2013 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL101 - TARGHEE

HUNT AREAS: 73, 900

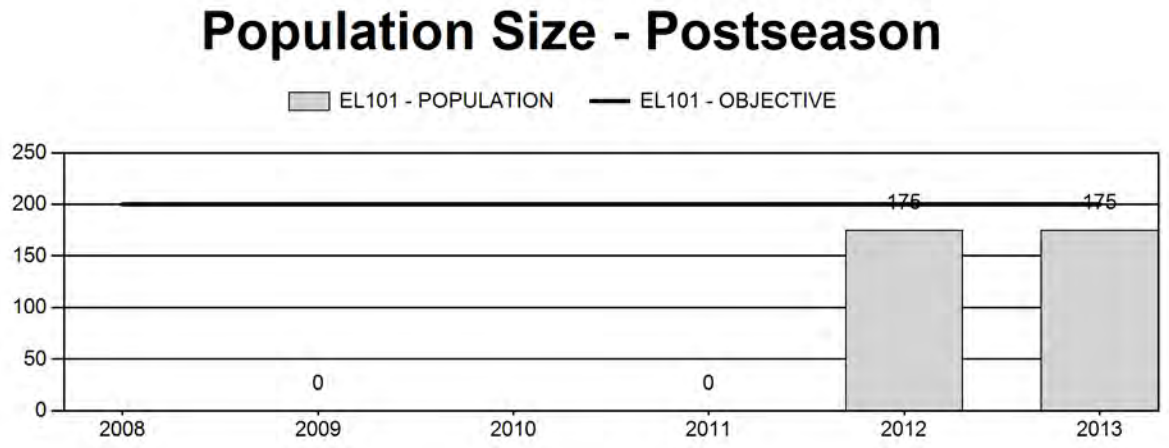
PREPARED BY: ALYSON COURTEMANCH

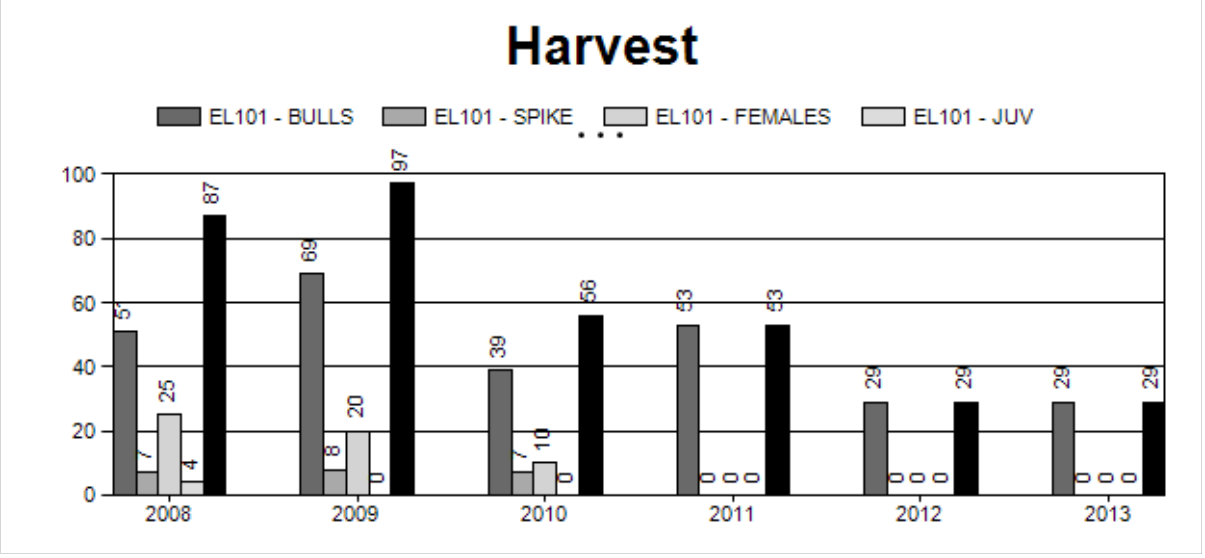
	2008 - 2012 Average	2013	2014 Proposed
Population:	35	175	175
Harvest:	64	29	30
Hunters:	204	100	115
Hunter Success:	31%	29%	26%
Active Licenses:	210	100	115
Active License Percent:	30%	29%	26%
Recreation Days:	1,360	563	575
Days Per Animal:	21.2	19.4	19.2
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

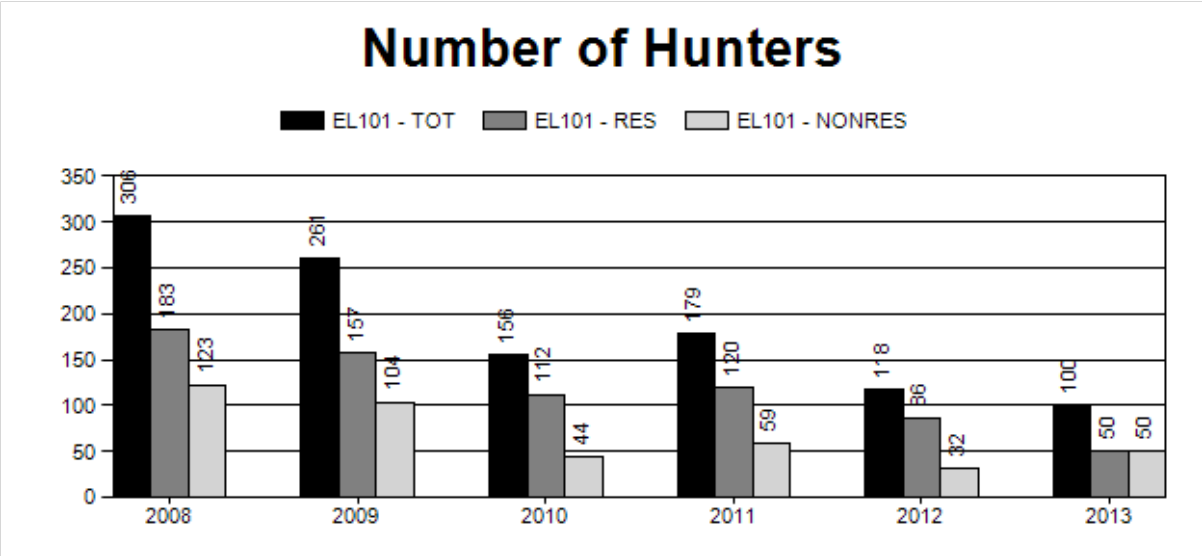
Population Objective:	200
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-12.5%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

