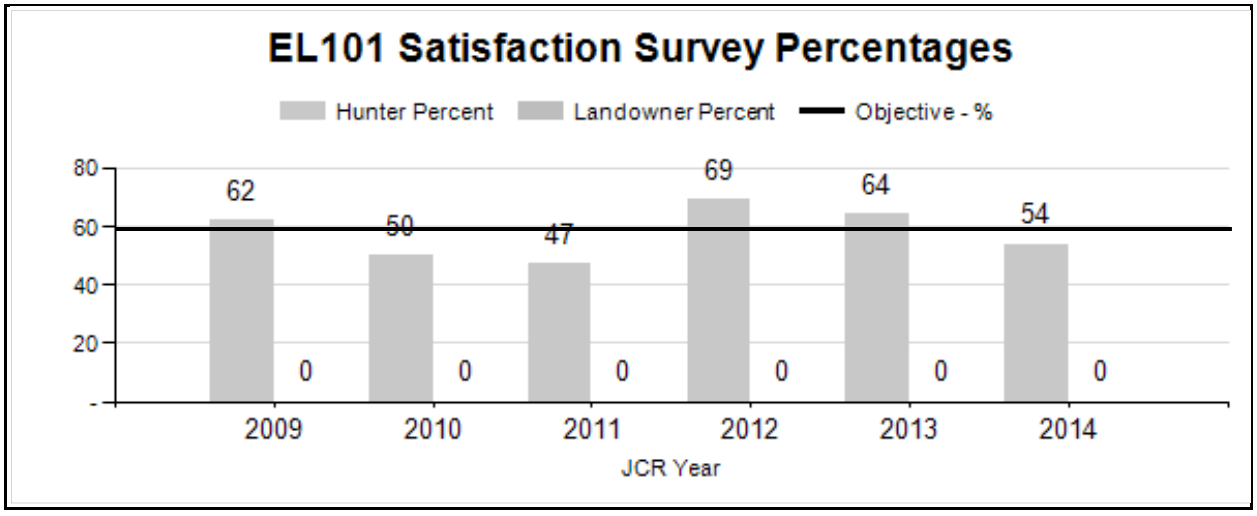
2014 - JCR Evaluation Form

SPECIES: Elk
HERD: EL101 - TARGHEE
HUNT AREAS: 73

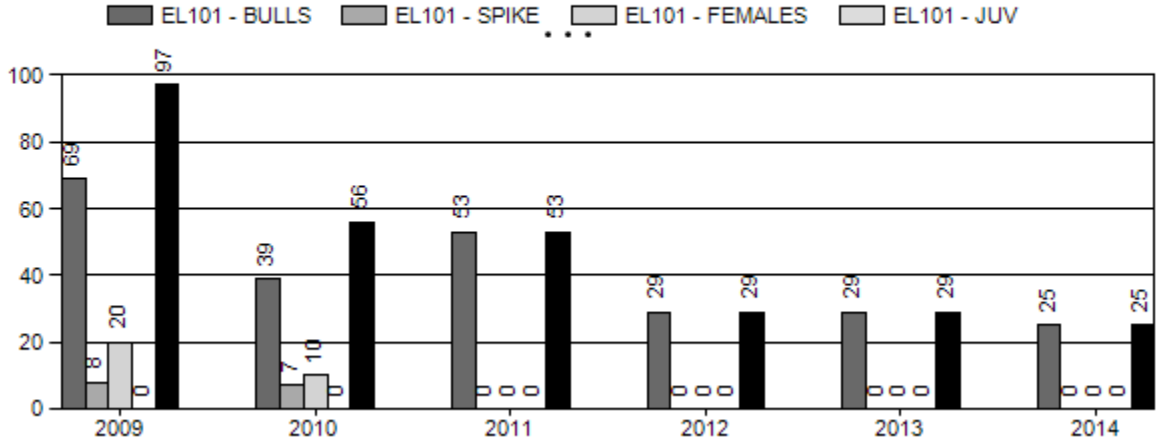
PERIOD: 6/1/2014 - 5/31/2015
PREPARED BY: ALYSON COURTEMANCH

	2009 - 2013 Average	2014	2015 Proposed
Hunter Satisfaction Percent	58%	54%	60%
Landowner Satisfaction Percent	N/A	N/A	N/A
Harvest:	53	25	30
Hunters:	163	94	100
Hunter Success:	33%	27%	30%
Active Licenses:	166	94	100
Active License Success:	32%	27%	30%
Recreation Days:	1,039	416	500
Days Per Animal:	19.6	16.6	16.7
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	

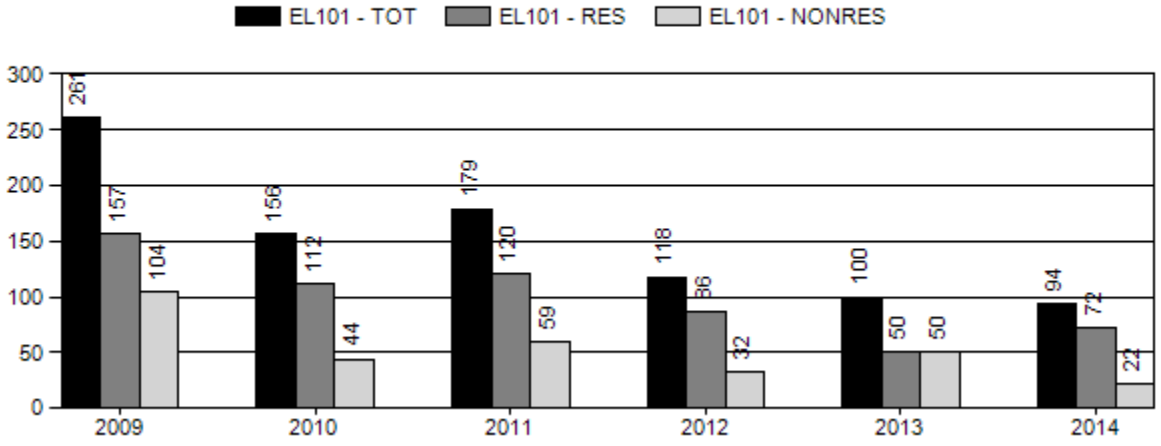
Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	N/A
Number of years population has been + or - objective in recent trend:	3



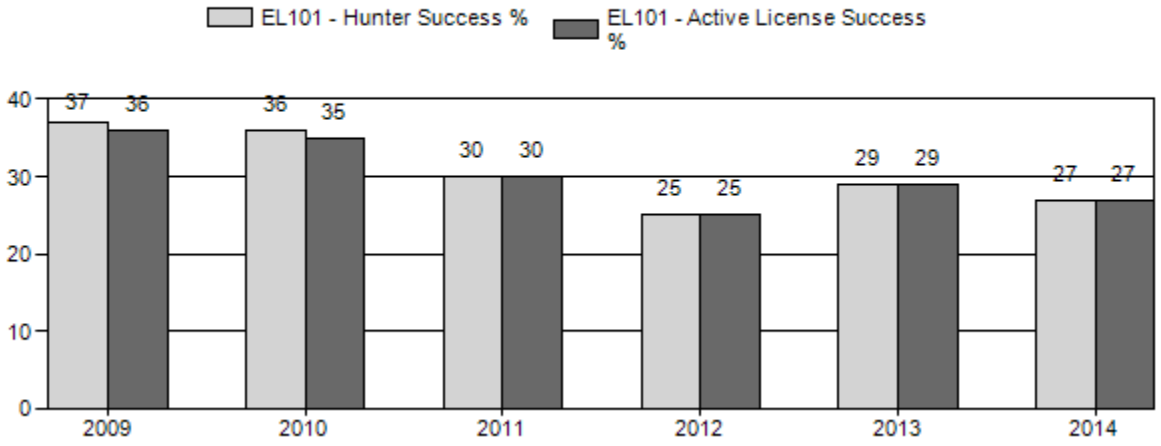
Harvest



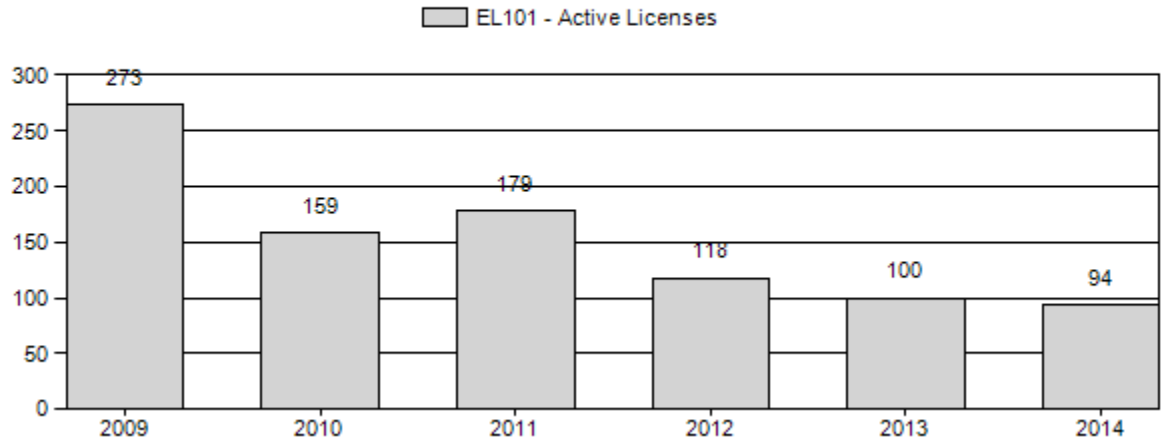
Number of Hunters



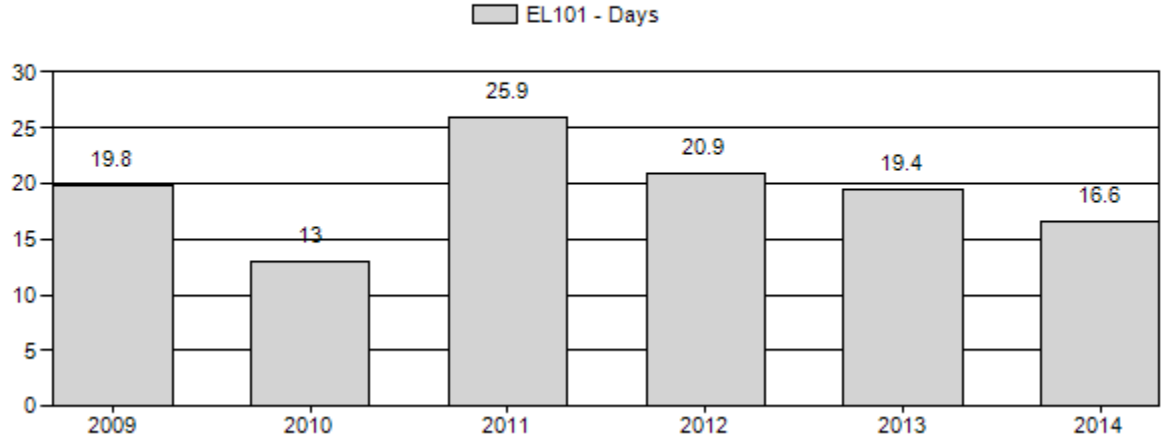
Harvest Success



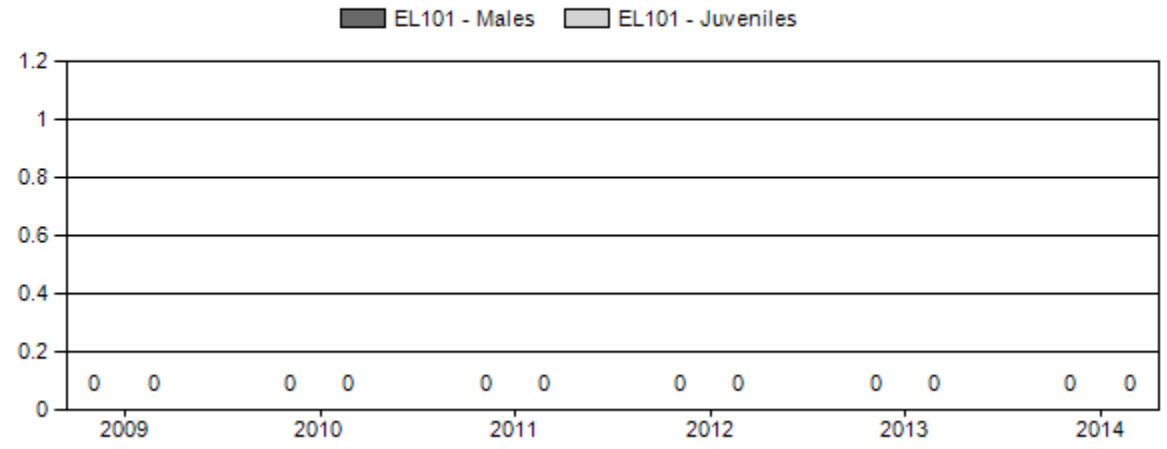
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2015 HUNTING SEASONS

TARGHEE ELK HERD (EL101)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
73		Sep. 20	Oct. 25		General	Antlered elk, spikes excluded

Special Archery Seasons

Hunt Area	Type	Season Dates		Limitations
		Opens	Closes	
73	All	Sep. 1	Sep. 19	Valid in the entire area

Management Evaluation

Management Strategy: Recreational
Hunter Satisfaction Objectives:
Primary Objective: Achieve a 3-year average of ≥ 60% of hunters indicating they are "satisfied" or "very satisfied" on the harvest survey.
Secondary Objective: Achieve a 3-year average of ≥ 25% harvest success.

The Wyoming Game and Fish Department (WGFD) proposed changing the objective for the Targhee Elk Herd from a postseason population objective to a hunter satisfaction objective in 2014. The objective change was needed because the herd is rarely surveyed due to budget priorities elsewhere and spreadsheet models do not appear to adequately simulate observed population trends. In addition, the interstate nature of the herd poses additional challenges to population surveys and management. A hunter satisfaction objective was adopted in 2014 after public review, and included primary and secondary objectives (listed above). The region did not adopt a landowner satisfaction objective because the majority of the herd unit is located on public lands.

In 2014, 54% of hunters indicated they were "satisfied" or "very satisfied" with hunting in the Targhee Elk Herd (Figure 1). The average satisfaction for the past 3 years is 62%. Therefore, the herd is meeting the primary objective of an average of ≥ 60% hunter satisfaction over 3 years.

In 2014, 27% of hunters were successful in the Targhee Elk Herd (Figure 2). The 3-year average of hunter success is 27%. Therefore, the herd is meeting the secondary objective of an average of ≥ 25% harvest success over 3 years.

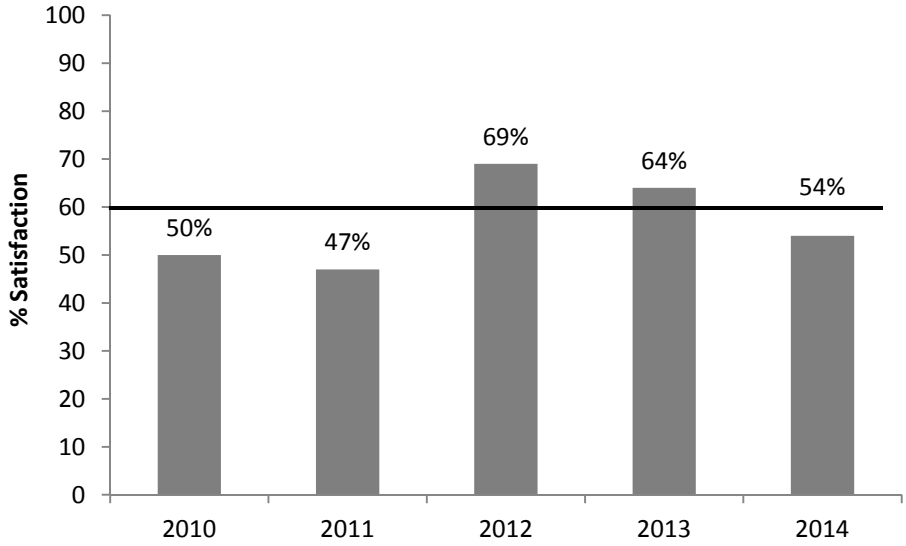


Figure 1. Percent of hunters indicating they were "satisfied" or "very satisfied" on WGFD's harvest survey from 2010-2014. The black line indicates the objective of 60%.

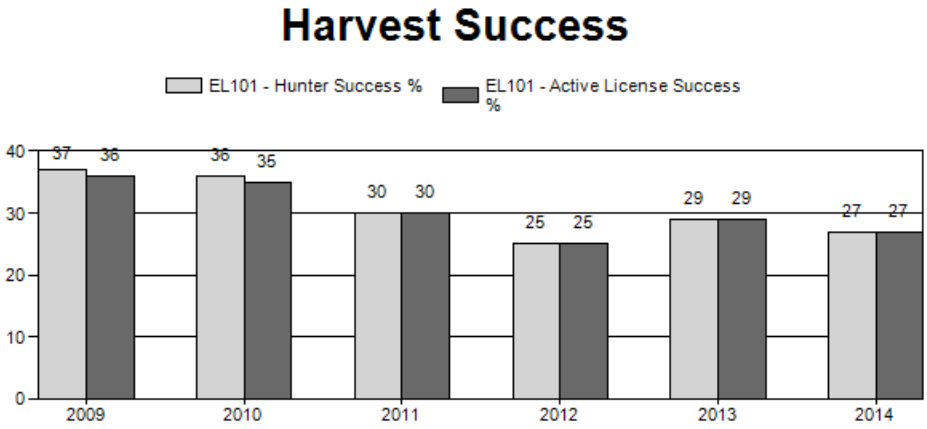


Figure 2. Harvest success rates in the Targhee Elk Herd for 2009-2014.

Herd Unit Issues

Post-season classification surveys are not flown in this herd due to budget constraints. However, elk were opportunistically recorded during an aerial survey of the Targhee bighorn sheep herd in March 2015. Only 4 adult bull elk were observed. Many of the historical winter ranges for the Targhee Herd have been converted to agriculture and residential development in Idaho. Winter ranges that remain are primarily low elevation mountain shrub and aspen communities in Wyoming and riparian areas in Idaho along the Teton River. Many of the mountain shrub and aspen communities along the state line are old and decadent and are being encroached by conifers. More restrictive hunting seasons have been implemented to allow this population to increase and increase hunter satisfaction.

Weather

Summer and fall 2014 produced consistent moisture, leading to good forage production. Elk migrated relatively late in the fall due to warm temperatures and late snowfall. The Snake River Basin received above-average snowfall in December and early January, but weather turned warm and dry by February. Many low elevation slopes were snow-free by mid-February, but snow remained deep and heavy with a hard crust on north-facing slopes and higher elevations. At the time of the mid-winter survey, winter precipitation was reported at 91% of normal. Please refer to the following web sites for specific weather station data.
http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/snowprec.html and
http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html

Habitat

There are several historical vegetation transects in elk winter and transitional ranges that have not been monitored in the past 5 years. Several habitat improvement projects are being planned in this herd unit, including the Hill Creek Prescribed Burn, which is scheduled for completion in 2015. In addition, a habitat treatment in Teton Canyon is currently in the planning stages to improve mountain shrub and aspen communities. The WGFD is assisting Caribou-Targhee National Forest (CTNF) with vegetation monitoring in aspen stands pre and post-treatment. Please refer to the 2014 Annual Report Strategic Habitat Plan Accomplishments for Jackson Region habitat improvement project summaries (https://wgfd.wyo.gov/web2011/wildlife-1000708.aspx).

Field Data

No field data were collected in the Targhee Herd Unit during the 2014 biological year.

Harvest Data

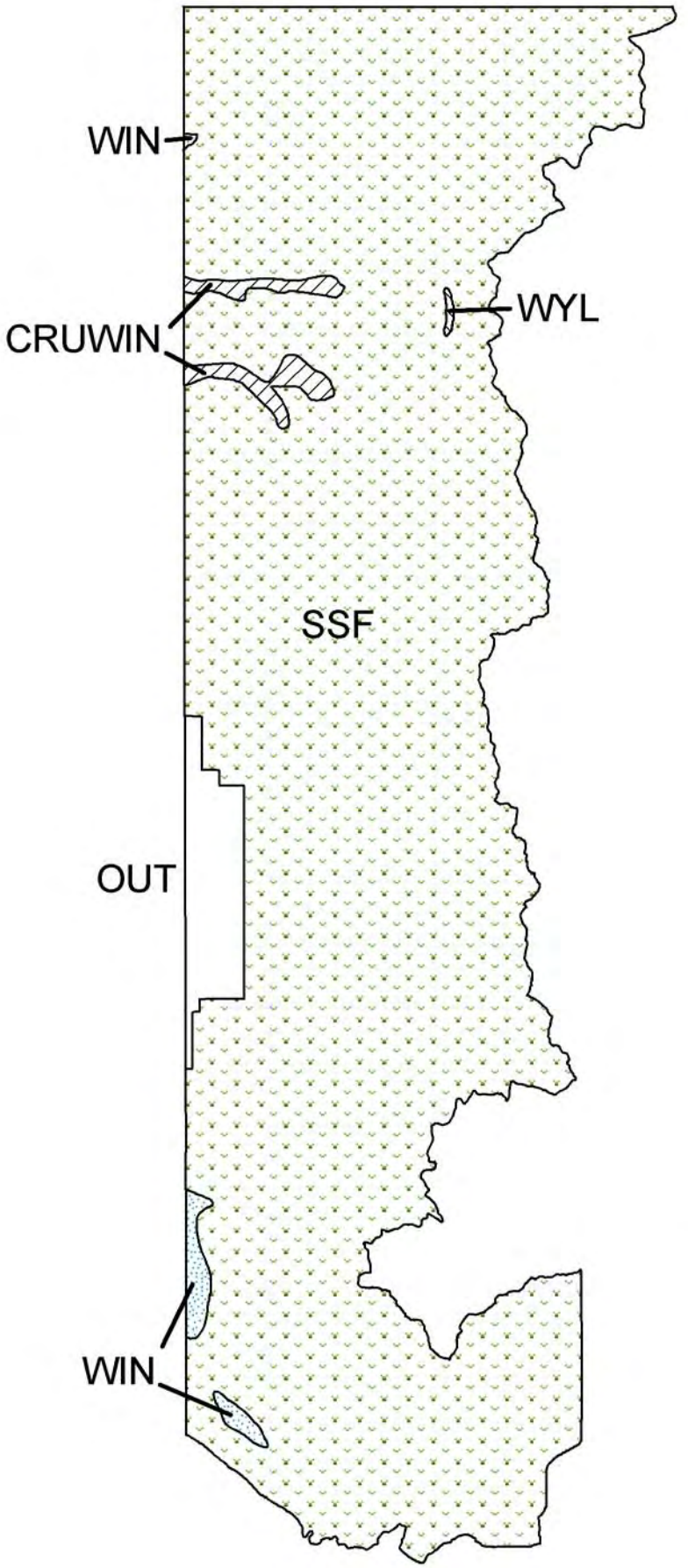
Based on harvest statistics, the density of elk in the Targhee Herd continues to be a concern. The overall number of elk harvested remained low in 2014 (n=25) as did the number of hunters (n=94). Antlerless elk seasons were eliminated in 2010 and the season was shortened 6 days in 2012. Hunter satisfaction appears to be improving over the last 3 years. In 2014, hunter satisfaction was 54% and harvest success was 27%.

