

2013 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL531 - IRON MOUNTAIN

HUNT AREAS: 6

PREPARED BY: LEE KNOX

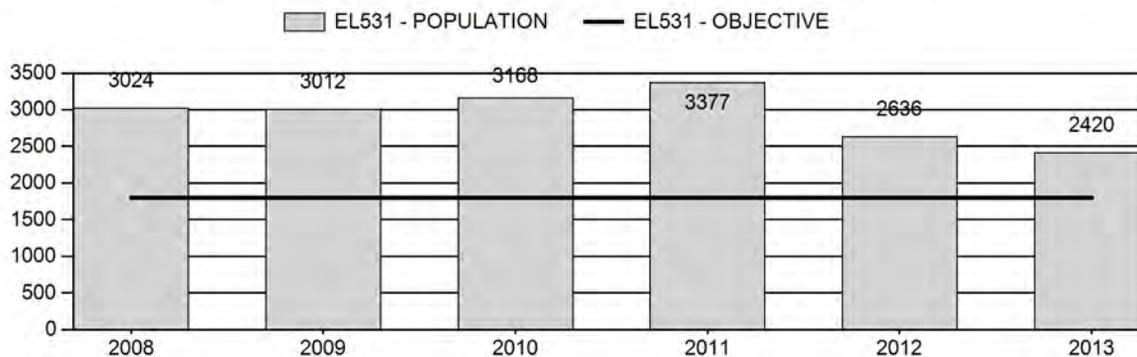
	<u>2008 - 2012 Average</u>	<u>2013</u>	<u>2014 Proposed</u>
Population:	3,043	2,420	2,037
Harvest:	689	716	655
Hunters:	1,206	1,814	1,300
Hunter Success:	57%	39%	50%
Active Licenses:	1,253	1,916	1,550
Active License Percent:	55%	37%	42%
Recreation Days:	7,246	12,539	12,000
Days Per Animal:	10.5	17.5	18.3
Males per 100 Females	18	29	
Juveniles per 100 Females	46	49	

Population Objective:	1,800
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	34%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/21/2014

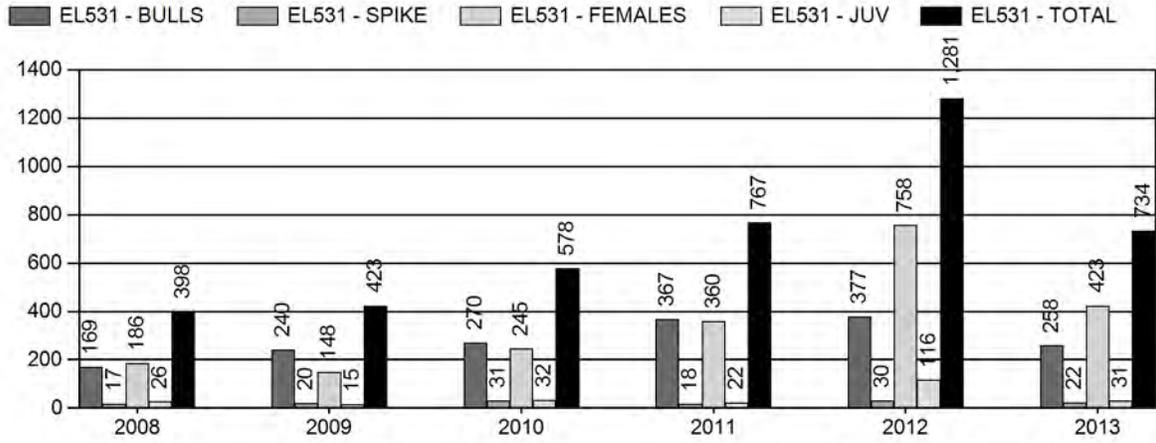
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	24%	13%
Males ≥ 1 year old:	38%	40%
Juveniles (< 1 year old):	4.5%	4.5%
Total:	23%	24%
Proposed change in post-season population:	25%	26%

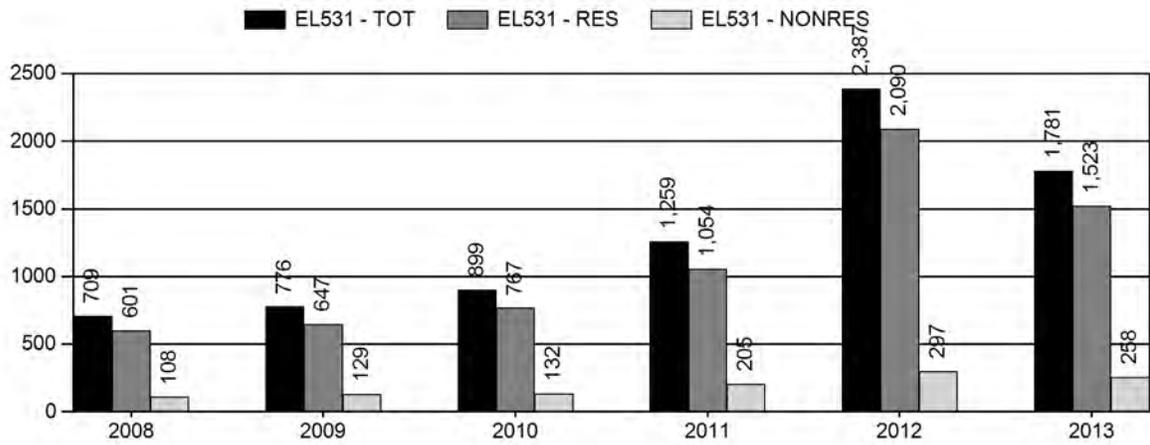
Population Size - Postseason



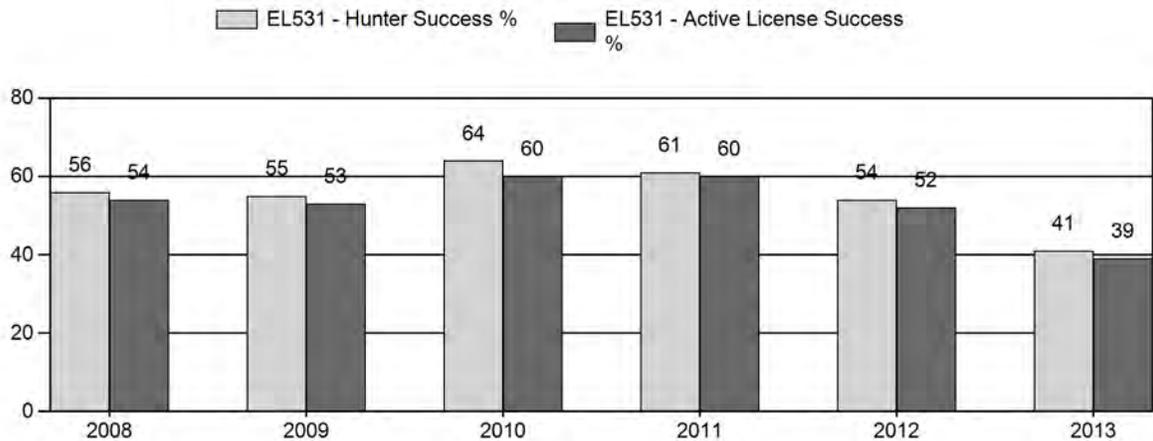
Harvest



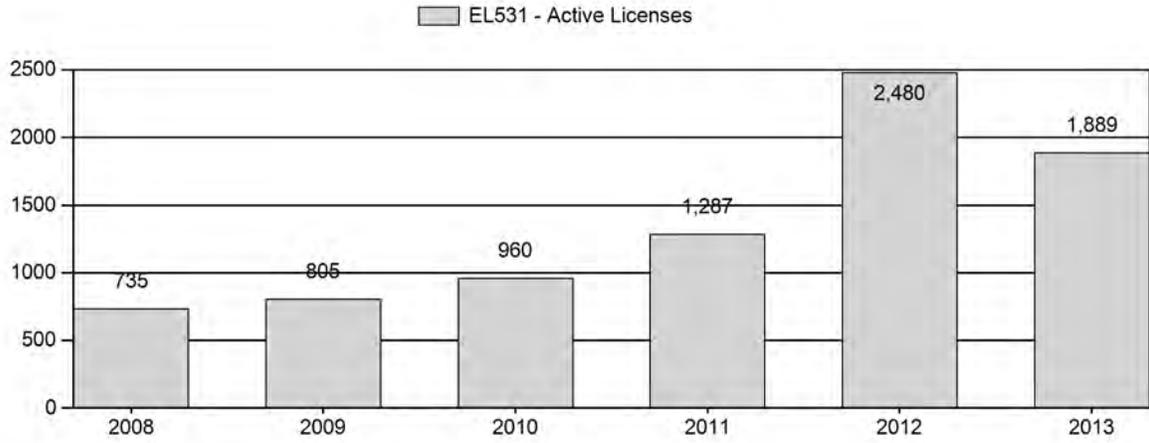
Number of Hunters



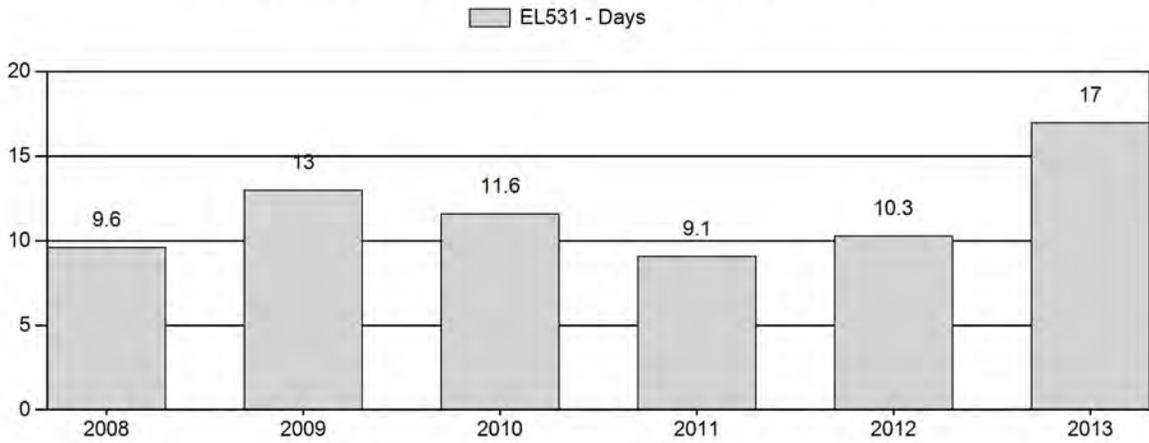
Harvest Success



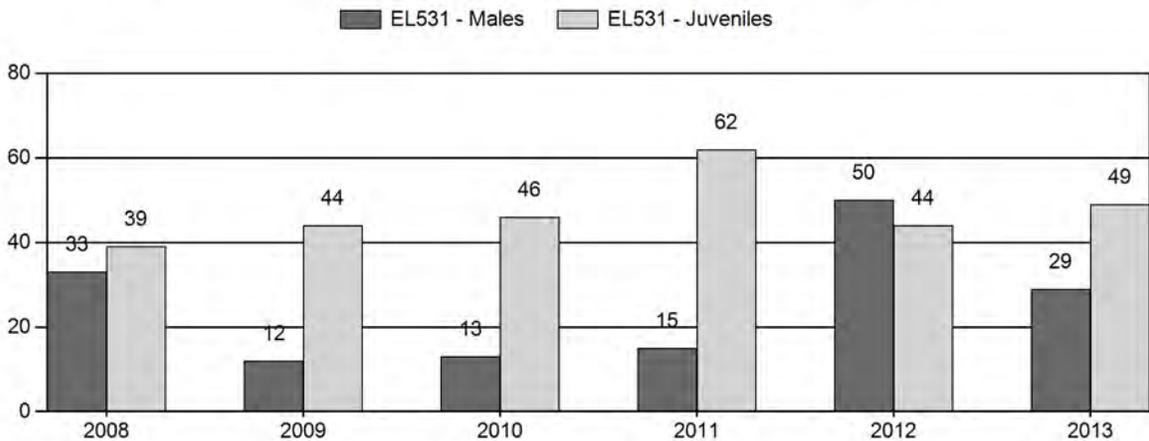
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL531 - IRON MOUNTAIN

Year	Post Pop	MALES			FEMALES			S			Tot			Males to 100 Females			Young to 100 Adult		
		Ylg	Adult	Total %	Total	%	Total	%	Total	%	Cls	Obj	Cls	Yng	Adult	Total	Conf	Int	Adult
2008	3,024	36	19	55	168	58%	66	23%	289	469	21	11	33	±6	39	±7	30		
2009	3,012	70	21	91	741	64%	325	28%	1,157	533	9	3	12	±1	44	±3	39		
2010	3,168	53	26	79	604	63%	278	29%	961	617	9	4	13	±2	46	±4	41		
2011	3,377	20	16	36	235	56%	145	35%	416	0	9	7	15	±3	62	±8	54		
2012	2,636	52	46	98	196	51%	87	23%	381	0	27	23	50	±7	44	±7	30		
2013	2,420	75	86	161	557	56%	273	28%	991	644	13	15	29	±3	49	±4	38		

**2014 HUNTING SEASONS
IRON MOUNTAIN ELK (EL531)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
6		Oct. 1	Oct. 31		General license; any elk valid off national forest,
		Nov. 1	Jan. 31		General license; antlerless elk valid off national forest
	1	Oct.15	Oct. 31	75	limited quota licenses; Any elk
		Nov. 1	Jan. 31		Unused Area 6 Type 1 licenses valid for antlerless elk
	4	Nov. 1	Jan. 31	100	Limited quota licenses; antlerless elk
	6	Aug. 15	Jan. 31	1100	Limited quota licenses; cow or calf off national forest;

Archery

Refer to Section 3 of this Chapter

Area	Type	Quota change from 2014
6	1	-25
	6	-400
Herd Totals	1	-25
	6	-400

MANAGEMENT EVALUATION

Current Postseason Population Management Objective: 1800

Management Strategy: Recreational

2013 Postseason population Estimate: ~ 2,400

2014 Proposed Postseason Population Estimate: 2,000

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

Herd Unit Issues

The Iron Mountain Elk Herd Unit includes Hunt Areas 5 and 6 (combined into Hunt Area 6 for 2014) which are composed of mostly private lands except for the Pole Mountain National Forest which is managed under a limited quota license to maintain hunt quality. Urban sprawl and nontraditional landowners are increasing in the herd unit as well as growing stone quarries in parts of Rogers canyon and between I-80 and Wyoming Highway 287. With the second year of a Hunter Management and Access Program (HMAP) (Figure 1) and a liberal season structure,

we maintained the harvest needed to continue to decrease this population. The 2013 post-season population estimate was 2,400 with the population trending downward.

Weather

Weather during the spring and summer of 2013 remained extremely dry. The Palmer Drought Severity Index (PDSI) ranked drought conditions in SE Wyoming as extreme through the month of August. However the fall of 2013 was extremely wet with September 2013 being the wettest September recorded in Laramie. For specific weather information please refer to the following link: <http://www.ncdc.noaa.gov/>.

Habitat

Turnover in personnel, changes in individual job responsibilities of employees, and evolving WGF D agency priorities have resulted in some issues with consistent habitat data collection and interpretation of data. Some transects, years after their initial establishment, have been identified as being in “non-representative” locations. Site selection was often influenced by terrain and/or land ownership status (i.e public access). Changing land uses (wind turbines, roads, fence construction, other developments, etc.) have influenced habitat use by wildlife in some locations, and in some instances have resulted in major shifts in animal usage of the area being monitored. Department personnel are currently evaluating shrub transects and the types of information being collected, and will be looking for ways to improve efficiency of data collection, types of data being collected, and refining criteria for site selection for future transects. The reader is referred to the Strategic Habitat Plan Annual Report for further background information on shrub transects.

Field Data

A total of 991 elk were classified which exceeded the estimated classification objective of 644. Calf ratios increased from 44:100 cows in 2012 to 49: 100 cows which may have been more of a factor of an increase in classification sampling effort than improved range conditions. Bull ratios are at the high end of recreational management at 29:100 cows which is typical of private land dominated herd units. With the decrease in access, hunter success decreased by 10% and hunter effort increased by 7 days. The number of active licenses decreased from 2,487 in 2012 to 1,889 in 2013. We expect this trend to continue for a few more years as the public realizes how difficult it is to find access. From the hunter satisfaction survey the number of hunters that stated they were satisfied or very satisfied with their hunt decreased from 87% in 2012 to 65% 2013. This is likely a factor of hunters not realizing the there is little hunter access.

Harvest Data

The Iron Mountain HMAP was implemented for the second year during the 2013 season, but at a reduced capacity. Department personal and landowners agreed to a more conservative program than the previous year and concentrated the harvest on the northern portion of the herd unit. We provided access to 334 hunters on to the Iron Mountain HMAP this year, harvesting 71 elk. The Sherman Hill HMA, located near the Colorado boarder, was added in 2013 but had minimal harvest. Over all cow harvest during the 2013 season was the second highest on record for this herd unit and was more than the estimated calf crop, and should result in a decrease in the elk population.

Population

This is the first year that we have had enough data to get a model to run. The Time-Specific Juv, Constant Adult Survival, male survival coefficient model was chosen for having the lowest AIC value of 320 and Best Fit of 210. This model predicts the population declining from a high of 3,400 in 2011 to the current population estimate of 2,400. This Model is ranked Poor for a variety of reasons including: little data available; ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; herd unit closure issues apparent; results not biologically defensible.

Management Summary

The 2014 season structure will result in a minimum harvest of 650 elk, and will continue to reduce the population towards the objective. We will be combining Hunt Areas 5 and 6 in 2014 to allow landowners and hunters more flexibility, and to simplify regulations. With the 31 day any elk season ending Oct. 31st, landowners will provide cow harvest opportunities earlier in the season before weather conditions prevent access. We are decreasing the Type 6s from 1,500 to 1,100 for multiple reasons: we do not plan to have the Iron Mountain HMAP in 2014, and we never sold more than 900 of the 1,500 licenses. Area 6 Type 1's will be decreased to 75 licenses to address the decline in hunter success and bull harvest on the forest. Once again, 100 Area 6 type 4s will be valid on forest to maintain antlerless harvest on Pole Mountain.

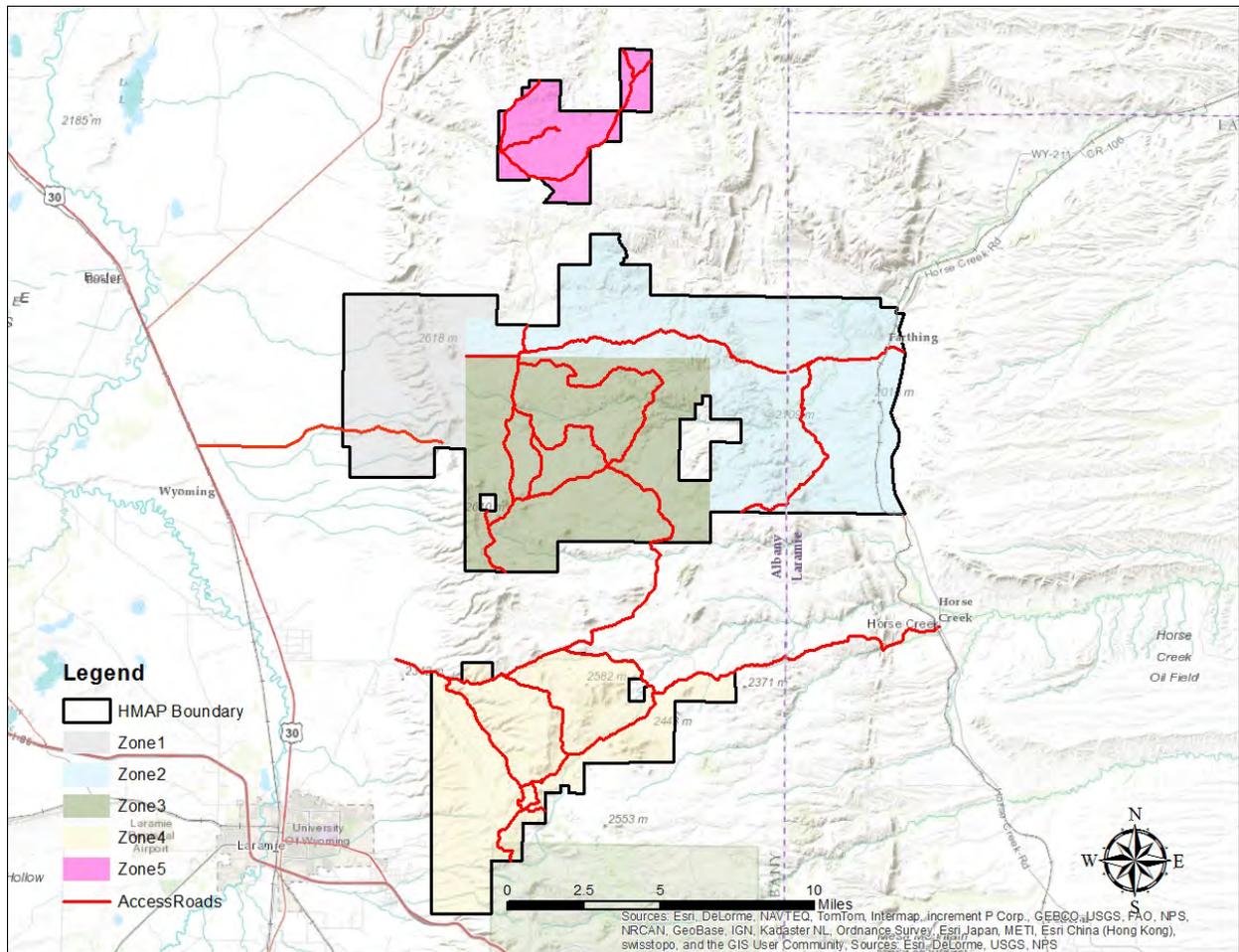


Figure 1. Map of the 2013 Hunter Management and Access Program located between Laramie and Cheyenne.

