75	3.43	22.99	23.07	1.81	4	640	63	707	41.7	1.6
2007		59.31	3.75	18.85	18.78	1.82	13	563	152	728	44.9	4.0
2008		54.32	3.88	25.18	25.18	2.38	20	520	172	712	34.8	4.3
2009		56.73	3.41	22.59	23.66	1.96	12	503	147	662	37.8	3.9
2010		54.17	3.50	25.03	27.67	2.27	14	279	176	469	24.9	5.0
2011		65.00	5.62	28.20	25.88	3.10	9	210	140	359	19.3	4.3
2012		70.12	5.36	29.08	25.06	2.75	5	292	100	397	25.3	3.3
2013		65.29	4.22	22.23	28.93	2.48	3	618	106	727	48.4	3.4
2014		62.26	4.42	33.30	26.24	2.51	5	250	20	275	18.5	0.6
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



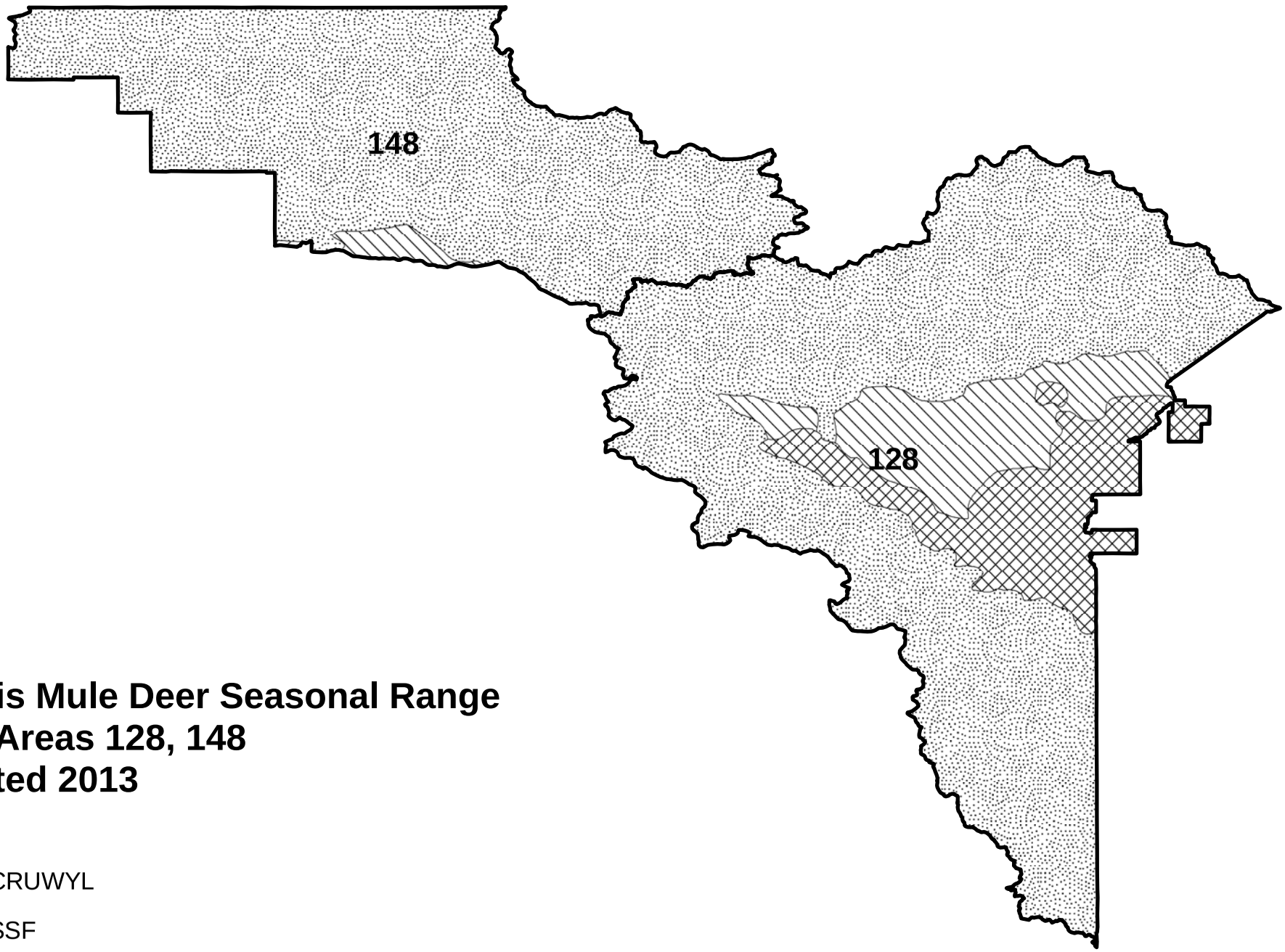






Comments:

END



Dubois Mule Deer Seasonal Range
Hunt Areas 128, 148
Updated 2013

CRUWYL

SSF

WIN

WYL

N

2013 - JCR Evaluation Form

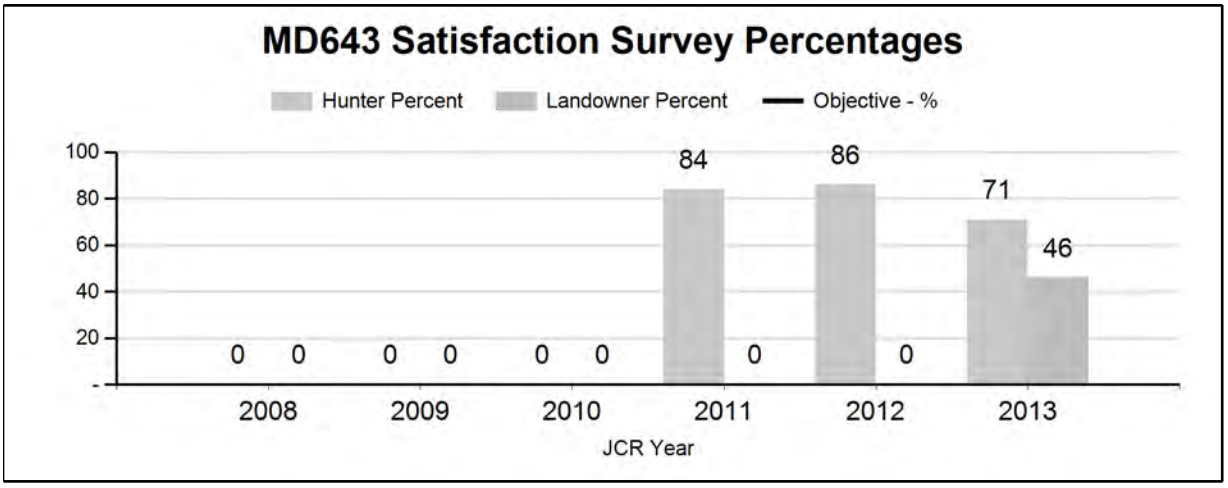
SPECIES: Mule Deer
HERD: MD643 - PROJECT
HUNT AREAS: 157, 170-171

PERIOD: 6/1/2013 - 5/31/2014

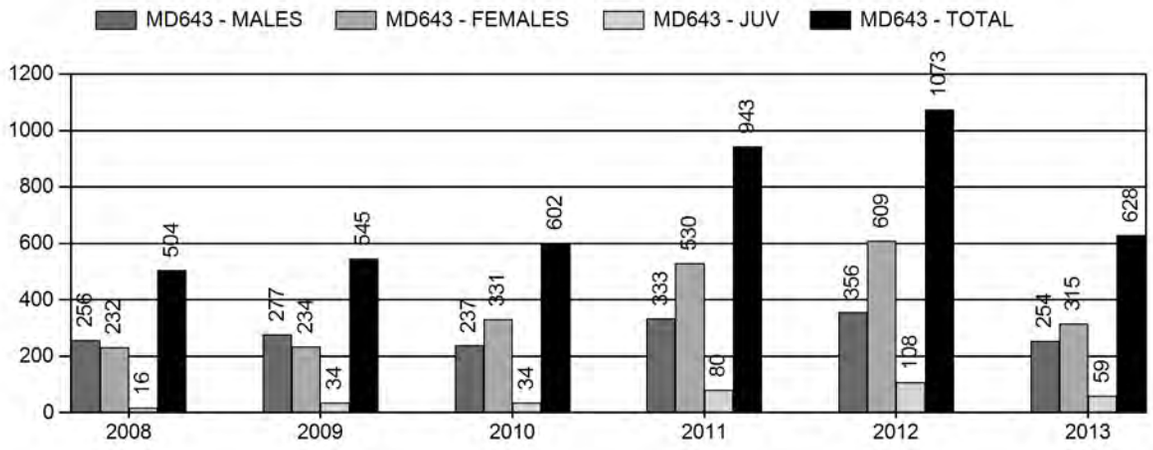
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Hunter Satisfaction Percent	85%	71%	70%
Landowner Satisfaction Percent	0%	46%	60%
Harvest:	733	628	630
Hunters:	834	731	740
Hunter Success:	88%	86%	85%
Active Licenses:	945	71%	890
Active License Percentage:	78%	71%	71%
Recreation Days:	3,541	3,561	3,600
Days Per Animal:	4.8	5.7	5.7
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	

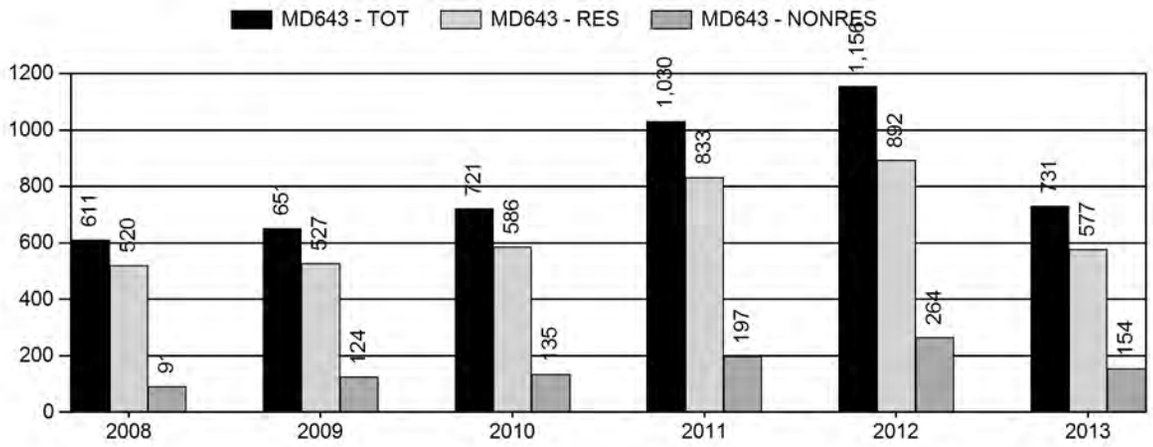
Satisifaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-2%
Number of years population has been + or - objective in recent trend:	1



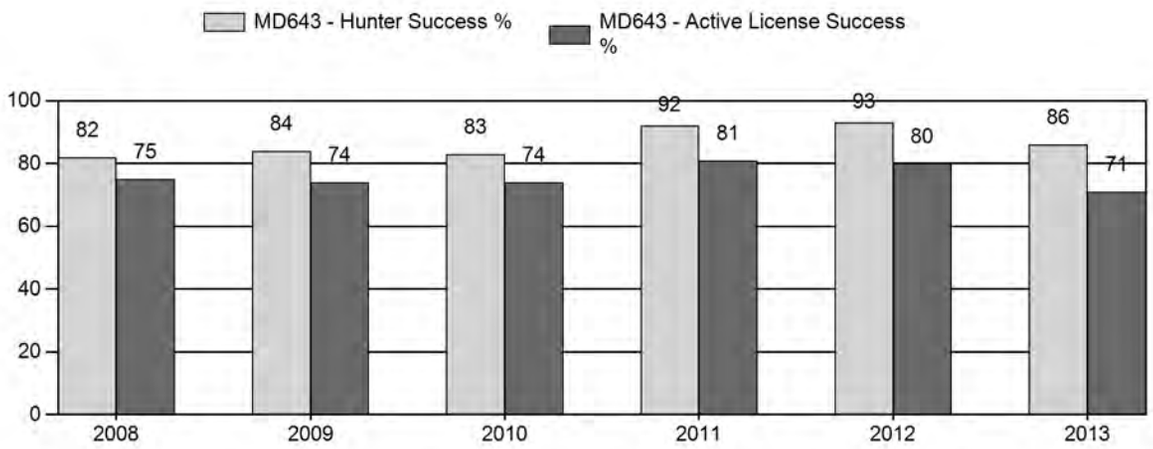
Harvest



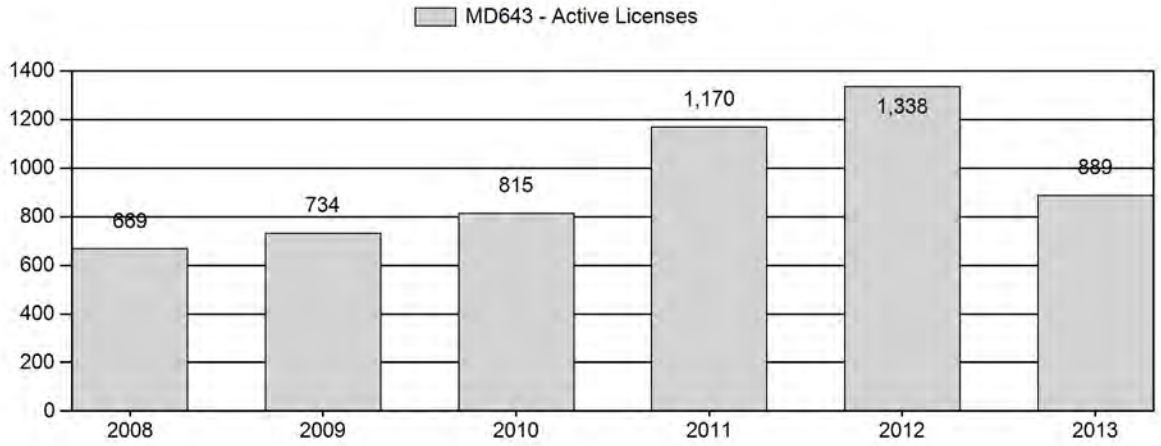
Number of Hunters



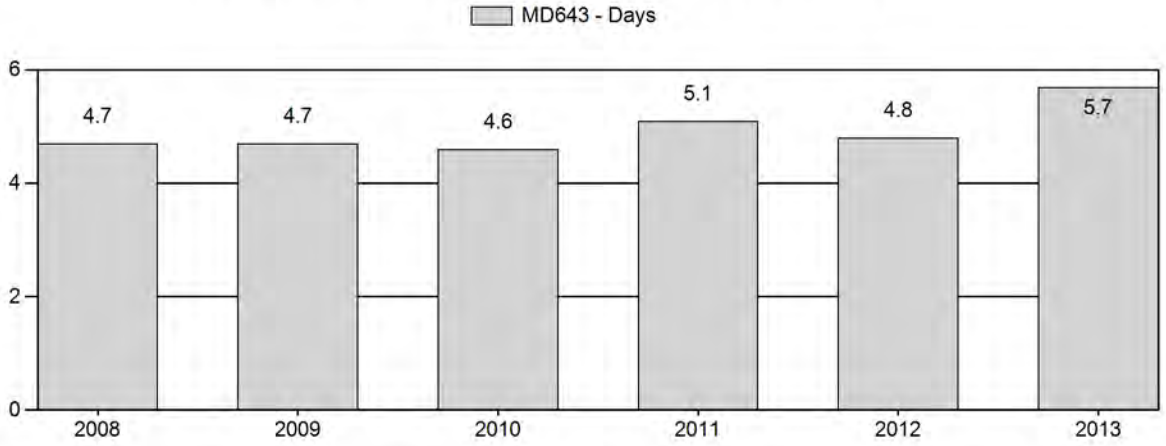
Harvest Success



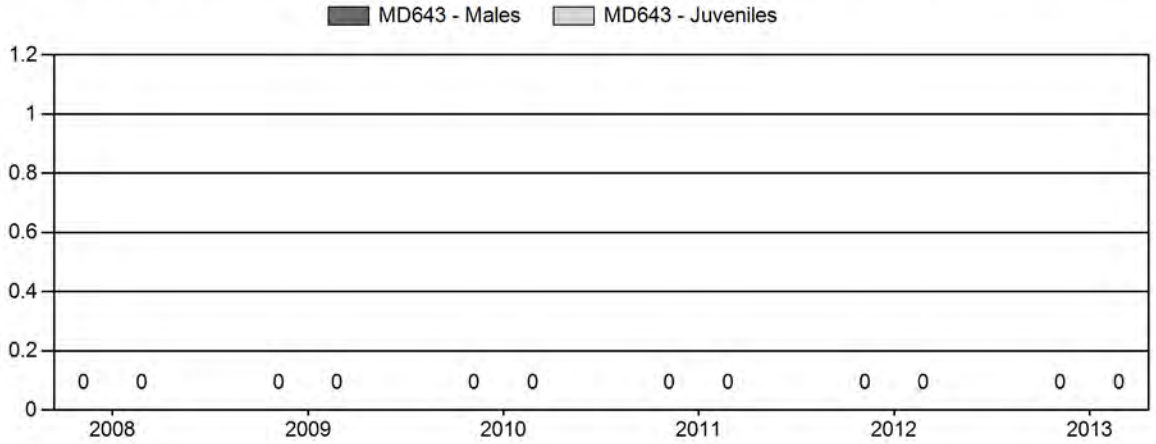
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2014 HUNTING SEASONS
PROJECT MULE DEER (MD 643)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
157, 170	1	Oct. 1	Oct. 31	300	Limited quota; any deer
	3	Nov. 1	Nov. 30	75	Limited quota; any white-tailed deer
	6	Oct. 1	Nov. 10	400	Limited quota; doe or fawn
	8	Oct. 1	Oct. 31	75	Limited quota; doe or fawn white-tailed deer
		Nov. 1	Nov. 30		Unused Area 157, 170 Type 8 licenses valid on private land
171		Oct. 1	Oct. 31		General; any deer
	3	Nov. 1	Nov. 30	75	Limited quota; any white-tailed deer
	6	Oct. 1	Nov. 30	250	Limited quota; doe or fawn
Archery					
157, 170		Sep. 1	Sep. 30		Refer to section 3 of this chapter
171		Sep. 1	Sep. 30		General; any deer. Limited quota; refer to section 3 of this chapter

Hunt Area	Type	Quota change from 2013
157, 170	3	-125
	8	-250
Total	**3**	**-125**
	8	**-250**

Management Evaluation
Current Management Objective: Hunter/Landowner Satisfaction 60%
Management Strategy: Recreational
2013 Hunter Satisfaction: 71%
2013 Landowner Satisfaction: 46% (65% very satisfied, satisfied, or neutral)
3 Year Average Hunter Satisfaction: 80%
3 Year Average Landowner Satisfaction: unknown

Management Issues
In 2013 the Department conducted an objective review for the Project mule deer herd unit. Previously the herd had a population objective of 500 mule deer. The population objective was impractical because personnel were unable to collect adequate demographic data due to extensive interchange with the neighboring Wind River Reservation (WRR). Following an internal review, a public meeting and contact with numerous landowners the objective was changed in 2013 to manage for 60% hunter and 60% landowner satisfaction. Hunter satisfaction is taken directly from the harvest survey while landowner satisfaction in 2013 was determined by mailing a survey (Appendix A) to a number of landowners in the herd unit.

Habitat/Weather
This population inhabits a heavily agricultural area in central Wyoming as well as lands interspersed throughout the WRR. Land ownership patterns make it difficult and cost prohibitive to collect demographic data in the herd. Over the past couple of decades, residential and industrial development have impacted habitat in portions of the herd unit. Despite the development, the deer population has thrived due to abundant feed resources associated with agriculture throughout the area. A harsh winter in 2010 and extreme drought in 2012 and 2013 had less impact in this herd than on surrounding populations, again due to abundant feed associated with irrigated fields and pasture.

Field/Harvest Data/Population
Classification data have never been collected in this herd unit due to access issues throughout much of the herd unit. Personnel observations as well as numerous comments from landowners throughout the herd unit indicate this population grew significantly from the mid-2000's through 2012. In response to perceived growth and increased damage claims, harvest pressure increased steadily from 2000 through 2012. In 2012, an historic high number of licenses were issued in hunt area 157 where the majority of harvest in the herd unit occurs (Fig. 1). That year, over 1,000 mule deer were harvested in the herd unit. In 2013 harvest pressure was reduced, but harvest was still the third highest on record over the past 20 years at over 600 mule deer. Following 4 consecutive years of historically high harvest in the herd unit, the mule deer population appears to have declined. While no demographic data is available for the population, harvest statistics in 2013 indicate hunters had a harder time harvesting deer. Type 1 license success was 78% in 2013 in area 157. That was a decline from 85% in 2012 and below the 5 year average of 81%. Concurrently, the days/animal increased to 7.8 in 2013 from 5.6 in 2012 and was well above the 5 year average of 5.2.

Along with the decreased Type 1 license success, hunter satisfaction declined from 86% in 2012 to 71% in 2013. Comments from hunters in the field indicated they were generally seeing fewer

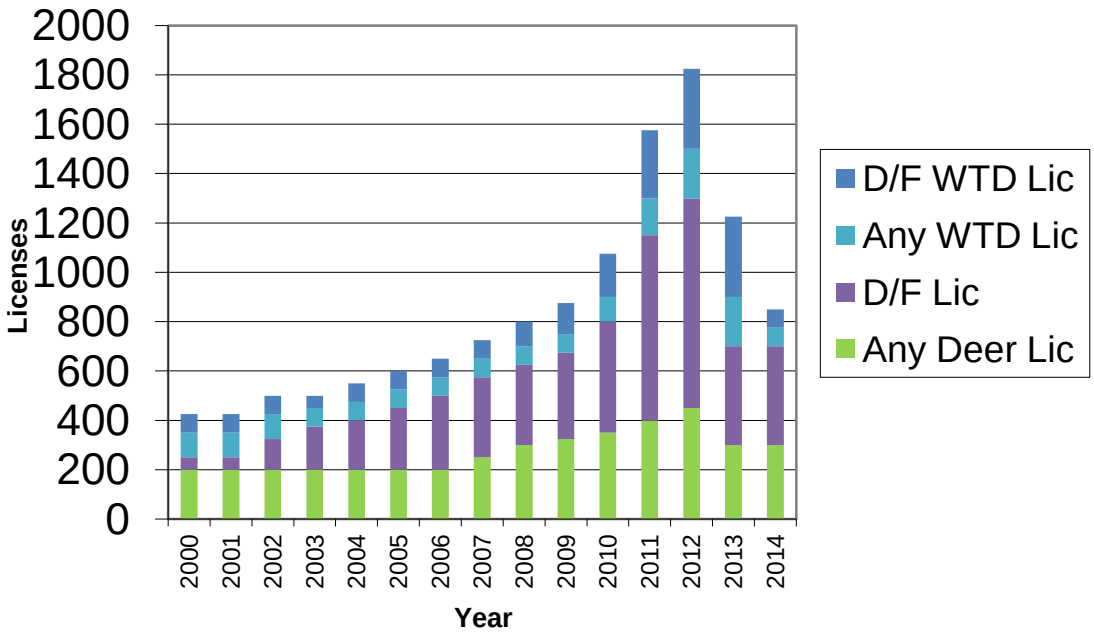
deer than in previous years. Forty six landowners responded to the satisfaction survey. Of the 46 responders, 46% were very satisfied or satisfied with mule deer numbers. Sixty five percent were very satisfied, satisfied or neutral regarding mule deer numbers. Of the 35% who were dissatisfied with mule deer numbers, 71% wanted fewer deer and 29% wanted more deer.

While mule deer numbers have declined in response to high harvest over the past several years, anecdotal information suggests white-tailed deer numbers continued to increase through 2012. Indications are the white-tailed deer population was reduced significantly in 2013 due to an EHD outbreak. A number of landowners reported finding dead white-tailed deer throughout the fall and hunters commented they saw very few white-tailed deer by the time the November season began. Similar to hunter comments, Type 3 license success indicated far fewer white-tailed deer in the herd unit. Type 3 license success was 47% in 2013, down from 59% in 2012 and well below the 5 year average of 73%.

Management Summary

Perceptions of hunters, landowners, and Department personnel are that the past 4 years' liberal seasons effectively reduced the deer population in the herd unit. Despite a significant reduction in the mule deer population, a number of landowners would like to have less deer. Given 71% of hunters are satisfied with deer numbers and 65% of landowners are satisfied or neutral regarding deer numbers, the population is considered at objective. In response to the landowners still displeased with the number of mule deer, the 2014 hunt season will remain unchanged from 2013. This still provides relatively high harvest pressure compared to historical levels in the herd unit and should result in an adequate number of hunters deer on properties where the population is undesirably high. In contrast, harvest pressure on white-tailed deer will be reduced significantly in response to EHD mortality in 2013. The true extent of the disease die-off is unknown, but hunter and landowner comments indicate loss to disease was substantial.

Figure 1. Deer area 157 historic license issuance



Appendix A
2013 landowner letter and satisfaction survey

December 12, 2013

Dear Landowner,

Starting in 2014, the Wyoming Game and Fish Department (Department) will begin utilizing landowner and hunter satisfaction surveys to manage deer (mule deer and white-tailed deer) in hunt areas 157 and 170 and antelope hunt areas 97and 117.

You are being asked to participate in this survey because you have allowed deer or antelope hunting on your property in the past (as indicated by your submission of landowner coupons). If you have an interest in deer and antelope management in these hunt areas, please take a minute to complete the survey below. Your answers, in combination with other landowners and hunters, will be considered when we develop hunt season structure for the coming year. If surveys indicate a majority of respondents are satisfied with deer and antelope numbers, it is likely upcoming hunting seasons will be very similar to last year's. If the majority of respondents feel there are too many or too few deer or antelope, we will likely recommend the Wyoming Game and Fish Commission consider issuing more or fewer licenses respectively.

Finally, if you have too many deer or antelope on your property and would like to see some reduction in numbers through doe/fawn harvest, please let us know and the Department will contact you to discuss potential options. If you have any questions, please contact your local game wardens, Allen Deru (856-4982) or Brad Gibb (856-9005), or wildlife biologist Greg Anderson (332-2688).

Please help us manage mule deer and white-tailed deer in hunt areas 157 and 170 and antelope in hunt areas 97and 117 by filling out the enclosed survey and returning it in the self-addressed envelope by ***January 31, 2014***.

The Department sincerely values your input, and we thank you for your time.

Sincerely,

Greg Anderson

Wildlife Biologist, North Lander

Mule Deer and White-tailed Deer – Hunt Areas 157 and 170
Antelope - Hunt Areas 97and 117

1. What is your level of satisfaction with mule deer numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

2. If you are not satisfied with mule deer numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

3. What is your level of satisfaction with white-tailed deer numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

4. If you are not satisfied with white-tailed deer numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

5. What is your level of satisfaction with antelope numbers?

   Very satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐

6. If you are not satisfied with antelope numbers, what would you like to see?

   Significantly more ☐ A few more ☐ Significantly fewer ☐ A few less ☐

7. Would you like to be contacted by the Department to discuss hunter access and increased doe/fawn deer or antelope harvest for the 2014 hunting season?

   Yes No

   If YES, please list your name, phone number, what hunt areas you own property in, and indicate the species you are interested in:

   ☐ Antelope ☐ White-tailed Deer ☐ Mule Deer

   Name _____

   Phone number _____

   In what antelope hunt area(s) is your property? _____

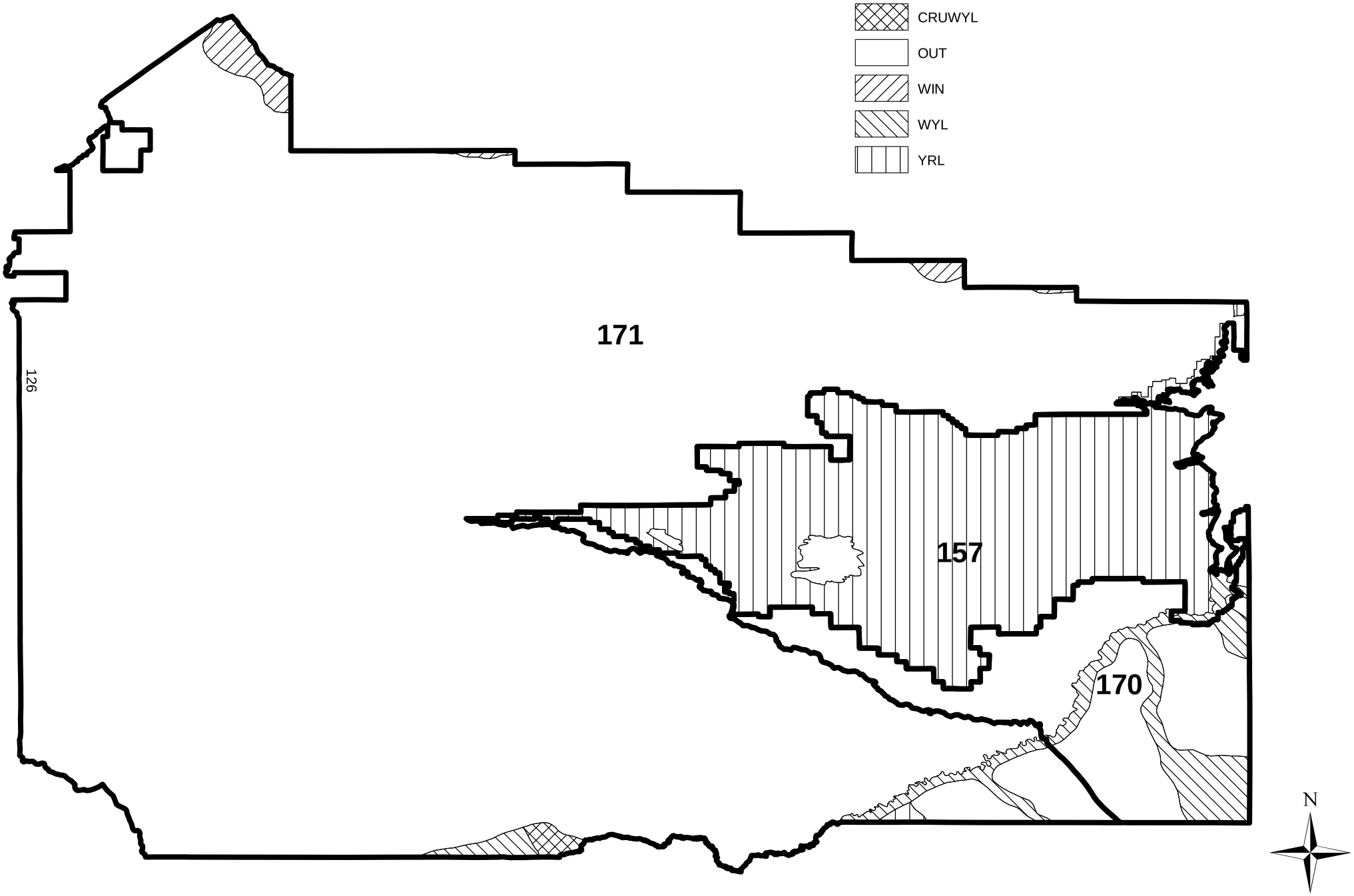
   In what deer hunt area(s) is your property? _____

In future years, we plan to conduct this survey electronically to reduce costs. Accordingly, if you have an interest in future participation, please provide us with an e-mail address. We will not share your e-mail address with any other entity.

Name _____

E-mail _____

Project Mule Deer Seasonal Range
Hunt Areas 157, 170, 171
Updated 2013



2013 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2013 - 5/31/2014

HERD: MD644 - SOUTH WIND RIVER

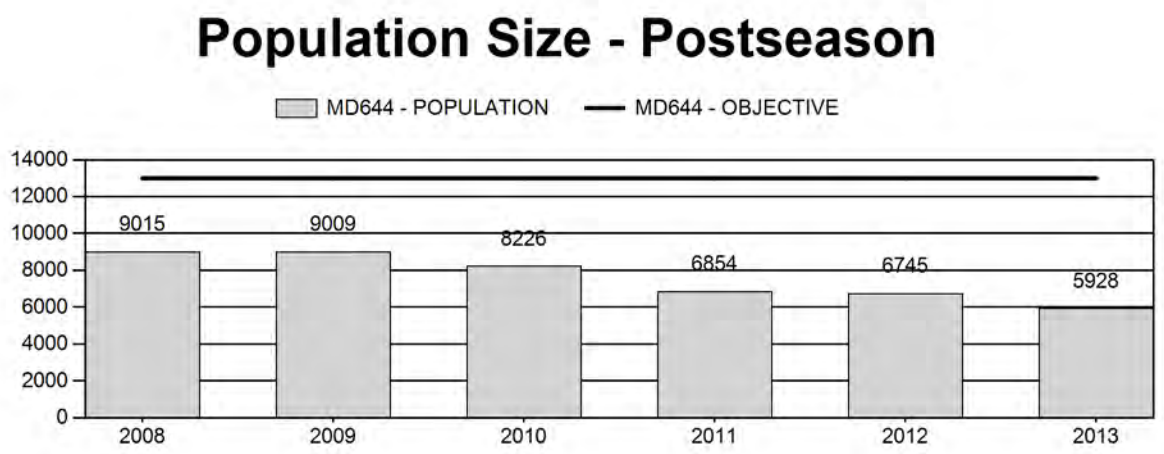
HUNT AREAS: 92, 94, 160 | PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	7,970	5,928	5,969
Harvest:	756	394	430
Hunters:	1,659	1,226	1,200
Hunter Success:	46%	32%	36%
Active Licenses:	1,770	1,231	1,200
Active License Percent:	43%	32%	36%
Recreation Days:	6,806	5,382	5,500
Days Per Animal:	9.0	13.7	12.8
Males per 100 Females	26	23	
Juveniles per 100 Females	77	63	

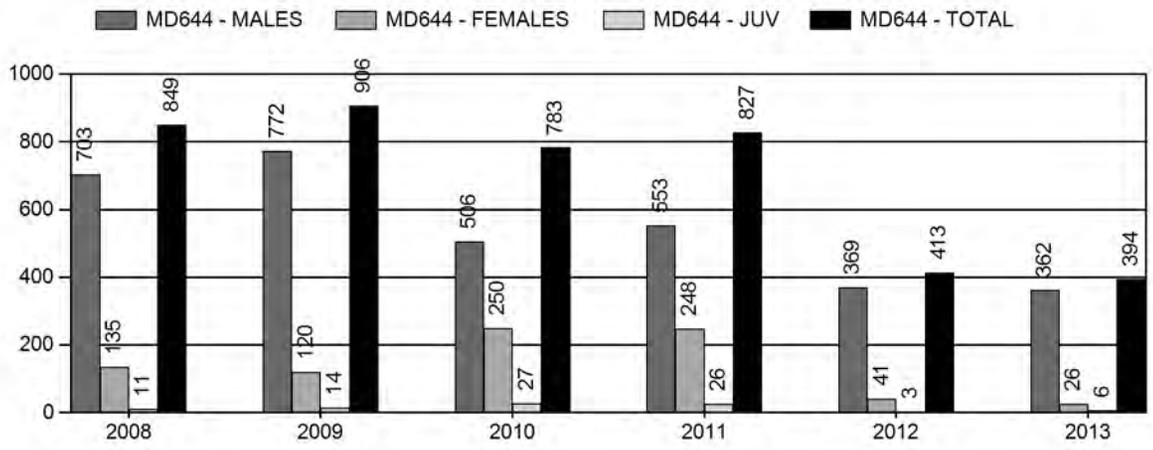
Population Objective:	13,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-54.4%
Number of years population has been + or - objective in recent trend:	5
Model Date:	3/3/2014

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

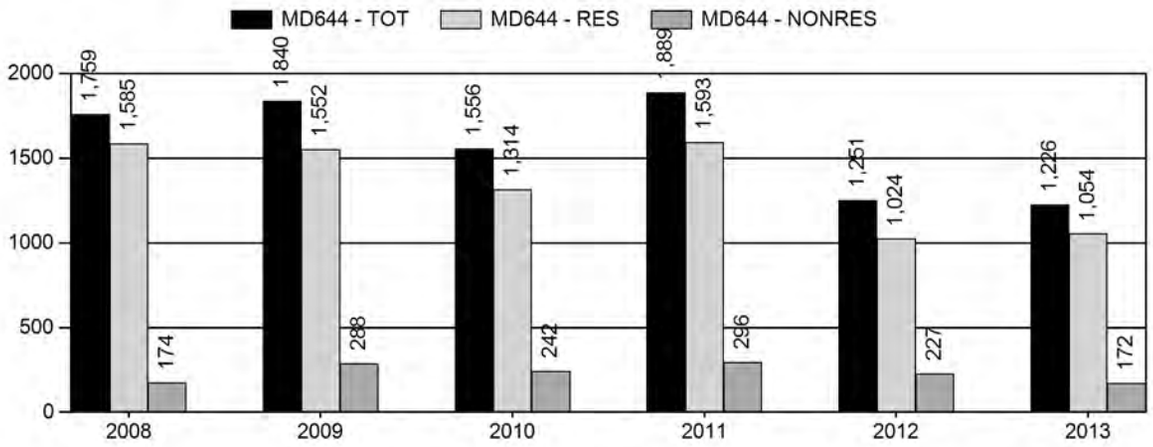
	JCR Year	Proposed
Females ≥ 1 year old:	0.9%	0.9%
Males ≥ 1 year old:	34.5%	34.9%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	6.2%	6.7%
Proposed change in post-season population:	-12.1%	+0.7%



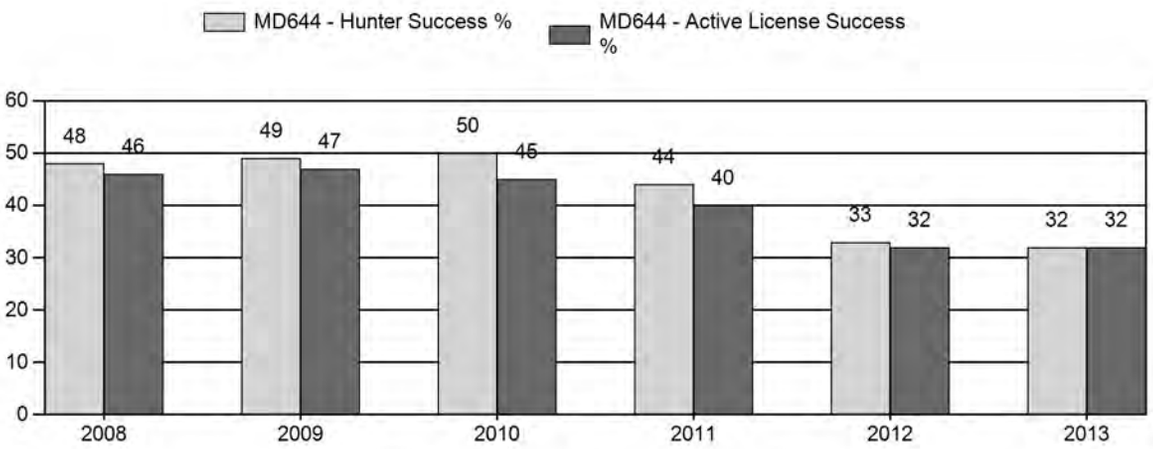
Harvest



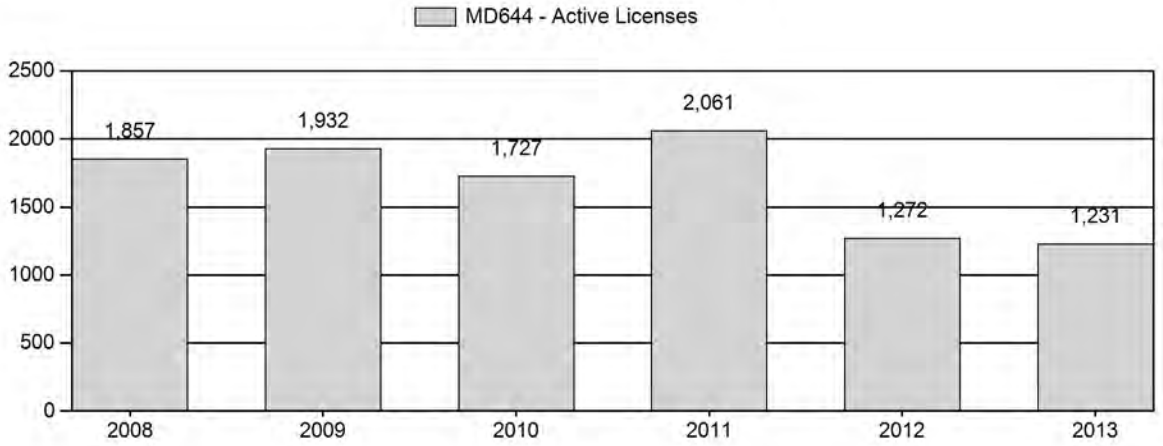
Number of Hunters



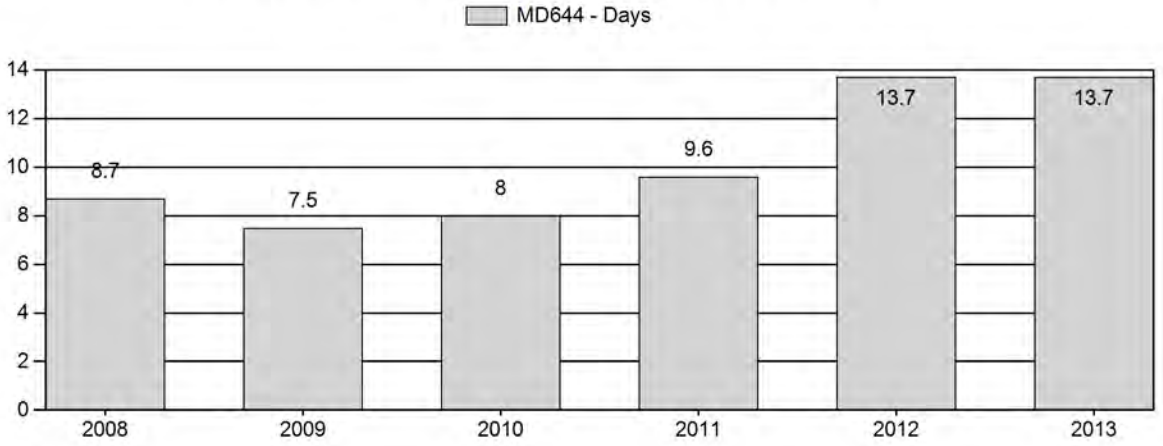
Harvest Success



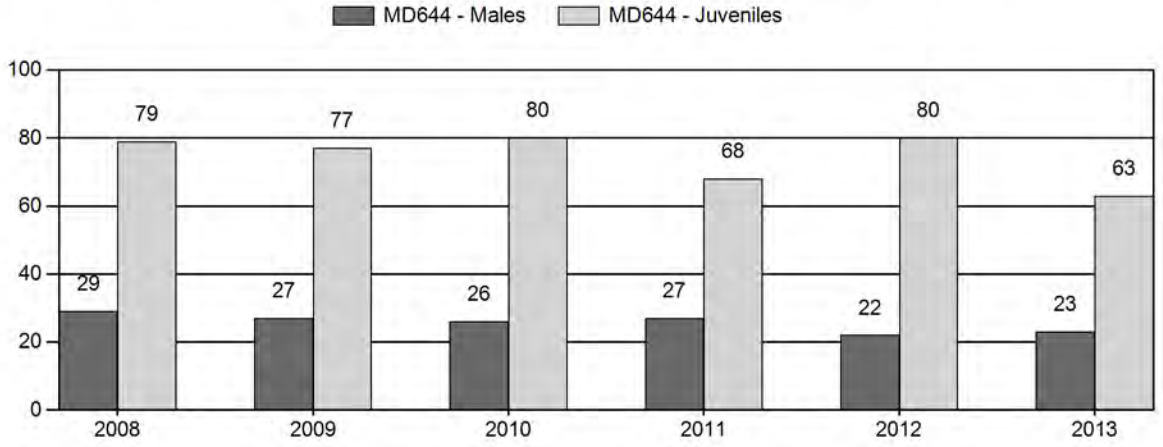
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD644 - SOUTH WIND RIVER

		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
2008	9,015	212	259	471	14%	1,650	48%	1,300	38%	3,421	1,654	13	16	29	± 2	79	± 3	61
2009	9,009	271	276	547	13%	2,007	49%	1,548	38%	4,102	1,587	14	14	27	± 1	77	± 2	61
2010	8,226	198	191	389	12%	1,512	49%	1,214	39%	3,115	1,695	13	13	26	± 1	80	± 3	64
2011	6,854	154	199	353	14%	1,319	51%	892	35%	2,564	1,277	12	15	27	± 2	68	± 3	53
2012	6,745	102	149	251	11%	1,129	49%	908	40%	2,288	1,543	9	13	22	± 2	80	± 4	66
2013	5,928	146	220	366	12%	1,581	54%	1,003	34%	2,950	1,036	9	14	23	± 1	63	± 2	52

2014 HUNTING SEASONS
South Wind River Mule Deer Herd Unit (MD 644)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	Limited Quota	LIMITATIONS
92		Oct. 15	Oct. 22		General; antlered mule deer three (3) points or more on either antler or any white-tailed deer
92		Oct. 1	Oct. 22		General youth license; any deer
92, 94, 160	3	Nov. 1	Nov. 20	25	Limited quota licenses; any white-tailed deer
92, 94, 160	8	Nov. 1	Nov. 20	25	Limited quota licenses; doe or fawn white-tailed deer
94		Oct. 15	Oct. 22		General; antlered mule deer three (3) points or more on either antler or any white-tailed deer
94		Oct. 1	Oct. 22		General youth license; any deer
160		Oct. 15	Oct. 22		General; antlered mule deer three (3) points or more on either antler or any white-tailed deer
160		Oct. 1	Oct. 22		General youth license; any deer
	6	Oct. 1	Oct. 22	25	Limited quota licenses; doe or fawn valid on private land

Region E Non-Resident Quota: 600

Hunt Area	Type	Change from 2013
92, 94, 160	3	-25
92, 94, 160	8	-75
	3	**-25**
	8	**-75**
Total MD644		**-100**

MANAGEMENT EVALUATION

Current Management Objective: 13,000
Management Strategy: Recreation (20-29 bucks/100 does)
2013 Post-season Population Estimate: ~5,900
2013 Post-season Population Estimate: ~6,000

Herd Unit Issues

This population declined dramatically in the early 1990s following a series of drought years and a harsher than normal winter in 1992. Mule deer numbers fluctuated greatly throughout the 1990s and 2000s, with peaks in 1998 and 2008-09. However, mule deer populations have declined noticeably in the South Wind River Mule Deer Herd Unit and elsewhere in their range in the past several years. The 2013 post-season population estimate for South Wind River Mule Deer is about 5,900 animals and 55% below objective.

Weather/Habitat

Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced over 50" of snow through early May (the equivalent of nearly 4" precipitation) in Lander, with more snow reported in Sinks Canyon (up to 78") and other locations along the east slope of the Wind River Range. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.34 inches of precipitation recorded in Lander from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Thus, poor body condition was observed in many mule deer by late-summer, especially lactating females attempting to raise fawns into fall. Many does were observed in late-August and September with backbones and ribs showing. Rain and snow returned to the area in September and October 2013, with as much as 300% of normal precipitation recorded in Lander with warm temperatures between early storms. This led to improvement in vegetation condition, primarily grasses. Consequently, many mule deer were observed with apparent improvement in body condition in fall and early-winter compared with those observed in late-summer. In spite of fairly mild winter conditions in 2013-14, late winter mortality may still be above average due to the poor condition of winter range shrubs following long-term drought.

Field Data

Sufficient flight budget and good flying conditions allowed us to survey winter ranges thoroughly using a Bell 206 Jet Ranger helicopter in mid-November 2013, but deer were difficult to see due to lack of snow cover and widely scattered distribution on early-winter ranges. Despite these conditions and declining trends in population, we observed about 29% more deer than in 2012, with increased sample size in Hunt Area 92, and reduced sample sizes in Areas 94 and 160. The 2013 post-season observed total buck/doe ratio increased slightly to 23M/100F. Three (3) point antler restrictions were implemented for the 2013 hunting season to reduce hunting pressure and buck harvest, which occurred. However, the buck/doe ratio did not increase as expected, likely the result of poor fawn production/recruitment in 2012. Despite protecting yearling bucks with this harvest restriction, the yearling buck/doe ratio remained at 9YM/100F. The fawn/doe ratio dropped to 63J/100F in 2013, again related to drought and poor habitat conditions.

Antler width class data have been collected (Figure 1) during classification surveys the past 2 years. About 84% of the mule deer bucks in the South Wind River Herd Unit are either yearlings or have Class 1 antler widths (an adult buck up to 18" wide), indicating the absence of older age-class bucks despite reduced harvest levels experienced with APRs.

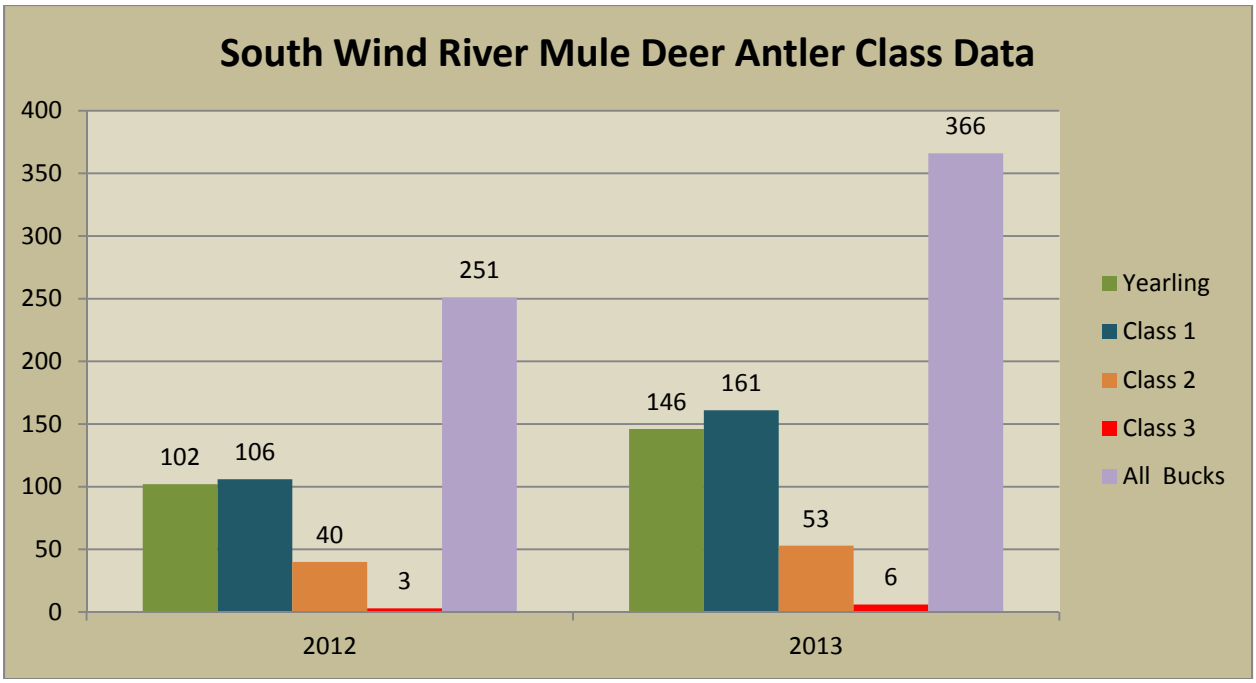


Figure 1. Antler class data from classification surveys in the South Wind River Mule Deer Herd Unit, 2012-2013.

Harvest Data

Weather during fall 2013 was quite variable in the South Wind River Herd Unit. Rainfall in early September along with heavy snows in late-September and early-October created major shifts in mule deer distribution; many deer were at much lower elevations during the hunting season than in the past. Hunters reported fewer and lower "quality" bucks and fewer mule deer overall, but where doe and fawn groups were found, they felt there were good numbers of fawns. In response to public desire to reduce hunter densities and reduce buck harvest, we continued three (3) point antler restrictions in 2013 and reduced the non-resident Region E general license quota from 800 to 600. Nearly identical numbers of general license hunters and bucks harvested were reported in the 2013 deer harvest survey as compared with 2012 levels. General license hunter success was stable at 32%. The "days per animal harvested" statistics for general licenses, as an indicator of hunter effort, remained at 13.7 days in 2013. Doe/fawn mule deer hunting in response to damage issues in Hunt Areas 160 and youth and archery hunters allowed to hunt for "Any" deer, resulted in minimal harvest of 26 does and 6 fawns.

Population

A spreadsheet model was developed for this population in 2012, and updated utilizing 2013 post-season classification and harvest data. The TSJ, CA model was again selected as the best fit model, with the lowest Relative AICc value and producing population estimates aligned with trends observed in buck harvest, fawn recruitment, and buck/doe ratios. It also matches the professional perceptions of field personnel and public opinion about mule deer population trends. The post-hunt population estimates created by this model are lower (~20%) than those produced by POP-II, but with very similar trends. This spreadsheet model (TSJ, CA) is considered FAIR, and should be used for bio-year 2013 with a post-season estimate of about 5,900 mule deer. The initial model in 2012 showed a much higher population throughout the past decade than the 2013

version; therefore the population data in the JCR database has been changed from 2008-13 to reflect the current model. We predict this model to "settle in" and don't anticipate such dramatic changes will be needed in the future. However, the South Wind River Mule Deer Herd Unit has been selected to conduct sightability surveys in bio-year 2014, which could require adjustments to the model based on the results of those surveys.

Management Summary

Management changes have included implementation of antler point restrictions (4-point in 2004 and 2005 and 3-point in 2012 and 2013), in response to declines in buck/doe ratios and population trends, and perceived increases in hunter numbers. Expectedly, both APR types resulted in lower hunter numbers and reduction of overall buck harvest. The 4-point APR implemented in 2004 and 2005 coincided with improved buck/doe ratios as a result of improved fawn survival/yearling buck recruitment with favorable weather patterns and improved, albeit short-term, habitat conditions. However, the recent 3-point APR seasons have not led to improved buck/doe ratios, due to concurrent poor fawn survival/yearling buck recruitment and overall population decline as drought has reduced habitat quality and untimely spring snowstorms in 2013 led to elevated late-winter mortality.