Population

This population likely declined following liberal hunting seasons in Idaho. The elimination of the supplemental feeding program in Idaho led to higher elk harvest to address damage to private lands and comingling with livestock. Data are limited in this population and spreadsheet models developed for this population do not simulate observed trends. Elk winter and transitional ranges in Wyoming are dominated by conifer-encroached aspen stands.

Management Summary

Due to the “interstate” nature of this population, managing this herd is difficult. This population spends the summer and early fall in Wyoming and winters along drainages in the foothills of the Teton Range. Observations of elk along the state line indicate this population remains at a low density even though hunting seasons are conservative. In an effort to improve male recruitment in this population a spikes-excluded season was implemented in 2013 and will continue in 2015. There will be no changes to hunting seasons in 2015. The WGFD continues to work closely with CTNF to develop habitat improvement projects to benefit elk in Wyoming.



E101 - Targhee
HA 73
Revised - 7/87

2014 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL102 - JACKSON

HUNT AREAS: 70-72, 75, 77-83

PREPARED BY: ALYSON COURTEMANCH

	2009 - 2013 Average	2014	2015 Proposed
Population:	11,690	11,000	11,000
Harvest:	1,307	1,746	1,500
Hunters:	3,082	3,351	3,000
Hunter Success:	42%	52%	50%
Active Licenses:	3,167	3,486	3,000
Active License Success:	41%	50%	50%
Recreation Days:	21,367	23,056	19,000
Days Per Animal:	16.3	13.2	12.7
Males per 100 Females	29	41	
Juveniles per 100 Females	21	21	

Population Objective (± 20%) : 11000 (8800 - 13200)

Management Strategy: Recreational

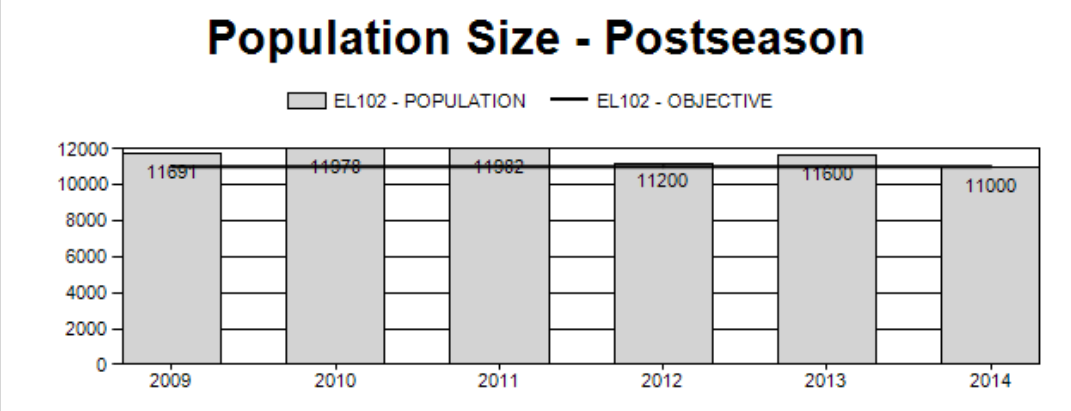
Percent population is above (+) or below (-) objective: 0%

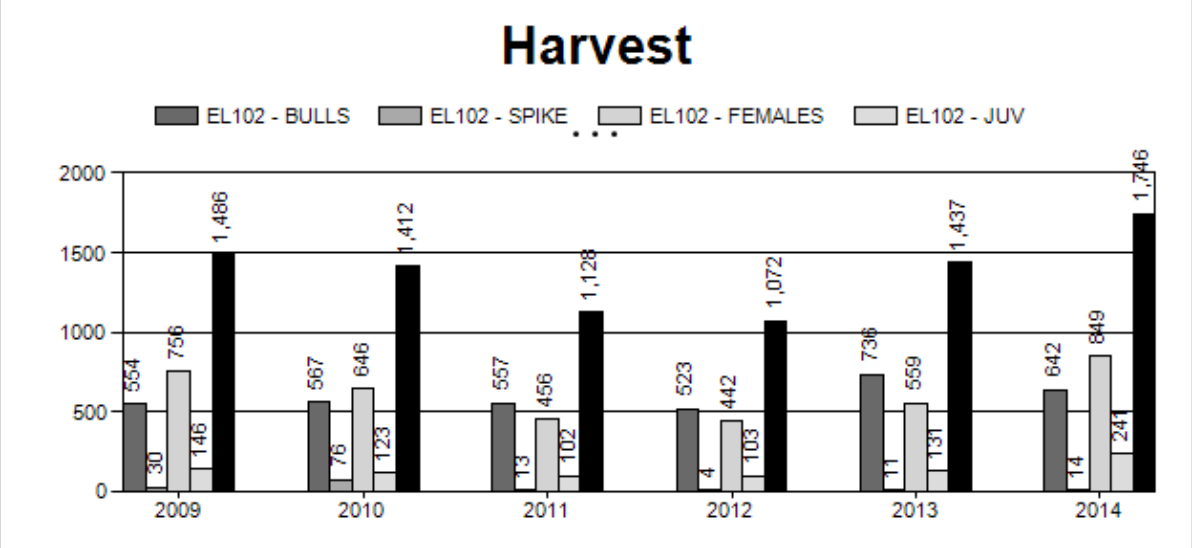
Number of years population has been + or - objective in recent trend:

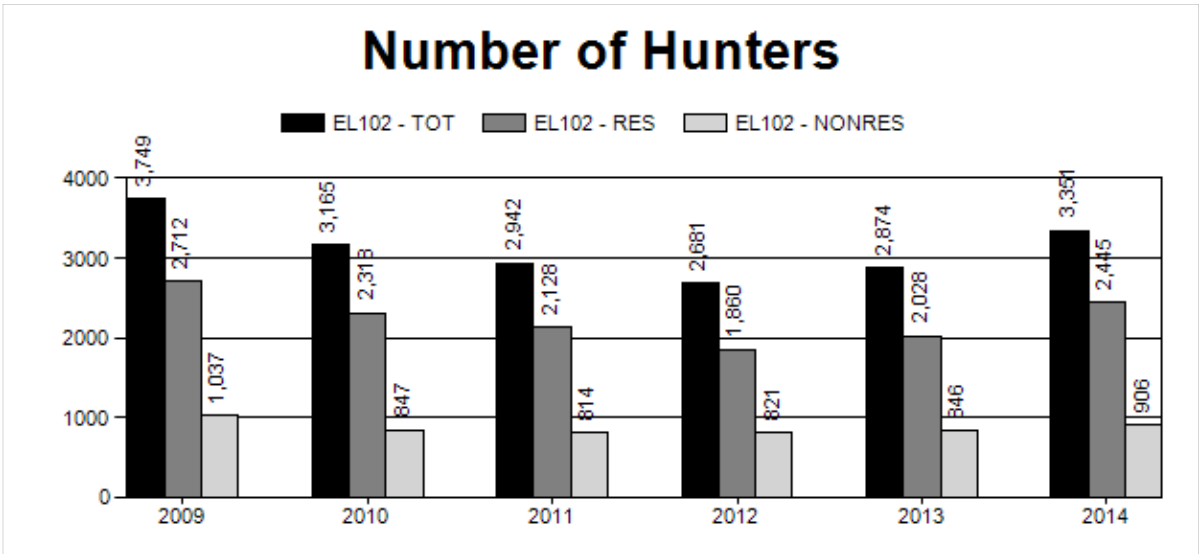
Model Date: None

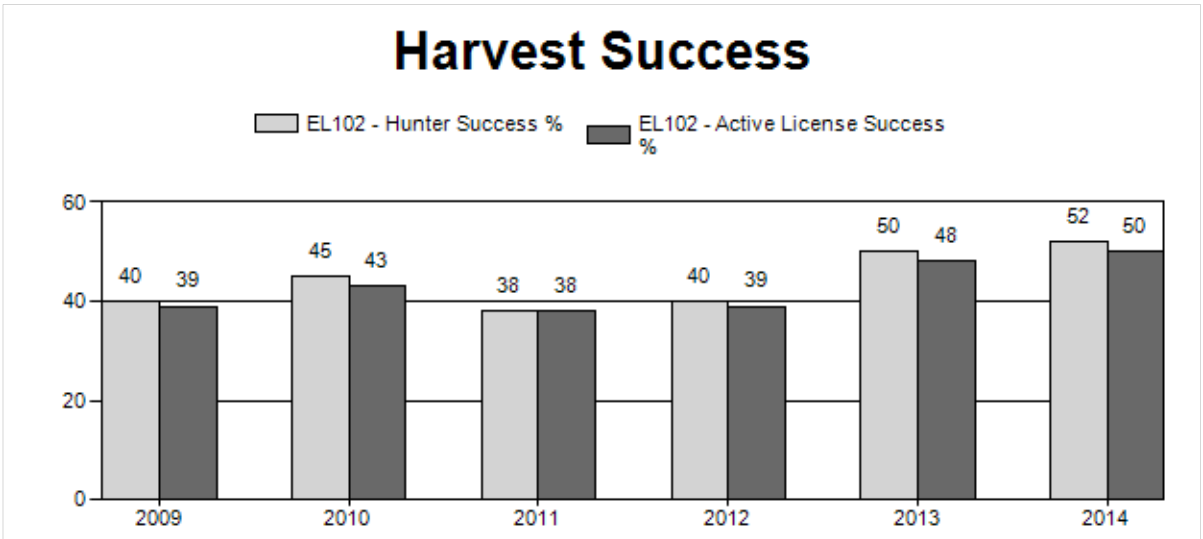
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

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

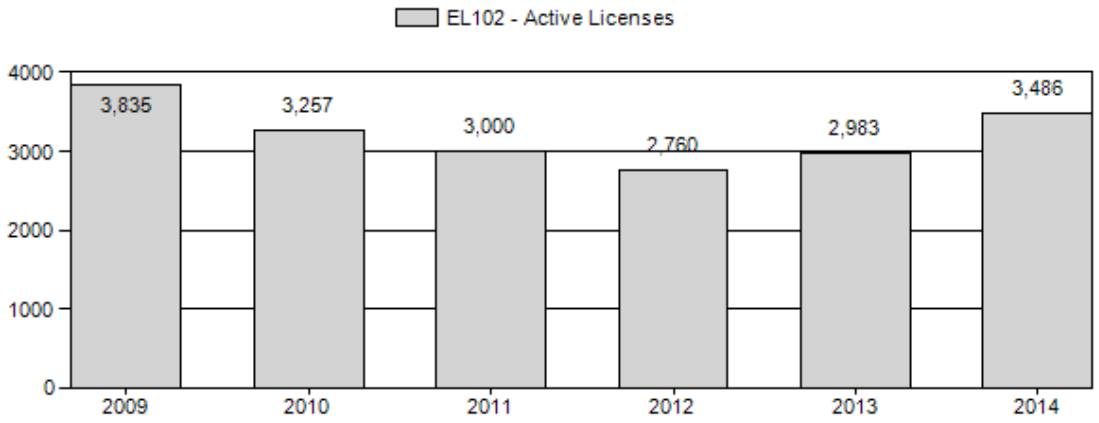



Harvest
EL102 - BULLS
EL102 - SPIKE
EL102 - FEMALES
EL102 - JUV
2000
1500
1000
500
0
554
30
756
146
1,486
567
76
646
123
1,412
557
13
456
102
1,128
523
4
442
103
1,072
736
11
559
131
1,437
642
14
849
241
1,746
2009
2010
2011
2012
2013
2014

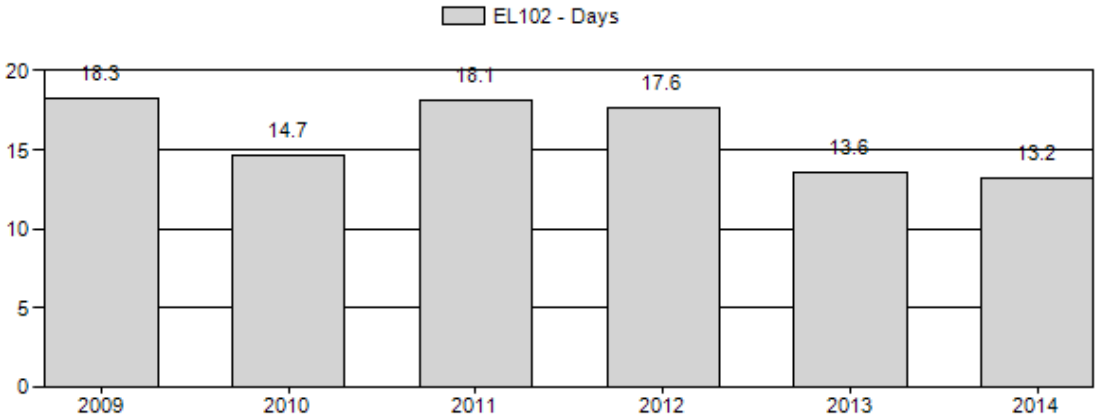

Number of Hunters
EL102 - TOT
EL102 - RES
EL102 - NONRES
4000
3000
2000
1000
0
3,749
2,712
1,037
3,165
2,318
847
2,942
2,128
814
2,681
1,860
821
2,874
2,028
846
3,351
2,445
906
2009
2010
2011
2012
2013
2014


Harvest Success
EL102 - Hunter Success %
EL102 - Active License Success %
60
40
20
0
40
39
45
43
38
38
40
39
50
48
52
50
2009
2010
2011
2012
2013
2014

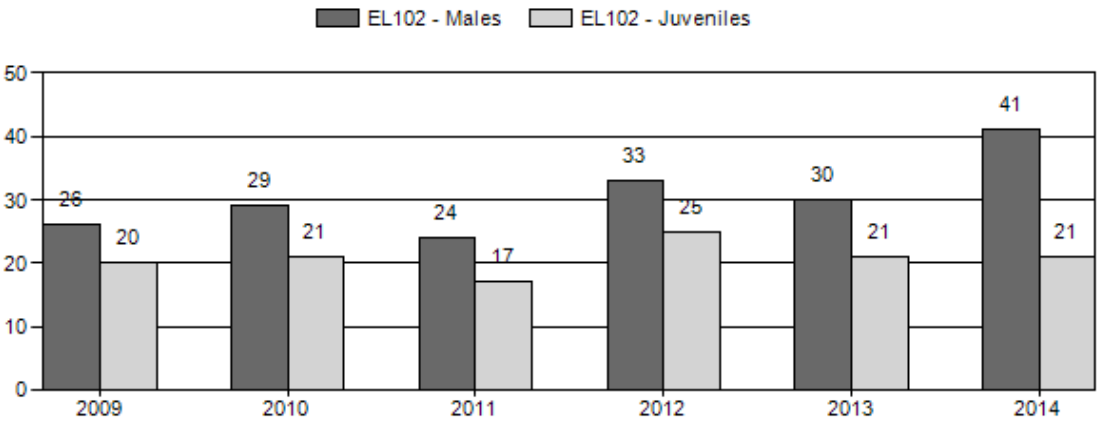
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL102 - JACKSON

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	11,691	409	1,012	1,421	18%	5,512	69%	1,093	14%	8,026	322	7	18	26	± 1	20	± 0	16
2010	11,978	659	1,589	2,248	20%	7,669	67%	1,586	14%	11,503	372	9	21	29	± 0	21	± 0	16
2011	11,982	467	1,519	1,986	17%	8,116	70%	1,417	12%	11,519	269	6	19	24	± 0	17	± 0	14
2012	11,200	601	1,693	2,294	21%	7,027	64%	1,730	16%	11,051	440	9	24	33	± 0	25	± 0	19
2013	11,600	659	1,619	2,278	20%	7,560	66%	1,585	14%	11,423	374	9	21	30	± 0	21	± 0	16
2014	11,000	679	2,028	2,707	25%	6,570	62%	1,356	13%	10,633	584	10	31	41	± 0	21	± 0	15

2015 HUNTING SEASONS
JACKSON ELK HERD (EL102)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
70		Sep. 20	Nov. 1		General	Antlered elk, spikes excluded – SEE SECTION 6
71		Sep. 20	Nov. 1		General	Antlered elk, spikes excluded – SEE SECTION 6
72						CLOSED
75	4	Oct. 24	Nov. 30	150	Limited quota	Antlerless elk; the Snake River Bottom portion of Area 75 shall be closed, also valid in that portion of Area 81 west of the Shadow Mountain Loop Road (U.S.F.S. Road 30340) - SEE SECTIONS 6 and 7
75	4	Oct. 24	Nov. 1			Unused Area 75 Type 4 licenses also valid in Area 79 – SEE SECTIONS 6 and 7
75	4	Dec. 1	Dec. 13			Unused Area 75 Type 4 licenses; the Snake River Bottom and Antelope Flats portion of Area 75 shall be closed - SEE SECTIONS 6 and 7
75	6	Oct. 24	Nov. 30	500	Limited quota	Cow or calf; the Snake River Bottom portion of Area 75 shall be closed - SEE SECTIONS 6 and 7
75	6	Dec. 1	Dec. 13			Unused Area 75 Type 6 licenses; the Snake River Bottom and Antelope Flats portion of Area 75 shall be closed - SEE SECTIONS 6 and 7

77		Oct. 17	Oct. 18			General license and unused limited quota licenses; excluding limited quota cow or calf licenses and limited quota archery only licenses, valid for any elk; 70 National Elk Refuge permits may be issued only for youths 12 through 17 years of age - SEE SECTIONS 6 and 7
77		Oct. 19	Oct. 26			General license and unused limited quota licenses; excluding limited quota cow or calf licenses and limited quota archery only licenses, any elk – SEE SECTIONS 6 and 7
77		Oct. 27	Dec. 18			General license and unused limited quota licenses; excluding limited quota archery only licenses, antlerless elk only - SEE SECTIONS 6 and 7
78	1	Sep. 26	Jan. 31	75	Limited quota	Any elk - SEE SECTION 6
78	6	Aug. 15	Sep. 25	175	Limited quota	Cow or calf valid off national forest – SEE SECTION 6
78	6	Sep. 26	Jan. 31			Unused Area 78 Type 6 licenses valid in the entire area – SEE SECTION 6
78	7	Aug. 15	Jan. 31	50	Limited quota	Cow or calf archery, muzzle-loading firearm or shotgun only– SEE SECTION 6
79		Oct. 24	Nov. 1			Unused Area 75 Type 4 licenses valid in Area 79 – SEE SECTIONS 6 AND 7
80		Sep. 26	Oct. 31		General	Any elk - SEE SECTION 6
80		Nov. 1	Nov. 15		General	Antlerless elk - SEE SECTION 6
80		Nov. 16	Nov. 30			General license and unused Area 80 Type 6 licenses valid for antlerless elk south of the Sheep Creek Road (U.S.F.S. Road 30445) – SEE SECTION 6
80	6	Oct. 17	Nov. 15	100	Limited quota	Cow or calf – SEE SECTION 6
81		Sep. 26	Oct. 25		General	Antlered elk, spikes excluded - SEE SECTION 6
82		Sep. 26	Oct. 25		General	Antlered elk, spikes excluded - SEE SECTION 6
82	4	Sep. 10	Oct. 25	25	Limited quota	Antlerless elk - SEE SECTION 6
83		Oct. 1	Oct. 25		General	Antlered elk, spikes excluded - SEE SECTION 6

Special Archery Seasons

Hunt Area	Type	Season Dates		Limitations
		Opens	Closes	
83	All	Sep. 1	Sep. 30	Valid in the entire area(s)
70, 71	All	Sep. 1	Sep. 19	Valid in the entire area(s)
78, 80-82	All	Sep. 1	Sep. 25	Valid in the entire area(s)

Summary of 2015 License Changes

Area	Type	Quota change from 2014	Other changes from 2014
70	General		+1 day for entire hunt area. Removed extra 2 days for area north and west of Pacific Creek and Mink Creek.
71	General		-1 day
75	4	-50	Opens 6 days later, closes 6 days later.
	6	+50	Opens 6 days later, closes 6 days later.
77			Opens 6 days later, closes 4 days later. Overall, a loss of 2 days.
78	1	+25	
	6	+50	Valid in Area 78 off National Forest for first portion of season. -16 days that license is valid on National Forest.
	7	-50	Shotgun included
79			–7 days that unused Area 75 Type 4 licenses are valid in Area 79.
80	General		+1 day for period before partial closure of hunt area.

Management Evaluation

Current Postseason Population Management Objective: 11,000
Management Strategy: Recreational
2014 Postseason Population Estimate: ~11,000
2015 Proposed Postseason Population Estimate: ~11,000

The population objective for the Jackson Elk Herd is 11,000 elk. The management strategy is recreational and the objective and management strategy were last revised in 2007. The current population estimate is approximately 11,000 elk. Low calf productivity from the northern herd segments and liberal antlerless elk hunting seasons on the southern migratory segment have reduced the population to the desired population objective. Based on pre-season surveys, hunting seasons in Grand Teton National Park (GTNP) are warranted in 2015. The population objective will be reviewed in spring 2016.

Herd Unit Issues

Management of this herd is complicated because occupied habitat includes two National Parks and the National Elk Refuge (NER). Complex seasons are typically used to address management concerns for various population segments in this herd. Recent pre-season classification surveys indicate that elk in the southern portion of the herd unit in southern GTNP and private lands near the Snake River reproduce at twice the rate of long-distance migratory elk from the northern herd segments. These differential recruitment rates are likely driven by lower predator densities and supplemental forage from agricultural areas and suburban landscapes in the southern herd segments.