INPUT	
Species:	Elk
Biologist:	Lee Knox
Herd Unit & No.:	Iron Mountain
Model date:	02/26/14

MODELS SUMMARY		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	385	375	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	385	375	<input type="checkbox"/> CJ,CA Model <input type="checkbox"/> SC,J,SCA Iv
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	1902	1827	<input type="checkbox"/> TS,J,CA Model
TS,J,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	320	210	<input checked="" type="checkbox"/> TS,J,CA,MSC, Modk

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count		Predicted Prehunt Population			Predicted Posthunt Population			Objective
	Field Est	Field SE	Juveniles	Total	Juveniles	Total Males	Females	Juveniles	Total Males	Females	
2003			839	681	1783	3304	822	503	1677	3001	1800
2004			670	715	1890	3274	652	553	1755	2960	1800
2005			784	710	1916	3410	750	521	1763	3034	1800
2006			779	710	1953	3442	754	502	1798	3054	1800
2007			874	694	1988	3555	860	514	1771	3145	1800
2008			731	737	1994	3462	703	532	1789	3024	1800
2009			807	706	1964	3477	790	420	1801	3012	1800
2010			896	767	2141	3603	861	436	1871	3168	1800
2011			1175	815	2243	4232	1139	391	1847	3377	1800
2012			783	905	2351	4039	670	459	1508	2636	1800
2013			686	745	1796	3228	652	437	1331	2420	1800
2014			508	676	1573	2758	475	373	1188	2037	1800
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Survival and Initial Population Estimates

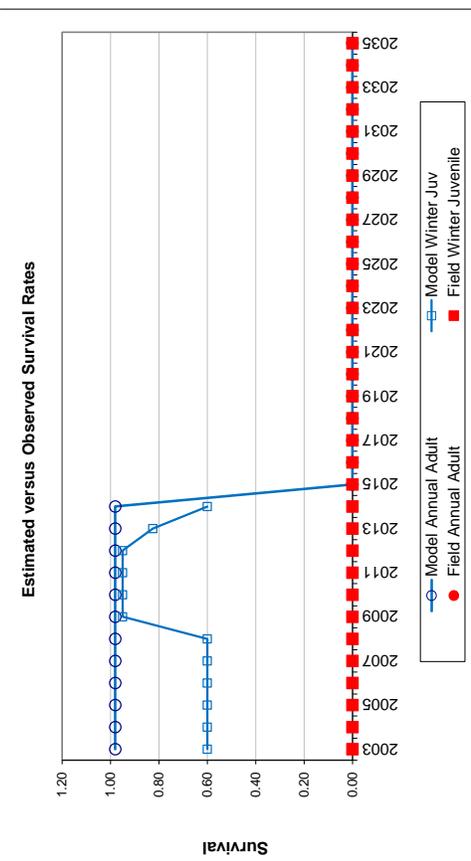
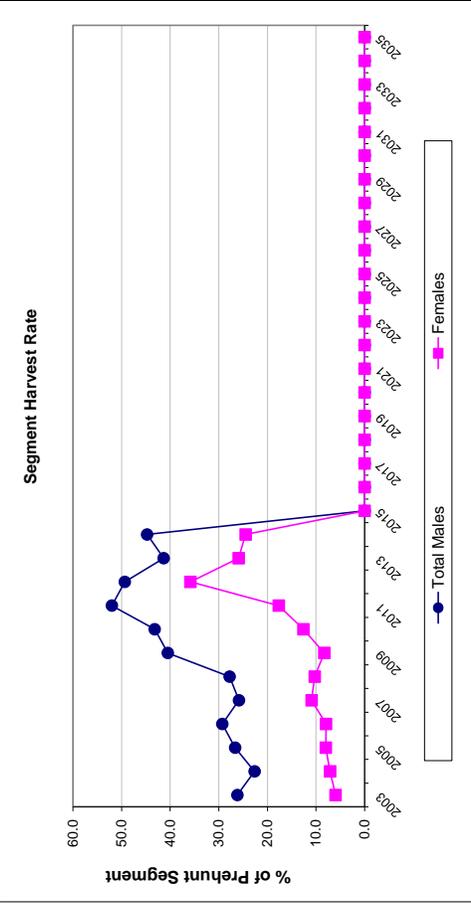
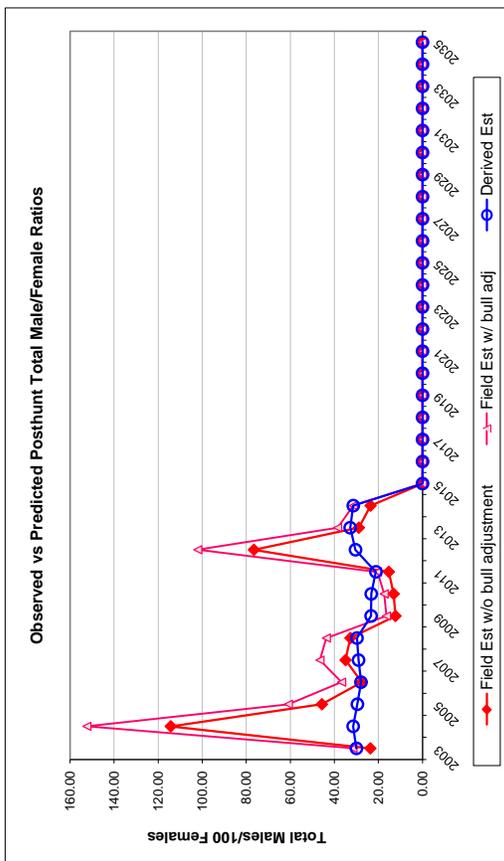
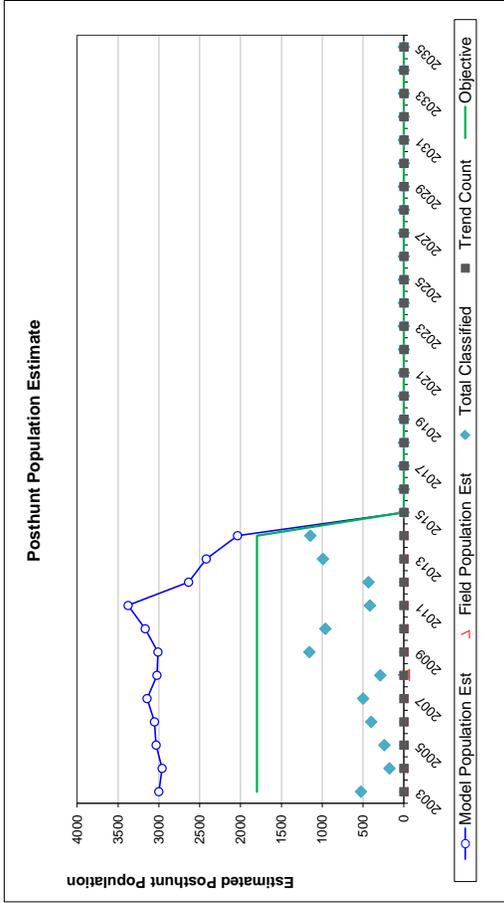
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
2003	0.60		0.98	
2004	0.60		0.98	
2005	0.60		0.98	
2006	0.60		0.98	
2007	0.60		0.98	
2008	0.60		0.98	
2009	0.95		0.98	
2010	0.95		0.98	
2011	0.95		0.98	
2012	0.95		0.98	
2013	0.83		0.98	
2014	0.60		0.98	
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Parameters:	Optim cells
Male Survival Coefficient	0.9950
Adult Survival =	0.980
Initial Total Male Pop/10,000 =	0.050
Initial Female Pop/10,000 =	0.168

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

Year	Classification Counts										Harvest																	
	Juvenile/Female Ratio					Total Male/Female Ratio					Juv			Yr1 males			2+ Males			Females			Total Harvest			Segment Harvest Rate (% of Prehunt Segment)		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yr1 males	2+ Males	Females	Total Harvest	Total Males	Females	Total Males	Females	Total Males	Females	Total Males	Females	Total Males	Females		
2003		49.01	4.90	29.99	31.58	23.68	3.10				16	6	156	97	275	26.2	6.0											
2004		37.14	8.53	31.50	152.38	114.29	18.70				16	16	131	122	285	22.6	7.1											
2005		42.52	6.91	29.56	60.89	45.67	7.24				31	7	165	139	342	26.6	8.0											
2006		41.95	5.02	27.94	36.72	27.54	3.86				23	32	157	141	353	29.3	7.9											
2007		48.53	5.15	29.05	46.57	34.93	4.16				13	14	149	197	373	25.8	10.9											
2008		39.29	5.71	29.75	43.65	32.74	5.09				26	17	169	186	398	27.8	10.3											
2009		43.86	2.92	23.34	16.37	12.28	1.36				15	20	240	148	423	40.5	8.3											
2010		46.03	3.34	23.28	17.44	13.08	1.56				32	31	270	245	578	43.2	12.6											
2011		61.70	6.52	21.17	20.43	15.32	2.74				22	18	367	360	767	52.0	17.7											
2012		44.39	5.72	30.41	102.04	76.53	8.30				103	30	376	766	1275	49.3	35.8											
2013		49.01	3.62	32.84	38.54	28.90	2.59				31	22	258	423	734	41.3	25.9											
2014		40.00	2.83	31.43	31.43	23.57	2.04				30	25	250	350	655	44.7	24.5											
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FIGURES



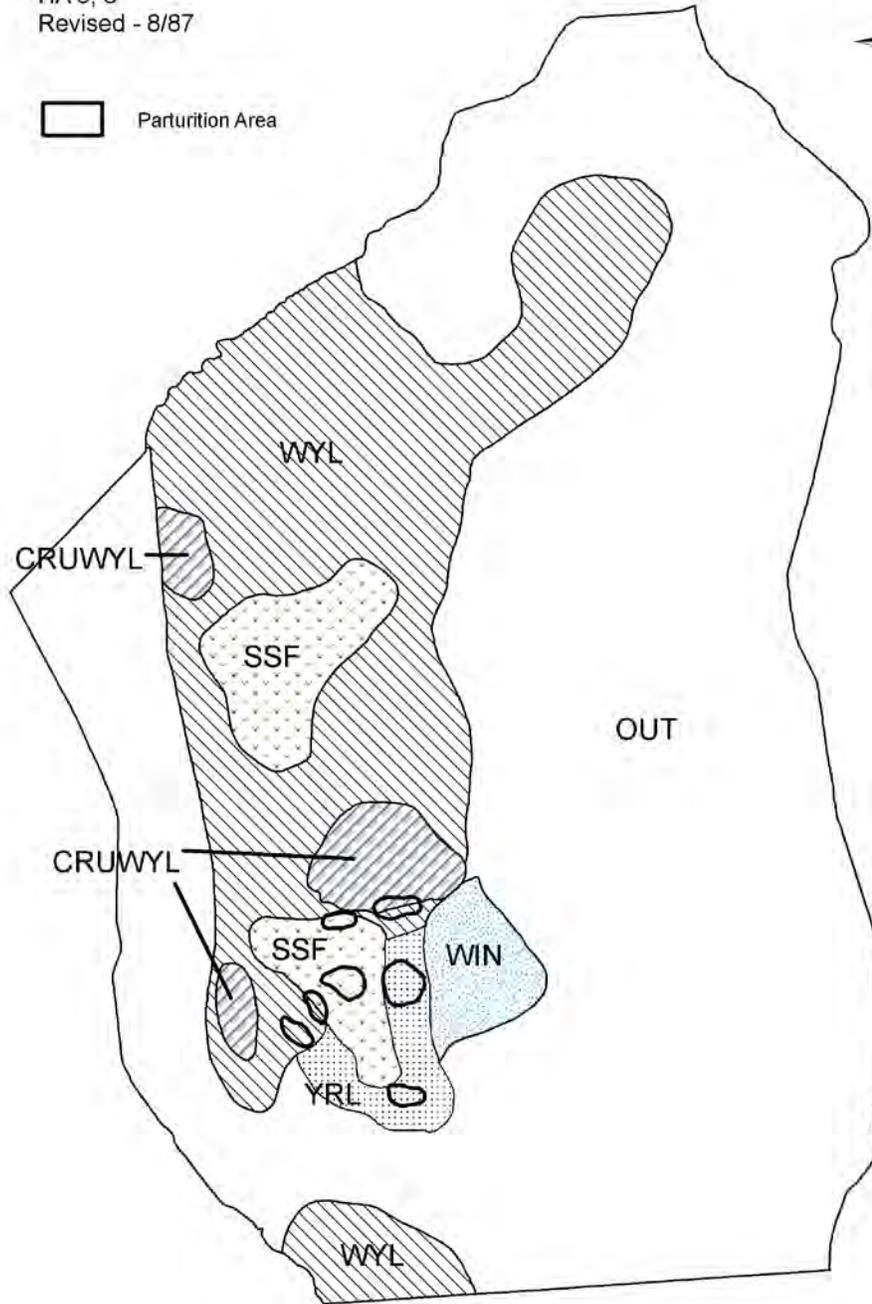
Comments:

END

E531 - Iron Mtn.
HA 5, 6
Revised - 8/87



 Parturition Area



2013 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL533 - SNOWY RANGE

HUNT AREAS: 8-12, 110, 114, 125

PREPARED BY: WILL SCHULTZ

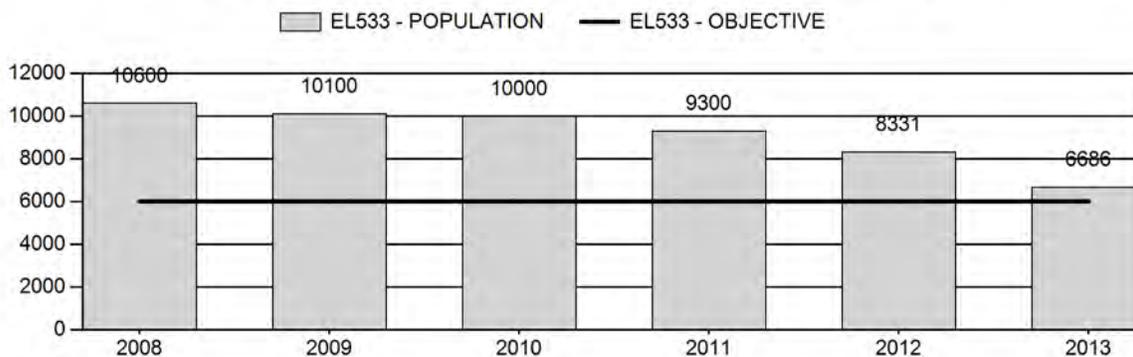
	<u>2008 - 2012 Average</u>	<u>2013</u>	<u>2014 Proposed</u>
Population:	9,666	6,686	6,000
Harvest:	1,698	2,263	1,650
Hunters:	5,539	5,902	5,000
Hunter Success:	31%	38%	33 %
Active Licenses:	5,690	6,178	5,200
Active License Percent:	30%	37%	32 %
Recreation Days:	40,610	45,044	35,000
Days Per Animal:	23.9	19.9	21.2
Males per 100 Females	22	29	
Juveniles per 100 Females	45	40	

Population Objective:	6,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	11%
Number of years population has been + or - objective in recent trend:	10
Model Date:	03/04/2014

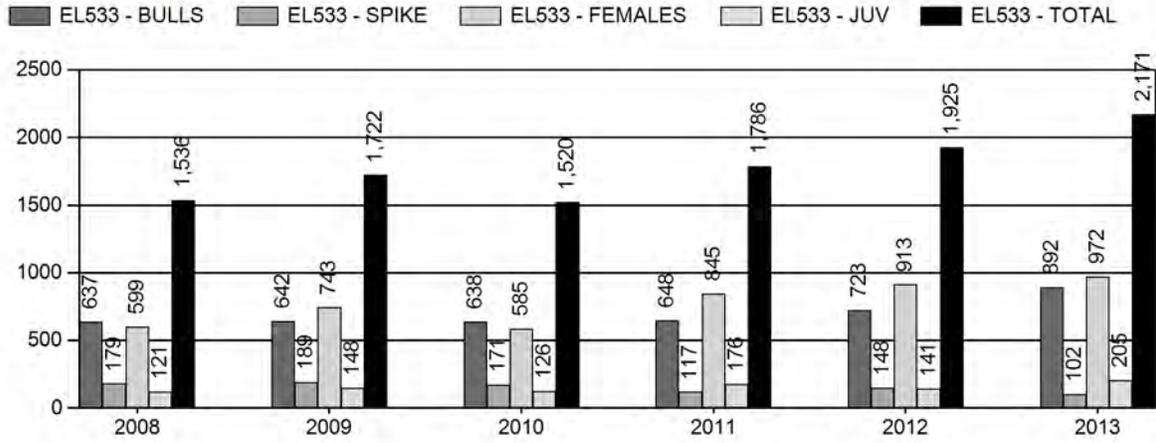
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	21.9%	17.2%
Males ≥ 1 year old:	55.5%	63.0%
Juveniles (< 1 year old):	10.9%	7.8%
Total:	24.7%	21.2%
Proposed change in post-season population:	-27.1%	-23.4%