Epizootic Hemorrhagic Disease (EHD) was present in the Lander Region in late summer 2013, especially in white-tailed deer and pronghorn. Recently, evidence of impacts to mule deer has been observed in a number of animals on Table Mountain and the Lander Foothills with hoof and antler abnormalities indicating exposure to EHD. The long range impacts of EHD on mule deer populations are not as well known as for white-tailed deer or pronghorn, but due to the presence of EHD in the area, it is possible this has been directly or indirectly affecting the decline in mule deer numbers across Wyoming, and exacerbates problems related to habitat conditions.

The 2013 seasons resulted in considerable decreases in hunter numbers and mule deer harvest, due largely to the use of a 3-point antler restriction for mule deer, as designed. This was the second of a 2-year evaluation period as was presented to the public in the 2012 season setting process. Our plan was to re-evaluate this season structure following the 2013 season based on whether:

1. Population improves toward objective.
2. Hunter success improves to ≥ 50% for general license hunters by 2013.

This population continues to decline and general license hunter success was 32%. With low fawn/doe ratios and yearling buck recruitment, it is not expected this population will move toward objective soon. Fewer mule deer equates to fewer bucks, thereby making the likelihood of reaching 50% hunter success an unlikely prospect with a general license season structure well into the foreseeable future. Hunters were asked to rank their satisfaction with mule deer hunting in the 2013 harvest survey, with about 45% of hunters in Areas 92 and 160 (35% in Area 94) reporting they were either satisfied or very satisfied. This falls well short of the 60% satisfaction "trigger point" being used as one of the criteria for herd units where Hunter Satisfaction is being utilized as a management objective.

The 2014 hunting seasons continue the 3-point APR for general license hunts, to again reduce hunter densities and minimize buck harvest, in lieu of other options. Hunters, at public meetings

and during field contacts, have repeatedly asked for ways to reduce hunter crowding, improve mule deer populations, buck numbers and quality, and have increasingly asked for the Department to change to limited quota seasons for the Sweetwater and South Wind River Mule Deer Herds. Minimal numbers of doe/fawn licenses will also be available on private land in Area 160 to focus hunters into specific hayfield damage prone private lands along the Little Popo Agie River.

White-tailed deer hunts are again being offered, but with reductions to 25 Type 3 (Any white-tailed deer) and 25 Type 8 (Doe or fawn white-tailed deer) licenses valid in Hunt Areas 92, 94, and 160 collectively in November. These license reductions are in response to very notable losses of white-tailed deer to EHD in 2013.

The 2014 season structure should result in a harvest of approximately 430 mule deer, including 400 bucks, along with 30 does and fawns. This should allow for a stable population of about 6,000 mule deer after the 2014 hunting season.

INPUT	
Species:	Mule Deer
Biologist:	Stan Harter
Herd Unit & No.:	South Wind River (MD644)
Model date:	03/03/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	391	400	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	391	400	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	12	109	☑ 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		
1994				2320	1339	3893	7552	2320	701	3893	6914	13000
1995				2020	1028	3594	6641	2020	688	3594	6301	13000
1996				2376	1370	3706	7453	2376	724	3704	6804	13000
1997				2216	1210	3606	7032	2216	700	3606	6522	13000
1998				4018	1560	3896	9474	4018	893	3896	8807	13000
1999				3405	1751	4165	9321	3405	902	4165	8472	13000
2000				2273	1694	4318	8284	2255	805	4071	7131	13000
2001				1455	1313	3938	6706	1455	631	3938	6024	13000
2002				1686	1077	3736	6499	1686	515	3736	5936	13000
2003				2106	1082	3672	6860	2106	533	3672	6311	13000
2004				2494	906	3429	6828	2494	693	3429	6616	13000
2005				2521	1518	3718	7756	2521	1162	3718	7400	13000
2006				2254	2068	4123	8445	2254	1072	4091	7417	13000
2007				2546	1876	4303	8726	2544	987	4222	7753	13000
2008				3471	1938	4539	9949	3459	1165	4391	9015	13000
2009				3444	1984	4577	10006	3429	1135	4445	9009	13000
2010				3229	1598	4260	9087	3199	1042	3985	8226	13000
2011				2443	1477	3843	7764	2415	869	3570	6854	13000
2012				2664	1182	3353	7199	2661	776	3308	6745	13000
2013				2013	1156	3192	6361	2007	758	3163	5928	13000
2014				1985	1261	3195	6442	1980	821	3168	5969	13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000
0												13000

Survival and Initial Population Estimates

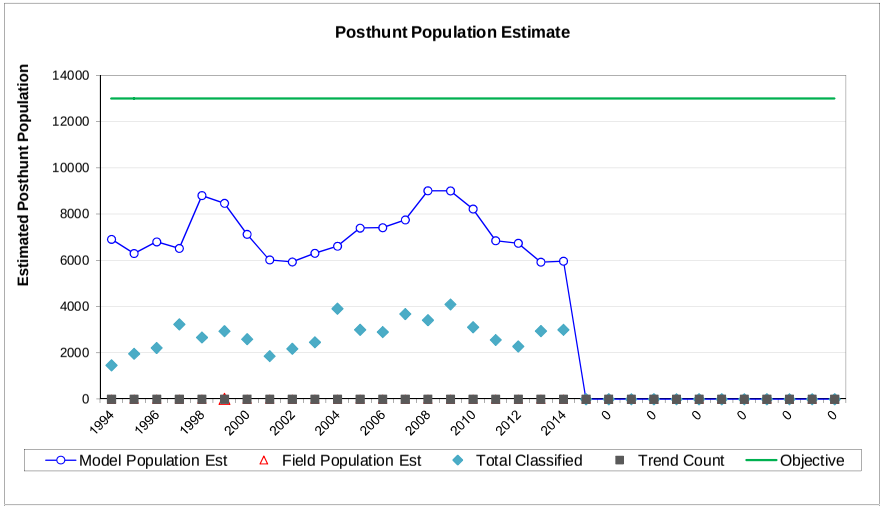
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1994	0.40			0.80		
1995	0.81			0.80		
1996	0.53			0.80		
1997	0.90			0.80		
1998	0.51			0.80		
1999	0.57			0.80		
2000	0.59			0.80		
2001	0.78			0.80		
2002	0.79			0.80		
2003	0.45			0.80		
2004	0.77			0.80		
2005	0.90			0.80		
2006	0.90			0.80		
2007	0.90			0.80		
2008	0.61			0.80		
2009	0.40			0.80		
2010	0.40			0.80		
2011	0.40			0.80		
2012	0.40			0.80		
2013	0.65			0.80		
2014	0.65			0.80		
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					

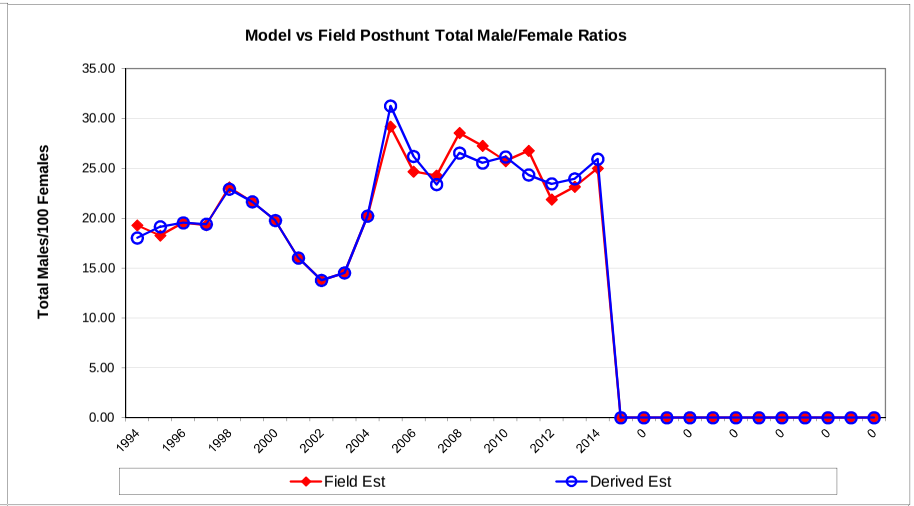
Parameters:	Optim cells
Adult Survival =	0.804
Initial Total Male Pop/10,000 =	0.070
Initial Female Pop/10,000 =	0.389

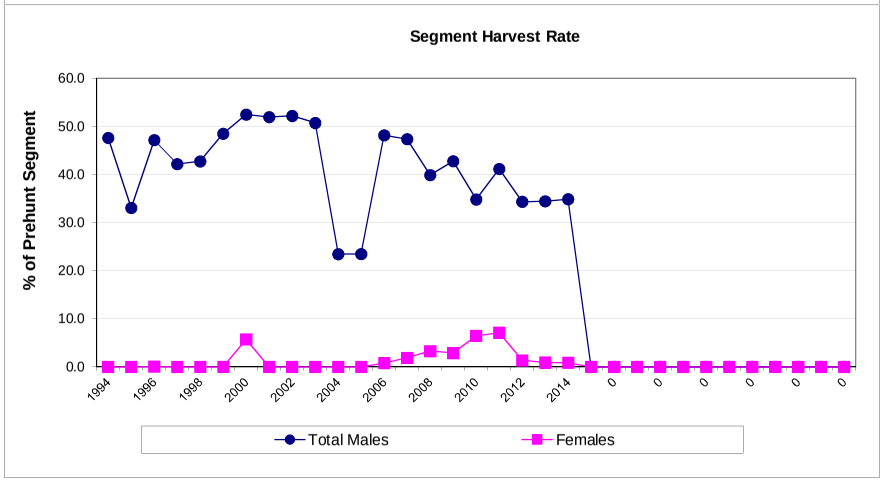
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

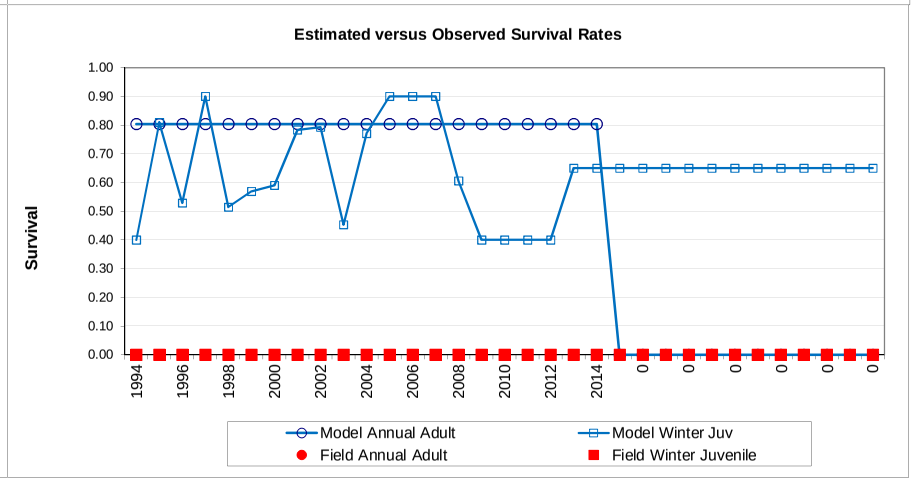
	Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1994		59.58	3.41	18.02	19.29	1.68	0	580	0	580	47.6	0.0
1995		56.21	2.79	19.14	18.26	1.38	0	309	0	309	33.1	0.0
1996		64.16	2.95	19.54	19.54	1.39	0	588	2	590	47.2	0.1
1997		61.44	2.35	19.40	19.31	1.13	0	464	0	464	42.2	0.0
1998		103.13	4.21	22.92	23.10	1.55	0	606	0	606	42.7	0.0
1999		81.74	3.21	21.65	21.65	1.35	0	772	0	772	48.5	0.0
2000		55.40	2.41	19.77	19.77	1.26	16	808	224	1048	52.5	5.7
2001		36.95	2.04	16.01	16.01	1.23	0	620	0	620	52.0	0.0
2002		45.12	2.18	13.78	13.78	1.07	0	511	0	511	52.2	0.0
2003		57.36	2.51	14.52	14.52	1.08	0	499	0	499	50.7	0.0
2004		72.73	2.49	20.22	20.22	1.09	0	193	0	193	23.4	0.0
2005		67.80	2.73	31.25	29.18	1.57	0	324	0	324	23.5	0.0
2006		55.10	2.30	26.19	24.68	1.38	0	906	29	935	48.2	0.8
2007		60.26	2.20	23.38	24.27	1.23	2	808	74	884	47.4	1.9
2008		78.79	2.92	26.54	28.55	1.49	11	703	135	849	39.9	3.3
2009		77.13	2.61	25.54	27.25	1.31	14	772	120	906	42.8	2.9
2010		80.29	3.09	26.14	25.73	1.46	27	506	250	783	34.8	6.5
2011		67.63	2.93	24.34	26.76	1.60	26	553	248	827	41.2	7.1
2012		80.43	3.59	23.45	21.88	1.54	3	369	41	413	34.4	1.3
2013		63.44	2.56	23.95	23.15	1.34	6	362	26	394	34.5	0.9
2014		62.50	2.52	25.93	25.00	1.40	5	400	25	430	34.9	0.9
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												

FIGURES



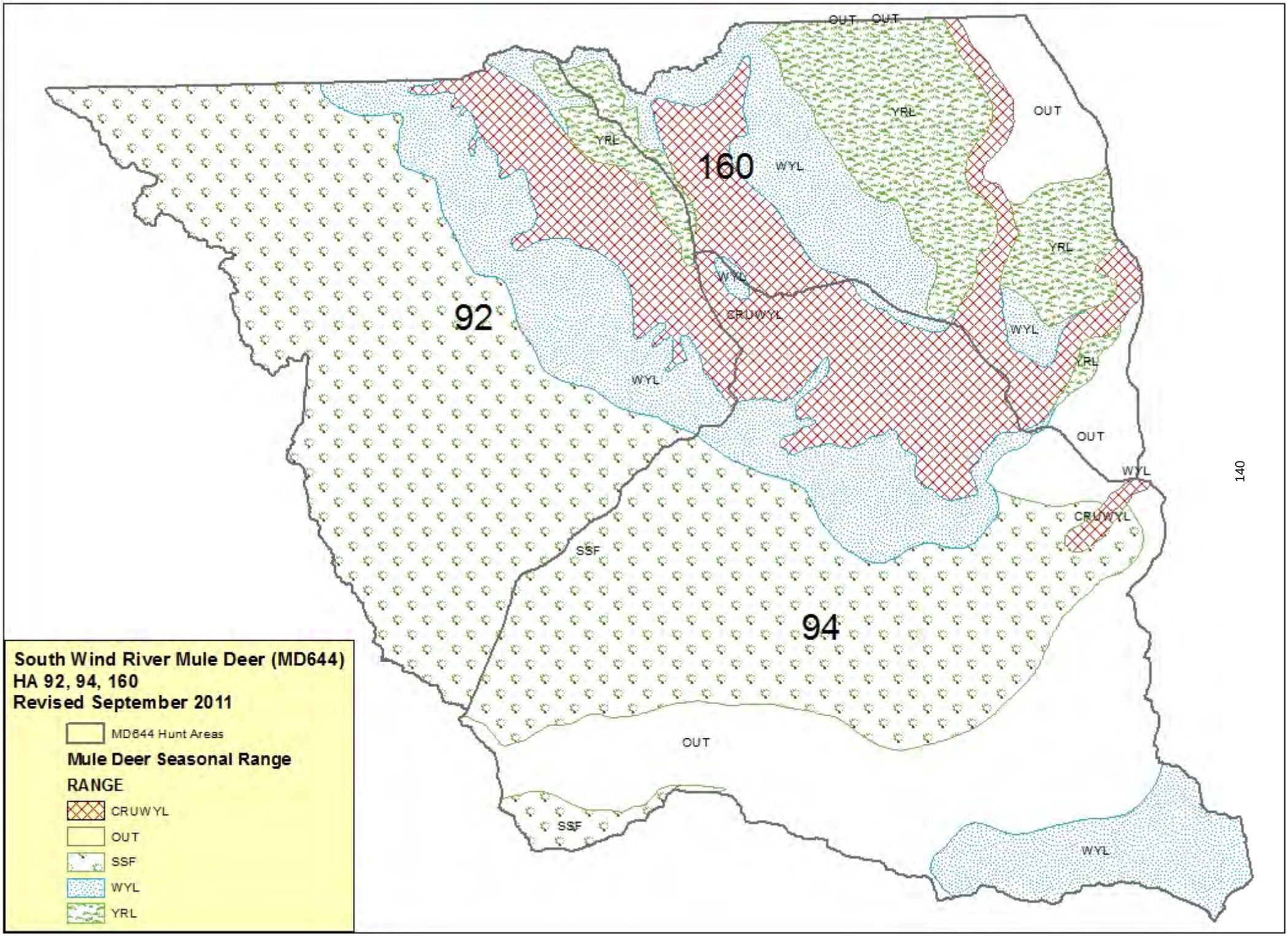






Comments:

END


South Wind River Mule Deer (MD644)
HA 92, 94, 160
Revised September 2011
MD644 Hunt Areas
Mule Deer Seasonal Range
RANGE
CRUWYL
OUT
SSF
WYL
YRL
92
94
160
OUT
OUT
OUT
OUT
OUT
YRL
YRL
YRL
YRL
WYL
WYL
WYL
WYL
WYL
WYL
CRUWYL
CRUWYL
SSF
SSF

2013 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2013 - 5/31/2014

HERD: MD646 - SWEETWATER

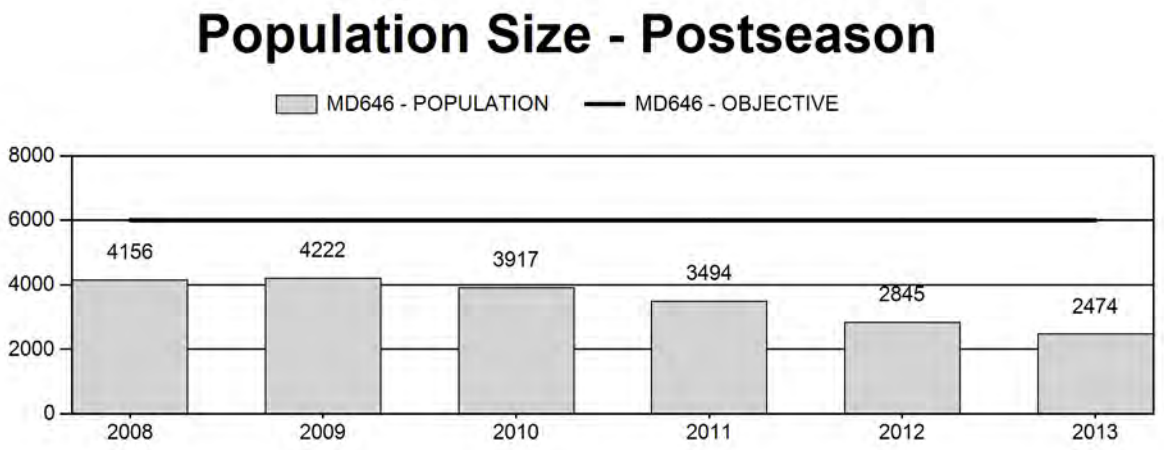
HUNT AREAS: 96-97 | PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	3,727	2,474	2,400
Harvest:	654	191	207
Hunters:	1,257	661	650
Hunter Success:	52%	29%	32 %
Active Licenses:	1,338	661	650
Active License Percent:	49%	29%	32 %
Recreation Days:	4,588	2,806	2,800
Days Per Animal:	7.0	14.7	13.5
Males per 100 Females	25	16	
Juveniles per 100 Females	78	63	

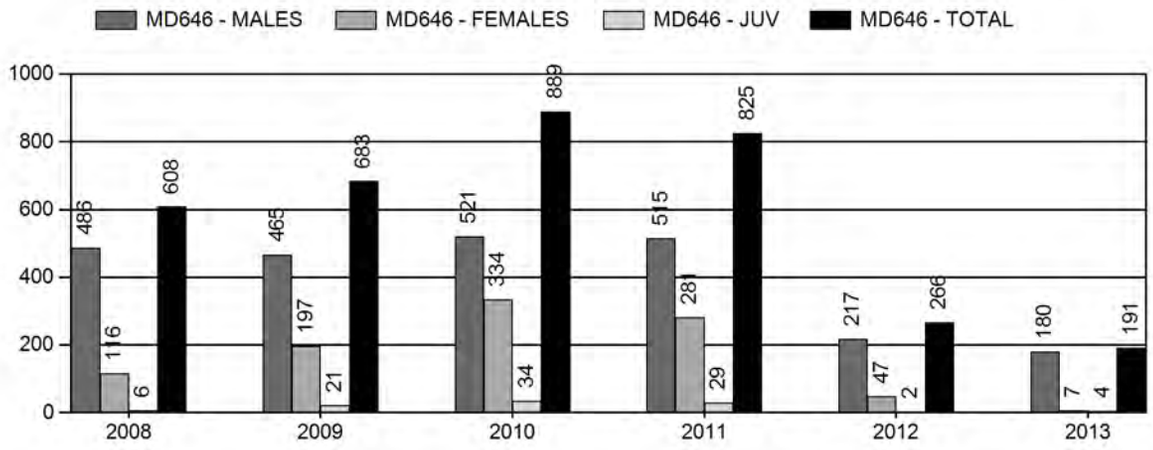
Population Objective:	6,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-58.8%
Number of years population has been + or - objective in recent trend:	5
Model Date:	3/3/2014

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

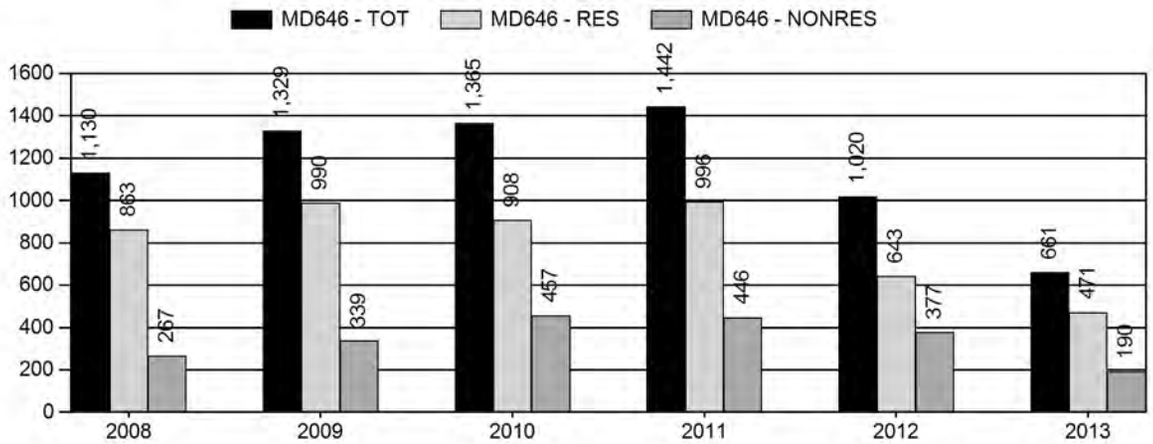
	JCR Year	Proposed
Females ≥ 1 year old:	0.6%	0.4%
Males ≥ 1 year old:	44.5%	46.8%
Juveniles (< 1 year old):	0%	0%
Total:	7.1%	7.9%
Proposed change in post-season population:	-13.0%	-3.0%



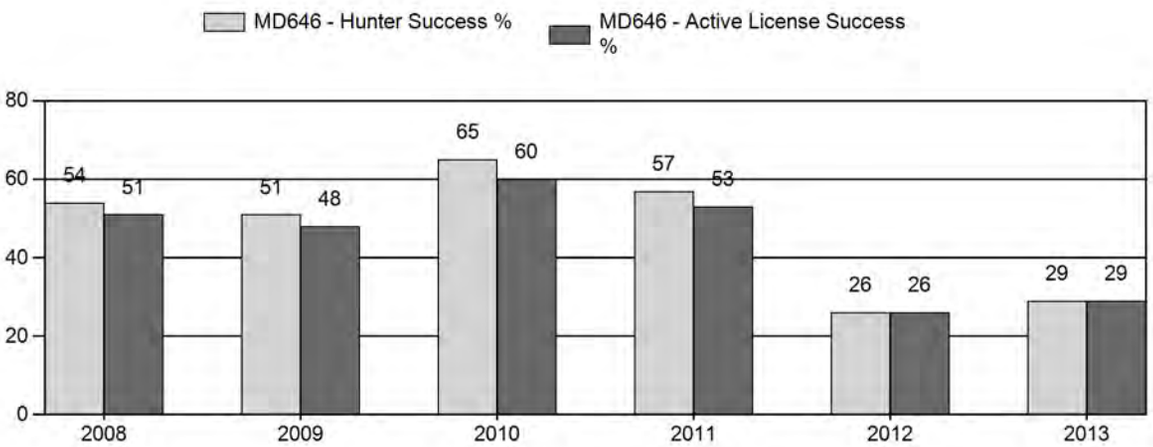
Harvest



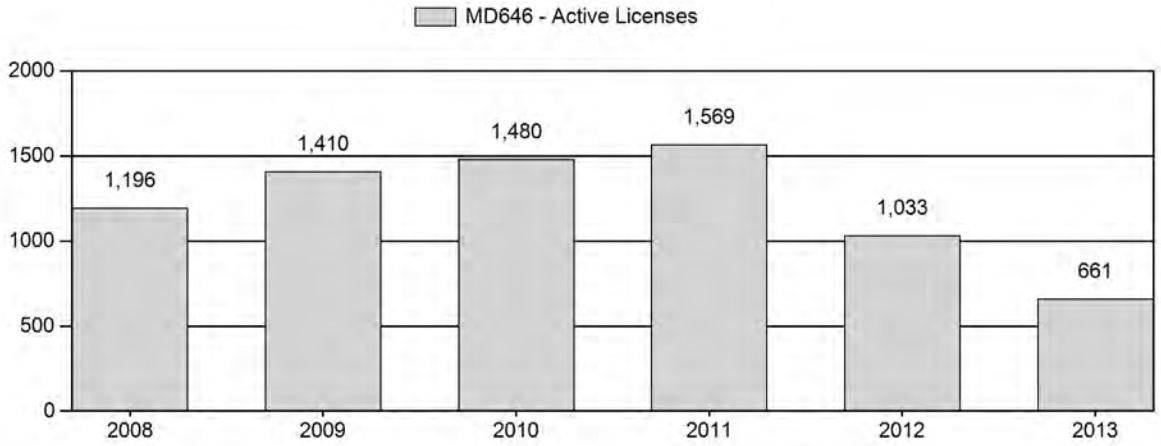
Number of Hunters



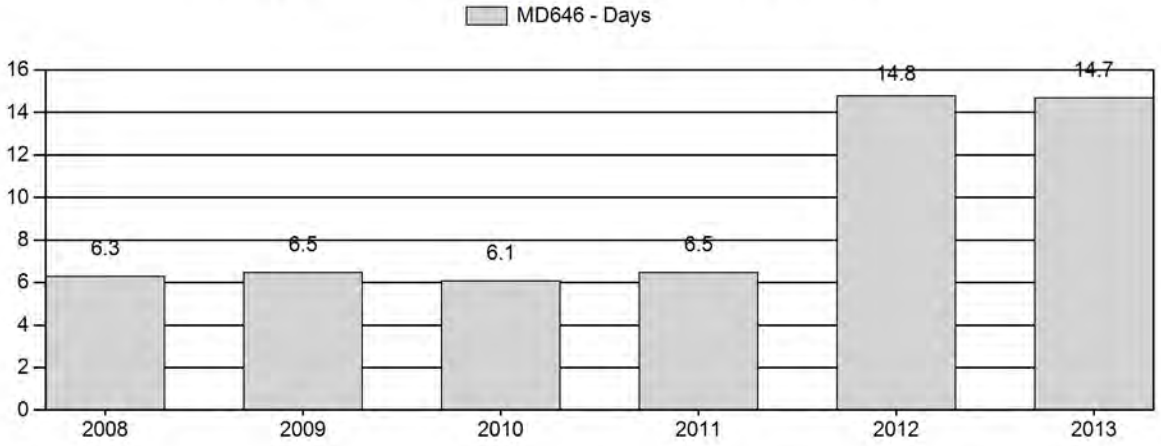
Harvest Success



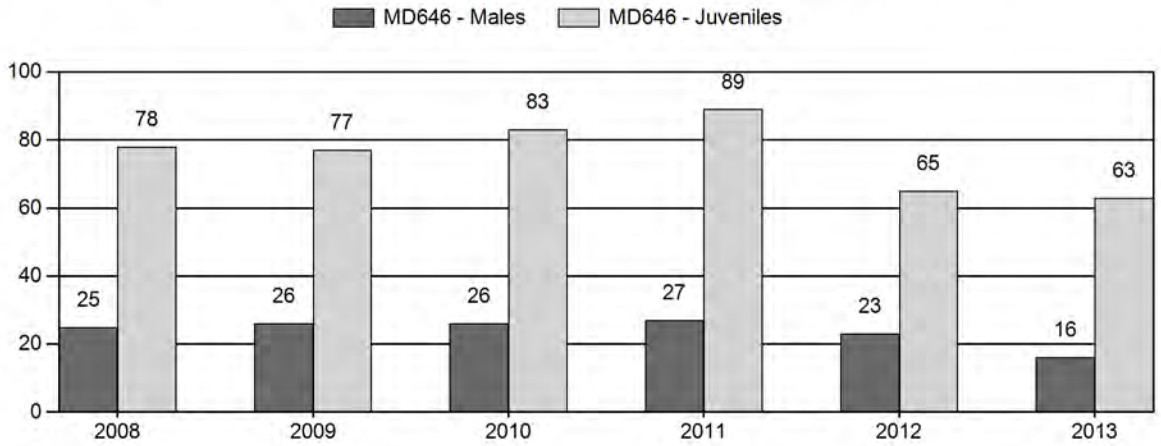
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD646 - SWEETWATER

		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
2008	4,156	99	126	225	12%	894	49%	701	39%	1,820	1,415	11	14	25	± 2	78	± 4	63
2009	4,222	138	167	305	13%	1,186	49%	909	38%	2,400	1,407	12	14	26	± 1	77	± 3	61
2010	3,917	72	82	154	12%	598	48%	494	40%	1,246	1,549	12	14	26	± 2	83	± 5	66
2011	3,494	49	101	150	13%	547	46%	486	41%	1,183	1,616	9	18	27	± 3	89	± 6	70
2012	2,845	48	58	106	12%	462	53%	302	35%	870	996	10	13	23	± 3	65	± 5	53
2013	2,474	67	61	128	9%	813	56%	514	35%	1,455	813	8	8	16	± 1	63	± 3	55

2014 HUNTING SEASONS
Sweetwater Mule Deer Herd Unit (MD 646)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	QUOTA	LIMITATIONS
96		Oct. 15	Oct. 22		General; antlered mule deer three (3) points or more on either antler or any white-tailed deer
96		Oct. 15	Oct. 26		General youth license; any deer
97		Oct. 15	Oct. 22		General; antlered mule deer three (3) points or more on either antler or any white-tailed deer
97		Oct. 15	Oct. 26		General youth license; any deer
97	3	Nov. 1	Nov. 30	25	Limited quota; any white-tailed deer
97	8	Nov. 1	Nov. 30	25	Limited quota; doe or fawn white-tailed deer

Region E Non-Resident Quota: 600

MANAGEMENT EVALUATION
Current Management Objective: 6,000
Management Strategy: Recreation (20-29 bucks/100 does)
2013 Post-season Population Estimate: ~2,500
2014 Post-season Population Estimate: ~2,400

Herd Unit Issues
This population declined dramatically in the early 1990s following a series of drought years and a harsher than normal winter in 1992. The population fluctuated greatly throughout the 1990s and early 2000s. From 2004- 2009, fawn recruitment improved, leading to population growth. However, mule deer populations have declined noticeably in the Sweetwater Mule Deer Herd Unit and elsewhere in their range in the past several years. The 2013 post-season population estimate is about 2,500 mule deer, about 59% below objective.

Weather/Habitat
Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced heavy snow through early May in Jeffrey City, with more at higher elevations such as Green Mountain and Beaver Rim. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.2 inches of precipitation recorded in Jeffrey City from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Thus, poor body condition was observed in many mule deer by late-summer, especially lactating females attempting to raise fawns into fall. Many does were observed in late-August and September with backbones and ribs showing. Rain and snow returned to the area in September and October 2013, with nearly 300% of normal precipitation recorded in Jeffrey City with warm temperatures

between early storms. This led to improvement in vegetation condition, primarily grasses. Consequently, many mule deer were observed with apparent improvement in body condition in fall and early-winter compared with those observed in late-summer. In spite of fairly mild winter conditions in 2013-14, late winter mortality may still be above average due to the poor condition of winter range shrubs following long-term drought.

Field Data

Classification flights were conducted in December 2013, with winter ranges surveyed using a Bell 206 Jet Ranger helicopter. Snow cover was minimal, and despite hunter and field personnel observations of few mule deer during the summer and fall, more deer were classified in Area 96 than in any year since 1994. The 2013 post-season fawn/doe ratio decreased to 63J/100F with a much lower total buck/doe ratio of 16M/100F. Three (3) point antler restrictions were again implemented for the 2013 hunting season along with reducing the non-resident Region E quota, to reduce hunting pressure and buck harvest, which occurred. Despite protecting yearling bucks with this harvest restriction, the yearling buck/doe ratio fell to 8YM/100F.

Antler width class data have been collected (Figure 1) during classification surveys the past 2 years. Over 80% of the mule deer bucks in the Sweetwater Herd Unit are either yearlings or have Class 1 antler widths (an adult buck up to 18" wide), indicating the absence of older age-class bucks despite reduced harvest levels experienced with APRs.

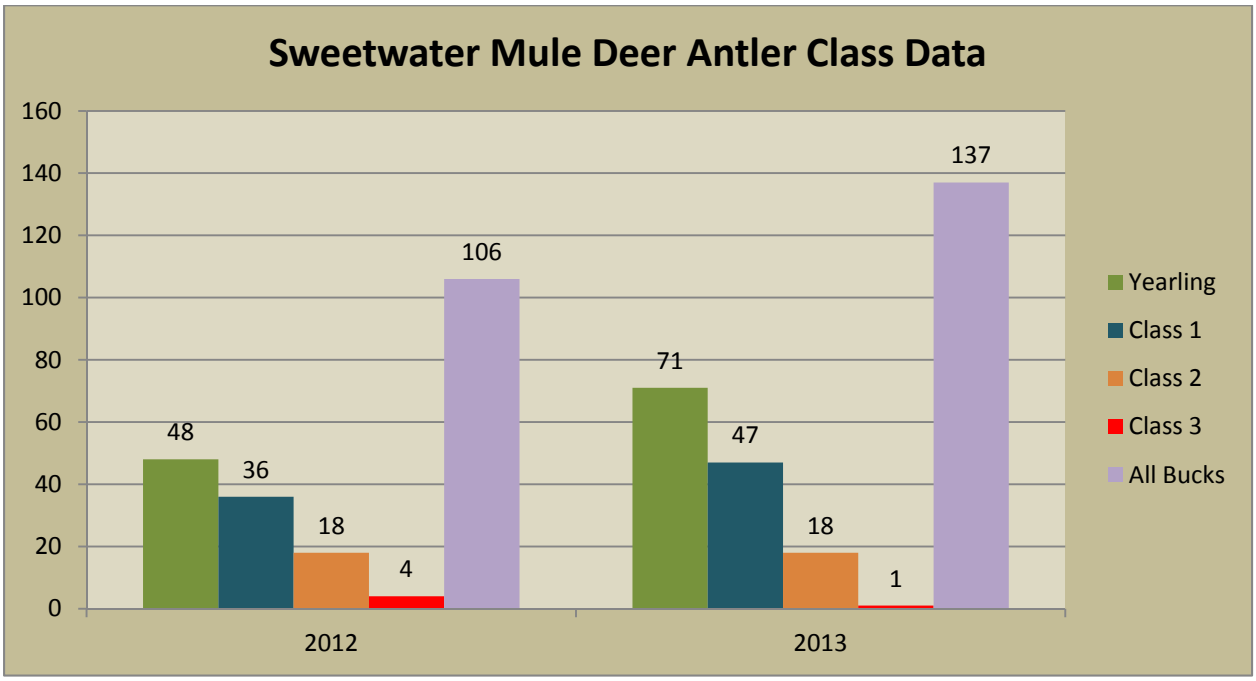


Figure 1. Antler class data from classification surveys in the Sweetwater Mule Deer Herd Unit, 2012-13.

Harvest Data

Weather during fall 2013 was quite variable in the Sweetwater Herd Unit. Rainfall in early September along with heavy snows in late-September and early-October created major shifts in mule deer distribution; many deer were at much lower elevations during the hunting season than in the past and may have left the herd unit to the south because of deep snow. Hunters reported considerably fewer mule deer overall, with almost no bucks; but where doe and fawn groups were found, they felt there were good numbers of fawns. In response to public desire to reduce hunter densities and reduce buck harvest, we continued three (3) point antler restrictions in 2013 and reduced the non-resident Region E general license quota from 800 to 600. These changes were successful in 2013, with a 35% decrease in the number of general license hunters and 17% decrease in bucks as compared with 2012 levels. General license hunter success was up slightly at 29%. The "days per animal harvested" statistics for general licenses, as an indicator of hunter effort, remained at 14.7 days in 2013. Doe/fawn mule deer harvest, since youth hunters and archers are allowed to hunt for "Any" deer, resulted in minimal harvest of 7 does and 4 fawns.

Population

A spreadsheet model was developed for this population in 2012, and updated utilizing 2013 post-season classification and harvest data. The TSJ, CA model was selected as the best fit model, with the lowest Relative AICc value and producing population estimates aligned with trends observed in buck harvest, fawn recruitment, and buck/doe ratios. It also matches the professional perceptions of field personnel and public opinion about mule deer population trends. The post-hunt population estimates created by this model are lower (~50%) than those produced by POP-II, but with very similar trends. This spreadsheet model (TSJ, CA) is considered FAIR, and should be used for bio-year 2013 with a post-season estimate of about 2,500 mule deer. The initial model in 2012 showed a much higher population throughout the past decade than the 2013 version; therefore the population data in the JCR database has been changed from 2008-13 to reflect the current model. We predict this model will "settle in" and don't anticipate such dramatic changes will be needed in the future.

Management Summary

Management changes have included implementation of antler point restrictions (4-point in 2004 and 2005 and 3-point in 2012 and 2013), in response to declines in buck/doe ratios and population trends, and perceived increases in hunter numbers. Expectedly, both APR types resulted in lower hunter numbers and reduction of overall buck harvest. The 4-point APR implemented in 2004 and 2005 coincided with improved buck/doe ratios as a result of improved fawn survival/yearling buck recruitment with favorable weather patterns and improved, albeit short-term, habitat conditions. However, the recent 3-point APR seasons have not led to improved buck/doe ratios, due to concurrent poor fawn survival/yearling buck recruitment and overall population decline as drought has reduced habitat quality and untimely spring snowstorms in 2013 led to elevated late-winter mortality.

Epizootic Hemorrhagic Disease (EHD) was present in the Lander Region in late summer 2013, especially in white-tailed deer and pronghorn. Recently, evidence of impacts to mule deer has been observed in a number of animals on Table Mountain and the Lander Foothills with hoof and antler abnormalities indicating exposure to EHD. While EHD was detected in pronghorn within and nearby the herd unit, it has not been observed in mule deer within the Sweetwater Herd Unit,

but has prompted us to begin looking for these symptoms. The long range impacts of EHD on mule deer populations are not as well known as for white-tailed deer or pronghorn, but due to the presence of EHD in the area, it is possible this has been directly or indirectly affecting the decline in mule deer numbers across Wyoming, and exacerbates problems related to habitat conditions.

The 2013 seasons resulted in considerable decreases in hunter numbers and mule deer harvest, due largely to the use of a 3-point antler restriction for mule deer, as designed. This was the second of a 2-year evaluation period as was presented to the public in the 2012 season setting process. Our plan was to re-evaluate this season structure following the 2013 season based on whether:

1. Population improves toward objective.
2. Hunter success improves to ≥ 50% for general license hunters by 2013.

This population continues to decline and general license hunter success was only 29%. With low fawn/doe ratios and yearling buck recruitment, it is not expected this population will move toward objective soon. Fewer mule deer equates to fewer bucks, thereby making the likelihood of reaching 50% hunter success an unlikely prospect with a general license season structure well into the foreseeable future. Hunters were asked to rank their satisfaction with mule deer hunting in the 2013 harvest survey, with 40% of all hunters reporting they were either satisfied or very satisfied. This falls well short of the 60% satisfaction "trigger point" being used as one of the criteria for herd units where Hunter Satisfaction is being utilized as a management objective.

The 2014 hunting seasons continue the 3-point APR for general license hunts, to again reduce hunter densities and minimize buck harvest, in lieu of other options. Hunters, at public meetings and during field contacts, have repeatedly asked for ways to reduce hunter crowding, improve mule deer populations, buck numbers and quality, and have increasingly asked for the Department to change to limited quota seasons for the Sweetwater and South Wind River Mule Deer Herds.

White-tailed deer hunts are again being offered for Hunt Area 97, with 25 Type 3 licenses (Any white-tailed deer) along with 25 Type 8 doe/fawn white-tailed licenses valid in November.

The 2014 season structure should result in a harvest of approximately 200 buck mule deer and about 7 does and fawns (with youth and archery hunters being allowed to harvest "Any" deer. If habitat conditions show improvement with recent precipitation, the population should begin to slowly recover. With anticipated fawn survival, this should allow for a stable population of about 2,400 mule deer after the 2014 hunting season.

INPUT	
Species:	Mule Deer
Biologist:	Stan Harter
Herd Unit & No.:	Sweetwater (MD646)
Model date:	03/03/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	279	288	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	279	288	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	26	123	☑ 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		
1994				1137	562	2103	3803	1137	431	2103	3672	6000
1995				1301	559	1842	3702	1301	422	1842	3566	6000
1996				916	585	1675	3175	916	423	1675	3014	6000
1997				1129	508	1469	3106	1129	322	1469	2920	6000
1998				1268	566	1447	3280	1268	349	1447	3063	6000
1999				1200	755	1598	3553	1200	341	1598	3139	6000
2000				1048	802	1767	3617	1048	328	1767	3143	6000
2001				941	617	1722	3279	941	254	1722	2916	6000
2002				855	583	1710	3147	855	225	1710	2790	6000
2003				905	558	1698	3160	905	255	1698	2858	6000
2004				1245	544	1652	3441	1245	425	1652	3322	6000
2005				1465	871	1813	4149	1463	593	1781	3837	6000
2006				1329	1114	2026	4469	1328	476	1992	3795	6000
2007				1482	963	2127	4572	1465	417	2016	3898	6000
2008				1637	980	2207	4824	1631	445	2080	4156	6000
2009				1622	1048	2303	4973	1599	536	2086	4222	6000
2010				1590	1057	2247	4895	1553	484	1880	3917	6000
2011				1516	907	1979	4402	1484	341	1670	3494	6000
2012				1000	558	1579	3138	998	320	1527	2845	6000
2013				867	445	1372	2685	863	247	1365	2474	6000
2014				829	470	1328	2627	827	250	1323	2400	6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000
0												6000

Survival and Initial Population Estimates

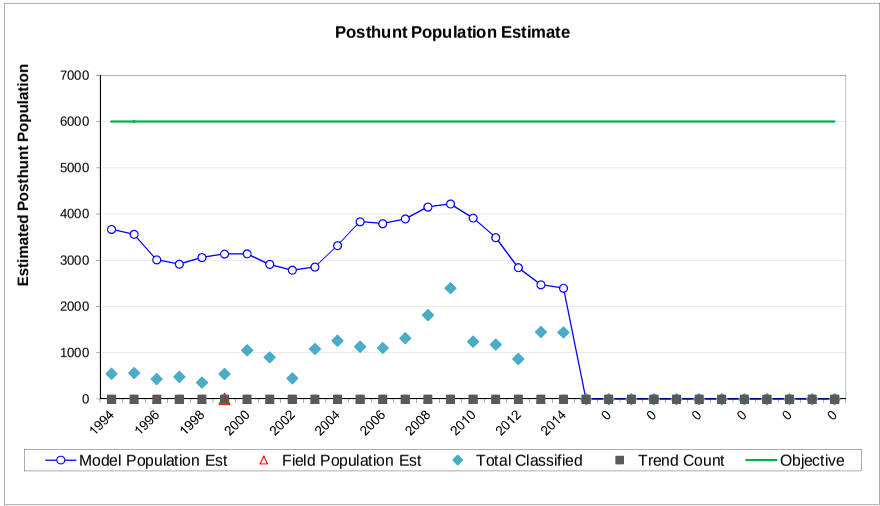
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1994	0.40			0.77		
1995	0.40			0.77		
1996	0.40			0.77		
1997	0.56			0.77		
1998	0.77			0.77		
1999	0.90			0.77		
2000	0.70			0.77		
2001	0.82			0.77		
2002	0.90			0.77		
2003	0.77			0.77		
2004	0.88			0.77		
2005	0.90			0.77		
2006	0.90			0.77		
2007	0.90			0.77		
2008	0.87			0.77		
2009	0.81			0.77		
2010	0.69			0.77		
2011	0.40			0.77		
2012	0.40			0.77		
2013	0.65			0.77		
2014	0.65			0.77		
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					
0	0.65					

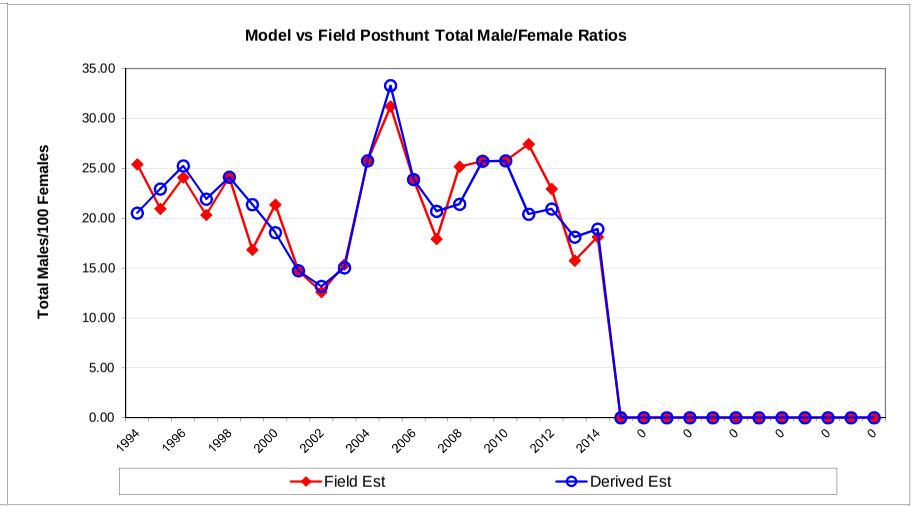
Parameters:	Optim cells
Adult Survival =	0.768
Initial Total Male Pop/10,000 =	0.043
Initial Female Pop/10,000 =	0.210

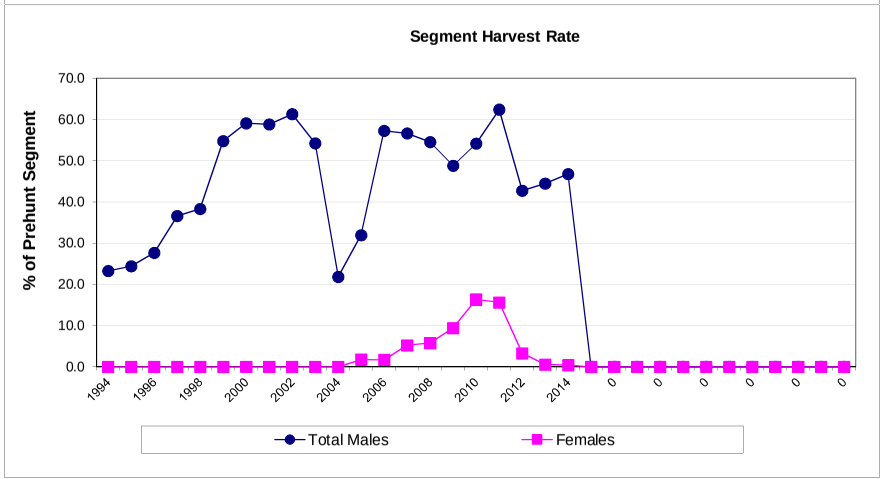
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

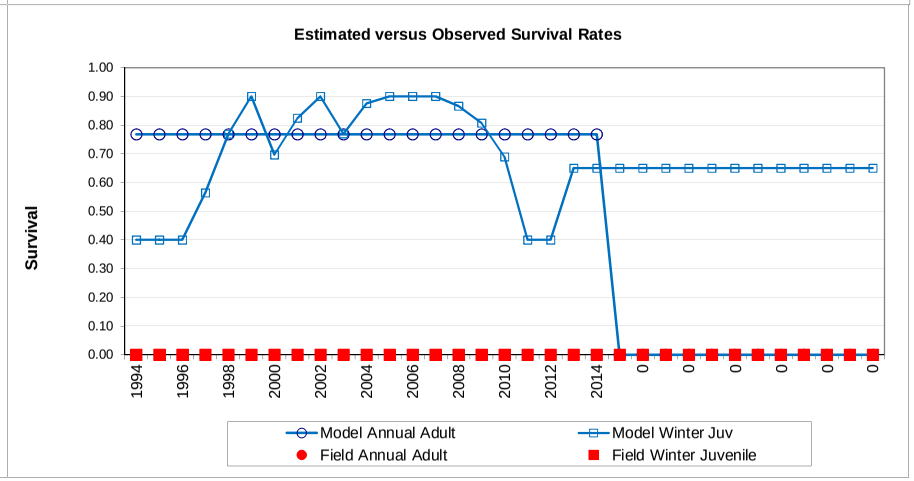
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1994		54.07	5.21	20.52	25.41	3.22	0	119	0	119	23.3	0.0
1995		70.61	6.38	22.92	20.95	2.93	0	124	0	124	24.4	0.0
1996		54.69	5.88	25.24	24.08	3.49	0	147	0	147	27.7	0.0
1997		76.83	7.43	21.91	20.33	3.15	0	169	0	169	36.6	0.0
1998		87.65	9.84	24.12	24.12	4.20	0	197	0	197	38.3	0.0
1999		75.09	6.79	21.37	16.84	2.63	0	376	0	376	54.8	0.0
2000		59.32	4.02	18.56	21.37	2.11	0	431	0	431	59.1	0.0
2001		54.66	3.97	14.74	14.74	1.78	0	330	0	330	58.9	0.0
2002		50.00	5.19	13.17	12.59	2.26	0	325	0	325	61.4	0.0
2003		53.33	3.56	15.03	15.35	1.66	0	275	0	275	54.3	0.0
2004		75.36	4.58	25.75	25.76	2.27	0	108	0	108	21.8	0.0
2005		82.14	5.30	33.30	31.20	2.77	2	253	29	284	31.9	1.8
2006		66.67	4.37	23.88	23.88	2.25	1	580	31	612	57.3	1.7
2007		72.69	4.26	20.70	17.92	1.75	15	496	101	612	56.7	5.2
2008		78.41	3.96	21.40	25.17	1.88	6	486	116	608	54.6	5.8
2009		76.64	3.38	25.71	25.72	1.65	21	465	197	683	48.8	9.4
2010		82.61	5.02	25.76	25.75	2.33	34	521	334	889	54.2	16.3
2011		88.85	5.54	20.40	27.42	2.53	29	515	281	825	62.4	15.6
2012		65.37	4.84	20.93	22.94	2.47	2	217	47	266	42.8	3.3
2013		63.22	3.56	18.11	15.74	1.50	4	180	7	191	44.5	0.6
2014		62.50	3.56	18.91	18.13	1.64	2	200	5	207	46.8	0.4
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												
0												

FIGURES



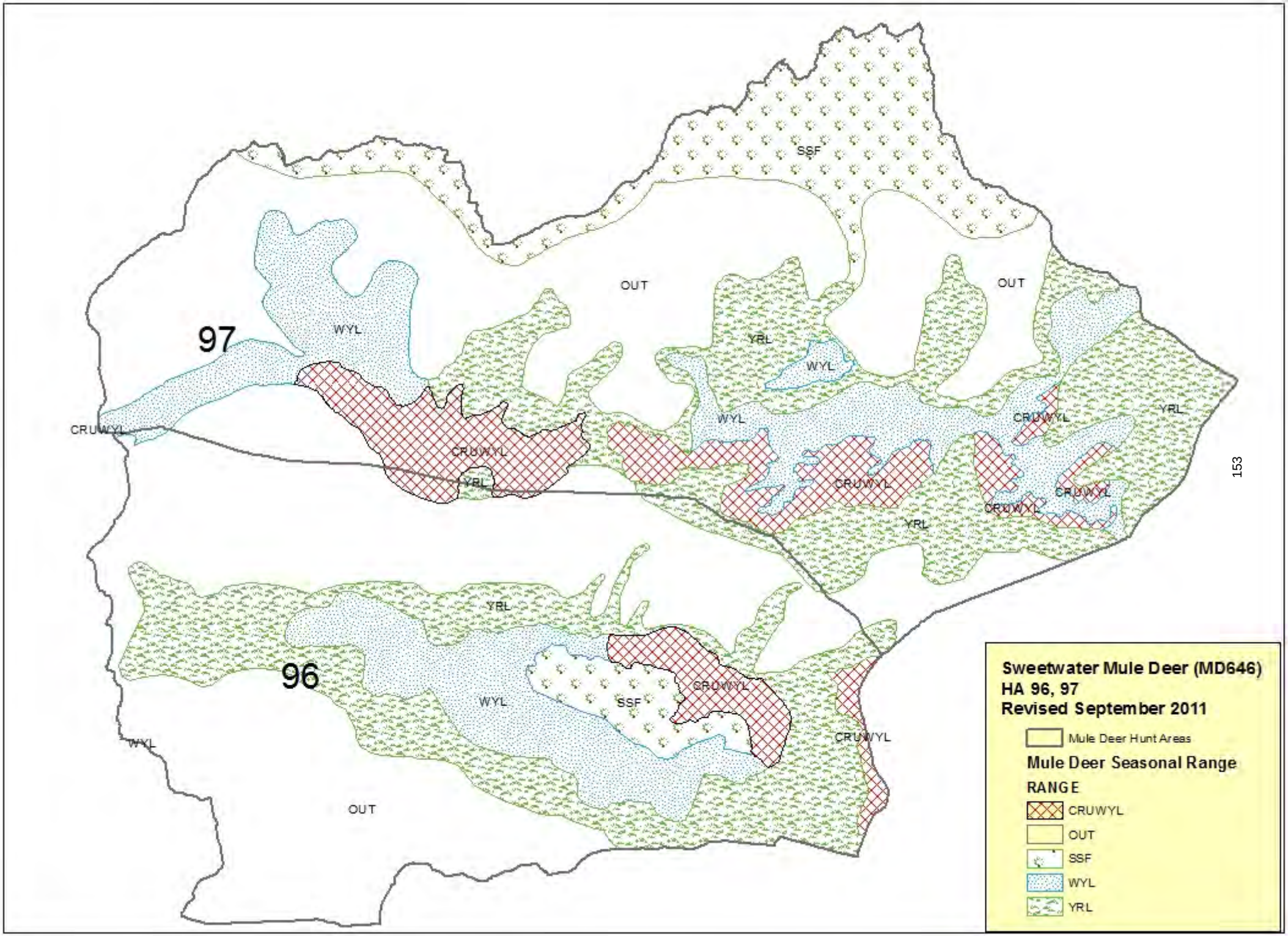






Comments:

END


Sweetwater Mule Deer (MD646)
HA 96, 97
Revised September 2011
Mule Deer Hunt Areas
Mule Deer Seasonal Range
RANGE
CRUWYL
OUT
SSF
WYL
YRL
97
96
SSF
OUT
OUT
WYL
YRL
WYL
CRUWYL
YRL
CRUWYL
CRUWYL
YRL
CRUWYL
CRUWYL
CRUWYL
YRL
YRL
WYL
SSF
CRUWYL
CRUWYL
WYL
OUT

2013 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2013 - 5/31/2014

HERD: MD647 - FERRIS

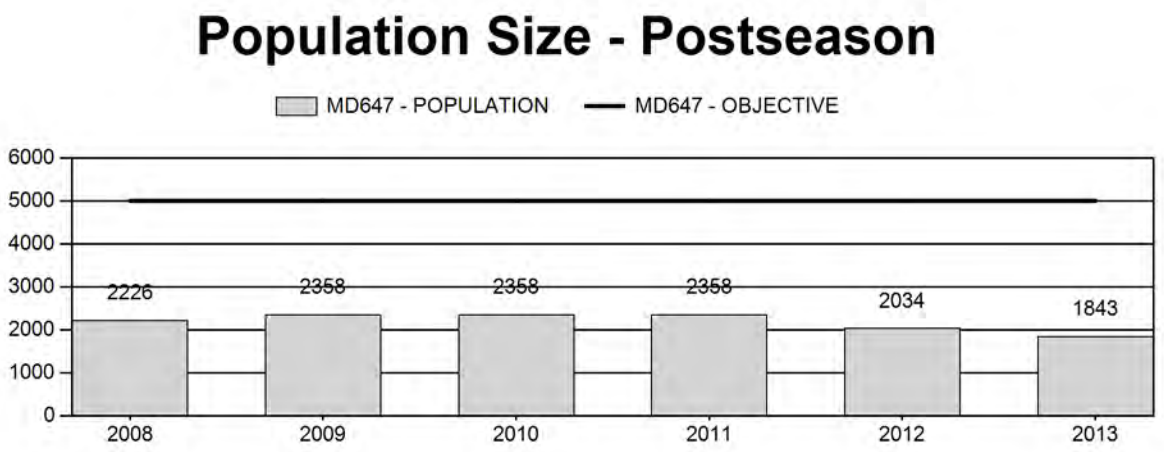
HUNT AREAS: 87 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	2,267	1,843	1,887
Harvest:	116	41	20
Hunters:	149	52	24
Hunter Success:	78%	79%	83 %
Active Licenses:	149	52	24
Active License Percent:	78%	79%	83 %
Recreation Days:	771	259	125
Days Per Animal:	6.6	6.3	6.2
Males per 100 Females	38	31	
Juveniles per 100 Females	54	29	

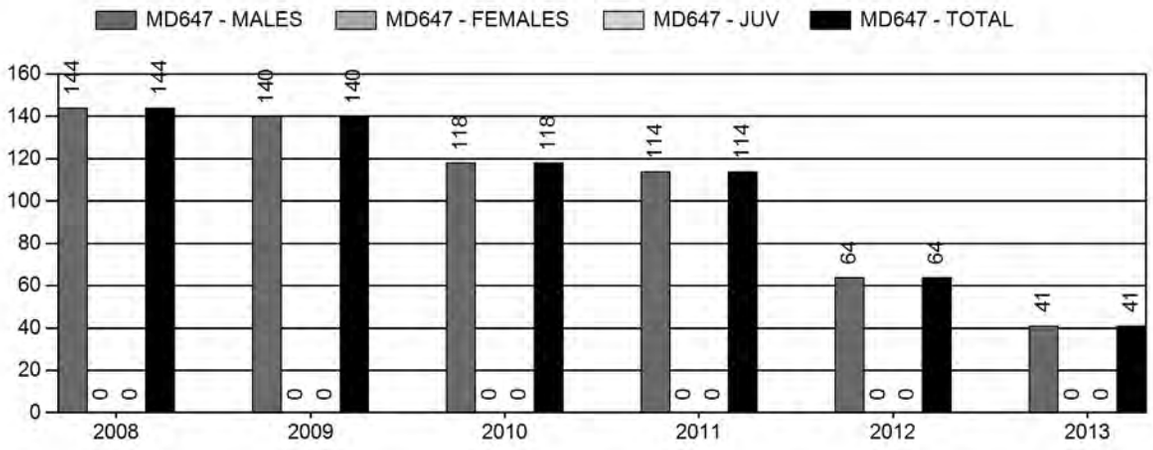
Population Objective:	5,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-63.1%
Number of years population has been + or - objective in recent trend:	21
Model Date:	3/5/2014

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

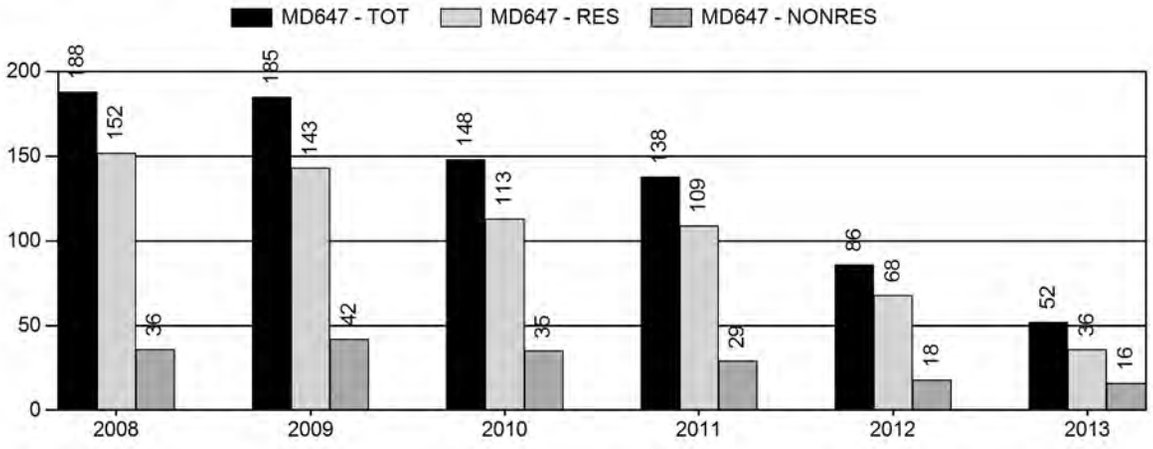
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6.4%	4.3%
Juveniles (< 1 year old):	0%	0%
Total:	1.5%	1.0%
Proposed change in post-season population:	+4.1%	+2.4%



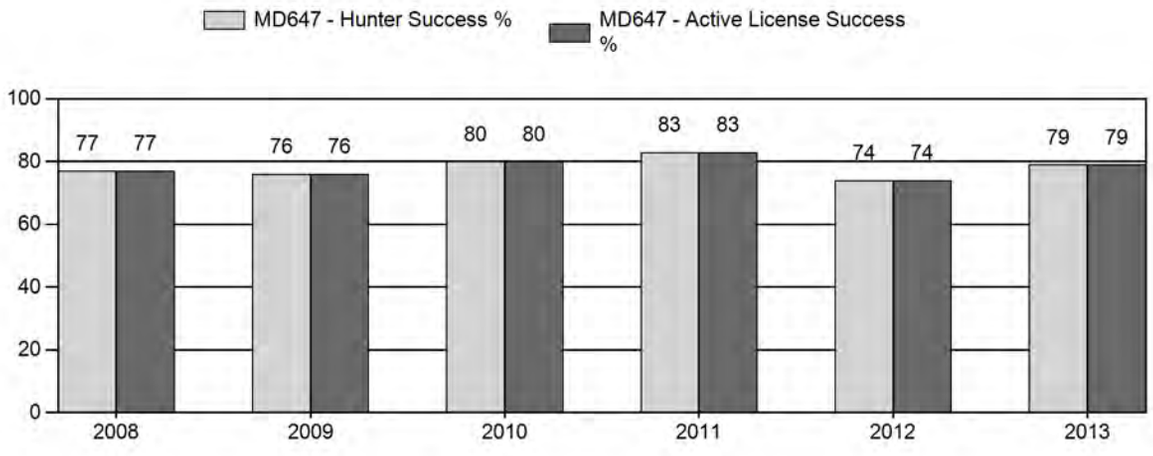
Harvest



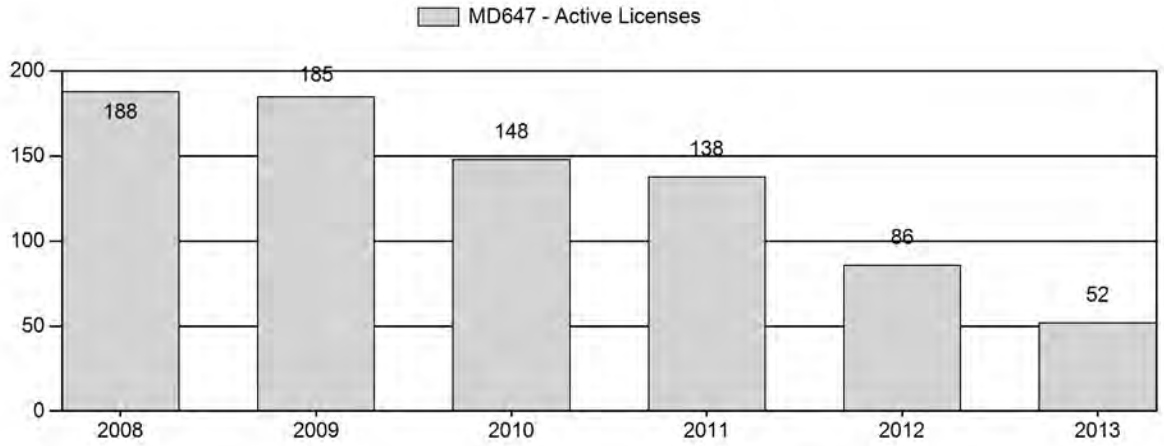
Number of Hunters



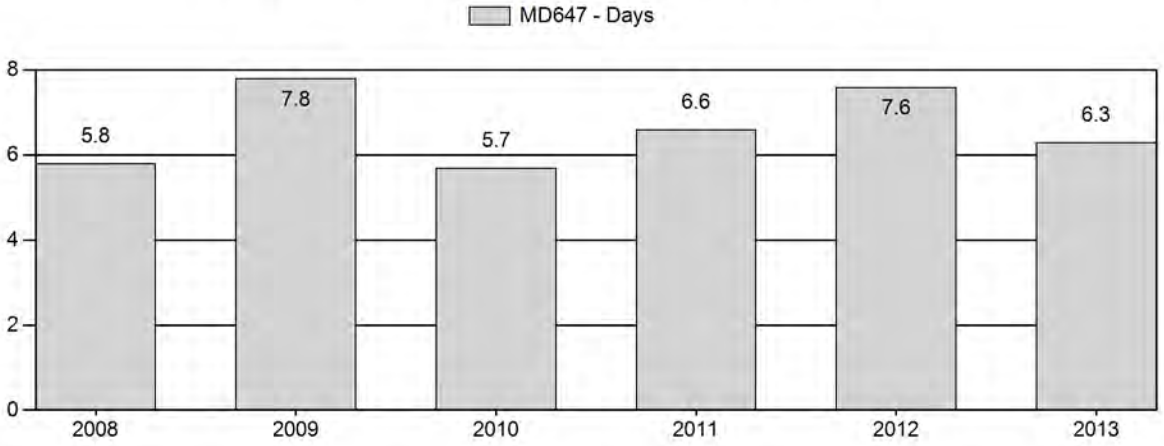
Harvest Success



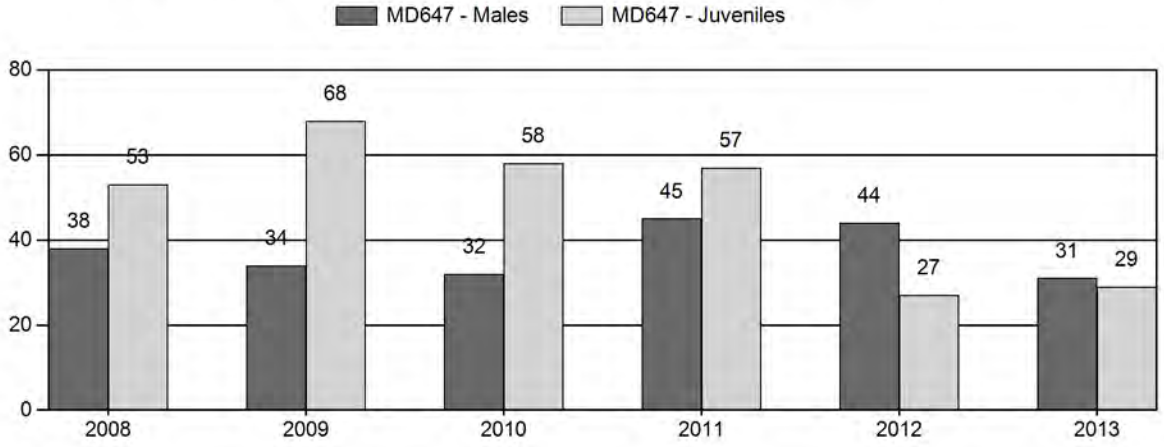
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD647 - FERRIS

		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
2008	2,226	57	101	158	20%	416	52%	221	28%	795	699	14	24	38	± 4	53	± 5	39
2009	2,358	55	87	142	17%	419	49%	286	34%	847	923	13	21	34	± 3	68	± 5	51
2010	2,358	51	71	122	17%	381	53%	222	31%	725	771	13	19	32	± 4	58	± 5	44
2011	2,358	50	111	161	22%	356	49%	204	28%	721	790	14	31	45	± 5	57	± 5	39
2012	2,034	0	0	125	26%	281	58%	75	16%	481	528	0	0	44	± 5	27	± 4	18
2013	1,843	14	58	72	20%	230	62%	66	18%	368	347	6	25	31	± 5	29	± 5	22

2014 HUNTING SEASONS
FERRIS MULE DEER HERD (MD647)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
87	1	Oct. 15	Oct. 31	25	Limited quota; antlered deer
Archery 87		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
87	1	-25
Total	**1**	**-25**

Management Evaluation
Current Management Objective: 5,000
Management Strategy: Recreation
2013 Postseason Population Estimate: ~1,845
2014 Proposed Postseason Population Estimate: ~1,890

The management objective for the Ferris Mule Deer Herd Unit is a post-season population objective of 5,000 deer. The current management strategy is recreational management, but the herd is undergoing review to consider changing management status of this herd to "special." The objective and management strategy were last publicly reviewed in 1994.

Herd Unit Issues

The 2013 post-season population estimate was about 1,845 deer with the population trending slowly downward from a high of about 3,000 deer in 2003. The herd was last near objective size prior to the 1992-93 winter. Restricted hunting access to major blocks of private and checkerboarded lands has concentrated hunting pressure on the remaining portions of the area, making it difficult to manage buck numbers and quality in the remaining portions of the herd.

Weather

Following severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, body condition of the few harvested deer checked in 2013 was poor. Given the poor condition of animals at the end of fall, mortality was expected to be above average during the 2012-13 winter, particularly following three severe winter storms in April. Unusually low numbers of yearling bucks in the 2013 classifications indicate these losses did occur.

Habitat

Lack of fire has resulted in decadent shrub stands encroached by conifer in this herd unit. Severe drought has reduced the quantity and quality of forage for mule deer. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2013.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminoe and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminoe Mountains and the eastern Ferris Mountains burned thousands of acres, including crucial mule deer winter habitat as well as year round habitats. These prescribed burns should benefit mule deer productivity with the return of young vigorous shrub complexes, but benefits from the wildfires will be longer term.

The Seminoe Fire burned over 3,800 acres in the Seminoe Mountains including areas within Morgan Creek WHMA. As in 2012, the Rawlins BLM again coordinated and funded aerial application of Plateau® in 2013 to mitigate cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions.

Plans for additional prescribed fires in the Seminoe Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire.

Field Data

Despite conservative seasons, deer numbers have slowly declined over the past two decades due to several severe winters and persistent drought conditions. Poor habitat conditions, on all seasonal ranges, have prevented the rapid population response seen after similar weather events in previous decades. Fawn:doe ratios have remained low in most years, preventing recovery of the population, and remained low in 2013 at 29:100, following the near-record low of 27:100 in 2012. Sample size was also the lowest since 1984, despite covering the usual winter ranges with the normal number of hours in a helicopter.

The buck:doe ratio dropped to 31:100 in 2013, the lowest in six years and marginal for the "special" management proposed for this herd. Most of the decline was in the yearling ageclass, at 6:100, a result of both poor production in 2012 and high losses during the April blizzards. Hunter access is greatly restricted to large portions of this herd, yielding segments of the population that are essentially unhunted. Rapid fluctuations in buck:doe ratios early in the previous decade is suspected to have been caused by changes in how observers surveyed between hunted and unhunted segments of the herd. Classification surveys the past seven years have attempted to have uniform coverage of all winter ranges, yielding more representative ratios. While ratios may no longer be as skewed, a significant proportion of the bucks in the sample still come from areas with limited or no public access. Only 8 percent of the bucks in the sample were Class 3. More than half were yearlings or Class 1.

Harvest Data

Harvest statistics do not appear to indicate a decline in deer numbers from 2012 to 2013. Hunter success rose slightly, from 74 percent to 79 percent while hunter effort decreased from 7.6 days/animal to 6.3. But only half as many licenses were issued in 2013 as in the previous year, so the remaining hunters would be expected to enjoy better hunting conditions. Only 41 deer were harvested, the smallest harvest from this herd in over forty years, included years with 4-point restrictions.

Population

The Time-Specific Juvenile & Constant Adult Survival (TSJ/CAS) spreadsheet model provided the best fit with observed buck:doe ratios for this herd, and the model behaved predictably when 2013 classification and harvest data were added. Annual adult survival was predicted at 80 percent, a reasonable level. However, best fit with observed buck:doe ratios did not arise unless juvenile survival was also held constant, at 65 percent. This model, while matching well with observed buck:doe ratios and tracking with classification sample sizes, had a high AICc value of 1077, evaluated as "poor", but improved over the 2012 version. A model with lower AICc values was obtained using the simpler Constant Juvenile – Constant Adult Mortality Rate which also tracked well with classification sample sizes, but simulated buck:doe ratios were well below observed. This model predicted population sizes roughly 10 percent lower than the TSJ/CAS model. Buck:doe ratios for this herd are skewed high because most hunters are denied access to major portions of the area. It may be more useful to weight ratios according to the segment of the herd sampled, rather than simply combining all data into one sample, and then use the simpler CJ/CA model to align with those values.

Fawn production in 2014 was projected at a 5-year average, which may be optimistic considering the poor condition of animals going into the 2013-14 winter and poor snowpack on low elevation habitats. Similarly, the model was run with moderate juvenile survival in 2014, which may be optimistic. The resultant model predicts a roughly stable population in 2014, but greatly over-estimates observed buck:doe ratios for the past two years. If drought conditions abate, the large acreages of treated habitat may improve fawn production and survival and provide for some degree of herd growth in the future.

Large numbers of dead pronghorn were found during late summer and early fall 2013 in Antelope Areas 62 and 63, which overlap this herd unit. Several were confirmed as EHD losses, and most are presumed to have been. EHD was also confirmed in a mule deer fawn mortality south of Rawlins in the Baggs herd unit, so it is likely there were losses from the Ferris herd as well.

Management Summary

Expected harvest from this season proposal would be roughly 20 buck deer. The limited quota hunt is compatible with the application booklets. As in the previous 18 years, these licenses are valid only for antlered deer during the regular season. The quota is reduced by half from that available in 2013, which was half that allowed in 2012. With the herd so far below objective, no

doe harvest is warranted and no doe/fawn licenses are available. Youth hunters and archers in the special archery season will still be able to harvest antlerless deer.
Opening date is traditional, coincides with hunts in neighboring areas in Regions D and E, and is consistent with the application booklets. Closing date is the same as in the previous 14 years. Archery season dates are standard and the same as used in previous years.

With the low numbers of permits allowed in this herd, hunters have come to expect better opportunities to see and harvest larger bucks than available in neighboring general license, more productive herds. High demand for these licenses is attributed as much to an expectation of high buck quality as it is for a less crowded hunting experience. To accommodate this demand, compensate for the second straight year of record low fawn production, and keep the herd near the "special" management criterion, the recommended license quota was decreased to 25 licenses in 2014.

INPUT	
Species:	Mule Deer
Biologist:	Greg Hiatt
Herd Unit & No.:	MD647 Ferris
Model date:	03/05/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	548	557	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	199	222	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	624	1077	☑ 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		
1993				757	427	1452	2635	753	330	1380	2463	5000
1994				650	509	1349	2508	650	401	1320	2371	5000
1995				776	532	1267	2575	776	444	1267	2487	5000
1996				799	607	1266	2673	799	488	1266	2553	5000
1997				720	650	1273	2642	720	511	1273	2503	5000
1998				1035	643	1252	2930	1035	522	1252	2809	5000
1999				968	754	1338	3060	968	553	1338	2859	5000
2000				805	757	1385	2947	805	534	1385	2724	5000
2001				912	689	1370	2971	912	542	1370	2823	5000
2002				808	730	1392	2930	808	586	1392	2786	5000
2003				1070	731	1376	3177	1070	576	1376	3022	5000
2004				844	808	1449	3101	844	616	1426	2885	5000
2005				631	767	1415	2813	631	533	1415	2579	5000
2006				610	631	1337	2579	610	419	1337	2366	5000
2007				733	534	1268	2535	733	285	1268	2286	5000
2008				665	466	1253	2384	665	308	1253	2226	5000
2009				832	463	1218	2512	832	309	1218	2358	5000
2010				725	517	1245	2487	725	387	1245	2358	5000
2011				706	546	1232	2483	706	420	1232	2358	5000
2012				324	566	1215	2104	324	495	1215	2034	5000
2013				309	501	1077	1888	309	456	1077	1843	5000
2014				481	466	962	1909	481	444	962	1887	5000
2015												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

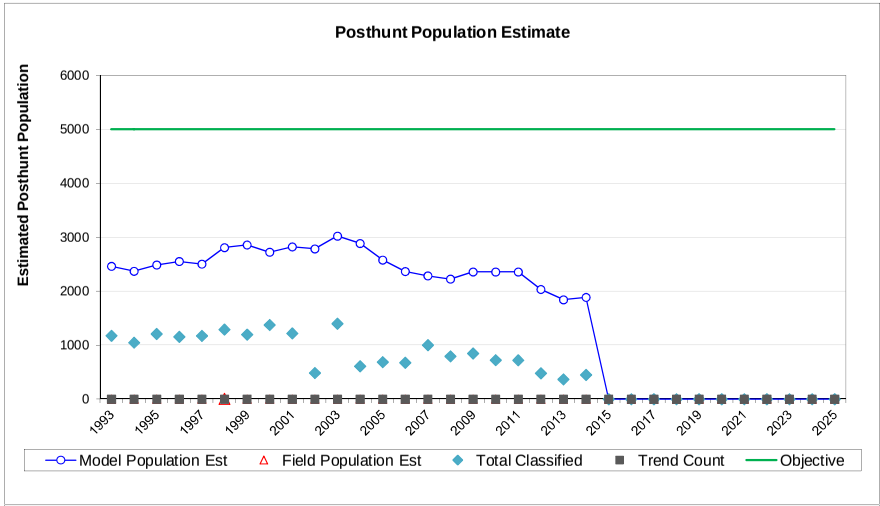
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.65			0.80		
1994	0.65			0.80		
1995	0.65			0.80		
1996	0.65			0.80		
1997	0.65			0.80		
1998	0.65			0.80		
1999	0.65			0.80		
2000	0.65			0.80		
2001	0.65			0.80		
2002	0.65			0.80		
2003	0.65			0.80		
2004	0.65			0.80		
2005	0.65			0.80		
2006	0.65			0.80		
2007	0.65			0.80		
2008	0.65			0.80		
2009	0.65			0.80		
2010	0.65			0.80		
2011	0.65			0.80		
2012	0.65			0.80		
2013	0.65			0.80		
2014	0.65			0.80		
2015	0.65					
2016	0.65					
2017	0.65					
2018	0.65					
2019	0.65					
2020	0.65					
2021	0.65					
2022	0.65					
2023	0.65					
2024	0.65					
2025	0.65					

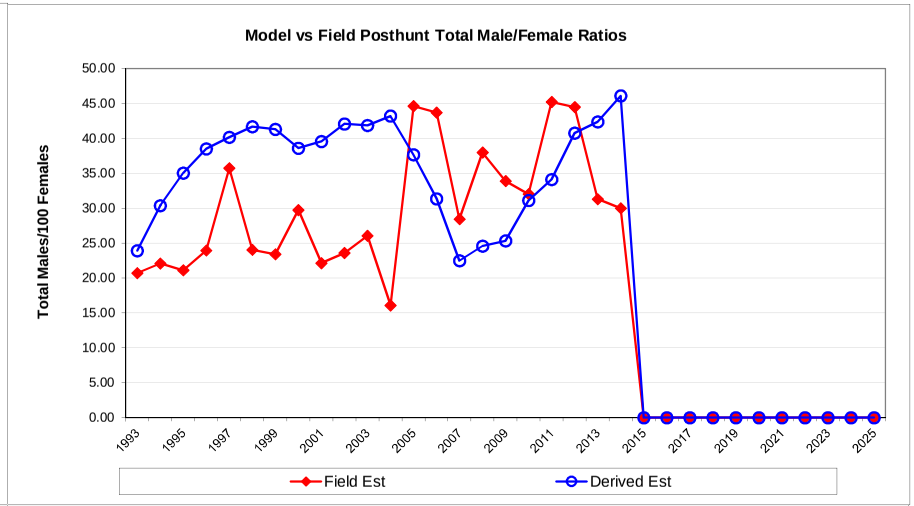
Parameters:	Optim cells
Adult Survival =	0.800
Initial Total Male Pop/10,000 =	0.033
Initial Female Pop/10,000 =	0.138

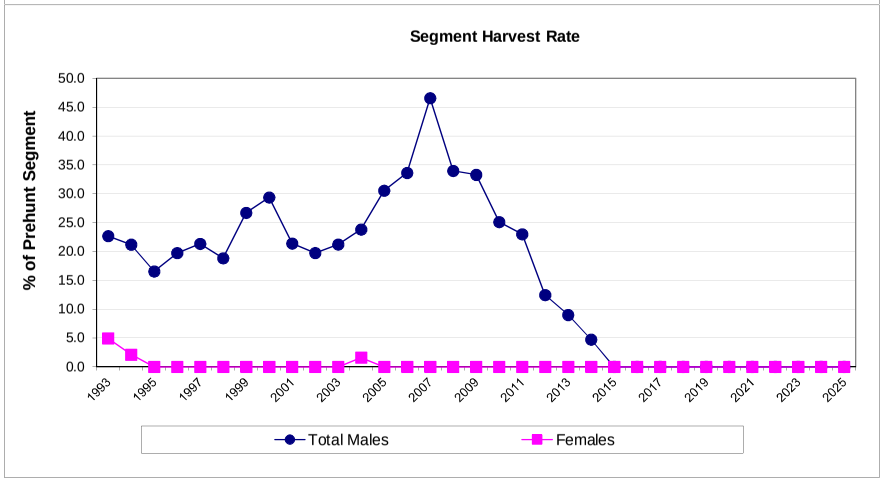
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

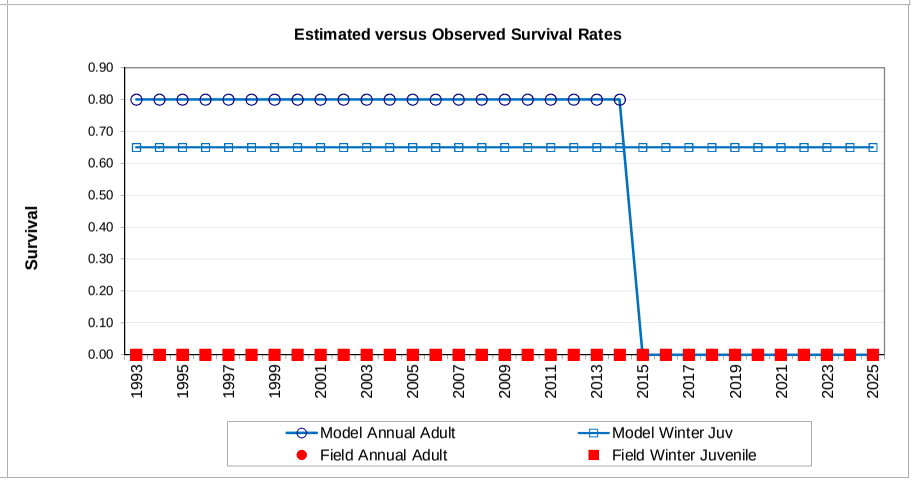
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		54.55	3.54	23.91	20.72	1.93	4	88	65	157	22.7	4.9
1994		49.26	3.47	30.37	22.09	2.10	0	98	26	124	21.2	2.1
1995		61.24	3.86	35.03	21.12	1.96	0	80	0	80	16.5	0.0
1996		63.11	4.08	38.51	23.95	2.19	0	109	0	109	19.7	0.0
1997		56.56	3.81	40.16	35.74	2.82	0	126	0	126	21.3	0.0
1998		82.69	4.92	41.68	24.04	2.19	0	110	0	110	18.8	0.0
1999		72.34	4.52	41.30	23.40	2.17	0	183	0	183	26.7	0.0
2000		58.12	3.54	38.59	29.74	2.29	0	202	0	202	29.4	0.0
2001		66.56	4.14	39.56	22.14	2.05	0	134	0	134	21.4	0.0
2002		58.05	5.86	42.07	23.60	3.30	0	131	0	131	19.7	0.0
2003		77.73	4.48	41.86	26.06	2.19	0	141	0	141	21.2	0.0
2004		59.20	5.20	43.21	16.09	2.32	0	175	21	196	23.8	1.6
2005		44.63	4.22	37.66	44.63	4.22	0	213	0	213	30.5	0.0
2006		45.66	4.32	31.35	43.70	4.19	0	193	0	193	33.6	0.0
2007		57.81	4.12	22.48	28.44	2.61	0	226	0	226	46.6	0.0
2008		53.13	4.42	24.58	37.98	3.55	0	144	0	144	34.0	0.0
2009		68.26	5.24	25.33	33.89	3.29	0	140	0	140	33.3	0.0
2010		58.27	4.92	31.11	32.02	3.33	0	118	0	118	25.1	0.0
2011		57.30	5.03	34.12	45.22	4.30	0	114	0	114	23.0	0.0
2012		26.69	3.47	40.76	44.48	4.78	0	64	0	64	12.4	0.0
2013		28.70	4.01	42.37	31.30	4.23	0	41	0	41	9.0	0.0
2014		50.00	5.48	46.10	30.00	3.95	0	20	0	20	4.7	0.0
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



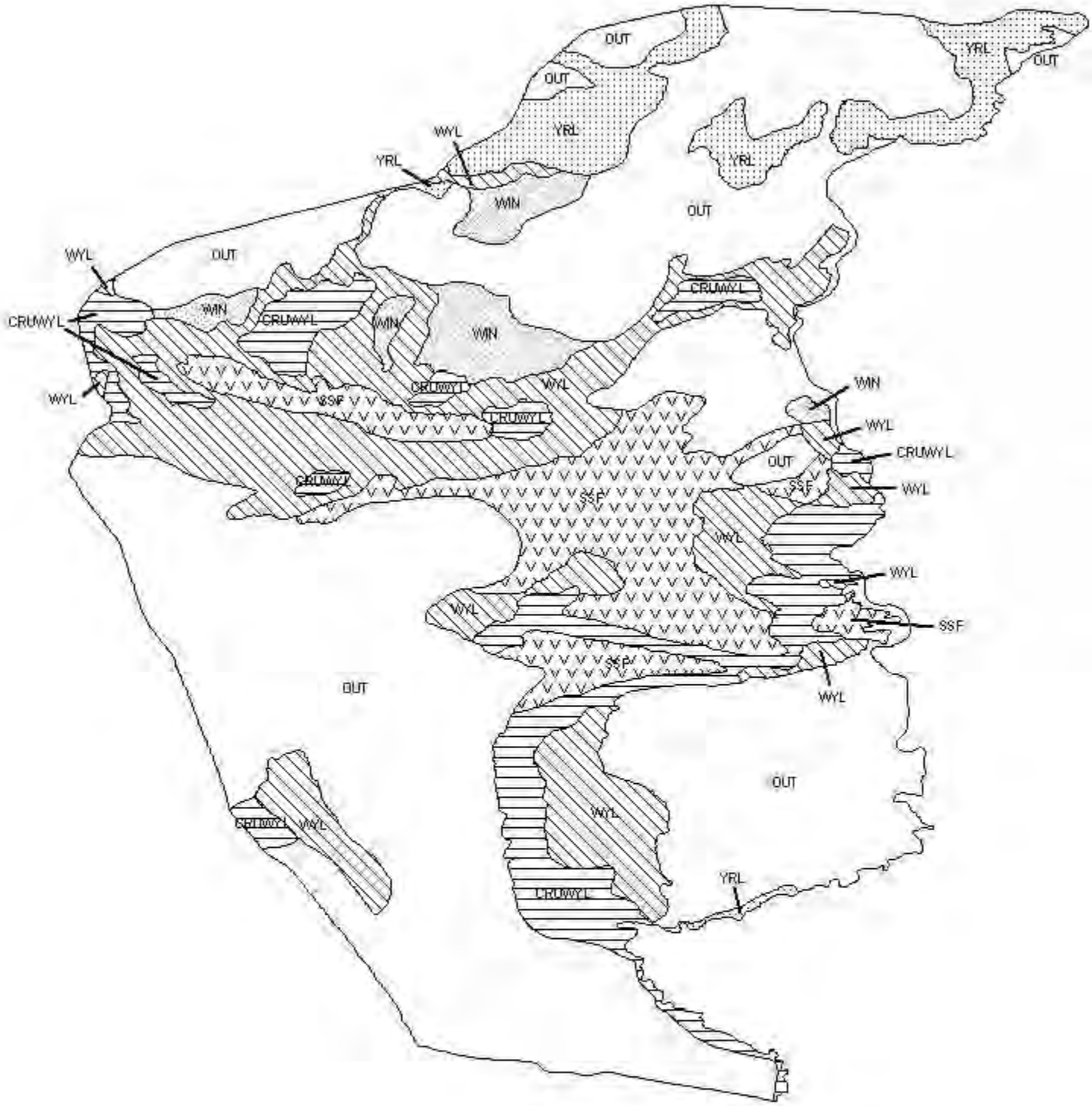






Comments:

END



Mule Deer (MD647) - Ferris
HA 87
Revised - 3/91

N

2013 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2013 - 5/31/2014

HERD: MD648 - BEAVER RIM

HUNT AREAS: 90

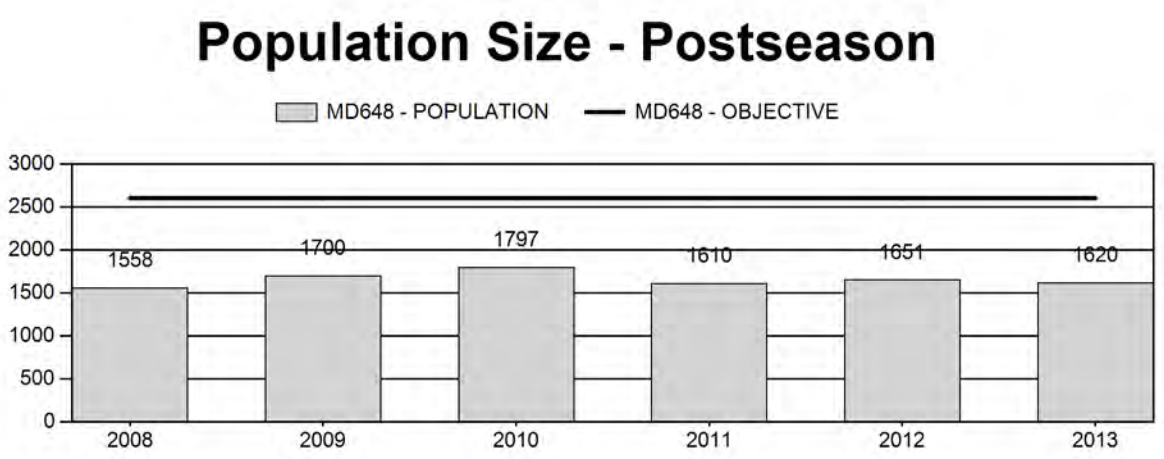
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	1,663	1,620	1,792
Harvest:	96	46	40
Hunters:	118	73	50
Hunter Success:	81%	63%	80 %
Active Licenses:	118	73	50
Active License Percent:	81%	63%	80 %
Recreation Days:	711	459	400
Days Per Animal:	7.4	10.0	10
Males per 100 Females	38	22	
Juveniles per 100 Females	44	34	

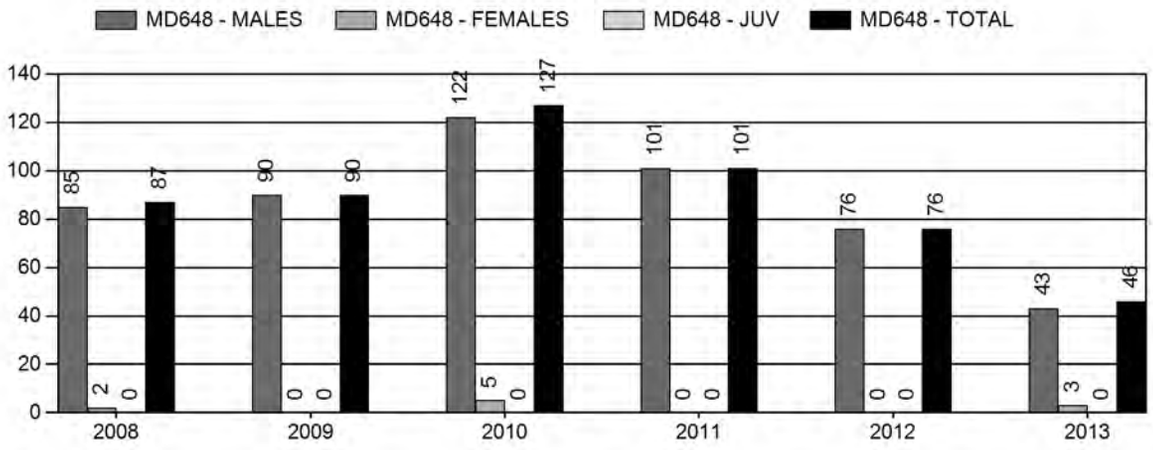
Population Objective:	2,600
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-37.7%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/21/2014

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

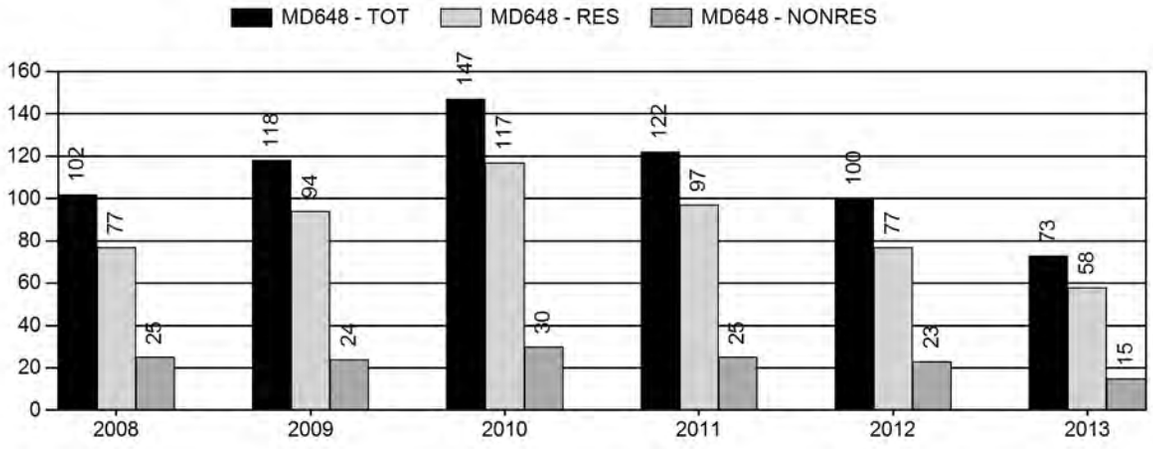
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	14%	12%
Juveniles (< 1 year old):	0%	0%
Total:	3%	2%
Proposed change in post-season population:	-2%	+11%



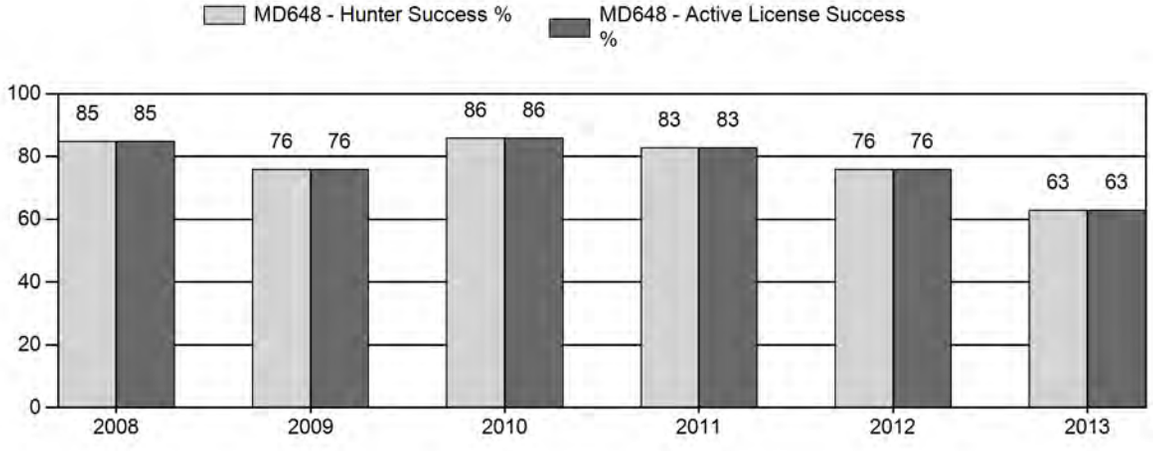
Harvest



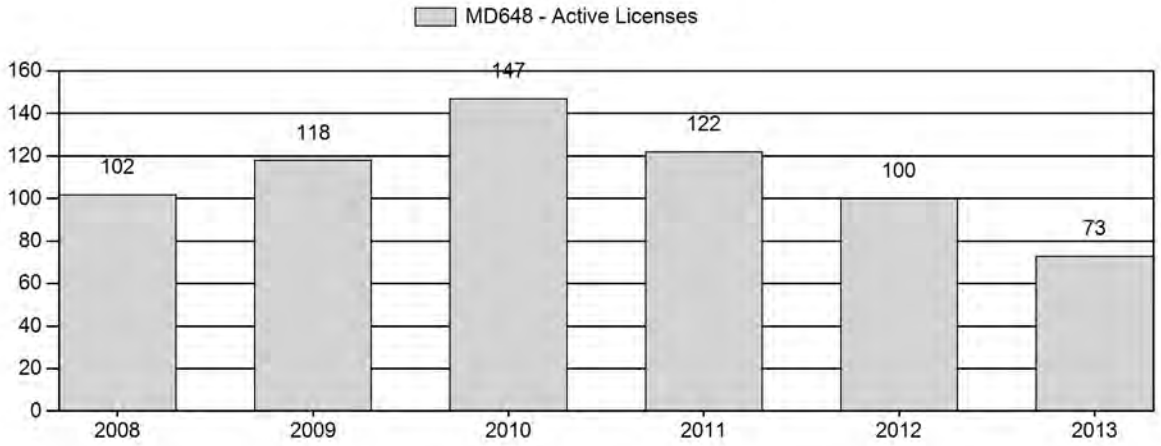
Number of Hunters



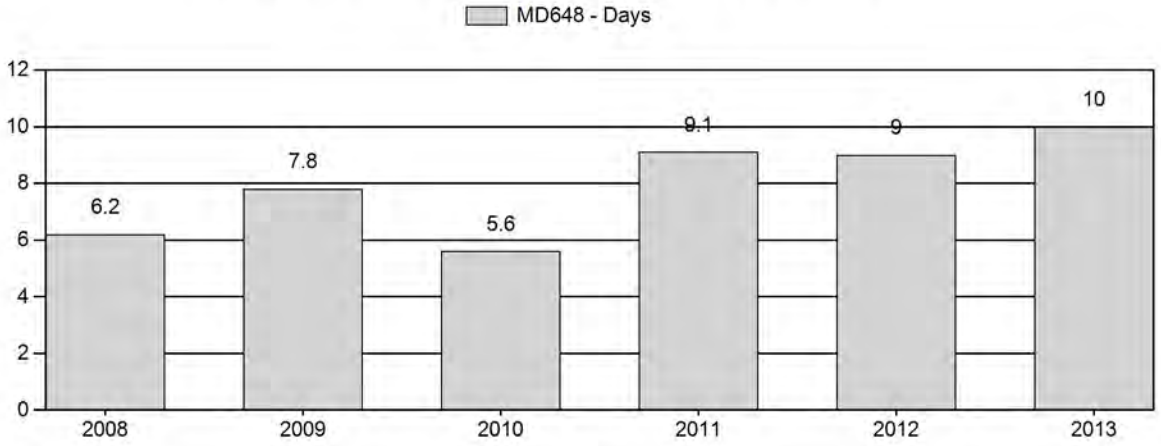
Harvest Success



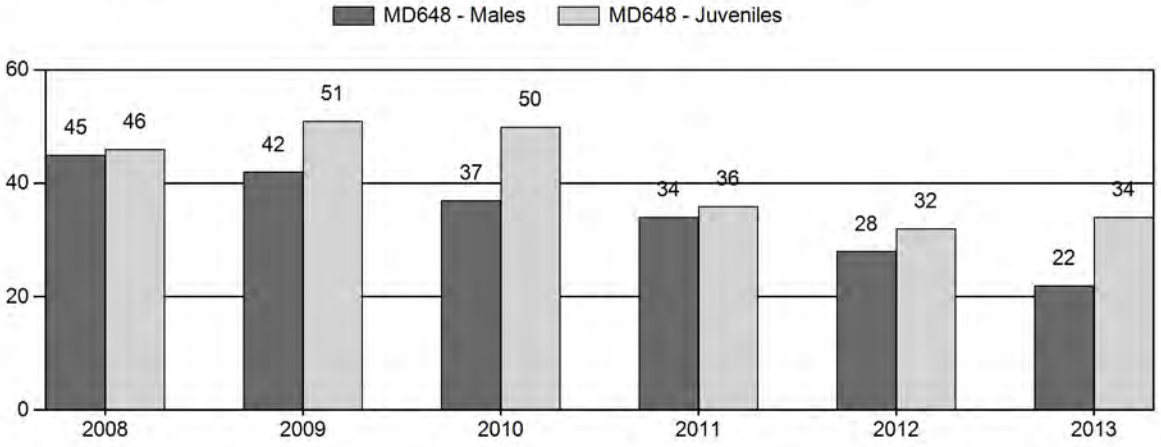
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD648 - BEAVER RIM

		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
2008	1,558	24	44	68	24%	151	52%	69	24%	288	504	16	29	45	± 8	46	± 8	32
2009	1,700	25	51	76	22%	182	52%	93	26%	351	552	14	28	42	± 7	51	± 7	36
2010	1,797	13	35	48	20%	129	54%	64	27%	241	582	10	27	37	± 8	50	± 9	36
2011	1,610	10	31	41	20%	119	59%	43	21%	203	389	8	26	34	± 7	36	± 8	27
2012	1,651	4	29	33	17%	120	62%	39	20%	192	362	3	24	28	± 7	32	± 7	25
2013	1,620	3	17	20	14%	90	64%	31	22%	141	362	3	19	22	± 7	34	± 9	28

2014 HUNTING SEASONS
BEAVER RIM MULE DEER (MD 648)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
90	1	Oct. 1	Oct. 31	50	Limited quota; any deer
Archery		Aug. 15	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
90	1	-25
Total	**1**	**-25**

Management Evaluation
Current Management Objective: 2,600
Management Strategy: Special
2013 Postseason Population Estimate: ~1,600
2014 Proposed Postseason Population Estimate: ~1,800

Management Issues
The Beaver Rim mule deer herd has a population objective of 2,600 and has a special management designation. The population objective has been in place since 1994.

The landscape in this herd unit has remained relatively undisturbed compared to neighboring herd units. That said, vegetation throughout much of the area has been in poor condition for a number of years due to drought. In particular, the mid-2000's, 2012, and 2013 were extremely dry. No vegetation data is collected in the herd unit, but casual observation indicated new growth was almost non-existent in 2012 and 2013. As a result, deer body condition was quite poor entering the 2013/14 winter.

Habitat/Weather
This population was once significantly larger than it currently is. The population declined dramatically in the early 1990's following a catastrophic winter die-off. Deer numbers then languished for over a decade. The population showed signs of a slow, steady increase from 2000 through 2010. A harsh winter in 2010 followed by extreme drought in 2012 and 2013 resulted in a population decline over the past 3 years. While no vegetation data is collected in the herd unit, casual observations suggest almost no herbaceous vegetation grew throughout much of the herd unit in 2012 or 2013. Over the same period, extensive areas of sagebrush appear to have senesced or died.

Field/Harvest Data/Population

Due to low deer densities in the herd unit, classification sample sizes have generally been below desired levels for the population. That said, the number of deer seen during classification surveys has declined consistently over the past 4 years concurrent with a perceived population decline. In 2013 personnel only classified 141 mule deer; well below an adequate number. While the sample size was undesirably small, indications are recruitment was quite poor with a fawn/doe ratio of 34/100. The fawn/doe ratio was also very low the previous 2 years at 32/100 and 36/100 respectively. Concurrent with poor recruitment, the buck/doe ratio has declined each year for the past 5 years. The buck/doe ratio was 22/100 in 2013 and well below the desired level for a special management area. In 2013, harvest success in the area was 63% and was the lowest in over 10 years. Harvest success has declined annually each of the past 3 years as recruitment has languished and the buck/doe ratio declined. Taken in concert, classification data, harvest data, and casual observations clearly indicate this population has declined significantly over the past 3 years.

A spreadsheet model was developed for this population in 2012. The addition of 2013 data did not dramatically change the estimates produced by the model. The SCJ/SCA model appeared to provide the best fit in both 2012 and 2013. The SCJ/SCA had a significantly lower AIC value than the TSJ/CA model but nearly as good of fit. Both models produce a similar trend over the past 10 years and population estimates are not markedly different. The CA/CJ version models a population increase annually for the past 20 years. Given other data for the area it is clear the population declined markedly over the past several years invalidating the CA/CJ model version. The SCJ/SCA model tracks perceived trends well up to 2010 indicating slow, steady growth from 2000 through 2010. Past 2010, the model shows a slight decline in 2011 and then indicates the population was stable from 2011 through 2013. This is a marked contrast to what is indicated by personnel/hunter observations, classification data, and harvest statistics. Although the model is classified as fair due to the inputs available, it is apparent it does not track a recent, significant decline in the population and is thus not biologically defensible and should be considered a poor model.

Management Summary

All factors with the exception of the spreadsheet model indicate this population has declined significantly over the past 3 years. The population is clearly below objective and hunt quality has declined over the past several years as well. The buck/doe ratio has been declining steadily and is now well below the prescribed threshold for special management. Given low recruitment in the herd unit the past 3 years, the buck/doe ratio is unlikely to increase dramatically over the next year. In response, Type 1 licenses will be reduced by 25 for the 2014 season.