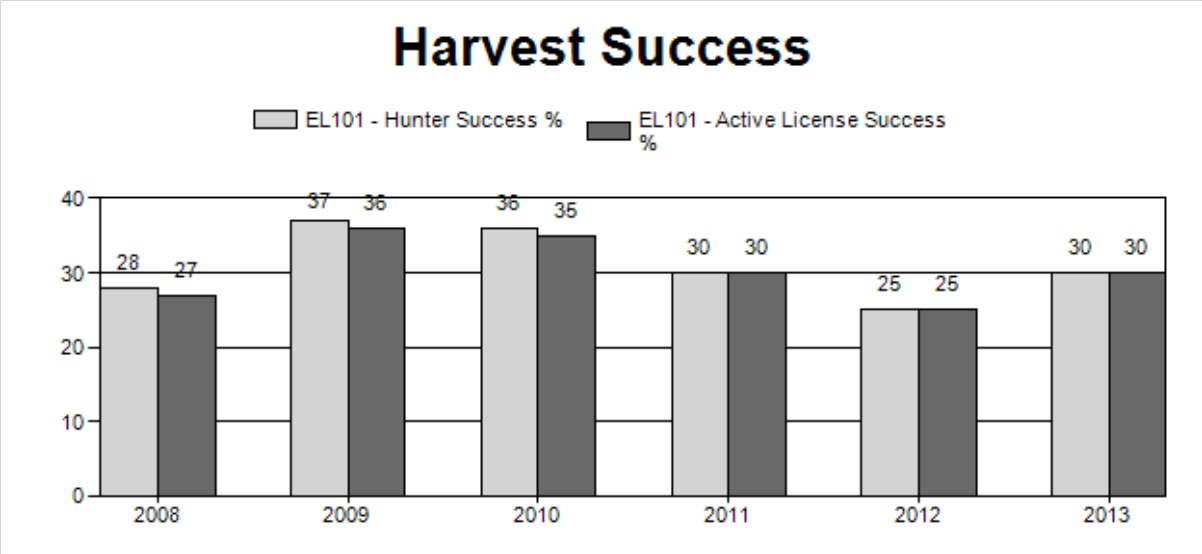
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

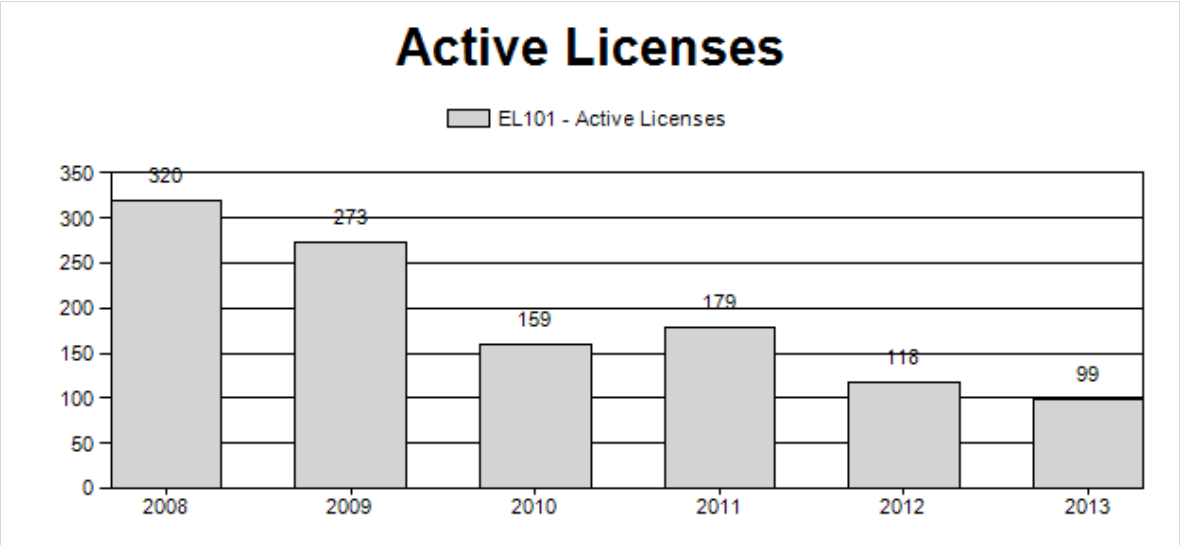
	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%