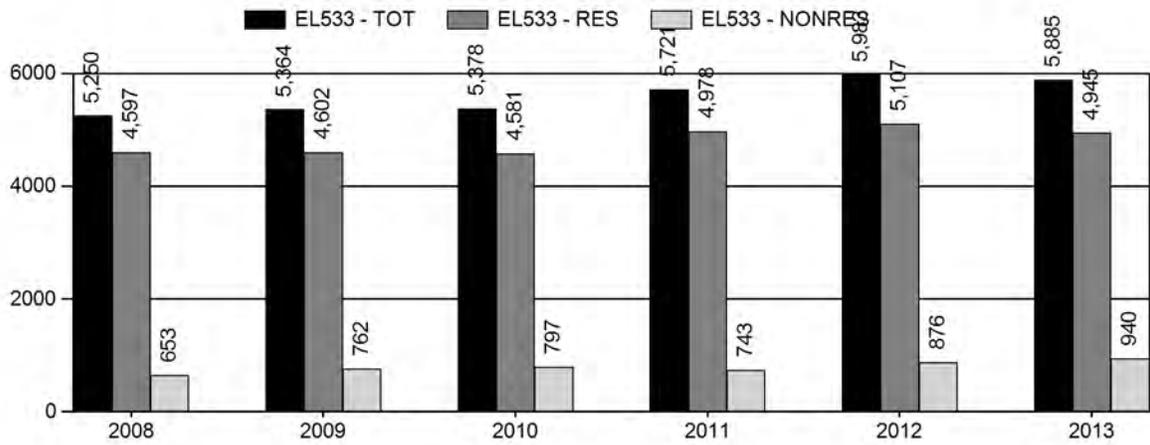
Population Size - Postseason



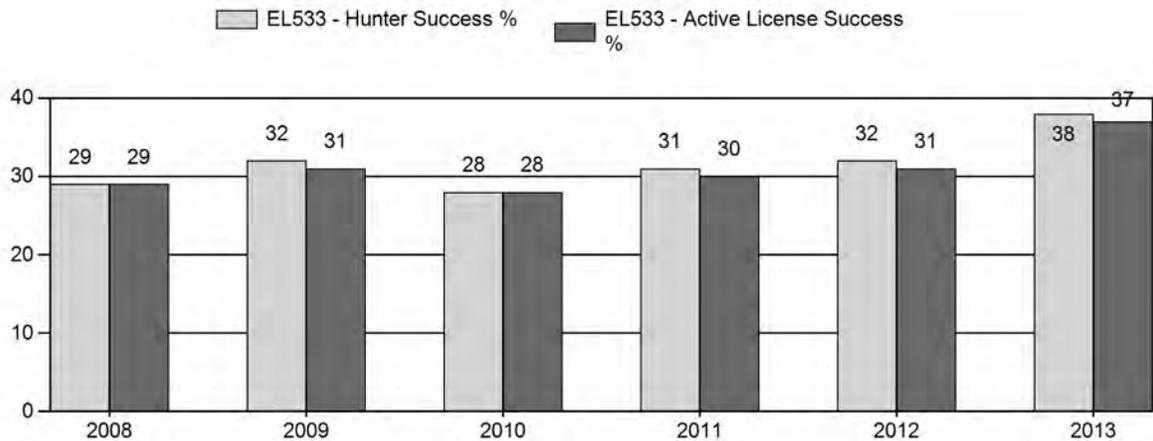
Harvest



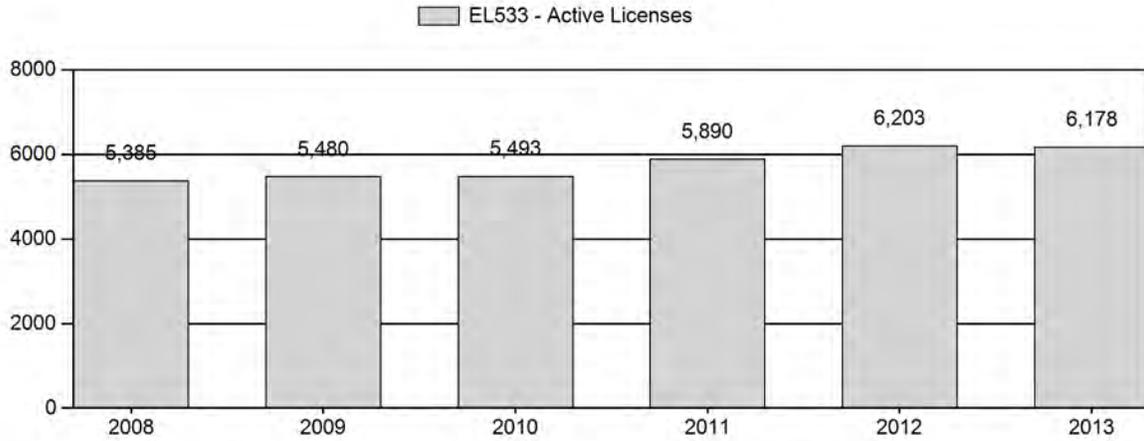
Number of Hunters



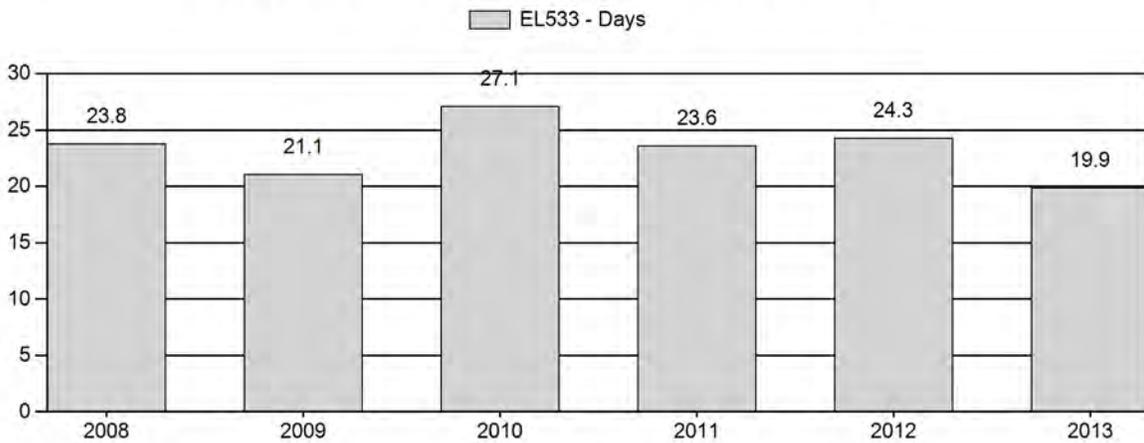
Harvest Success



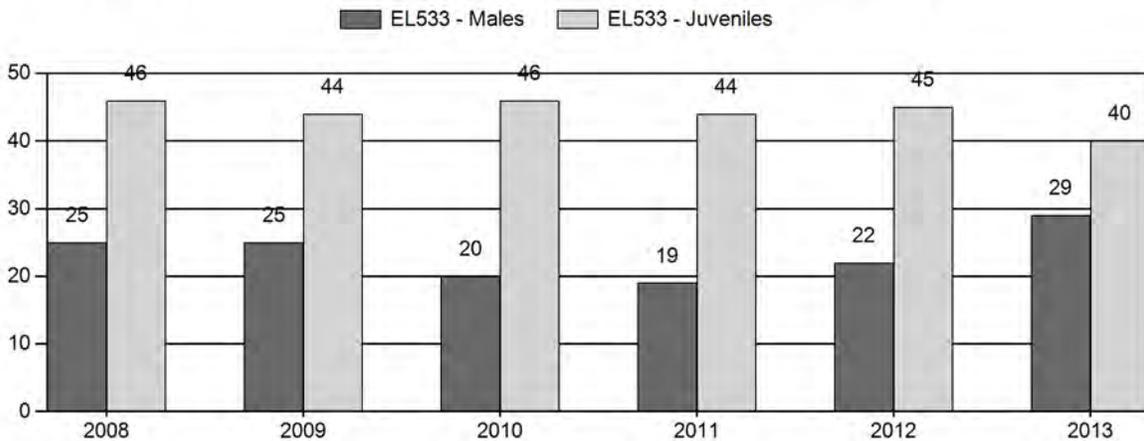
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL533 - SNOWY RANGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	10,600	215	271	486	14%	1,980	59%	909	27%	3,375	690	11	14	25	± 1	46	± 2	37
2009	10,100	279	179	458	15%	1,816	59%	802	26%	3,076	679	15	10	25	± 1	44	± 2	35
2010	10,000	318	200	518	12%	2,633	60%	1,211	28%	4,362	650	12	8	20	± 1	46	± 2	38
2011	9,300	145	109	254	12%	1,308	61%	576	27%	2,138	639	11	8	19	± 1	44	± 2	37
2012	8,331	252	218	470	13%	2,181	60%	990	27%	3,641	664	12	10	22	± 1	45	± 2	37
2013	6,686	292	456	748	17%	2,539	59%	1,023	24%	4,310	646	12	18	29	± 1	40	± 1	31

Snowy Range Elk (EL533)
Hunt Areas 8, 9, 10, 11, 12, 110, 114 and 125
2014 Hunting Seasons

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

Hunt Area	Type	Dates of Seasons		Limited Quota	Limitations
		Opens	Closes		
114	1	Oct. 1	Jan. 31	50	Limited quota licenses; any elk
	6	Aug. 15	Jan. 31	150	Limited quota licenses; cow or calf
125	1	Oct. 1 Jan. 1	Dec. 31 Jan. 31	200	Limited quota licenses; any elk Unused Area 125 Type 1 licenses valid for antlerless elk
	6	Oct. 1	Jan. 31	200	Limited quota licenses; cow or calf

Hunt Area	Type	Quota change from 2013
8	6	-50
10	6	-400
12	6	+50
110	6	-50
114	6	-50
125	1	+25
Herd Unit	1	+25
Total	6	-500

Management Evaluation

Current Management Objective: 6,000

Management Strategy: Recreational

2013 Postseason Population Estimate: 6,700

2014 Proposed Postseason Population Estimate: 6,000

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

Herd Unit Issues

The Snowy Range herd unit occupies a large portion of south central Wyoming. Elk management issues here include development in the form of energy, agricultural, and residential; invasive and noxious plants; forestry and range management; and human disturbance in important elk habitat.

Weather

Weather in this herd unit was relatively normal during the past bio-year. This weather pattern most likely had a neutral to positive influence on elk. For specific meteorological information for the Snowy Range herd unit the reviewer is referred to the following link: <http://www.ncdc.noaa.gov/cag/>

Habitat

Habitat conditions improved in 2013 with an increase in timely spring and fall precipitation. However, much of the transition and winter ranges were severely impacted by the drought conditions experienced in bio-year 2012. No elk habitat production/utilization data was available for this herd unit. However, annual production rates should have improved from the previous year, while utilization rates on winter ranges likely continued to be high.

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

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

Field Data

An adequate postseason classification sample of 4,300 elk produced ratios of 29 bulls and 40 calves per 100 cows in this herd unit (Figure 1). We classified elk from a helicopter in conjunction with local mule deer classifications. A comparison of the trend in bull ratios between general season hunt areas and limited quota hunt areas in the Snowy Range herd unit demonstrated the difference in ratios between the 2 hunting season strategies (Figure 2). Limited quota area bull ratios were generally higher in trend than in general hunt areas, the trend in general hunt area ratios has become stable to increasing in recent years.

Figure 1. 2004-2013 Bull and calf ratios from the Snowy Range Elk Herd Unit, Wyoming.

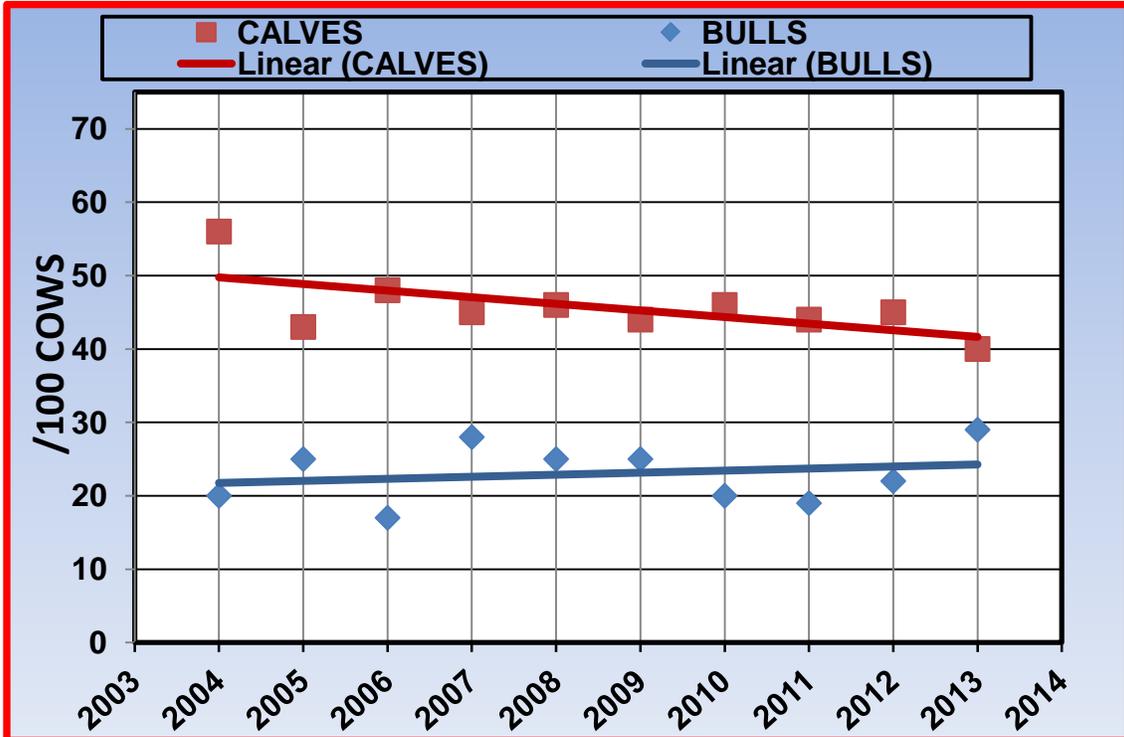
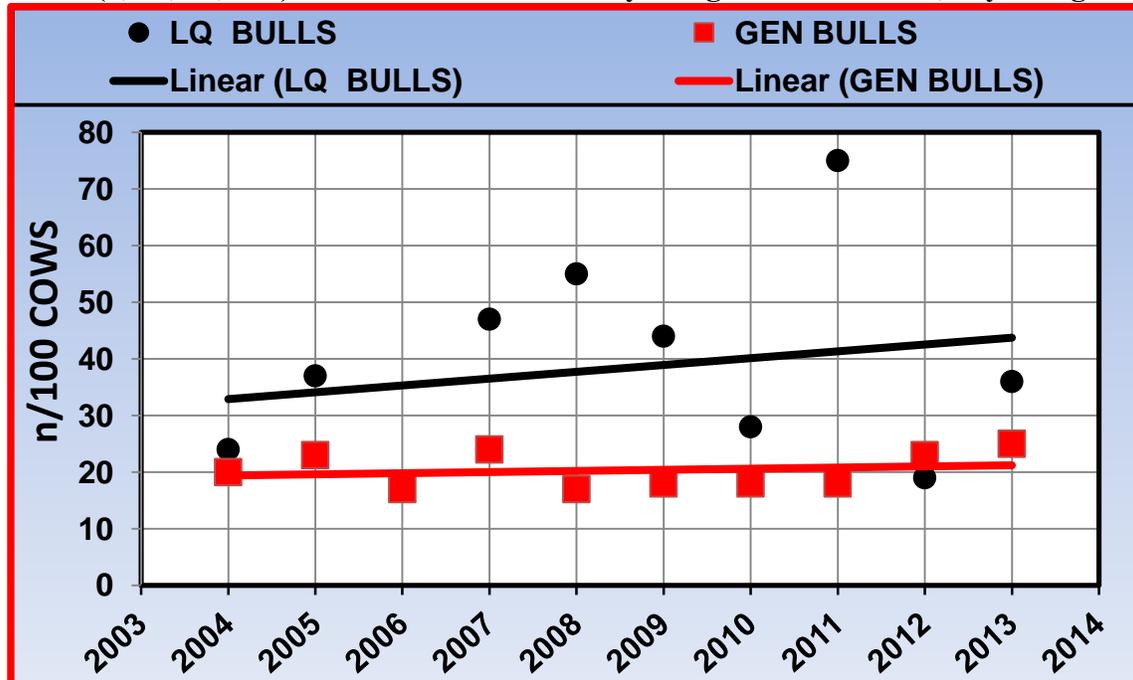


Figure 2. 2004-2013 Bull ratios from limited quota (8, 11, 114, 125) and general season (9, 10, 12, 110) Hunt Areas in the Snowy Range Elk Herd Unit, Wyoming.



Harvest Data

The 2013 preliminary harvest survey data indicated 6,200 (.05% decrease from 2012) active licensed hunters harvested 2,300 (15% increase from 2012), with a total harvest success rate of 38% (6% increase from 2012). Branch antlered bulls accounted for 91% of the male harvest in 2013 and 40% of the overall harvest. The spikes excluded seasons in areas 12 and 110 did result in lower spike harvest in those hunts compared to previous years. The proportion of yearlings in the male harvest for the entire herd unit also declined from 17% in 2012 to 9% in 2013. However, yearling male ratios in hunt areas 12 and 110 did not improve in 2013. Antlerless elk accounted for 56% of the total 2013 elk harvest, which was similar in the Snowy Range Herd Unit.

Population

We continued to use the SCJ,SCA spreadsheet model to simulate Snowy Range herd unit population dynamics because it produced the lowest AICc score of the plausible models. Scores and postseason estimates were very similar between the CJ,CA model and SCJ, SCA models. Without other information (e.g. an independent population estimate or survival data) to incorporate into the model, accuracy of estimates will continue to be unknown. We considered the 2013 postseason estimate produced by the SCJ,SCA spreadsheet model to be plausible.

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

Management Summary

The hunting seasons in the Snowy Range Herd Unit continue to provide opportunities to reduce the overall elk population. Elk numbers appear to be declining towards the management objective and we may need to consider reducing antlerless harvest rates in the distant future. Continued spikes excluded limitations in general Hunt Areas 12 and 110 remained in an attempt to stabilize or improve future branch antlered bull ratios, which have been in decline. Future harvest opportunity for antlered elk may need to be further reduced in all general hunt areas to insure ratios do not continue to decline beyond the recreational management strategy threshold.

Literature Cited

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

Bibliography of Herd Specific Studies

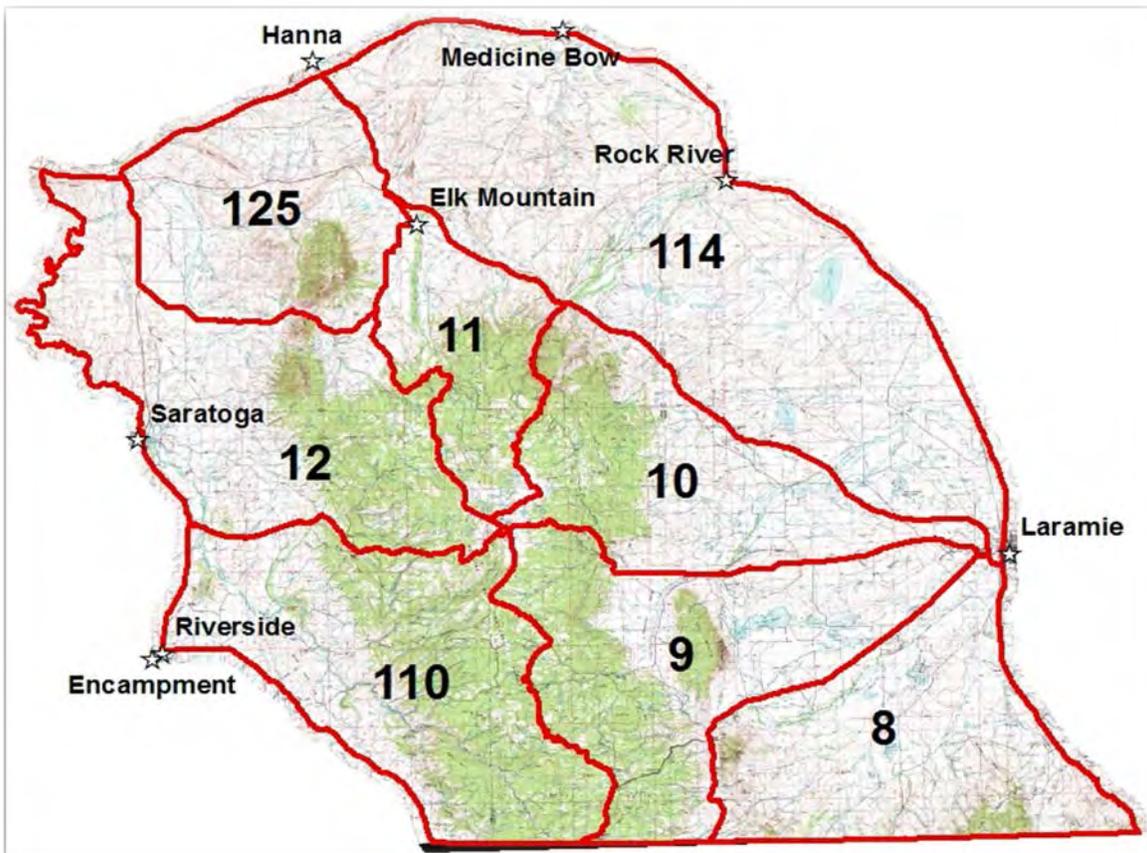
Reeve, A.F., F.G. Lindzey, and S.H. Anderson. 2003. Elk population in Wyoming: 1978-2001. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming. USA. 138pp.

2013 SNOWY RANGE ELK HERD UNIT AND POPULATION OBJECTIVE REVIEW

Prepared by: Will Schultz, Saratoga Wildlife Biologist

The Snowy Range Elk Herd Unit includes elk Hunt Areas 8, 9, 10, 11, 12, 110, 114, and 125 in south central Wyoming (Figure 1). The herd unit contains 1,922 mi² of delineated elk range which includes the Snowy Range of the Medicine Bow Mountains and the peripheral sagebrush grasslands located in the North Platte, Medicine Bow and Laramie River watersheds. Land ownership of the delineated elk range consists of 42% US Forest Service (USFS), 27% private, 18% Wyoming Game and Fish Department (WGFD), 8% Bureau of Land Management, and 5% other ownership.

Figure 1. A map of the Snowy Range Elk Herd Unit and Hunt Areas located in south central Wyoming.



POPULATION OBJECTIVE REVIEW

Historically, WGFD has managed elk using post-season population objectives as a guide for harvest management. The post-season population objective is the desired number of elk remaining in the herd unit after the annual hunting season has been completed. However, an

actual count of all elk in a herd unit would be, for all practical purposes, impossible to complete. Therefore, WGFD develops herd unit population estimates based on data collected annually through hunter-harvest surveys and post-season elk sex and age composition surveys. The population estimate is used to determine where the herd unit's elk population is at in relation to the established population objective. Generally, if the population estimate is above the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will increase harvest and reduce the number of elk toward the population objective. Conversely, if the population estimate is below the population objective, WGFD will propose changes to the herd unit's next hunting seasons which will decrease harvest and increase the number of elk toward the population objective.

Post-season elk population objectives for the Snowy Range Herd Unit have been adopted and subsequently changed following periodic reviews of both biological and social considerations. These considerations have included, but were not limited to, a realized increase in the number of elk being observed the herd unit; assumed carrying capacity of the habitat; sportsmen desires; and landowner desires/tolerance.