INPUT	
Species:	Mule Deer
Biologist:	Greg Anderson
Herd Unit & No.:	Beaver Rim Mule Deer
Model date:	02/21/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	17	26	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	17	28	☑ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	10	121	☐ 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		
1993				91	153	217	461	88	31	171	291	2600
1994				79	58	188	325	79	32	172	282	2600
1995				116	55	186	357	115	41	184	341	2600
1996				125	76	209	410	125	63	208	396	2600
1997				133	100	235	468	133	73	235	442	2600
1998				196	112	262	570	196	91	262	549	2600
1999				246	149	309	703	246	110	309	665	2600
2000				168	183	368	719	168	146	362	676	2600
2001				162	191	392	745	162	157	392	711	2600
2002				174	199	418	792	174	166	416	756	2600
2003				251	212	444	907	251	180	442	873	2600
2004				280	250	494	1024	280	199	494	973	2600
2005				312	277	552	1141	312	226	550	1087	2600
2006				450	312	614	1376	450	274	609	1333	2600
2007				467	402	715	1584	467	332	715	1514	2600
2008				373	462	819	1654	373	369	816	1558	2600
2009				451	466	882	1799	451	367	882	1700	2600
2010				478	489	969	1937	478	355	964	1797	2600
2011				350	402	969	1721	350	291	969	1610	2600
2012				330	386	1017	1733	330	303	1017	1651	2600
2013				342	332	996	1670	342	285	993	1620	2600
2014				422	377	1036	1836	422	333	1036	1792	2600
2015												2600
2016												2600
2017												2600
2018												2600
2019												2600
2020												2600
2021												2600
2022												2600
2023												2600
2024												2600
2025												2600

Survival and Initial Population Estimates

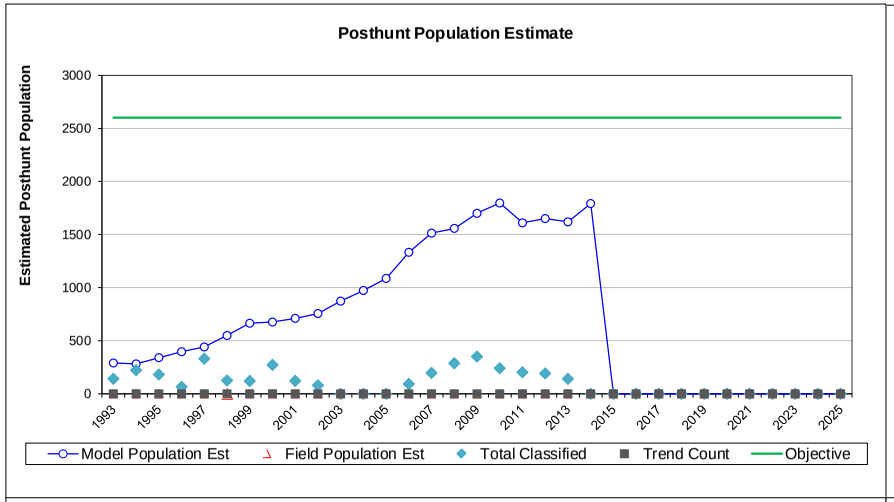
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.66			0.93		
1994	0.66			0.93		
1995	0.66			0.93		
1996	0.66			0.93		
1997	0.66			0.93		
1998	0.66			0.93		
1999	0.66			0.93		
2000	0.66			0.93		
2001	0.66			0.93		
2002	0.66			0.93		
2003	0.66			0.93		
2004	0.66			0.93		
2005	0.66			0.93		
2006	0.66			0.93		
2007	0.66			0.93		
2008	0.66			0.93		
2009	0.66			0.93		
2010	0.30			0.93		
2011	0.66			0.93		
2012	0.30			0.93		
2013	0.66			0.93		
2014	0.66			0.93		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

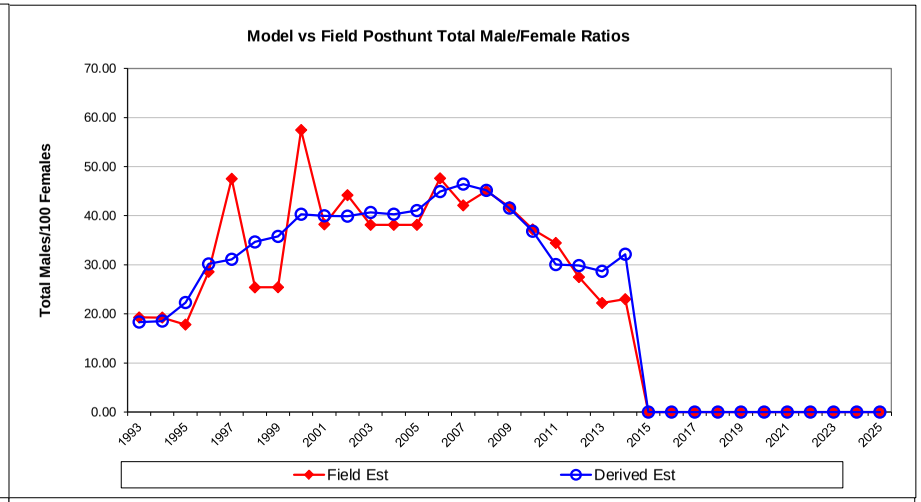
Parameters:	Optim cells
Juvenile Survival =	0.656
Adult Survival =	0.931
Initial Total Male Pop/10,000 =	0.003
Initial Female Pop/10,000 =	0.017

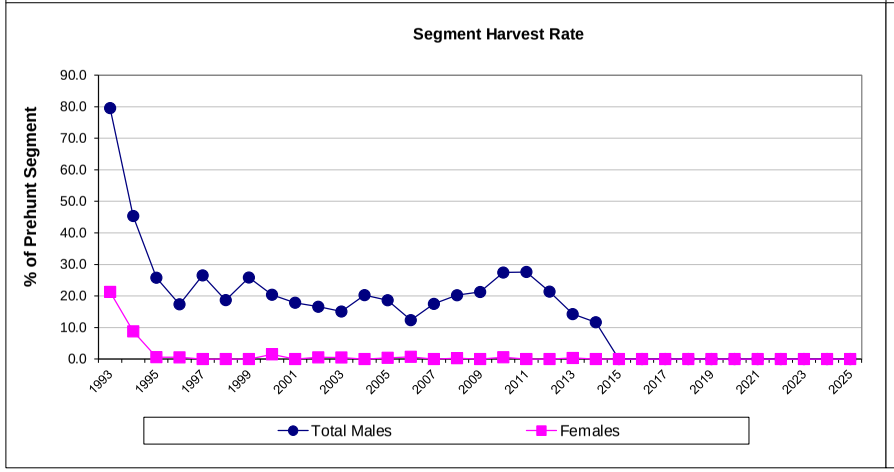
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

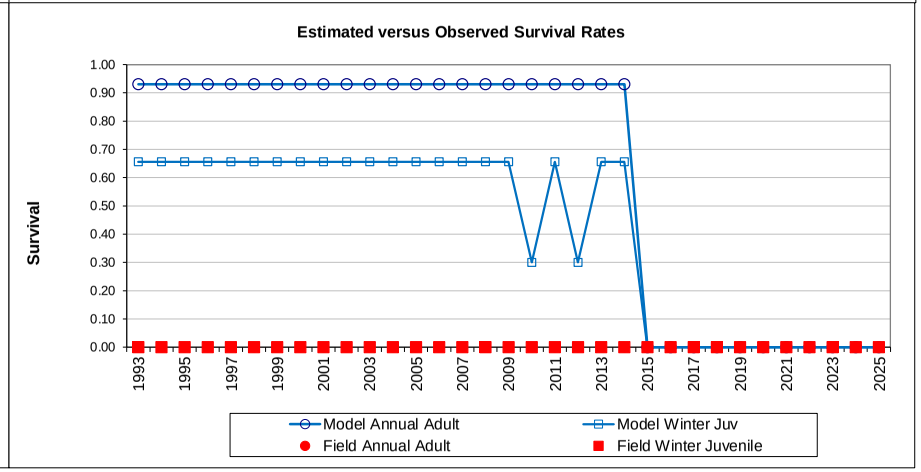
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		51.81	9.73	18.34	19.28	5.26	2	111	42	155	79.6	21.3
1994		45.93	7.05	18.54	19.26	4.12	0	24	15	39	45.4	8.8
1995		62.38	10.01	22.31	17.82	4.56	1	13	1	15	25.8	0.6
1996		60.00	16.56	30.17	28.57	10.24	0	12	1	13	17.4	0.5
1997		56.79	7.41	31.13	47.53	6.58	0	24	0	24	26.5	0.0
1998		74.60	14.38	34.65	25.40	7.11	0	19	0	19	18.7	0.0
1999		79.66	15.57	35.79	25.42	7.35	0	35	0	35	25.9	0.0
2000		46.27	7.11	40.30	57.46	8.22	0	34	5	39	20.4	1.5
2001		41.18	9.25	39.98	38.24	8.82	0	31	0	31	17.9	0.0
2002		41.86	11.75	39.91	44.19	12.17	0	30	2	32	16.6	0.5
2003		56.71	11.61	40.66	38.14	8.73	0	29	2	31	15.1	0.5
2004		56.71	11.61	40.31	38.14	8.73	0	46	0	46	20.3	0.0
2005		56.71	11.61	41.05	38.14	8.73	0	47	2	49	18.6	0.4
2006		73.81	17.48	44.92	47.62	12.94	0	35	4	39	12.3	0.7
2007		65.26	10.66	46.45	42.11	7.94	0	64	0	64	17.5	0.0
2008		45.70	6.64	45.16	45.03	6.58	0	85	2	87	20.2	0.3
2009		51.10	6.51	41.55	41.76	5.70	0	90	0	90	21.3	0.0
2010		49.61	7.59	36.84	37.21	6.29	0	122	5	127	27.4	0.6
2011		36.13	6.43	30.05	34.45	6.24	0	101	0	101	27.6	0.0
2012		32.50	5.99	29.84	27.50	5.41	0	75	0	75	21.4	0.0
2013		34.44	7.17	28.68	22.22	5.49	0	43	3	46	14.2	0.3
2014		40.76	6.74	32.16	23.00	5.83	0	40	0	40	11.7	0.0
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES





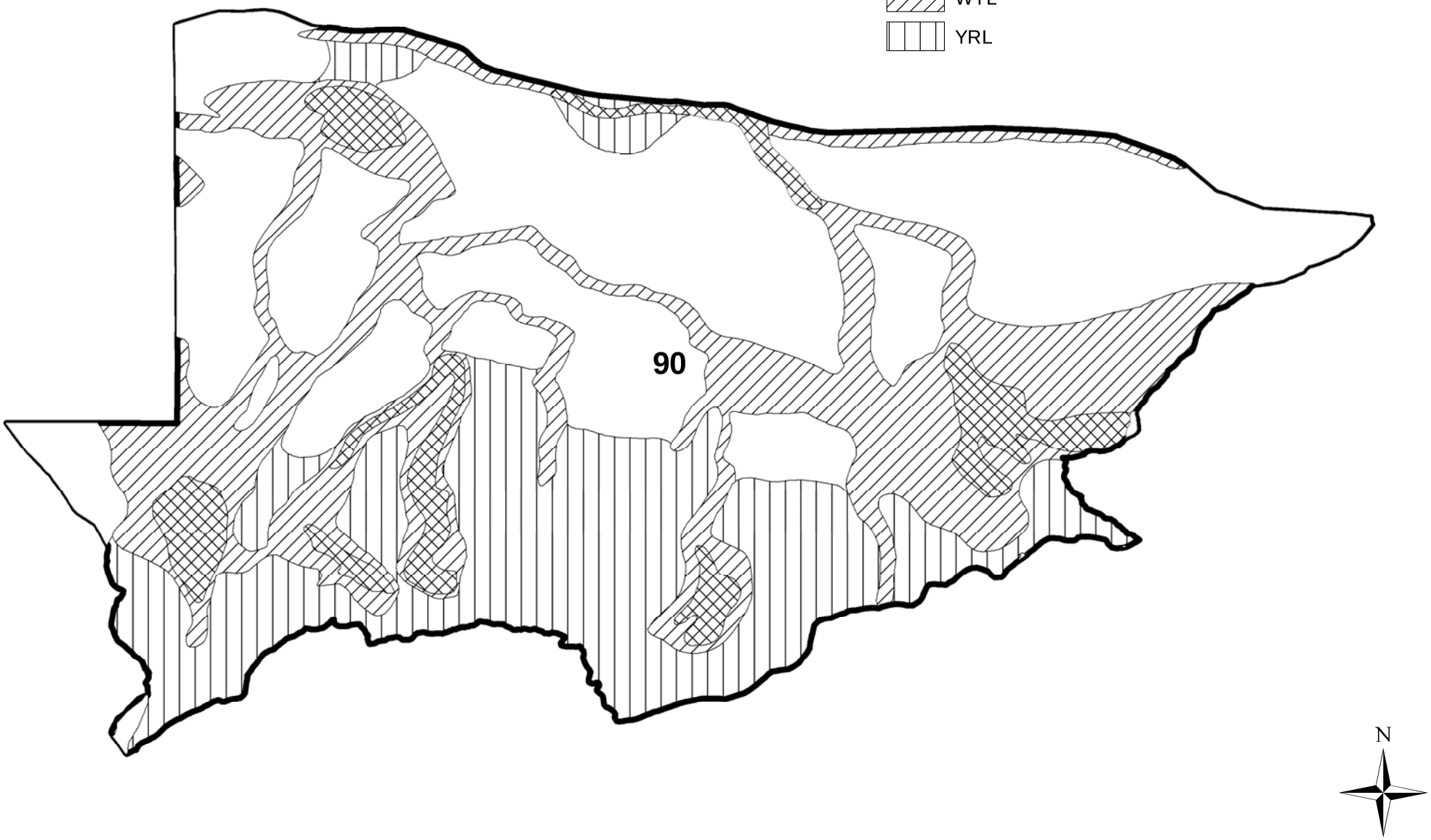




Comments:

END

Beaver Rim Mule Deer Seasonal Range
Hunt Area 90
Updated 2013



2013 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2013 - 5/31/2014

HERD: MD650 - CHAIN LAKES

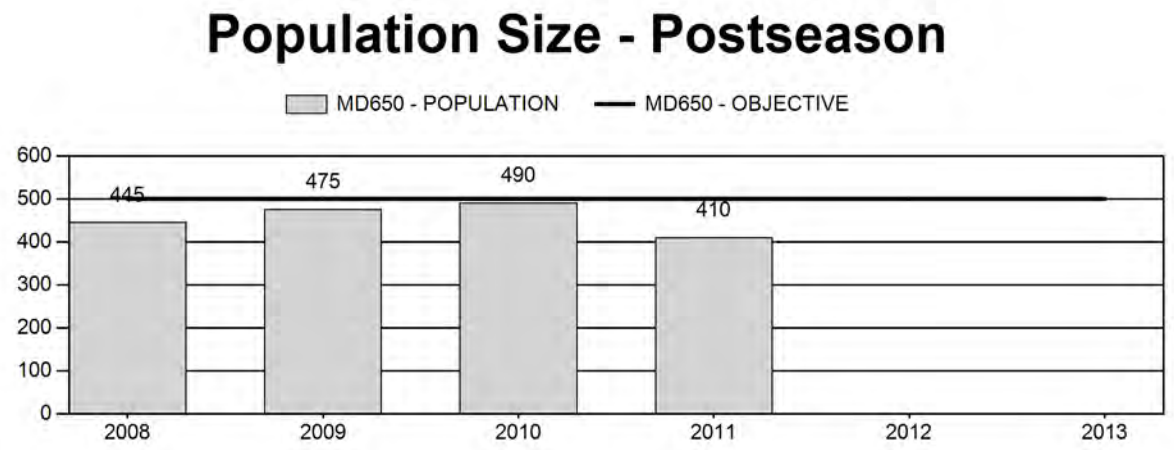
HUNT AREAS: 98 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	364	N/A	N/A
Harvest:	40	15	20
Hunters:	133	93	110
Hunter Success:	30%	16%	18 %
Active Licenses:	133	93	110
Active License Percent:	30%	16%	18 %
Recreation Days:	568	378	500
Days Per Animal:	14.2	25.2	25
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

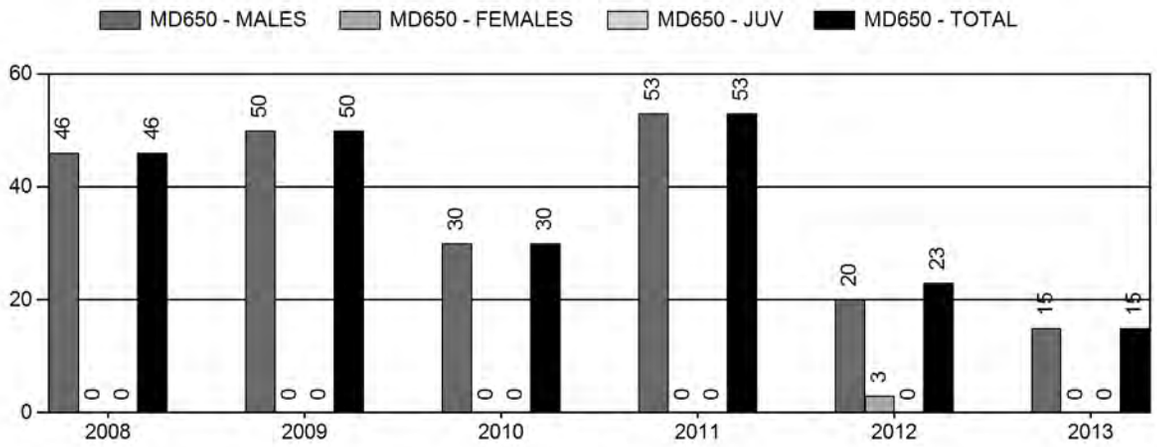
Population Objective:	500
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

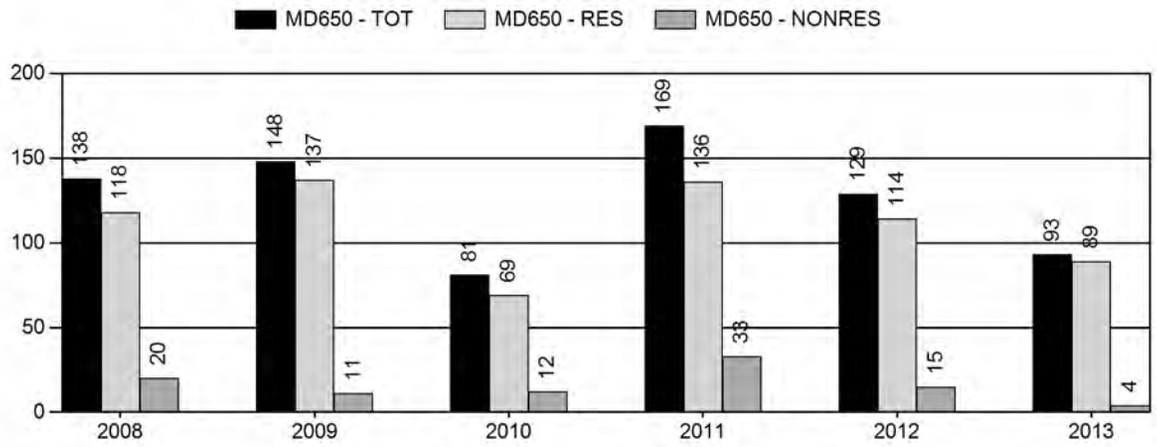
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



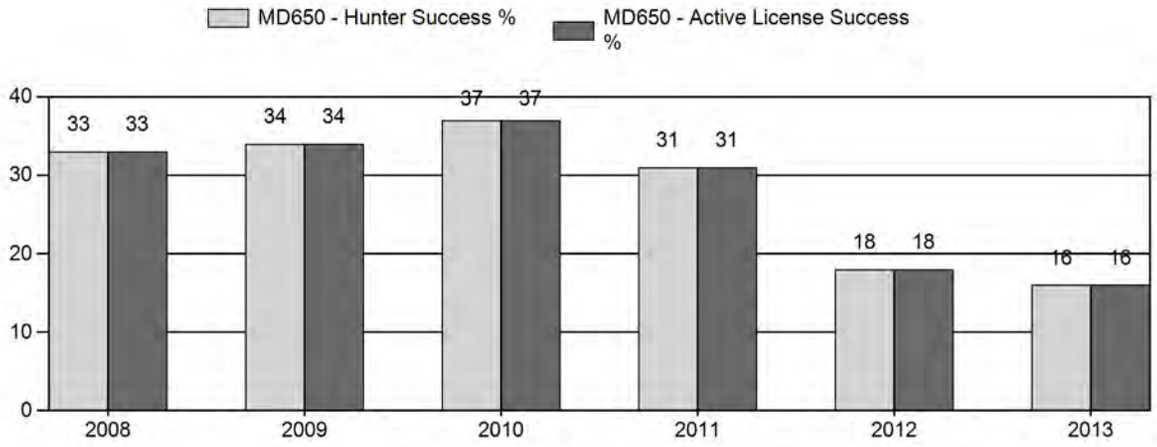
Harvest



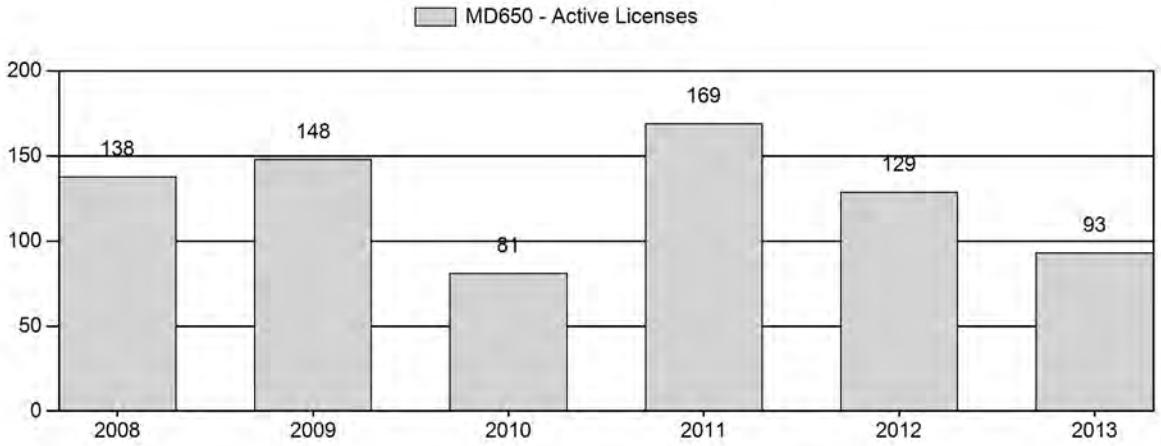
Number of Hunters



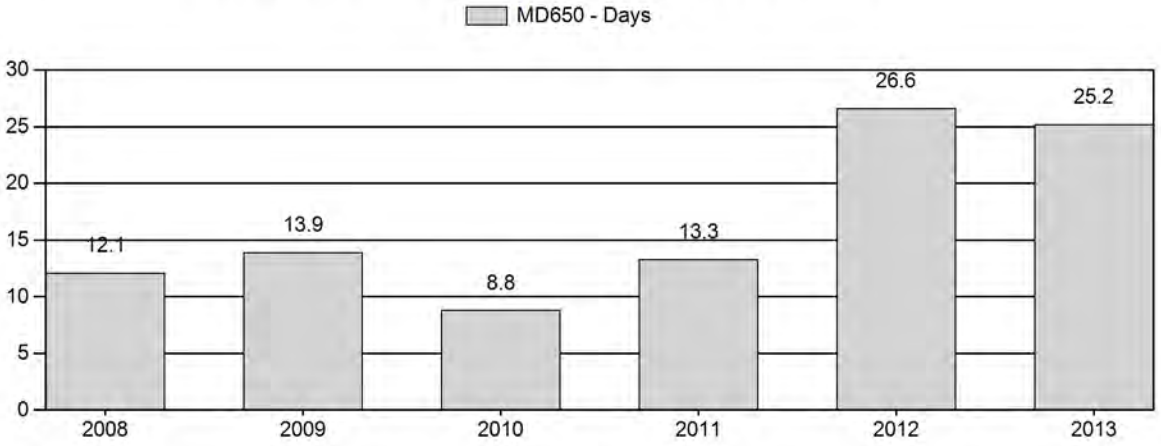
Harvest Success



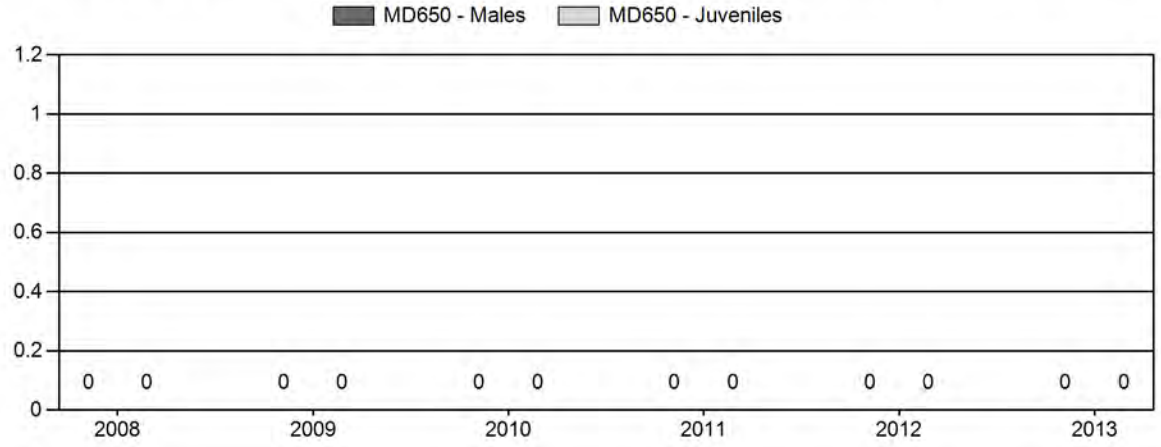
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD650 - CHAIN LAKES

		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
2008	445	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2009	475	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	490	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	410	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2014 HUNTING SEASONS
CHAIN LAKES MULE DEER HERD (MD650)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
98		Oct. 15	Oct. 22		General; antlered deer three (3) points or more on either antler, archery or muzzleloading firearms only
Archery 98		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
98	Gen	No change
Total		

Management Evaluation
Current Management Objective: 500
Management Strategy: Recreation
2013 Postseason Population Estimate: N/A
2014 Proposed Postseason Population Estimate: N/A

The management objective for the Chain Lakes Mule Deer Herd Unit is a post-season population objective of 500 deer. The management strategy is recreational management. The objective and management strategy were last publicly reviewed in 1994.

Herd Unit Issues

Dispersal of these deer in small bands across hundreds of square miles of sagebrush makes both aerial and ground classifications prohibitively expensive. Without reliable estimates of herd ratios, herd size cannot be modeled and objectives based on population size cannot be evaluated.

Concern has arisen that improved range, accuracy and faster reloading times of modern in-line muzzle-loading firearms is increasing hunter success, rather than increases in numbers of deer. If true, a redefinition of legal weapons allowed in this season may be necessary in the future to prevent excessive harvests from these vulnerable small bands of deer.

Weather

Severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, were followed by three severe late winter blizzards in April 2013. Based on low yearling ratios in pronghorn and mule deer herds to the north and south, losses were presumed to

be well above normal during the 2012-13 winter in this herd as well. The 2013 summer was also exceptionally dry, reducing energy reserves of deer for the 2013-14 winter.

Habitat

Only one shrub transect has been established near this herd unit, on the Chain Lakes WHMA, but was not read in 2013. Shrub production is expected to again be poor. Precipitation that finally arrived in September was likely too late to stimulate growth on forbs and shrubs.

BP America transferred ownership of two solar water wells on Chain Lakes WHMA to WGFD. Developed with funds provided by WWNRT, these wells provide additional water sources for wildlife and help disperse domestic livestock that graze Chain Lakes WHMA.

Field Data

All classification samples for this herd have been statistically inadequate and no posthunt classification data were collected again this year. Drought during 2013 reduced fawn production in neighboring herds and fawn production in this desert herd was presumably low as well. Combined with losses during the previous winter, the herd is expected to be well below objective size.

Harvest Data

General license seasons with weapons restrictions allowed this herd to recover from severe losses in the past and that strategy is continued in 2014. These combined muzzleloader and archery seasons, used for the past 31 years, have been popular with a steady segment of both resident and nonresident hunters. But hunter numbers declined to 93 in 2013, the second lowest in the past 10 years, presumably because of the 3-point restriction, low deer numbers, and the poor success seen in 2012.

Hunter success was low again in 2013, at 16 percent, which was expected given the 3-point antler restriction. This was the poorest hunter success since 2004, following the severe 2003-04 winter. Unlike in 2012, no antlerless deer were reported in the 2013 harvest, even though archers in the special archery season and youth hunters in the regular season were allowed to harvest any deer. The average number of days hunted for each harvested deer remained high at 25 days. These data support hunter comments about low numbers of deer being seen during the fall hunt.

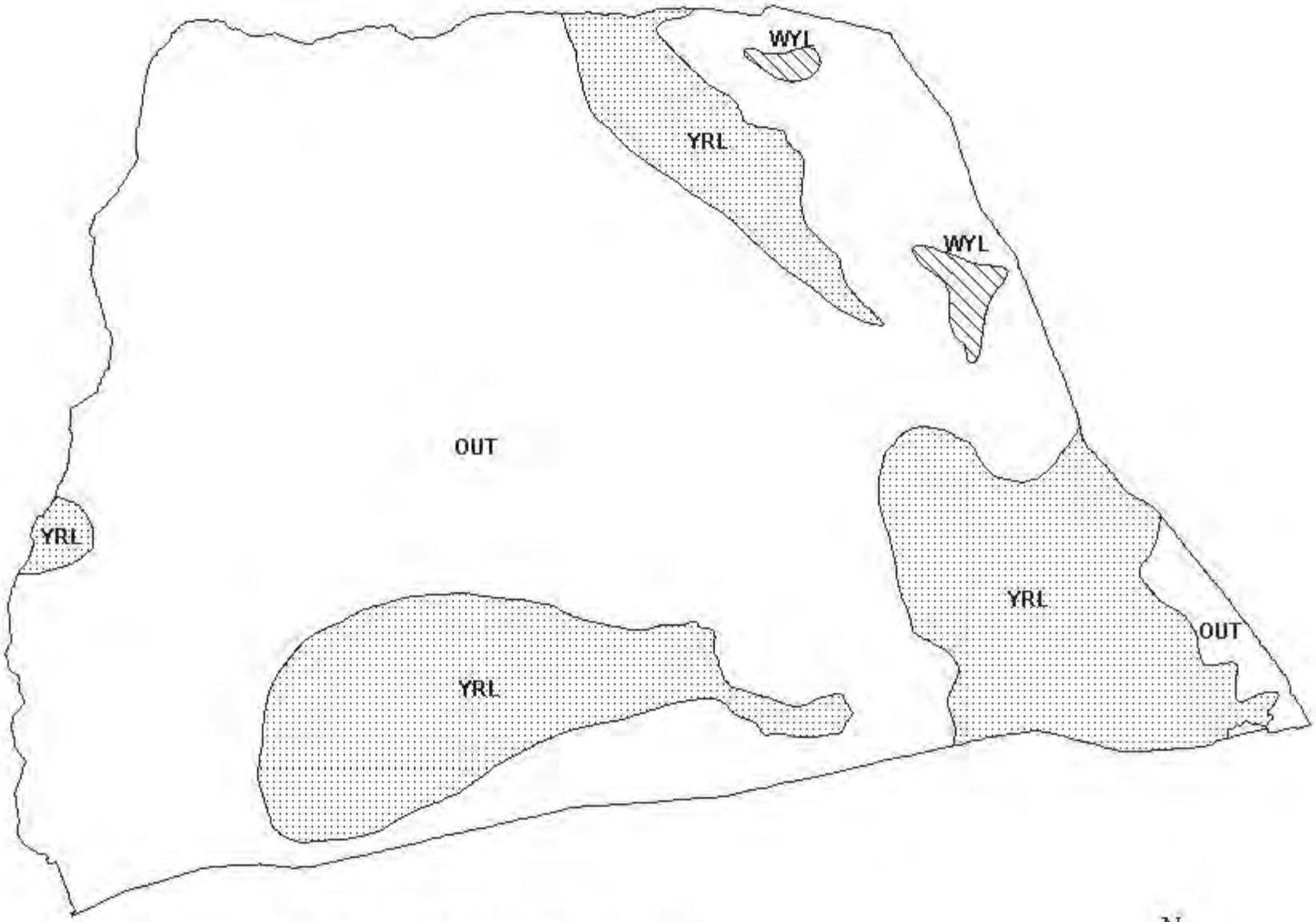
Population

This herd consists of small bands of deer residing yearlong in pockets of suitable habitat in the eastern Red Desert. No reliable population estimate is available for this herd, nor is one likely under current manpower and budget constraints. A simplistic population model was developed that supported the reported harvests, but its accuracy could not be evaluated because of the absence of classification data and limited harvest field check samples. Instead, population trends are monitored through harvest data and classification ratios of neighboring herds.

Management Evaluation

Deer in this desert herd unit have few options for finding green forage during dry conditions, with no high elevation habitats available. Body condition of deer entering the 2013-14 winter is presumed to have been poor. Because of drought stress, mortality is expected to be above average during the 2013-14 winter, despite relatively open winter conditions.

Expected harvest from the 2014 season would be about 20 antlered deer by roughly 110 hunters. The opening date is the same used in the past 18 years, is consistent with the application booklet, and opens simultaneously with neighboring areas in Region E. As in 2013, the closing date is aligned with general license hunts in neighboring areas in Region E. As in 18 of the previous 19 years, most hunters during the regular season would be restricted to harvesting only antlered deer. With neighboring general license areas to the north and south again adding 3-point antler point restrictions in 2014, a similar 3-point restriction is applied in Area 98 to prevent this area and the private landowners who grant access from being overwhelmed by general license hunters. Opportunities for archery hunting will again be available during the October season in addition to the special archery season in September. Archers will be allowed to harvest any deer during September to follow the statewide standard special archery season.



Mule Deer (MD650) - Chain Lakes
HA 98
Revised - 3/94

2013 - JCR Evaluation Form

SPECIES: Elk
HERD: EL635 - WIGGINS FORK
HUNT AREAS: 67-69, 127

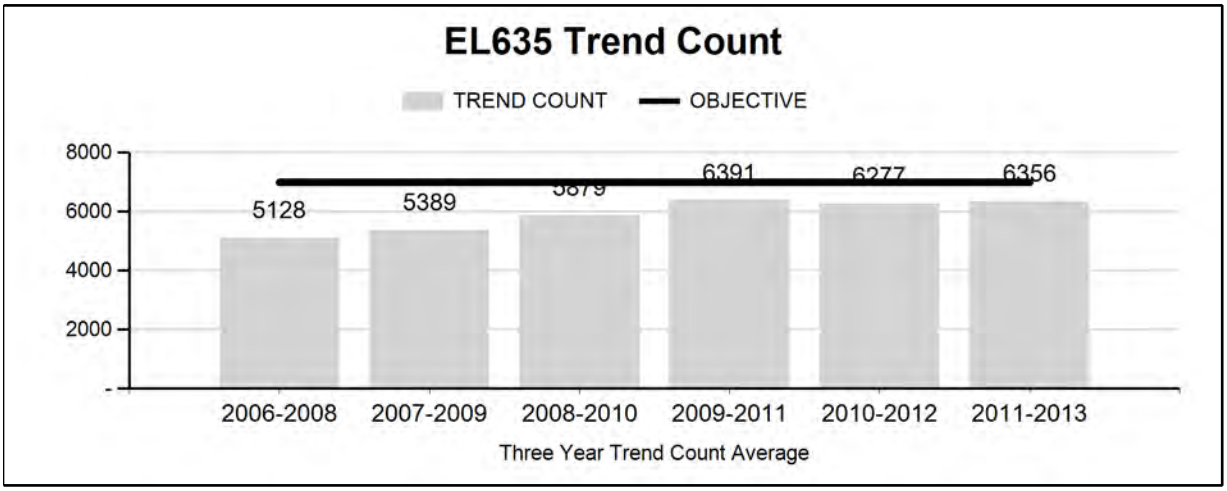
PERIOD: 6/1/2013 - 5/31/2014
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Trend Count:	6,089	6,260	5,700
Harvest:	809	1,186	1,150
Hunters:	2,171	2,735	2,800
Hunter Success:	37%	43%	41%
Active Licenses:	2,222	42%	2,900
Active License Percentage:	36%	42%	40%
Recreation Days:	14,317	18,225	19,000
Days Per Animal:	17.7	15.4	16.5
Males per 100 Females:	9	8	
Juveniles per 100 Females	24	24	

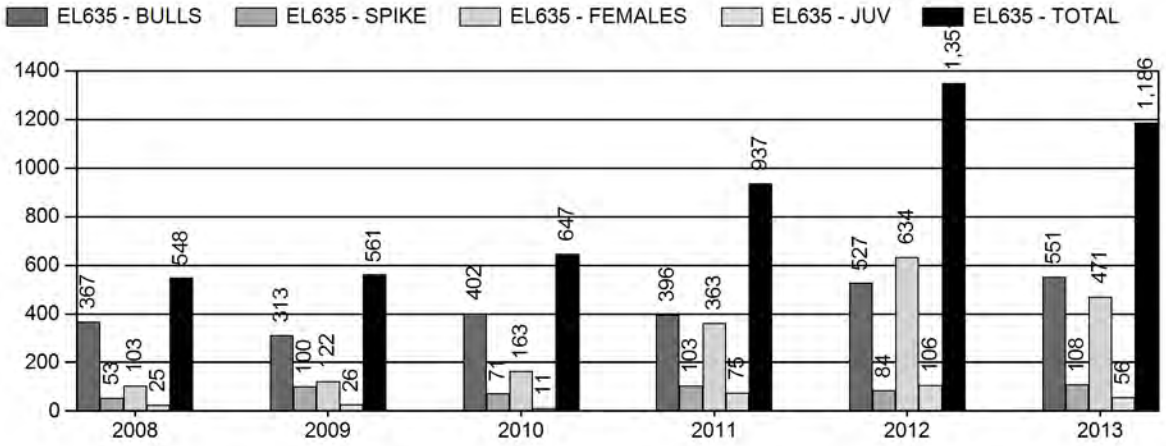
Trend Based Objective (± 20%)	7,000 (5600 - 8400)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	-10.6%
Number of years population has been + or - objective in recent trend:	5

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

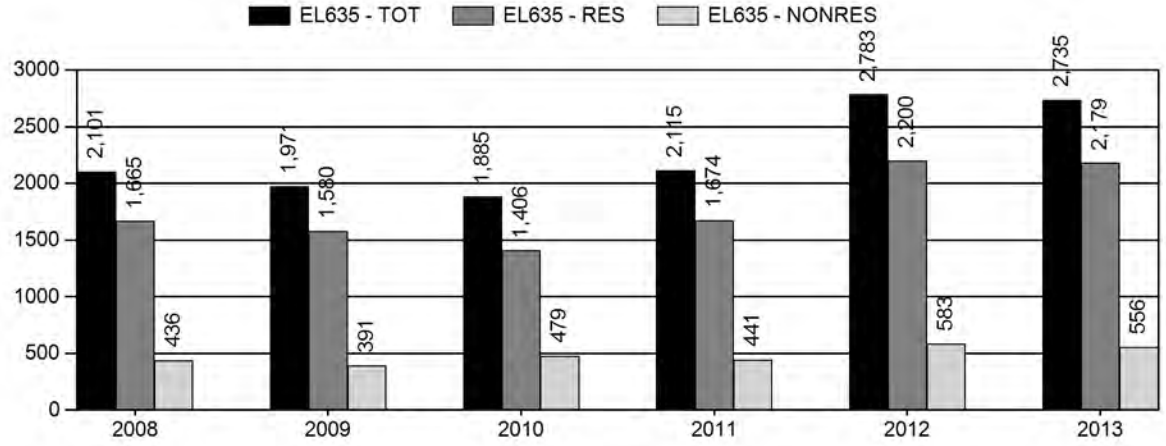
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



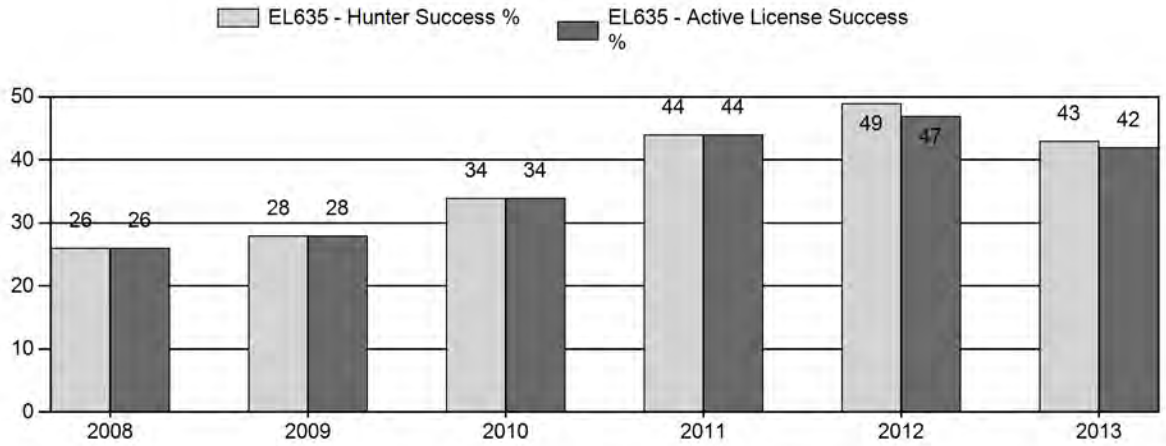
Harvest



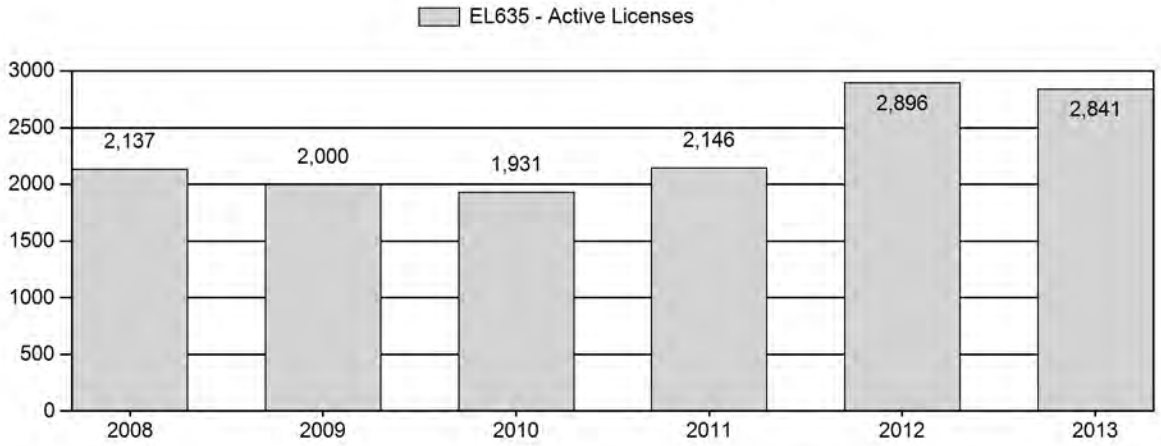
Number of Hunters



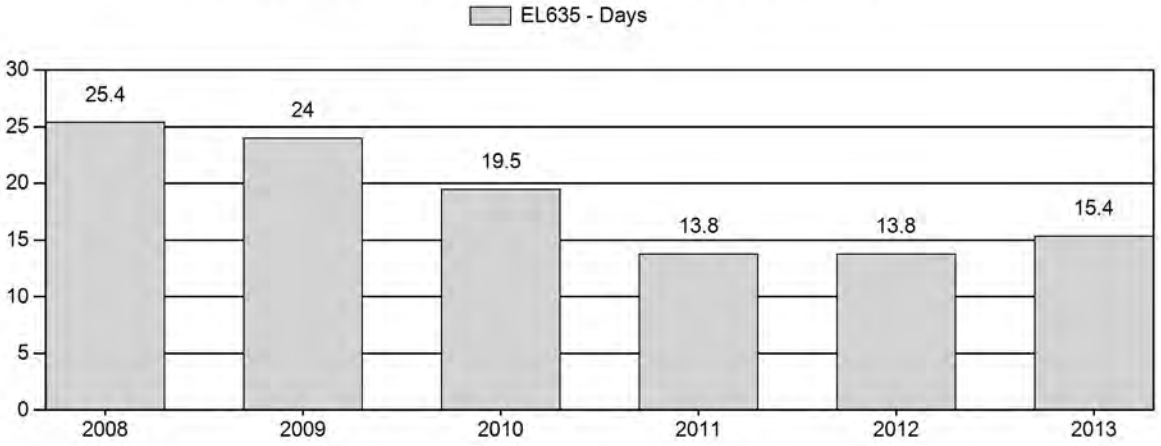
Harvest Success



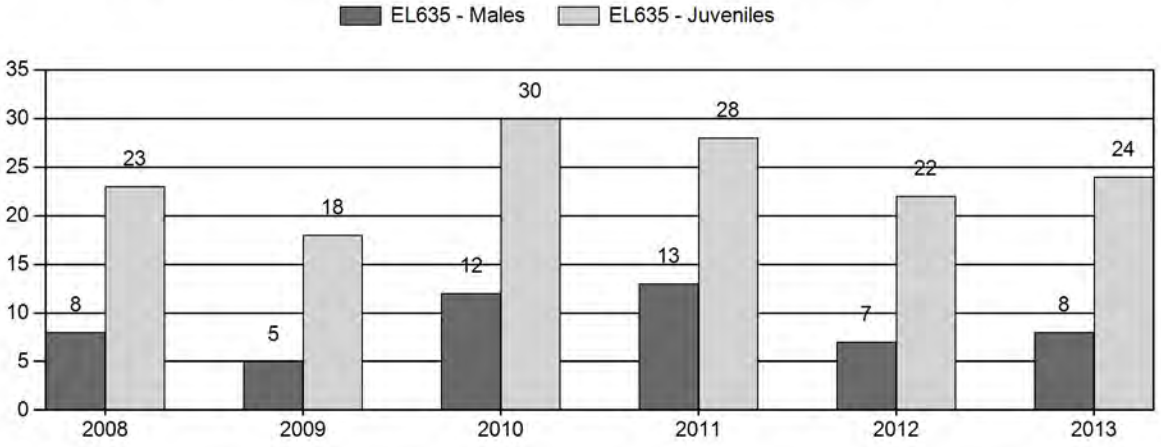
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL635 - WIGGINS FORK

		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
2008	7,164	135	31	166	6%	2,089	76%	485	18%	2,740	234	6	1	8	± 1	23	± 1	22
2009	7,899	117	13	130	4%	2,524	81%	456	15%	3,110	168	5	1	5	± 0	18	± 1	17
2010	7,777	276	114	390	8%	3,388	71%	1,019	21%	4,797	346	8	3	12	± 0	30	± 1	27
2011	9,083	202	28	230	9%	1,802	71%	498	20%	2,530	321	11	2	13	± 1	28	± 2	25
2012	0	138	22	160	6%	2,143	77%	463	17%	2,766	0	6	1	7	± 0	22	± 0	20
2013	0	135	23	158	6%	1,881	76%	451	18%	2,490	0	7	1	8	± 0	24	± 0	22

2014 HUNTING SEASONS
WIGGINS FORK ELK (EL 635)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
67		Oct. 1	Oct. 31		General; antlered elk, spikes excluded
	4	Nov. 1	Dec. 15	300	Limited quota; antlerless elk
	6	Nov. 15	Dec. 15	500	Limited quota; cow or calf valid west of the Wiggins Fork and west of the East Fork downstream from the confluence with the Wiggins Fork
67, 68, 69	9	Sep. 1	Sep. 30	125	Limited quota; any elk, archery only
68		Oct. 1	Oct. 31		General; antlered elk, spikes excluded
	6	Nov. 1	Nov. 30	200	Limited quota; cow or calf
69		Oct. 1	Oct. 31		General; any elk
		Nov. 1	Nov. 15		General; antlerless elk
	6	Oct. 1	Nov. 30	75	Limited quota; cow or calf
127		Oct. 1	Oct. 31		General; any elk
		Nov. 1	Dec. 31		General; antlerless elk
Archery					
67, 68, 69		Sep. 15	Sep. 30		General; any elk. Limited quota; refer to section 3 of this chapter
127		Sep. 1	Sep. 30		General; any elk

Hunt Area	Type	Quota change from 2013
67	6	+100
68	6	-50
	4	+50
Total	**4**	**+50**
	6	**+50**

<u>Management Evaluation</u>
Current Management Objective: 6,000-7,000
Management Strategy: Recreational
2013 Postseason Population Estimate: ~8,100
2014 Proposed Postseason Population Estimate: unknown

Management Issues
The Wiggins Fork elk herd is managed based on a winter trend count. The objective is to maintain 6,000 to 7,000 wintering elk in the herd unit with a recreational management strategy. Annual trend counts are conducted each January to assess the population. The objective was last reviewed in 2012.

The Wiggins Fork elk herd occupies the upper Wind River drainage west of the Wind River Reservation (WRR). There is good documentation elk wintering in the herd unit migrate into a number of other northwest Wyoming elk herd units in the summer and early fall. Given the amount of interchange with neighboring herd units, the number of elk present can vary significantly throughout the hunting season. Seasons structured to reduce the elk population generally need to include antlerless elk harvest after mid-November to allow elk to migrate into the herd unit from neighboring areas.

Habitat/Weather
Over the past 2 years, all of the elk winter range in this herd unit has been impacted by severe drought. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was approximately 55% of the previous 5 year average. Herbaceous production was even lower than in 2012 which was also a very dry year. Although no vegetation data is collected at high elevation summer range, observations suggest vegetation growth was low on summer range as well. In contrast to the dry spring/summer, precipitation in fall 2013 was unusually high. Of particular note was heavy snowfall at higher elevations in late September and early October. The heavy snows forced elk onto winter range nearly 2 months earlier than normal. The early migration likely put additional pressure on already poor feed resources on winter range.

Field/Harvest Data/Population

The amount of movement between this population and adjacent herd units invalidates the use of a population model. Instead, the objective aims to maintain 6,000 to 7,000 elk on wintering grounds throughout the DAU. Trend counts to estimate the wintering population are conducted each January/February. Trend count numbers declined from 1997 through 2003. From 2004 through 2007, the population appeared to stabilize. Winter count numbers fluctuated year-to-year but did not indicate any consistent population trends. In 2008, personnel counted a significantly higher number of elk (5,504). This was the highest count since 1998. In 2009 and 2010, personnel again counted a significantly greater number of elk; 6,110 and 6,023 respectively (Fig. 1). In 2011 the trend count increased significantly again to 7,039. Following a liberal season in 2012, the trend count declined to 5,768. The count increased again in 2013 by 500 elk to 6,260. Trend count data are used to calculate a population estimate for three herd segments with sub-objectives. Personnel assume 80% sightability for both the East Fork and Dunoir/Spring Mtn segments and 70% sightability for the South Dubois segment. Population estimates are thus produced by dividing trend counts for the East Fork and Dunoir/Spring Mountain segments by .8 and the South Dubois segment by .7. Since trend counts can fluctuate dramatically year-to-year, the population objective is based on a three year running average. Averaging the past three years' population estimates yields a 2013, post-season population of approximately 8,200. The estimate is essentially unchanged from the previous 3 years. The population is currently 17% above the upper objective threshold.

When the new objective range was set in 2002, The Department set sub-objectives for three segments of the herd. The sub-objectives were set to recognize reasonably well-defined spatial segregation of elk groups wintering in the area. The sub-groups include the East Fork, Dunoir/Spring Mountain, and South Dubois groups. While there is a significant amount of interchange, elk from the three groups tend to segregate themselves on winter range and utilize different spring/fall migration routes. Since elk in the three sub-groups are subjected to different demographic influences, sub-objectives were set for each of the three groups (Table 1). One of the sub-groups (East Fork) has been below the lower objective threshold for all but one year in the past decade. Two of the sub-groups (Dunoir/Spring Mtn and South Dubois) have been well above the upper objective threshold for the past 4 years. The South Dubois segment has consistently been above objective for the past decade. Liberal seasons on an annual basis provide the opportunity for significantly greater harvest in this herd segment but lack of hunter desire to harvest cow elk in this rugged area precludes greater harvest. Despite the lack of necessary harvest, the population in this segment has remained fairly stable over the past 5 years. In contrast, elk numbers in the Dunoir/Spring Mtn herd segment increased dramatically for a period after 2007. The 2012 and 2013 hunting seasons were designed to reduce cow numbers in this herd segment. The number of elk in this segment did decline from 2011 to 2012 but subsequently increased again in 2013.

Between 2006 and 2009, recruitment in this herd unit was well below historic levels (Fig. 2). Despite low recruitment between 2006 and 2009, the number of elk counted still increased. In 2010 and 2011 recruitment increased significantly and likely contributed to some of the trend count increase. In 2013, the calf/cow ratio was 24/100 and was essentially the same as the 10 year average for the herd of 25/100.

Figure 1. Wiggins Fork Elk trend count

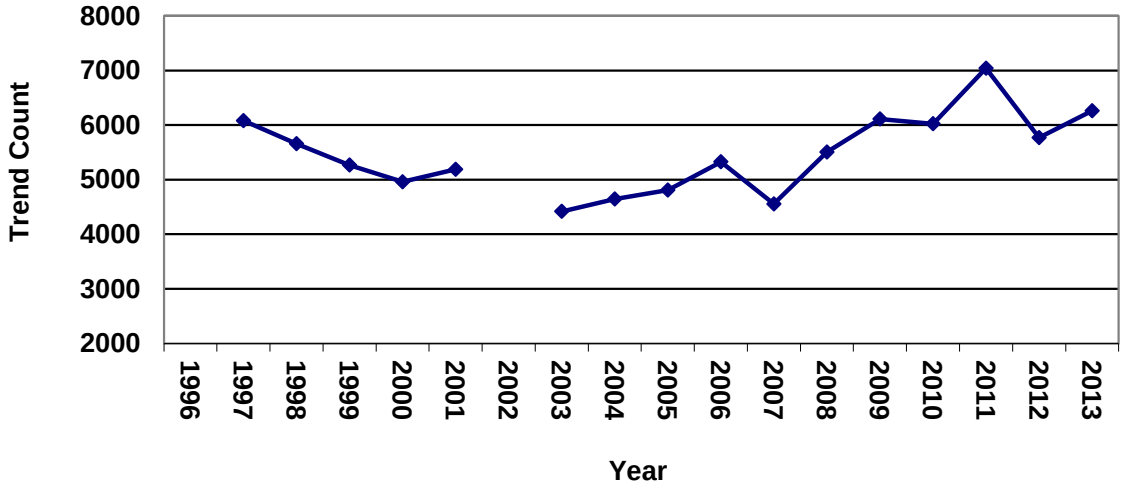
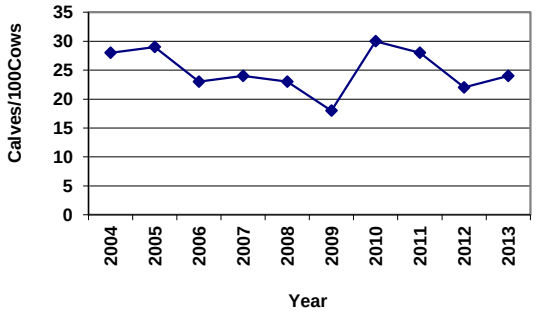


Table 1. Trend count numbers from sub-groups in the Wiggins Fork Elk Herd Unit.