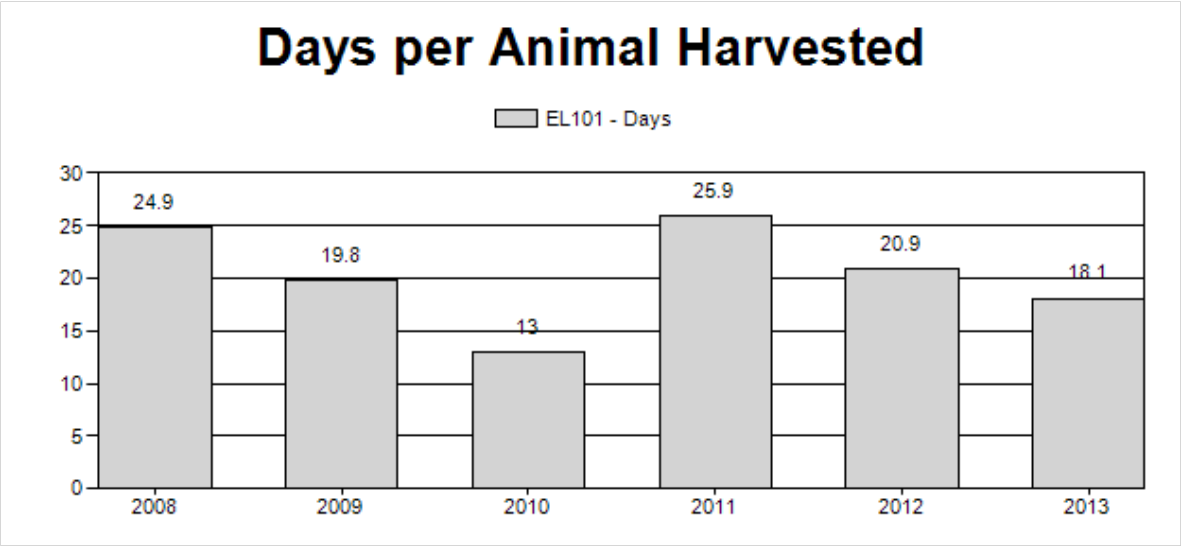


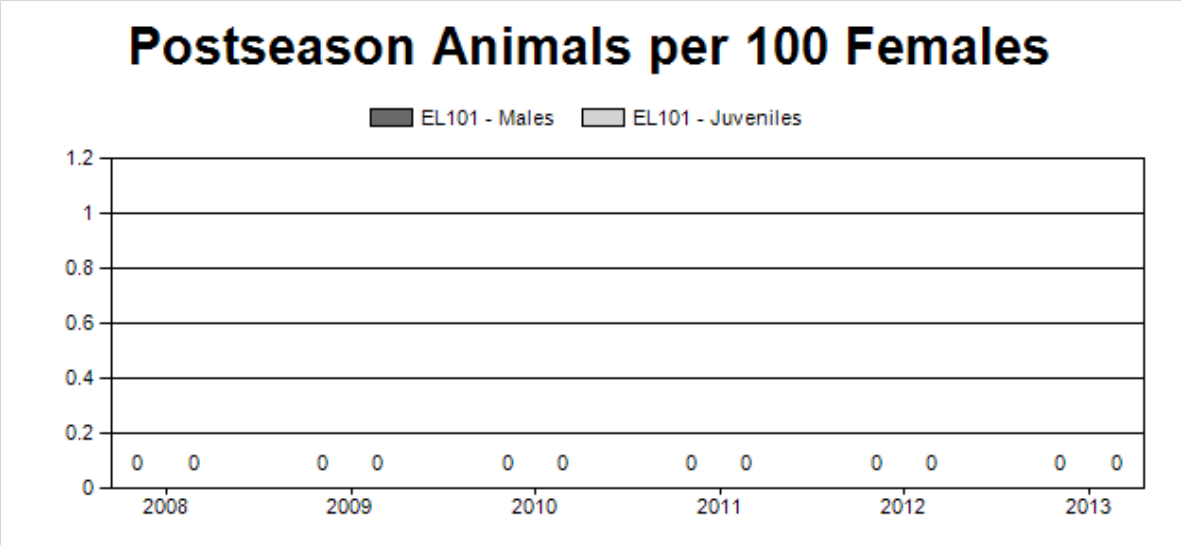

Harvest
EL101 - BULLS
EL101 - SPIKE
EL101 - FEMALES
EL101 - JUV
100
80
60
40
20
0
2008
2009
2010
2011
2012
2013


Number of Hunters
EL101 - TOT
EL101 - RES
EL101 - NONRES
350
300
250
200
150
100
50
0
2008
2009
2010
2011
2012
2013


Harvest Success
EL101 - Hunter Success %
EL101 - Active License Success %
40
30
20
10
0
28
27
37
36
36
35
30
30
25
25
30
30
2008
2009
2010
2011
2012
2013


Active Licenses
EL101 - Active Licenses
350
300
250
200
150
100
50
0
320
273
159
179
118
99
2008
2009
2010
2011
2012
2013


Days per Animal Harvested
EL101 - Days
30
25
20
15
10
5
0
24.9
19.8
13
25.9
20.9
18.1
2008
2009
2010
2011
2012
2013


Postseason Animals per 100 Females
EL101 - Males
EL101 - Juveniles
1.2
1
0.8
0.6
0.4
0.2
0
0 0
0 0
0 0
0 0
0 0
0 0
2008
2009
2010
2011
2012
2013

2008 - 2013 Postseason Classification Summary

for Elk Herd EL101 - TARGHEE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2009	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	175	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	175	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	

2014 HUNTING SEASONS
TARGHEE ELK HERD (EL101)

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

Special Archery Seasons

Hunt Area	Dates of Seasons	
	Opens	Closes
73	Sep. 1	Sep. 19

Management Evaluation

Current Postseason Population Management Objective: 200
Management Strategy: Recreational
2013 Postseason Population Estimate: ~150
2014 Proposed Postseason Population Estimate: ~150

The management objective for the Targhee elk herd is 200 elk. Spreadsheet models developed for this herd do not appear to adequately simulate observed trends and therefore managers will develop an alternative objective proposal in 2014. The management strategy for this herd is designated as Recreational Management.

Herd Unit Issues

This population is likely below the post season management objective based on anecdotal observations along the Wyoming-Idaho State line and harvest statistics. Post-season classification surveys are not flown in this herd due to budget constraints. More restrictive hunting seasons have been implemented to allow this population to increase. The herd unit objective will be reviewed in 2014.

Weather

Following an extremely dry summer and fall in 2012, weather conditions in 2013 were considerably wetter. The area received significant pulses of spring and fall moisture, which improved forage conditions for elk and other big game. Winter precipitation was reported at 109% of normal by mid-February 2014. Please refer to the following web sites for specific weather station data. **http://www.ncdc.noaa.gov/temp-and-precip/time-series** and **http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html**

Habitat

No habitat data has been collected on elk seasonal ranges in recent years. There are several historical vegetation transects that have not been monitored in the past 5 years. Several habitat improvement projects are being implemented in this herd unit, including the Hill Creek Prescribed Burn, which is scheduled for completion in 2014. This project will improve aspen communities for elk and other ungulates. Please refer to the 2013 Annual Report Strategic Habitat Plan Accomplishments for Jackson Region habitat improvement project summaries **(http://wgfd.wyo.gov/web2011/wildlife-1000708.aspx)**.

Field Data

No field data were collected in the Targhee Herd Unit during the 2013 biological year.