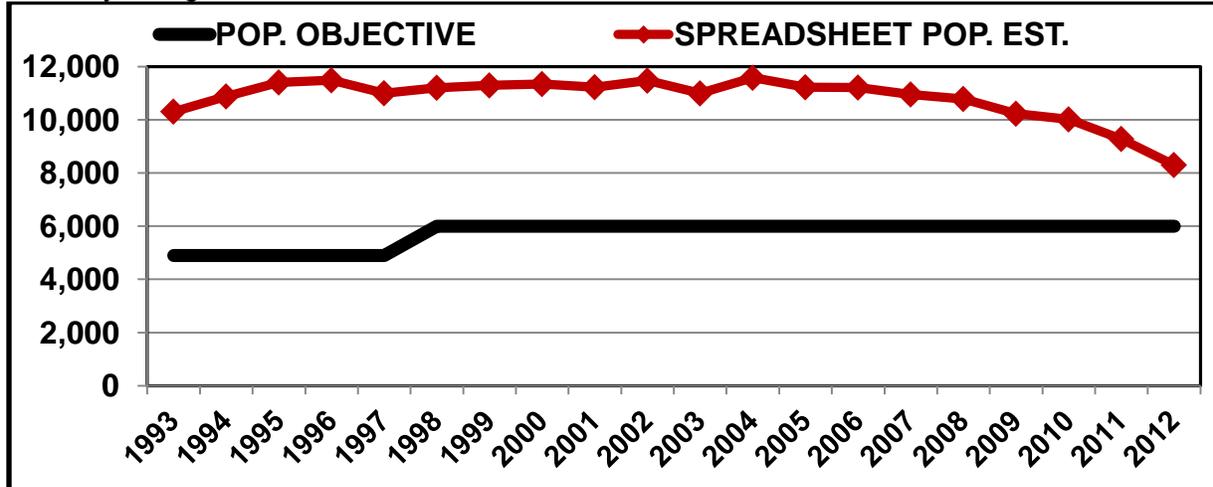
A post-season population objective of 3,000 elk was first established for the Snowy Range Herd Unit in the late 1970s. In 1982, the population objective was increased to 4,000 elk and subsequently increased again in 1993 to 5,000 elk. These increases to the population objective were primarily adopted to better align the population objective with the actual number of elk being observed in the herd unit during those periods. In 1997, the Snowy Range Herd Unit population objective was again increased to 6,000 elk. Since 1997, no formal review of the Snowy Range Herd Unit population objective has occurred and the population objective has remained at 6,000 elk.

Annual population estimates for the Snowy Range Herd Unit are currently produced using a computer-based, spreadsheet population model. As described previously, estimates are derived from data collected annually through hunter-harvest surveys and post-season elk sex and age composition surveys. Survey sample sizes have been considered to be adequate for this herd unit and typically exceed the minimums required to produce estimates with acceptable 80% confidence intervals. Since 2004, the annual population estimates have declined in trend (Figure 2). This trend is plausible given the significant increase in antlerless harvest which has occurred during this same period. The 2012 post-season population estimate was 8,300 elk. Reducing the herd unit's elk population estimate to the current population objective of 6,000 elk is considered achievable.

CURRENT MANAGEMENT STRATEGIES BY HUNT AREA

A recreational management strategy has been historically prescribed for the Snowy Range Elk Herd Unit. The recreational strategy directs WGFD to manage harvest rates which will result in annual post-season bull:cow ratios being maintained within the parameters of 15 to 29 bulls per 100 cows, at the herd unit level. The Snowy Range Herd Unit consists of 8 hunt areas and several different hunting season strategies are employed across the herd unit.

Figure 2. Snowy Range Elk Herd Unit population objectives and population estimates, 1993 – 2012, Wyoming.



Hunt Areas 8, 114, and 125 employ limited quota hunting seasons. These hunt areas have relatively higher post-season bull:cow ratios, and although WGFD provides very liberal opportunities for both bull and antlerless elk harvest, there is relatively little harvest realized. Land ownership in these hunt areas is predominately private and the lack of public access is the ultimate factor in producing high post-season bull:cow ratios and low antlerless harvest rates. Many of the landowners in these hunt areas are either directly engaged in outfitting elk hunts or lease their property to outfitters. Consequently, these landowners exhibit a high tolerance for large herds of elk on their property. Landowners who do allow public hunting access in these hunt areas generally are experiencing significant damage to growing or stored hay crops and view the elk as competing directly with them for their agricultural income.

Hunt Area 11 is also a limited quota hunting season area. However, unlike other limited quota hunt areas in the Snowy Range Herd Unit, Hunt Area 11 contains a substantial amount of accessible public land, including the Wyoming Game and Fish Commission’s Wick Wildlife Habitat Management Area and USFS lands. The management strategy is to provide a limited opportunity for the public to experience a quality elk hunt on public land in the Snowy Range. Relatively high numbers of mature bulls and low hunters numbers make this a sought after elk hunting destination.

Hunt Areas 9, 10, 12, and 110 employ a general license hunting season strategy. Currently, limited quota, reduced-price cow or calf licenses are also available in each of these hunt areas as an additional effort to increase antlerless harvest. The majority of the Snowy Range Herd Unit’s annual elk harvest occurs in these 4 hunt areas. These hunt areas have relatively lower post-season bull:cow ratios than the limited quota hunt areas in the Snowy Range Herd Unit. Most of the occupied elk range in these hunt areas is public land and hunter access is very good. Additionally, many of the landowners do allow elk hunting, typically antlerless elk, in an effort to reduce the impacts from elk on their agricultural-based livelihoods.

RECOMMENDED HERD UNIT OBJECTIVE AND MANAGEMENT STRATEGIES BY HUNT AREA

WGFD recommends continued use of the current post-season population objective of 6,000 elk for the Snowy Range Herd Unit. Continuation of a recreational management strategy is also recommended for this herd unit. The goal for WGFD under the recommended population objective and management strategy will be to continue to reduce elk numbers toward the population objective, and optimize recreational hunting opportunities where possible, in all hunt areas throughout the Snowy Range Herd Unit.

LANDOWNER, AGENCY, AND PUBLIC INVOLVEMENT

As part of the population objective review WGFD completed an extensive outreach process. Questionnaires and public meeting invitations were mailed to landowners, elk hunters were surveyed in the field, and news releases advertising public meetings were sent to media sources statewide. This was done in an attempt to insure all stakeholders were given an opportunity to be informed about the population objective review. Written comments received from stakeholders through the survey mailings and public meetings were compiled for WGFD review. Stakeholder comments were analyzed as a component of the internal WGFD review of the Snowy Range Herd Unit population objective. The decision to recommend the continued use of a post-season population objective of 6,000 elk was strongly supported by stakeholder comments.

Once WGFD developed this recommendation, news releases advertising public meetings to discuss the population objective recommendations were sent to media sources statewide. Additionally, landowners were mailed public meeting invitations containing a brief description of the population objective. The following information is provided in an effort to describe for the reader the outreach process for the Snowy Range Elk Herd Unit population objective review.

Landowner Involvement

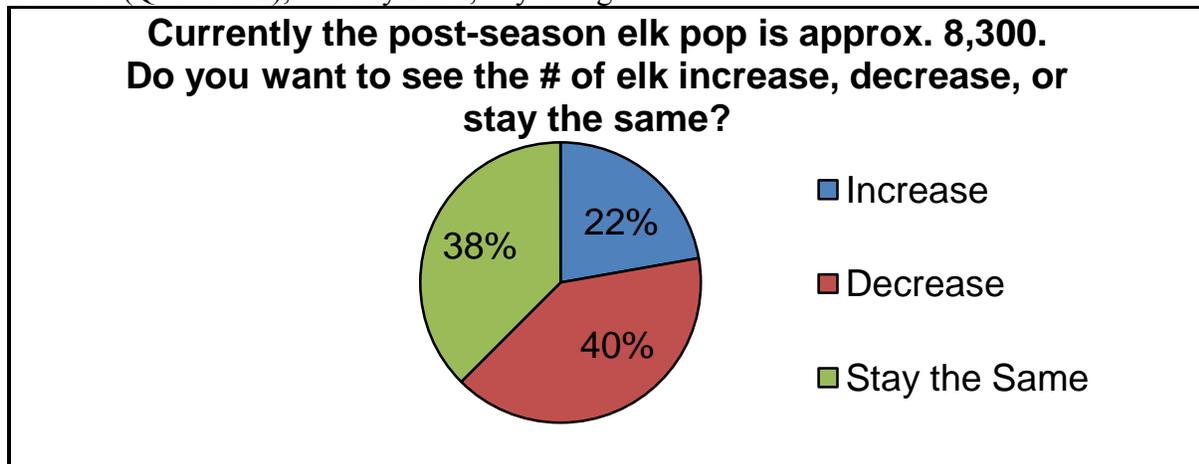
In January of 2013, a landowner questionnaire was developed by WGFD to collect information about attitudes of landowners towards current elk numbers and elk management (APPENDIX A). A mailing list for all landowners in the Snowy Range Herd Unit, who owned more than 160 acres, was developed using billing addresses received from the Albany County and Carbon County Assessor's offices. Questionnaires were mailed to these landowners, along with an invitation to attend one of the upcoming public meetings, and a postage paid return envelope was also included for completed questionnaires. A return rate of 31% was obtained for the landowner questionnaires and completion results are described in Table 1.

Table 1. Snowy Range Elk Herd Unit landowner survey completion results, January 2013, Wyoming.

Questionnaires mailed to landowners of ≥ 160 acres	= 283
Envelopes returned marked "Return to Sender"	= 16
Completed questionnaires received	= 84 (31% return rate)

A summary of the landowner questionnaire responses are attached (APPENDIX B). A very important statistic derived from the survey was a measure of landowner tolerance regarding the current number of elk in the Snowy Range Herd Unit. A majority (78%) of landowner responses indicated they would like to see the current number of elk either stay the same or decreased (Figure 3). Additionally, the landowner questionnaire also included 2 questions to gauge landowner attitudes about moose numbers. These questions were included to gather preliminary information for a future review of the Snowy Range Moose Herd Unit population objective.

Figure 3. Snowy Range Elk Herd Unit landowner questionnaire responses regarding current elk numbers (Question 2), January 2013, Wyoming.



Agency Involvement

In January of 2013, WGFD provided public meeting notices to the USFS Laramie and Brush Creek/Hayden Ranger District Offices located in Laramie and Saratoga, respectively. USFS range and wildlife personnel attended the public meeting held in Saratoga. The Saratoga, Encampment, Rawlins Conservation District (SERCD) and Natural Resource Conservation Service offices in Saratoga were also provided with public meeting notices. Several SERCD employees and board members attended the Saratoga public meeting.

Public Involvement

Meetings to review the Snowy Range Elk Herd Unit population objective were held in Saratoga, Laramie, Cheyenne, and Medicine Bow. News releases advertising public meetings were sent by WGFD to media services statewide (APPENDIX C). Saratoga radio station, KKGa 99.3 FM, interviewed the WGFD Saratoga Game Warden as a means of promoting the Saratoga meeting. At the meetings other local herd unit population objectives, currently being presented for public review, were also discussed at these meetings (e.g. Cooper Lake Pronghorn and Sierra Madre Elk Herd Units). Table 2 describes meeting attendance rates and the sign-in sheets are compiled in APPENDIX D.

Many of the attendees at the population objective review meeting were landowners who had already completed and returned the landowner questionnaire they had received earlier in January. Surveys designed to gauge the attitudes of sportsmen and other stakeholders were distributed to non-landowners who attended these public meetings (APPENDIX E). In response to a question

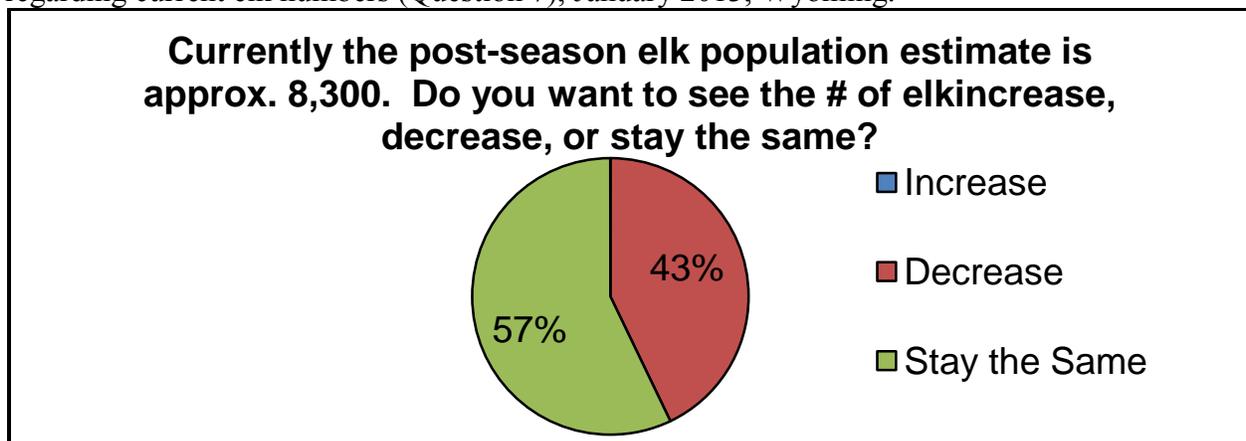
similar to one included in the landowner survey, all (n=26) of the non-landowners who attended these meetings indicated they would like to see the current number of elk either stay the same or

Table 2. Snowy Range Elk Herd Unit population objective review public meeting attendance results, January and February 2013, Wyoming.

Location	Date	Attendance
Saratoga Meeting	January 28	11
Laramie Meeting	January 29	12
Cheyenne Meeting	January 29	8
Medicine Bow Meeting	February 6	4

decreased (Figure 4). Many of the concerns expressed by non-landowners at these public meetings were in regard to perceived impacts by current elk numbers on declining local mule deer populations.

Figure 4. Snowy Range Elk Herd Unit public meeting non-landowner survey responses regarding current elk numbers (Question 7), January 2013, Wyoming.



Notification of the Proposed Population Objective

In May of 2013, WGFD once again completed an extensive outreach process to inform stake holders of the proposal to continue managing the Snowy Range Herd Unit toward a population objective of 6,000 elk. Landowners previously identified during the questionnaire process were mailed a postcard invitation to attend upcoming population objective proposal meetings. The postcard also contained a brief description of the proposed population objective.

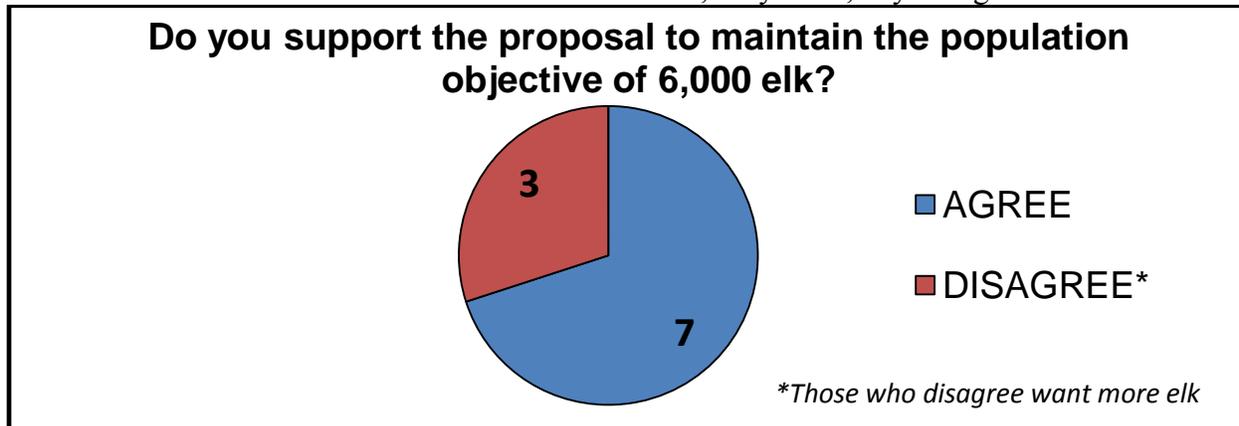
News releases advertising this round of public meetings were sent by WGFD to media services statewide (APPENDIX F). Meetings to present the Snowy Range Elk Herd Unit population objective proposal were held again in Cheyenne, Laramie, Saratoga, and Medicine Bow. Other local herd unit population objective proposals were also presented to the public at these meetings (e.g. Cooper Lake Pronghorn and Sierra Madre Elk Herd Units). Table 3 describes meeting attendance rates for the presentation of the proposed population objective. Sign-in sheets for these meetings are compiled in APPENDIX G. After the herd unit presentations, attendees were

given an opportunity to fill out a comment form explaining whether they agreed or disagreed with the proposal as presented and to provide any additional comments (APPENDIX H). Figure 5 describes the results from the 10 proposal meeting comment forms which meeting attendees submitted. After a review of the comments received during the proposal meeting process, WGFD decided to continue forward with the proposed population objective. This concluded the population objective review and proposal development process for the Snowy Range Elk Herd Unit.

Table 3. Snowy Range Elk Herd Unit population objective proposal presentation meeting attendance results, May 2013, Wyoming.

Location	Date	Attendance
Cheyenne Meeting	May 8	4
Laramie Meeting	May 15	4
Saratoga Meeting	May 20	10
Medicine Bow Meeting	May 21	0

Figure 5. Snowy Range Elk Herd Unit population objective proposal presentation meeting comment form results from the 10 who returned forms, May 2013, Wyoming.



**SNOWY RANGE ELK & MOOSE
MANAGEMENT LANDOWNER QUESTIONNAIRE**

1. Please circle the elk hunt area number where the majority of your property is located:

HUNT AREA: 8 9 10 11 12 110 114 125

2. Currently the post-hunt elk population estimate for the Snowy Range Herd Unit is approximately 8,200 (2.5 elk/mi²). Do you want to see the number of elk:

INCREASE _____ **DECREASE** _____ **STAY THE SAME** _____

3. If you want to see the number of elk **INCREASE** or **DECREASE**, what percentage change to the current population size would you prefer? (*Skip if you answered "STAY THE SAME" above*)

20% _____ **30%** _____ **40%** _____ **50%** _____ **OTHER (specify)** _____

4. Indicate your satisfaction level with the current Snowy Range Herd Unit elk population (*circle the number that corresponds to your satisfaction level*):

1	2	3	4	5
Very dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Very satisfied

5. If there were a negative impact to mule deer because of the current number of elk in the Snowy Range Herd Unit, would you want to see the number of elk?

INCREASE _____ **DECREASE** _____ **STAY THE SAME** _____

6. Do you allow antlerless elk harvest on your property?

YES _____ **NO** _____

- If you answered **YES**, how many antlerless elk were harvested on your property during the 2012 hunting season? (*circle your response*) **0** **1-10** **11-25** **26+**

7. Do you want to see the number of moose in the Snowy Range Herd Unit:

INCREASE _____ **DECREASE** _____ **STAY THE SAME** _____

8. Indicate your satisfaction level with the current Snowy Range Herd Unit moose population (*circle the number that corresponds to your satisfaction level*):

1	2	3	4	5
Very dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Very satisfied

9. **Additional comments:**

SNOWY RANGE ELK

Hunt Area where property is located

Hunt Area	8	9	10	11	12	110	114	125
Tallies	9	12	15	3	7	6	10	7

Currently the post-hunt elk pop is approx. 8,200- do you want to see the # of elk:

	Increase	Decrease	Stay the Same
Tallies	16	29	27

If you want to see the number of elk Increase or Decrease what % change do you want to see

Decrease	20%	30%	40%	50%	Other (specify)
Tallies	10	7	1	10	75%- 1
Increase	20%	30%	40%	50%	Other (specify)
Tallies	7	3	2	2	10%-1

Indicate your satisfaction with the current elk population

	1	2	3	4	5
Tallies	14	15	15	21	6

If there were negative impacts to MD because of the # of elk would you want to see the # of elk:

	Increase	Decrease	Stay the Same
Tallies	8	47	16

Do you allow antlerless elk harvest on your property?