Herd management is largely structured around the following elk winter distribution goals: 1) 5,000 elk on supplemental feed on the NER, 2) 3,500 elk in the Upper Gros Ventre (Wyoming Game and Fish Department (WGFD) feedgrounds and native winter ranges east of Crystal Creek in the Gros Ventre drainage), and 3) 2,500 elk on other native winter ranges. Achieving these goals has been challenging due to high calf recruitment in southern herd segments, low harvest on private lands, comingling issues with livestock, elk movement patterns, weather, and predator influences. The number of elk on native winter ranges has decreased dramatically over the past decade. For example, the average number of elk on native winter ranges in the Gros Ventre drainage has decreased by over 50% in the last decade. From 2000-2004, an average of 1,160 elk utilized native winter ranges, whereas an average of 538 were found from 2010-2014. From 2000-2004, an average of 864 elk wintered in the Buffalo Valley and Spread Creek, whereas an average of 167 wintered from 2010-2014, an 80% reduction. During that time, the overall population has only decreased by 7%.

Weather

Summer and fall 2014 produced consistent moisture, leading to good forage production. Elk migrated relatively late in the fall due to warm temperatures and late snowfall. The Snake River Basin received above-average snowfall in December and early January, but weather turned warm and dry by February. Many low elevation slopes were snow-free by mid-February, but snow remained deep and heavy with a hard crust on north-facing slopes and higher elevations. At the time of the mid-winter survey, winter precipitation was reported at 91% of normal. Please refer to the following web sites for specific weather station data.
http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/snowprec.html and
http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html

Habitat

There are several established aspen transects on elk winter and transitional ranges in the Gros Ventre drainage, Buffalo Valley, and Blackrock areas. These transects have been monitored since the late 1970s. Data was collected on these transects in summers 2012 and 2013. The Red Rock Fire Ungulate Nutrition Project was initiated in 2012 in the Gros Ventre drainage. This is

designed to be a long-term project to collect and analyze nutritional and mineral content of vegetation post-wildfire and evaluate the influence of fire severity on plant nutrition for ungulates (Appendix I). This project is scheduled to continue through at least 2016. The Northeast Quad Prescribed Burn was completed in fall 2014 in cooperation with Bridger-Teton National Forest to improve elk and moose habitat. The burn treated approximately 100 acres of decadent aspen stands near Blackrock Ranger Station. Please refer to the 2014 Annual Report Strategic Habitat Plan Accomplishments for Jackson Region habitat improvement project summaries
(http://wgfd.wyo.gov/web2011/wildlife-1000708.aspx).

Field Data

Postseason classification surveys were conducted February 18 – 24, 2015. A total of 10,633 elk were counted including 6,570 females, 1,356 calves, 679 yearling males, and 2,028 adult males. The majority of elk were located on feedgrounds (89%; n=9,421), with only 11% on native winter ranges (n=1,212). Elk sightability from aircraft can range from 70-90% under good visibility and searching conditions (Coughenour & Singer 1996). Therefore, it is expected that approximately 135 - 400 elk were likely not observed during the aerial surveys. The population estimate is rounded up to 11,000 elk to account for this.

Herd Unit ratios were 21 calves:100 cows, 31 adult males:100 cows and 10 yearling males:100 cows. Approximately 79% of the herd (8,390) was counted on supplemental feed on the National Elk NER, while 10% was split between the Patrol Cabin and Alkali feedgrounds in the Gros Ventre drainage (1,031). The 11% of the herd that was observed on native winter range was mostly in Hunt Area 80 to the east of the NER, native ranges on the NER, lower Gros Ventre drainage, and Buffalo Valley. This winter distribution is similar to last year. The large percentage of the herd wintering on supplemental feed on the NER is likely due to above-average early winter snowfall. Despite warmer and drier conditions in February, north-facing slopes and high elevations retained crusted, hard snow, likely restricting elk movements. Most elk appear to have remained on supplemental feed instead of venturing to native ranges. This is the second year in a row that elk numbers on supplemental feed on NER have been above 8,000. Ratios on the NER were 21 calves:100 cows, 34 mature bulls:100 cows, and 12 yearling bulls:100 cows.

Staff at the NER estimated that refuge-wide herbaceous and woody forage production was 20,195 tons in 2014, which is 16% above 1998-2014 averages. Relatively high forage production on NER was attributed to average total precipitation during the May through August growing season, plus irrigation system improvements. The WGFD and NER staff monitored forage and snow conditions on the NER through late December and January, and decided to initiate elk supplemental feeding on January 19, 2015. The average date of feeding initiation on the NER is January 26. Above-average snowfall in December caused large numbers of elk to congregate on the NER early in the winter, leading to relatively rapid consumption of natural forage.

Total elk wintering in the Upper Gros Ventre increased from 2009 to 2011, but have steadily declined over the past 3 years (Figure 1). Postseason calf:cow ratios were relatively high in the

Upper Gros Ventre in 2012 (23 calves:100 cows) and 2013 (22 calves:100 cows), but declined substantially in 2014 (9 calves:100 cows). This decline could be due to lower overall elk numbers in the Upper Gros Ventre this year (Figure 1). The number of elk decreased by 52% over last year. Radio-collared elk movements reveal that at least 30% of elk that typically winter in the Gros Ventre are wintering on the NER this year. Mature bull ratios in the Upper Gros Ventre continue to be low; this year the ratio was 12 mature bulls per 100 cows (compared to a 31:100 ratio herd-wide).

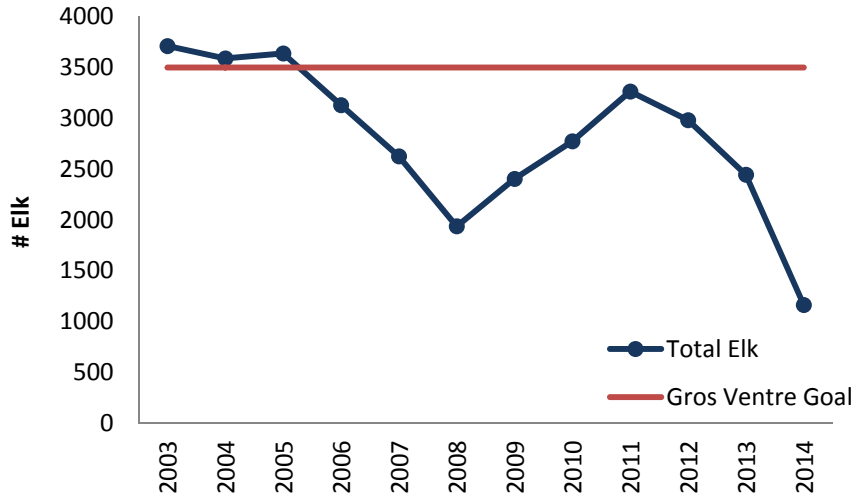


Figure 1. Total elk numbers in the Upper Gros Ventre (feedgrounds and native winter ranges east of Crystal Creek) from 2003-2014. Numbers have been below the goal of 3,500 wintering elk for the past 9 years.

Preseason elk classification surveys were flown in southern Yellowstone National Park and the Teton Wilderness (Hunt Areas 70 and 71) on August 19-20, 2014 by WGFD personnel (Appendix II). Grand Teton National Park personnel flew preseason elk surveys in GTNP on July 31 and August 1, 2014. Wyoming Game and Fish Department flights were cut short due to poor weather, so only two thirds of the area was surveyed. Observers classified 834 elk, including 551 cows, 166 calves, 78 mature bulls, and 39 yearling bulls. Ratios were 30 calves:100 cows, 14 mature bulls:100 cows, and 7 yearling bulls:100 cows. While mature bull and yearling bull ratios have remained relatively consistent since 1990, the calf:cow ratio has declined over the years (Figure 2). In GTNP, a total of 1,023 elk were classified in the Central Valley, Elk Ranch/Uhl Hill, and Willow Flats areas of GTNP including 604 cows, 191 calves, 148 mature bulls and 78 yearling bulls. Ratios were 32 calves:100 cows and 25 mature bulls:100 cows. In addition, 73 elk were observed in the Snake River South area, which includes the Snake River corridor south of Moose, Moose-Wilson Road, and slopes near Phelps Lake. That area's calf:cow ratio was 65:100. Based on pre-season surveys, hunting seasons in GTNP are warranted in 2015 to continue to curb the growth rate of the southern herd segment. The signed copies of the Grand Teton National Park elk agreements for 2015 are included at the end of the Jackson elk narrative.

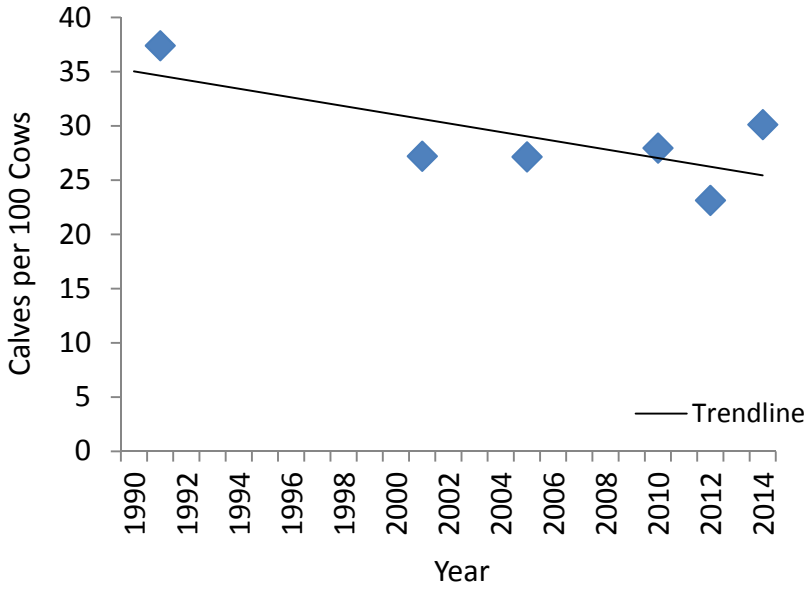


Figure 2. Elk calf:cow ratios in southern Yellowstone and the Teton Wilderness from 1990-2014.

The continued high number of elk utilizing supplemental feed on the NER suggests that current management direction to maintain liberal seasons on antlerless elk from the southern herd segment is needed. At the same time, maintaining a conservative season structure for elk that migrate longer distances from the northern segments of the herd is important. Increasing harvest pressure on elk in southern GTNP, Hunt Area 80, and Hunt Area 78 will help achieve management goals for the herd.

Harvest Data

The 2014 harvest continued to focus hunting pressure on elk from southern herd segments with the majority of cow harvest occurring in Hunt Area 77 (296 cows), followed by Hunt Area 75 (236 cows), and Hunt Area 80 (214 cows). The majority of mature bull harvest occurred in Hunt Area 70 (240 bulls), followed by Hunt Area 81 (145 bulls). Total harvest was 1,746 elk, including 849 cows, 642 mature bulls, 14 yearling bulls, and 241 calves. Hunter numbers in 2014 increased to 3,351, the highest since 2009 and an increase of 477 over last year. This increase is likely explained by low hunter success in earlier season general license hunt areas south of Jackson. Hunter success in the Jackson Herd was the highest it has been in the past 15 years at 52%.

Cow harvest in 2014 was the highest it has been since 2003. Recently, seasons have been structured to increase antlerless harvest in southern herd segments that have high calf production rates and contribute to high elk numbers on supplemental feed on the NER. The high cow harvest in Hunt Areas 75, 77, and 80 this year shows that current hunt season structure is

succeeding in addressing this herd segment. Of 11 radio-collared cow elk from the northern herd segment (southern Yellowstone and Teton Wilderness), only 1 was harvested in 2014. This suggests that season structure in 2014 succeeded in targeting harvest on elk from the productive southern herd segments, while protecting elk from the declining northern herd segment.

Total bull harvest has been declining in the Jackson herd since 2001. However, bull harvest the past two years has shown an upward trend. This year, 642 mature bulls were harvested, compared to 736 last year, and was higher than harvest from 2009-2012. Bull harvest remained relatively high this year despite a warm fall with late snowfall that allowed elk to remain at high elevations longer. The WGFD has made changes over the past decade to season length and established antlered only spikes excluded seasons. There were no any-elk licenses offered in GTNP in during the 2012-2014 hunting seasons. Spikes-excluded seasons were initiated in 2007 in Areas 81, 82, and 83 in an effort to improve yearling bull recruitment in the Gros Ventre drainage and hunting seasons were shortened in 2008. In the Teton Wilderness, spikes-excluded seasons were initiated in 2011 to address low recruitment. It appears that the population is responding to these changes with higher bull ratios observed during the past couple of years.

The NER provided funds to the WGFD to support Chronic Wasting Disease (CWD) surveillance in the Jackson elk herd during the 2014 hunting seasons. The funding was used to hire two temporary CWD technicians, employed with the WGFD from mid-September through December 2014. Technicians obtained lymphnodes from harvested elk by contacting elk hunters in the field, working with local meat processors, and from head drop barrels. A total of 284 samples from elk were tested in 2014, all of which were negative for CWD (Appendix III).

Population

The 2014 mid-winter trend count indicates that this population remained relatively stable near the population objective of 11,000. We classified 790 fewer elk in 2014 than 2013, which likely reflects a true decrease in the herd, but also difficulty in finding all elk groups due to open, snow-free slopes. The majority of elk were located on feedgrounds (89%; n=9,421), with only 11% on native winter ranges (n=1,212). Elk sightability from aircraft can range from 70-90% under good visibility and searching conditions (Coughenour & Singer 1996). Therefore, it is expected that approximately 135 - 400 elk were likely not observed during the aerial surveys. The population estimate is rounded up to 11,000 elk to account for this.

Management Summary

Hunting seasons in 2015 will again focus hunting pressure on southern resident elk that spend the summer along the Snake River corridor. Trend data indicate the Jackson Elk Herd has declined in recent years, but may now be stable within 10% of the population objective. To prevent further declines in the Yellowstone and Teton Wilderness long-distance migratory segments, elk hunting seasons in Hunt Areas 70, 71, and 79 will remain relatively the same as 2014, closing after November 1. This will encourage elk to stage in the Moran area and ensure that hunting pressure will not displace elk off transitional ranges. The northern portion of Area 80 will close after November 15 to protect northern migrants while allowing hunters to access

those areas where Snake River corridor elk are likely available to harvest. The southern portion of Area 80 (south of the Sheep Creek Road) will close after November 30 to coincide with winter closures on Bridger-Teton National Forest. Hunt Areas 75 and 77 will open 1 week later due to the lack of elk harvest in these areas until late October. These areas will also close later, with Area 75 closing after December 13 and Area 77 after December 18. The Antelope Flats portion of Area 75 will remain open through November 30 again this year. Area 78 will close on January 31. These later closing dates are designed to maintain hunting pressure on elk from southern GTNP and private lands along the Snake River. Type 6 licenses will be increased in Area 75 by 50 licenses, with a corresponding reduction of Type 4 licenses by 50 to address differences in license demand. Total license numbers will be the same for 2015 in GTNP. Land along the Gros Ventre River south of the Kelly Road will remain open to hunting again this year and elk hunters will be allowed to access the NER in this area. The Snake River Bottom portion of Area 75 will be closed to hunters again this year. Type 7 licenses will be decreased in Area 78 and Type 6 and Type 1 licenses will be increased to address differences in license demand and hunter success. In addition, hunters holding a Type 6 license for Area 78 will be able to hunt during the early season on lands off National Forest.

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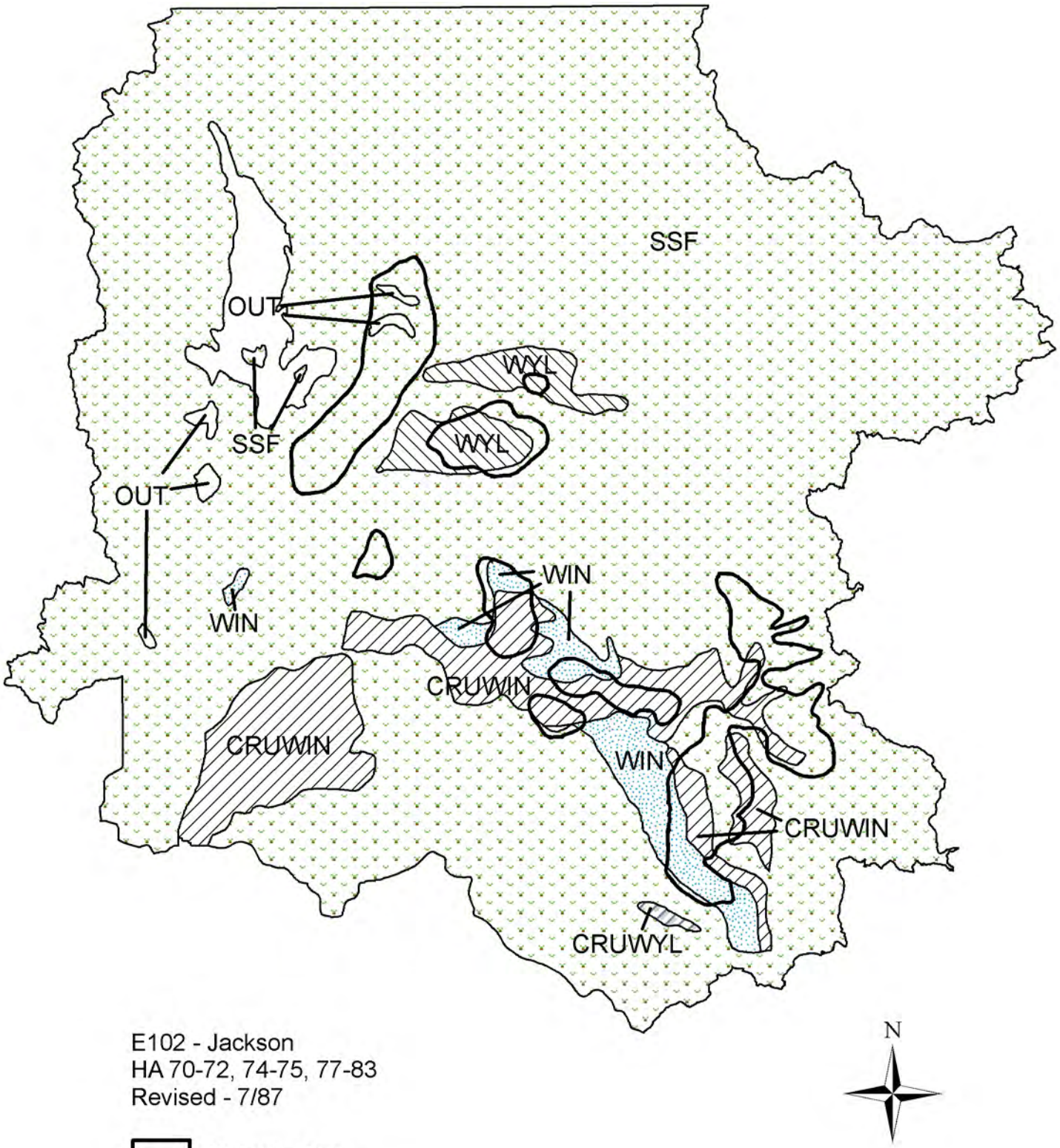
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APPENDIX I

Red Rock Fire Ungulate Nutrition Project

Photo Comparison from 1 Year Post-Fire and 2 Years Post-Fire

2012 – One year post-fire

2013 – Two years post-fire

Figure 1. Excellent aspen and forb regeneration shown 1 year post-fire and 2 years post-fire at an aspen site that burned at high severity.

2012 – One year post-fire

2013 – Two years post-fire

Figure 2. Forb regeneration in a conifer stand that burned at high severity. This conifer stand is in a bighorn sheep migration corridor.

2012 – One year post-fire

2013 – Two years post-fire

Figure 3. Forb and grass re-growth in a meadow site that burned at moderate severity.

2012 – One year post-fire

2013 – Two years post-fire

Figure 4. A conifer stand that burned at high severity exhibiting little re-growth. This burn will expand available habitat for bighorn sheep.

Red Rock Fire Ungulate Nutrition Project

Selected Preliminary Forage Results from 1 Year Post-Fire

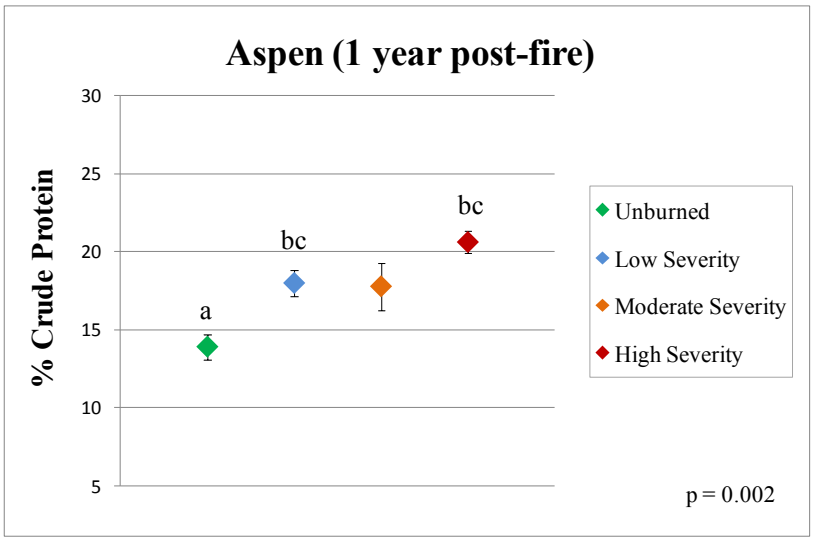


Figure 1. Crude protein content of aspen suckers sampled from unburned, low, moderate, and high burn severity sites in the Red Rock Fire area. Error bars represent one standard error. The *p*-value is based on a one-way ANOVA, and lower-case letters represent significant differences identified by a Tukey's HSD test.

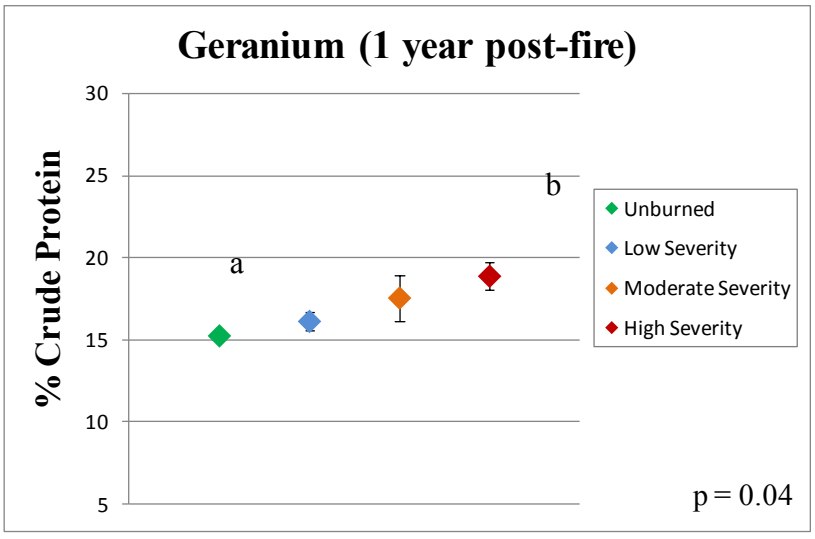


Figure 2. Crude protein content of geranium plants sampled from unburned, low, moderate, and high burn severity sites in the Red Rock Fire area. See Figure 1 for error bars, *p*-value, and significance descriptions.