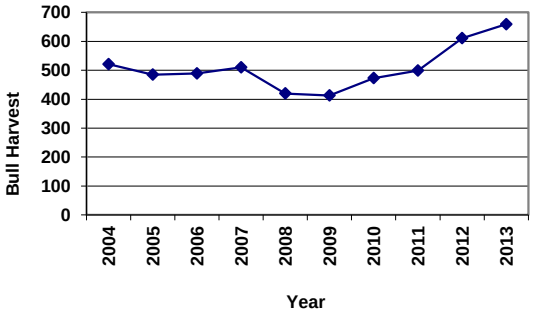
	East Fork Objective: 2,400-2,800		Dunoir/Spring Mountain Objective: 2,300-2,700		South Dubois Objective: 1,300-1,500		Wiggins Fork Herd Unit Objective: 6,000-7,000		
Year	Count	Pop. Estimate	Count	Pop. Estimate	Count	Pop. Estimate	Count	Pop. Estimate	3 Year Average
1998	2154	**2693**	2457	**3071**	1046	**1494**	5657	**7258**	**5454**
1999	2180	**2725**	2109	**2636**	977	**1396**	5266	**6757**	**7264**
2000	1883	**2354**	2014	**2518**	1061	**1516**	4958	**6387**	**6801**
2001	2100	**2625**	1818	**2273**	1269	**1813**	5187	**6710**	**6618**
2002	nc		nc		nc		nc		**6549**
2003	1857	**2321**	1666	**2083**	895	**1279**	4418	**5682**	**6196**
2004	1832	**2290**	1601	**2001**	1211	**1730**	4644	**6021**	**5852**
2005	1669	**2086**	1807	**2259**	1331	**1901**	4807	**6246**	**5983**
2006	1623	**2029**	2297	**2871**	1406	**2009**	5326	**6909**	**6392**
2007	1478	**1848**	1634	**2043**	1441	**2059**	4553	**5949**	**6368**
2008	1294	**1618**	2620	**3275**	1590	**2271**	5504	**7164**	**6674**
2009	1457	**1821**	3186	**3983**	1467	**2096**	6110	**7899**	**7004**
2010	1930	**2413**	2704	**3380**	1389	**1984**	6023	**7777**	**7613**
2011	1765	**2206**	3680	**4600**	1594	**2277**	7039	**9083**	**8253**
2012	1834	**2293**	2580	**3225**	1354	**1934**	5768	**7452**	**8104**
2013	1713	**2141**	3022	**3778**	1525	**2179**	6260	**8097**	**8211**

Figure 2. Ten year recruitment history in the Wiggins Fork Elk Herd.



Unfortunately, bull/cow ratio data for this herd are very unreliable. Classification surveys are conducted on the ground throughout the DAU. Since mature bulls generally winter in timber at the fringes of the winter ranges, the number of bulls seen is quite low and mature bull/cow ratios for the herd are not considered accurate. Despite the lack of classification data, members of the public and Department personnel suspected the bull/cow ratio in the herd declined concurrently with low recruitment in the mid-2000s. Despite this speculation, bull harvest has not declined over the past 10 years (Fig. 3). Over the past 4 years, bull harvest has increased annually. Antlered elk harvest in both 2012 and 2013 was the highest in the past 20 years. The high bull harvest in 2013 is not indicative of any demographic changes in the population. Instead, the high harvest can be directly linked to environmental conditions. Heavy snows in late September forced elk (including bulls) onto winter range where they were extremely vulnerable to harvest throughout the general, October season. However, 4 consecutive years of increasing antlered elk harvest indicates bull numbers in the population are stable at the very least and have likely increased.

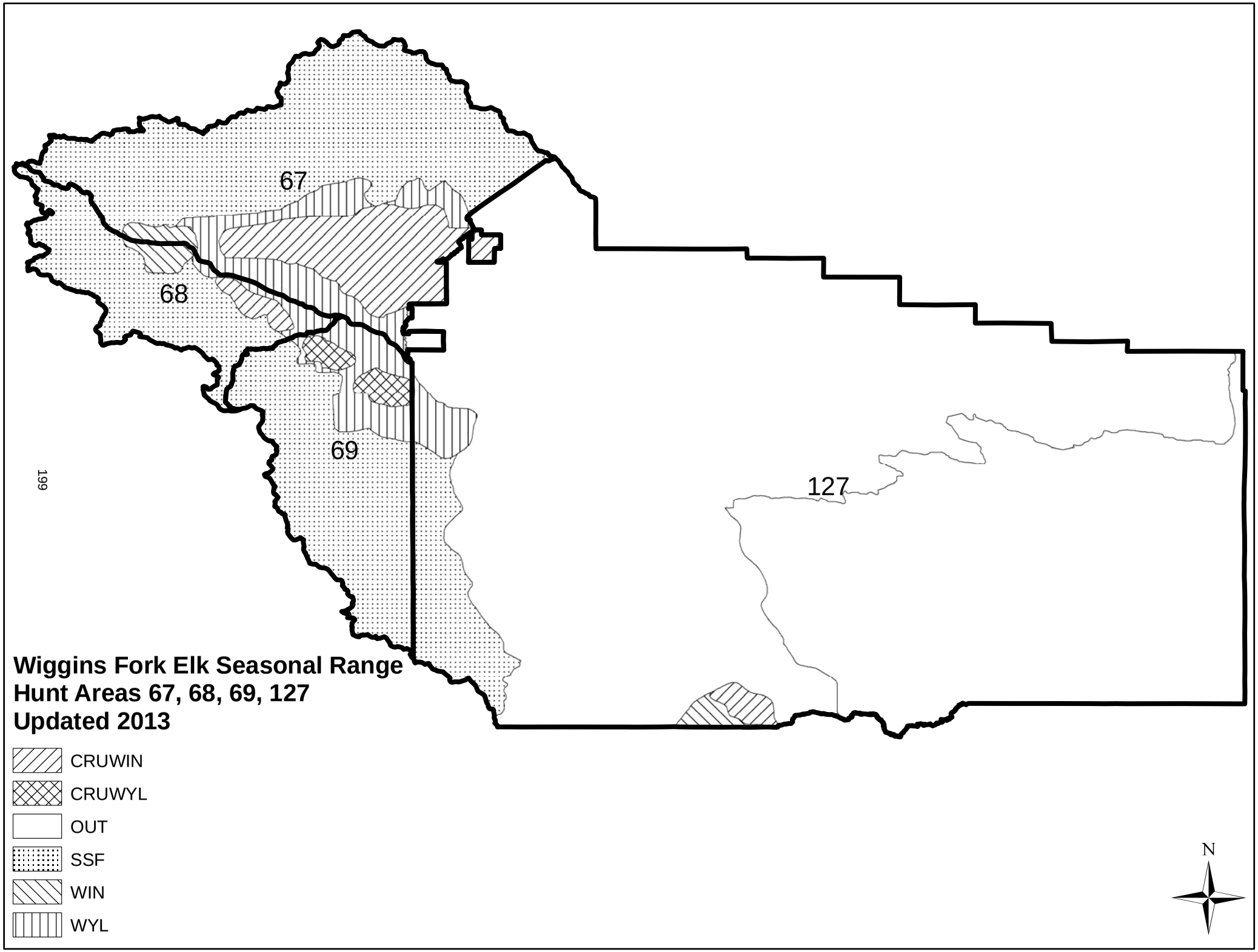
Figure 3. Antlered elk harvest in the Wiggins Fork Elk Herd.



Management Summary

The 2013 trend count indicates the Wiggins Fork elk population remains above the upper end of the objective range set in 2012. The 2013 season was somewhat more conservative than the 2012 season, but nearly as many elk were harvested in 2013 due to increased vulnerability associated with environmental conditions. Despite 2 years of high harvest the trend count

increased from 2012 to 2013. Most of the increase was in the Dunoir/Spring Mtn. segment of the population. In response, Type 6 licenses will be increased by 100 in 2014. These licenses target elk that tend to winter west of the Wiggins Fork. A couple of comments from the 2013 hunt season indicated these elk may have moved east of the Wiggins Fork periodically throughout the hunting season to escape harvest pressure. In response, the season length for Type 4 licenses will be expanded to December 15, the same closing date as the Type 6 licenses. This will maintain a bit of hunting activity east of the Wiggins Fork and not allow elk to settle in an area unavailable to Type 6 license holders. The other significant change for the 2014 season is a spikes excluded limitation in hunt areas 67 and 68. A few members of the outfitting community and hunters requested the limitation believing it will increase opportunity to harvest branch antlered bulls. Although the bull/cow ratio for the herd unit is not deemed accurate, branch antlered bull harvest in 2012 and 2013 were the highest on record for the past 20 years. As such, benefits from this restriction are expected to be marginal. Finally, the season length in hunt area 69 will be reduced by 15 days. While elk numbers remain high in area 69, the general, November hunt season has proven to be an ineffective way to harvest elk but results in a high level of disturbance. Future hunt seasons in area 69 may be structured to see if fewer hunters with Type 6 licenses can effectively harvest as many or more elk than a steady stream of general license hunters in November.


67
68
69
127
Wiggins Fork Elk Seasonal Range
Hunt Areas 67, 68, 69, 127
Updated 2013
CRUWIN
CRUWYL
OUT
SSF
WIN
WYL
N

2013 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2013 - 5/31/2014

HERD: EL637 - SOUTH WIND RIVER

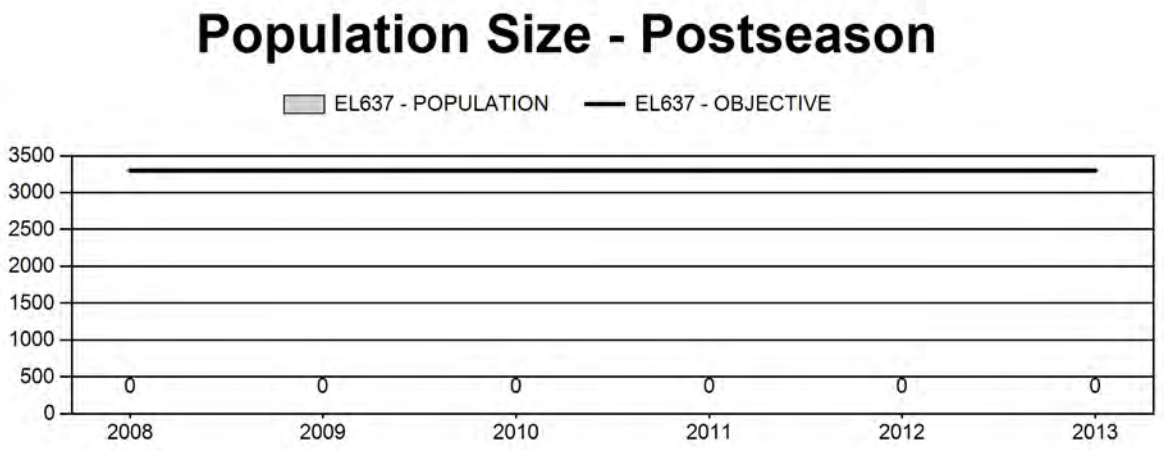
HUNT AREAS: 25, 27-28, 99 | PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	0	N/A	N/A
Harvest:	681	690	700
Hunters:	2,154	2,134	2,000
Hunter Success:	32%	32%	35%
Active Licenses:	2,254	2,183	2,050
Active License Percent:	30%	32%	34%
Recreation Days:	16,165	14,846	14,000
Days Per Animal:	23.7	21.5	20
Males per 100 Females	24	24	
Juveniles per 100 Females	32	31	

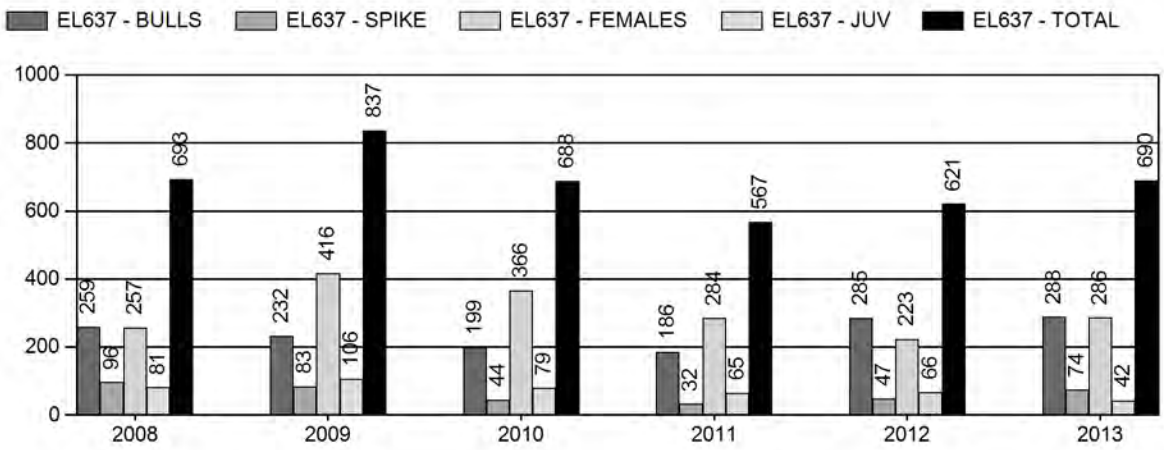
Population Objective:	3,300
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	10
Model Date:	None

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

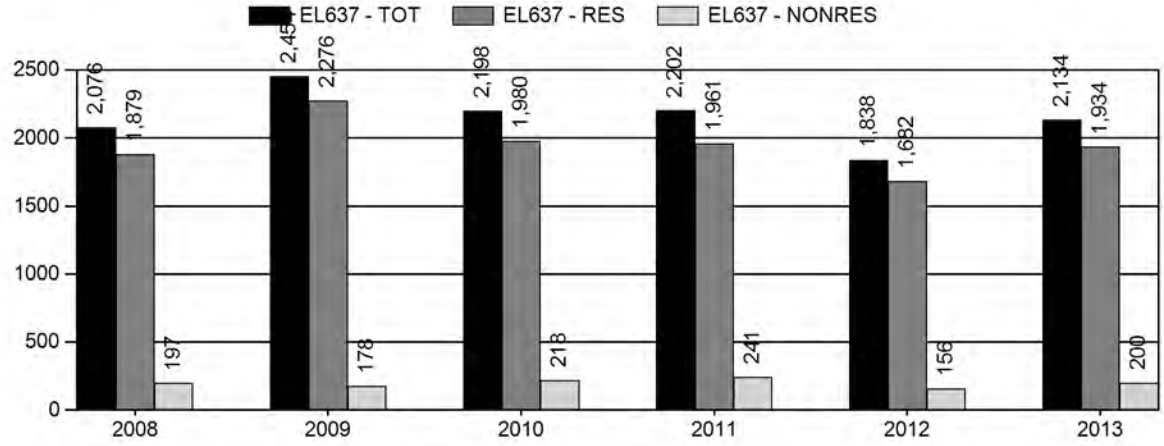
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



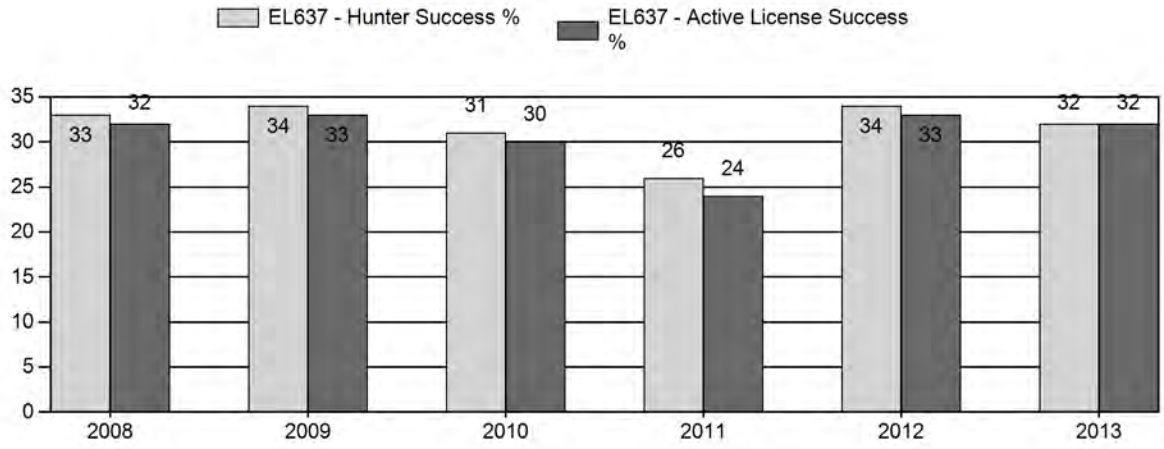
Harvest



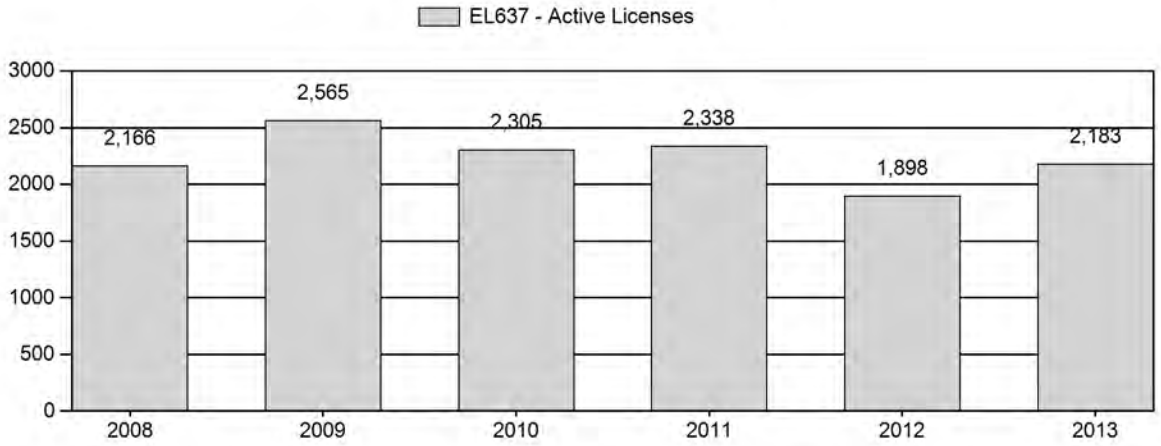
Number of Hunters



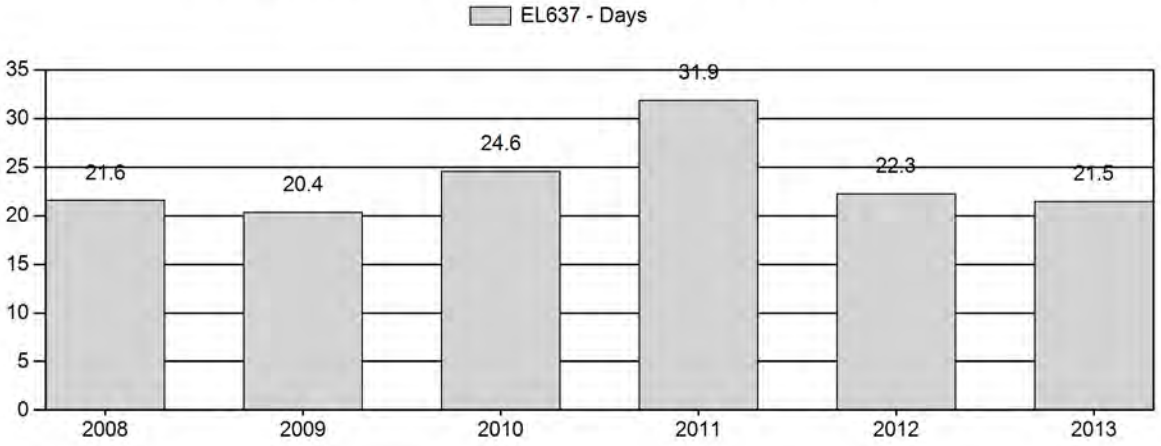
Harvest Success



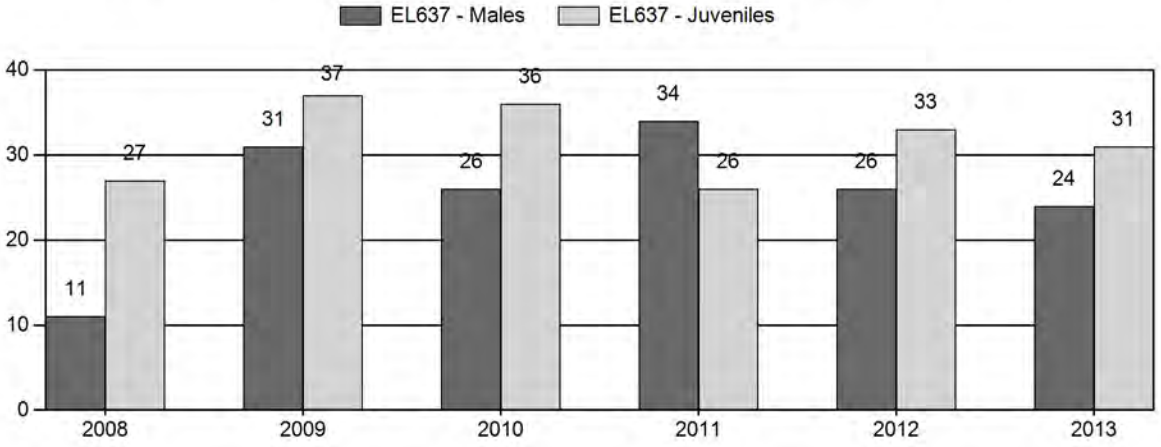
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL637 - SOUTH WIND RIVER

		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
2008	0	114	121	235	8%	2,204	73%	597	20%	3,036	290	5	5	11	± 0	27	± 1	24
2009	0	193	263	456	19%	1,460	60%	537	22%	2,453	491	13	18	31	± 1	37	± 1	28
2010	0	174	231	405	16%	1,554	62%	563	22%	2,522	460	11	15	26	± 1	36	± 1	29
2011	0	179	299	478	21%	1,397	62%	365	16%	2,240	0	13	21	34	± 2	26	± 1	19
2012	0	183	356	539	16%	2,066	63%	691	21%	3,296	0	9	17	26	± 1	33	± 1	27
2013	0	165	228	393	16%	1,623	65%	499	20%	2,515	0	10	14	24	± 0	31	± 0	25

2014 HUNTING SEASONS
South Wind River Elk Herd Unit (EL 637)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	Quota	LIMITATIONS
25, 27	1	Oct. 1	Oct. 31	200	Limited quota; any elk
		Nov. 1	Nov. 20		Unused Area 25, 27 Type 1 licenses valid for antlerless elk
25	4	Oct. 15	Nov. 20	200	Limited quota; antlerless elk
25	6	Nov. 1	Nov. 20	100	Limited quota; cow or calf
27	4	Oct. 1	Nov. 20	100	Limited quota; antlerless elk
28		Oct. 1	Oct. 22		General; antlered elk
	4	Nov. 1	Nov. 20	200	Limited quota; antlerless elk
99	1	Oct. 1	Oct. 31	200	Limited quota; any elk
		Nov. 1	Nov. 20		Unused Area 99 Type 1 licenses valid for antlerless elk
	4	Oct. 1	Nov. 20	225	Limited quota; antlerless elk

Hunt Area	Type	Quota Change from 2013
25	6	**-100**
28	**4**	**-100**
Total EL637		**-200**

MANAGEMENT EVALUATION

Current Management Objective: 3,300
Management Strategy: Recreation (15 – 29 bulls/100 cows)
2013 Post-season Population Estimate: No Model
2014 Post-season Population Estimate: No Model

Herd Unit Issues/Population Model

The current management objective for the South Wind River Elk Herd Unit is a post-season population size of 3,300 elk. All attempts to create a spreadsheet model for South Wind River Elk were unsuccessful. All iterations of the Spreadsheet Model result in either unsubstantiated population trends or somewhat reasonable trends with greatly exaggerated population size. Also, the models using variable survival estimates (TSJ/CA and TSJ/CA/MSC) have almost all juvenile survival estimates at the upper or lower thresholds, leaving doubt as to the model's true ability to estimate this elk population accurately. Also, classification data are often questionable with respect to bull/cow ratios fluctuating widely when bull groups are missed. Since the spreadsheet model is largely dependent on bull/cow ratio trends, this fluctuation creates inadequacies in modeling this population. We are in the process of reviewing the management objective for the South Wind River Elk Herd Unit.

Weather/Habitat

Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced over 50" of snow through early May (the equivalent of nearly 4" precipitation) in Lander, with more snow reported in Sinks Canyon (up to 78") and other locations along the east slope of the Wind River Range. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.34 inches of precipitation recorded in Lander from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Thus, some elk observed in the mid-winter classification surveys appeared thinner than normal. Rain and snow returned to the area in September and October 2013, with as much as 300% of normal precipitation recorded in Lander with warm temperatures between early storms. This led to improvement in vegetation condition, primarily grasses. In spite of fairly mild winter conditions in 2013-14, some winter mortality is expected due to the poor condition of winter range habitats following long-term drought.

Field Data

Classification flights were conducted in late February with a Bell Jet Ranger 206 helicopter in Areas 25, 27, and 28, with personnel from the Pinedale Region covering Area 99 in mid-February with a Bell 47 Soloy helicopter. A ground survey on Sheep Mountain in Area 25 was done in March following a report of about 600 elk in the area, however only 245 could be classified. A total of 2,515 elk were classified out of a total trend count of 2,870. This was nearly 800 fewer elk classified than in 2012, but with lower than normal snowfall, combined with a mid-February chinook, snow cover was the least observed in 10 years, creating problems in locating elk groups in all hunt areas. We believe we missed a few groups of elk, especially bulls, in Area 28 since lighter snow cover allowed elk to travel well into summer/transitional habitats on the Shoshone National Forest. Yet, the 1,852 elk observed in Area 28 were nearly identical to last year's record high sample. This total again included nearly 1,000 elk on Red Canyon WHMA, some of which likely crossed Highway 28 from Area 25. Fewer elk were classified in Area 25 this year, with several groups of adult bulls found, but only one group of cows, calves, and spikes observed (Sheep Mountain). We flew several transects across areas where elk are traditionally located, but with almost no snow in the majority of Area 25, we were unable to locate groups of elk which were likely in the hunt area, as evidenced by the group of 600 elk on Sheep Mountain where we made several aerial passes to look for elk. Elk in Areas 27 and 99 were again scattered this winter, leading to fewer elk observed in these 2 areas than normal. The observed post-season calf/cow ratio of 31J/100F and bull ratio of 24M/100F were about average.

Harvest Data

Weather during fall 2013 was quite variable in the South Wind River Herd Unit. Rainfall in early September along with heavy snows in late-September and early-October created major shifts in elk distribution, with elk at much lower elevations during the hunting season than usual.

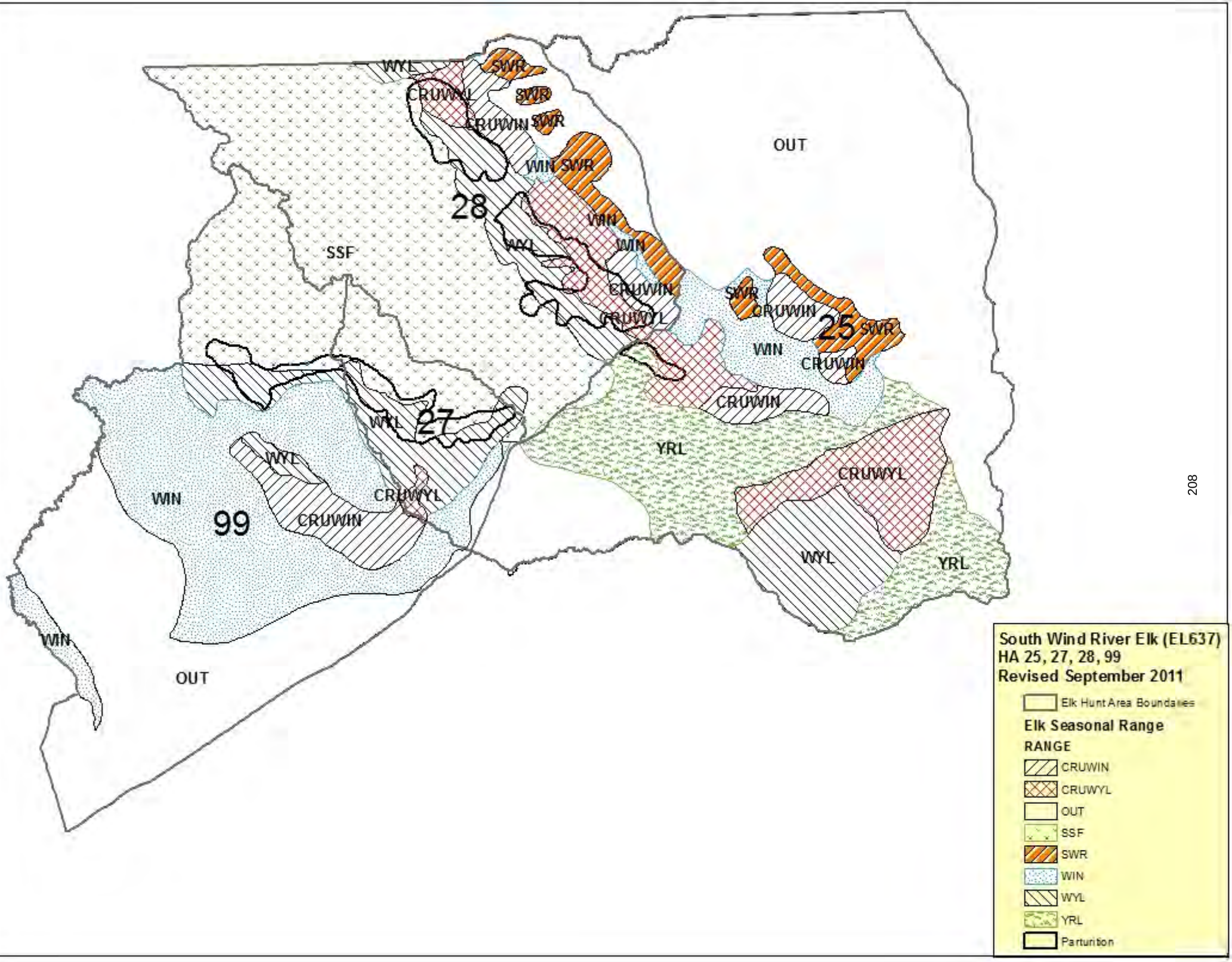
Female harvest rose above average in 2013, partly due to early snows forcing elk into accessible areas, especially in Area 28. Bull harvest also increased in 2013, likely a result of the early snows. Based on harvest survey results, total harvest increased 11% in 2013 to 690 elk, a little above average. Hunter success rates have remained fairly stable, with the 2013 success rate of 32% equaling the 10-year average. Hunter effort data indicate slight improvement in 2013 over the previous 10 years (21.5 days/harvest in 2013 vs. 22.9 days per harvest since 2003). These harvest statistics indicate this elk population has stabilized.

Management Summary

Public meetings have been held in December each of the past 3 years, in addition to traditional season setting meetings held in March. Several changes to recent hunting seasons were made to increase elk harvest in managing toward the current objective, provide appropriate hunting opportunities, and where deemed appropriate to accommodate public concerns expressed at these meetings regarding hunter crowding. For 2013 elk hunting seasons, we made changes to address concerns about over-crowding and increase cow harvest. We added a new antlerless season for Area 27 not tied to Area 25, with 100 Type 4 licenses valid only in Area 27. To increase female harvest in Area 25, we shifted the opening date in application information for Type 6 licenses to November 1 to create a 3rd opening date and reduce crowding for the Type 1 and Type 4 seasons. These changes were mostly successful, with the exception of those licenses valid only in November having much lower success rates.

While considering options for future management objectives, there seems to be overall support for the current number of elk, from hunters and land managers. In anticipation of an alternative objective of a mid-winter trend count near the current number of elk, we foresee less need to amplify cow harvest and a shift to maintain this population where it stands. Therefore, for the 2014 seasons, we made only a few changes to the hunting season structure, with reductions of 100 Type 6 licenses in Area 25 and 100 Type 4 licenses in Area 28. These reductions are also the result of lower success in the November Area 25 hunts in 2013, leading to lower hunter satisfaction during these seasons.

We expect the 2014 seasons outlined above should result in a harvest of at least 700 elk with a stable cow harvest. If calf recruitment is near average, this harvest should stabilize or slightly reduce the population following the 2014 season.


South Wind River Elk (EL637)
HA 25, 27, 28, 99
Revised September 2011
Elk Hunt Area Boundaries
Elk Seasonal Range
RANGE
CRUWIN
CRUWYL
OUT
SSF
SWR
WIN
WYL
YRL
Partuition
28
27
25
99
OUT
SSF
WYL
CRUWYL
CRUWIN
SWR
WIN
YRL

2013 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2013 - 5/31/2014

HERD: EL638 - GREEN MOUNTAIN

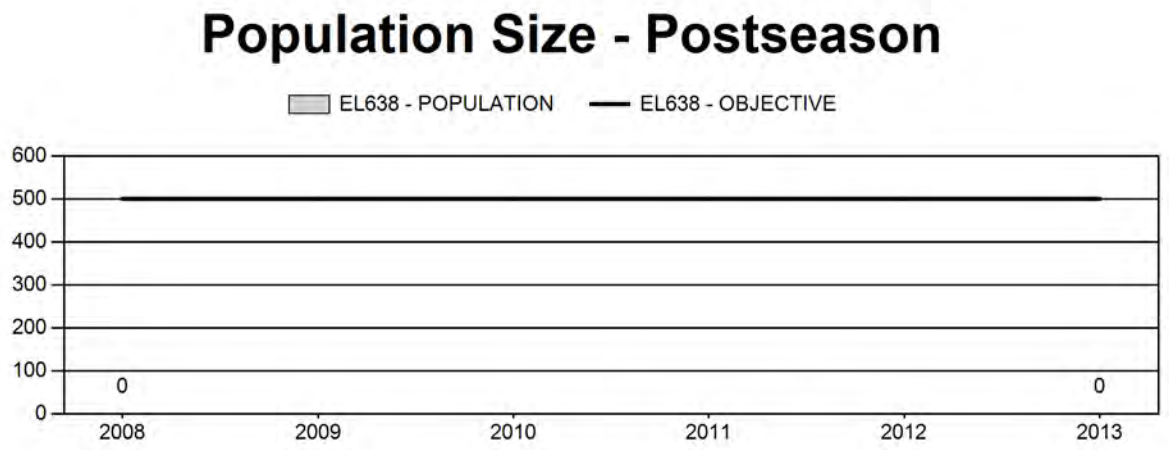
HUNT AREAS: 24, 128 | PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	0	N/A	N/A
Harvest:	280	258	250
Hunters:	656	723	580
Hunter Success:	43%	36%	43%
Active Licenses:	658	741	580
Active License Percent:	43%	35%	43%
Recreation Days:	3,209	3,816	3,500
Days Per Animal:	11.5	14.8	14
Males per 100 Females	36	44	
Juveniles per 100 Females	40	42	

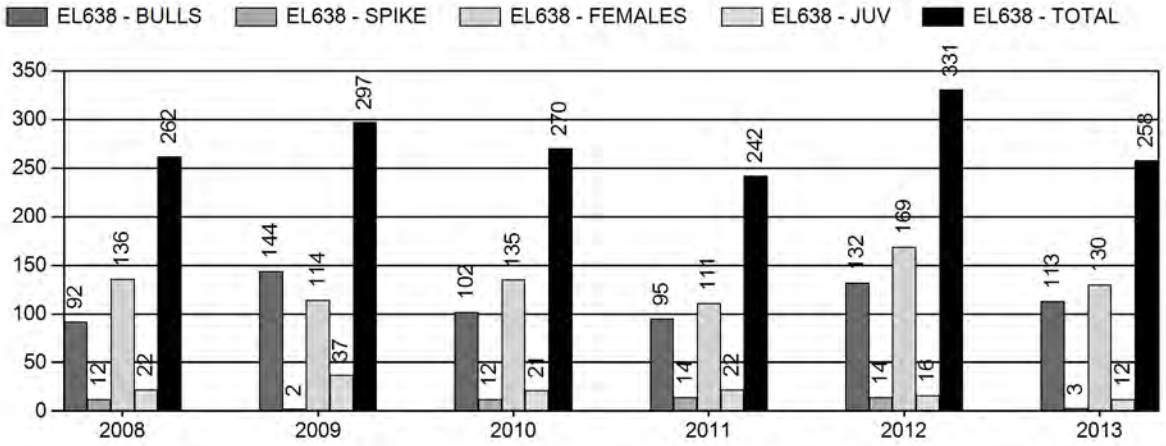
Population Objective:	500
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	6
Model Date:	None

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

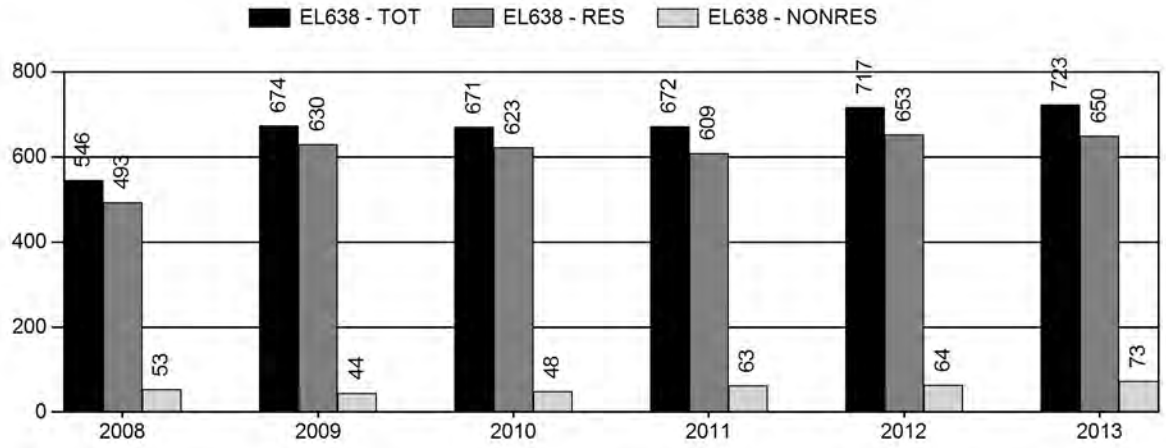
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



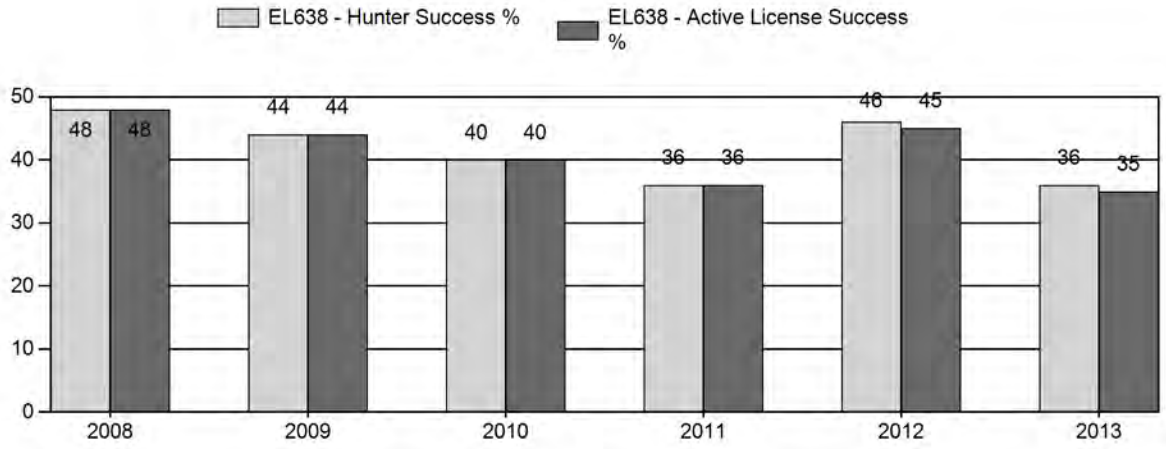
Harvest



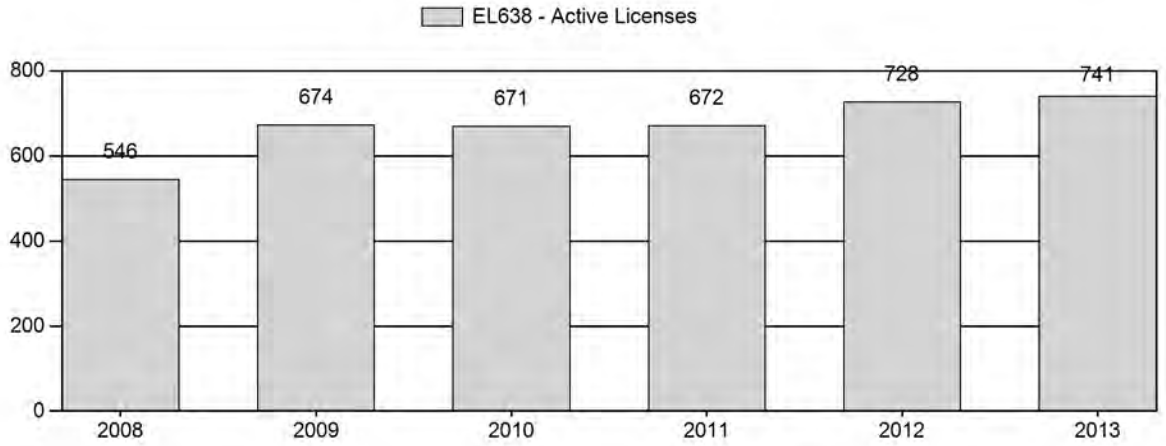
Number of Hunters



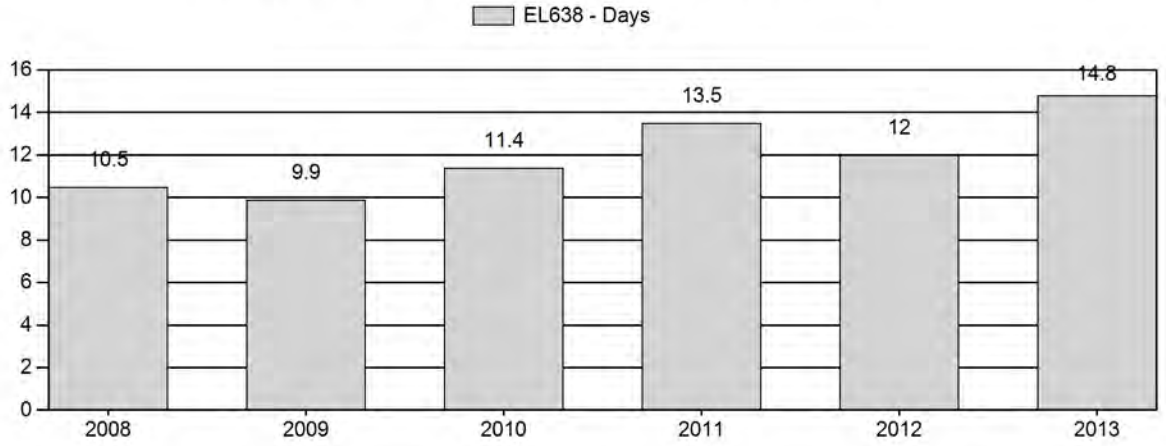
Harvest Success



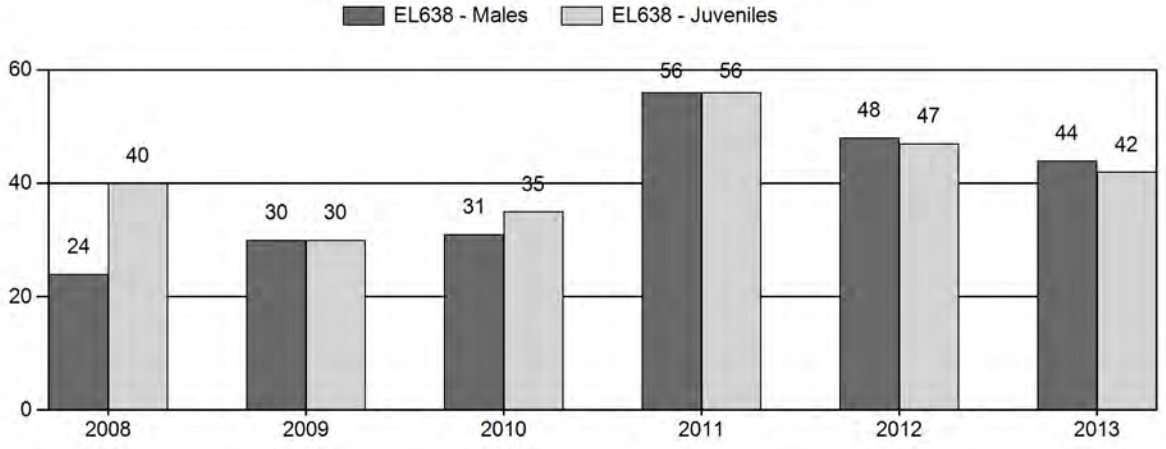
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL638 - GREEN 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
2008	0	45	46	91	15%	374	61%	151	25%	616	0	12	12	24	± 0	40	± 0	32
2009	0	55	96	151	19%	503	63%	149	19%	803	0	11	19	30	± 0	30	± 0	23
2010	0	61	62	123	18%	401	60%	141	21%	665	0	15	15	31	± 0	35	± 0	27
2011	0	47	127	174	26%	313	47%	176	27%	663	0	15	41	56	± 0	56	± 0	36
2012	0	49	111	160	24%	336	51%	158	24%	654	0	15	33	48	± 0	47	± 0	32
2013	0	41	99	140	24%	319	54%	135	23%	594	0	13	31	44	± 0	42	± 0	29

2014 HUNTING SEASONS
Green Mountain Elk Herd Unit (EL 638)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	Quota	LIMITATIONS
24	1	Oct. 1	Oct. 14	200	Limited quota; any elk
		Nov. 1	Nov. 30		Unused Area 24 Type 1 licenses valid for antlerless elk, also valid in Area 128
	4	Oct. 1	Oct. 14	50	Limited quota; antlerless elk
		Nov. 1	Nov. 30		Unused Area 24 Type 4 licenses, also valid in Area 128
24, 128	5	Nov. 1	Nov. 30	100	Limited quota; antlerless elk
128		Oct. 1	Oct. 14		General; any elk

Hunt Area	Type	Quota Changes from 2013
24	1	-25
	5	-100
	6	-100
	1 & 5	**-125**
	6	**-100**
Total EL638		**-225**

MANAGEMENT EVALUATION

Current Management Objective: 500
Management Strategy: Recreation (15 – 29 bulls/100 cows)
2013 Post-season Population Estimate: No Model
2014 Post-season Population Estimate: No Model

Herd Unit Issues/Population

The current management objective for the Green Mountain Elk Herd Unit is a post-season population size of 500 elk. All attempts to create a spreadsheet model for Green Mountain Elk were unsuccessful. All iterations of the Spreadsheet Model result in either unsubstantiated population trends or somewhat reasonable trends but exaggerated population size. Also, models using variable survival estimates (TSJ/CA and TSJ/CA/MSC) have almost all juvenile survival estimates at the upper or lower thresholds, leaving doubt as to the model's true ability to estimate this elk population accurately. Also, classification data are sometimes questionable with respect to bull/cow ratios, which fluctuate widely if bull groups are missed. We are in the process of reviewing the management objective for the Green Mountain Elk Herd Unit.

Weather/Habitat

Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced heavy snow through early May in Jeffrey City, with more at higher elevations such as Green Mountain and Beaver Rim. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.2 inches of precipitation recorded in Jeffrey City from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Rain and snow returned to the area in September and October 2013, with nearly 300% of normal precipitation recorded in Jeffrey City with warm temperatures between early storms. This led to improvement in vegetation condition, primarily grasses. In spite of fairly mild winter conditions in 2013-14, some winter mortality is expected due to the poor condition of winter range habitats following long-term drought.

Field Data

Classifications were attempted in early-December 2012 using a Bell 206 Jet Ranger helicopter while classifying mule deer. However, due to light snow cover outside of timbered areas, fewer elk were observed in traditional wintering areas, primarily on Crooks Mountain. A mid-February flight resulted in better detection of elk, but it still seemed elk groups were missed. The reported classification data include mostly December data, with a few groups from Crooks Mountain added that were widely separated from each other spatially and overlap between time periods seemed improbable. The resulting post-season calf ratio declined slightly to 42J/100F and the observed bull/cow ratio was 44M/100F, with both ratios at or above average.

Harvest Data

258 elk were harvested in 2013, a decline from 2012, but about the average of the past 10 years. Hunter success was lower in Area 24 this year, with 50% for the Type 1 any elk season, 16% and 36% respectively for Type 4 and Type 5 antlerless elk hunters. Some of this reduction was due to early, heavy snows in September and October impeding hunter access.

A number of changes to the season structure were in place the past 2 hunting seasons, after numerous complaints about hunter over-crowding were heard during seasons and at public meetings in 2011 and 2012. We created a Type 6 season in late-August (100 total licenses). These Type 6 hunters enjoyed 59% success in 2012 but only 34% in 2013, with days per harvest at 17.1 days in 2013 more than double that of 2012. This season preceded archery season, and we heard numerous complaints from archery hunters and others in October and November seasons. In 2012, later seasons saw good harvest and hunter statistics, but all hunts were less successful in 2013. In addition, we reduced the number of Area 24 Type 5 licenses back to 200, but allowed them to be used the entire month of November in both Areas 24 and 128. Access to Green and Crooks Mountains was excellent in November 2013, with almost no snow related travel problems. Yet, fewer cow elk were harvested in November regardless of hunter numbers. Conditions in 2013 didn't compel hunters to hunt in Area 128, with only 13 people harvesting 3 elk. Harvest statistics, especially success rates, indicate hunters met with difficulty in finding elk for various reasons, warmer August weather for Type 6 hunts, early winter storms affecting the October seasons, and the possibility elk left Area 24 during part or all of the 2013 seasons. While the

number of elk observed during classification surveys decreased slightly in 2013, harvest levels of 2013 were likely only a small part of the reason for the decline, as was the lower calf/cow ratio.

Management Summary

In response to numerous public complaints regarding hunter crowding and the early cow/calf season, the 2014 hunting seasons have been adjusted quite dramatically to maintain or increase harvest, but with far less crowded conditions. In the past 10 years, we have nearly doubled license numbers in Area 24 in response to concerns about being over objective. Yet, as illustrated in Figure 1, increasing license numbers has not resulted in similar increases in harvest.

In 2011, a record number of bulls along with a record bull/cow ratio was observed, prompting increases in Type 1 licenses in 2012 and 2013. However, in 2013, the number of adult bulls was 43% lower than in 2011 and the adult bull/cow ratio was also 41% lower than in 2011. To avoid severely overharvesting bulls and in response to Type 1 hunter success in 2013 being the lowest in over 10 years, we have reduced Type 1 any elk licenses by 25 in 2014. We believe this will still reduce bull numbers toward "recreational" management levels.

To address hunter crowding concerns from the public, we are reducing the number of Type 5 licenses by 100, but allowing Type 1 and 4 hunters who are not successful in October to hunt for antlerless elk in November in both Hunt Areas 24 and 128. Similarly, some Area 23 (Rattlesnake Elk Herd Unit) hunters will have the ability to hunt in Area 128 from mid-November to mid-December, mostly targeting elk that move off the Rattlesnake Hills into the Gas Hills/Beaver Rim area. Anticipated harvest levels should continue to reduce the population. The expected 2014 harvest should consist of at least 250 elk, mostly from Area 24.