Harvest Data

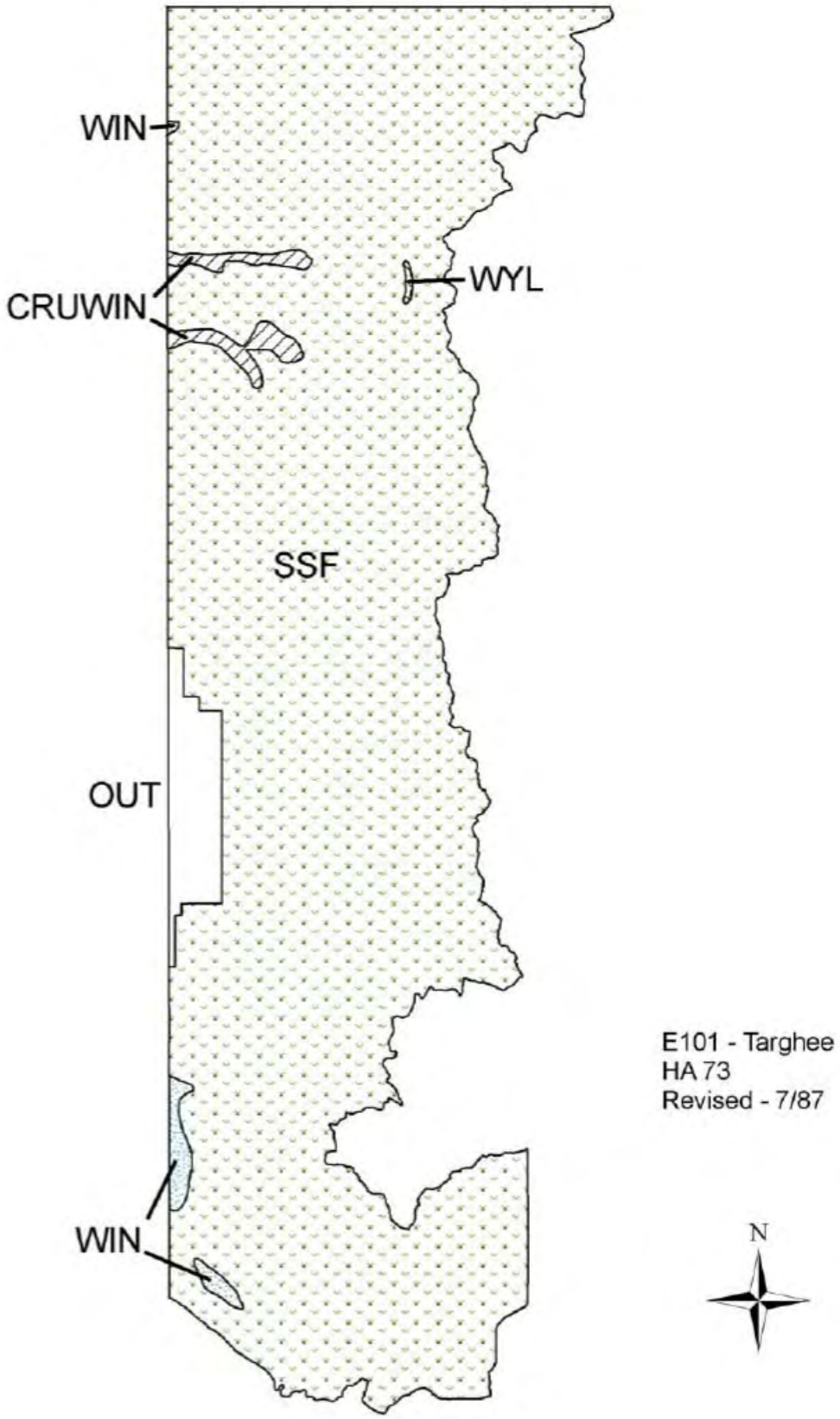
Based on harvest statistics, the density of elk in the Targhee Herd continues to be a concern. The overall number of elk harvested remained low in 2013 (n=29) as did the number of hunters (n=99). Antlerless elk seasons were eliminated in 2010 and the season was shortened 6 days in 2012.

Population

This population likely declined following liberal hunting seasons in Idaho. Data are limited in this population and spreadsheet models developed for this population do not simulate observed trends.

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 recruitment in this population a spikes excluded season was implemented in 2013 and will continue in 2014. There will be no changes to hunting seasons in 2014.