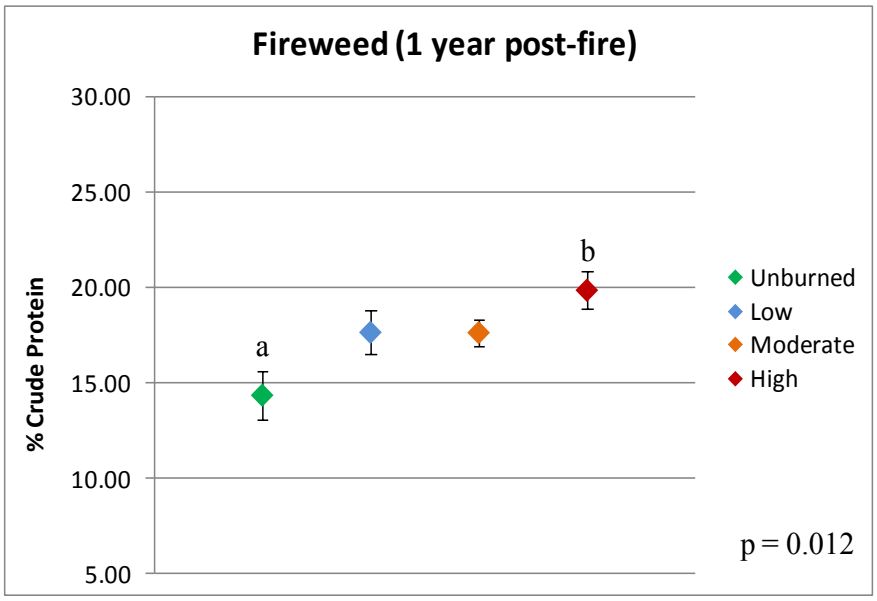


Figure 3. Crude protein content of fireweed plants sampled from areas that were unburned, low, moderate, and high burn severity in the Red Rock Fire area. See Figure 1 for error bars, *p*-value, and significance descriptions.

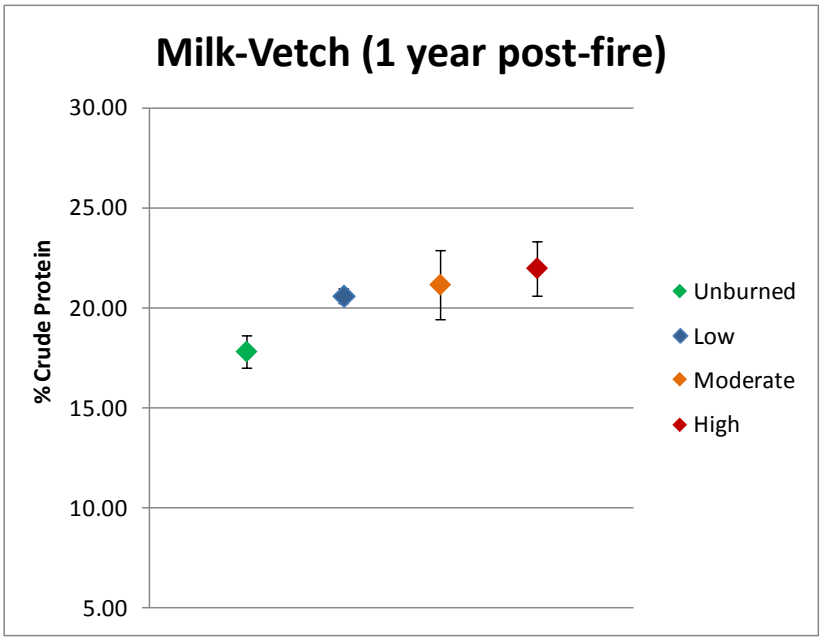


Figure 4. Crude protein content of milk-vetch plants that were in unburned, low, moderate, and high burn severity sites in the Red Rock Fire area.

APPENDIX II

2014 Pre-Season Elk Classification Flight Report - Teton Wilderness and Southern Yellowstone

Report prepared by: Alyson Courtemanch, Jackson Wildlife Biologist
Wyoming Game and Fish Department

A pre-season elk classification flight was flown August 19-20, 2014 in the Teton Wilderness of Bridger-Teton National Forest (hunt areas 70 and 71) and southern Yellowstone National Park. The survey took place between 700 and 1330 using a Bell helicopter with pilot Dave Savage of Savage Air Services. Observers included Alyson Courtemanch, Jackson Wildlife Biologist, Kyle Lash, South Jackson Game Warden, and Jon Stephens, North Jackson Game Warden. Due to poor weather conditions, we were unable to complete a third day of surveys in the Enos Lake and Two Ocean Creek areas.

The purpose of the survey was to obtain pre-season classification information on long-distance migratory elk from the Jackson Elk Herd. This segment of the Jackson Elk Herd has been in decline since the 1990s. Summer aerial classifications enable managers to survey this segment before they mix with elk from other herd segments on common winter ranges. Grand Teton National Park personnel completed a separate elk aerial survey within the park boundary from July 31 – August 1, 2014 and Wyoming Game and Fish Department Cody Region personnel completed an aerial survey on August 11, 2014 in hunt areas 55, 56, 59, and 60 and southeastern Yellowstone National Park.

Fig. 1. Jon Stephens counts a group of elk in a forested area in hunt area 70.

Fig. 2. A group of cows and calves observed during the classification flight.

A total of 834 elk were classified (Table 1). Unlike previous years when large groups of elk were found on open, high elevation plateaus, we found most elk at elevations around 9,000 feet in or near conifer stands (Fig. 1). These habitats likely led to poor sightability, especially of smaller groups. Although it is difficult to say why elk were utilizing different habitats, this year's relatively high summer moisture and prolonged vegetation green-up at mid elevations probably was a major factor.

The calf:cow ratio across the surveyed area was 30.1. Adult bull:cow ratio was 14.2 and

the yearling bull:cow ratio was 7.1 (Table 1). These ratios varied between hunt areas and southern Yellowstone National Park (Table 1, Fig. 3). Some of these differences could be explained by small sample sizes and poor sightability of groups in forested areas.

When summer classification flights were first flown in this area in 1991, the calf:cow ratio was 37.4:100. Subsequent flights between 2001 and 2012 had reduced calf:cow ratios of between 23:100 and 28:100 (Fig. 4). This year's calf:cow ratio is slightly elevated, but does not represent a significant increase compared to the past decade. Adult bull:cow and yearling bull:cow ratios are similar to past classifications (Fig. 5), however these ratios fluctuate quite a bit depending on sample size and sightability.

Table 1. Elk classification by hunt area in the Teton Wilderness and southern Yellowstone National Park, August 19-20, 2014.

Location	Cows	Calves	Adult Bulls	Yearling Bulls	Total	:100 Cows		
						Calves	Adult bulls	Yrl bulls
HA 70	168	56	14	13	251	33.3	8.3	7.7
HA 71	193	65	38	12	308	33.7	19.7	6.2
South YNP	190	45	26	14	275	23.7	13.7	7.4
Total	**551**	**166**	**78**	**39**	**834**	**30.1**	**14.2**	**7.1**

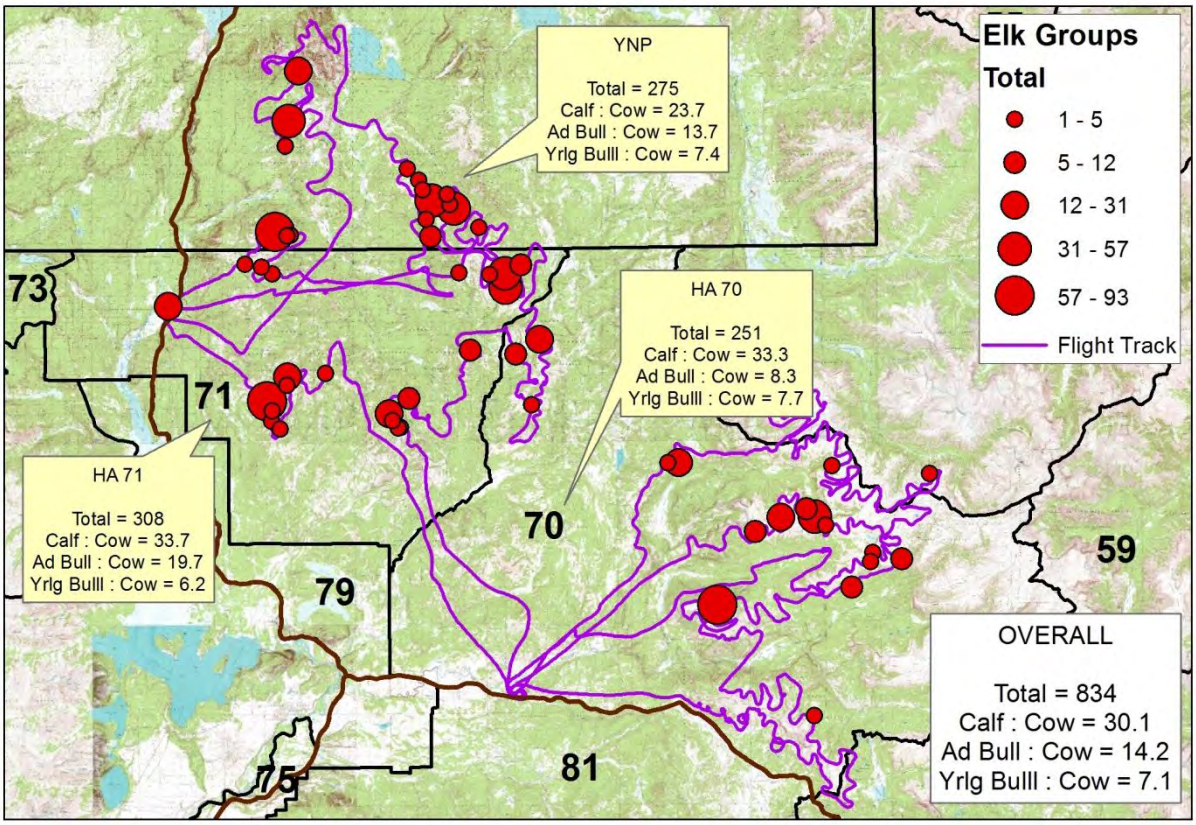


Fig. 3. Number of elk counted and calf, bull, and yearling bull to cow ratios for Hunt Areas 70 and 71 and southern Yellowstone National Park.

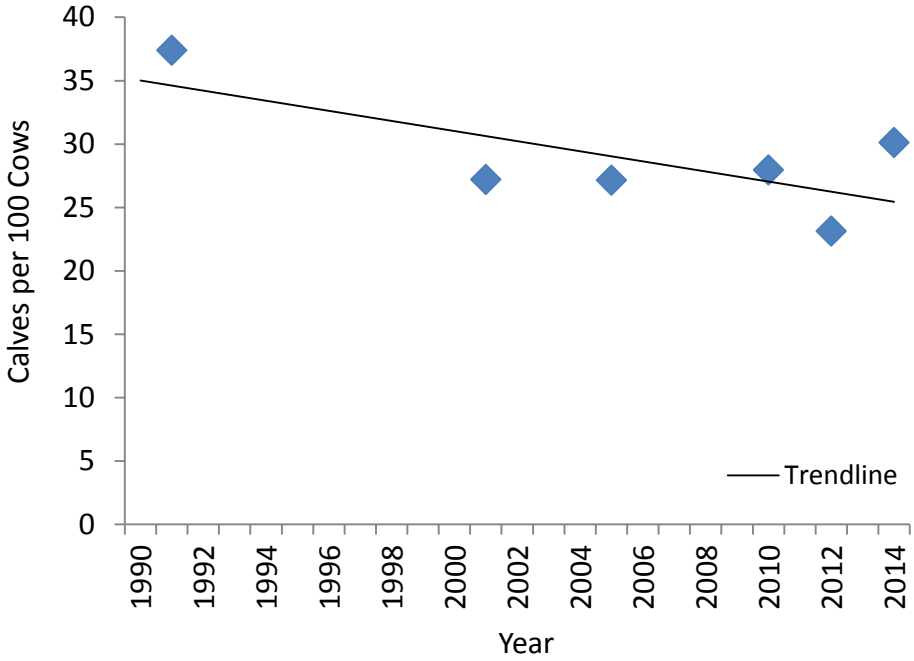


Fig. 4. Elk calf:cow ratios from Teton Wilderness/southern Yellowstone flights from 1990-2014.

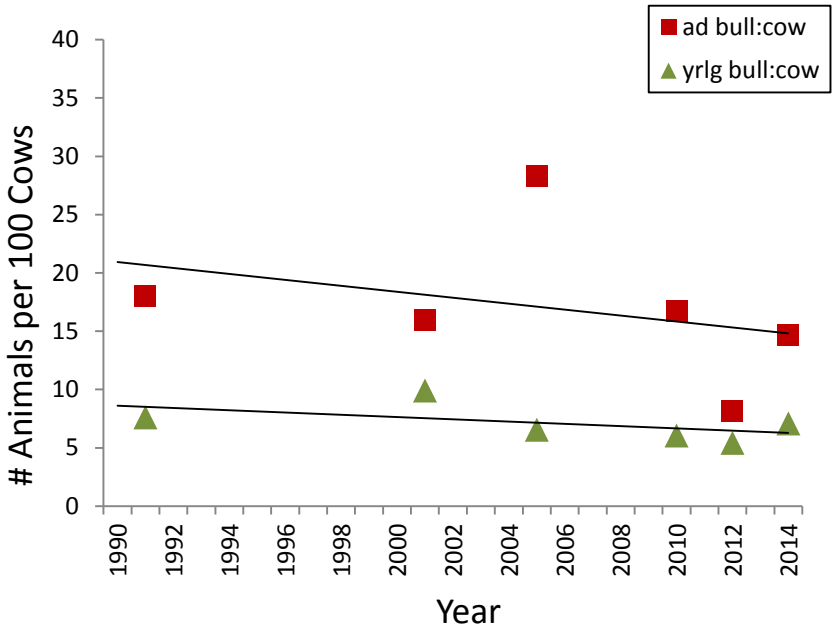


Fig. 5. Elk adult bull and yearling bull to cow ratios for Teton Wilderness/southern Yellowstone flights from 1990-2014.

APPENDIX III

BRUCELLOSIS MANAGEMENT (E102) – 2014 JCR

FEEDGROUND SURVEILLANCE

Gros Ventre Feedgrounds

Eight adult female elk were chemically immobilized, five were fitted with GPS collars and four were implanted with VITs in late February, 2015. GPS collars are scheduled to drop during January, 2017. Two of the eight (25%) blood samples tested positive for exposure to *B. abortus* (Table 1). However, this sample size falls far short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inferences should be made about the population from these data.

VIT and GPS collar data have been collected in the Gros Ventre since 2010 as part of an effort to analyze relationships between serostatus and elk movements, define brucellosis transmission risk areas, determine parturition locations and investigate elk use of habitat treatments. Collar locations of seven elk telemetered during 2014-2015 are shown in Figure 1. Collar data from Gros Ventre elk will be compared to elk on other feedgrounds for determining effects of feedground practices and feeding season length. The Safari Club International funded a portion of the collar costs in 2010-2013, and North Wind provided the seven collars deployed in 2014 (mortality collars from a separate project in southwestern Sublette Co., WY with a year of battery life remaining).

		Yearling			Adult			All Females		
Feedground	**Year**	+	***n***	**%**	+	**n**	**%**	+	***n***	**%**
Alkali	1990	3	8	38	27	108	25	30	116	26
	1992	1	6	17	25	65	38	26	71	37
	1999	0	1	0	12	47	26	12	48	25
	2002*	0	0	0	4	6	67	4	6	67
	2010*	0	0	0	1	6	17	1	6	17
	2012*	0	0	0	2	10	20	2	10	20
	2013*	0	1	0	2	9	20	2	10	20
	Sum	**4**	**16**	**7.9**	**73**	**251**	**30.4**	**77**	**267**	**30.3**
Patrol Cabin	2002*	0	0	0	5	13	38	5	13	38
	2003*	0	0	0	3	6	50	3	6	50
	2011*	0	0	0	0	4	0	0	4	0
	2012*	0	0	0	1	1	100	1	1	100
	2013*	0	0	0	1	1	100	1	1	100
	2014*	0	0	0	3	10	30	3	10	30
	2015*	0	0	0	2	8	25	2	8	25
	Sum	**0**	**0**	**0**	**15**	**43**	**49**	**15**	**43**	**49**
NER	1985*	1	3	33	2	10	20	3	13	23
	1988	0	6	0	22	44	50	22	50	44
	1990	0	6	0	10	30	33	10	36	28
	1993	0	0	0	12	38	32	12	38	32
	1995*	2	7	29	5	10	50	7	17	41
	1996	5	10	50	16	49	33	21	59	36
	1997*	0	5	0	6	25	24	6	30	20
	1998	3	18	17	28	60	47	31	78	40
	1999	0	6	0	9	33	27	9	39	23
	2001*	0	1	0	1	13	8	1	14	7
	2002	3	18	17	10	37	27	13	55	24
	2003*	1	7	14	3	16	19	4	23	17
	2004*	1	1	100	0	4	0	1	5	20
	2005*	1	2	50	4	8	50	5	10	50
	2006*	0	2	0	5	24	21	5	26	19
	2007*	0	0	0	2	17	12	2	17	12
	2009*	0	0	0	0	12	0	0	12	0
	2010*	1	2	50	1	8	13	2	9	22
	2011*	0	0	0	5	12	42	5	12	42
	2012*	0	0	0	2	12	17	2	12	17
	2014*	0	0	0	1	1	100	1	1	100
	Sum	**18**	**94**	**17.1**	**144**	**463**	**29.8**	**161**	**555**	**29.4**

* Inadequate sample size for the estimated prevalence to be +/- 15% of the true prevalence.

Table 1. Yearling, adult, and total female seroprevalence of elk on feedgrounds in the Jackson Elk Herd based on 4 standard tests and cELISA, 1985-2015.

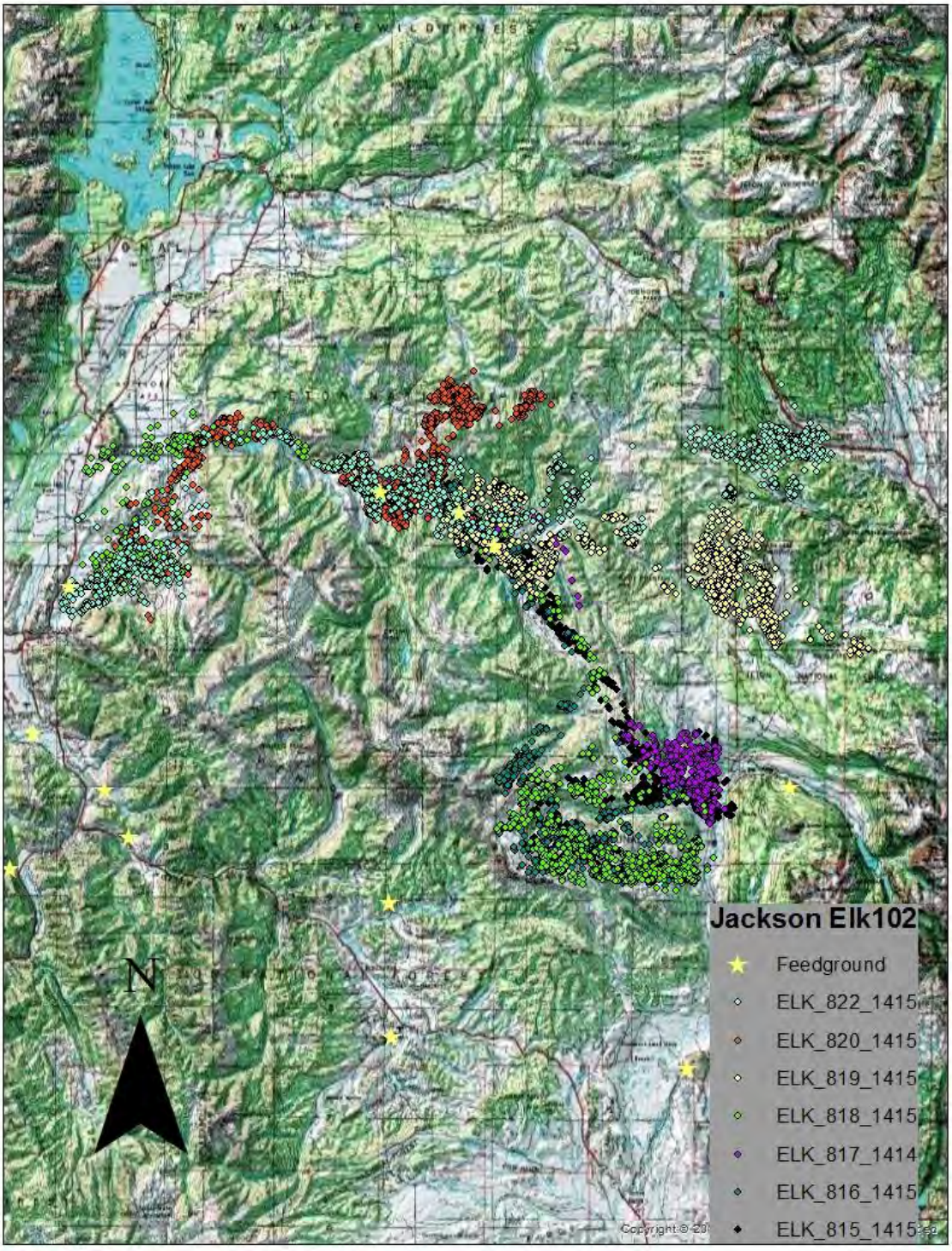


Figure 1. GPS collar locations from elk captured on Patrol Cabin feedground, March 2014 through January 2015.

A total of 1,271 individual elk were captured and tagged on the National Elk Refuge (1,135), Alkali (128) and Patrol Cabin (25) feedgrounds between 1993 and 2014.