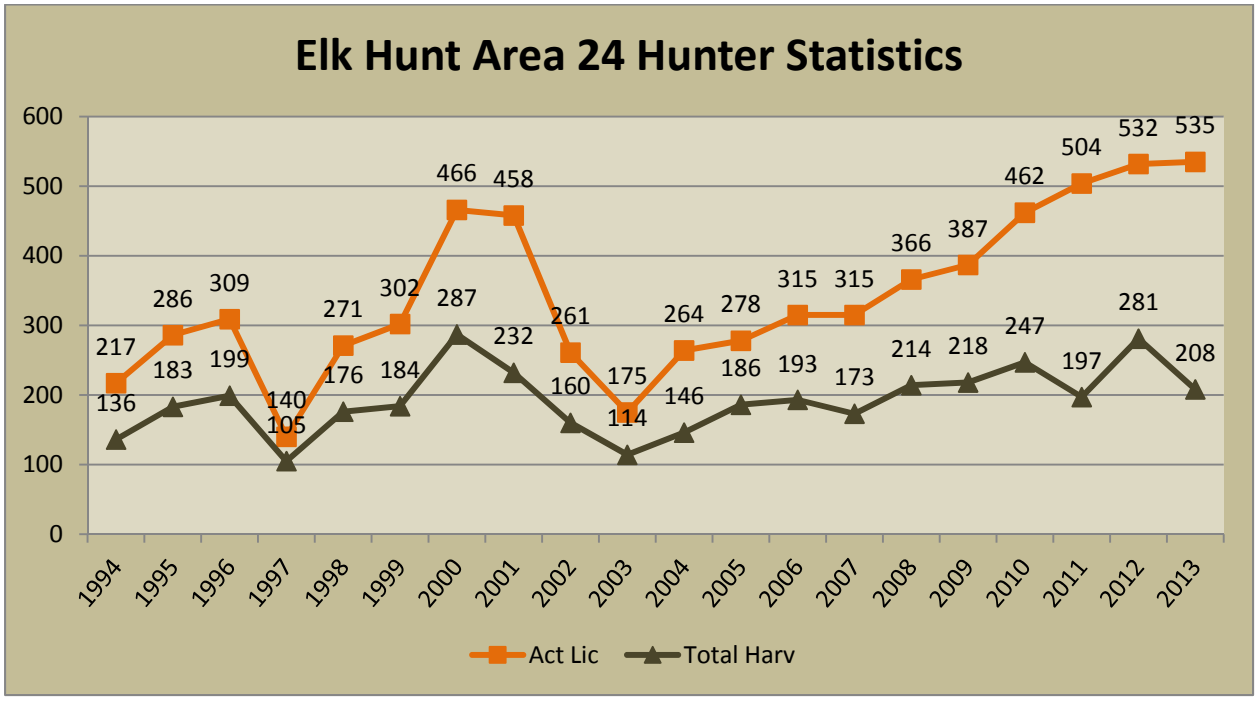
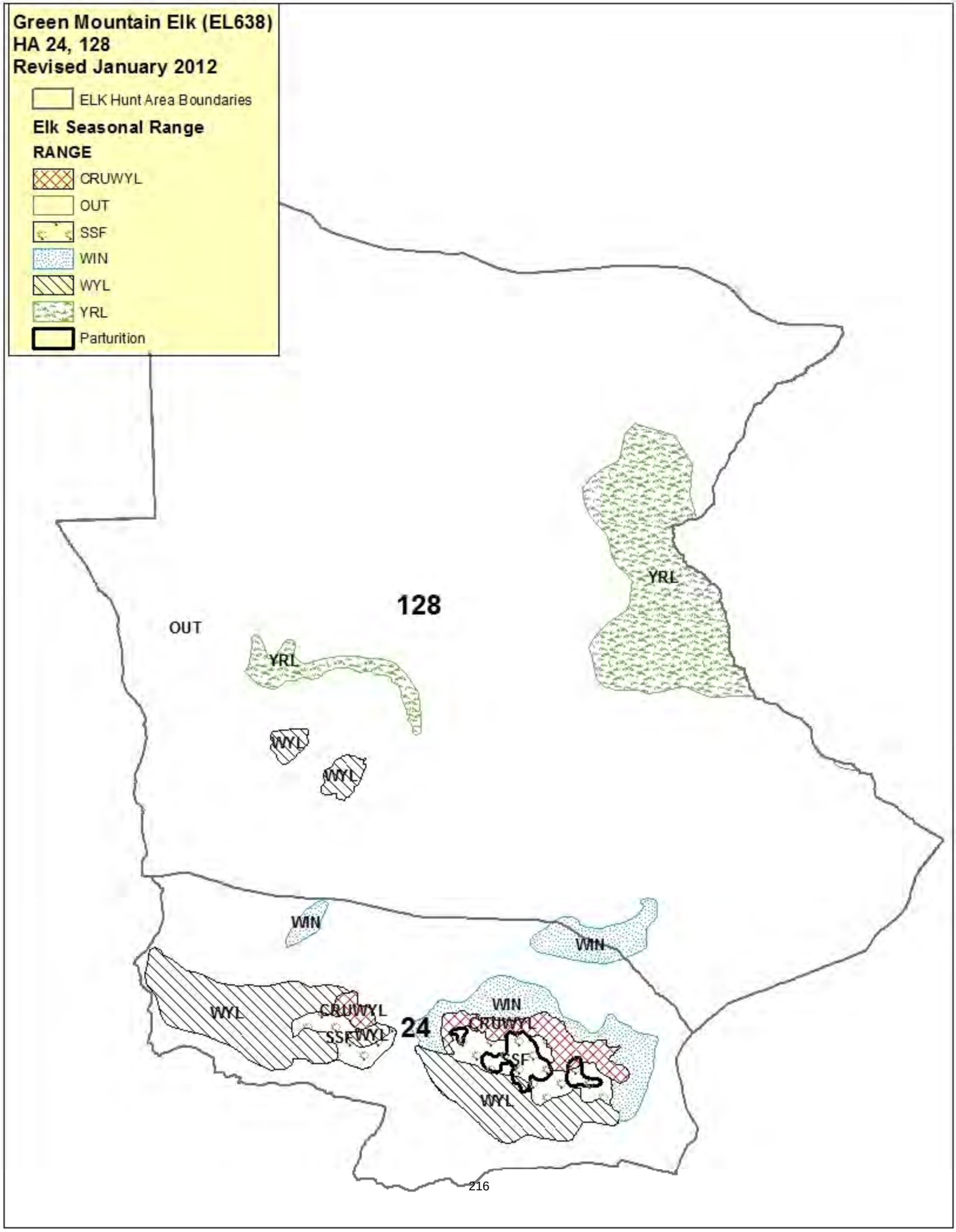


Figure 1. Comparison of elk license numbers and elk harvest trends in Elk Hunt Area 24, 1994-2013.


Green Mountain Elk (EL638)
HA 24, 128
Revised January 2012
ELK Hunt Area Boundaries
Elk Seasonal Range
RANGE
CRUWYL
OUT
SSF
WIN
WYL
YRL
Parturition
128
OUT
YRL
YRL
WYL
WYL
WIN
WIN
WYL
CRUWYL
SSF
WYL
24
WIN
CRUWYL
SF
WYL

2013 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2013 - 5/31/2014

HERD: EL639 - FERRIS

HUNT AREAS: 22, 111 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	564	500	485
Harvest:	158	73	105
Hunters:	288	157	225
Hunter Success:	55%	46%	47%
Active Licenses:	296	166	225
Active License Percent:	53%	44%	47%
Recreation Days:	1,939	1,116	1,735
Days Per Animal:	12.3	15.3	16.5
Males per 100 Females	59	24	
Juveniles per 100 Females	47	15	

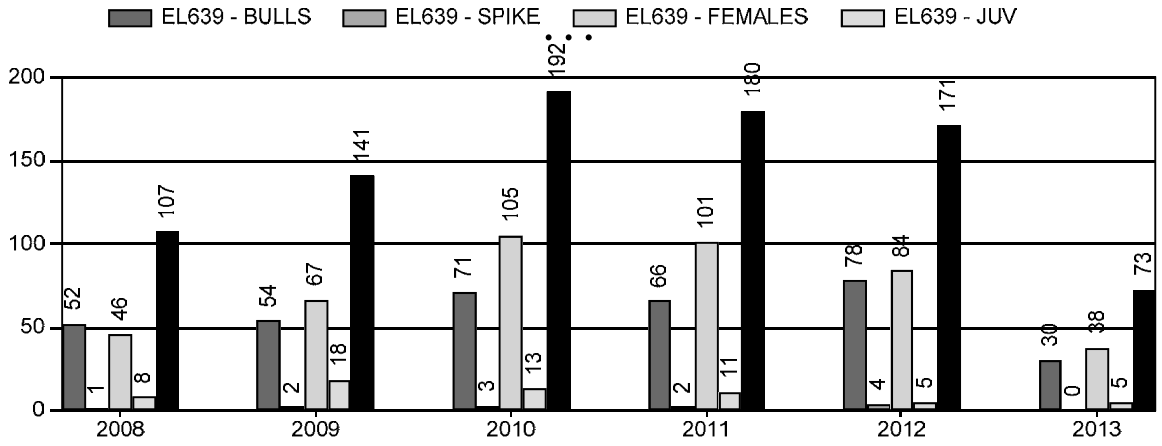
Population Objective:	350
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	43%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

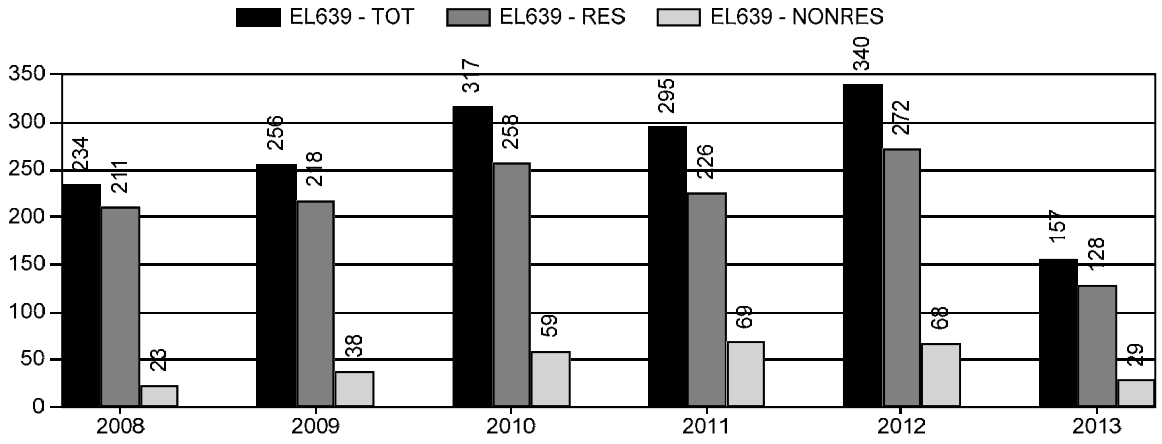
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	-5%	-3%

Population Size - Postseason

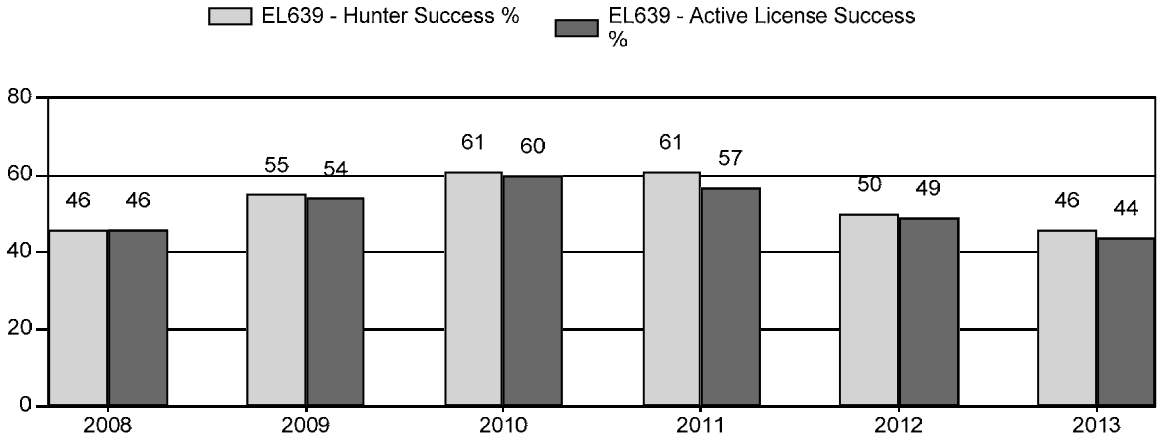
Harvest



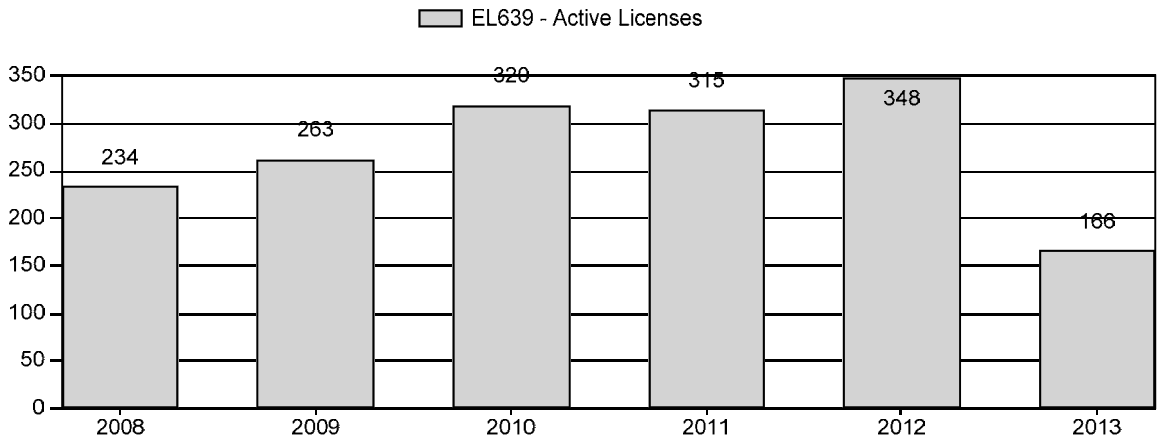
Number of Hunters



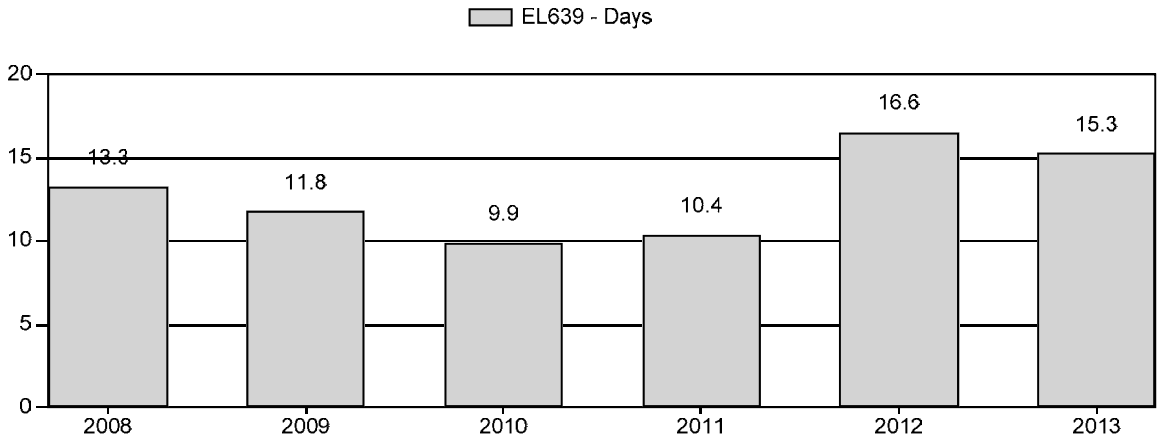
Harvest Success



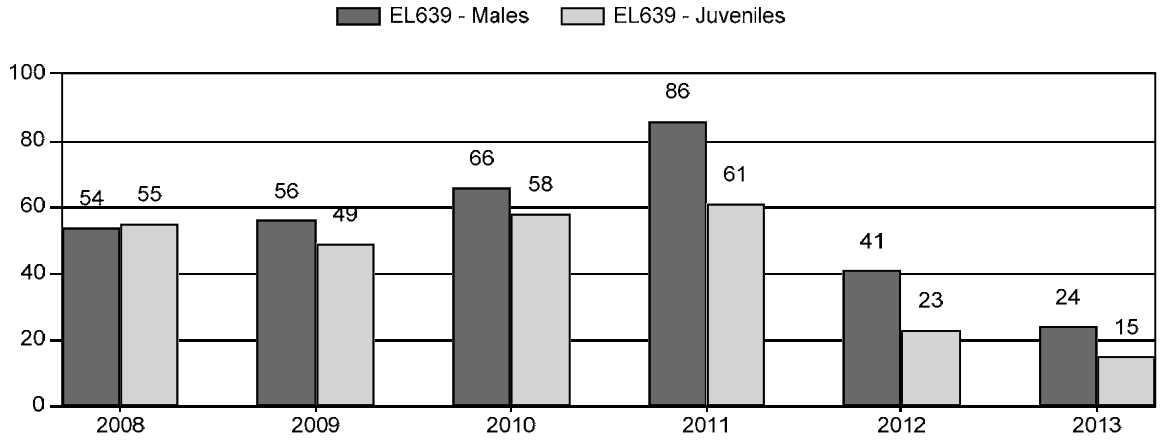
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL639 - FERRIS

		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
2008	620	19	42	61	26%	112	48%	62	26%	235	406	17	38	54	± 0	55	± 0	36
2009	645	56	116	172	27%	305	49%	150	24%	627	416	18	38	56	± 0	49	± 0	31
2010	590	25	53	78	29%	119	45%	69	26%	266	432	21	45	66	± 9	58	± 8	35
2011	580	23	87	110	35%	128	41%	78	25%	316	474	18	68	86	± 10	61	± 8	33
2012	385	25	50	75	25%	182	61%	42	14%	299	237	14	27	41	± 3	23	± 2	16
2013	500	34	49	83	17%	353	72%	54	11%	490	176	10	14	24	± 1	15	± 0	12

2014 HUNTING SEASONS
FERRIS ELK HERD (EL639)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
22	1	Oct. 8	Oct. 31	25	Limited quota; any elk
		Nov. 1	Jan. 31		Unused Area 22 Type 1 licenses valid for antlerless elk
	6	Oct. 8	Oct. 31	25	Limited quota; cow or calf valid in the Muddy Creek drainage
		Nov. 1	Jan. 31		Unused Area 22 Type 6 licenses valid in the entire area
111	1	Oct. 10	Oct. 31	25	Limited quota; any elk
	4	Oct. 10	Oct. 31	25	Limited quota; antlerless elk
		Nov. 1	Jan. 31		Unused Area 111 Type 1 and Type 4 licenses valid for antlerless elk in that portion of Area 111 off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area
	6	Nov. 1	Jan. 31	125	Limited quota; cow or calf valid in that portion of Area 111 off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area
Archery 22, 111		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
22	1	0
	6	0
	7	-25
111	1	0
	4	0
	6	-25
	7	+100
Total	**1**	**0**
	4	**0**
	6 & 7	**+50**

<u>Management Evaluation</u>
Current Management Objective: 350
Management Strategy: Special
2013 Postseason Population Estimate: ~500
2014 Proposed Postseason Population Estimate: ~485

The management objective for the Ferris Elk Herd Unit is a post-season population objective of 350 elk. The management strategy is "special" management, with bull:cow ratios allowed to exceed 30:100 and the proportion of branch-antlered bulls expected to exceed 66 percent of the antlered harvest. The population objective and management strategy were last publicly reviewed in 2012. All affected major landowners strongly endorsed keeping the population objective of 350 elk.

Herd Unit Issues

Access is a major issue with this herd unit. While there are large blocks of accessible, public land, refugia created by several large ranches that are either closed to hunting or greatly limit hunter numbers have prevented harvest from most of the elk in this herd unit, particularly in Area 111. As license quotas are increased to reduce elk numbers to objective, the lack of hunter access to these animals leads to over-harvest of public land areas while still preventing the harvest necessary to reach the population objective.

Weather

Severe drought in 2012, with almost no precipitation throughout the spring and summer, was followed by three severe late winter blizzards in April 2013. The 2013 summer was again exceptionally dry, reducing forage availability for the 2013-14 winter and delaying recovery of vegetation in two large wildfires in 2011. Precipitation increased in the fall, providing for some herbaceous plant growth. The 2013-14 winter had numerous bitter cold spells, and high winds, but those winds also exposed forage on most winter ranges. Losses may still be above average because of the below normal body condition of animals going into the winter.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production is expected to have been low again in 2013 due to continued drought. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2013.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminoe and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminoe Mountains and the eastern Ferris Mountains burned thousands of acres. These prescribed burns and the recent wildfires should benefit elk.

The Seminoe Fire burned over 3,800 acres in the Seminoe Mountains including areas within Morgan Creek WHMA. As in 2012, the Rawlins BLM again coordinated and funded aerial application of Plateau® in 2013 to mitigate cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions.

Plans for additional prescribed fires in the Seminoe Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire.

Field Data

Obtaining reliable classification samples from small populations is difficult because, statistically, the majority of the population must be included in the sample to have any confidence in the resulting ratios. Ratios collected for this herd are further skewed because elk in this herd are not distributed randomly among the winter bands. Missing any of a handful of bachelor bull herds will significantly under-estimate bull:cow ratios. Failure to classify even one of the large cow/calf bands will greatly over-estimate bull:cow ratios, as happened in 2011. Without reliable, consistent herd ratios, spreadsheet modeling for this small herd does not work.

Conditions during a helicopter trend count in December 2013 were nearly ideal, and all 490 elk counted were also classified, yielding the largest sample since 2009. As expected because of the lack of hunter access to much of Area 111, the majority of the elk (425) were found in that area. Calf production was at a record low of only 15:100, following the previous record low of 23:100 in 2012. Continued drought reduced calf survival in both hunt areas, at 13:100 in Area 22 and 16:100 in Area 111.

Since a majority of the herd was classified, the bull:cow ratio from the 2013 classification sample was probably the most reliable estimate since 2009. The 2013 ratio of 24:100 was well below the minimum criterion for special management, the lowest ratio in eight years, and less than half the previous five-year average. This supports the belief high bull:cow ratio seen in 2011 was skewed by the small sample size that year and the following increase in licenses in 2012 was excessive. Bull:cow ratios were similar between the two areas, at 23:100 in Area 22 and 26:100 in Area 111. Both areas failed to meet the special management criterion. The ratio of branch-antlered bulls:cows was less than a third of the previous five-year average, and this ratio in Area 111 was almost half that found in Area 22.

The spike:cow ratio was only 10:100, the lowest in five years, a result of the low calf production in 2012. No spikes were seen in Area 22 where the calf crop was only 10:100 in 2012. This ratio will likely be low again in 2014 because of this year's poor calf production.

Harvest Data

Success for hunters with Type 1 licenses remained high in Area 22 in 2013, at 68 percent, but dropped to the lowest success in 16 years in Area 111, at only 54 percent. The proportion of antlerless elk taken on these licenses fell slightly, to 6 percent. The average number of days hunted per elk harvested off this license type was within the normal range for Area 22, but rose

to a record high for Area 111. Like the classification data, these harvest statistics suggest the supply of bulls in this herd has been significantly reduced, particularly in Area 111.

Beginning in 2010, Type 6 licenses in Area 22 were restricted to the Muddy Creek drainage for the first portion of the 5-week season to address damage concerns on irrigated hayfields. Success for hunters with these licenses was high, at 72 percent, but declined to 62 percent in 2011, 38 percent in 2012 and only 21 percent in 2013. The average number of days hunted per elk harvested on these licenses rose to 19.2 days in 2012 and 21 days in 2013. This license strategy has successfully reduced the number of elk found on these irrigated fields in the fall, despite the drought conditions.

Hunters with the late Type 7 cow/calf licenses in Area 22 fared no better, with only 22 percent success in 2013, despite a two-month season. As shown by the trend count data, increased harvests have successfully reduced elk numbers in Area 22 where hunters have good access.

To address a problem of inadequate harvests resulting from poor license sales, most of the antlerless licenses in Area 111 were converted into reduced price cow/calf licenses beginning in 2009. To address crowding issues in the Seminoe Mountains and to direct harvest to the segments of the herd protected by ranches with limited access during the fall hunt, those cow/calf licenses were not valid on the Morgan Creek WHMA. Success for hunters with these licenses had dropped off each year since, but rose to 61 percent success in 2013 with the extended season. Hunters with the late Type 7 tags enjoyed 48 percent success

Population

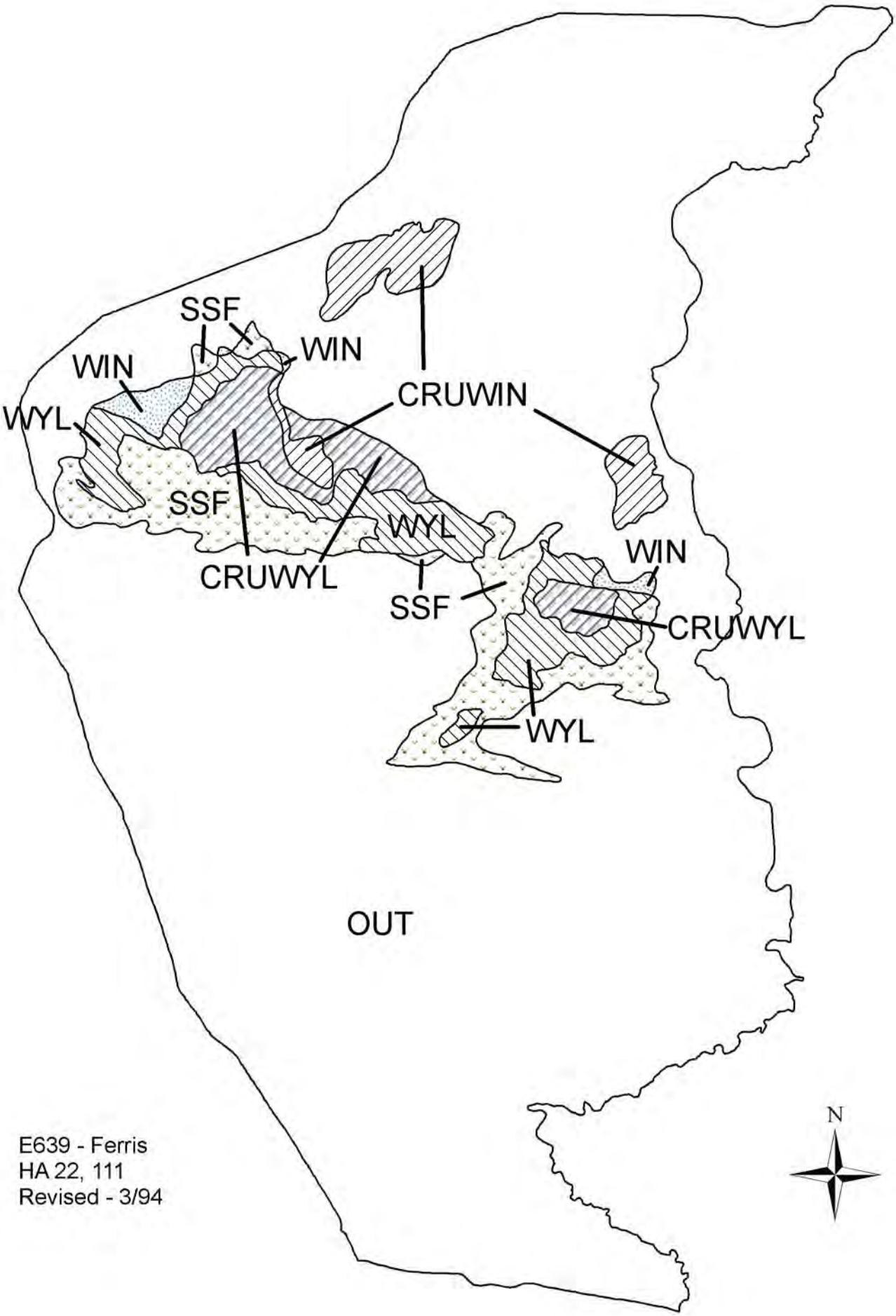
Past efforts to model this herd using standardized values for some parameters in POP-II failed, as did recent efforts to employ spreadsheet modeling. As a result, population estimates and harvest recommendations have been based on winter trend counts, applying estimates of annual calf production and harvest for years when counting conditions are not favorable. A trend count with good conditions in January 2013 found only 299 elk in the two hunt areas, but did not include an additional band of ~70 elk on the north side of the Seminoe Mountains. A similar sized band found a week later, only 5-6 miles distant, was presumed to be the same elk, but the increased count in December 2013 suggests it was not. Based on the 2013 count of 490 elk, the herd is still well above objective, but reduced by more than 20 percent from high numbers seen four years ago. All of the surplus elk are in Area 111 where access is limited, with numbers in Area 22 dropping to a record low.

Management Evaluation

License quotas were reduced in 2013 in response to the low 2012 trend count with all quotas set at minimal numbers, intended to slow herd reduction while providing reasonable chances of success for hunters applying for such tags. While this was the proper response for Area 22, elk numbers are still above objective in Area 111. Recommended license quotas for 2014 are again reduced for Area 22, but increased by 75 for Area 111. Expected harvest from the 2014 seasons would be about 105 elk, with roughly 70 percent being antlerless. Almost 80 percent of the harvest should come from Area 111.

Comments from several major landowners indicated they want elk harvested from this herd, but do not want public hunters on their lands. This herd offers an unusual opportunity where large portions of summer/fall habitats are on private lands with limited or no public access, but many winter ranges are on accessible public lands. Hence a strategy was initiated with an emergency regulation in 2012 and continued in 2013 to allow hunters to pursue antlerless elk as late as January, where most of the elk are expected to be on public land. The intent is to achieve harvest of the reproductive segment of most of the elk herd, not just the segments which are publicly available in the fall. This same strategy is repeated in 2014 seasons. Elk occupying the Haystack Mountains in checker-boarded lands in Area 111 will continue to be unavailable to most hunters.

All 2014 license types are consistent with the application booklets. Opening dates in both areas are consistent with the application booklets. Closing dates are the same as in the 2013 season. Archery seasons coincide with local deer archery seasons and archery seasons in neighboring elk areas.


SSF
WIN
WIN
WYL
CRUWIN
SSF
WYL
CRUWYL
SSF
WIN
CRUWYL
WYL
OUT
N
E639 - Ferris
HA 22, 111
Revised - 3/94

2013 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2013 - 5/31/2014

HERD: EL643 - SHAMROCK

HUNT AREAS: 118 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	184	N/A	N/A
Harvest:	65	38	45
Hunters:	102	60	70
Hunter Success:	64%	63%	64%
Active Licenses:	106	63	70
Active License Percent:	61%	60%	64%
Recreation Days:	500	270	350
Days Per Animal:	7.7	7.1	7.8
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

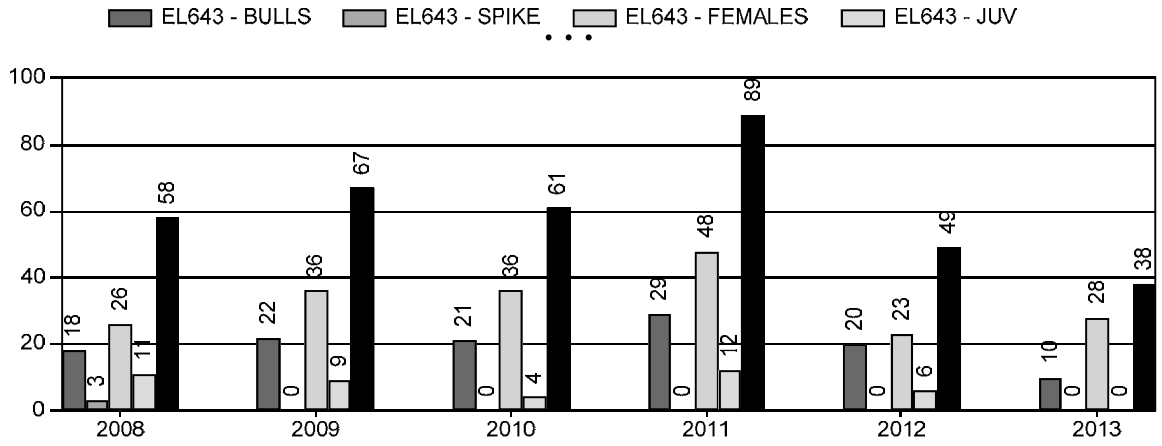
Population Objective:	75
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

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

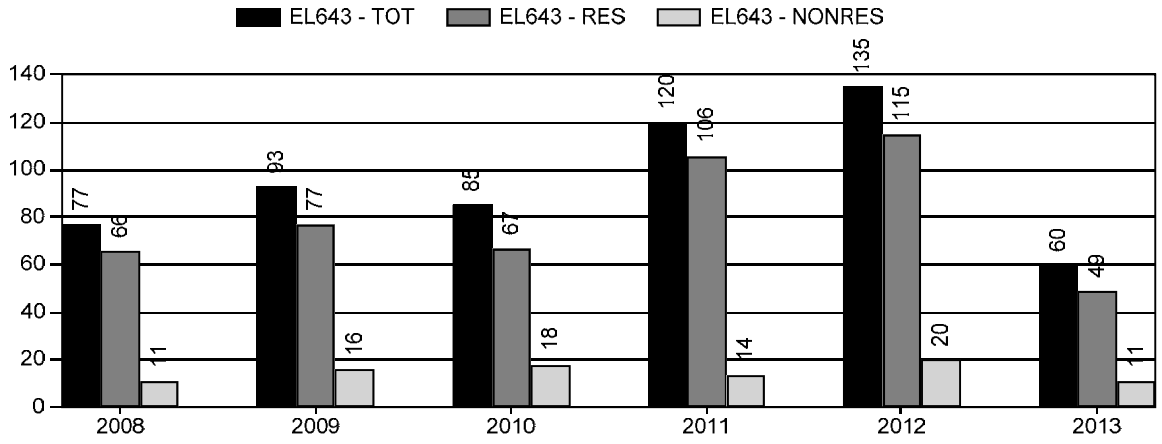
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%

Population Size - Postseason

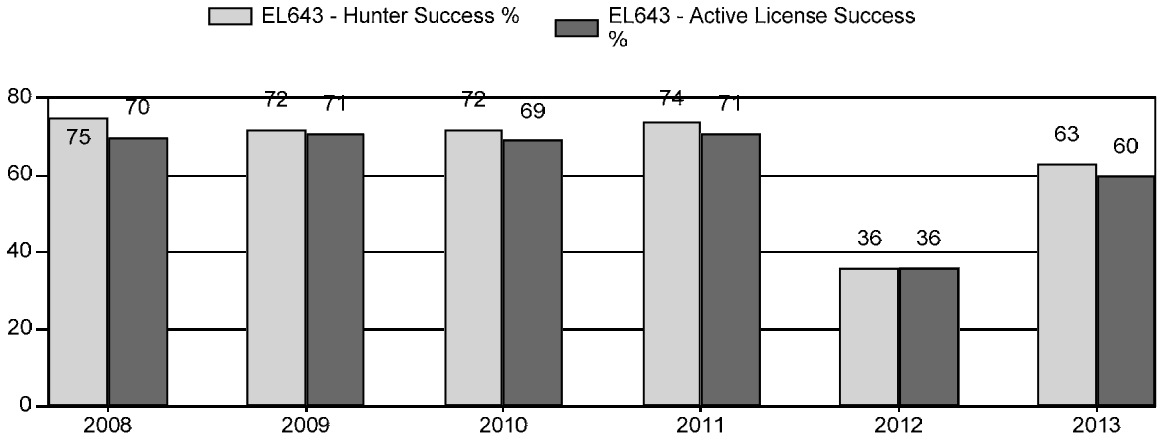
Harvest



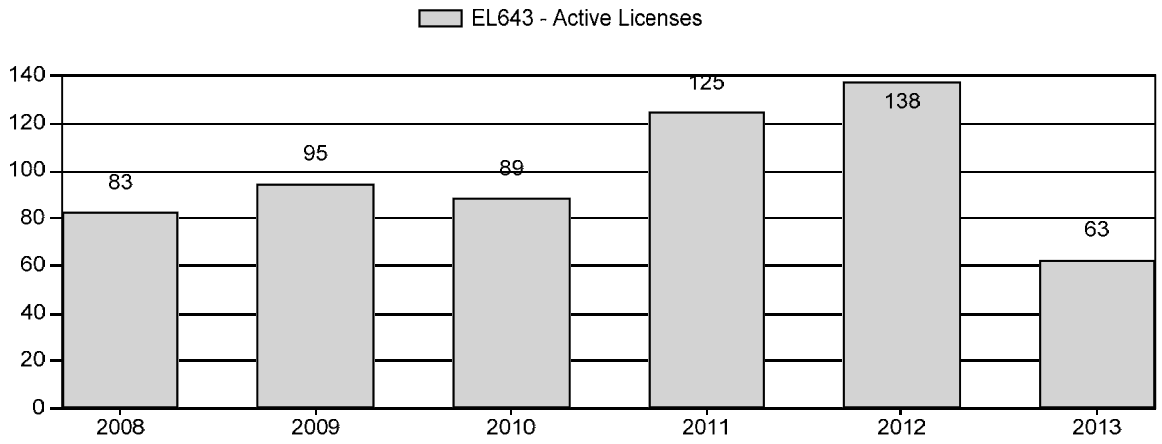
Number of Hunters



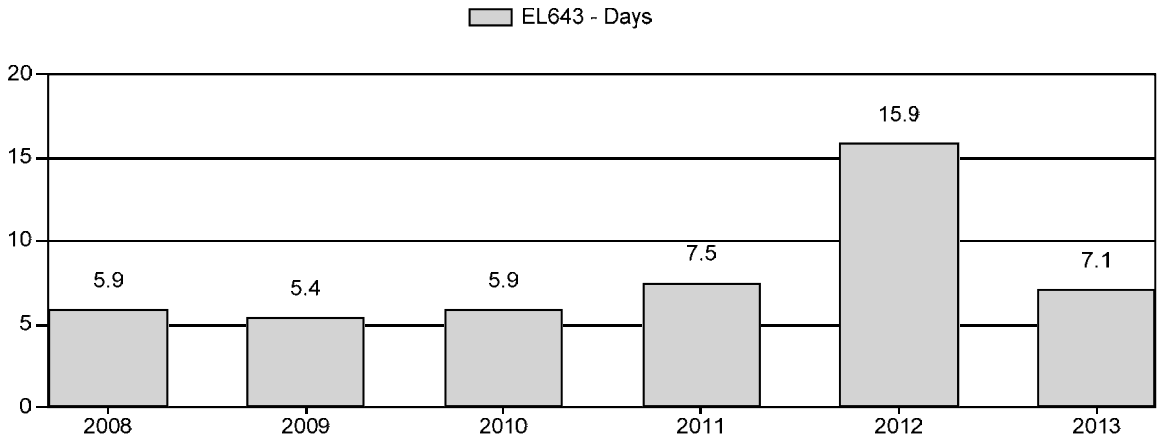
Harvest Success



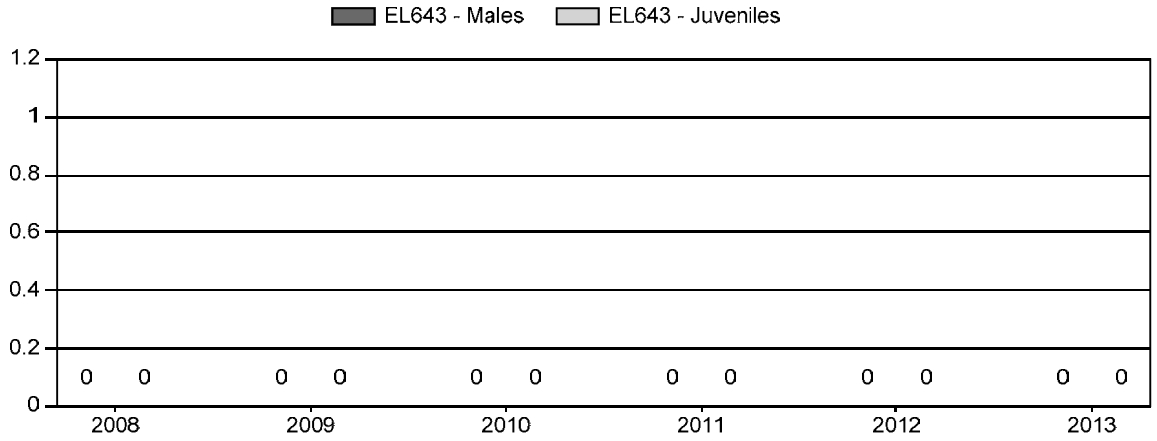
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL643 - SHAMROCK

		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
2008	250	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2009	240	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	230	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	200	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2014 HUNTING SEASONS
SHAMROCK ELK HERD (EL643)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
118	1	Oct. 23	Nov. 12	25	Limited quota; antlered elk
	4	Oct. 23	Nov. 12	25	Limited quota; antlerless elk
	6	Oct. 1	Nov. 30	25	Limited quota; cow or calf valid south of the Mineral X Road (Sweetwater County Road 63 and BLM Road 3206)
Archery 118		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
118	1	0
	4	0
	6	0
Total	**1**	**0**
	4 & 6	**0**

Management Evaluation
Current Management Objective: 75
Management Strategy: Recreation
2013 Postseason Population Estimate: N/A
2014 Proposed Postseason Population Estimate: N/A

The management objective for the Shamrock Elk Herd Unit is a post-season population objective of only 75 elk. The management strategy is recreational management. This objective and management strategy were first established in 1984, when elk were found almost exclusively in the southeastern quarter of the herd unit, and were last publicly reviewed in 1994.

Herd Unit Issues

This herd consists of bands of elk scattered in open sagebrush desert with three main areas of concentration in the southeast, southwest and the northeast corners of the herd unit. Observations have documented movement of bands of elk between these three concentration areas, as well as into Area 100 to the west, leading to confusion on the actual numbers of elk in the population. Aerial trend counts have been attempted, but often failed to find elk in all three areas simultaneously. Snow cover is rarely adequate for good visibility of elk from an aircraft. Classification samples have been too small and inconsistent to allow for a reliable herd model to

guide management. As a result, license quotas have been based upon harvest statistics and simple assumptions of annular herd growth and harvest.

Weather

Severe drought in 2012, with almost no precipitation throughout the spring and summer, was followed by three severe late winter blizzards in April 2013. The 2013 summer was again exceptionally dry, reducing forage availability for the 2013-14 winter. Precipitation increased in the fall, providing for some herbaceous plant growth. The 2013-14 winter had numerous bitter cold spells, and high winds, but those winds also exposed forage on most winter ranges. Losses may still be above average because of the below normal body condition of animals going into the winter.

These bands of elk are highly mobile, and observations before and during the 2012 hunt suggested a significant number of elk from the southwestern portion of the herd may have moved west into more mesic habitats in the eastern edge of Area 100, but this did not appear to occur in 2013. Similarly, body condition of harvested elk checked in the field in 2013 was improved over the poor conditions seen in 2012. No incidences of elk feeding on toxic lichen were noted in 2013, where one was found nearby in Area 100 in 2012.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production is expected to have been low due to continued drought. Only one shrub transect has been established near this herd unit, on the Chain Lakes WHMA, but was not read in 2013.

BP America transferred ownership of two water wells on Chain Lakes WHMA to WGFD. Developed with funds provided by WWNRT, these solar wells provide additional water sources for wildlife and help disperse domestic livestock that graze Chain Lakes WHMA. Elk were found by hunters and two bulls harvested near one of these wells in 2013.

Habitat losses to uranium development increased with opening of the Ur *in situ* uranium mine near the center of the herd unit, but is not in or near crucial elk ranges. Habitat losses to gas development have slowed due to low gas prices and demand for drilling rigs in the Bakken fields.

Field Data

All classification samples for this herd have been statistically inadequate and no posthunt classification data were collected again this year. Dispersal of these elk in small bands across hundreds of square miles of sagebrush makes both aerial and ground classifications prohibitively expensive. Continued drought during 2013 reduced calf production in neighboring herds and production in this desert herd was presumably low as well.

Harvest Data

Hunter success is typically quite high in this herd unit due to the open terrain and limited cover, but was exceptionally poor in 2012, when license quotas had been increased. Quotas were reduced in 2013, but success for bull hunters remained low at 50 percent, the lowest in ten years.

Success for Type 4 “antlerless elk” hunters, who could hunt the entire area, rose to 76 percent, within the normal range for this type. Success for cow/calf hunters, limited to the southern half of the area, was 68 percent success, typical for these licenses. This was the first year these hunters were free to hunt the entire south half, rather than just the southeastern corner.

The average number of days hunted per elk harvested returned to normal levels in 2013, for all three license types, after record highs in 2012. Elk were certainly more available for harvest in 2013, but it is not known if elk numbers had increased this year, or if large numbers had moved into eastern Area 100 in 2012.

Harvest in 2013 was almost 50 percent above expected because of improved hunter success. Antlerless harvest in 2013 was nearly identical to that of 2012, despite having less than half as many licenses.

Population

While initially found only in the southeastern portion of the herd unit, over the past 20 years elk have expanded into most portions of Area 118, at least for some seasons of the year. Numbers increased as well, with Department personnel being able to confirm at least 270 elk in this area prior to the 2010 hunting season. Harvests were increased, and the herd was estimated at about 200 elk following the 2011 hunt. Harvest from Type 6 licenses was most effective at reducing elk numbers in the southeast corner where elk use of private lands has been a concern. Antlerless and cow/calf license quotas were increased again in 2012, by 26 percent.

Localized movement of elk westward into Area 100 cannot explain the difficulty hunters had finding elk to harvest in the entire area in 2012, nor those restricted to the southeastern corner. Increased harvests in recent years, coupled with what was presumably a poor calf crop in 2012, have reduced elk numbers across the herd unit.

Management Evaluation

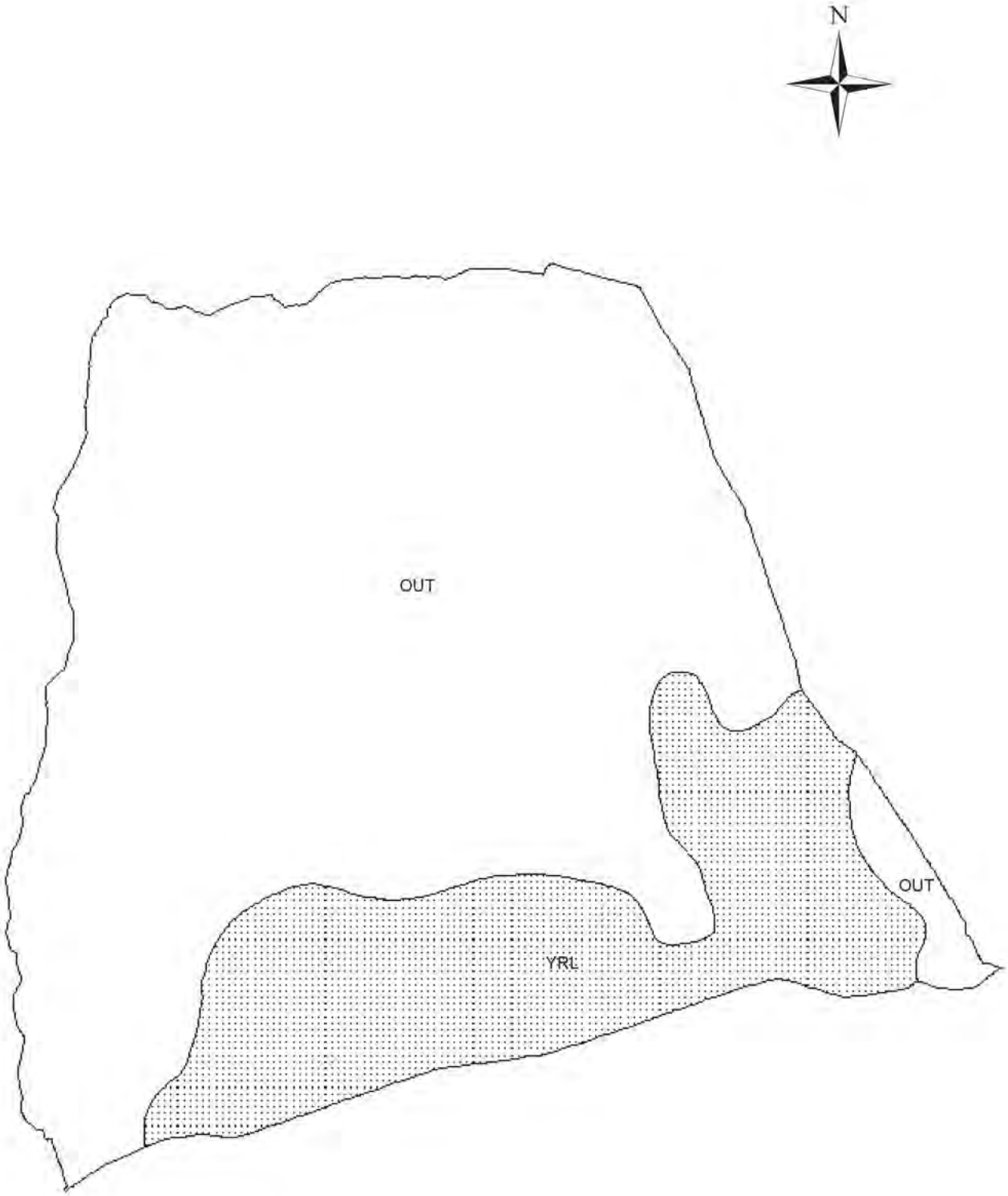
Expected harvest from the 2014 season would be about 45 elk, with roughly two-thirds being antlerless elk. In previous years, cow/calf licenses were restricted to the southeastern portion of the area to address landowner concerns about elk numbers on private lands close to Rawlins. This strategy was successful, and the restricted area for those Type 6 licenses was expanded to include all of the hunt area south of the Mineral X Road in 2013, which will encompass most private lands within the checkerboard. A similar delineation is proposed in 2014.

Opening date in this hunt area has been in the third week of October since it was reopened to hunting in 1992. Recently, there have been years when significant numbers of elk moved west out of the southwestern portion of this herd unit into Area 100 before or during hunting season, reducing harvests. In an attempt to compensate for this movement, the opening date for this area was synchronized with Area 100 in 2011 and 2012, on Oct 15. The attempt failed, with a large number of elk still moving west in 2012. There simply is not enough hunting pressure in the eastern end of Area 100 to shift elk back into Area 118. Complaints about the earlier opening date were received from nearly every hunter contacted, most being upset about crowding due to the season opener coinciding with that for the deer season. Others commented on the lack of a Department presence in the field on opening day, and subsequent poor hunting behavior (chasing with vehicles, herd shooting) by some participants. Opening date in 2014 is returned to the

traditional third week of October and avoids overlap with the general license deer hunt in the same area. To maintain the extra days of hunting opportunity provided in 2011 and 2012, the 2013 season is extended to Nov. 12. The archery season uses standardized dates and is comparable to those in neighboring areas.

The population objective of 75 elk adopted for this herd unit in 1984 may have been appropriate when elk were only resident in the checkerboard, primarily in the southeast corner near Rawlins. With increased elk numbers in the habitats shared with Area 100 to the west and expansion of the population into mostly public lands north of the Mineral X Road, it may be reasonable to consider a different objective, particularly since collection of adequate data to model the herd is unlikely with current budgetary restraints. To address concerns over elk use on private lands, a commitment to restrain elk numbers within the checkerboard may be beneficial. Realigning herd unit and hunt area boundaries with Area 100 to the west may also improve management of elk in this portion of the Red Desert.