WIN
CRUWIN
WYL
SSF
OUT
WIN
E101 - Targhee
HA 73
Revised - 7/87
N

2013 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL102 - JACKSON

HUNT AREAS: 70-72, 75, 77-83, 777, 888, 899

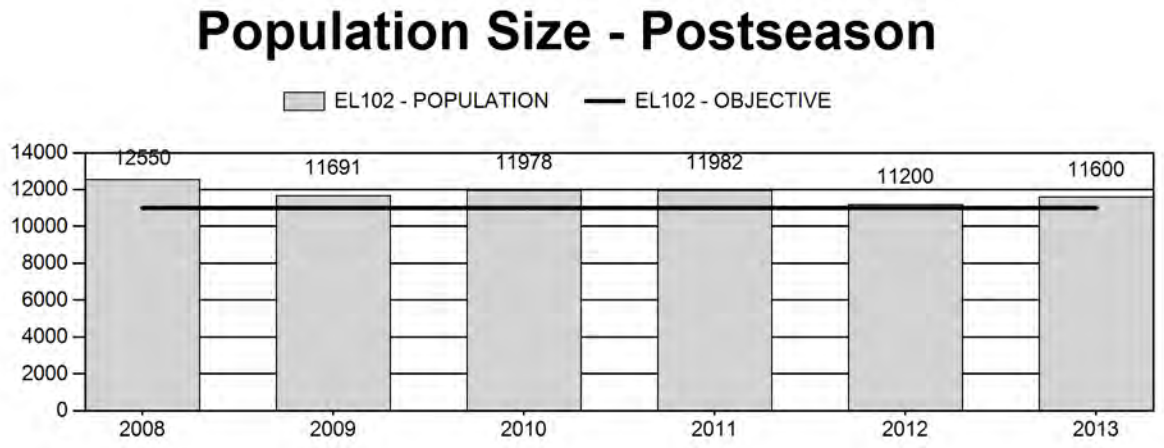
PREPARED BY: ALYSON COURTEMANCH

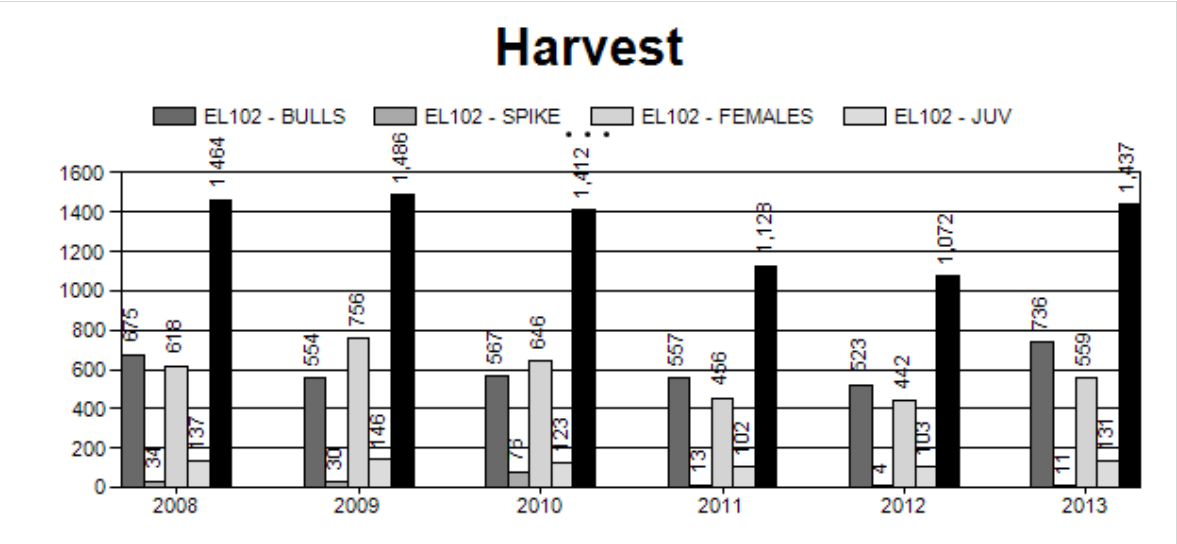
	2008 - 2012 Average	2013	2014 Proposed
Population:	11,880	11,600	11,500
Harvest:	1,312	1,437	1,400
Hunters:	3,319	2,874	2,900
Hunter Success:	40%	50%	48%
Active Licenses:	3,403	2,983	2,900
Active License Percent:	39%	48%	48%
Recreation Days:	23,090	19,517	19,000
Days Per Animal:	17.6	13.6	13.6
Males per 100 Females	29	30	
Juveniles per 100 Females	22	21	

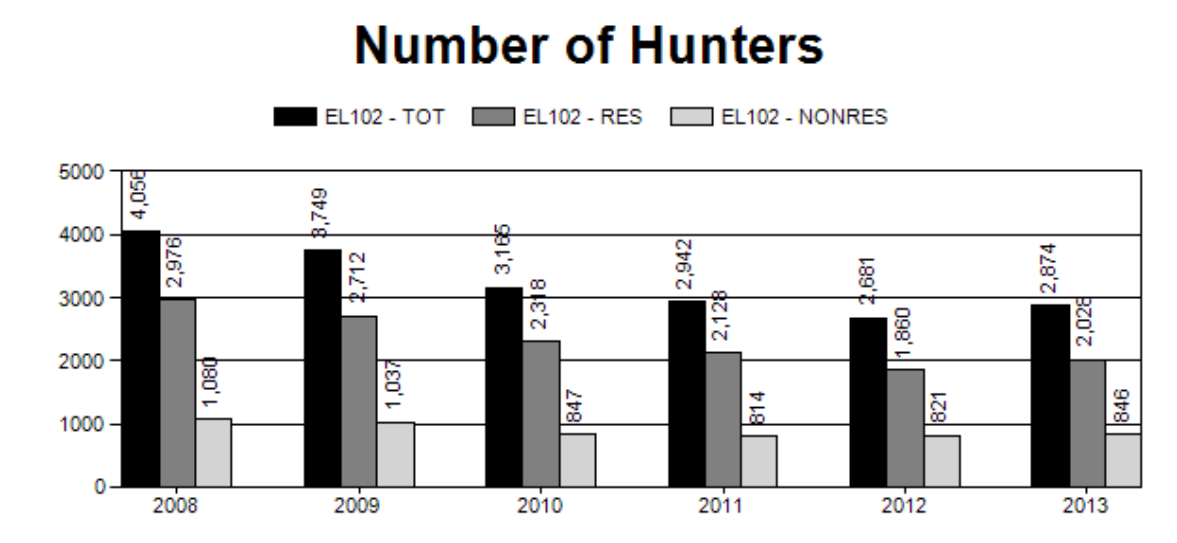
Population Objective:	11,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	5%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

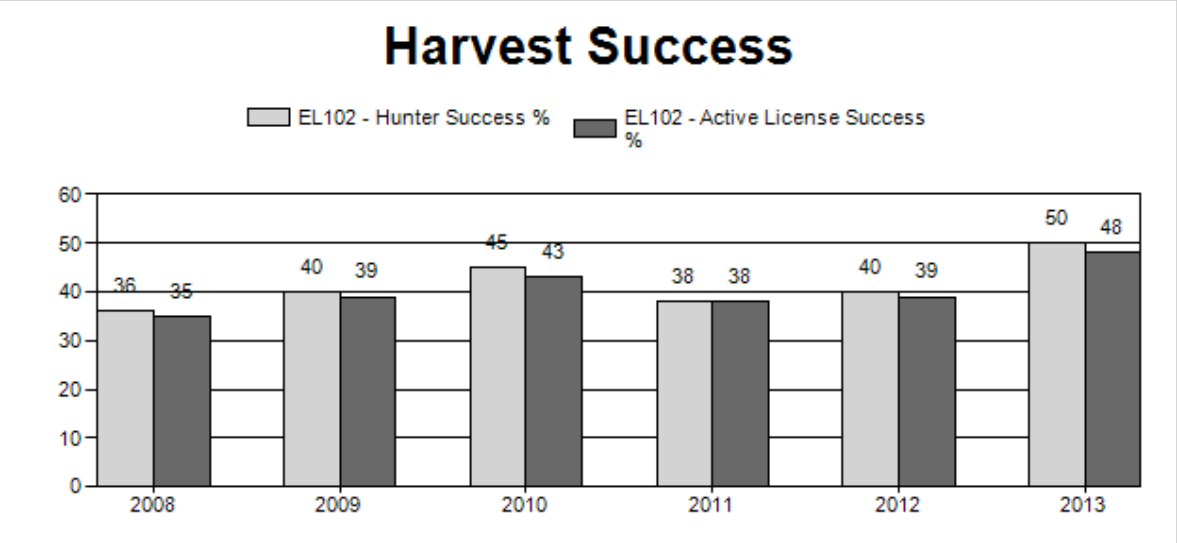
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