STRAIN 19 VACCINATION

Gros Ventre Feedgrounds

Due to the low levels of feedground attendance at the Gros Ventre feedgrounds, vaccination efforts were not attempted during the winter of 2014-2015. Elk were conditioned to the vaccination equipment in late February 2015, but animal movement patterns and low feedground attendance did not allow for vaccination to commence. A total of 7,818 elk have been vaccinated on the Gros Ventre feedgrounds since vaccination efforts were established in the area. Annual vaccine coverage on the Gros Ventre feedgrounds has been declining over the last decade because of unpredictable elk distributions and behavior.

National Elk Refuge

Brucella Strain 19 elk vaccination has occurred annually on the NER basis since the winter of 2003. In 2015, vaccination activities began February 1 by acclimating elk to the presence of the over-the-snow vehicles and the sound of the vaccine and paint-marking guns. The first live vaccine was fired February 5 but with less than ideal vaccination conditions (little to no snow, warm temperatures), progress was slow and vaccination attempts ceased on March 12. Vaccinating elk on the NER tends to be the least efficient/most labor-intensive site compared to the state-operated feedgrounds; a team of five contract employees vaccinated from two over-the-snow vehicles during the 2014/2015 and proved to be efficient than in recent winters. A total of 501 calves were vaccinated out of 1073 classified on the NER during winter 2015 (47% coverage). Since 2003, 8,949 elk have been vaccinated with s19 on the NER (8,337 calves, 612 cows).

CHRONIC WASTING DISEASE SURVEILLANCE

The National Elk Refuge (NER) provided funds to the Wyoming Game and Fish Department (WGFD) to support Chronic Wasting Disease (CWD) surveillance in the Jackson elk herd and adjacent elk, deer, and moose herds during the 2014 hunting seasons. The funding was used to hire two temporary CWD technicians, employed with the WGFD from mid-September through December 2014. The technicians logged 1400 hours and 14,453 miles, mostly while conducting field contacts with hunters and pulling samples (medial retropharyngeal lymph nodes) from carcasses. Having two technicians allowed field presence nearly every day of open hunting seasons in the Jackson area, and helped maximize the number of samples collected from all species throughout the Jackson WGFD Region.

The highest yielding method of collecting elk samples for subsequent CWD testing in the Jackson region comes from hunter contacts in the field, especially those within Grand Teton National Park (GTNP) and the NER. Hunter contacts are made throughout the fall in an effort to increase sample size and participation, and to educate hunters on CWD. NER parking areas and highly used locations in GTNP, such as the Kelly Hayfields and Blacktail Butte, are reliable places to make hunter contacts and collect samples. Frequent communication among NER law enforcement, elk retrieval operators and other WGFD personnel is essential for locating successful hunters soon after they've harvested their elk.

Successful hunters whose animals are not sampled in the field are requested to deposit heads with attached harvest information in bear-proof containers placed at Moose and Moran Junctions within GTNP in the same locations as the tooth and permit drops. Another container is stationed at Kelly Warm Springs, mostly for use by hunters returning from the Gros Ventre drainage, and more head-drop containers are placed at three of the hunter parking areas on the NER. Additional collection barrels in the Jackson region are located at the WGFD office in Jackson, South Park Wildlife Habitat Management Area (WHMA), Camp Creek, Greys River road, and the Greys River WHMA.

Many samples are obtained though the cooperation of the local game meat processor (Matts Meats – Jackson and Hog Island Meats). Processor employees save heads along with harvest date, location, and hunter contact information, which are retrieved by CWD technicians daily. CWD samples are also collected from road-killed and "targeted" (euthanized due to illness) animals throughout the year. In addition, GTNP personnel make a concerted effort to sample from road-killed animals within the Park.

Personnel at the WGFD Wildlife Disease Laboratory use the IDEXX enzyme-linked immunosorbent assay (ELISA) to analyze lymph node samples for CWD. Any IDEXX-positive samples would then be

confirmed with the Bio-Rad ELISA. Samples positive on both ELISAs would be confirmed by immunohistochemistry. Results are reported to hunters typically within three weeks of sample submission. Hunters can obtain results by accessing the Department's web site, and hunters that submit a positive sample are personally notified via phone and letter. The WGFD also notifies other state wildlife agencies if a hunter from their state harvests a CWD test-positive animal in Wyoming.

The WGFD collected and tested a total of 356 lymph nodes from 284 elk, 45 deer, and 24 moose for CWD within the Department's Jackson region in 2014 (specific hunt areas (HA) are listed in Tables 2-4). No positive samples were detected. Detailed sampling efforts from specific geographic areas follow.

Year	Sample Size	Population Estimate	% of Est. Pop Sampled	# Harvested	% of Harvest Sampled
1997	243	16463	1.48%	3290	7.39%
1998	317	17641	1.80%	3159	10.03%
2000	197	16385	1.20%	2350	8.38%
2002	234	13457	1.74%	2253	10.39%
2004	187	12610	1.48%	1818	10.29%
2005	189	12855	1.47%	1776	10.64%
2006	184	12904	1.43%	1678	10.97%
2007	116	12795	0.91%	1689	6.87%
2008	301	12935	2.33%	1316	22.87%
2009	434	13349	3.25%	1486	29.21%
2010	414	11976	3.46%	1414	29.28%
2011	275	11962	2.30%	1146	24.00%
2012	241	11051	2.18%	1037	23.24%
2013	300	11423	2.63%	1437	20.88%
2014	247	11000	2.25%	1768	13.97%

Table 1. CWD samples collected from elk within the Jackson elk herd by year, with corresponding population and harvest estimates.

Jackson elk herd, North Jackson deer

During calendar year 2014, we collected 247 lymph nodes from elk sampled within the Jackson elk herd (HAs 70-83; Tables 1-2, Figure 2). HAs 75 and 77 comprised the majority of samples, and the most effective means of sample collection was through field contacts (i.e., approaching hunters with downed animals and removing lymph nodes in the field; Figure 1). The high proportion of samples obtained via field contacts emphasizes the importance of having trained personnel in the field every day. Head-drop barrels were only moderately successful in gathering samples; many hunters make use of the barrels only if they have been contacted previously in the field by a CWD technician. An additional 26 samples from the Jackson herd were taken from targeted elk; the bulk of which were elk euthanized on the NER during feeding operations January-March 2014.

A total of 7 samples were collected from deer within the area of the Jackson elk herd (Table 3). Contributions to the overall deer sample size came entirely from hunter harvested mule deer. The majority of deer harvested in this area are typically bucks killed in backcountry areas. Whole carcasses and intact heads are rarely encountered during field checks, limiting opportunities for collecting testable lymph nodes.

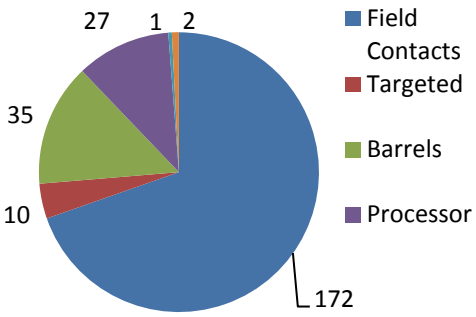


Figure 2. Collection method of 247 total elk CWD samples obtained in the Jackson elk herd, 2014.

APPENDIX IV

JOINT FIELD RECOMMENDATION TO
THE WYOMING GAME AND FISH DEPARTMENT
AND
THE SUPERINTENDENT OF GRAND TETON NATIONAL PARK
CONCERNING ELK MANAGEMENT
WITHIN GRAND TETON NATIONAL PARK
FOR THE YEAR 2015

The undersigned field representatives of the Wyoming Game and Fish Department (WGFD) and Grand Teton National Park (GTNP) respectfully submit for your joint consideration a recommendation for the 2015 elk management program for GTNP and the following information in support of this recommendation, as required by Public Law 81-787, an Act to establish a new Grand Teton National Park...approved September 14, 1950. The proposed 2015 program calls for the controlled reduction of elk and is based on our joint review of the current status of the Jackson elk herd (including estimated herd size, composition, and ratios; migratory patterns; the number of elk on supplemental feed on the National Elk Refuge (NER); and other technical information). We conclude that a reduction of the herd in GTNP in 2015 is necessary for the proper management and protection of the elk.

The proposed program has the long-range objectives of reducing the need to harvest elk within GTNP, continuing progress toward restoring historic distributions and migration patterns, and encouraging elk to use historic fall and winter range areas in the southern half of GTNP.

Supporting Information

Management of elk within GTNP is guided by the 2007 *Bison and Elk Management Plan* prepared by GTNP and the NER in cooperation with the WGFD. The following elk herd management objectives are outlined in the plan:

- Reduce the number of elk on supplemental feed on the NER to approximately 5,000 elk.
- For the park segment of the Jackson elk herd only, work cooperatively with the WGFD to achieve desired bull-to-cow ratios that are more reflective of non-hunted populations.
- Work collaboratively with WGFD to achieve a herd objective of about 11,000 for the Jackson elk herd.

Stated below are maximum harvest objectives associated with GTNP and the NER herd segments, which are part of the overall harvest objectives established for the Jackson elk herd unit.

Number of elk on supplemental feed
Management data indicate the portion of the Jackson elk herd wintering on lands within the NER numbers approximately 8,400 animals during the 2014 - 2015 winter. The number of elk on feed on the refuge has been above the objective (5000 elk) for 6 of the past 7 winters. The 2015 post-season (mid-winter) calf ratio for elk wintering on NER supplemental feed is estimated at 21

calves to 100 cows. Post-season calf-to-cow ratios have been shown to strongly correlate with population growth rates in elk. With this recruitment rate and an overwinter mortality of approximately 1.5%, the NER wintering segment of elk is expected to grow by fall 2015.

Summer herd ratios
Based on summer elk classification surveys conducted in GTNP in 2014, the estimated ratio was 23 mature bulls to 100 cows. This is below the recommended objective of 35 bulls to 100 cows. Consequently, harvest of bulls in Grand Teton National Park is not recommended in 2015.

Pre-season (summer) elk classification surveys conducted in GTNP, Teton Wilderness, and southern Yellowstone in 2014 indicate that elk in the southern portion of the herd unit reproduce at more than twice the rate of the northern migratory segment. Because of observed differences in recruitment between summering segments, the proposed season structure focuses more liberal harvest on the southern segments and less hunting pressure on the northern migratory segment.

Jackson elk herd objective
The post-hunt population for the Jackson Elk Herd is estimated at approximately 11,000 elk in February 2015. This estimate is within 20% of the state's objective for the elk herd.

To reduce the NER wintering herd segment toward the goal of 5,000 elk, a harvest of elk that summer in GTNP and hunt area 78, and winter on the NER is desired. The following harvest objectives focus on resident and migrating elk that winter on or adjacent to the NER. The proposed season structure should lead to restoration of traditional elk numbers and migration patterns in areas outside national park boundaries and reduce elk numbers toward the NER objective of 5,000 elk.

Summer Elk Herd Segment	Hunt Area	Harvest Objectives
Central and eastern Grand Teton National Park (elk in hunt areas 75 and 79)	75, 79	300
Southern Grand Teton National Park (elk in portions of Grand Teton National Park south of Moose and on private lands of hunt area 78)	77	400
Northern migratory segment (elk in southern Yellowstone National Park, Teton Wilderness, Berry Creek and northern Grand Teton National Park)	70, 71, 75, 77, 79	300
TOTAL		1000

Recommended 2015 Park Program

The following elk management program is recommended for GTNP in 2015 to facilitate an overall coordinated interagency program for managing the Jackson Elk Herd. The management program will be open to persons holding a valid Grand Teton National Park Permit and certified as having successfully completed an approved Hunter Safety Course. Hunters are only allowed to harvest one antlerless or cow/calf elk during the 2015 Grand Teton National Park elk management program.

1. Issue 150 Area 75 Type 4 Limited Quota Licenses, valid for antlerless elk, for the period October 24 through November 30, 2015, in that portion of Area 75 designated as open. The area designated as the Snake River bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.

2. Allow Area 75 Type 4 licenses to hunt in Area 75 for the period December 1 through December 13, 2015, in that portion of Area 75 designated as open. The area designated as Antelope Flats and the area designated as the Snake River Bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.

3. Issue 500 Area 75 Type 6 Limited Quota Licenses, valid for cow or calf elk, for the period October 24 through November 30, 2015 in that portion of Area 75 designated as open. The area designated as the Snake River Bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.

4. Allow Area 75 Type 6 licenses to hunt in Area 75 for the period December 1 through December 13, 2015, in that portion of Area 75 designated as open. The area designated as Antelope Flats and the area designated as the Snake River Bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.

5. Allow unused Area 75 Type 4 licenses to hunt in Area 79 for antlerless elk for the period of October 24 to November 1, 2015, in that portion of Area 79 designated as open.

6. Maintain the closure of Area 72 and monitor elk numbers and movement patterns in that herd segment.

7. Retain a provision for extending the season to obtain desired objectives.

8. Maintain posted ½ mile closure around structures, as indicated on the detailed Area 75 and 79 hunt area maps. Structures excluded from this closure include those within the Gros Ventre Campground, all stand-alone toilets and/or well houses, the McCollister Historic District, the historic Luther Taylor ("Shane") Cabins, the historic Cunningham Cabin, and the Elk Ranch buildings.

9. An area ¼ mile wide along the north side of the Gros Ventre – Kelly road from the Mormon Row road easterly to the town of Kelly is closed to all public entry.

10. The technical committee of the Jackson Hole Cooperative Elk Studies Group annually reviews all available data concerning the Jackson Elk Herd to better evaluate the reduction program within GTNP and reports the progress toward achieving objectives stated above to the annual meeting of the group.

11. When any news media contacts either the WGFD or GTNP concerning the elk reduction program, the agency contacted by the news media will immediately notify the other agency to establish a coordinated response.

Recommended:

Grand Teton National Park

Michael Nash, Chief Park Ranger — 4·13·15 — Date

Sarah Dewey, Wildlife Biologist — 4/8/15 — Date

Recommended:

Wyoming Game and Fish Department

Tim Fuchs, Regional Supervisor Jackson Region — 4/14/15 — Date

Alyson Courtemanch, Wildlife Biologist Jackson Region — 4/3/15 — Date

APPENDIX V

JOINT RECOMMENDATION OF THE NATIONAL PARK SERVICE AND THE WYOMING GAME AND FISH COMMISSION FOR THE MANAGEMENT OF ELK WITHIN GRAND TETON NATIONAL PARK FOR THE YEAR 2015

The National Park Service and the Wyoming Game and Fish Commission, as required by Section 6 of Public Law 81-787, and 16 United States Code Chapter 6, Section 673c, met in Casper, Wyoming on April 22 and 23, 2015 to review elk migration, hunter success, range and population data provided by biologists and administrators of the representative agencies, and to prepare joint recommendations concerning elk management activities within Grand Teton National Park for the 2015 year.

Wyoming Game and Fish Commission Members:
Charles Price, President
T. Carrie Little, Vice President
Mark Anselmi
Patrick Crank
Keith Culver
Richard Klouda
David Rael

National Park Service Representatives:
Chief Park Ranger or representative of Grand Teton National Park

During the meeting, the following agreements were reached:

1. Based on the joint review of the current status of the Jackson elk herd (including estimated herd size, composition, and ratios; migratory patterns; the number of elk on supplemental feed on the National Elk Refuge (NER); and other technical information), a controlled reduction of elk in Grand Teton National Park (GTNP) in 2015 is necessary for the proper management and protection of the elk.

2. The reduction season in the Park shall be open. October 24 through December 13, 2015.

3. The Joint Recommendation to the Director of the Wyoming Game and Fish Department and the Superintendent of Grand Teton National Park by field representatives of the respective agencies will become an approved attachment to this joint recommendation for the purpose of providing a more complete understanding of the need for the 2015 Elk Reduction Program.

4. The portion of GTNP which will be open to elk reduction by deputized park rangers is described as follows:

   Area 75. Snake River: Beginning at the southern boundary of Grand Teton National Park and the Gros Ventre river at U. S. Highway 26-89-191; northerly along said highway to Ditch Creek; westerly along said creek to the Snake River proper; northerly

along the eastern most bank of the main channel of the Snake River to the northern most channel of Spread Creek; easterly along said creek to U.S. Highway 26-89-191; southwesterly along said highway to U.S.F.S. Road 30310 at the Cunningham Cabin; southerly along said road to the Grand Teton National Park boundary; southerly along said boundary to the southernmost intersection with the Shadow Mountain-Kelly Road (U.S.F.S. Road 30340); southwesterly along said road to the junction of the Teton Science School road; northeasterly along said road one and one-quarter (1-1/4) miles to a marked boundary, easterly one (1) mile to the Grand Teton National Park boundary; southerly along the Grand Teton National Park boundary to the Gros Ventre-Kelly Road; southwesterly along said road to a posted boundary approximately ½ mile west of the Gros Ventre Campground; southerly along said boundary to the southern boundary of Grand Teton National Park at the Gros Ventre River; westerly along said boundary to U.S. Highway 26-89-191.

Area 79.Teton Park: Beginning where the U.S. Forest Service access road (U.S.F.S. Road 30310) near Cunningham Cabin intersects U.S. Highway 26-89-191; northerly along said highway to the junction of U.S. Highway 89-287 at Moran; northwesterly along said highway to the Grand Teton National Park boundary; easterly and southerly along said boundary to the private land boundary at the Pinto Ranch; westerly, southerly and easterly along said boundary to the Grand Teton National Park-Bridger Teton National Forest boundary; northeasterly then southerly and westerly along the Grand Teton National Park boundary to the U.S. Forest Service access road (U.S.F.S. Road 30310); near Cunningham Cabin; northerly along said road to U.S. Highway 26-89-191.

5. Holders of Area 75 Type 4 and Area 75 Type 6 Limited Quota Licenses will receive the permits and copies of the regulations from GTNP by mail or authorized personnel.

6. Maintain posted ½ mile closure around structures, as indicated on the detailed Area 75 and 79 hunt area maps. Structures excluded from this closure include those within the Gros Ventre Campground, all stand-alone toilets and/or well houses, the McCollister Historic District, the historic Luther Taylor ("Shane") Cabins, the historic Cunningham Cabin and the Elk Ranch buildings.

7. An area ¼ mile wide along the north side of the Gros Ventre – Kelly road from the Mormon Row road easterly to the town of Kelly is closed to all public entry.

8. The reduction period may be extended beyond the established season in the event of late migration, inadequate reduction, or similar condition, upon mutual concurrence of the GTNP Superintendent and the WGFD Director.

9. Six hundred fifty (650) persons licensed by the State of Wyoming will be referred to the Grand Teton National Park Superintendent and, if qualified, will be deputized as park rangers for participation in the reduction program. All permits will be issued by mail or authorized personnel.

10. Persons with GTNP permits may camp in Grand Teton National Park only at locations designated by the National Park Service.

11. The National Park Service will continue to allow selected road access to adjacent hunting areas on the Bridger-Teton National Forest.

12. The WGFD and the National Park Service will cooperate in a comprehensive law enforcement program to assure human safety, protection of resources, the rights of private landowners and the success of the elk management program.

13. When any news media contacts either the WGFD or GTNP concerning the elk reduction program, the agency contacted by the news media will immediately notify the other agency to establish a coordinated response.

RECOMMENDED:

Scott Talbott, Director — Date 4/27/15
Wyoming Game and Fish Department

for David Vela, Superintendent — Date 4/29/15
Grand Teton National Park

APPROVED:

Matthew H. Mead — Date 5/21/15
Governor of Wyoming

Sue Masica, Regional Director — Date 5/6/15
Intermountain Region
National Park Service

2014 - JCR Evaluation Form

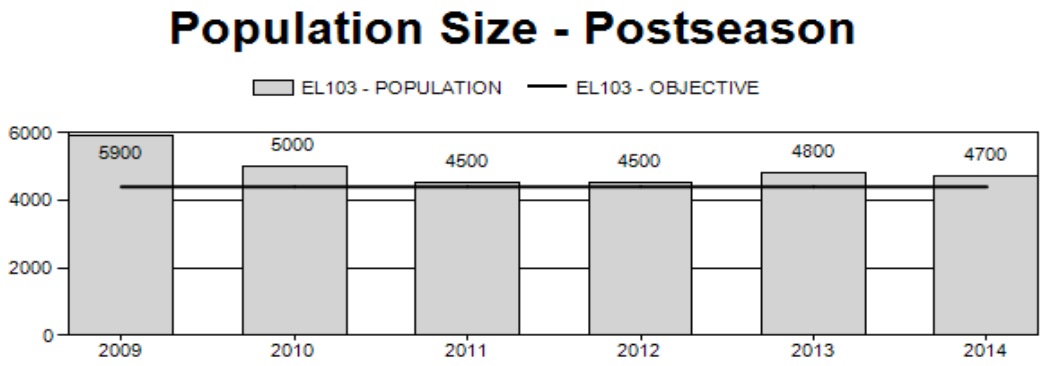
SPECIES: Elk
PERIOD: 6/1/2014 - 5/31/2015
HERD: EL103 - FALL CREEK
HUNT AREAS: 84-85
PREPARED BY: GARY FRALICK

	2009 - 2013 Average	2014	2015 Proposed
Population:	4,940	4,700	4,300
Harvest:	981	566	653
Hunters:	2,523	1,930	2,050
Hunter Success:	39%	29%	32%
Active Licenses:	2,653	1,982	2,050
Active License Success:	37%	29%	32%
Recreation Days:	20,007	12,749	12,450
Days Per Animal:	20.4	22.5	19.1
Males per 100 Females	22	26	
Juveniles per 100 Females	28	25	

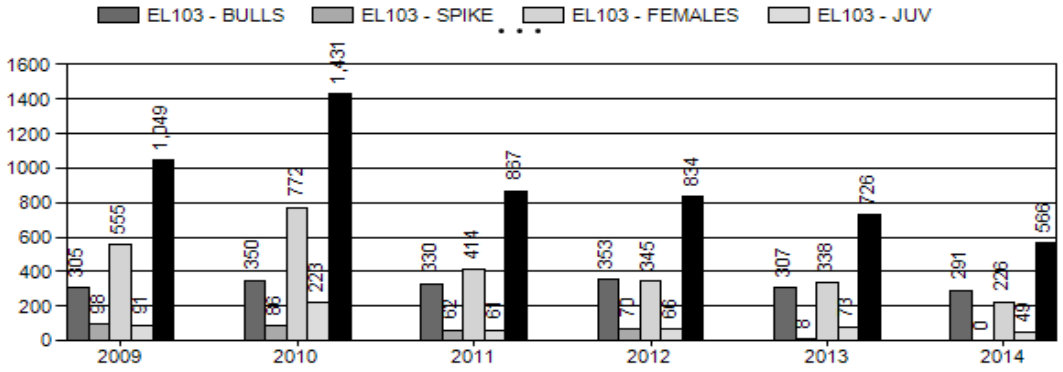
Population Objective (± 20%) :	4400 (3520 - 5280)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	7%
Number of years population has been + or - objective in recent trend:	12
Model Date:	5/26/2015