E643 - Shamrock
HA 118
Revised - 5/88



2013 - JCR Evaluation Form

SPECIES: Moose
HERD: MO620 - LANDER
HUNT AREAS: 2, 30, 39

PERIOD: 6/1/2013 - 5/31/2014

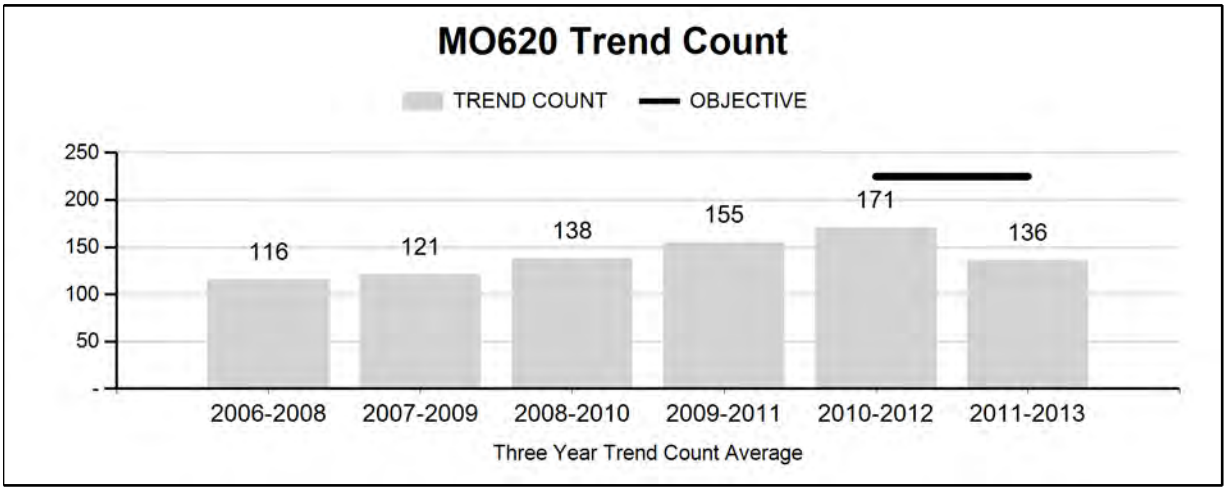
PREPARED BY: STAN HARTER

	2008 - 2012 Average	2013	2014 Proposed
Trend Count:	144	106	180
Harvest:	9	7	10
Hunters:	11	9	10
Hunter Success:	82%	78%	100%
Active Licenses:	11	78%	10
Active License Percentage:	82%	78%	100%
Recreation Days:	94	107	130
Days Per Animal:	10.4	15.3	13
Males per 100 Females:	62	87	
Juveniles per 100 Females	35	43	

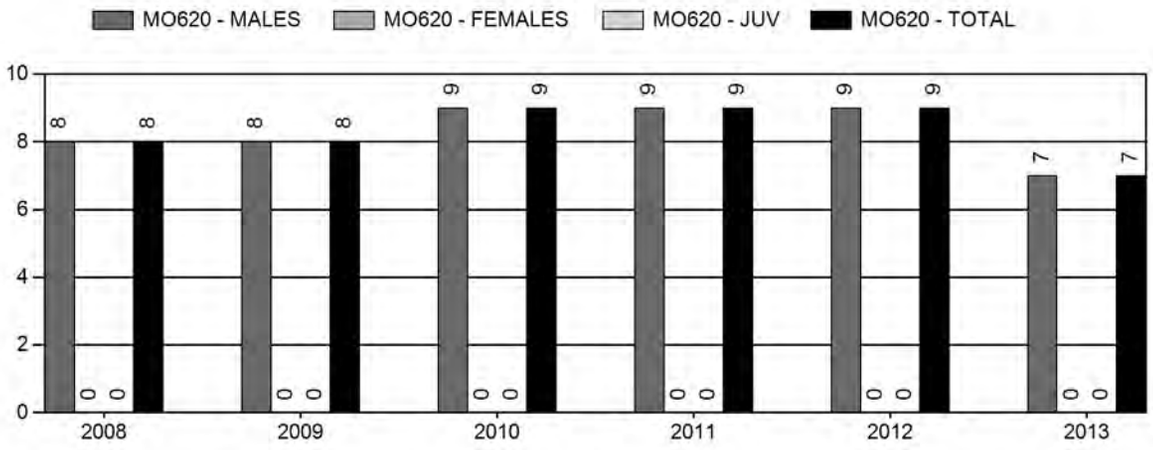
Trend Based Objective (± 20%)	225 (180 - 270)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-52.9%
Number of years population has been + or - objective in recent trend:	3

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

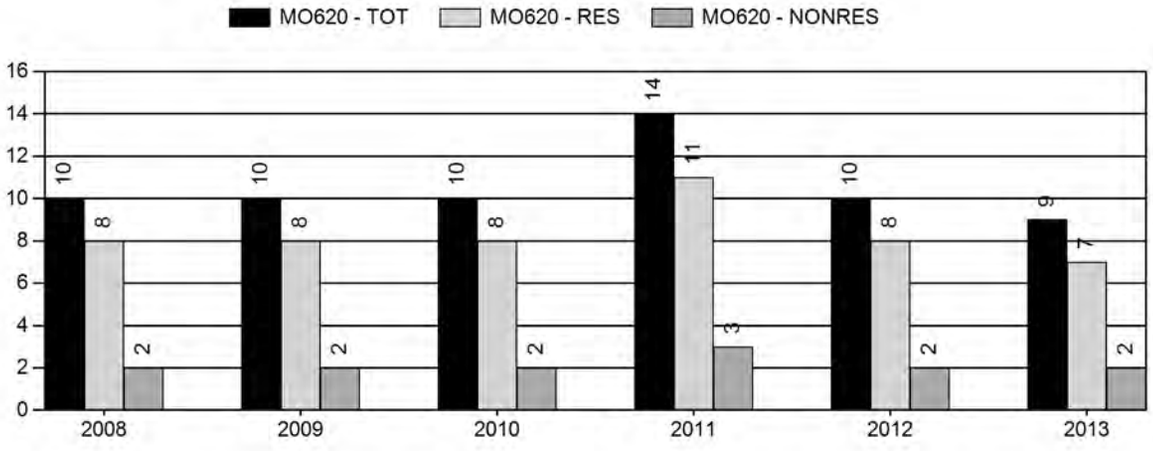
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



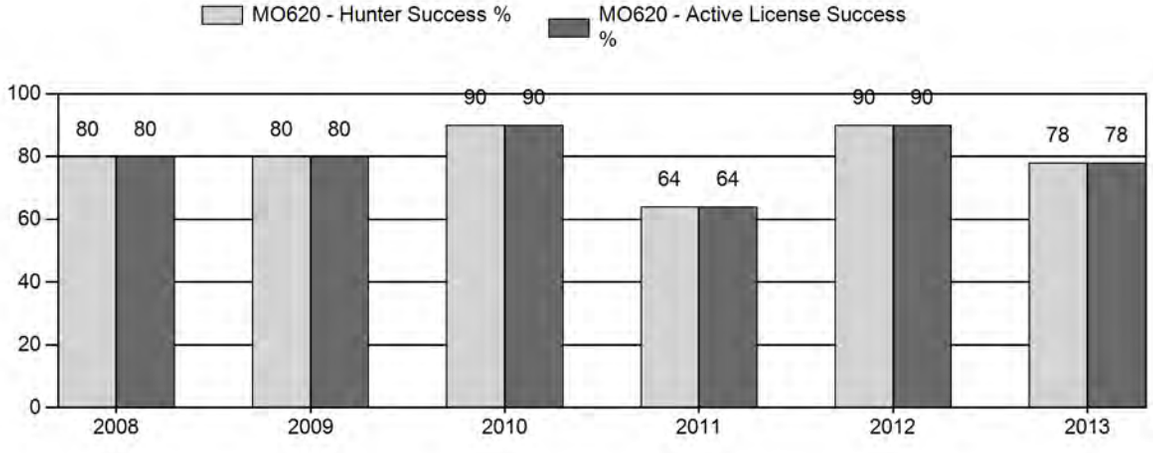
Harvest



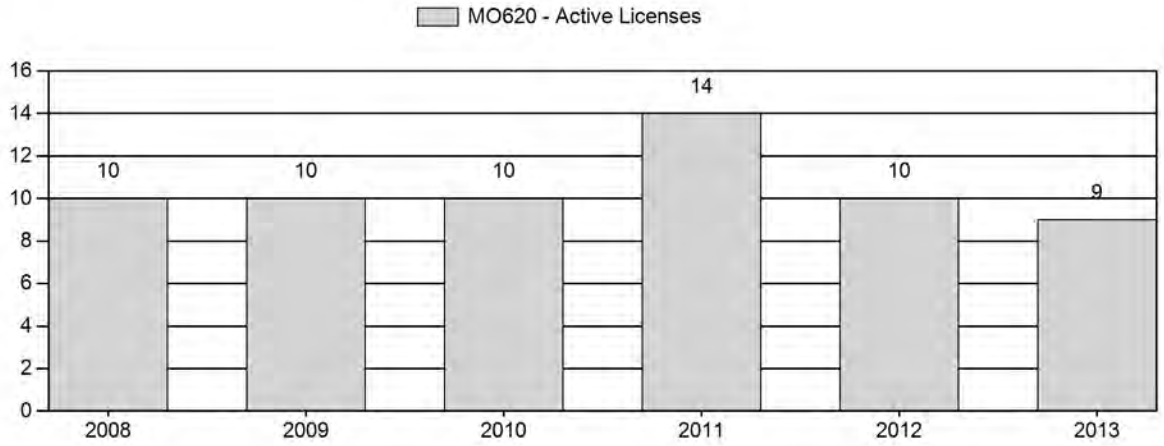
Number of Hunters



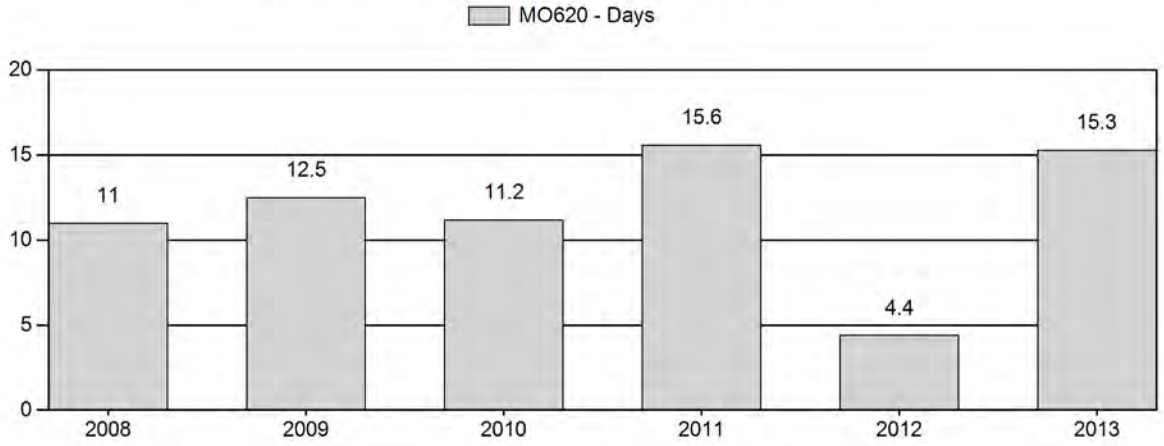
Harvest Success



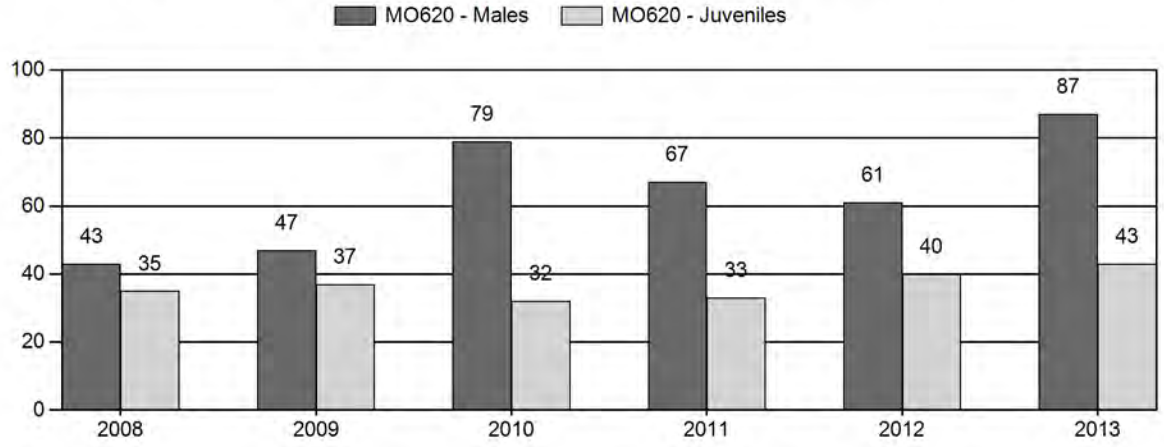
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Moose Herd MO620 - LANDER

		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
2008	0	0	0	27	24%	63	56%	22	20%	112	220	0	0	43	± 10	35	± 9	24
2009	0	0	0	24	26%	51	54%	19	20%	94	234	0	0	47	± 13	37	± 11	25
2010	0	0	0	78	37%	99	47%	32	15%	209	281	0	0	79	± 9	32	± 5	18
2011	0	0	0	54	33%	81	50%	27	17%	162	263	0	0	67	± 11	33	± 7	20
2012	0	0	0	43	30%	70	50%	28	20%	141	0	0	0	61	± 12	40	± 9	25
2013	0	0	0	40	38%	46	43%	20	19%	106	0	0	0	87	± 0	43	± 0	23

2014 HUNTING SEASONS
Lander Moose Herd Unit (MO 620)

HUNT AREA	TYPE	Season Dates OPENS	CLOSES	Quota	LIMITATIONS
2	1	Oct. 1	Nov. 20	5	Limited quota; antlered moose
30	1	Oct. 1	Oct. 31	5	Limited quota; antlered moose
		Nov. 1	Nov. 20		Unused Area 30 Type 1 licenses also valid in Area 2
39		CLOSED			

MANAGEMENT EVALUATION

Current Management Objective: Mid-winter Trend Count = 225
Management Strategy: 60-70 bull/100 cows
2013 Trend Count = 106
Most Recent 3-year Running Average Trend Count = 136

Herd Unit Issues/Population

This population has experienced a general decline beginning in 1995. Recent trend counts show a general upward trend since 2004, peaking in 2010, an excellent year for detecting moose with near optimal snow cover and flight conditions. Starting in 2011, sample sizes have declined rather sharply, due in part to less favorable snow cover and/or flight conditions. While this decline is possibly only the result of reduced detection of moose, it may also indicate a real decline in moose numbers. Calf/cow ratios are seemingly on the rise, but with such small sample sizes, this statistic could be misleading, especially in light of several hunters and other members of the public and Department reporting seeing few cow moose with calves at their sides the past few years.

Moose throughout their range are susceptible to a variety of diseases, parasites, and other maladies. Presence of carotid artery worms (*Elaeophora schneideri*) has been increasingly documented in most herd units in Wyoming recently. However, moose from the Lander Herd Unit were sampled for this parasite in fall 2013, with no worms found. In fact, no presence of *Elaeophora* worms has been detected in this herd unit since it was first discovered in 1999 and 2000. A homeowner on the south end of Limestone Mountain reported a cow moose with a prolapsed uterus. The cow was euthanized due to her severely deteriorated body condition from a systemic infection. Her surviving calf was captured and transported to the Tom Thorne/Beth Williams Wildlife Research Center at Sybille to aid in research about carotid artery worms. No confirmed cases of winter ticks have been reported in bio-year 2013, but most cases of winter ticks don't manifest themselves until late winter or early spring, as was the situation with 2 cases identified in April/May 2013. Another dead cow moose was found along the Middle Fork of the Popo Agie River in June 2013, with winter ticks being a possible cause of death.

Attempts to develop a spreadsheet model for Lander Moose were not successful. All iterations of the Spreadsheet Model result in either unsubstantiated population trends or somewhat reasonable trends, but exaggerated population size. Also, the model with the most reasonable trend (TSJ/CA) has almost all juvenile survival estimates at the upper or lower thresholds, leaving doubt as to the model's true ability to estimate this moose population accurately. In the absence of an accurate, or even usable, population estimate for the Lander Moose Herd Unit, a change to an alternative objective was necessary. The most reasonable alternative objective is one based on winter trend counts (collected as classification survey data, which we believe to be a reliable trend indicator as we fly all available winter ranges annually). Therefore, the management objective was changed in 2013 to a trend count of 225 moose (range of 180-270 moose).

Field Data

Moose winter range trend count/classification surveys were conducted in combination with elk and deer classifications, using a Bell Jet Ranger helicopter along the Sweetwater River and major streams along the southern Wind River mountains. Personnel from the Pinedale Region flew Area 30 west of the Sweetwater River with Savage Air's Bell 47 Soloy helicopter. Most moose were observed in traditional willow riparian areas or aspen stands. However, due to very light snow cover in most of Area 2 and increasing winds affecting flight safety, we did not observe as many moose as we anticipated in several locations, particularly in the Middle Popo Agie drainage, Maxon Basin, Pass Creek burn, and Limestone Mountain areas. The total classification sample of 106 moose was 18% below the average since 2004. The observed post-season calf/cow ratio of 43J/100F was the highest observed since 2006 and the observed bull/cow ratio of 87M/100F was the highest since 1994. Due to a low number of cows in the sample (the lowest since 2006), both ratios fluctuated more widely than did the actual number of calves or bulls. This is a common issue for this herd unit, with very low sample sizes even in "good" years.

Weather/Habitat

Drought conditions were extreme to exceptional for most of the past two years, beginning with minimal snowfall in winter 2011-12 and continuing with almost no precipitation during spring and summer 2012. In April 2013, a series of several late winter/early spring snow storms produced over 50" of snow through early May (the equivalent of nearly 4" precipitation) in Lander, with more snow reported in Sinks Canyon (up to 78") and other locations along the east slope of the Wind River Range. These storms were extremely helpful in lessening the effects of drought, yet they only helped change the drought status from Extreme to Severe. Drought returned in summer 2013, with only 0.34 inches of precipitation recorded in Lander from June 1 to September 1. This reduced forage production in herbaceous and browse species across the herd unit, although some improvement over 2012 conditions was noted. Rain and snow returned to the area in September and October 2013, with as much as 300% of normal precipitation recorded in Lander with warm temperatures between early storms. This led to improvement in vegetation condition, primarily grasses. In spite of fairly mild winter conditions in 2013-14, some winter mortality is expected due to the poor condition of winter range habitats following long-term drought.

Future management of Lander Moose will also include evaluation and monitoring of habitat conditions on key moose winter ranges. Willow transects were measured in fall 2013, to attempt gauging moose winter habitat use and condition. A modified live/dead (LD) index was initiated at 2 of the transect sites previously monitored by Hanna, et al. (1989). However, the amount of time required to conduct the modified LD monitoring seems excessive and alternatives are being considered. Additional transects will be established to detect winter habitat use in areas such as the Pass Creek Burn of 2002 and elsewhere if necessitated by recent updates to seasonal ranges.

Harvest Data

Hunter success declined to 78% in 2013, but average age and antler width of harvested bulls, along with numbers of moose reported by moose and elk hunters, has generally improved over recent years, especially in Hunt Area 2. In 2013, nine hunters harvested 7 moose, and the number of days per animal harvested more than tripled to 15.3 days. Possibly due to more time spent in the field by each hunter, the number of moose observed by hunters nearly doubled in 2013 to 80, 47 in Area 2 and 33 in Area 30.

According to the tooth aging report, teeth were submitted from only 4 harvested bull moose, with average age via cementum annuli at 5.5 years (range 3.5 – 9.5 years). This increased over that of the past several seasons. Antler width averaged 41 inches (range 34 – 48 inches).

Management Summary

Hunting seasons remain conservative in 2014 with 5 Type 1 Antlered Moose licenses in Hunt Area 2 and with 5 Type 1 licenses in Hunt Area 30. The bull/cow ratio has been increasing in recent years, but with low calf/cow ratios (average of 35/100 since 2006, range 32 – 43; average was 47/100 from 1980 to 2006, range 24 – 63) and lower trend counts, we don't believe this population can yet sustain an increase in bull harvest. Hunter success has averaged 80% in the past several years, in spite of increases in bull/cow ratios. When we increased the number of Type 1 licenses from 10 to 15 in 2011, hunter success dropped to 64% and days per harvest increased to 15.6. Since the actual number of bulls observed in 2013 was just over half that observed in 2010 prior to raising license numbers, we don't believe the elevated bull/cow ratio is an indicator of dramatic rises in the overall number of bulls in the population.

Given relatively poor detection of moose, it is likely the actual number of moose is much higher than that observed in the 2013 classification/trend survey. Regardless, the population is still experiencing an increasing trend since 2004 (Figure 1). However, decreasing counts since 2010 cause concern this population may once again be declining.

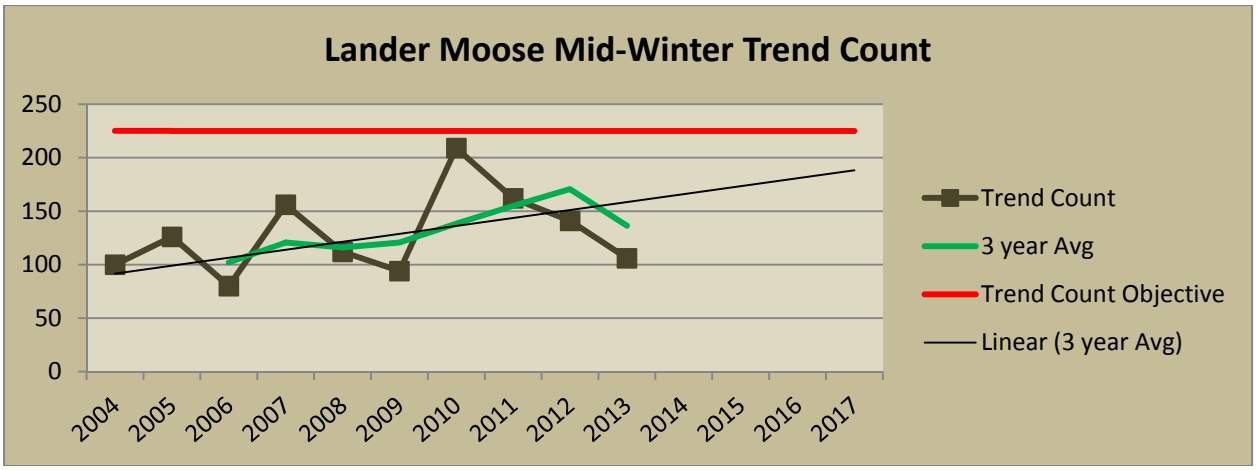
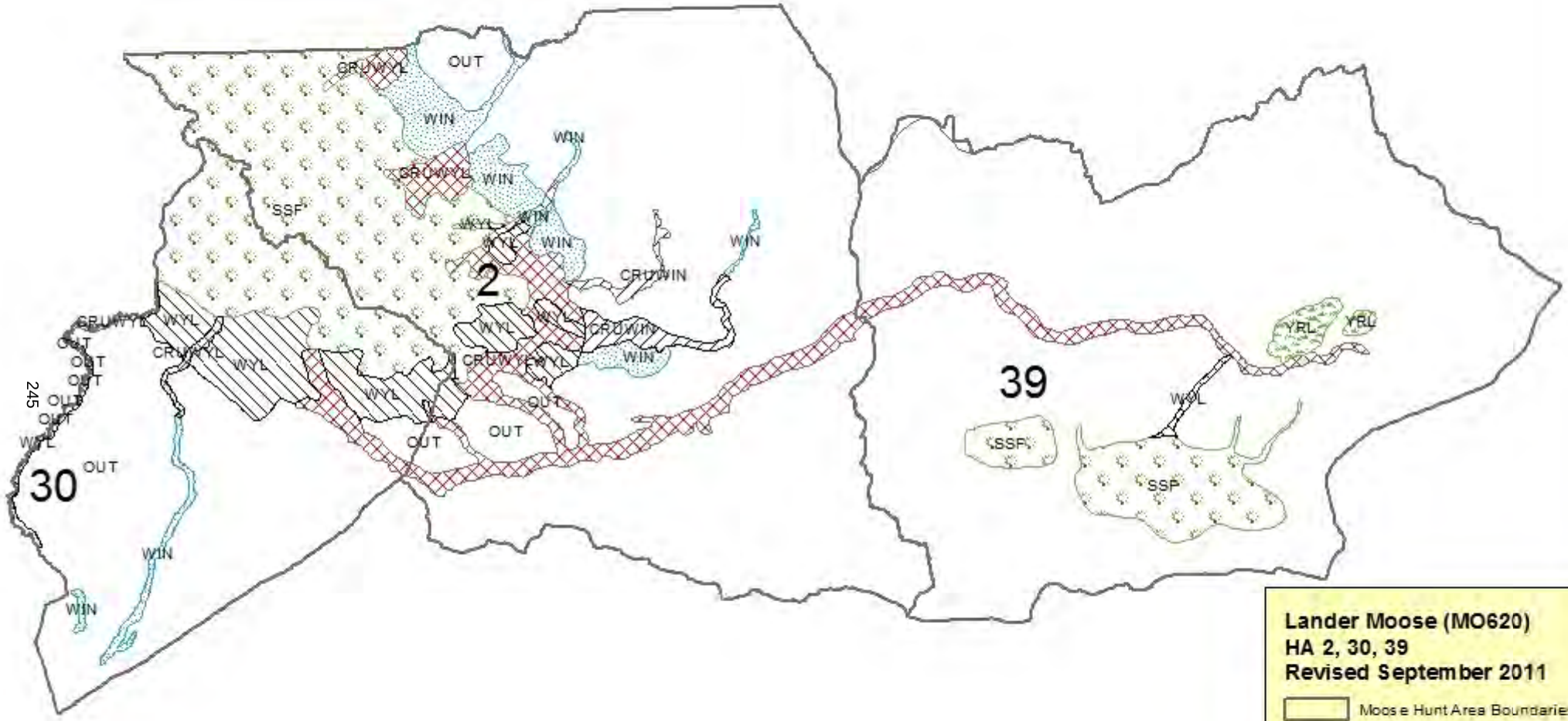


Figure 1. Mid-winter trend count data for Lander Moose (2004-2013) with projected trend through 2017 based on 3-year running average.

In response to hunters reporting difficulty in finding and harvesting moose in Area 30 in recent years, Area 30 hunters continue to be allowed to hunt in Area 2 after November 1, if they are unsuccessful in Area 30 during October. This was done the past 2 seasons, but none of the Area 30 hunters have actually hunted in Area 2.

The 2014 seasons should provide a quality experience for moose hunters following increased bull/cow ratios and improved hunter statistics. We expect hunter success to be 100%, resulting in a harvest of 10 bulls.


2
30
39
OUT
WIN
CRUWYL
SSF
WYL
CRUWIN
YRL
Lander Moose (MO620)
HA 2, 30, 39
Revised September 2011
Moose Hunt Area Boundaries
Moose Seasonal Range
CRUWIN
CRUWYL
OUT
SSF
WIN
WYL
YRL

2013 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2013 - 5/31/2014

HERD: MO621 - DUBOIS

HUNT AREAS: 6

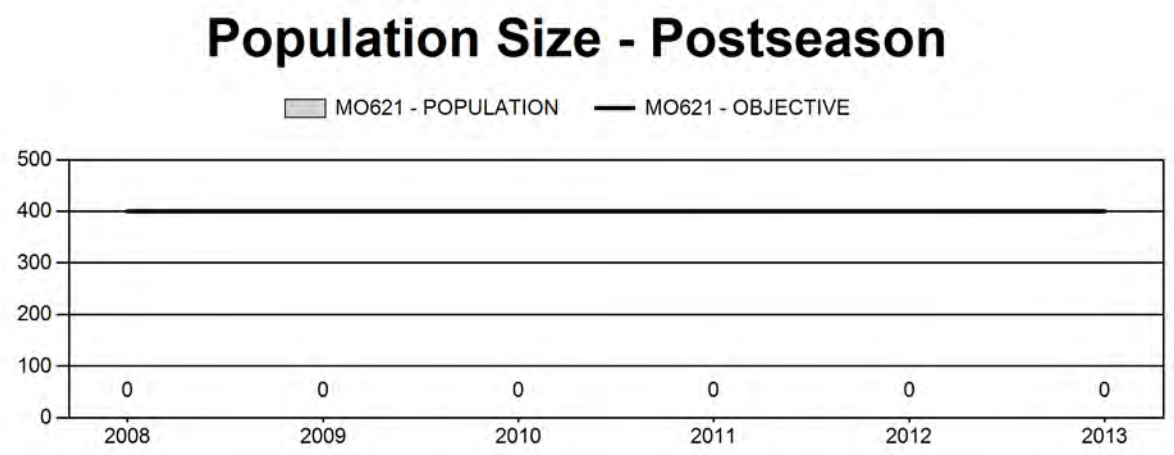
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	0	N/A	N/A
Harvest:	5	5	5
Hunters:	6	5	5
Hunter Success:	83%	100%	100 %
Active Licenses:	6	5	5
Active License Percent:	83%	100%	100 %
Recreation Days:	40	30	35
Days Per Animal:	8	6	7
Males per 100 Females	34	0	
Juveniles per 100 Females	16	0	

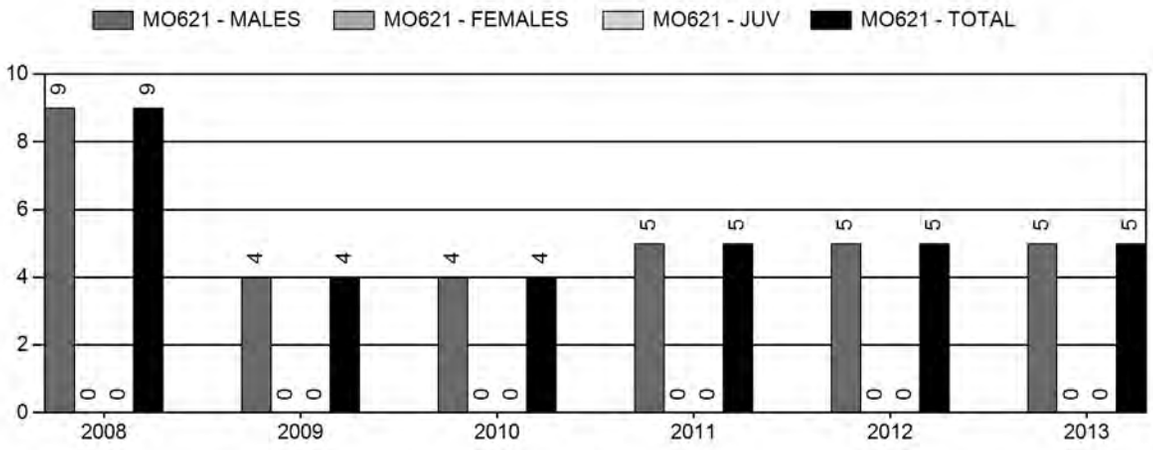
Population Objective:	400
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	1/1/2014

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

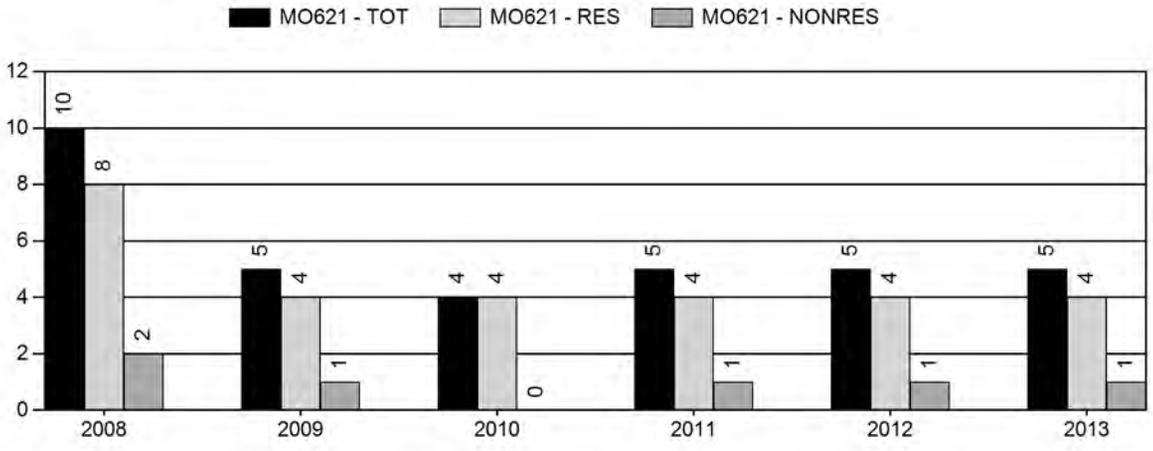
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



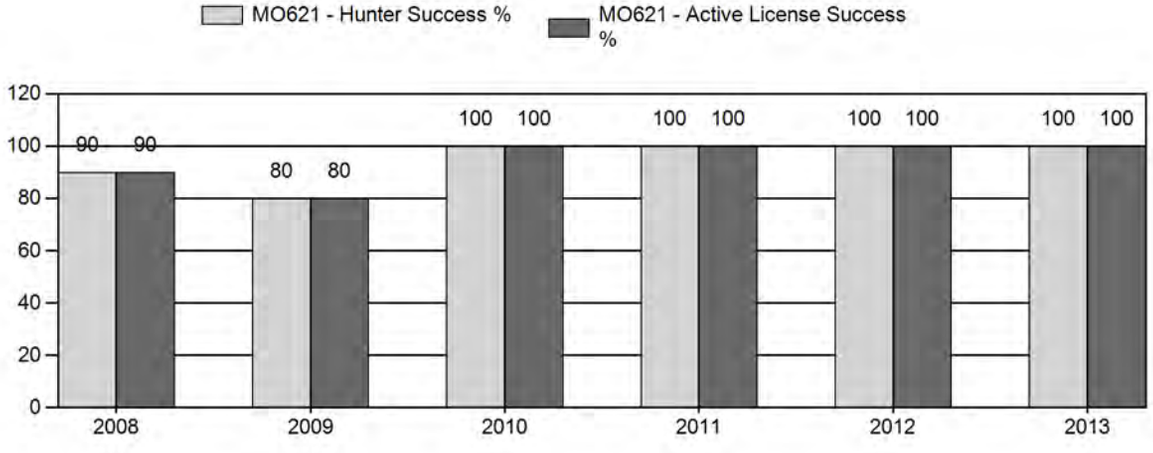
Harvest



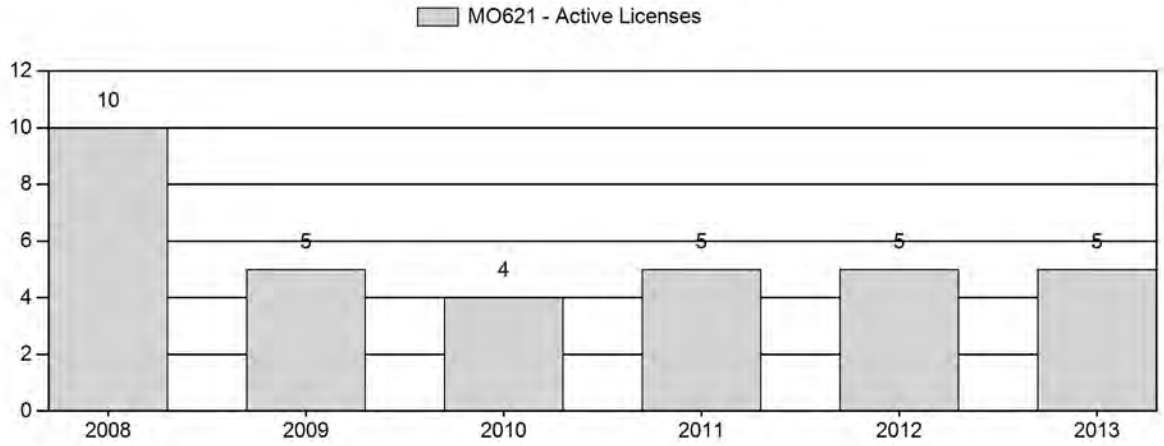
Number of Hunters



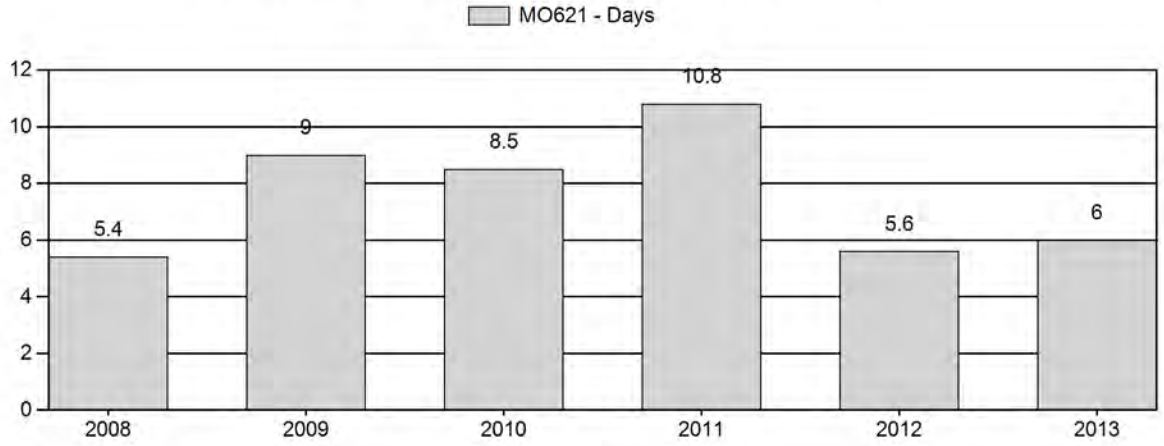
Harvest Success



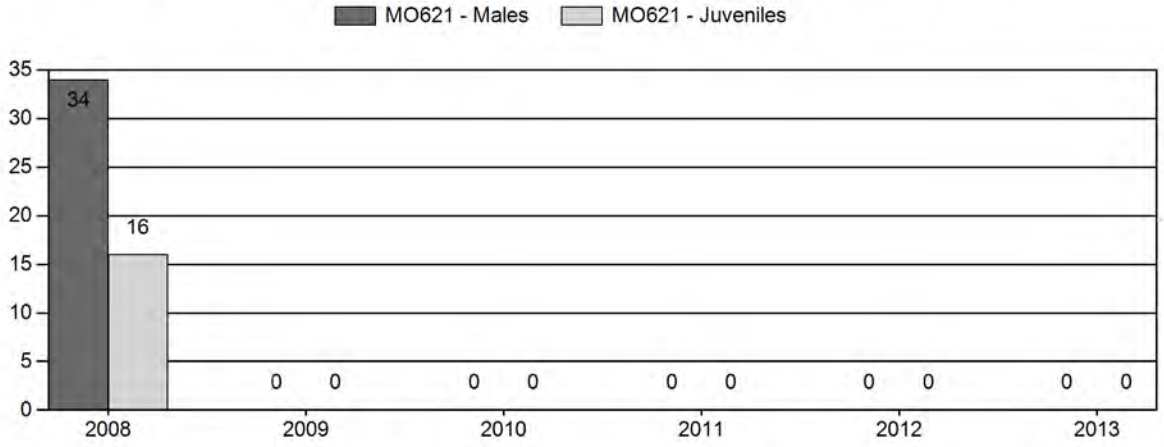
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Moose Herd MO621 - DUBOIS

		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
2008	0	0	0	21	23%	61	66%	10	11%	92	0	0	0	34	± 0	16	± 0	12
2009	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2014 HUNTING SEASONS
DUBOIS MOOSE (MO 621)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
6	1	Oct. 1	Nov. 20	5	Limited quota; antlered moose
Archery		Sep. 1	Sep. 30		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
6		
Total		

Management Evaluation
Current Management Objective: 400
Management Strategy: Special
2013 Postseason Population Estimate: unknown
2014 Proposed Postseason Population Estimate: unknown

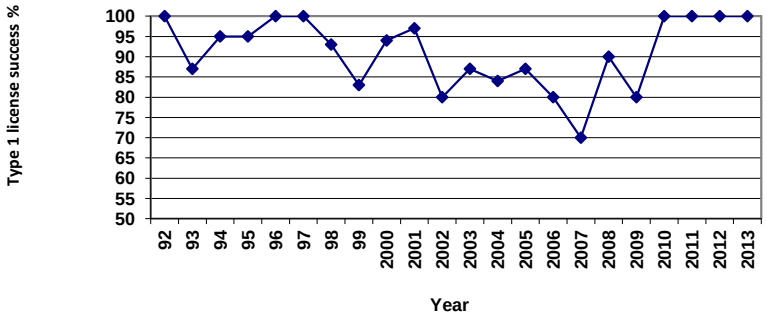
Management Issues
The Dubois moose herd has a population objective of 400 and a special management designation. The objective has been in place since 1994. Despite having a numerical objective, the herd has never been modeled effectively and no model has been constructed over the past 10 years due to the lack of demographic data. Given the low density of moose in the herd unit, managers essentially stopped collecting demographic data over the past several years. To maintain a small amount of data useful in analyzing long term population trends, managers plan to establish winter count areas at several sites with historically higher wintering moose densities.

Habitat/Weather
The 2013 bio-year was characterized by extreme drought in this herd unit. Vegetation growth on both low elevation winter sites and mid-elevation summer range is thought to have been below average based on personnel observations. The moose population should have been somewhat buffered from the drought due to the extensive amount of habitat occupied by very low moose densities. It is likely this population has been and will continue to be impacted by large tracts of beetle killed timber across the herd unit over the past several years. The effects of this natural successional change should manifest themselves over the next decade.

Harvest Data/Population

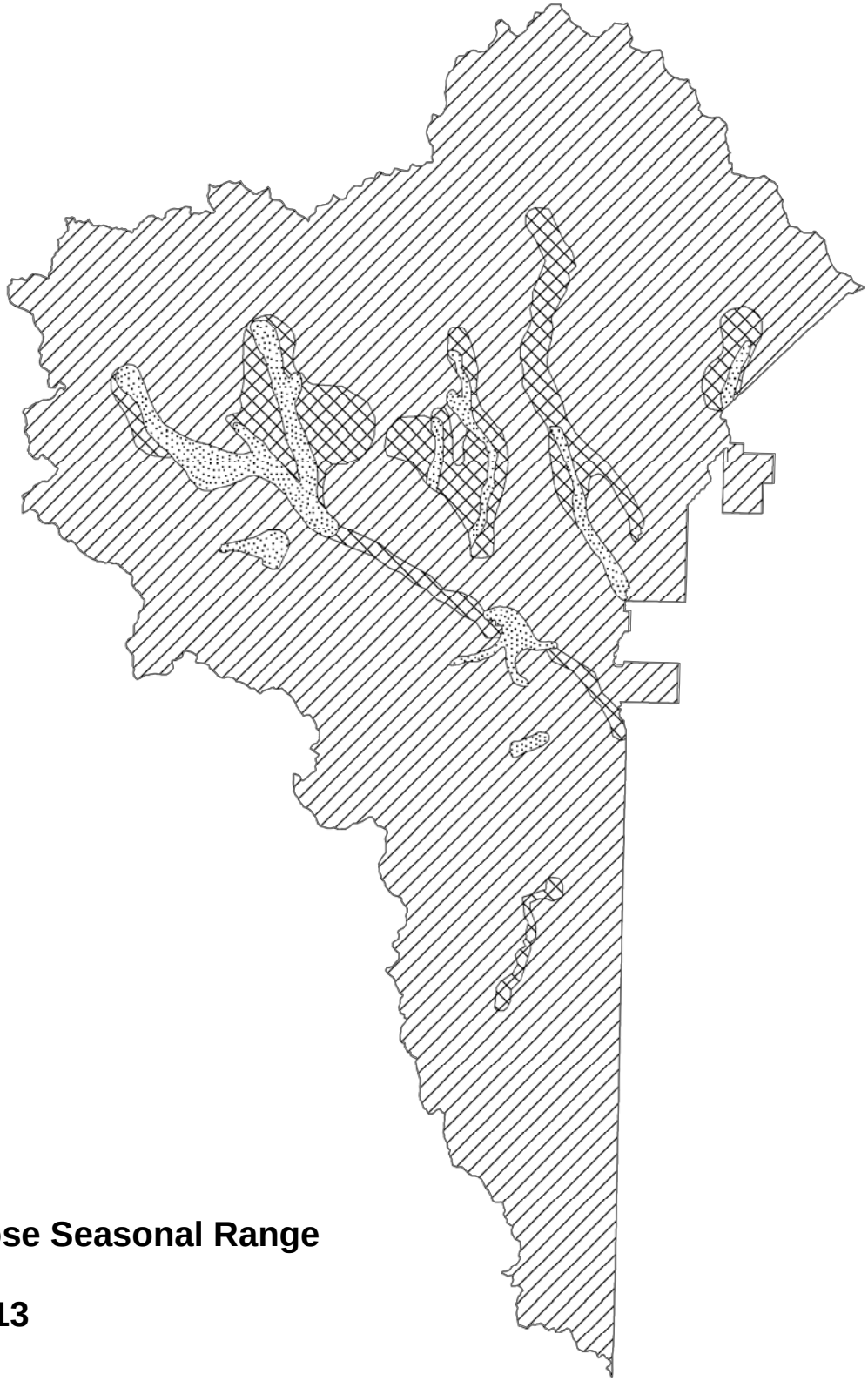
Anecdotal evidence suggests this population declined significantly over the past decade. As the population declined it became progressively more difficult and expensive to collect a reasonable amount of demographic data. Concurrently, harvest pressure was reduced and the small amount of harvest data collected annually became less useful for making management decisions. The Department has not actively managed this herd for a number of years due to the lack of demographic data and the cost prohibitive nature of collecting an appropriate amount of classification data. Instead, personnel have used anecdotal information as well as Type 1 license success data to formulate hunt season recommendations. For the past 4 years an appropriate amount of recreational opportunity has been provided by issuing 5 Type 1 licenses annually. The reduction to 5 Type 1 licenses occurred in 2009 in response to declining success on Type 1 licenses over the previous decade (Fig. 1). Success on the Type 1 licenses has been 100% each of the last 4 years including 2013.

Figure 1. Type 1 license success in the Dubois Moose Herd



Management Summary

While hunter success has been high the past 4 years, there is no indication the moose population increased dramatically. A significant population increase should be indicated by greater moose numbers on key, highly visible winter ranges throughout the herd unit. Department personnel have not noticed or received public comments to suggest an increase in moose numbers on winter range. Given no anecdotal information suggesting population growth in this herd unit, the 2014 hunt season will remain unchanged with the issuance of 5 Type 1 licenses.



Dubois Moose Seasonal Range
Hunt Area 6
Updated 2013

CRUWYL

SSF

WYL

N

2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2013 - 5/31/2014

HERD: BS609 - WHISKEY MOUNTAIN

HUNT AREAS: 8-10, 23

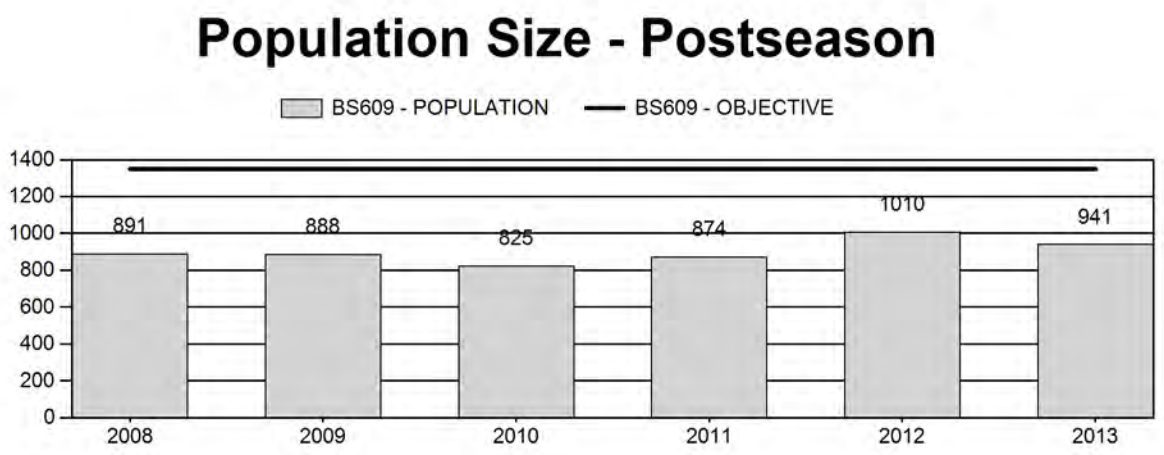
PREPARED BY: GREG ANDERSON

	2008 - 2012 Average	2013	2014 Proposed
Population:	898	941	939
Harvest:	14	16	15
Hunters:	24	25	24
Hunter Success:	58%	64%	62%
Active Licenses:	24	25	24
Active License Percent:	58%	64%	62%
Recreation Days:	208	246	250
Days Per Animal:	14.9	15.4	16.7
Males per 100 Females	39	40	
Juveniles per 100 Females	29	22	

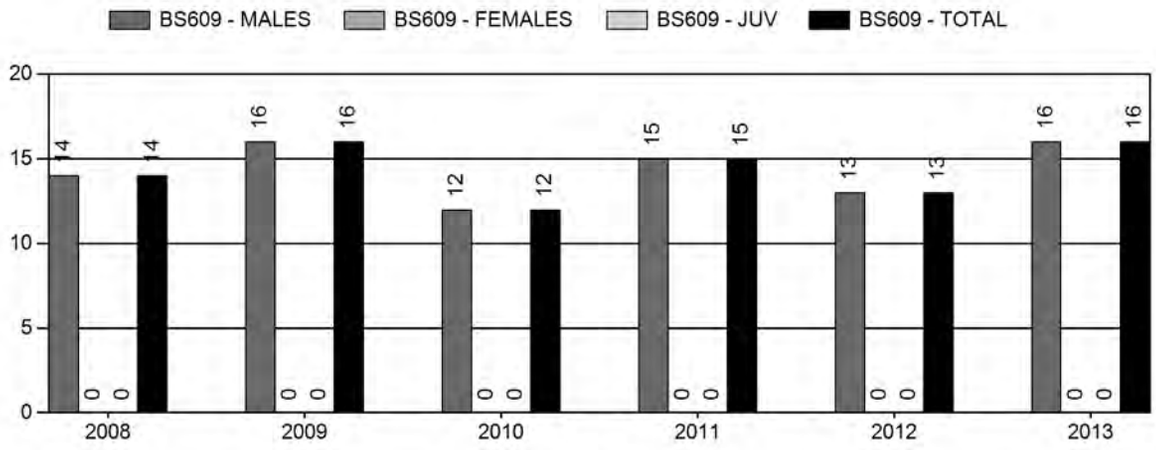
Population Objective:	1,350
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-30.3%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/18/2014

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

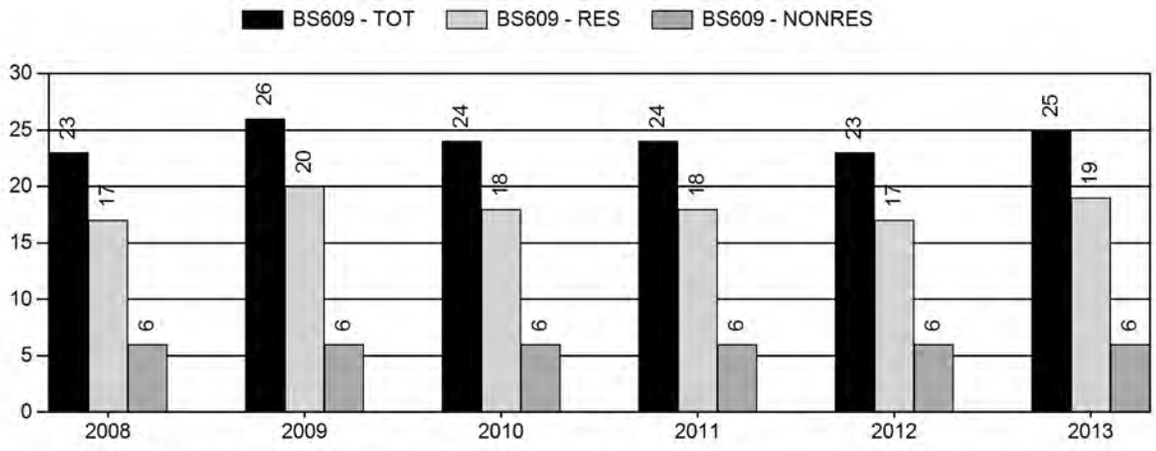
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	6%
Juveniles (< 1 year old):	0%	0%
Total:	1%	1%
Proposed change in post-season population:	-7%	0%



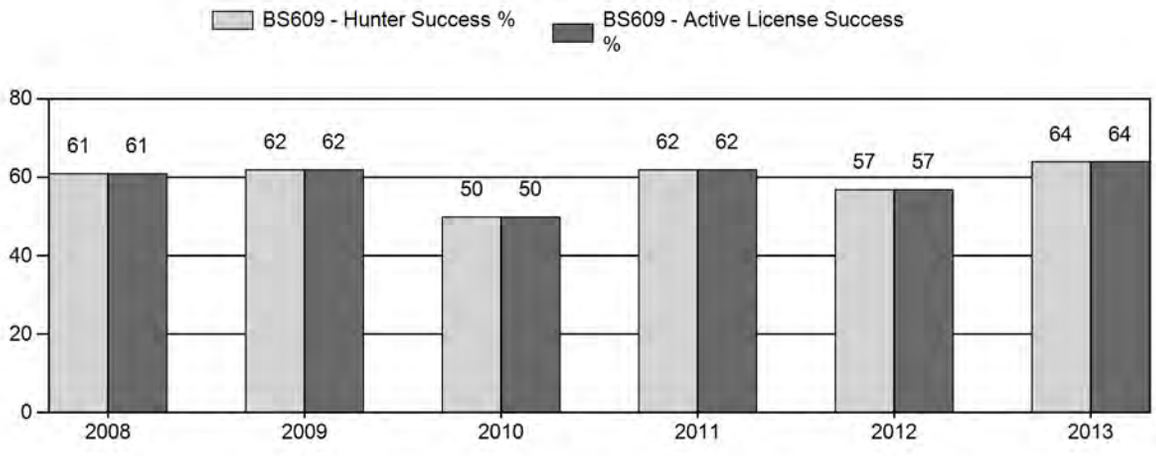
Harvest



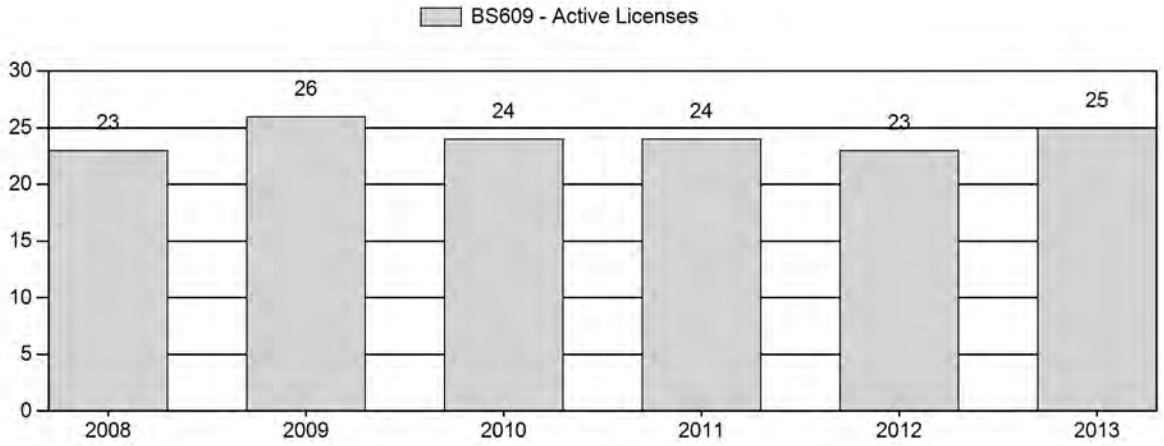
Number of Hunters



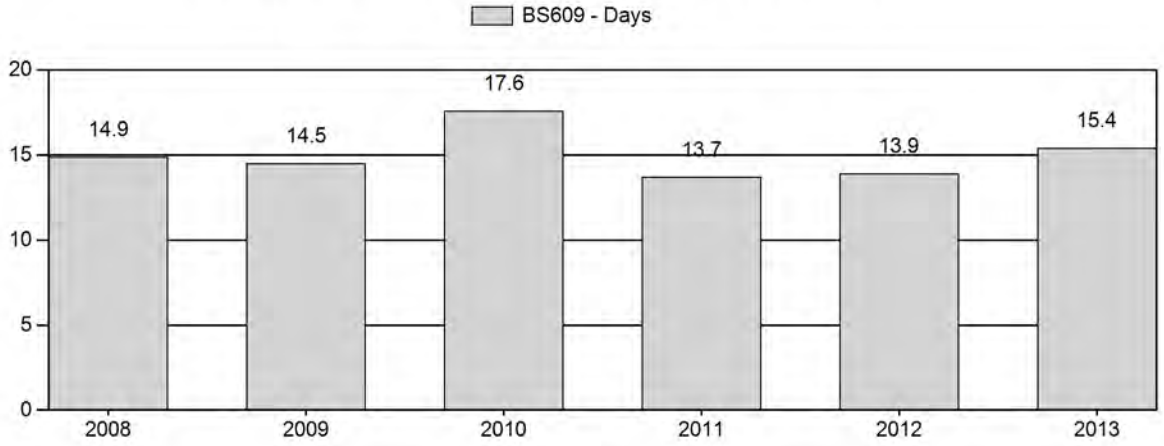
Harvest Success



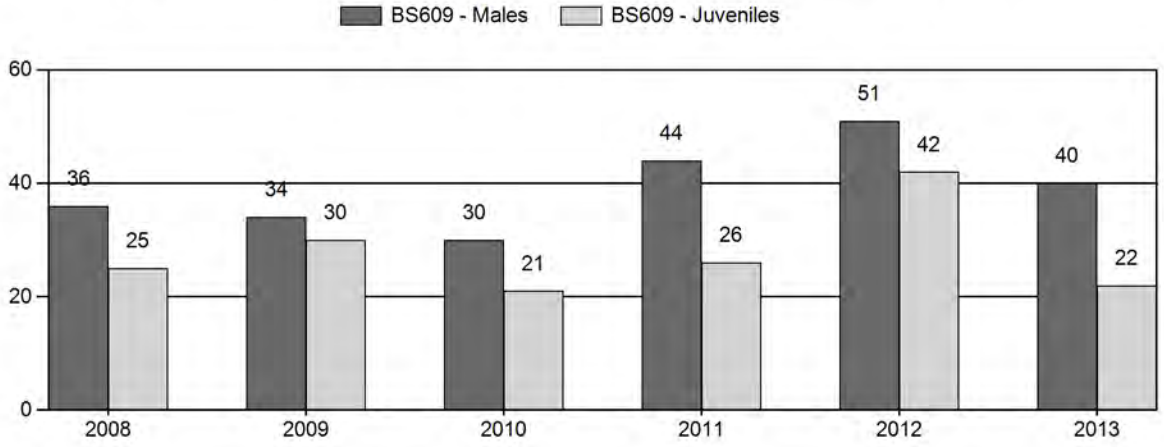
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Bighorn Sheep Herd BS609 - WHISKEY 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
2008	891	4	27	132	22%	366	62%	93	16%	591	298	1	7	36	± 3	25	± 2	19
2009	888	1	26	119	21%	348	61%	106	18%	573	264	0	7	34	± 3	30	± 3	23
2010	825	0	0	77	20%	255	66%	53	14%	385	240	0	0	30	± 4	21	± 3	16
2011	874	15	83	98	26%	223	59%	58	15%	379	328	7	37	44	± 5	26	± 4	18
2012	1,010	14	149	163	26%	320	52%	133	22%	616	496	4	47	51	± 4	42	± 3	28
2013	941	16	79	95	24%	240	62%	53	14%	388	365	7	33	40	± 5	22	± 3	16

2014 HUNTING SEASONS
WHISKEY MOUNTAIN BIGHORN SHEEP (BS 609)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Limitations
8, 23	1	Sep. 1	Oct. 15	12	Limited quota; any ram
9	1	Aug. 15	Oct. 15	4	Limited quota; any ram
10	1	Aug. 15	Oct. 15	8	Limited quota; any ram
Archery					
8, 23		Aug. 15	Aug. 31		Limited quota; refer to license type
9		Aug. 1	Aug. 14		Limited quota; refer to license type
10		Aug. 1	Aug. 14		Limited quota; refer to license type

Hunt Area	Type	Quota change from 2013
Total		

<u>Management Evaluation</u>
Current Management Objective: 1,350
Management Strategy: Special
2013 Postseason Population Estimate: ~900
2014 Proposed Postseason Population Estimate: ~900

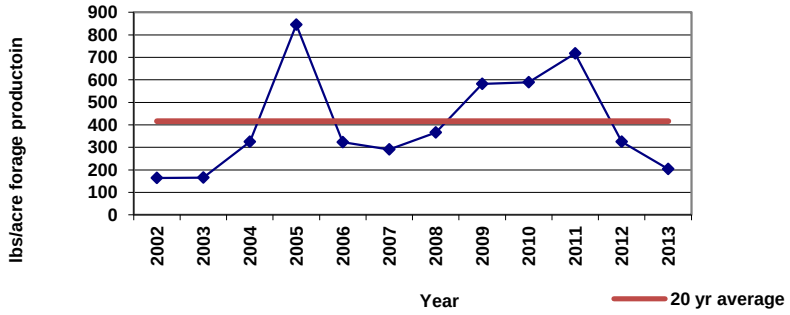
Management Issues
The post-season population objective for this herd is 1,350 sheep and it is classified as special management. The current objective was adopted in 2002. In 2013 the Department conducted an objective review for the herd that included a public meeting. Following review, the objective remained unchanged. The herd has been below objective for over two decades following a catastrophic, all-age pneumonia die-off in 1991. The population continues to languish below objective primarily due to low recruitment associated with persistent lamb pneumonia. In 2012 and 2014 the Department collected blood samples from sheep in the herd to document the presence and frequency of various pathogens. Forty seven sheep were sampled in 2012 and 22 sheep were sampled in 2014.