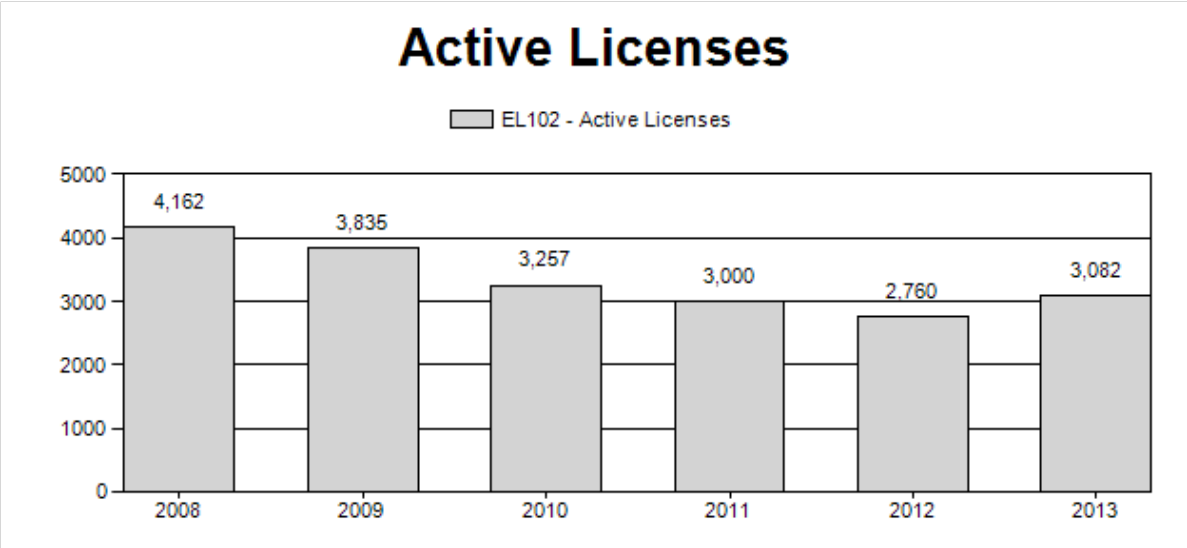
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%

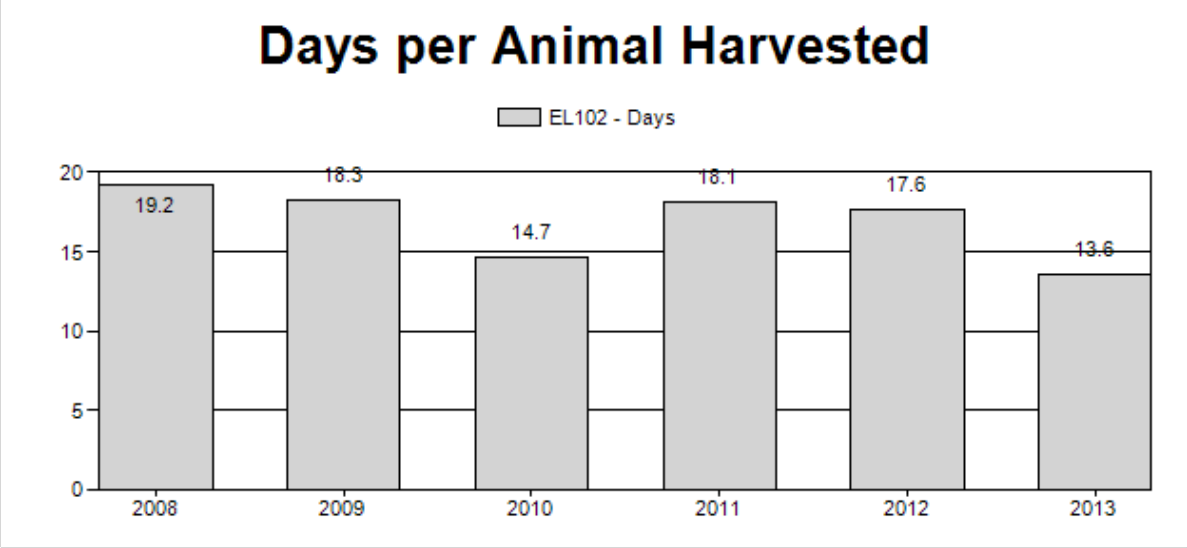


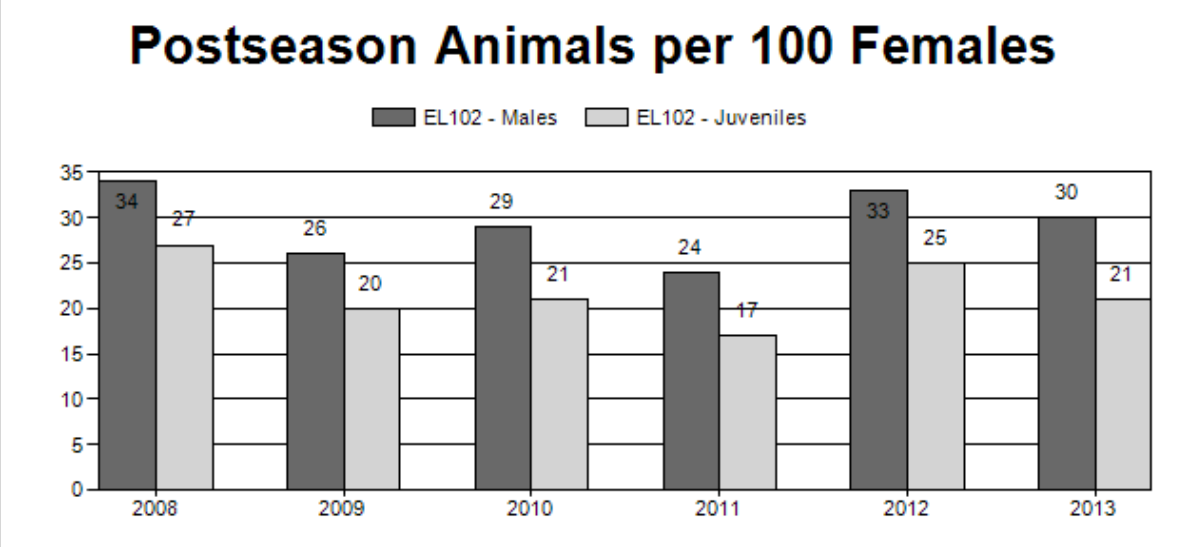

Harvest
EL102 - BULLS
EL102 - SPIKE
EL102 - FEMALES
EL102 - JUV
1600
1400
1200
1000
800
600
400
200
0
675
34
618
137
1,464
554
30
756
146
1,486
567
75
646
123
1,412
557
13
456
102
1,123
523
4
442
103
1,072
736
11
559
131
1,437
2008
2009
2010
2011
2012
2013