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

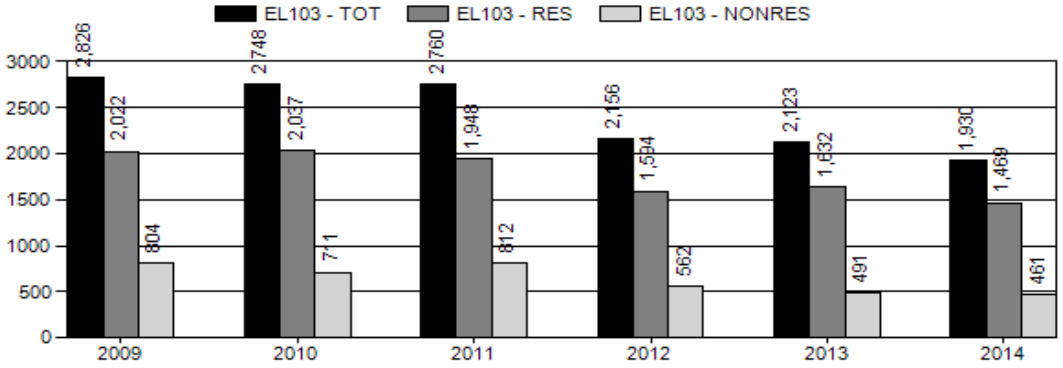
	JCR Year	Proposed
Females ≥ 1 year old:	10%	10%
Males ≥ 1 year old:	27%	27%
Juveniles (< 1 year old):	9%	9%
Total:	15%	15%
Proposed change in post-season population:	10%	10%



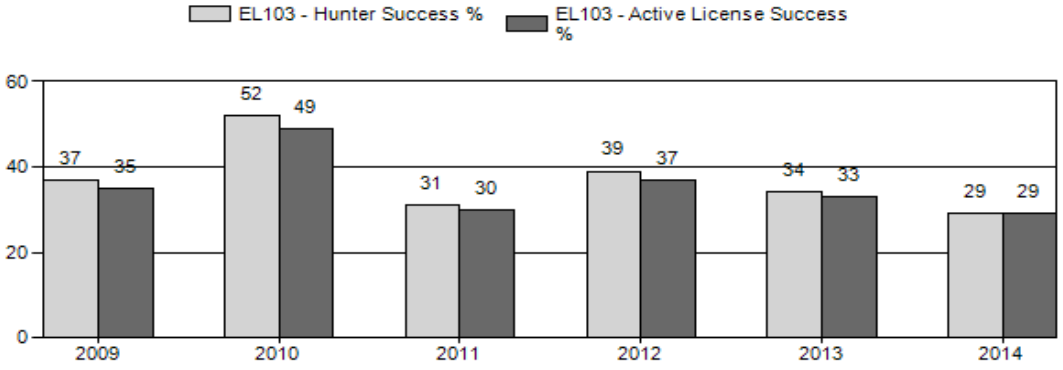
Harvest



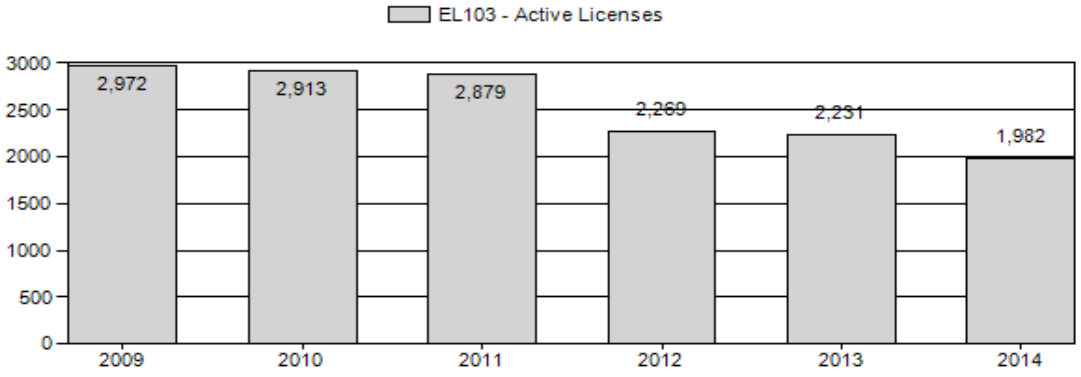
Number of Hunters



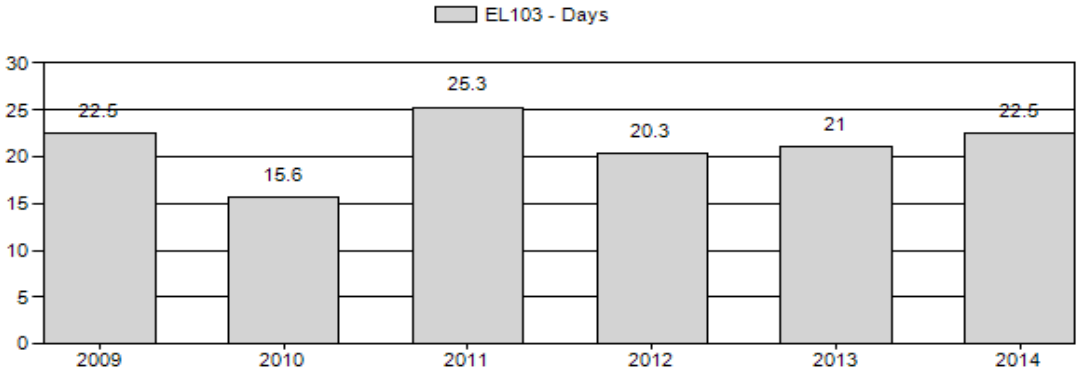
Harvest Success



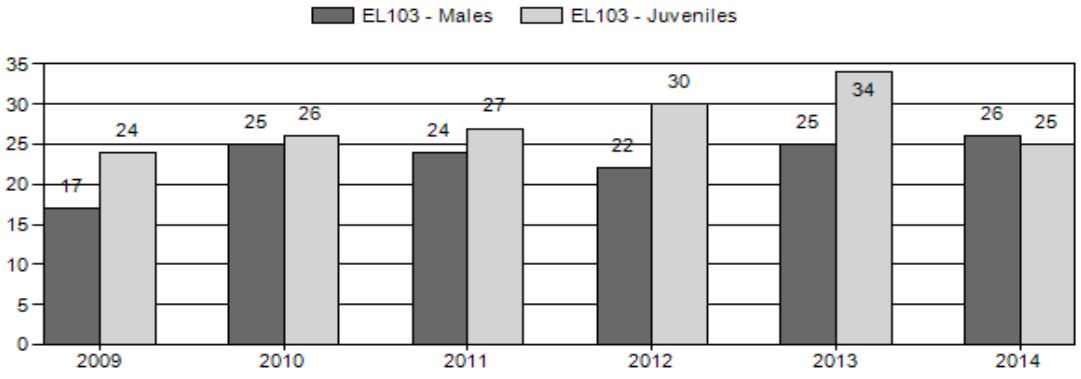
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL103 - FALL CREEK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	5,900	206	309	515	12%	3,100	71%	748	17%	4,363	263	7	10	17	± 1	24	± 1	21
2010	5,000	290	484	774	17%	3,115	66%	796	17%	4,685	271	9	16	25	± 0	26	± 0	20
2011	4,500	198	487	685	16%	2,841	66%	766	18%	4,292	317	7	17	24	± 0	27	± 0	22
2012	4,500	215	379	594	15%	2,663	66%	804	20%	4,061	310	8	14	22	± 0	30	± 0	25
2013	4,800	318	309	627	16%	2,498	63%	842	21%	3,967	328	13	12	25	± 1	34	± 1	27
2014	4,700	261	441	702	17%	2,692	66%	682	17%	4,076	303	10	16	26	± 1	25	± 1	20

2015 HUNTING SEASONS
FALL CREEK ELK HERD (EL103)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
84		Sep.26	Oct. 18		General	Any elk , spikes excluded – SEE SECTION 6
84		Oct. 19	Oct. 31		General	Antlered elk, spikes excluded – SEE SECTION 6
84	1	Nov. 1	Jan. 31	20	Limited quota	Limited quota; Any elk valid on private land west of U.S. Highway 191 and north and east of the Snake River starting at the South Park Bridge; access to private land is limited – SEE SECTION 6
84	6	Sep. 26	Nov. 20	25	Limited quota	Cow or calf; that portion of Area 84 east and south of Granite Creek to the Hoback River shall be closed after October 31 – SEE SECTION 6
84		Nov. 21	Jan. 31			Unused Area 84 Type 6 and Area 85 Type 6 licenses valid in that portion of Area 84 on private land west of U.S. Highway 191 and north and east of the Snake River starting at the South Park Bridge; access to private land is limited – SEE SECTION 6
84	7	Aug. 15	Jan. 31	75	Limited quota	Cow or calf valid on private land west of U.S. Highway 191 and north and east of the Snake River starting at the South Park Bridge; access to private land is limited – SEE SECTION 6
85		Sep. 26	Oct. 18		General	Any elk, spikes excluded – SEE SECTION 6
85		Oct. 19	Oct. 31		General	Antlered elk, spikes excluded – SEE SECTION 6
85	6	Sep. 26	Oct. 31	25	Limited quota	Cow or calf – SEE SECTION 6
85		Nov. 1	Jan. 31			Unused Area 84 Type 6 and Area 85 Type 6 Licenses valid on private land in that portion of Area 85 north of Butler Creek; access to private land is limited – SEE SECTION 6

SUMMARY OF PROPOSED CHANGES BY LICENSE NUMBER

Area	License Type	Change from 2014
84	6	-75
Herd Unit Total		-75

Management Evaluation

Current Postseason Population Management Objective: 4,400
Management Strategy: Recreational
2014 Postseason Population Estimate: ~4,700
2015 Proposed Postseason Population Estimate: ~4,300

The population objective for Fall Creek elk herd is 4400 elk. The management strategy is recreational management. The objective and management strategy were last revised in 2011. The current population estimate of 4700 elk is within +/- 20% of the population objective. Low calf productivity and management strategies associated with November hunting seasons that targeted the antlerless segment of the population have stabilized the population near the population objective.

Herd Unit Issues

The most substantial herd unit issues continue to be associated with elk numbers inhabiting private property along the Snake River Bottomlands and maintaining elk numbers at or near desired feedground quotas on the Dog Creek feedground in Area 85. Late season depredation hunts have been implemented over the last 20 years in an effort to encourage elk to move to the South Park feedground thereby minimizing this potential conflict situation. Substantial reductions in antlerless elk hunting opportunities have resulted from lower than desired elk numbers in Area 85.

Weather

Weather conditions during 2014 were ideal for forage production beginning in early spring and continuing through fall. By late summer the moisture regime had changed frequent precipitation scenario that persisted into the fall hunting season. Drought conditions in the early portion of the summer abated by late fall as persistent snow storms began to deposit snowpack in the Snake River Mountain Range. By mid winter snow conditions on winter ranges had changed significantly. Little to no snow had accumulated on core winter ranges. These conditions persisted throughout the remainder of the winter. By late winter 2015 snowpack in western Wyoming watersheds were estimated to be near normal. For additional weather and precipation

data please visit the following websites: http://www.ncdc.noaa.gov/temp-and-precip/time-series and http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html.

Habitat

No habitat data has been collected on elk summer and winter ranges. There are no established vegetation transects in this herd unit. Please refer to the 2014 Annual Report Strategic Habitat Plan Accomplishments, for the Jackson Region habitat improvement project summaries (**http://wgfd.wyo.gov/web2011/wildlife-1000708.aspx)**.

Field Data

The Fall Creek elk herd is capable of rapid growth because of high calf production in excess of 30 calves:100 cows, and associated high juvenile survival. Since 2009, population growth has been suppressed by lower calf production coupled with November antlerless elk hunts that have targeted the reproductive segment of the population. This management strategy has resulted in the desired management objective of reducing the population to within 20% of the population objective. Management over the last four years has been successful at maintaining bull:cow ratios at or higher than the management goal of 20 bulls:100 cows. Bull:cow ratios in 2014 were observed at one of the highest levels in 10 years, and is likely a result of very warm temperatures and absence of weather during the October portion of the hunting season. A total of 26 bulls:100 cows were noted in the current year's trend count. Trend count data since 2011 indicates the population has stabilized near the population objective of 4400 elk.

Since 2011 reductions in antlerless elk hunting opportunity have been implemented in response to population reduction and lower than desired bull numbers in Area 85. The 2013 hunting season was the first attempt in the management history of the Fall Creek elk herd to introduce general license, spikes excluded hunting seasons in response to low yearling bull:100 cow ratio in this area. Spikes excluded seasons were incorporated into the Area 84 management strategy in 2013 to address public concerns that hunting pressure would increase in this area if spikes excluded seasons were not adopted. The 2015 hunt season will be the third consecutive year of spikes excluded hunting seasons.

Harvest Data

Hunter success was estimated at 29% in 2015 with a total harvest estimated at 566 elk. Limited quota license hunters typically account for a much higher success than general licenses hunters. In most years, limited quota license hunters represent at least 40-55% of the total annual antlerless harvest, especially in Hunt Area 84. However due to the reduced antlerless harvest herd unit wide in 2014, limited quota license holders accounted for only 35% of the total estimated antlerless elk harvest.

The spikes excluded hunt the last two years has resulted in antlered harvest being focused on the 2+-year old bulls. Since 2012 the number of 2+-year old bulls estimated in the annual harvest has declined as a result of reduced hunter participation. The reduction in yearling harvest achieved

the desired result in an overall slight increase in the number of yearling bulls counted from 2009 – 2012 (Figure 1). The spikes excluded regulation was designed to address concerns regarding the low yearling bulls:100 cows ratio herd unit wide, but especially in Area 85.

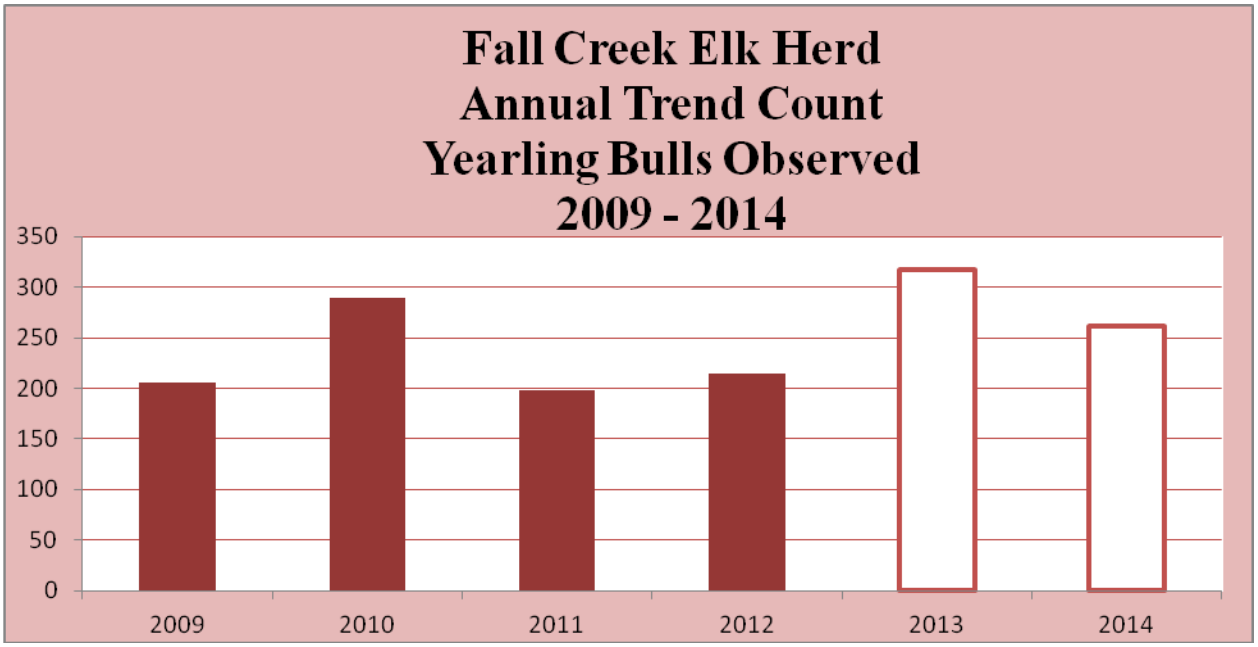


Figure 1. A depiction of the number of yearling bulls counted during the annual trend count during years of general license, any elk hunting seasons (2009-2012) versus general license, any elk spikes excluded hunting seasons (2013, 2014).

Population

The population has stabilized within 20% of the objective. The "Time Sensitive Juvenile – Constant Adult Mortality Rate" (TSJ, CA) spreadsheet model was used to derive the post season population estimate. The TSJ, CA model showed the best overall fit compared to the suite of available models (Fit=186, Relative AICc=301). This model tracks bull:cow ratios and , harvest percentages of antlered elk, and population estimates. Model simulations and derived outcomes fit with observed data collected during postseason herd composition and trend surveys.

Management Summary

The 2015 hunting season is designed to maintain a stable population near the objective. The number of elk counted during the current year's trend count will result in the continuance of general, any elk seasons, with the spikes excluded restriction in order to maintain the opportunity for general license hunters to harvest antlerless elk throughout the herd unit. To achieve these goals, limited quota Type 6 licenses will be reduced from 2014 levels in Area 84, but continue to be valid into November. A substantial departure from general license any elk management strategy will occur in 2015. The length of the general any elk hunting season will be reduced by

13 days in Areas 84 and 85. Hunters will have the opportunity to harvest any elk, spikes excluded from September 26 – October 18. Beginning on October 19 and continuing through October 31, antlered only elk with the spikes excluded restriction may be taken with general licenses. This management strategy will reduce overall antlerless harvest and maintain the population within 20% of the population objective.

In Area 84 the limited quota Type 6 licenses will be valid through October 31. The elimination of the November portion of the hunting season and reduction in the number of Type 6 licenses issued from 100 to 25 is in response to lower numbers of elk being counted on the Horse Creek and Camp Creek feedgrounds, and because of concerns expressed by the public regarding lower elk numbers on these feedgrounds. An additional limited quota Type 7 license will be maintained for the second consecutive year at 75 licenses. The opening date for the Type 7 license will be August 15. This private land hunt will address landowner concerns regarding elk numbers on private property along the Snake River Bottomlands and provide hunters with an extended hunting opportunity to harvest antlerless elk in areas that have been historically prone to chronic elk damage and comingling with livestock.

In Area 85, hunting pressure will be reduced on the antlerless segment of the population by maintaining the number of Type 6 cow/calf licenses at 25 licenses and closing the season October 31. Population management objectives have been achieved in the Area 85 portion of the herd unit, and therefore the appropriate management response is to initiate season limitations that are designed to stabilize this segment of the population that spends the winter on the Dog Creek feedground.

The 2015 hunting seasons are projected to harvest a total of 650 elk. The projected harvest should maintain the population at approximately 4300 elk following the 2015 hunting season.

FEEDGROUND SURVEILLANCE/RESEARCH

Horse Creek Feedground

Three adult female elk were chemically immobilized at the Horse Creek feedground on February 2, 2015. Two of the three captured elk were pregnant, and were fitted with Vaginal Implant Transmitters (VITs) that will be expelled upon either abortion or parturition during late winter 2015/spring 2016, and GPS collars which record a location every 30 minutes that will automatically drop off in one year. The one non-pregnant female was captured to remove a GPS collar that failed to release. All three cows were bled for brucellosis diagnostics, and two (66%) were considered positive for exposure to *B. abortus* (Table 1). However, this sample size falls far short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inference of brucellosis prevalence should be made about the population from these data.

Dog Creek Feedground

Four adult female elk were chemically immobilized on this feedground on January 16, 2015; three of the captured cows were pregnant and received GPS collars and VITs. The GPS collars are on 30 minute fixes and programmed to drop in January of 2017. Three of the four (75%) blood samples were considered positive for exposure to *B. abortus* (Table 1). However, this sample size is also short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inference of brucellosis prevalence should be made about the population from these data.

South Park Feedground

Two adult female elk was chemically immobilized and fitted with a GPS collar and VIT on January 16, 2015. Both cows were pregnant and were fitted with Vaginal Implant Transmitters (VITs) that will be expelled upon either abortion or parturition during late winter 2015/spring 2016, and GPS collars which record a location every 30 minutes that will automatically drop off in January 2017. Both cows were bled for brucellosis diagnostics, and one (50%) was considered positive for exposure to *B. abortus* (Table 1). However, this sample size falls far short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inference of brucellosis prevalence should be made about the population from these data.

Table 1. Yearling, adult, and total female seroprevalence of elk on feedgrounds in the Fall Creek Elk Herd based on 4 standard tests and cELISA, 1987-2015.

		Yearling			Adult			All Females		
Feedground	**Year**	**+**	***n***	**%**	**+**	**n**	**%**	**+**	***n***	**%**
South Park	2003	4	12	33	8	30	27	12	42	29
	2005*	0	1	0	0	1	0	0	2	0
	2008	2	10	20	11	21	52	13	31	42
	2009*	0	0	0	3	7	43	3	7	43
	2010*	0	0	0	4	7	57	4	7	57
	2011	2	18	11	14	27	52	16	45	36
	2013	0	0	0	0	0	0	16	64	25
	2014*	0	0	0	0	1	0	0	1	0
	2015*	0	0	0	1	2	50	1	2	50
	Sum	**8**	**41**	**20**	**41**	**96**	**31.2**	**65**	**201**	**31.33**
Horse Creek	1988*	1	4	25	8	24	33	9	28	32
	2000	2	12	17	18	30	60	20	42	48
	2011*	0	0	0	3	4	75	3	4	75
	2012*	0	0	0	2	5	40	2	5	40
	2015*	0	0	0	2	3	60	2	3	60
	Sum	**3**	**16**	**19**	**33**	**66**	**53.6**	**36**	**82**	**51**
Camp Creek	1989	2	12	17	24	52	46	26	64	41
	2013*	0	0	0	2	5	40	2	5	40
	2014*	0	0	0	2	5	40	2	5	40
	Sum	**0**	**0**	**0**	**28**	**62**	**42**	**30**	**74**	**40.3**
Dog Creek	1987*	0	0	0	0	1	0	0	1	0
	1996*	0	5	0	4	13	31	4	18	22
	1997*	0	0	0	6	6	100	6	6	100
	1998*	1	6	17	1	4	25	2	10	20
	2010*	0	0	0	3	4	75	3	4	75
	2014*	0	0	0	4	5	80	4	5	80
	2015*	0	0	0	3	4	75	3	4	75
	Sum	**1**	**11**	**9**	**21**	**37**	**55.1**	**22**	**48**	**53.14**

* Inadequate sample size for the estimated prevalence to be +/- 15% of the true prevalence.