Yes	No	If Yes, how many elk were harvested in 2012 season					
Tallies	52	18	0	1 to 10	11 to 25	26+	
			Tallies	14	27	7	1

Do you want to see the number of moose in the Snowy Range Unit:

	Increase	Decrease	Stay the Same
Tallies	36	8	27

Indicate your satisfaction level with the current Snowy Range moose population

	1	2	3	4	5
Tallies	3	16	21	17	13

ADDITIONAL COMMENTS
The problem is that all the elk in the Centennial Valley during hunting season are on the 91 Ranch. They need to be hunted and dispersed. The elk won't go back up on the mountain so increasing the herd only puts more in that area or on the 91 Ranch.
If hunters can't get to areas to hunt what good are your seasons and areas???
I think there is much to be learned about "carrying capacity" in regards to these decisions. In the past we have had more trouble with elk coming onto the cattle feed grounds than we do now. I think the antlerless harvest has helped, but I realize there are many other factors as well.
Too long of a season- kill more cows harvest the junk bulls with cows somehow. Very little deeded land in 114 so lets get together with Tyler Sims/G&F/ Landowners and work it out.
G&F should re-imburse ranchers for the damage to their hay crop (while the hay is growing and after harvest). We know that amount would need to be quantified but hopefully without too many hoops to jump.
NO ELK ON PROPERTY
Would like to have map of areas included in survey. Hunted 4 times and did not see 1 elk!!!
Wyoming Central hand Improvement Co. Sold this land to the State Board of Lands and Investments on March 29, 2012 - from Amy King
Elk herd has too few bulls and too many cows. Mule deer will come back strong when the number of mountain lions is reduced.
Horn restrictions on mule deer and elk and more law enforcement on road hunters as well as four-wheelers on closed roads!
To many outfitters controlling the population and access to some hunting areas in our region.
I honestly do not understand the reason for these repetitive questionnaires.
I love to see and hunt elk but the numbers are out of control. It is very difficult to control numbers when land owners do not allow hunting. In a drought as we are in now it is very difficult to provide forage and maintain good rangeland health when there are too many elk and antelope competing for forage. Elk do a lot of damage that is difficult to document.
I can't add much input on the Snowy Range herd as I am spending all my hunting time in 125.
I know nothing about this area!!
We have too many elk in the Centennial valley. During hunting season the elk hang out on the 91 Ranch to avoid being shot at. A lot of hunters leave empty- that would really appreciate taking home a cow elk.
Mule deer are being pushed out by whitetail, but even whitetail numbers are down. We only have a small number of elk on our property so we rarely allow hunting. I prefer deer and moose over elk because they do not compete for the same type of feed my cows like. I also cut and ___? hay, feeding it on the ground all winter rather than bailing. This low cost type of operation does not work very well with alot of elk around. I think the flood two years ago may have taken a toll on the deer population (fawns) on our ranch.
My address is 12706 HWY 230. I'm not sure what hunting area that is. I am a summer time resident and my property is leased by Big Creek Ranch and is posted because of damage to gates by hunters. I would like to see the mule deer population come back. - Sue Breeden
Make the elk hunters take or harvest three cow or calf elk before they can harvest a bull elk. Give the cow tags a lesser cost than the trophy bull tags.
We have no elk or moose to hunt on our property- Biddick Ranch.
#6. The outfitter encourages people to hunt trophy elk and charges so much most people won't hunt antlerless or small bulls. We now have a herd in 114 that has lots of small junk bulls with twisted and uneven antlers. The bulls number 40-45 in one group of 75-80. They number 75-80 in a group of 15-175. If they are running 50%. This is WAY out of line and needs corrected.

Concerned about mule deer population. Would be in favor of decreasing elk population if that would help deer herds.
If reducing elk herd would help mule deer population, would be for reducing elk.
There aren't very many moose.
Decrease antlerless elk only! The bull/cow ratio in the Snowy Range elk herd is way below 25% or even 15% in some herds. The solution is to make the area limited quota. The next best solution is to kill more cow/calves. Don't blame the mule deer decline on too many elk; is one factor in a complicated issue, mild drought, predators and habitat loss and energy development and subdivision housing being important causes too. Obviously we should manage for more moose, that is a no brainer.
I'm clueless, I don't hunt. And, there are too few deer in the area so I don't allow hunting.
No mule deer shot on my land since 1997. Mule deer populations are bad. Too many cats and bear and coyotes. (More bear licenses and maybe only bucks during hunting season) or maybe a quota system on mule deer. Bear licenses and Moose licenses should be available to landowners first as area 8 is almost entirely private. (Landowners either resident or nonresident should have this respect)
I had several people with type 6 in area 9 we didn't fill because the elk stayed high- but that means they aren't in the hay meadows so it is working. Too many elk still but with Hamakers buying property east of Bald Mountain I would expect to see those elk moved around more and available for harvest (Area 10) and in Area 9 I think the hunt is helping also.
TOO DAMN MANY!! When you government bosses introduce a species in an area you should be responsible for all the damage they do when you FAIL to manage them. There are so many damn moose on the Big Laramie River now that they are killing our trees and willows. In the Spring they eat our grass that we hay in the fall. you should drastically reduce their numbers and be responsible for keeping them off our property or pay for all the damage they do. (Norma Thompson)
I am in favor of a very limited quota for mule deer bucks of four points or better on each side. I feel our mule deer population is dangerously low.
I think the elk herd on our property are way too many. The number of elk that show up in the winter is staggering. The elk herd shows up in big numbers. Setting themselves up for a disease outbreak. Not to mention the property damage they do and the amount of forage they eat. They are taking a big toll on our ranching business. Particularly in our drought conditions.
With the antler/antlerless season running Oct 1-Oct 31, general license hunters hold out for antlered elk until too late and don't get any elk. Starting hunting Aug 15 (rifle) is a risk if there are bow hunters in area (with no orange) and rifle hunters in the area.
Need more moose!

**PUBLIC MEETINGS UPCOMING ON FUTURE MANAGEMENT OF BIG GAME IN
SOUTHEAST WYOMING**

LARAMIE – Over the next few weeks, the Wyoming Game and Fish Department will hold a series of public meetings to receive input on the future management of big game species in southeast Wyoming.

Game and Fish is reviewing herd unit objectives for several big game herds, including the following hunt units: Snowy Range Elk (Hunt Areas 8, 9, 10, 11, 12, 110, 114, and 125); Snowy Range Moose (Hunt Areas 38 and 41); Sierra Madre Elk (Hunt Areas 13, 15, 21, 108, and 130); Centennial Pronghorn (Hunt Areas 45, 44, and 37); and Cooper Lake Pronghorn (Hunt Area 43).

The meetings will be held at the following locations:

• **Saratoga - Saratoga Town Hall, 6 p.m., Jan. 28**

Snowy Range Elk
Snowy Range Moose
Sierra Madre Elk

• **Laramie - Laramie Fire Hall #3, 6 p.m., Jan. 29**

Snowy Range Elk
Snowy Range Moose
Sierra Madre Elk
Centennial Pronghorn
Cooper Lake Pronghorn

• **Cheyenne - Wyoming Game and Fish Headquarters, 6 p.m., Jan. 30**

Snowy Range Elk
Snowy Range Moose
Centennial Pronghorn
Cooper Lake Pronghorn

• **Medicine Bow - Medicine Bow Community Center, 6 p.m., Feb. 6**

Snowy Range Elk
Snowy Range Moose
Cooper Lake Pronghorn

Game and Fish will be welcoming any comments from the public on management of big game in southeast Wyoming. Contact Laramie Game and Fish biologist Lee Knox at (307) 745-4046 or Saratoga wildlife biologist Will Schultz at (307) 326-3020 with additional questions.

The Wyoming Game and Fish Department supports the Americans with Disabilities Act. Every effort will be made for reasonable accommodations. Contact the Laramie Game and Fish office at (307) 745-4046.

-WGFD-

APPENDIX D

NAME	CITY	EMAIL
Brad Weatherd	Saratoga	bweatherd@fs.fed.us
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DAVE STURM	SARATOGA	
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Learned Johnson	Saratoga	ljohnson@union-tel.com
Steve Loose	Saratoga	sloose@fs.fed.us
Gerald Newmeyer	CASPER	JNewmeyer@Bresnan.net
Phil Hills	CASPER	phills@bresnan.net
Addie Fletcher	Saratoga	adelaidemyers@yahoo.com
Jim States	Saratoga	jstates@union-tel.com
Ron Platt	Encampment	

1/29/13

Laramie Objective
Email

Name

TOWN

Name	TOWN	Email
CHRIS WOOD	Laramie WY	CCBWOOD@yahoo.com
Clay Rouse	Cheyenne WY	11ycar@bresnan.net
JIM LISTEN	Laramie WY	JIMLISTEN@comcast.net
DAVE Whitman	Laramie, WY	dwhitman@wyoming.com
Tyler Sims	McFadden, WY	tyler@tylersims.com
Kelly Namie	Laramie WY	Webnamies@bresnan.net
Mark Cushman	Laramie WY	Mjcumen66@bresnan.net
Jim Rogers	Laramie WY	JGR1680@Carbonpower.net
Tom Page	Laramie WY	page@dieterhorsesandparts@yahoo.com
Bill Hewitt	Laramie WY	billhewitt@yaho.com
Clynn Phillips	Laramie, WY	clynn@uwyo.edu
Mike W. [unclear]	" "	

APPENDIX D

Cheyenne 1/30/2013

Name	City	EMAIL
------	------	-------

Bill Cushing	Cheyenne	billecushing10@gmail.com
Jim Fisher	Cheyenne	jfisher278@yahoo.com
Rob Arey	Cheyenne	RWAREY@gmail.com
Mike Baillie	Cheyenne	mkbaillie@millec.com
Paula Shaffer	"	sas@baillieranch.com
John Monte	Cheyenne	monte500@yahoo.com
Dennis Magnusson	Iron Mountain	imohunting@gmail.com
Jim Dechene		mobileratt@gmail.com

SNOWY RANGE ELK HUNTER SURVEY

1. If you are a **RESIDENT**, please indicate the county in which you live. If you are nonresident, please indicate which state you live:

County of residence _____

2. How many years have you been hunting elk in the Snowy Range Elk Herd?

This is my 1st year ____ **2 to 3** ____ **4 to 7** ____ **8 to 10** ____ **More than 10** ____

3. What hunt area do you primarily hunt within the Snowy Range Elk Herd (circle the area you hunt the most)?

8 **9** **10** **11** **12** **110** **114** **125**

4. When hunting in the hunt area indicated above, which hunting methods do you participate in?

Archery ____ **Firearm** ____

5. How many days do you spend hunting in the hunt area indicated above?

1 to 3 ____ **4 to 7** ____ **8 or more** ____

6. Why do you choose to hunt the Snowy Range Elk Herd (mark all that apply)?

Close to home ____ **High number of elk** ____ **Public land access** ____ **Road access** ____

No grizzlies ____ **Tradition** ____ **Other (list why)** _____

7. Currently the post-hunt population estimate for the Snowy Range Elk Herd is approximately 8,200 elk (2.5 elk/mi²). Do you want to see the number of elk:

DECREASE ____ **INCREASE** ____ **STAY THE SAME** ____

8. Do you hunt mule deer in any of the mule deer hunt areas listed below (mark all that apply)?

74 ____ **75** ____ **76** ____ **77** ____ **78** ____ **79** ____

9. If there were a negative impact to the mule deer herd because of the current Snowy Range Elk herd population size, would you want to see the number of elk:

DECREASE ____ **INCREASE** ____ **STAY THE SAME** ____

10. Do you want to see the number of moose in the Snowy Range Herd Unit:

INCREASE ____ **DECREASE** ____ **STAY THE SAME** ____

11. Indicate your satisfaction level with the current Snowy Range Herd Unit moose population (circle the number that corresponds to your satisfaction level):

1 **2** **3** **4** **5**

Very
dissatisfied

Somewhat
dissatisfied

Neither satisfied
nor dissatisfied

Somewhat
satisfied

Very
satisfied

Additional comments:

**PUBLIC MEETINGS TO DISCUS POPULATION OBJECTIVES FOR
PRONGHORN/ELK/MOOSE IN SARATOGA, LARAMIE, CHEYENNE AREAS**

CHEYENNE – The Wyoming Game and Fish Department will be holding a series of public meetings to discuss the review of herd unit population objectives for pronghorn, elk and moose in the Saratoga, Laramie and Cheyenne areas. Lee Knox, Game and Fish wildlife biologist in Laramie said proposals will include the following herd units:

Cooper Lake Pronghorn (Hunt Area 43)
Centennial Pronghorn (Hunt Areas 45,44,37)
Snowy Range Elk (Hunt Areas 8,9,10,11,12,110,114,125)
Snowy Range Moose (Hunt Areas 38,41)

Meetings will be held at 6 p.m. at the following locations:

Cheyenne, May 8, WGFD Office Building, Elk Room

Laramie, May 15, Fire Hall #2

Saratoga, May 20, Town Hall

Medicine Bow, May 21, Community Center

Contact: Lee Knox (307)-745-4046 or Will Shultz (307)-326-3020



WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

wgfd.wyo.gov

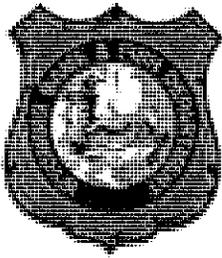
GOVERNOR
MATTHEW H. MEAD

DIRECTOR
SCOTT TALBOTT

COMMISSIONERS
MIKE HEALY - President
RICHARD KLOUDA - Vice President
MARK ANSELM
AARON CLARK
KEITH CULVER
T. CARRIE LITTLE
CHARLES PRICE

Cheyenne Public Meeting- Sign-In Sheet May 8, 2013

Name	Address	Phone Number
1. DAVE CRISPO	1888 CADILLAC RD Chey	638-6540
2. TOM WAGGONER	1131 W. JEFFERSON	625-7052
3. Joss Fish	453 W. ...	632-3366
4. Tom Hushbeck	1506 Audover Dr Chey	514-4289
5. Jon Hinze	4500 Carmel Dr.	421-3418
6.		
7.		
8.		
9.		
10.		
11.		
12.		
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14.		
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35.		



WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

Web site: <http://gf.state.wy.us>

GOVERNOR
MATTHEW H. MEAD

DIRECTOR
SCOTT TALBOTT

COMMISSIONERS
FRED LINDZEY - President
AARON CLARK - Vice President
MIKE HEALY
RICHARD KLOUDA
T. CARRIE LITTLE
ED MIGNERY
CHARLES PRICE

May 15, 2012

Laramie

Objective Review

Please take the time to fill out the survey- THANK YOU for your participation!

Name	Address	Phone	email
1 JD Hamaker	Box 327 Centennial WY	7453591	
2 Susan Weaver	3000 West Co. Rd. 70	Ft. Collins, CO	80524
3 MAXINE WEAVER	"	970-568-3898	
4 Tyler Sims	958 State Hwy 13	McFadden, WY	82083 tyler@tyler SIMS -COM
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
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16			
17			
18			
19			
20			
22			
23			
24			

20 May
2013

Saratoga Town Hall Snowy Range + Sierra Madre Elk

<u>Name</u>	<u>Email or Address</u>	<u>Town</u>
Pat Malone	malone@union-tel.com	Saratoga
Leonard Johnson	ljohnson@union-tel.com	Saratoga
TOM CHECK	W 345 53702 MORAINE DOVSMAN, WY. 53118	LARAMIE 136
BOB JOHNSTON	BOX 321	SARATOGA
PAT ROLLISON	PO # 1281	SARATOGA
Jack Berger	Box 245	Saratoga
Michael Crimmins	mcimmins@carbonpower.net	Saratoga
Roger Cox	cox@netcommander.com	Saratoga
Rick & Jody Kalinay	RRALINAY@UWYO.EDU	Laramie

INPUT	
Species:	ELK
Biologist:	WILL SCHULTZ
Herd Unit & No.:	SNOWY RANGE 533
Model date:	03/04/14

MODEL EVALUATION: FAIR

Clear form

MODELS SUMMARY		Relative AICc	Check best model to create report	Notes
C,J,CA	Constant Juvenile & Adult Survival	317	<input type="checkbox"/> C,J,CA Model	Constrained C,J @ <0.95 & >0.8 and CA @ <0.98 & ,0.85 Constrained SC,J @ <0.95 & >0.5 and SCA @ <0.98 & ,0.8 Highest Population estimate not biologically plausible
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	314	<input checked="" type="checkbox"/> SC,J,SCA Mod	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	347	<input type="checkbox"/> TS,J,CA Model	
TS,J,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	254	<input type="checkbox"/> TS,J,CA,MSC Model	

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective	
	Field Est	Field SE		Juveniles	Total Males	Females	Total Males	Females	Total		
1993											
1994				2762	2239	6998	11998	2531	1293	9830	6000
1995				3127	2077	6529	11733	3003	1336	10382	6000
1996				3209	2278	6722	12209	3079	1587	10912	6000
1997				3113	2540	6940	12592	2986	1939	11002	6000
1998				3114	2841	6748	12704	2937	1795	10520	6000
1999				3094	2688	6460	12242	2972	1920	10734	6000
2000				3181	2819	6522	12521	2970	1994	10834	6000
2001				3004	2887	6548	12439	2836	2244	10905	6000
2002				3078	3079	6460	12616	2871	2204	10803	6000
2003				3040	3052	6381	12473	2922	2257	11070	6000
2004				2519	3120	6552	12191	2410	2264	10636	6000
2005				3460	2953	6446	12858	3325	1973	11225	6000
2006				2788	2988	6722	12497	2667	2112	10929	6000
2007				3042	2896	6710	12649	2903	1945	10955	6000
2008				2892	2818	6749	12459	2745	1894	10747	6000
2009				2905	2717	6696	12318	2772	1819	10628	6000
2010				2734	2655	6639	12028	2571	1741	10134	6000
2011				2771	2514	6367	11652	2633	1624	9980	6000
2012				2557	2424	6296	11276	2363	1582	9312	6000
2013				2344	2293	5867	10505	2189	1319	8331	6000
2014				1894	1986	5295	9175	1666	884	6686	6000
2015				1904	1398	4470	7771	1739	518	5956	6000
2016											6000
2017											6000
2018											6000
2019											6000
2020											6000
2021											6000
2022											6000
2023											6000
2024											6000
2025											6000

Survival and Initial Population Estimates

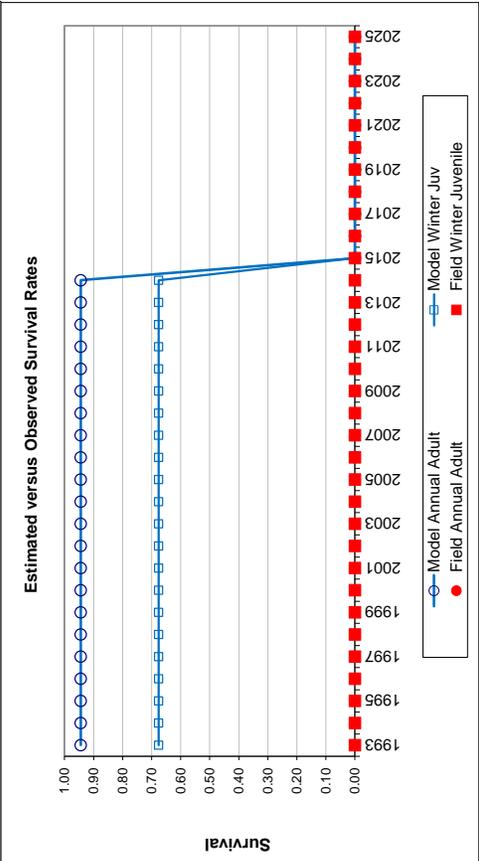
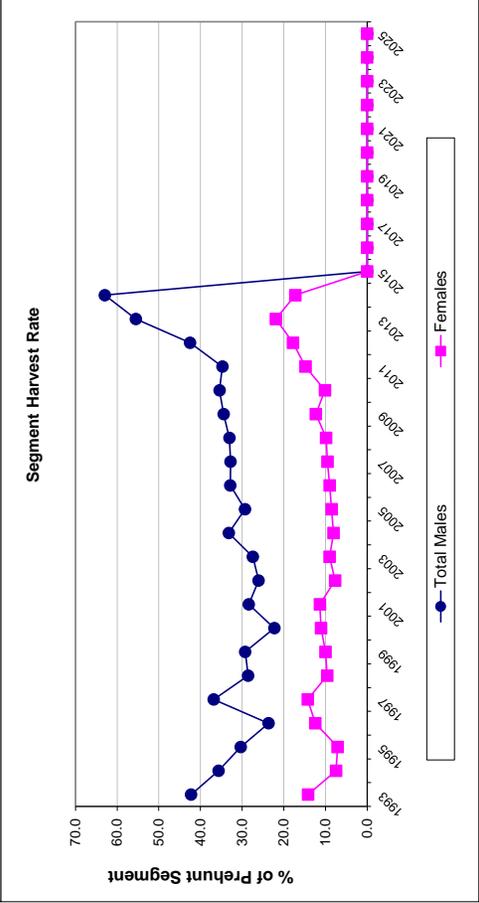
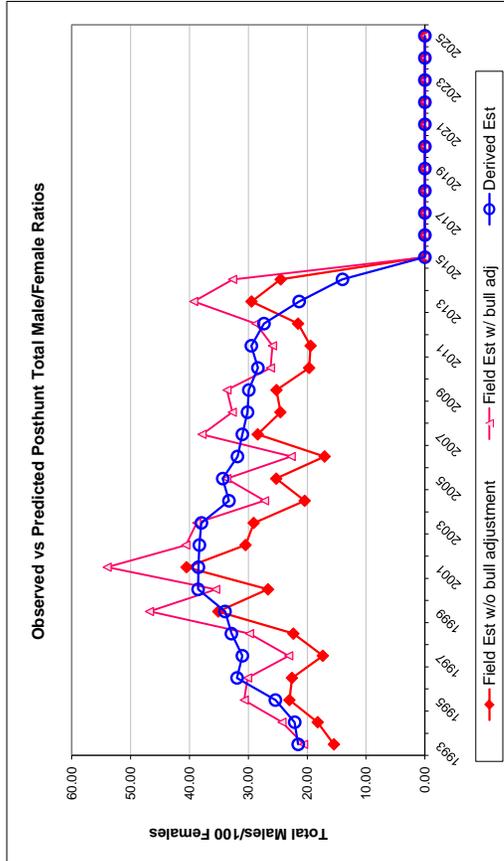
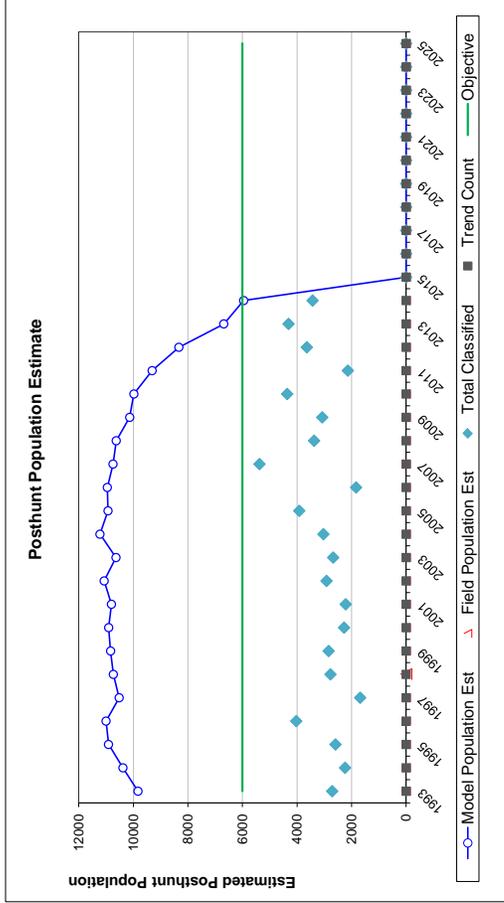
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.68	0.94	0.94	
1994	0.68	0.94	0.94	
1995	0.68	0.94	0.94	
1996	0.68	0.94	0.94	
1997	0.68	0.94	0.94	
1998	0.68	0.94	0.94	
1999	0.68	0.94	0.94	
2000	0.68	0.94	0.94	
2001	0.68	0.94	0.94	
2002	0.68	0.94	0.94	
2003	0.68	0.94	0.94	
2004	0.68	0.94	0.94	
2005	0.68	0.94	0.94	
2006	0.68	0.94	0.94	
2007	0.68	0.94	0.94	
2008	0.68	0.94	0.94	
2009	0.68	0.94	0.94	
2010	0.68	0.94	0.94	
2011	0.68	0.94	0.94	
2012	0.68	0.94	0.94	
2013	0.68	0.94	0.94	
2014	0.68	0.94	0.94	
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Juvenile Survival =		0.676
Adult Survival =		0.944
Initial Total Male Pop/10,000 =		0.129
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%
Total Bulls Adjustment Factor	75%