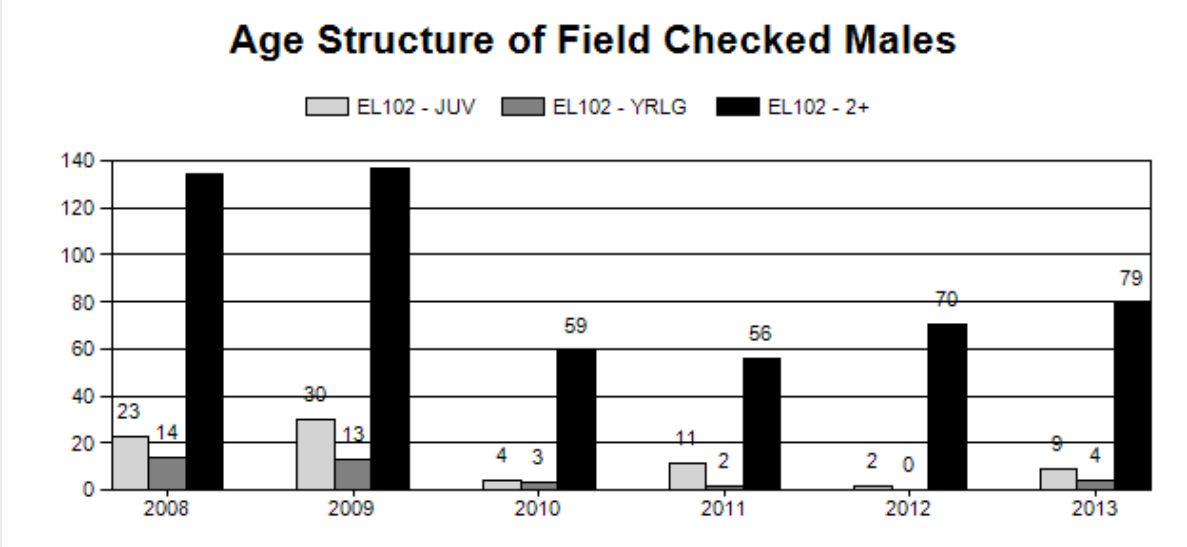

Number of Hunters
EL102 - TOT
EL102 - RES
EL102 - NONRES
5000
4000
3000
2000
1000
0
4,056
2,976
1,080
3,749
2,712
1,037
3,165
2,318
847
2,942
2,128
814
2,681
1,860
821
2,874
2,028
846
2008
2009
2010
2011
2012
2013

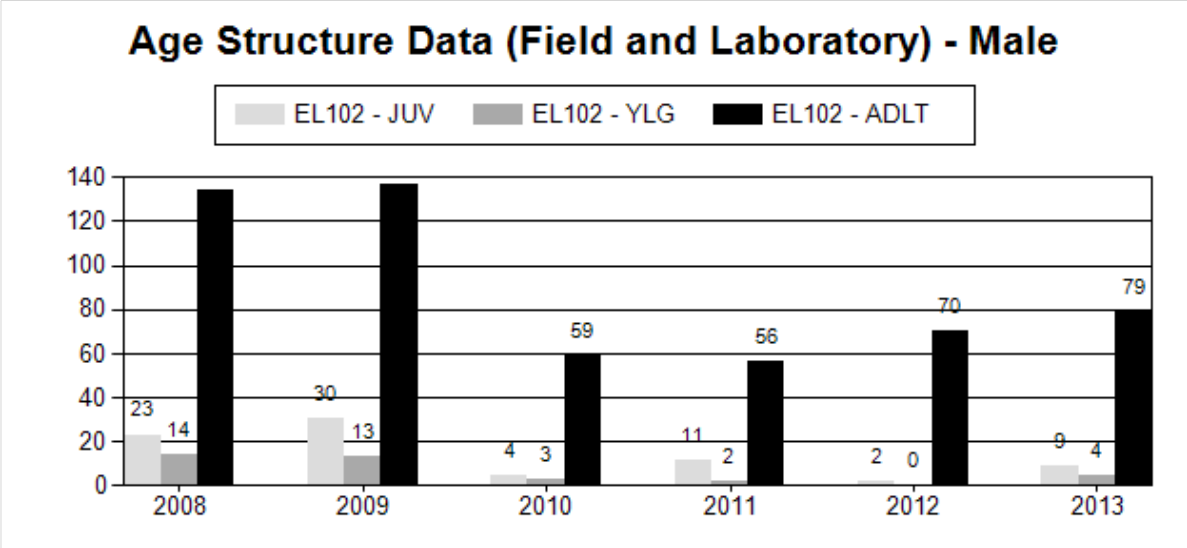

Harvest Success
EL102 - Hunter Success %
EL102 - Active License Success %
60
50
40
30
20
10
0
36
35
40
39
45
43
38
38
40
39
50
48
2008
2009
2010
2011
2012
2013

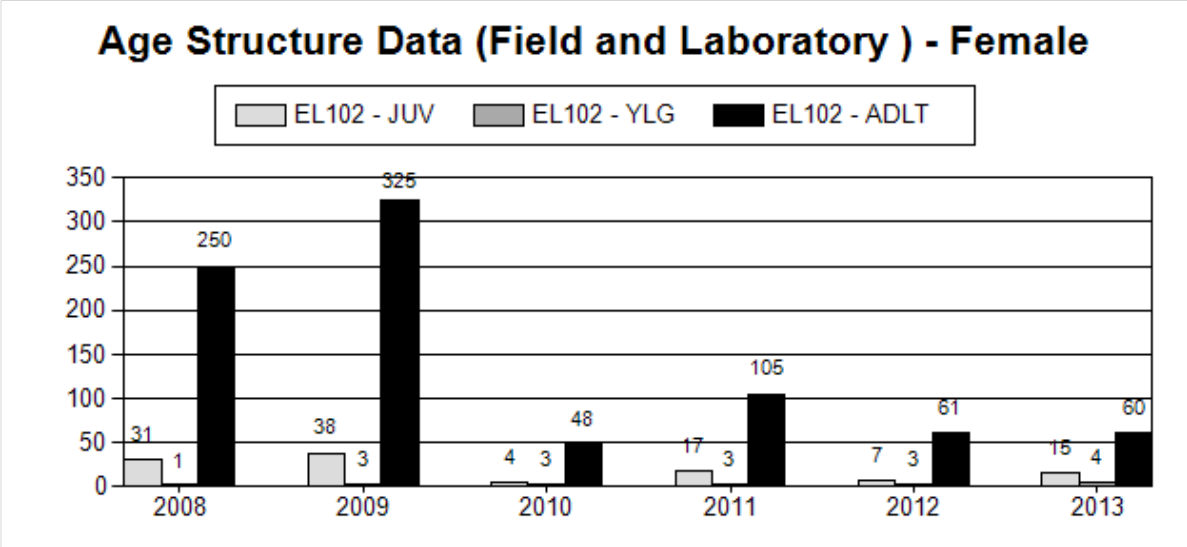

Active Licenses
EL102 - Active Licenses
5000
4000
3000
2000
1000
0
4,162
3,835
3,257
3,000
2,760
3,082
2008
2009
2010
2011
2012
2013