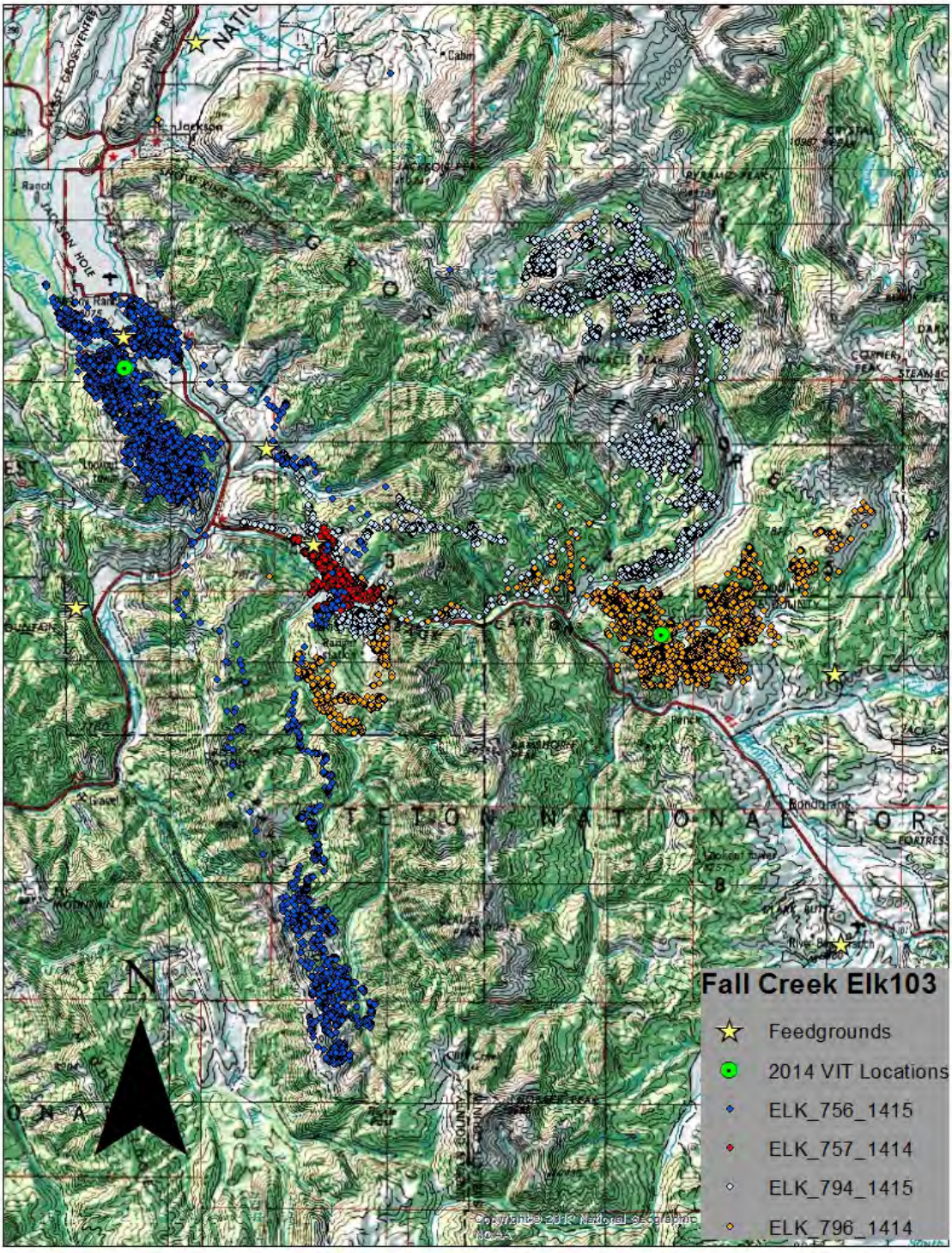


Figure 1. VIT expulsion locations (bright green circles; parturition sites) and GPS collar locations from elk captured on Camp Creek and South Park feedgrounds, February 2014 through January 2015.

STRAIN 19 VACCINATION

Dog Creek Feedground
Vaccination was completed from February 8th-20th, 2015. While 125 calves were classified, 122 calves (98%) were vaccinated. From 1990, when the vaccination program was initiated on the Dog Creek feedground, 4,803 juveniles and 1,252 adults have been vaccinated.

Camp Creek Feedground
Vaccination was not attempted at Camp Creek feedground in 2015. The majority of elk in the Horse Creek/Camp Creek feedground complex attended Horse Creek during vaccination activities and proved to be very sensitive to human activity and often left the area resulting in increased private property damage concerns. Since 1993, a total of 3,855 juveniles have been vaccinated. Elk were first vaccinated on Camp Creek in 1989.

Horse Creek Feedground
Vaccination was not attempted at Horse Creek feedground in 2015. Most of the cow and calf elk within the Horse Creek/Camp Creek feedground complex attended Horse Creek during vaccination. Elk remaining at Horse Creek feedground proved to be very sensitive to human activity and often left the area resulting in increased private property damage concerns. Since 1993, a total of 4,910 juveniles have been inoculated. Elk were first vaccinated on Horse Creek feedground in 1989.

South Park Feedground
Vaccination was completed for the 24th consecutive year at this feedground. The elk feeder vaccinated elk from February 8th-20th, 2015. While 205 calves were classified in February, 206 calves (>100%) were vaccinated, potentially due to elk movements to the feedground after classification and some yearlings may have been misidentified as calves and received a booster dose. Since 1990 when vaccination began at South Park, a total of 5,845 juveniles and 909 adult females have been inoculated.

INPUT	
Species:	Elk
Biologist:	Gary Fralick
Herd Unit & No.:	Fall Creek
Model date:	05/26/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	174414	174423	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	376	502	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	186	301	☑ TSJ,CA Model	
TSJ,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	9617	9713	☐ TSJ,CA,MSC Mode	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				1640	2077	7423	11140	1551	1585	6887	10023	
1994				2724	2243	7279	12246	2545	1444	6237	10226	
1995				1727	2122	6675	10524	1684	1625	6248	9557	
1996				1981	1965	6357	10302	1849	1570	5899	9318	
1997				1696	1953	6066	9716	1631	1445	5645	8721	
1998				1649	2012	6001	9662	1608	1544	5784	8936	
1999				1400	2048	6075	9523	1299	1534	5700	8533	
2000				1938	1788	5745	9471	1879	1330	5481	8691	
2001				2037	1733	5677	9448	1996	1270	5409	8675	
2002				1584	1706	5637	8927	1540	1385	5293	8218	
2003				2184	1854	5566	9604	2122	1381	5231	8734	
2004				1681	1843	5500	9024	1549	1255	4912	7717	
2005				1794	1928	5403	9125	1747	1439	5122	8308	
2006				1818	1962	5461	9241	1681	1487	5041	8209	
2007				1746	1833	5209	8788	1643	1323	4795	7761	
2008				1609	1668	4966	8243	1482	1226	4476	7183	
2009				1068	1535	4623	7226	968	1092	4012	6072	
2010				1120	1497	4271	6888	874	1017	3422	5314	
2011				930	1382	3666	5979	864	940	3206	5009	
2012				1003	1303	3456	5762	928	831	3074	4833	
2013				1044	1231	3361	5636	965	879	2976	4819	
2014				822	1271	3263	5356	764	945	3016	4725	
2015				844	1089	3056	4988	774	770	2792	4336	
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

Year	Winter Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.95			0.95		
1994	0.59			0.95		
1995	0.50			0.95		
1996	0.50			0.95		
1997	0.78			0.95		
1998	0.72			0.95		
1999	0.51			0.95		
2000	0.50			0.95		
2001	0.50			0.95		
2002	0.70			0.95		
2003	0.50			0.95		
2004	0.95			0.95		
2005	0.68			0.95		
2006	0.50			0.95		
2007	0.50			0.95		
2008	0.50			0.95		
2009	0.95			0.95		
2010	0.95			0.95		
2011	0.95			0.95		
2012	0.95			0.95		
2013	0.90			0.95		
2014	0.50			0.95		
2015	0.84			0.95		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.950
Initial Total Male Pop/10,000 =	0.159
Initial Female Pop/10,000 =	0.689

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Total Bulls Adjustment Factor	80%

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio				Harvest					Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ bull adj	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		22.52	0.99	23.02	19.65	15.72	0.81	81	147	300	487	1015	23.7	7.2
1994		40.81	1.49	23.15	27.84	22.27	1.02	163	241	485	948	1837	35.6	14.3
1995		26.95	1.08	26.00	29.24	23.39	0.99	39	147	305	388	879	23.4	6.4
1996		31.34	1.22	26.61	25.74	20.59	0.95	120	71	288	416	895	20.1	7.2
1997		28.90	1.23	25.60	23.83	19.06	0.96	59	114	348	383	904	26.0	6.9
1998		27.80	1.15	26.70	26.70	21.36	0.99	37	97	328	198	660	23.2	3.6
1999		22.78	1.00	26.91	26.91	21.53	0.97	92	142	325	341	900	25.1	6.2
2000		34.28	1.28	24.26	25.11	20.09	0.93	53	89	327	240	709	25.6	4.6
2001		36.90	1.28	23.48	27.44	21.96	0.93	38	149	272	244	703	26.7	4.7
2002		29.09	1.13	26.18	22.33	17.86	0.85	40	70	221	313	644	18.8	6.1
2003		40.58	1.34	26.40	26.88	21.51	0.91	56	78	352	305	791	25.5	6.0
2004		31.54	1.16	25.55	24.79	19.83	0.88	120	139	395	534	1188	31.9	10.7
2005		34.11	1.18	28.09	28.49	22.79	0.92	43	79	366	255	743	25.4	5.2
2006		33.35	1.17	29.49	29.51	23.61	0.94	124	109	323	382	938	24.2	7.7
2007		34.27	1.16	27.60	29.57	23.66	0.93	94	102	361	377	934	27.8	8.0
2008		33.10	1.11	27.39	30.90	24.72	0.93	116	55	347	445	963	26.5	9.9
2009		24.13	0.98	27.21	20.77	16.61	0.79	91	98	305	555	1049	28.9	13.2
2010		25.55	1.01	29.73	31.06	24.85	1.00	223	86	350	772	1431	32.0	19.9
2011		26.96	1.10	29.31	30.14	24.11	1.03	60	65	337	419	881	32.0	12.6
2012		30.19	1.21	27.04	27.88	22.31	1.01	68	72	357	347	844	36.2	11.0
2013		32.41	1.29	29.52	30.17	24.13	1.07	72	8	312	350	742	28.6	11.5
2014		25.33	1.09	31.33	33.11	26.49	1.12	49	0	291	226	566	25.6	7.6
2015		27.74	1.14	27.57	26.41	21.13	0.97	63	0	290	240	593	29.3	8.6
2016														
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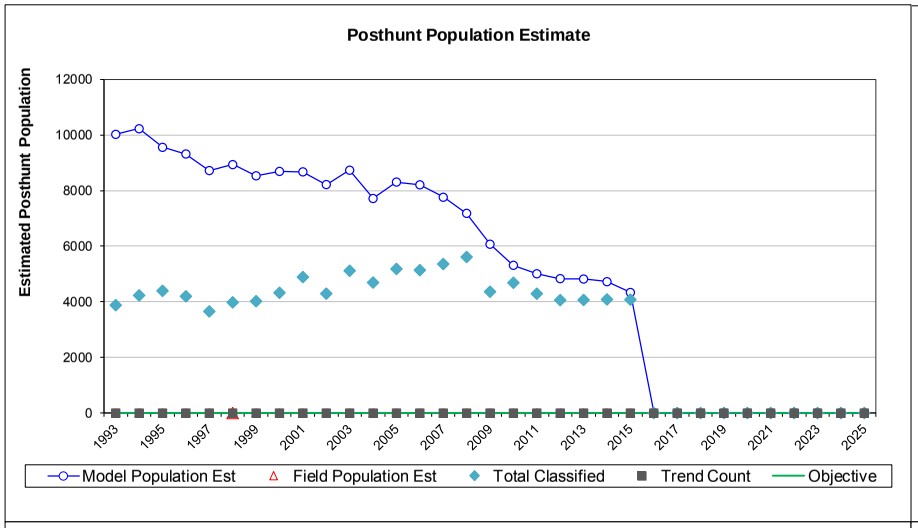
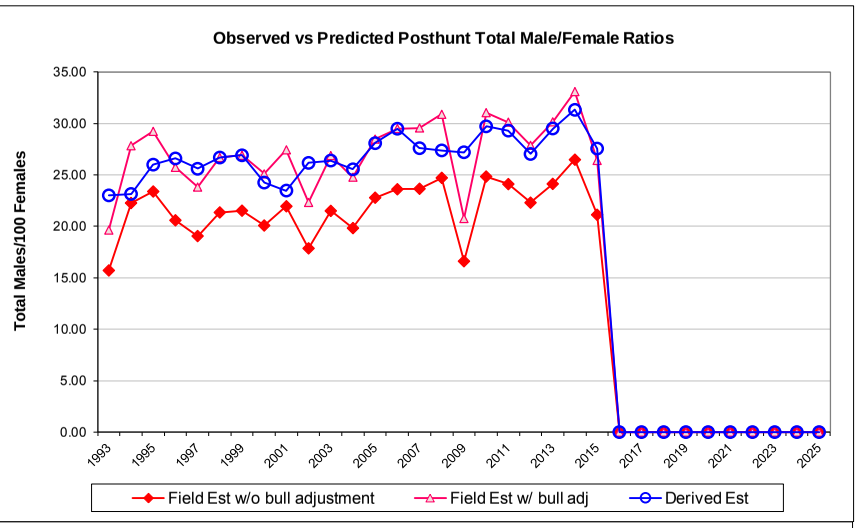
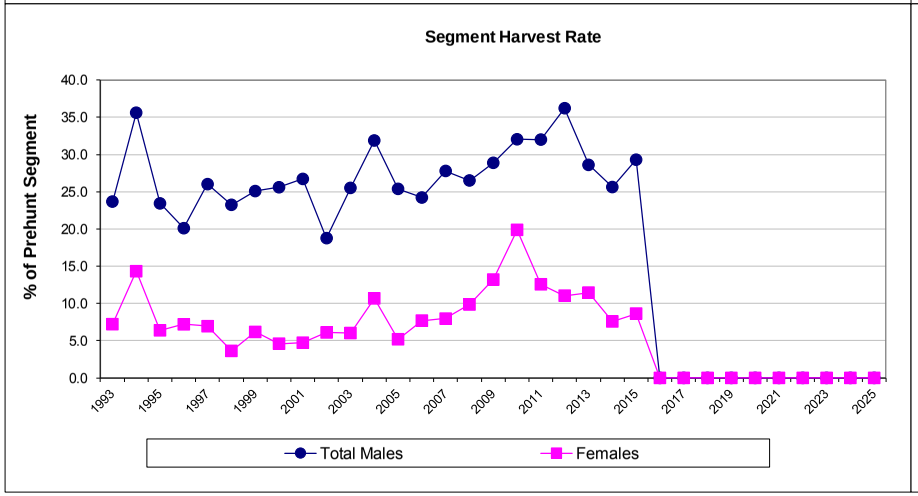
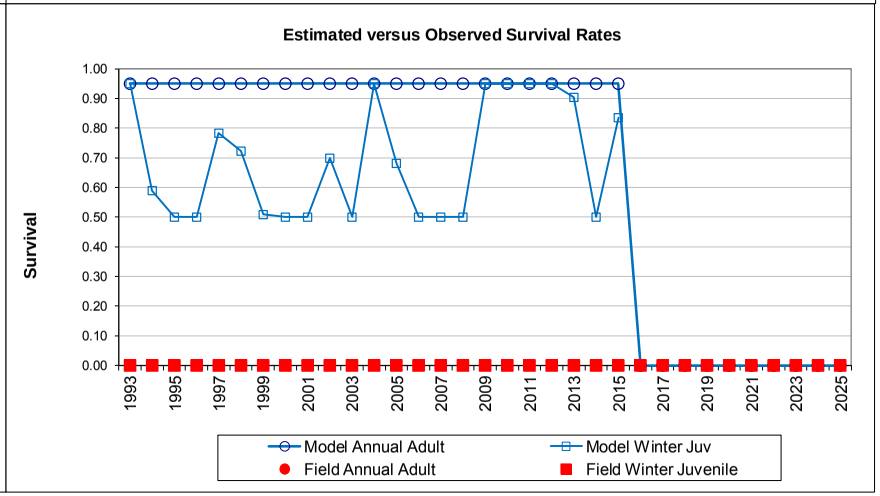
2025														

FIGURES









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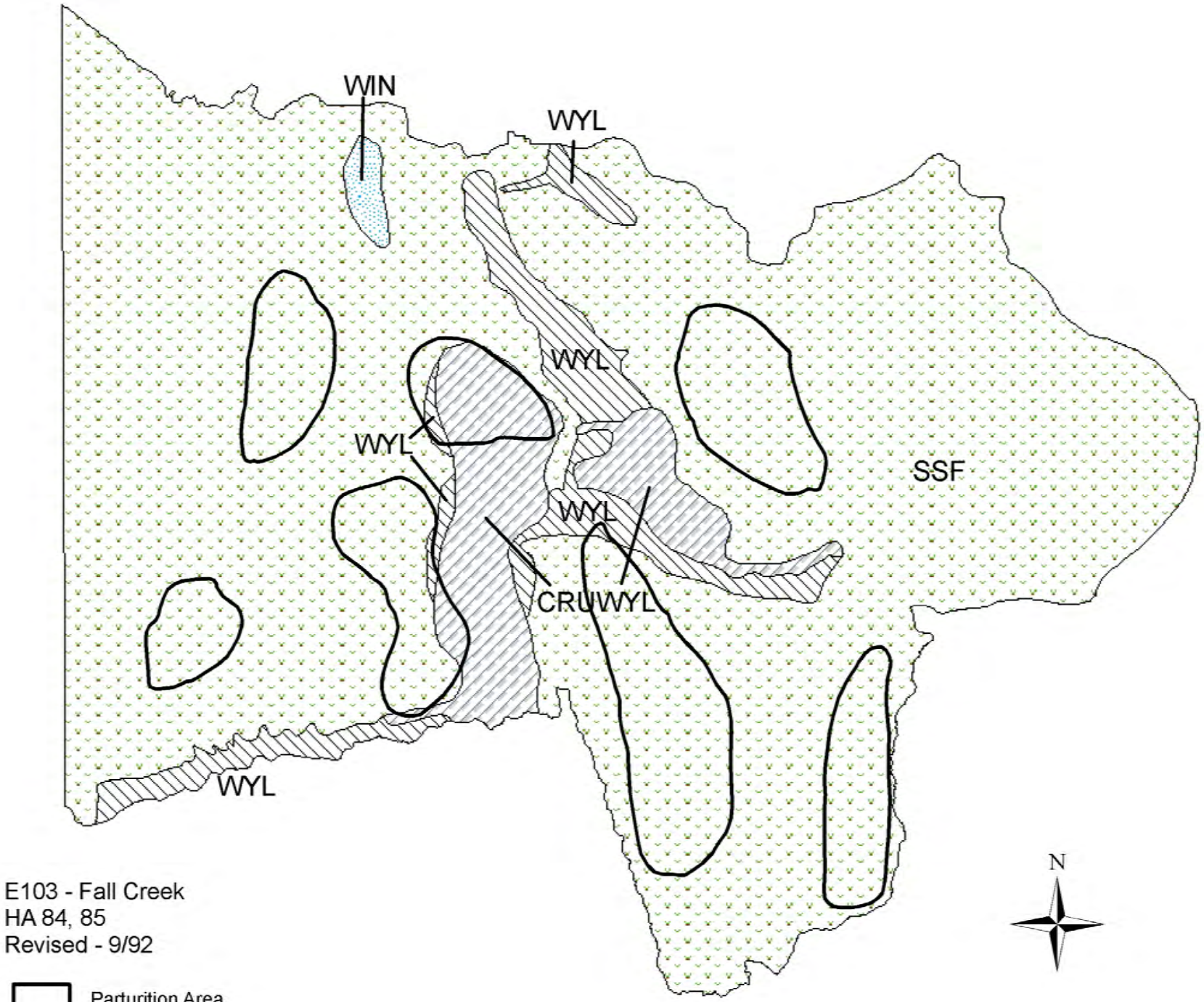


E103 - Fall Creek
HA 84, 85
Revised - 9/92

Parturition Area

2014 - JCR Evaluation Form

SPECIES: Elk
HERD: EL105 - AFTON
HUNT AREAS: 88-91

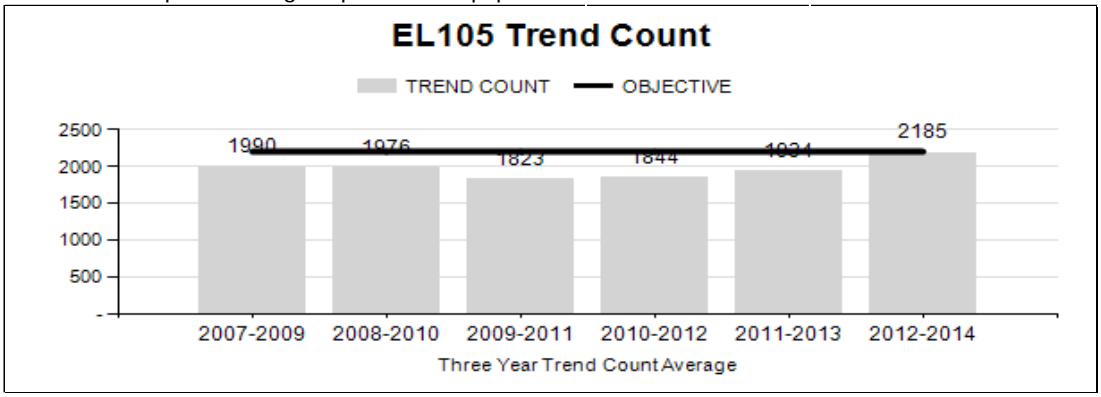
PERIOD: 6/1/2014 - 5/31/2015
PREPARED BY: GARY FRALICK

	2009 - 2013 Average	2014	2015 Proposed
Trend Count:	1,919	2,432	1,950
Harvest:	754	757	782
Hunters:	2,317	2,360	2,210
Hunter Success:	33%	32%	35%
Active Licenses:	2,398	2,449	2,210
Active License Success	31%	31%	35%
Recreation Days:	15,605	19,082	18,011
Days Per Animal:	20.7	25.2	23.0
Males per 100 Females:	20	15	
Juveniles per 100 Females	35	38	