Year	Classification Counts										Harvest				
	Juvenile/Female Ratio					Total Male/Female Ratio					Segment Harvest Rate (% of Prehunt Segment)				
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females	
1993		42.13	1.87	21.52	20.61	15.46	1.02	210	249	611	901	1971	42.3	14.2	
1994		49.70	2.36	22.12	24.29	18.22	1.27	113	199	474	442	1228	35.6	7.4	
1995		49.30	2.21	25.40	30.69	23.02	1.37	118	206	422	433	1179	30.3	7.1	
1996		49.15	1.77	31.91	30.12	22.59	1.09	115	118	428	785	1446	23.6	12.4	
1997		50.75	2.76	31.01	23.13	17.35	1.42	161	266	685	873	1985	36.8	14.2	
1998		50.87	2.19	32.88	29.80	22.35	1.31	111	158	540	562	1371	28.6	9.6	
1999		50.59	2.23	33.96	46.80	35.10	1.76	192	203	547	592	1534	29.3	10.0	
2000		48.69	2.56	38.54	35.54	26.66	1.61	153	117	467	658	1395	22.3	11.1	
2001		50.13	2.54	38.48	54.00	40.50	2.21	188	165	630	665	1648	28.4	11.3	
2002		49.60	2.14	38.31	40.63	30.48	1.57	107	97	626	445	1275	26.1	7.7	
2003		40.43	1.90	37.97	38.78	29.09	1.54	99	149	629	536	1413	27.4	9.0	
2004		56.11	2.26	33.29	27.24	20.43	1.20	122	113	778	472	1485	33.2	8.1	
2005		43.37	1.64	34.34	33.68	25.26	1.17	110	190	606	520	1426	29.3	8.5	
2006		47.53	2.51	31.85	22.72	17.04	1.34	127	160	705	548	1540	32.9	9.0	
2007		44.94	1.45	31.02	37.87	28.40	1.08	134	157	683	583	1557	32.8	9.5	
2008		45.91	1.84	30.14	32.73	24.55	1.24	121	179	637	599	1536	33.0	9.8	
2009		44.16	1.87	29.91	33.63	25.22	1.32	148	189	642	743	1722	34.4	12.3	
2010		45.99	1.60	28.37	26.23	19.67	0.95	126	171	638	585	1520	35.4	10.1	
2011		44.04	2.20	29.49	25.89	19.42	1.33	176	117	648	845	1786	34.7	14.8	
2012		45.39	1.74	27.34	28.73	21.55	1.10	141	153	733	949	1976	42.5	17.8	
2013		40.29	1.49	21.36	39.28	29.46	1.23	205	102	892	972	2171	55.5	21.9	
2014		47.00	1.86	14.00	32.67	24.50	1.23	150	100	700	700	1650	63.0	17.2	
2015															
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

FIGURES

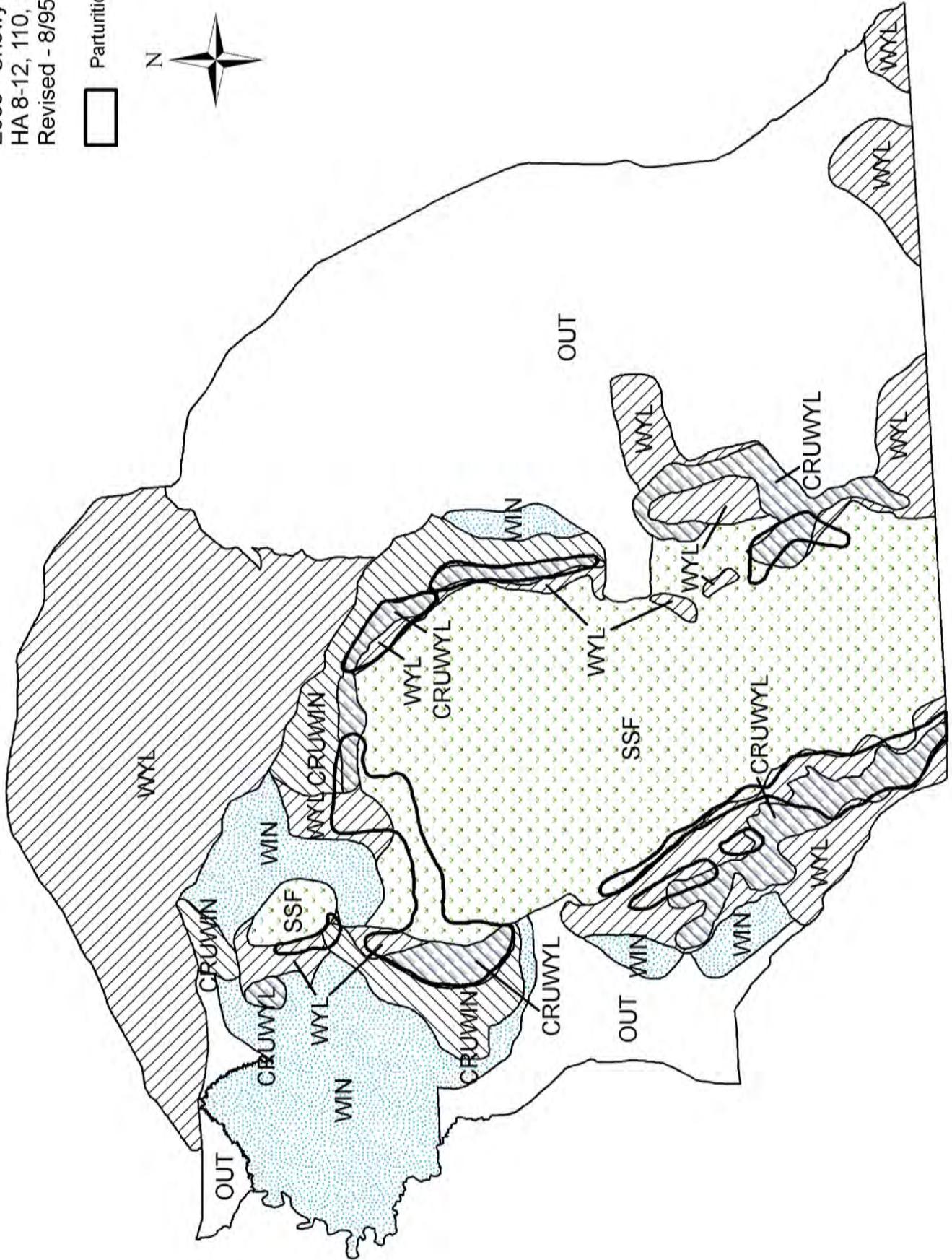


Comments:
 The SCJ/SCA model was selected because it produced the lowest F_{it} and AIC_c scores. Scores and postseason estimates were similar between this model and the C, CA and TS, CA models. Without other information (e.g. an independent population estimate or survival data) for comparison it is difficult to determine which of these 3 models produced the most accurate estimate. WS 4 Mar '14

END

E533 - Snowy Range
HA 8-12, 110, 114, 125
Revised - 8/95

Parturition Area



2013 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL534 - SHIRLEY MOUNTAIN

HUNT AREAS: 16

PREPARED BY: WILL SCHULTZ

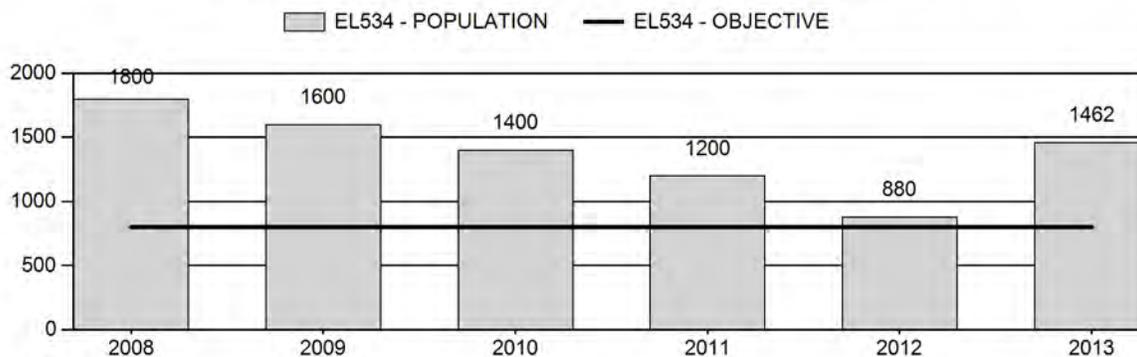
	<u>2008 - 2012 Average</u>	<u>2013</u>	<u>2014 Proposed</u>
Population:	1,376	1,462	1,204
Harvest:	311	378	351
Hunters:	580	581	700
Hunter Success:	54%	65%	50%
Active Licenses:	603	607	634
Active License Percent:	52%	62%	55%
Recreation Days:	4,434	3,765	4,200
Days Per Animal:	14.3	10.0	12.0
Males per 100 Females	35	39	
Juveniles per 100 Females	45	45	

Population Objective:	800
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	83%
Number of years population has been + or - objective in recent trend:	20
Model Date:	3/17/2014

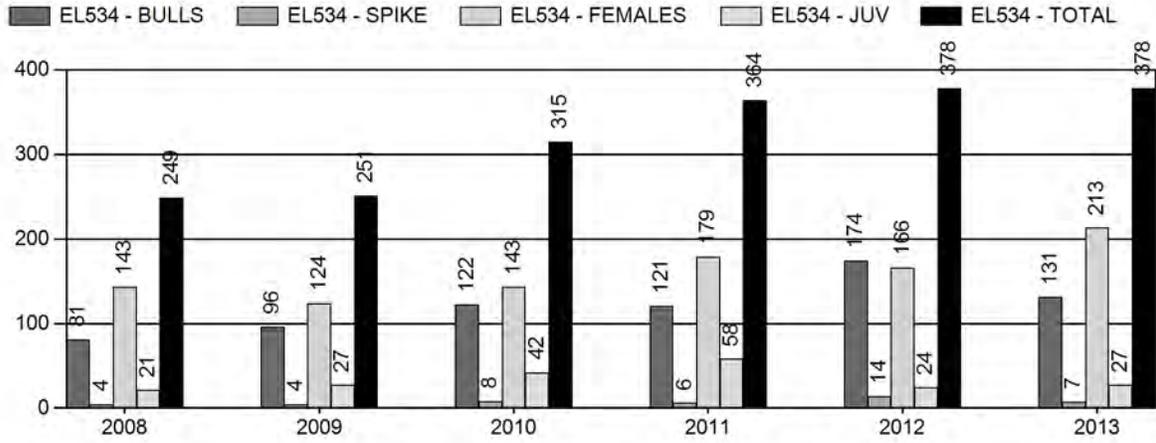
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	40.9%	29%
Males ≥ 1 year old:	49.3%	41%
Juveniles (< 1 year old):	11.6%	11%
Total:	33.4%	27%
Proposed change in post-season population:	-36.6%	-29%

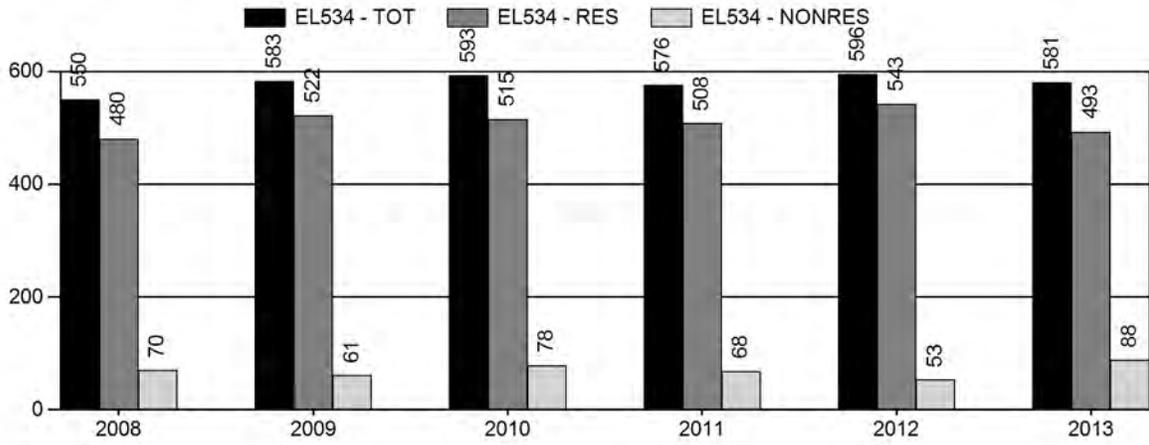
Population Size - Postseason



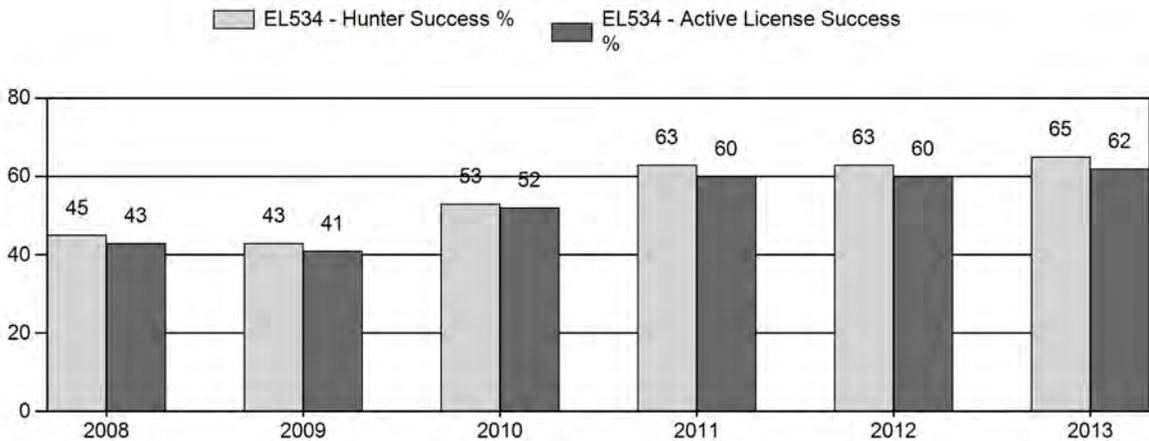
Harvest



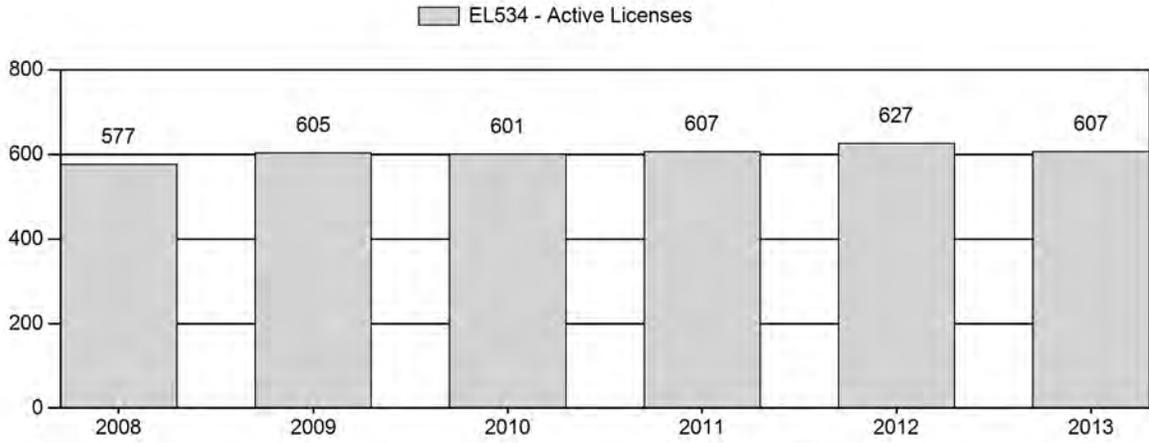
Number of Hunters



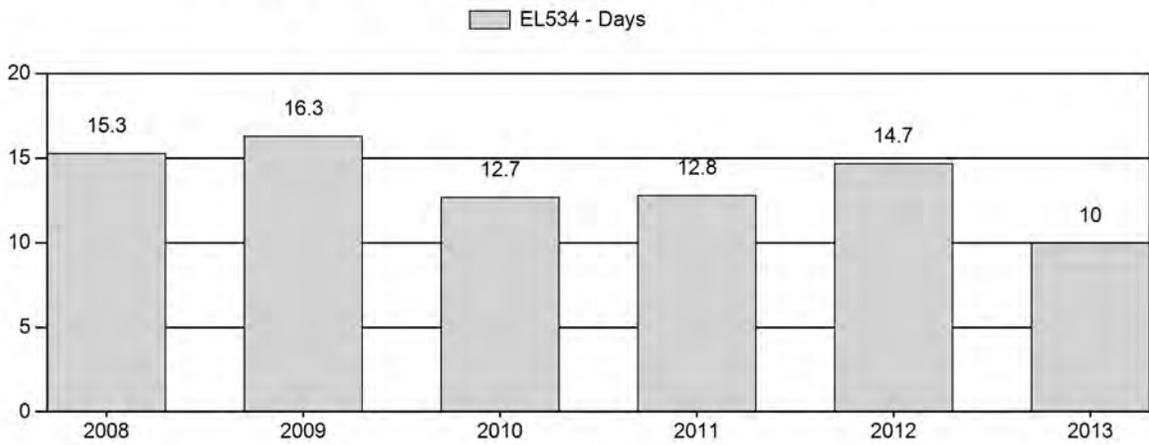
Harvest Success



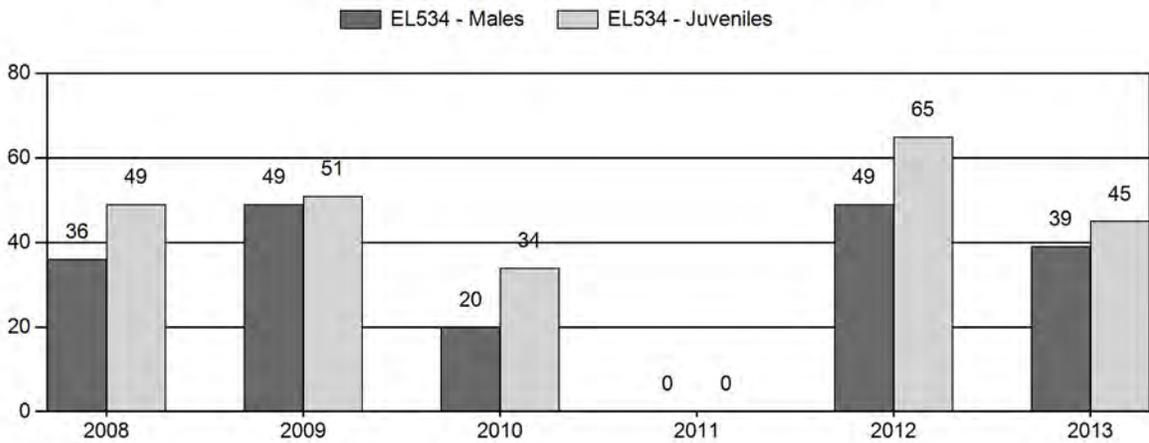
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd EL534 - SHIRLEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	1,800	71	91	162	20%	444	54%	216	26%	822	440	16	20	36	± 3	49	± 4	36
2009	1,600	37	108	145	25%	295	50%	151	26%	591	463	13	37	49	± 5	51	± 5	34
2010	1,400	49	42	91	13%	449	65%	151	22%	691	469	11	9	20	± 2	34	± 3	28
2011	1,200	0	0	0	0%	0	0%	0	0%	0	500	0	0	0	± 0	0	± 0	0
2012	880	8	32	40	23%	81	47%	53	30%	174	420	10	40	49	± 11	65	± 13	44
2013	1,462	52	90	142	21%	365	54%	165	25%	672	568	14	25	39	± 4	45	± 4	33