Habitat/Weather

The Whiskey Mountain bighorn sheep herd occupies the northern Wind River Mountain Range. The majority of sheep winter at sites located along the very northern tip of the Wind River Mountains. Some sheep winter at high elevation along the continental divide and scattered throughout the west slope of the mountains. Sheep disperse from the wintering sites to populate the entire northern portion of the Wind River Mountains in the summer and fall. Much of the sheep habitat is located in wilderness areas and remains undisturbed. Important winter range sites in the upper Wind River Valley are part of the Department's Whiskey Mountain WHMA and are also relatively undisturbed.

Despite protection from development and disturbance, the condition of key winter range throughout this herd unit is still subject to change based on environmental conditions. In 2012, sheep range throughout the herd unit was impacted by extreme drought and the same occurred in 2013. Casual observations both years suggest vegetation production was quite low at high elevation summer range. Based on data from vegetation monitoring transects, herbaceous production on winter range was only 45% of the previous 10 year average and the third lowest production on record over the past 20 years (Fig. 1).

Figure 1. Annual, herbaceous forage production on bighorn sheep winter range



Field/Harvest Data/Population

In conjunction with poor forage production in 2012 and 2013, lamb recruitment was fairly low at 22 lambs per 100 ewes in 2013. This was a significant decline from 2012, however 2012 recruitment was unusually high compared to other values over the past 20 years (Fig. 2). With the exception of 2012, lamb recruitment has been low but stable over the past decade. The ram/ewe ratio in the herd increased markedly in both 2011 and 2012. Despite a decline to 40/100 in 2013, the ram/ewe ratio remained above the 10 year average for the herd (Fig. 3). Both the lamb/ewe and ram/ewe ratio indicate the population was stable.

A population model developed in 2012 behaved predictably with the addition of data in 2013.

For 2013, the TSJ/CA version of the model was selected to track the population. While this model had a higher AIC value than 2 other models, it was the only version to produce reasonable population estimates. Both the CJ/CA and SCJ/SCA models produce estimates of less than 500 sheep annually for the past 10 years. Many of the estimates produced by these 2 models are well below the number of sheep personnel classified on a given year. Indications are the TSJ/CA model does a fair job of simulating the population. The model simulates a long, steady decline in the sheep population from the late 1990's through 2010. The population then increased in 2011 and 2012 and declined slightly in 2013. Overall, the model indicates a population change of less than 5% in the past 6 years or essentially a stable population. The 2013 population estimate is approximately 900 sheep.

Overall harvest success in the herd unit was 64% in 2013. This included success rates of 25% in hunt area 9, 100% in hunt area 10, and 54% in hunt areas 8/23. Success rates for 2013 in areas 9 and 8/23 were similar to success rates each of the past 3 years. The success rate increased each of the past 3 years in area 10. Again, the consistent to improving hunter success indicates a stable population. The average age of rams harvested increased in each hunt area in 2013 (Fig. 4). Despite the increase of average age in 2013, the long-term trend in age of harvested rams is flat again indicating a relatively stable population. The average age of ram harvest in hunt area 9 tends to fluctuate wildly since it is based on a very low sample. In both 2012 and 2013, a single 10 year old ram was harvested in hunt area 9 and accounts for the high average harvest age.

Figure 2. Ten-year recruitment history in the Whiskey Mountain Bighorn Sheep Herd

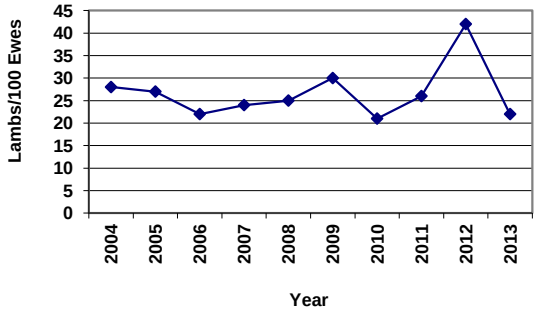


Figure 3. Ten-year history of the ram/ewe ratio in the Whiskey Mountain Bighorn Sheep Herd.

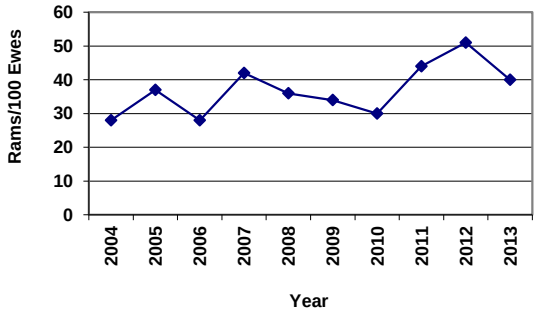
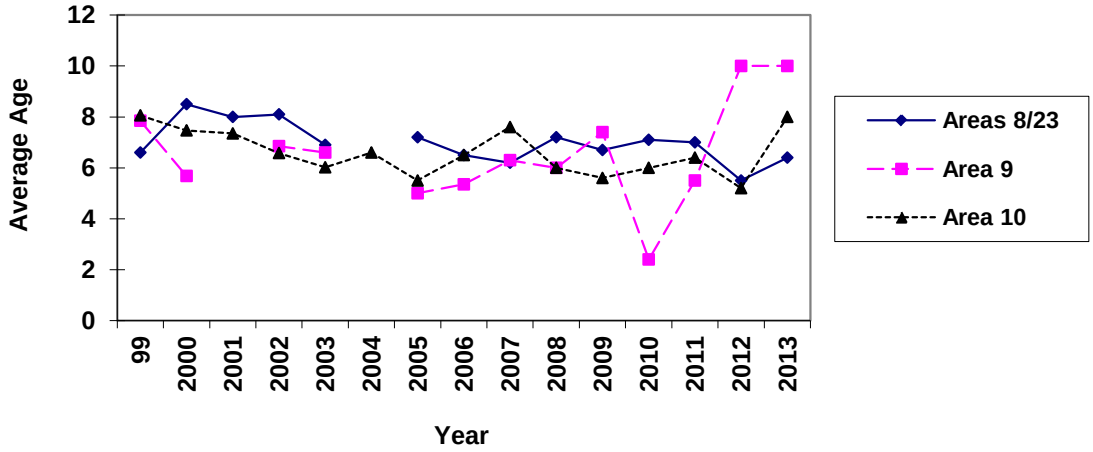


Figure 4. Average age of rams harvested in the Whiskey Mountain Bighorn Sheep Herd.



Management Summary

Overall, indications are there was little demographic change in this population over the past year. This population remains well below objective. Given no indications of significant population growth, the 2014 hunting season is unchanged. With 24 licenses issued throughout the herd unit, hunters are expected to harvest 15 rams in 2014. The population is expected to remain stable in 2014 at about 900 animals.

INPUT	
Species:	Bighorn Sheep
Biologist:	Greg Anderson
Herd Unit & No.:	Whiskey Mountain
Model date:	02/18/14

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	49	58	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	49	60	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	32	154	☑ 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		
1993				193	276	734	1202	193	226	734	1153	
1994				163	245	711	1120	163	188	711	1063	
1995				129	246	725	1099	129	220	725	1073	
1996				182	252	714	1148	182	224	714	1121	
1997				198	287	736	1221	198	260	736	1194	
1998				137	280	716	1132	137	250	716	1102	
1999				201	271	697	1170	201	241	697	1140	
2000				112	268	686	1066	112	232	686	1029	
2001				108	234	650	993	108	204	650	962	
2002				63	208	617	888	63	179	617	859	
2003				153	193	593	939	153	167	593	914	
2004				162	184	574	920	162	164	574	901	
2005				157	207	582	947	157	191	582	930	
2006				123	206	565	894	123	185	565	873	
2007				139	225	573	936	139	203	573	914	
2008				140	214	552	906	140	198	552	891	
2009				163	209	534	906	163	192	534	888	
2010				108	208	521	838	108	195	521	825	
2011				137	227	526	890	137	211	526	874	
2012				226	255	543	1024	226	240	543	1010	
2013				123	279	557	959	123	262	557	941	
2014				151	267	537	956	151	251	537	939	
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

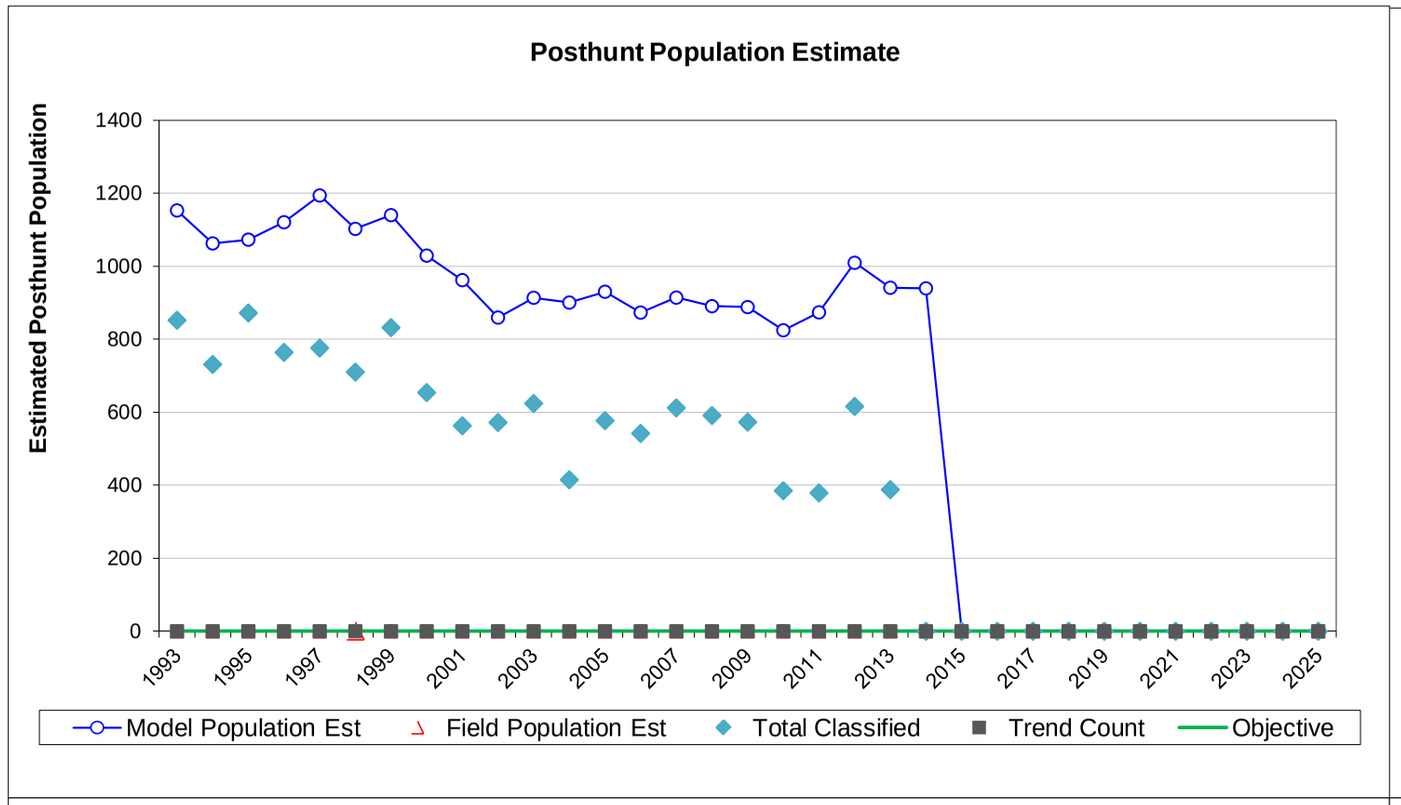
Year	Winter Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.92		
1994	0.90			0.92		
1995	0.79			0.92		
1996	0.90			0.92		
1997	0.42			0.92		
1998	0.61			0.92		
1999	0.47			0.92		
2000	0.40			0.92		
2001	0.40			0.92		
2002	0.90			0.92		
2003	0.40			0.92		
2004	0.70			0.92		
2005	0.40			0.92		
2006	0.90			0.92		
2007	0.40			0.92		
2008	0.40			0.92		
2009	0.40			0.92		
2010	0.90			0.92		
2011	0.90			0.92		
2012	0.52			0.92		
2013	0.45			0.92		
2014	0.40			0.92		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

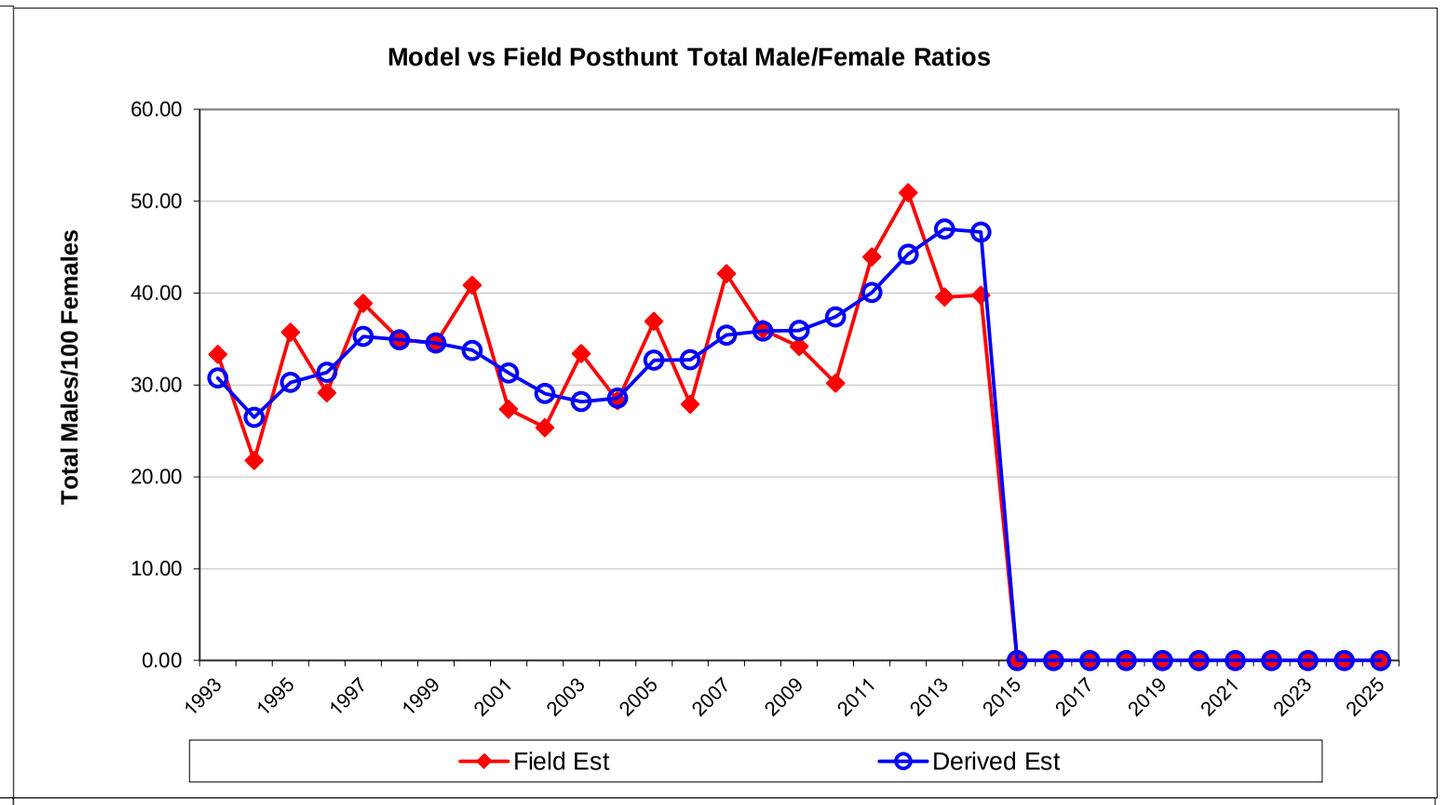
Parameters:	Optim cells
Adult Survival =	0.916
Initial Total Male Pop/10,000 =	0.023
Initial Female Pop/10,000 =	0.073

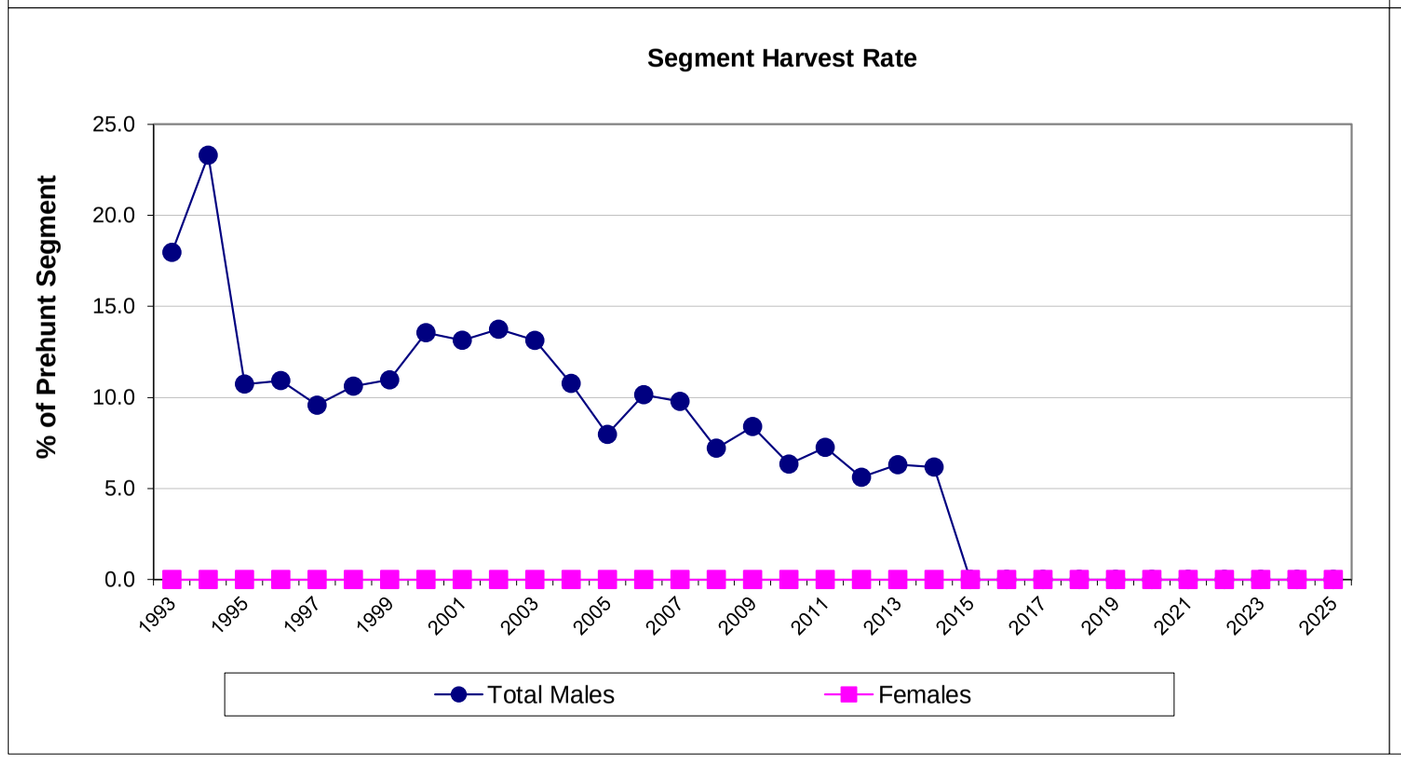
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

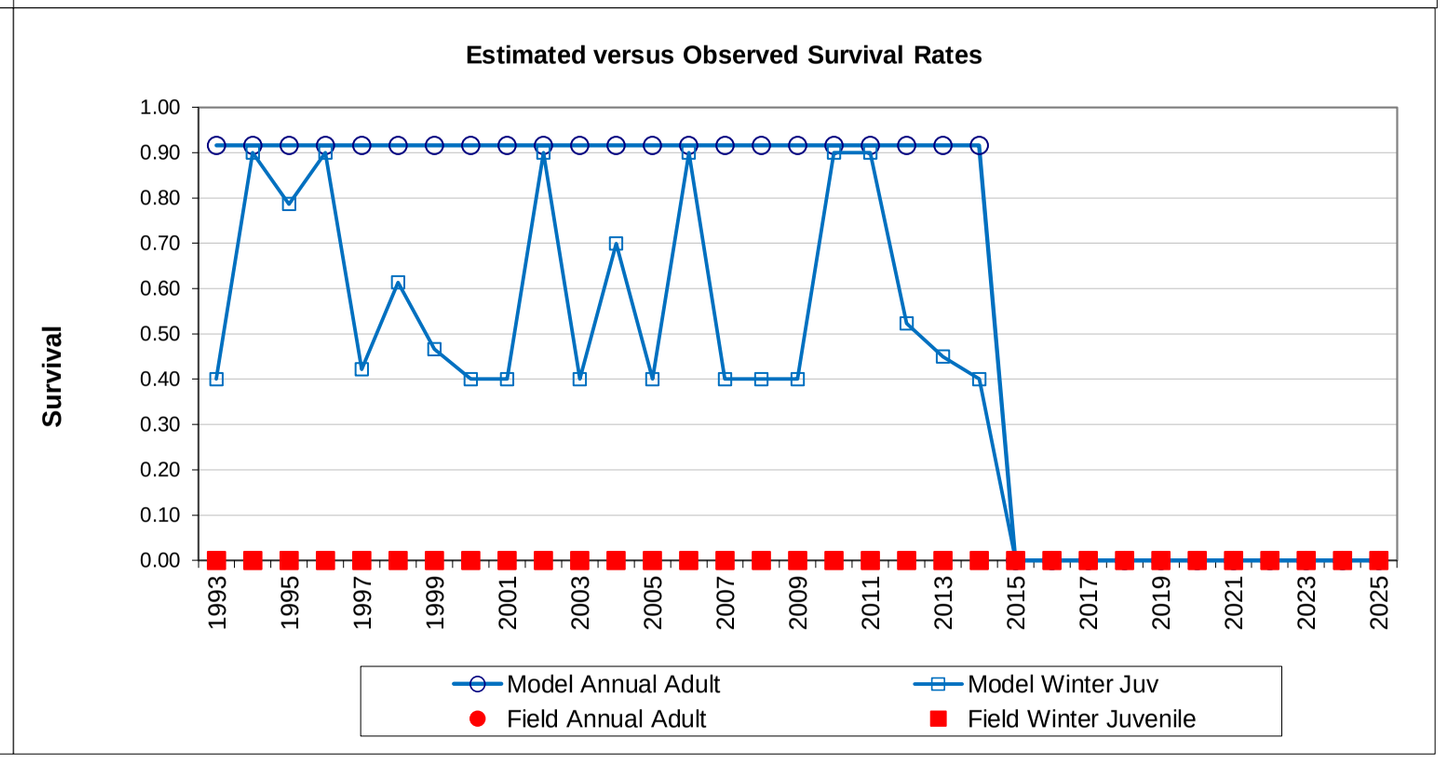
	Classification Counts						Harvest						
Year	Juvenile/Female Ratio			Total Male/Female Ratio								Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		26.22	2.49	30.77	33.33	2.88	0	0	45	0	45	18.0	0.0
1994		22.97	2.37	26.48	21.78	2.29	0	0	52	0	52	23.3	0.0
1995		17.78	1.92	30.29	35.74	2.92	0	0	24	0	24	10.7	0.0
1996		25.51	2.55	31.39	29.15	2.76	0	0	25	0	25	10.9	0.0
1997		26.92	2.70	35.29	38.89	3.40	0	0	25	0	25	9.6	0.0
1998		19.09	2.22	34.92	34.92	3.20	0	0	27	0	27	10.6	0.0
1999		28.88	2.70	34.58	34.58	3.02	0	0	27	0	27	11.0	0.0
2000		16.35	2.14	33.76	40.87	3.72	0	0	33	0	33	13.6	0.0
2001		16.62	2.23	31.31	27.37	2.99	0	0	28	0	28	13.1	0.0
2002		10.19	1.63	29.08	25.36	2.74	0	0	26	0	26	13.7	0.0
2003		25.77	2.88	28.20	33.42	3.37	0	0	23	0	23	13.1	0.0
2004		28.30	3.70	28.58	28.30	3.70	0	0	18	0	18	10.8	0.0
2005		26.99	3.12	32.71	36.93	3.79	0	0	15	0	15	8.0	0.0
2006		21.82	2.71	32.76	27.90	3.14	0	0	19	0	19	10.1	0.0
2007		24.18	2.86	35.43	42.12	4.03	0	0	20	0	20	9.8	0.0
2008		25.41	2.95	35.88	36.07	3.66	0	0	14	0	14	7.2	0.0
2009		30.46	3.38	35.95	34.20	3.63	0	0	16	0	16	8.4	0.0
2010		20.78	3.14	37.41	30.20	3.93	0	1	11	0	12	6.3	0.0
2011		26.01	3.83	40.08	43.95	5.33	0	0	15	0	15	7.3	0.0
2012		41.56	4.29	44.24	50.94	4.90	0	0	13	0	13	5.6	0.0
2013		22.08	3.35	46.99	39.58	4.80	0	0	16	0	16	6.3	0.0
2014		28.18	3.60	46.65	39.77	4.52	0	0	15	0	15	6.2	0.0
2015		0.00											
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES





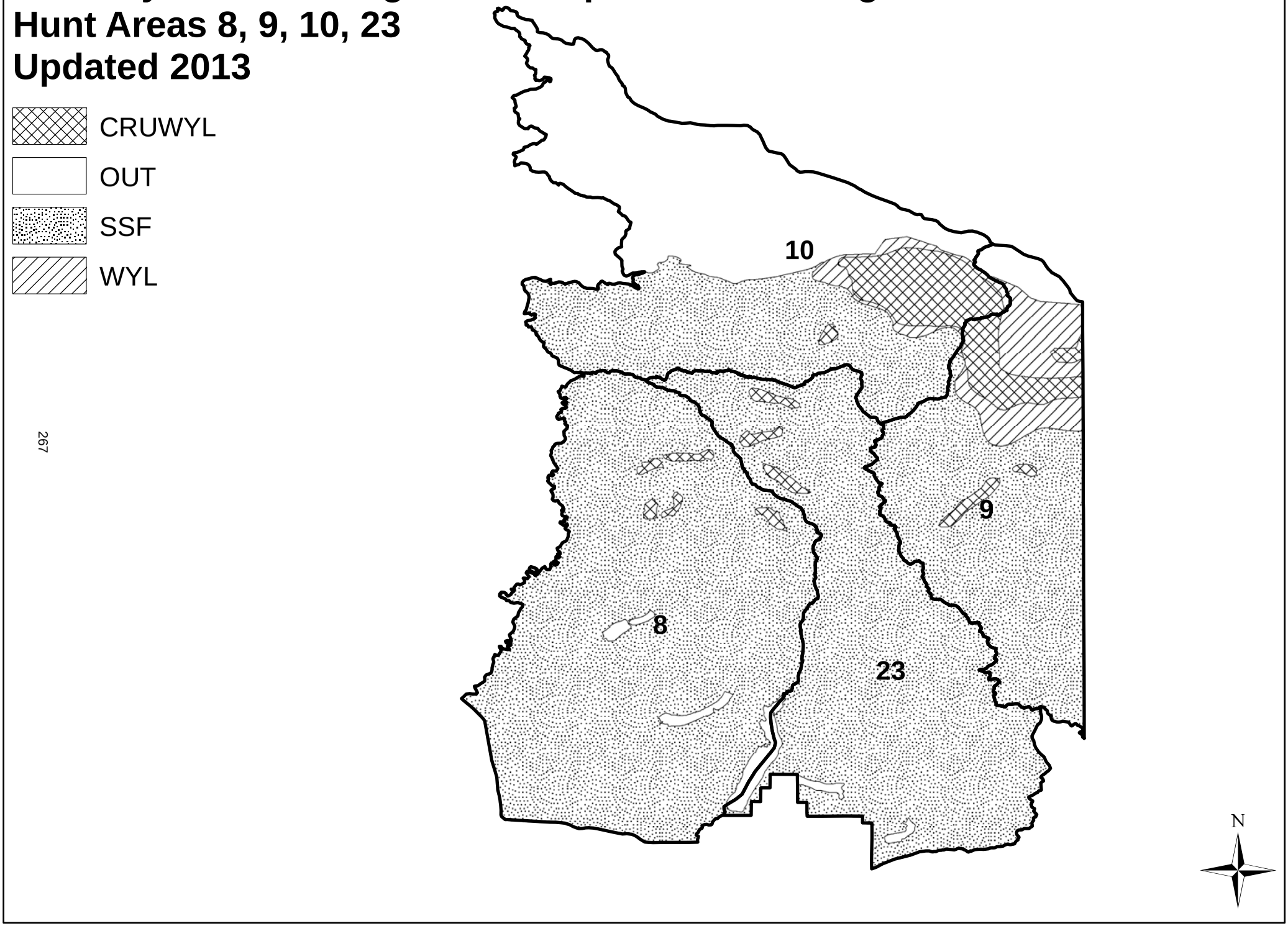




Comments:

END

Whiskey Mountain Bighorn Sheep Seasonal Range
Hunt Areas 8, 9, 10, 23
Updated 2013



2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep | PERIOD: 6/1/2013 - 5/31/2014

HERD: BS615 - FERRIS-SEMINOE

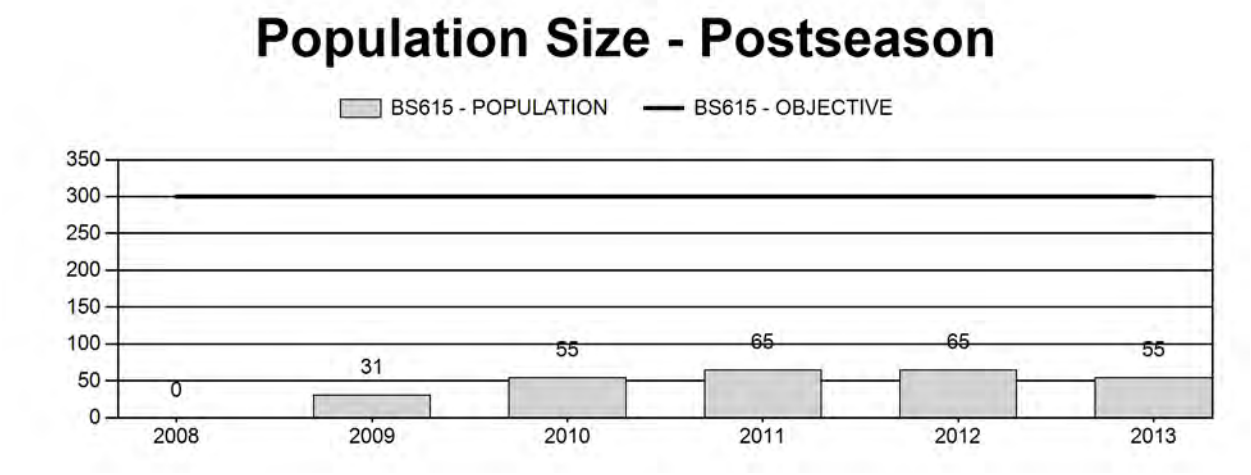
HUNT AREAS: 17 | PREPARED BY: GREG HIATT

	2008 - 2012 Average	2013	2014 Proposed
Population:	43	55	65
Harvest:	0	1	1
Hunters:	0	1	1
Hunter Success:	0%	100%	100 %
Active Licenses:	0	1	1
Active License Percent:	0%	100%	100 %
Recreation Days:	0	6	6
Days Per Animal:	0	6	6
Males per 100 Females	38	0	
Juveniles per 100 Females	10	0	

Population Objective:	300
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-81.7%
Number of years population has been + or - objective in recent trend:	20
Model Date:	None

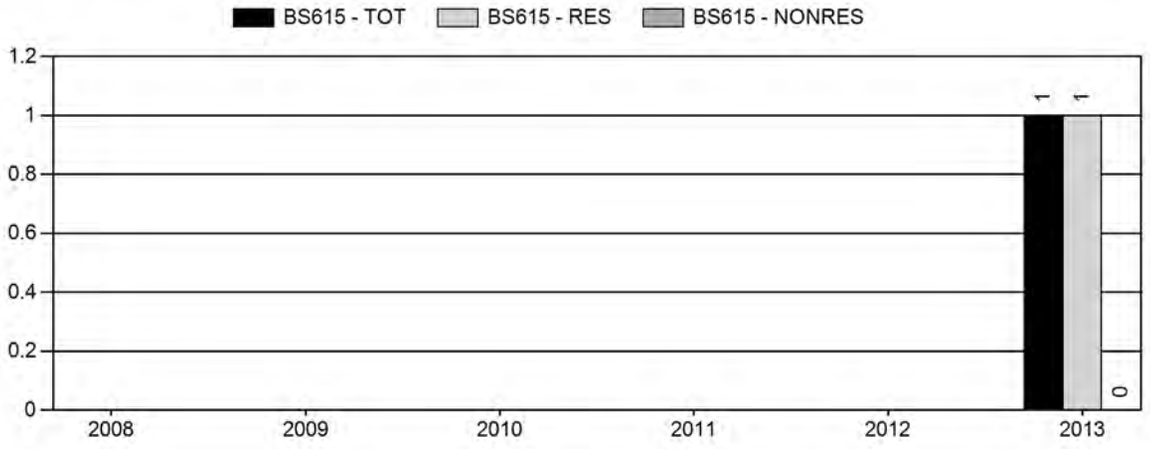
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	7%	6%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	7.7%	18%

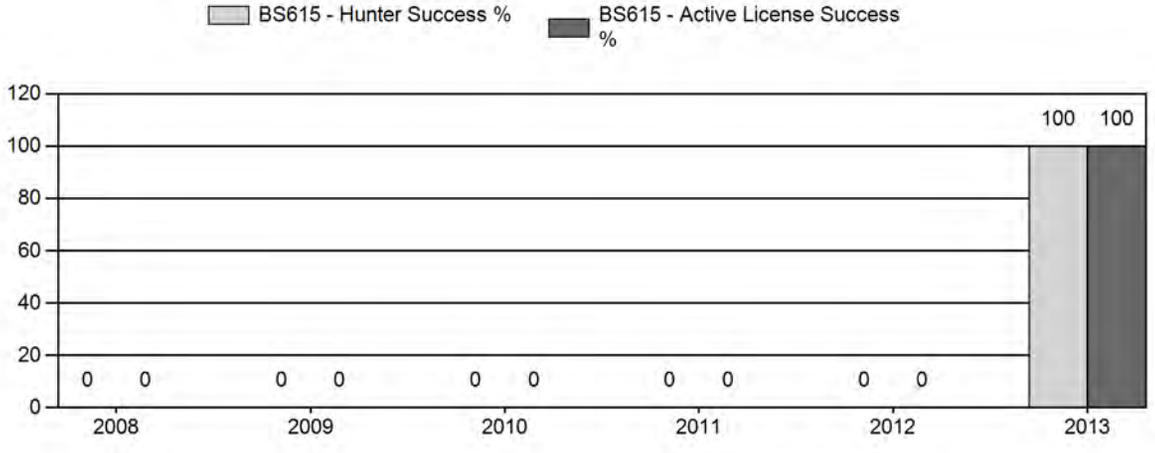


Harvest

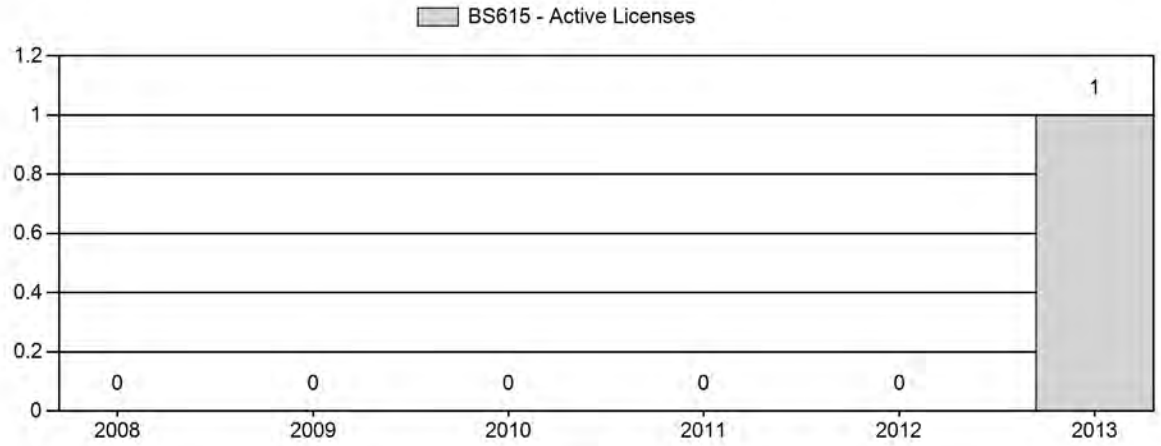
Number of Hunters



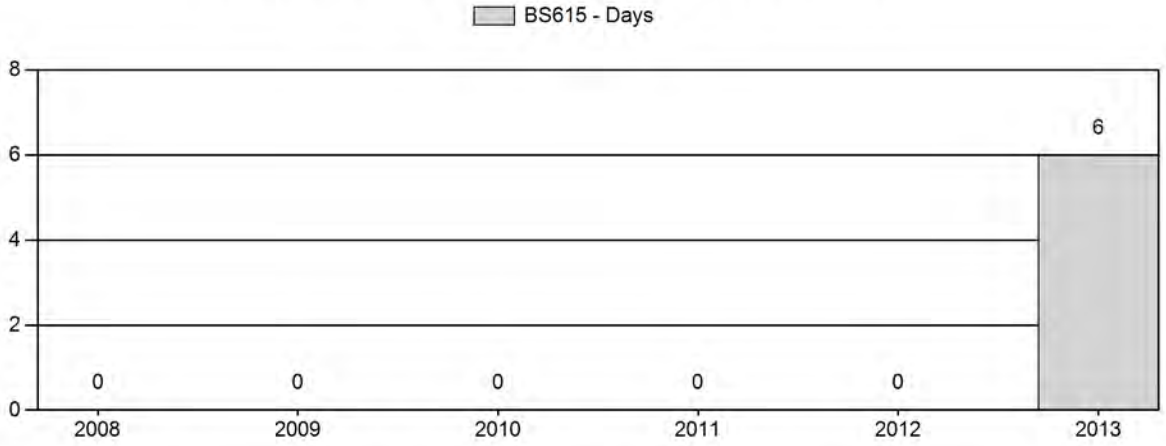
Harvest Success



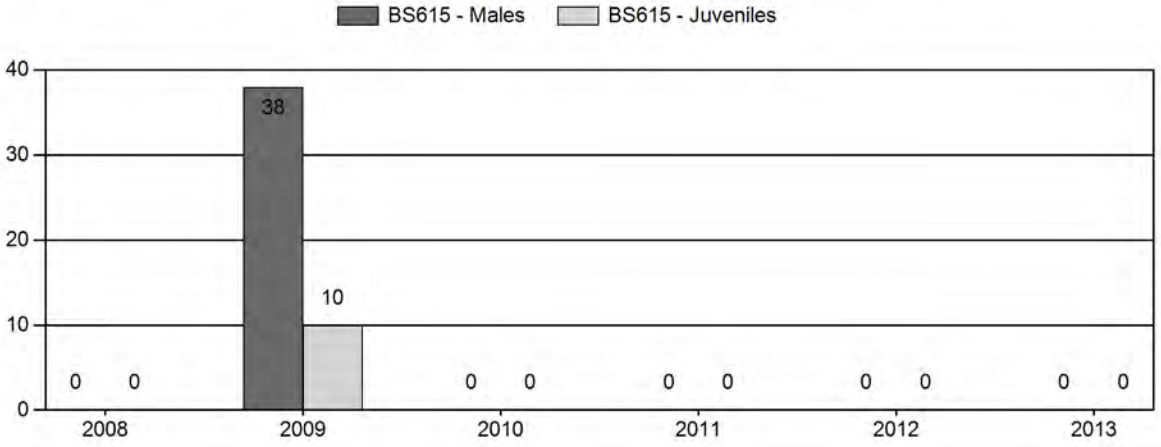
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Bighorn Sheep Herd BS615 - FERRIS-SEMINOE

		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
2008	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2009	31	2	6	8	26%	21	68%	2	6%	31	0	10	29	38	± 0	10	± 0	7
2010	55	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	55	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2014 HUNTING SEASONS
FERRIS-SEMINOE BIGHORN SHEEP HERD (BS615)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
17	1	Sep. 1	Oct. 31	1	Limited quota; any ram (resident only)
Archery 17		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2013
17	1	**0**
Total	**1**	**0**

Management Evaluation
Current Management Objective: 300
Management Strategy: Special
2013 Postseason Population Estimate: ~55
2014 Proposed Postseason Population Estimate: ~65

The management objective for the Ferris-Seminoe Bighorn Sheep Herd Unit is a post-season population objective of 300 sheep, established in 1984. As with all bighorn sheep herds, management strategy is "special" management. The objective and management strategy were last publicly reviewed in 1994.

Herd Unit Issues

Bighorn sheep were first reintroduced into the Ferris Mountains in the late 1940's from two small transplants, one of which consisted of desert bighorns from Nevada. Neither produced a viable population. Slightly larger transplants were made into the Seminoe Mountains in the 1950's and 1960's, but numbers never increased appreciably. A total of one hundred bighorn from the Whiskey Mountain herd were released on the Morgan Creek Unit in the Seminoe Mountains in 1978 and 1980 and, after initial losses and dispersal, a reproducing population was established. Growth rate was low, but animals were successfully recruited into the population. To expand the herd's size and range, another 100 bighorn sheep from Whiskey Mountain were released in the Ferris Mountains in January of 1985. Dispersal was high, but roughly 40 to 60 of the sheep remained in the herd unit.

Poor lamb survival during summer months was a major problem for this reintroduced herd, in both the Seminoe and Ferris portions, with few yearling bighorns recruited each year. Three summers of intensive monitoring identified poor forage quality as the most likely cause of lamb loss. The source population for these transplanted sheep was the Whiskey Mountain herd by

Dubois, where sheep are adapted to high elevation summer habitats and lambed in the first half of June. In the Ferris and Seminoe Mountains, sheep were in essentially low elevation year-long range where much of the lush spring growth is cured and gone by the time lambs were born. Low recruitment failed to replace natural mortality and the herd steadily declined. By 2003, there were estimated to be fewer than 15 sheep remaining in this population.

Forty low elevation, non-migratory bighorn sheep from Oregon and 12 surplus sheep from the Devil's Canyon herd in Wyoming were transplanted into the Seminoe Mountains in 2009 and 2010. These animals typically lamb 4-6 weeks sooner than the high-elevation migratory sheep brought in from Dubois and lambing should be better synchronized with spring green-up for the Seminoe and Ferris habitats. About a half dozen of these sheep established themselves in the Bennett Mountains east of Seminoe Reservoir. Habitats there are probably suitable for bighorns, but the herd unit boundary will need to be expanded to encompass these animals. When appropriate, an additional hunt area may also be required.

Initial indications are these sheep will do well in the Seminoe Mountains, and consideration should be given to using these low elevation, non-migratory sheep to expand their range into the Ferris Mountains as well. The 2011 prescribed natural fire and 2012 wildfire on the eastern end of the Ferris Mountains should provide improved habitats for bighorn.

Weather

Drought in 2012 was classified as moderate in April, severe in May and then extreme for all subsequent months through February 2013. Body condition of deer harvested from the Ferris herd was poor, so bighorn sheep were probably in similar condition. Losses during that winter were expected to be above average because of poor body condition, low forage production the previous summer, and the three severe blizzards that struck in April 2013. Seven out of 24 collared bighorns died in the 2012-13 winter. Two presumably to mountain lion predation, one to fence mortality, and four died of winter exposure/starvation. Collars indicate these winter loss animals died during the April blizzards.

Habitat

Decades without fire resulted in decadent shrub stands encroached by conifer in this herd unit. Severe drought reduced the quantity and quality of forage in 2012 and 2013. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2013. No transects have been established for herbaceous forage.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminoe and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminoe Mountains and the eastern Ferris Mountains burned thousands of acres, including occupied bighorn habitat. In addition to opening habitats adjacent to rocky escape cover, the prescribed burns should benefit bighorn sheep productivity with herbaceous cover and return of young vigorous shrub complexes. Forage benefits from the wildfires will be longer term.

The Seminoe Fire burned over 3,800 acres in the Seminoe Mountains including areas within Morgan Creek WHMA. As in 2012, the Rawlins BLM again coordinated and funded aerial

application of Plateau® in 2013 to mitigate cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions. Plans for additional prescribed fires in the Seminoe Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire.

Field Data

No bighorns were found during helicopter surveys of the Seminoe Mountains in December 2013. BLM personnel preparing for future prescribed burns found a group of 15 rams in the Seminoe Mountains in late summer/early fall. All telemetry collars have dropped off these sheep, so bands are more difficult to locate. Winter surveys found only 2 lambs out of 17 bighorn sheep, most of which were ewes, so it appears lamb production was affected by the drought in 2013.

Harvest Data

The single resident hunter in this area harvested a ram late in the season, a three-year old that was presumably descended from the Oregon and Devil's Canyon transplants, but born in the Seminoe Mountains. The hunter reported six days of hunting, which is low compared to hunter effort expended when this area was last hunted in the 1980s. The hunter and his guide found at least 15 different rams in the Seminoes, presumably the same seen by the BLM, quite a few of which were older than the one harvested.

Population

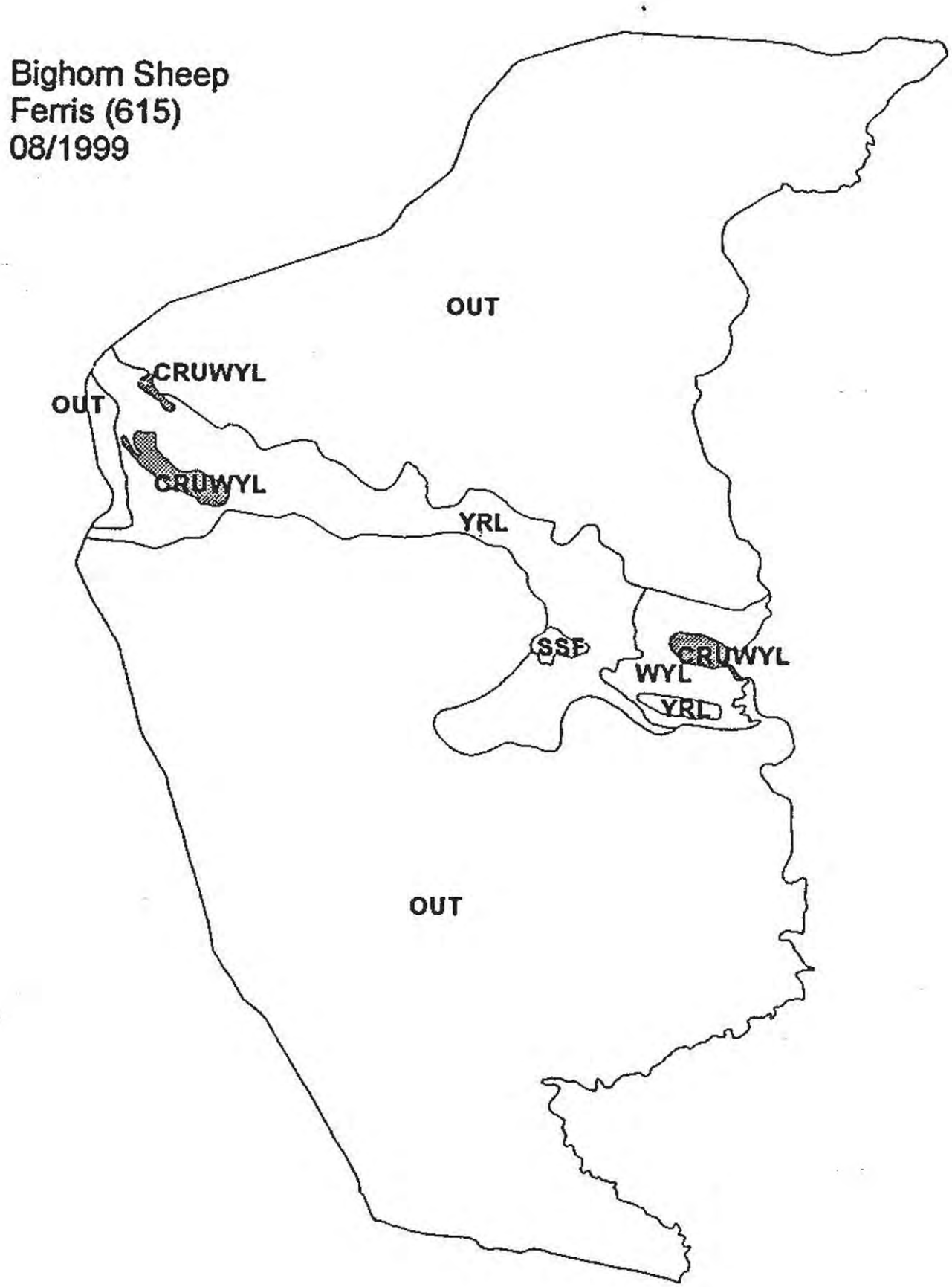
No model exists for this small herd, nor is one likely in the near future. Current population estimates are based upon limited observations of small bands in the Seminoe and Bennett Mountains. Based upon known mortality of telemetered bighorns, losses during the 2012-13 winter were probably high, and the herd is now estimated to be between 50 to 75 sheep, roughly the same size as immediately after the transplants. Lamb production did not appear to be high in 2013, so growth of the herd may be slow. Recovery of burned areas should improve forage for gestating and lactating ewes, despite drought conditions, and lamb numbers should increase.

Management Evaluation

The population was first hunted in 1983, with two rams being harvested by four hunters. Minimal hunts with only four licenses were held each year through 1989, with a total of 21 rams being harvested by 28 hunters. Illegal killing of both rams and ewes was a problem during this period. Non-consumptive use of this herd was high, particularly in the Seminoe Mountains.

Department personnel, BLM and the 2013 hunter all report seeing at least 15 rams in the Seminoe Mountains, several of which are nearing full-curl. With these numbers of trophy animals available, a limited harvest by a single license is warranted.

Opening and closing dates are the same used in this herd during the 1980s, the same as in 2013 and comparable to most other sheep areas in the state. Archery season dates are standard for most areas.


Bighorn Sheep
Ferris (615)
08/1999
OUT
CRUWYL
OUT
CRUWYL
YRL
SSF
CRUWYL
WYL
YRL
OUT