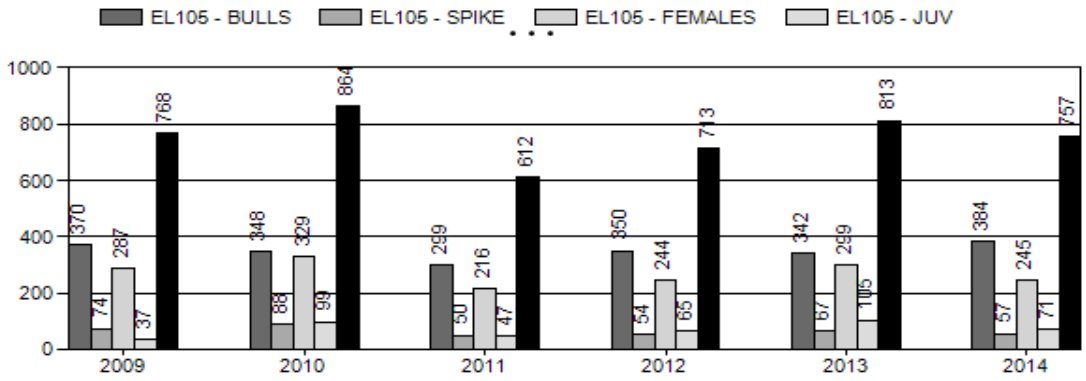
Trend Based Objective (± 20%)	2,200 (1760 - 2640)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	11%
Number of years population has been + or - objective in recent trend:	5

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

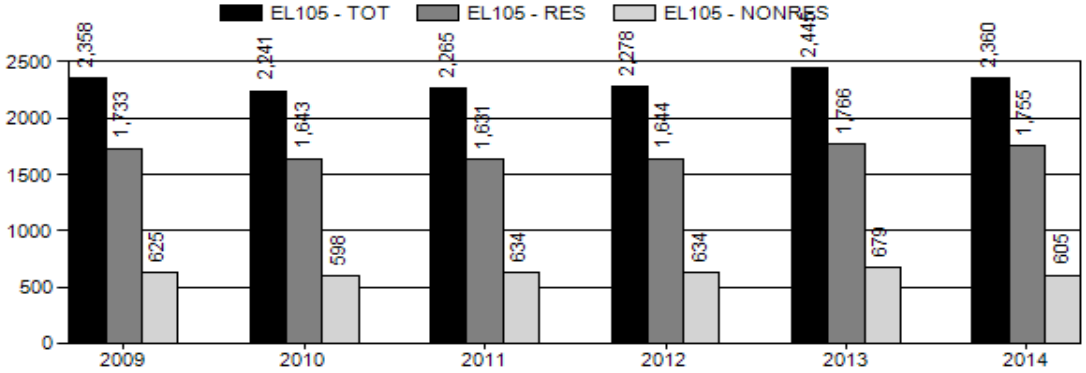
	JCR Year	Proposed
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



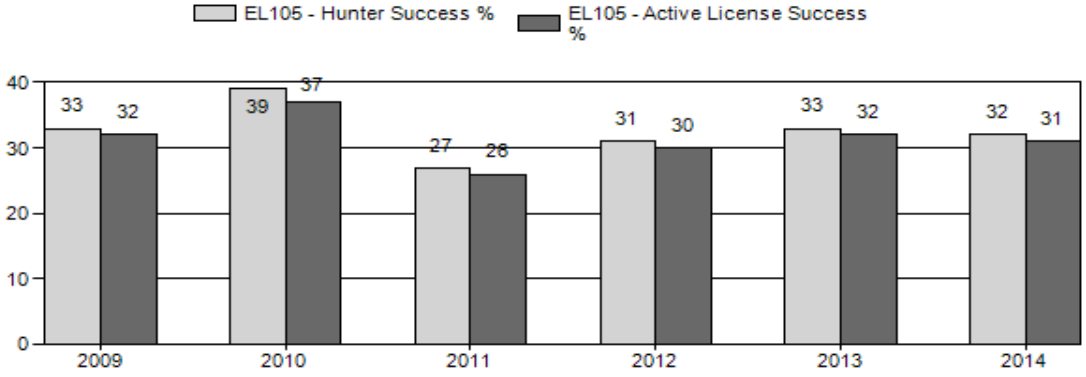
Harvest



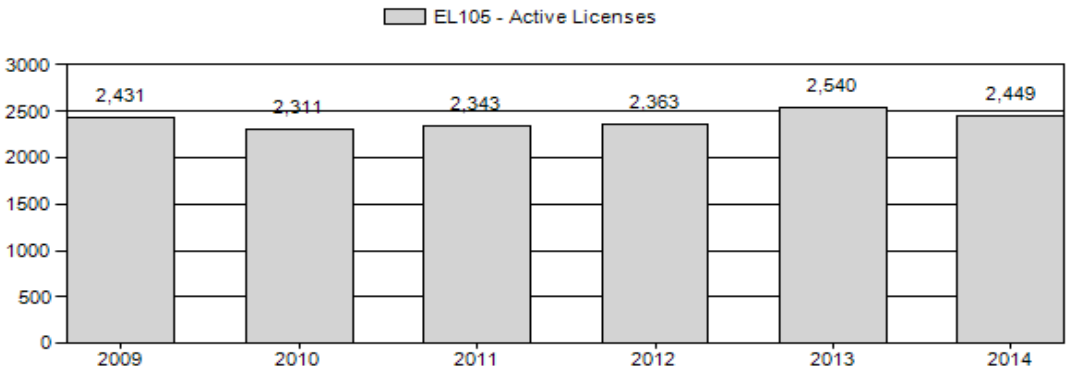
Number of Hunters



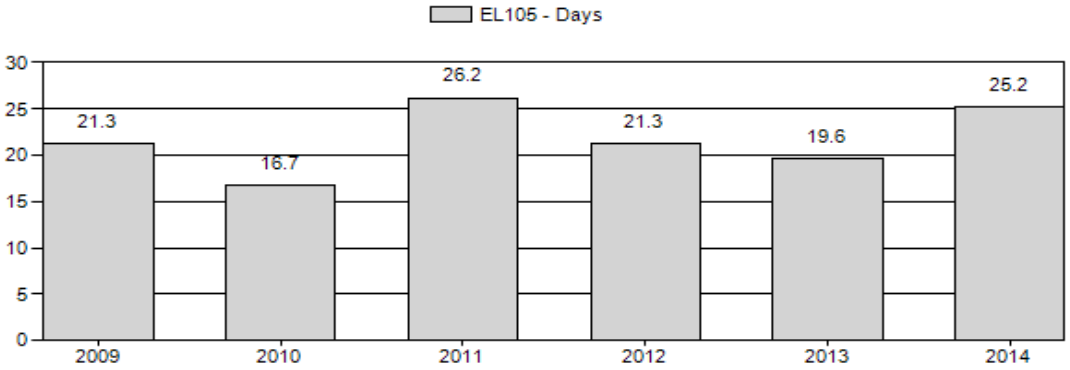
Harvest Success



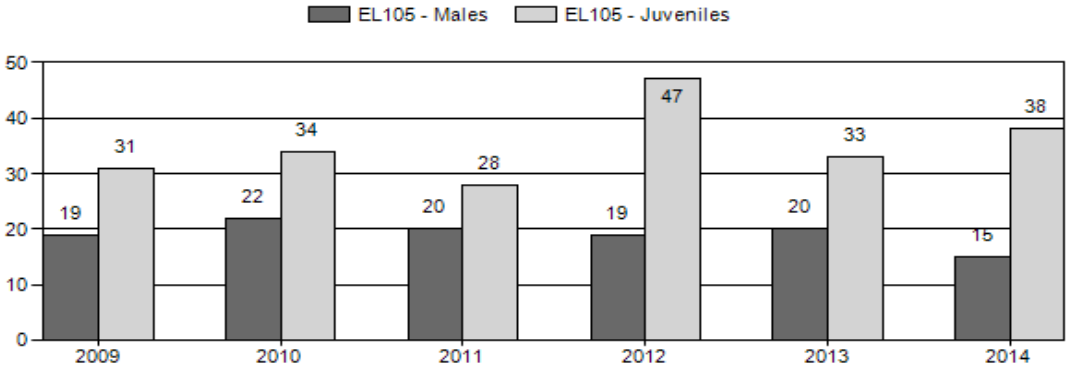
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Elk Herd EL105 - AFTON

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	2,102	65	163	228	13%	1,196	67%	373	21%	1,797	294	5	14	19	± 1	31	± 1	26
2010	2,280	86	186	272	14%	1,235	64%	426	22%	1,933	322	7	15	22	± 1	34	± 1	28
2011	2,098	53	169	222	13%	1,132	68%	322	19%	1,676	299	5	15	20	± 1	28	± 1	24
2012	2,400	60	145	205	11%	1,077	60%	506	28%	1,788	281	6	13	19	± 1	47	± 2	39
2013	2,400	109	166	275	13%	1,409	66%	461	21%	2,145	363	8	12	20	± 1	33	± 1	27
2014	2,400	77	152	229	10%	1,564	66%	592	25%	2,385	419	5	10	15	± 0	38	± 0	33

2015 HUNTING SEASONS
AFTON ELK HERD (EL105)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
88		Oct.1	Oct. 31	40	Limited quota	Any elk – SEE SECTION 6
89		Oct. 15	Oct. 18		General	Any elk – SEE SECTION 6
		Oct. 19	Oct. 31		General	Antlered Elk – SEE SECTION 6
90		Oct. 15	Oct. 31		General	Any elk – SEE SECTION 6
		Nov. 1	Nov. 15		General	Antlerless elk – SEE SECTION 6
	6	Oct. 15	Nov. 15	250	Limited quota	Cow or calf – SEE SECTION 6
91		Oct. 15	Oct. 31		General	Any elk – SEE SECTION 6
	1	Oct. 1	Oct. 31	100	Limited quota	Any elk – SEE SECTION 6
		Nov. 1	Dec. 31			Unused Area 91 Type 1 licenses valid for antlerless elk – SEE SECTION 6
	6	Oct. 1	Dec. 31	175	Limited quota	Cow or calf – SEE SECTION 6
		Jan. 1	Jan. 31			Unused Area 91 Type 6 licenses valid in the entire area. Archery only in that portion of Area 91 south of Cedar Creek and east of Muddy String Road (Lincoln County Road 117), north of Lost Creek Road (Lincoln County Road 120) and north of Lost Creek, off national forest - SEE SECTION 6.
88		Sep. 1	Sep. 30			Archery only – REFER TO SECTION 4
89,90		Sep. 1	Sep. 30			Archery only – REFER TO SECTION 4
91		Sep. 1	Sep. 30			Archery only – REFER TO SECTION 4

SUMMARY OF PROPOSED CHANGES BY LICENSE NUMBER

Area	License Type	Change from 2014
91	6	+25
Herd Unit Total	6	+25

Management Evaluation
Current Mid-Winter Trend Count Management Objective: 2,200
Management Strategy: Recreational
2014 Mid-Winter Trend Count: 2,400
Most Recent 3-Year Running Average Trend Count: 2,200

The current mid-winter trend count management objective for Afton elk herd is 2200 elk. The management strategy is recreational management. The objective and management strategy were last revised in 2011. The current mid-winter trend count was 2400 elk.

Herd Unit Issues

Management strategies have been diverse throughout the four hunt areas over the last 10 years in an effort to address individual hunt area issues. Hunting pressure has been maintained in the upper Greys River (Area 90) where elk numbers exceed the Commission-established quota for the Forest Park elk feedground. In the lower Greys River (Area 89) hunting opportunity has been more restricted with shorter overall season length and fewer days to harvest antlerless elk than in Area 90. This strategy is designed to increase overall elk numbers on the Greys River feedground and native winter ranges in Area 89. Based on the current year's trend count, this strategy was successful as elk numbers have decreased on Forest Park feedground and increased on the Greys River feedground. Hunt seasons in the Salt River (Area 91), have maintained elk numbers at desired levels to minimize damage to stored crops and comingling with livestock.

Weather

Weather conditions during the 2014 were ideal for forage production beginning in early spring and continuing through fall. By late summer the moisture regime had changed frequent precipitation scenario that persisted into the fall hunting season. Drought conditions in the early portion of the summer abated by late fall as persistent snow storms began to deposit snowpack in the Wyoming and Salt Mountain Ranges. By mid winter snow conditions on winter ranges had changed significantly. Little to no snow had accumulated on core winter ranges. These conditions persisted throughout the remainder of the winter. By late winter 2015 snowpack in western Wyoming watersheds were estimated to be at or above normal. For additional weather and precipitation data please visit the following websites: http://www.ncdc.noaa.gov/temp-and-

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

Habitat

No habitat data has been collected on elk summer and winter ranges. There are no established vegetation transects in this herd unit. Please refer to the 2014 Annual Report Strategic Habitat Plan Accomplishments for the Jackson Region habitat improvement project summaries (**http://wgfd.wyo.gov/web2011/wildlife-1000708.aspx)**.

Field Data

The Afton elk herd has been managed to maintain the population within +/-20% of the objective of 2200. Population trends are relatively stable. Hunt seasons have been successful at targeting elk numbers, notably in upper Greys River segment of the population, where rapid and sustained growth has been observed. Hunting seasons have suppressed population growth in an elk herd where moderate to high calf survival and calf:cow ratios are frequently observed at 40 calves:100 cows or higher. Since 2000 bull:cow ratios have met or exceeded the management goal of at least 20 bulls:100 cows in most years.

Harvest Data

Hunter success was estimated at 32% in 2014. The hunt seasons have produced the desired population reduction over the last 5 years. Hunt seasons that provide a combination of any and antlerless elk hunting opportunities during the October portion of the hunt, and into November, will maintain population within the +/- 20% of the objective. A slightly liberal hunting season in 2015 will focus on harvesting predominately cows and calves in Area 89 to compensate for the generally higher trend count in that area. The emphasis to maintain the population near the objective and maintain postseason bull:cow ratios of at least 20 bulls:100 cows provide management flexibility and support from the public.

Population

The population increased slightly in 2014 in response to a below average elk harvest. Attempts to develop a spreadsheet model have been unsuccessful. Poor alignment of the bull:cow ratios, harvest percentages of males, and population estimates have rendered the development of a spreadsheet model unsuitable. However, on-going efforts to assess population performance were based on annual trend counts conducted since 2007. Trend counts appear to present a more reasonable depiction of this population's performance, which has averaged approximately 2100 elk over the last three years.

Management Summary

The 2015 hunting season is designed to maintain the mid-winter trend count management objective. The lower Greys River (HA 89) will close on October 31 which is a departure from the management strategy of closing at least one week earlier since 2008. The general any elk portion of the hunting season in Area 89 will be extended by one day and close on October 18. Antlered elk only hunting will continue on October 19 and close on October 31. The longer season in Area 89 is in response to the number of elk counted during the 2014 winter trend count on native winter ranges in Area 89 and on the Greys River feedground.

Management will continue to emphasize antlerless elk harvest in Area 90 by enabling general and limited quota type 6 license holders to hunt into November. The Area 90 Type 6 additional cow or calf licenses will remain at 250 licenses in an effort to increase harvest. The season length for limited quota Type 6 licenses will extend into November as it has since 2006 in an effort to encourage hunters to harvest antlerless elk in an area where the Forest Park feedground quota has exceeded the Commission-established quota.

In Area 91 the number of Type 6 cow or calf only licenses will increase from 150 to 175 licenses in response to higher elk numbers being observed in 2014. The increase in Type 6 licenses will address elk damage concerns along the eastern portion of area 91. Season dates for this license will continue to extend through the end of January.

Based on past harvest statistics, the 2015 hunting seasons will result in a harvest of 780 elk. The 2015 harvest should maintain the population within +/- 20% of the annual three-year trend count average of 2200 following the 2015 hunting season.

BRUCELLOSIS MANAGEMENT (E105) - 2014

BRUCELLOSIS SURVEILLANCE/RESEARCH

Greys River Feedground

Elk were again captured at Greys River feedground this winter after not capturing during winter 2013-14 due to warm and wet conditions in early February which inundated the elk trap with nearly 3 feet of standing water which later froze and prevented operation of nearly all trap chutes and gates. A total of 132 elk were processed through the chutes, and 2 GPS collars (2 year drop; 30 minute fix schedules) were deployed along with 3 VHF collars and 5 Vaginal Implant Transmitters. Among the 44 yearling and older females bled and tested for exposure to *Brucella abortus*, the bacteria causing brucellosis, 7 were positive for a prevalence of 16%

From 2008-2015, 22 GPS collars and 43 VITs have been deployed on/in elk captured from the Greys River feedground. GPS collar data indicate some elk movement north into the Fall Creek elk herd and some movement west into Idaho, but most elk use occurs in HA 88 and the northwestern corner of HA 89. Among the 43 VITs, WGFD personnel identified the locations of 32 parturition sites and 4 reproductive failures. One elk died prior to expelling the VIT, one elk's VIT was classified as unknown (could not be located), and 5 VITs were still implanted and being monitored while as of this writing. These data are allowing managers to assess feedground interchange and define areas of high risk for inter and intra-specific brucellosis transmission.

Forest Park Feedground

Two adult females were chemically immobilized on this feedground on February 19, 2015. The cows were both pregnant and received GPS collars and VITs. From 2011-2015, 18 GPS collars and 17 VITs were deployed on elk captured from Forest Park. Collar data indicate most elk use is within HA90, with limited movement north into southern HA89 and east into HA 92. Among the VITs, personnel documented 12 parturition sites and two abortions; one elk was confirmed pregnant via blood testing, but had not calved by early August when funding for flights prevented further monitoring and the VIT was not heard again, and 2 VITs were still implanted as of this writing.

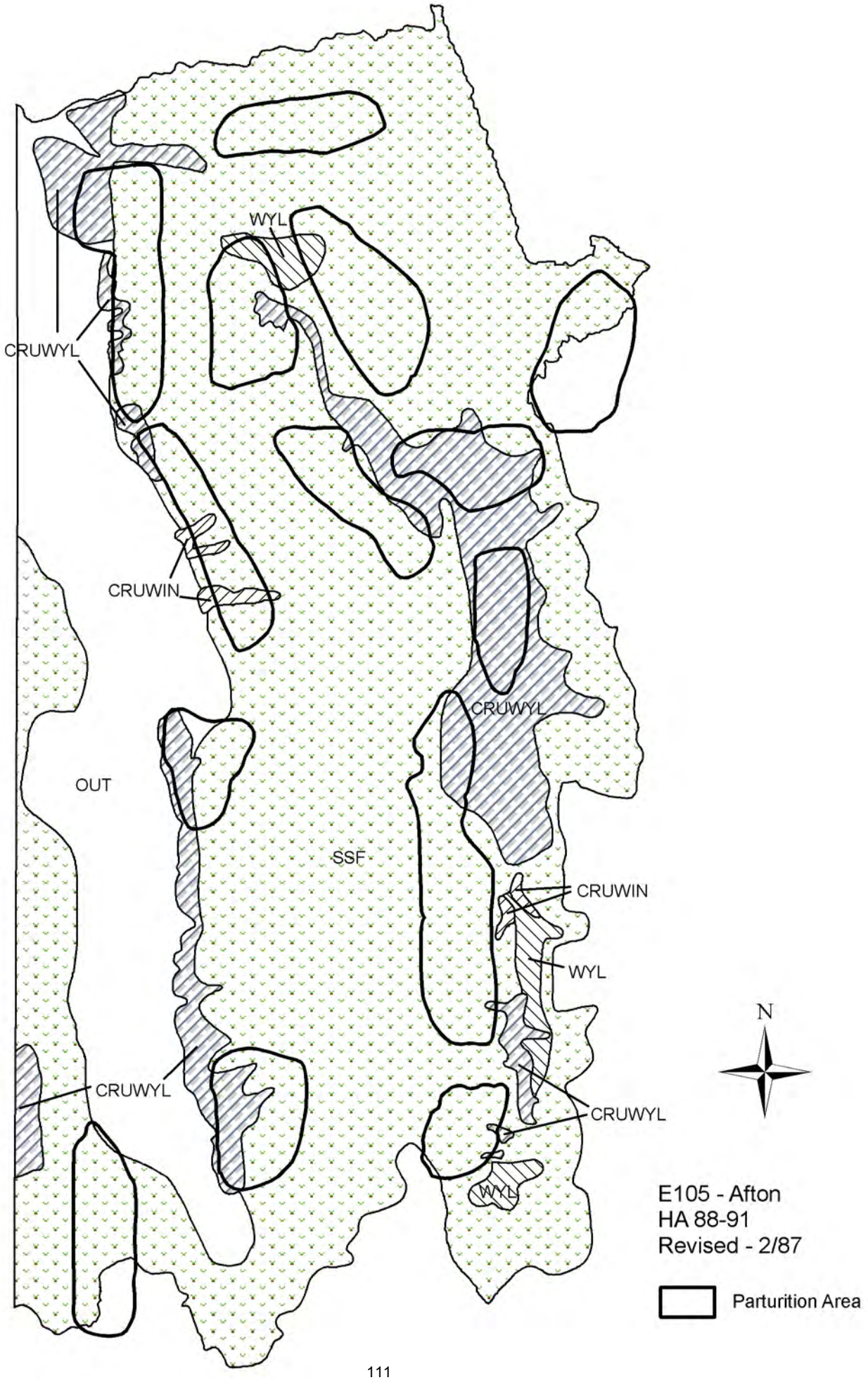
STRAIN 19 VACCINATION

Greys River Feedground

B. abortus Strain 19 (S19) vaccination of elk calves on Greys River feedground was accomplished during early March of 2015. There were 164 calves at the time of classification and 160 calves were reported to have been vaccinated for coverage of 98%. The S19 elk vaccination program on Wyoming's feedgrounds initiated at the Greys River feedground in 1985. Since then, a total of 6,684 calves have been vaccinated on Greys River and yearly coverage has been very complete. Juvenile coverage rates has averaged nearly 100% since inception of the program. The large proportion of juveniles annually covered by S19 vaccine indicates a successful vaccination delivery program.

Forest Park Feedground

Vaccination at Forest Park was accomplished from March 6-18, 2015. There were 172 calves at the time of classification and all were reported to have been vaccinated. Vaccination was skipped at Forest Park in 2009 and again in 2011 because of short supplies of vaccine. In all other years, coverage has been nearly 100%. Vaccination was initiated at this feedground in 1988. Since that time, a total of 5,475 juveniles and 715 adult females have been vaccinated.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Parturition Area