**Shirley Mountain Elk (EL534)
 Hunt Areas 16
 2014 Hunting Seasons**

Hunt Area	Type	Dates of Seasons		Limited Quota	Limitations	
		Opens	Closes			
16	1	Oct. 1	Oct. 31	150	Limited quota licenses; any elk	
	2	Nov. 1	Nov. 30	50	Limited quota licenses; any elk	
		Dec. 1	Dec. 15		Unused Area 16 Type 1 and Type 2 licenses valid on the Beer Mug Hunter Management Area (HMA permission slip required)	
	4	6	Jan. 15	Jan. 31	300	Unused Area 16 Type 1 and Type 2 licenses valid on the Beer Mug Hunter Management Area (HMA permission slip required)
			Oct. 1	Jan. 31		Limited quota licenses; antlerless elk
	6	6	Aug. 15	Sep. 30	200	Limited quota licenses; cow or calf valid on private land
Oct. 1			Jan. 31	Unused Area 16 Type 6 licenses valid in the entire area		

Hunt Area	Type	Quota change from 2013
16	1, 2, 4, 6	NONE

Management Evaluation

Current Management Objective: 800

Management Strategy: Recreational

2013 Postseason Population Estimate: 1,500

2014 Proposed Postseason Population Estimate: 1,200

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

Herd Unit Issues

The University of Wyoming continues to monitor elk on the Dunlap Wind Farm on the east side of this herd unit. This wind farm is proposed to expand into more crucial winter range in the future. In 2013, elk radio-collar data from the Dunlap Wind Farm research project was used to refine the eastern boundary of the herd unit. Our ability to manage elk numbers through harvest is difficult because a large portion of the elk habitat in this

herd unit is owned by one landowner who provides limited access. Most elk damage in this herd unit occurs on hay meadows in the northern portion during summer months.

Weather

Weather in this herd unit was relatively normal during the past bio-year. This weather pattern most likely had a neutral to positive influence on elk. For specific meteorological information for the Shirley Mountain herd unit the reviewer is referred to the following link:

<http://www.ncdc.noaa.gov/cag/>

Habitat

Habitat conditions improved in 2013 with an increase in timely spring and fall precipitation. However, much of the transition and winter ranges were severely impacted by the drought conditions experienced in bio-year 2012. No elk habitat production/utilization data was available for this herd unit. However, annual production rates should have improved from the previous year, while utilization rates on winter ranges likely continued to be high.

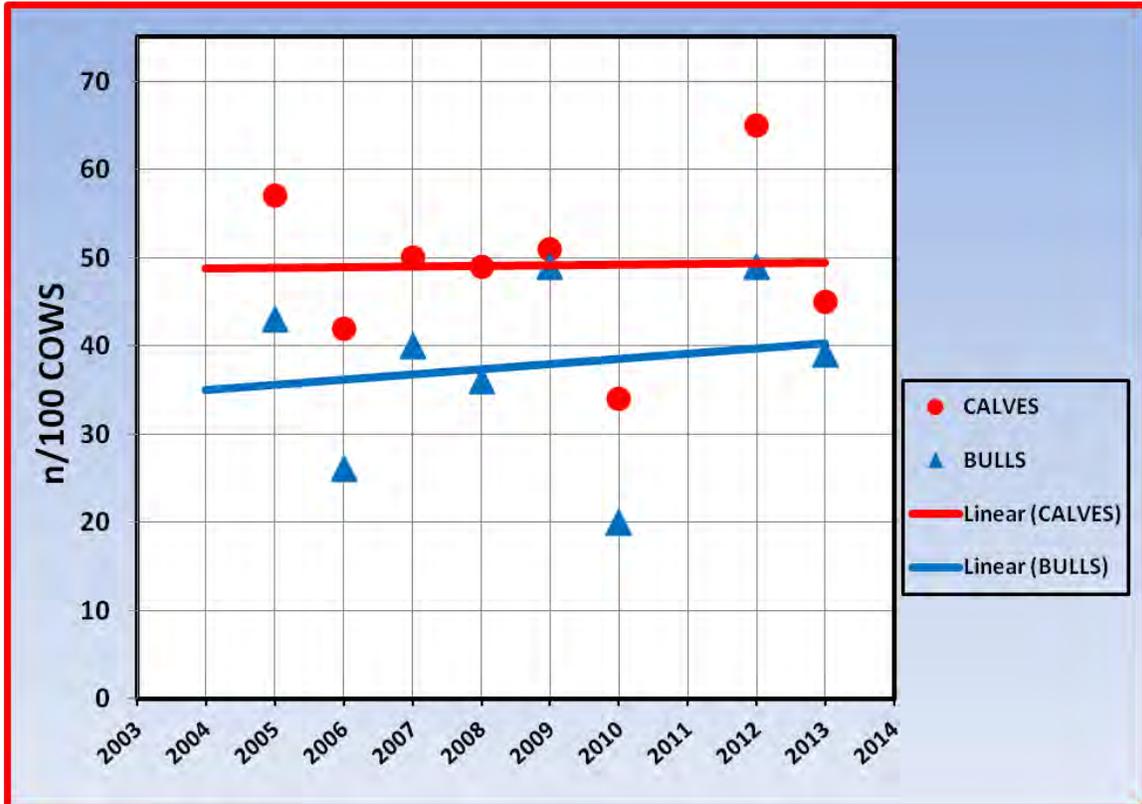
The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game specie.

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

Field Data

A postseason classification survey was conducted by helicopter in March of 2014. The 2013 postseason ratios were 39 bulls and 45 calves/100 cows, from an adequate sample size of 672 elk. Trend from past classifications infer this herd unit was still above the recreational management strategy maximum for bull ratios (Figure 1). The collection of classification data has varied in methodology primarily due to no dedicated flight funding for this herd. Managers considered the 2013 postseason survey to representative of the elk within this herd unit.

Figure 1. Wyoming 2004-2013 Shirley Mountain Elk Herd Unit bull and calf ratio trend.



Harvest Data

Preliminary elk harvest survey data indicated 630 active licensed hunters harvested 430 elk in 2013, with an overall success rate of 70%. The 2013 harvest success increased 8% from the 2012 harvest. The 2013 bull harvest (n=130) was a 26% decrease from 2012. The cause for the decrease in bull harvest was unknown, as all factors were similar across the years. Antlerless harvest (n=290) increased 33% in 2013; with only an additional allocation of 50 Type 6 licenses.

Population

In 2012 a CJ,CA model was selected to model the Shirley Mountain Herd Unit's population dynamics due to the low AIC score, simplicity, and plausible population estimate. In 2013 this model ceased to function due to harvest rates exceeding the population estimate. Classification data for this herd has accuracy issues from less than adequate sampling efforts; and most likely the assumption of this herd unit being a closed population has been violated also. These factors make it difficult to develop reliable annual population estimates.

In 2013 the TSJ,CA,MSC was selected to simulate elk population dynamics in the Shirley Mountain herd unit. This model was the only model in the 2013 suite of models

which did not cease to function by 2015 due to the continued harvest rates exceeding the predicted population estimate. The TSJ,CA,MSC model also produced the best fit and AICc score. Selecting the TSJ,CA,MSC model resulted in a retroactive increase of the 2012 postseason population estimate that was previously reported in the Job Completion Report database. The 2013 postseason population estimate was plausible; however it was likely to be a significant over estimate. Without other information (e.g. an independent population estimate or survival data) to incorporate into the model, accuracy of estimates will continue to be unknown.

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

Management Summary

Shirley Mountain Herd Unit hunting seasons are similar to last year and will continue to provide opportunities to reduce the overall elk population and reduce bull ratios towards recreational parameters. Elk numbers appear to be trending towards the management objective. Given recent drought conditions, competition with other ungulates, and some damage issues, we consider it prudent to continue to provide opportunities to harvest elk in this herd unit. The continued operation of the Beer Mug Mountain Hunter Management Area has provided additional harvest opportunities for many elk hunters in this herd unit.

Literature Cited

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

Bibliography of Herd Specific Studies

None at present time.

INPUT	
Species:	ELK
Biologist:	SCHULTZ
Herd Unit & No.:	SHIRLEY EL534
Model date:	03/17/14

MODEL EVALUATION: POOR

Clear form

MODELS SUMMARY		Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	129	<input type="checkbox"/> CJ,CA Model	Harvest will exceed population estimate in 2015
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	129	<input type="checkbox"/> SC,J,SCA Mod	same as above
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	301	<input type="checkbox"/> TS,J,CA Model	Harvest will exceed population estimate in 2014
TS,J,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	171	<input checked="" type="checkbox"/> TS,J,CA,MSC Model	Plausible but most likely over estimating abundance.

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective	
	Field Est	Field SE		Juveniles	Total Males	Females	Juveniles	Total Males	Females		Total
1993				243	315	827	228	237	740	1205	800
1994				283	302	804	275	217	745	1238	800
1995				245	332	857	230	265	773	1268	800
1996				425	355	863	416	273	744	1433	800
1997				377	450	923	377	359	838	1574	800
1998				342	445	929	327	367	863	1557	800
1999				375	495	997	349	402	879	1630	800
2000				656	538	1023	640	465	970	2075	800
2001				546	642	1156	529	565	1098	2192	800
2002				658	655	1202	633	566	1113	2312	800
2003				625	682	1243	596	583	1112	2292	800
2004				549	689	1233	525	578	1116	2219	800
2005				642	666	1219	621	528	1095	2244	800
2006				476	644	1222	463	518	1115	2096	800
2007				579	630	1236	527	514	1060	2102	800
2008				513	608	1165	490	515	1008	2013	800
2009				582	709	1215	552	599	1079	2230	800
2010				531	693	1189	485	550	1032	2067	800
2011				499	628	1122	435	488	926	1849	800
2012				588	629	1049	558	423	853	1834	800
2013				365	537	976	335	385	742	1462	800
2014				322	451	818	292	290	622	1204	800
2015											800
2016											800
2017											800
2018											800
2019											800
2020											800
2021											800
2022											800
2023											800
2024											800
2025											800

Survival and Initial Population Estimates

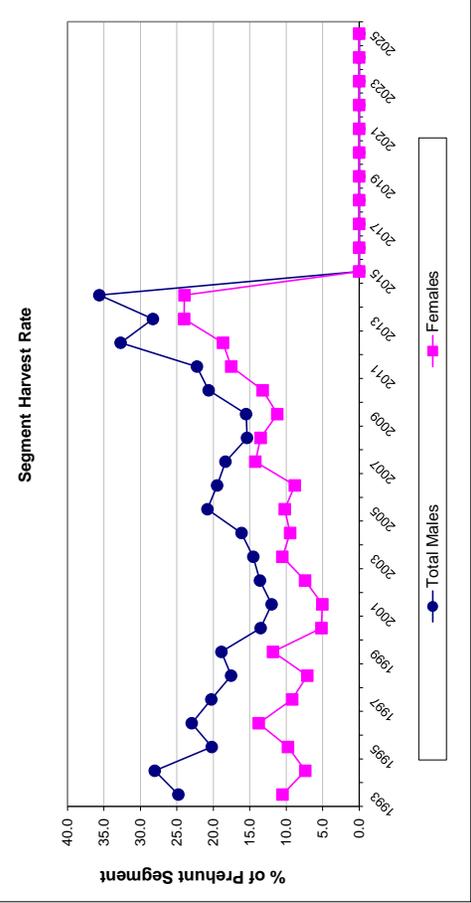
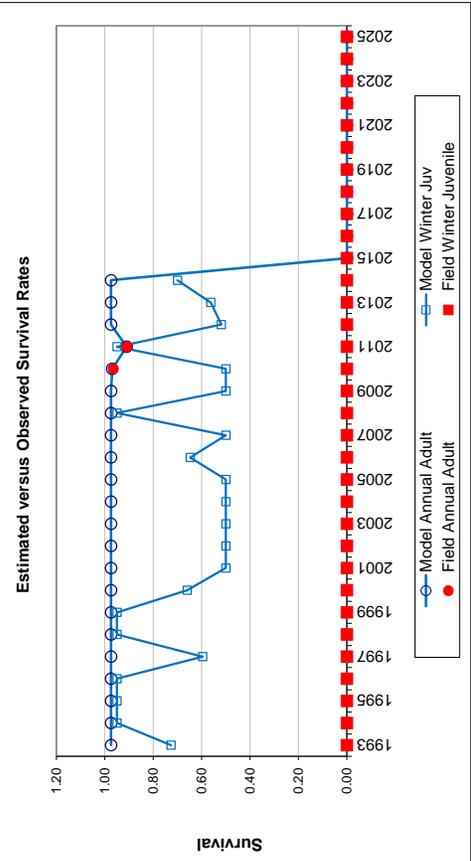
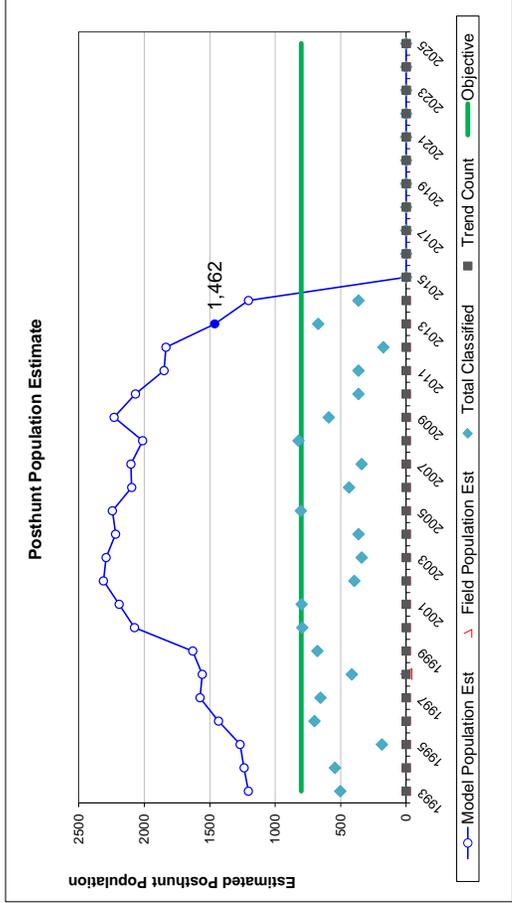
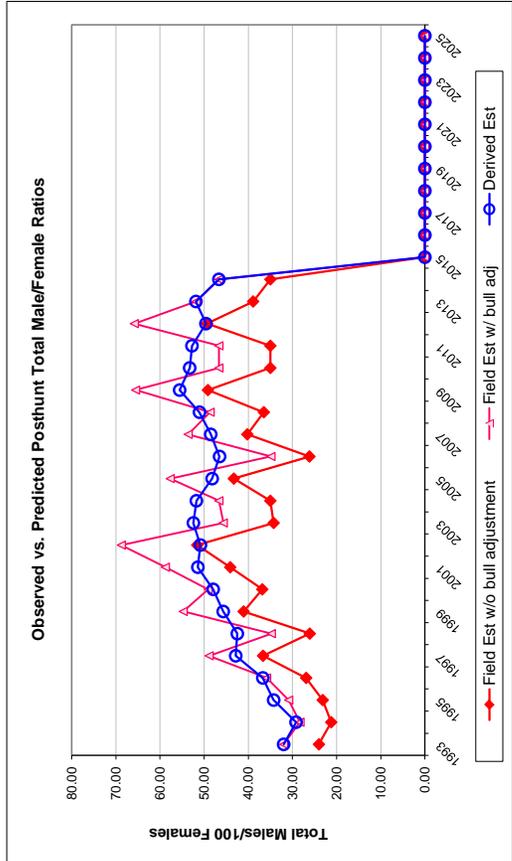
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.73		0.97	
1994	0.95		0.97	
1995	0.95		0.97	
1996	0.95		0.97	
1997	0.60		0.97	
1998	0.95		0.97	
1999	0.95		0.97	
2000	0.66		0.97	
2001	0.50		0.97	
2002	0.50		0.97	
2003	0.50		0.97	
2004	0.50		0.97	
2005	0.50		0.97	
2006	0.65		0.97	
2007	0.50		0.97	
2008	0.95		0.97	
2009	0.50		0.97	
2010	0.50		0.97	0.03
2011	0.95		0.91	0.08
2012	0.52		0.97	
2013	0.56		0.97	
2014	0.70		0.97	
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Male Survival Coefficient		0.950
Adult Survival =		0.975
Initial Total Male Pop/10,000 =		0.024
Initial Female Pop/10,000 =		0.074

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

Year	Classification Counts										Harvest				
	Juvenile/Female Ratio					Total Male/Female Ratio					Segment Harvest Rate (% of Prehunt Segment)				
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Juv	Yr1 males	2+ Males	Females	Total Harvest	Total Males	Females		
1993		30.77	3.52	32.00	32.00	24.00	14	23	48	79	164	24.8	10.5		
1994		36.92	3.83	29.19	28.29	21.22	7	21	56	54	138	28.0	7.4		
1995		29.75	5.65	34.26	30.85	23.14	14	9	52	76	151	20.2	9.8		
1996		55.87	4.77	36.71	35.86	26.89	8	11	63	108	190	23.0	13.8		
1997		45.00	4.26	42.85	48.89	36.67	0	18	65	77	160	20.3	9.2		
1998		37.94	4.55	42.49	34.78	26.09	13	12	59	60	144	17.6	7.1		
1999		39.73	3.85	45.69	54.76	41.07	23	22	63	107	215	18.9	11.8		
2000		65.98	5.29	47.96	49.10	36.83	15	11	55	48	129	13.5	5.2		
2001		48.19	4.15	51.44	58.80	44.10	6	9	61	53	129	12.0	5.0		
2002		56.84	6.85	50.85	68.77	51.58	23	3	78	81	185	13.6	7.4		
2003		53.59	6.74	52.44	45.67	34.25	26	0	90	119	235	14.5	10.5		
2004		47.00	5.88	51.77	46.67	35.00	22	16	85	106	229	16.1	9.5		
2005		56.72	4.70	48.19	57.71	43.28	19	10	116	113	258	20.8	10.2		
2006		41.54	4.76	46.51	34.87	26.15	12	8	106	98	224	19.5	8.8		
2007		49.72	6.45	48.52	53.63	40.22	47	10	95	160	312	18.3	14.2		
2008		48.65	4.04	51.06	48.65	36.49	21	4	81	143	249	15.4	13.5		
2009		51.19	5.12	55.56	65.54	49.15	27	4	96	124	251	15.5	11.2		
2010		47.00	5.88	53.29	46.67	35.00	42	8	122	143	315	20.6	13.2		
2011		47.00	5.88	52.77	46.67	35.00	58	6	121	179	364	22.2	17.5		
2012		65.43	11.56	49.60	65.84	49.38	27	14	173	178	392	32.7	18.7		
2013		45.21	4.24	51.87	51.87	38.90	27	7	131	213	378	28.3	24.0		
2014		47.00	5.88	46.67	46.67	35.00	27	14	132	178	351	35.6	23.9		
2015															
2016															
2017															
2018															
2019															
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2024															
2025															

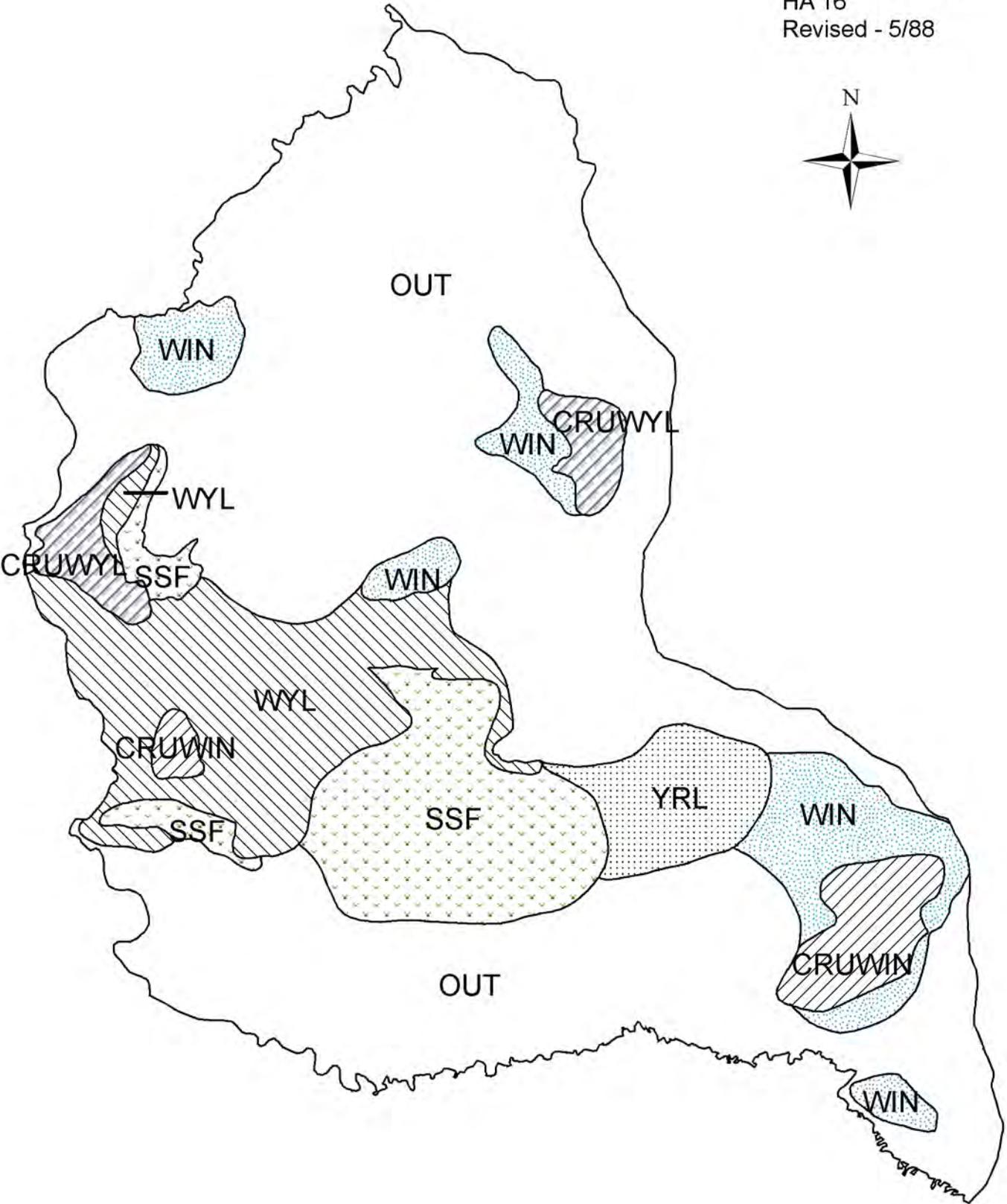
FIGURES



Comments: For postseason 2013, the TSJ, CA, MSC model was selected due to the most plausible population estimate. However, this model is considered to over estimate the current population. The data set for this herd has accuracy issues related to survey sample sizes for classification data. Interchange of elk with surrounding herd units has been documented, leading to the question of whether this is a closed population.

END

E534 - Shirley Mtn.
HA 16
Revised - 5/88



2013 - JCR Evaluation Form

SPECIES: Elk

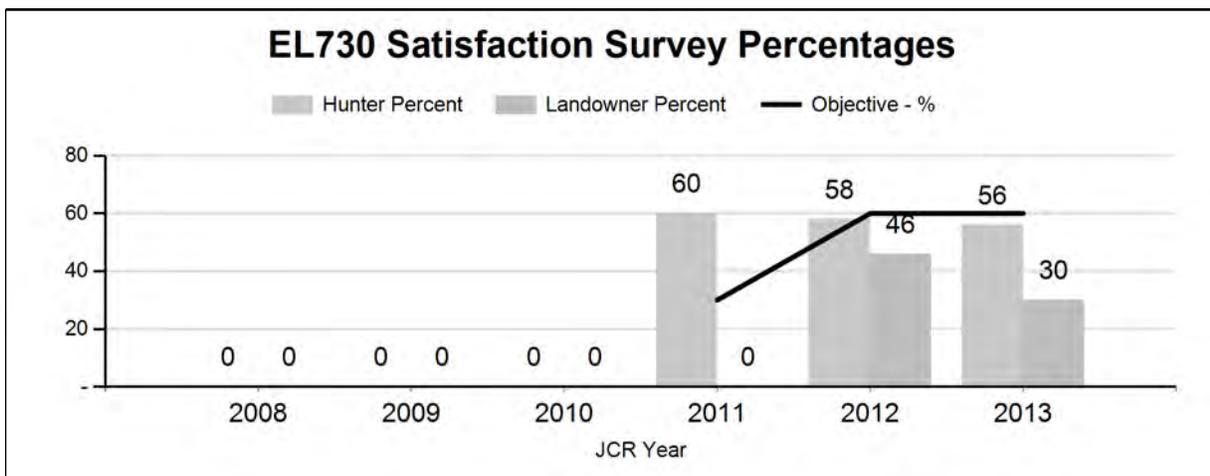
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HERD: EL730 - RAWHIDE

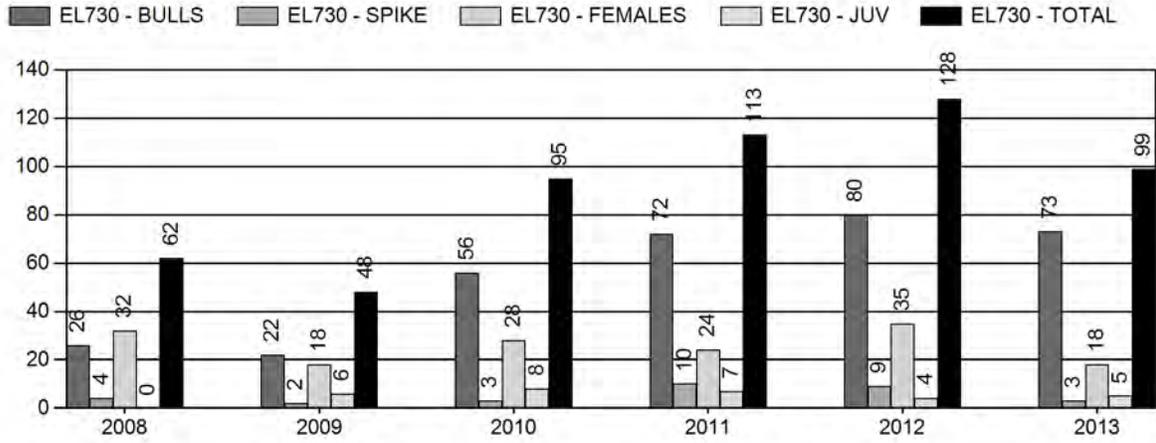
HUNT AREAS: 3

PREPARED BY: MARTIN HICKS

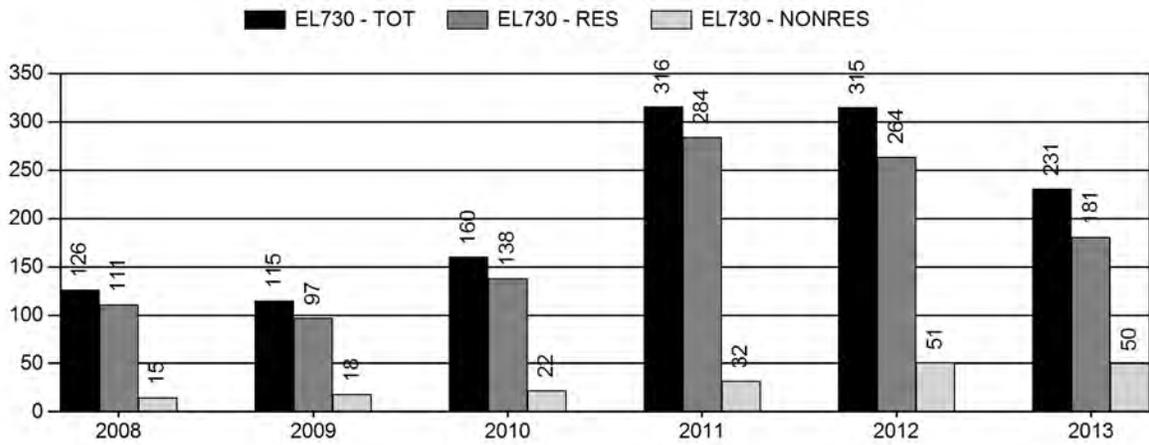
	<u>2008 - 2012 Average</u>	<u>2013</u>	<u>2014 Proposed</u>
Hunter Satisfaction Percent	59%	59%	60%
Landowner Satisfaction Percent	46%	46%	60%
Harvest:	89	94	125
Hunters:	206	231	250
Hunter Success:	43%	41%	50 %
Active Licenses:	219	248	275
Active License Percentage:	41%	38%	45 %
Recreation Days:	1,669	1,576	1,600
Days Per Animal:	18.8	16.8	12.8
Males per 100 Females:	70	0	
Juveniles per 100 Females	58	0	
Satisfaction Based Objective			60%
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-17%
Number of years population has been + or - objective in recent trend:			2



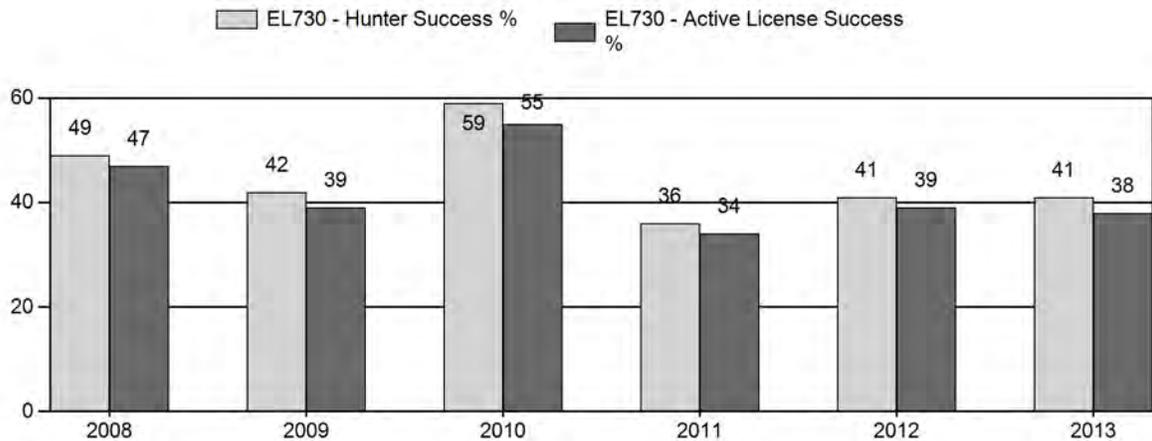
Harvest



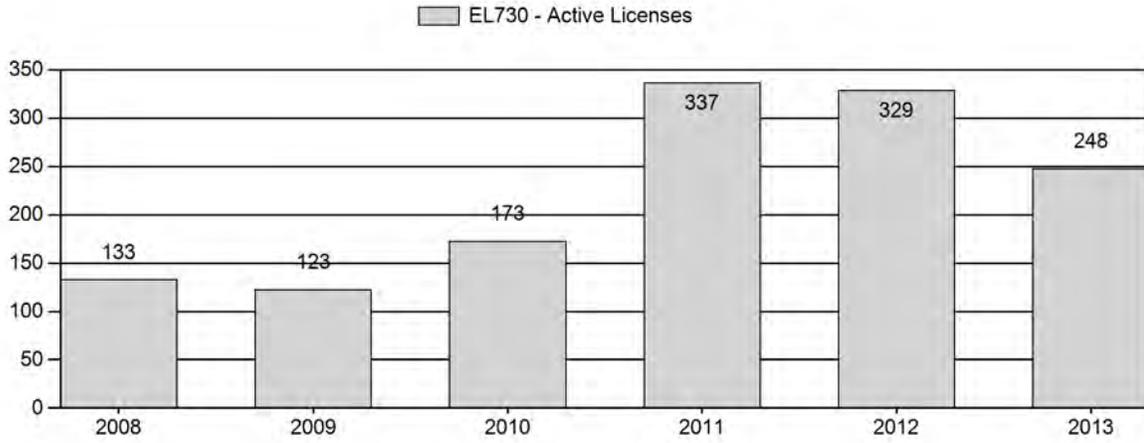
Number of Hunters



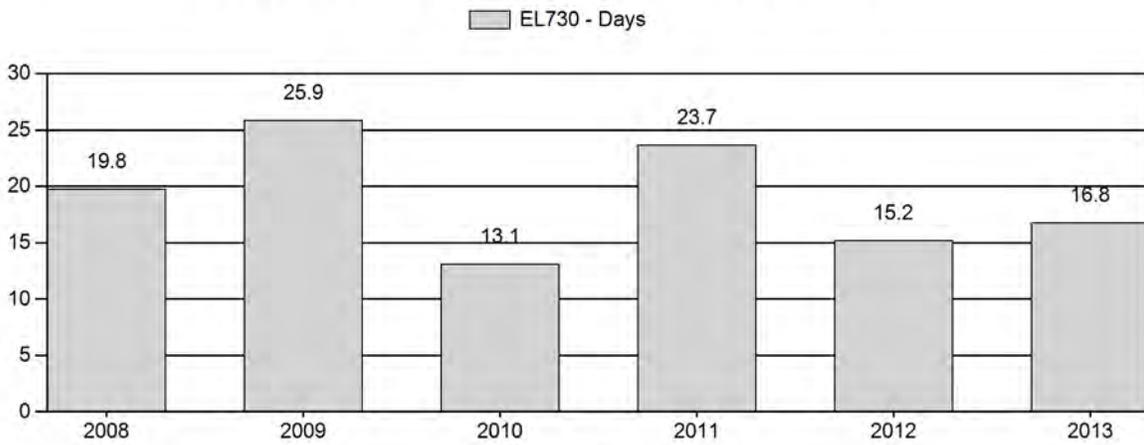
Harvest Success



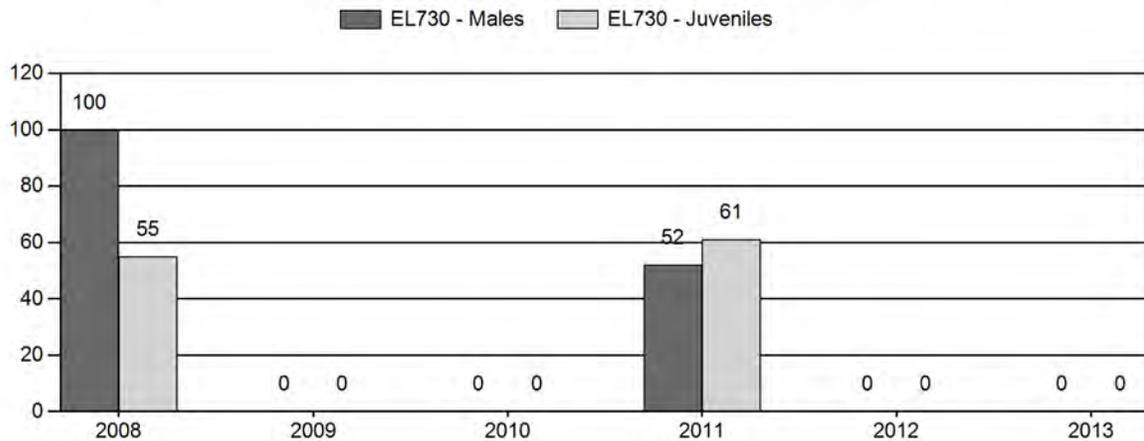
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2014 HUNTING SEASONS
RAWHIDE ELK HERD (730)**

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

Hunt Area	Type	Quota change from 2013
3	1	-75
	4	-50
	6	+125

Management Evaluation

Current Management Objective: 1) Landowner and hunter satisfaction; Target goal: $\geq 60\%$
2) Male “quality”; Target goal: $\geq 61\%$ branch antlered bulls in harvest survey

Management Strategy: Special

2013 Hunter Satisfaction Estimate: 1) 56% satisfied, 2) 26% neutral, 3) 18% dissatisfied

2013 Landowner Satisfaction Estimate: 1) 30% satisfied, 2) 33% neutral, 3) 37% dissatisfied

Male Quality: 96% branch antlered bulls

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 57%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 38%

Management Issues

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

This herd unit has been difficult to manage based on our inability to collect adequate herd composition data along with field harvest data. Based on field personnel and landowner observations we estimate there are over 400 elk in the Rawhide Elk Herd, with the population expanding south of the North Platte River into Goshen, Platte and Laramie Counties. There have been several public meetings to address the increasing population, and as a result the herd boundary was expanded south to the Colorado border for the 2012 season. Additionally the portion of Area 3 north of U.S. Highway 26 was changed to a general season for the 2014 season (the southern portion was changed to a general in 2011). The general season will open September 15 and the Type 6 license will start on August 15 to address damage.

Weather

Weather during 2013 and into 2014 was wetter and colder than normal. Ungulates went into the winter in good body condition as a result of the fall moisture. Winter conditions were somewhat mild with low snowpack but with periods of extreme cold temperatures, followed up with above freezing periods. Refer to the following websites for weather data:

<http://www.ncdc.noaa.gov/temp-and-precip/time-series/> and
<http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html>.

Habitat

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

Field/Harvest Data

Harvest success and effort has fluctuated the past five years, and when the 2013 harvest data is compared to the five-year average success decreased and effort increased. Harvest is driven by access and if hunters are limited to public land, success decreases and effort increases. Finding elk in this herd unit can be difficult due to landownership patterns. Access is restricted to the Broom Creek HMA north of US Hwy 26 and is dependent on crop damage south of US Hwy 26. A majority of landowners do not want elk south of the highway and are willing to allow access. In 2011 elk were plentiful and hunters were successful. In 2012 the severe drought displaced elk and they were not found in traditional places (i.e. alfalfa fields). In 2013 above average late summer/fall precipitation re-distributed elk which increased forage production and as a result elk were not dependent upon irrigated crops. The high percentage of branch antlered elk is indicative of the quality of bulls and the amount of private land that provides sanctuaries to allow bulls to reach maturity.

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

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

Landowner/Hunter Satisfaction Survey Results

The hunter satisfaction survey showed that 56% of the hunters were satisfied and 26% were neutral. Only 18% were dissatisfied with their quality of hunt. Based on limited conversations from hunters in the field there was concern over finding elk. However, the majority of the complaints came from hunters that were trying to hunt the limited public land. Hunters need to secure private land to hunt prior to the season or realize they will have to pay a trophy or outfitters fee. The landowner satisfaction survey showed that 30% of the landowners were satisfied, 33% were neutral and 37% were dissatisfied. There were 27 surveys returned, slightly lower than 2013, which had a return rate of 73%. Sample size was adequate to provide confidence in the survey. Hunters satisfaction was just slightly below the target range of 60%

but it is obvious landowners are not satisfied with the elk herd with the same target range of 60%. Based on return comments there were numerous reasons for their dissatisfaction: 1) damage, 2) no elk during the hunting season, 3) fires displaced elk and 4) landowners do not want elk south of Highway 26, 5) uncooperative neighbors and 6) not in favor of the general season north of Hwy 26. The percent of branched antlered bulls in the survey was 96%. Our ability to manage this segment of the population is limited due to access and adult bulls within the harvest will likely remain high.

Management Summary

In summary the 2014 season is designed to reduce elk numbers throughout the entire hunt area by having both portions (north and south of US Hwy 26) a general firearm season from Sept 15-Oct 14, and the 109 days of an any season elk south of US Hwy 26. The Type 6 licenses increased by 125 license and will run from August 15 through January 31. Given the new season structure we hope to attain a harvest of around 125 elk.