Days per Animal Harvested
EL102 - Days
20
15
10
5
0
19.2
18.3
14.7
18.1
17.6
13.6
2008
2009
2010
2011
2012
2013


Postseason Animals per 100 Females
EL102 - Males
EL102 - Juveniles
35
30
25
20
15
10
5
0
34
27
26
20
29
21
24
17
33
25
30
21
2008
2009
2010
2011
2012
2013


Age Structure of Field Checked Males
EL102 - JUV
EL102 - YRLG
EL102 - 2+
140
120
100
80
60
40
20
0
23
14
30
13
4
3
59
11
2
56
2
0
70
9
4
79
2008
2009
2010
2011
2012
2013


Age Structure Data (Field and Laboratory) - Male
EL102 - JUV
EL102 - YLG
EL102 - ADLT
140
120
100
80
60
40
20
0
23
14
30
13
4
3
59
11
2
56
2
0
70
9
4
79
2008
2009
2010
2011
2012
2013


Age Structure Data (Field and Laboratory) - Female
EL102 - JUV
EL102 - YLG
EL102 - ADLT
350
300
250
200
150
100
50
0
31
1
250
38
3
325
4
3
48
17
3
105
7
3
61
15
4
60
2008
2009
2010
2011
2012
2013

2008 - 2013 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
2008	12,550	585	1,588	2,173	21%	6,324	62%	1,697	17%	10,194	464	9	25	34	± 0	27	± 0	20
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 HUNTING SEASONS
JACKSON ELK HERD (EL102)

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
70		Sep. 20	Oct. 31		General	Antlered elk, spikes excluded – SEE SECTION 6
		Nov. 1	Nov. 2		General	Antlered elk, spikes excluded; valid north and west of Pacific Creek and Mink Creek – SEE SECTION 6
71		Sep. 20	Nov. 2		General	Antlered elk, spikes excluded – SEE SECTION 6
72						CLOSED
75	4	Oct. 18	Nov. 30	200	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
		Dec. 1	Dec. 7			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
		Oct. 18	Nov. 2			Unused Area 75 Type 4 licenses also valid in Area 79 – SEE SECTIONS 6 and 7
	6	Oct. 18	Nov. 30	450	Limited quota	Cow or calf; the Snake River Bottom portion of Area 75 shall be closed - SEE SECTIONS 6 and 7

		Dec. 1	Dec. 7			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. 11	Oct. 12			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
		Oct. 13	Oct. 19			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
		Oct. 20	Dec. 14			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	50	Limited quota	Any elk - SEE SECTION 6
	6	Aug. 15	Sep. 9	125	Limited quota	Cow or calf, valid on private land, access to private land is limited – SEE SECTION 6
		Sep. 10	Jan. 31			Unused Area 78 Type 6 licenses valid in the entire area – SEE SECTION 6
	7	Aug. 15	Jan. 31	100	Limited quota	Unused Area 78 Type 6 licenses valid in the entire area - SEE SECTION 6
79		Oct. 18	Nov. 2			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
		Nov. 1	Nov. 16		General	Antlerless elk - SEE SECTION 6
	6	Oct. 18	Nov. 16	100	Limited quota	Cow or calf – SEE SECTION 6
		Nov. 17	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
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
	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	Dates of Seasons	
	Opens	Closes
83	Sep. 1	Sep. 30
70, 71	Sep. 1	Sep. 19
78, 80-82	Sep. 1	Sep. 25

Summary of 2014 License Changes

Hunt Area	Type	License	Quota change from 2013	Other changes from 2013
70		General		-1 day
71		General		-1 day
75	4	Limited quota	-50	+14 days to Antelope Flats area before closing.
	6	Limited quota	+50	+14 days to Antelope flats area before closing.
78	6	Limited quota	-50	+2 days
	7	Limited quota	+50	+2 days
80		General		-1 day for period before partial closure of hunt area. Change closure area to north of the Sheep Creek Road (U.S.F.S. Road 30445).
	6	Limited quota	+50	Change closure area to north of the Sheep Creek Road (U.S.F.S. Road 30445)

<u>Management Evaluation</u>
Current Postseason Population Management Objective: 11,000
Management Strategy: Recreational
2013 Postseason Population Estimate: ~11,600
2014 Proposed Postseason Population Estimate: ~11,500

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 11,600 elk. Low calf productivity from the northern herd segments and liberal antlerless elk hunting seasons on the southern migratory segment has reduced the population to within 10% of the desired population objective.

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 exurban landscapes in the southern herd segments.

Weather

Following an extremely dry summer and fall in 2012, weather conditions in 2013 were considerably wetter. The area received significant pulses of spring and fall moisture, which improved forage conditions for elk and other big game. At the time of the mid-winter survey, winter precipitation was reported at 109% of normal. Please refer to the following web sites for specific weather station data. **http://www.ncdc.noaa.gov/temp-and-precip/time-series** and **http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html**

Habitat

There are several established aspen transects on elk winter and transitional ranges in the Gros Ventre, 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, but has not been compiled. 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. This project is scheduled to continue through at least 2016. The Dry Quad Prescribed Burn was completed in fall 2013 in cooperation with Bridger-Teton National Forest to improve elk and moose habitat. The burn treated approximately 60 acres of decadent aspen stands south of Spread Creek. Please refer to the 2013 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 – 27, 2014. A total of 11,423 elk were counted including 7,560 females, 1,585 calves, 659 yearling males, and 1,619 adult males. Herd Unit ratios were 21 calves:100 cows, 21 adult males:100 cows and 9 yearling males:100 cows. Approximately 73% of the herd was counted on southern portions of the National Elk Refuge (NER), while 17% was split between the Patrol Cabin and Fish Creek feedgrounds in the Gros Ventre. Only 10% of the herd was observed on native winter range, compared to 19% last year. This distribution shift to feedgrounds this winter is likely due to the above average snowpack. The distribution shift led to approximately 2,000 more elk on feed this winter on the

NER than last year. The area experienced relatively shallow snow depths for much of December and January, contributing to the NER and WGFD decision to delay the initiation of elk feeding until February 4, 2014, which is 9 days later than the average date of January 26. Several large snowstorms in early February caused elk to move onto feedgrounds and by the time of the postseason classification surveys, we observed relatively few elk on native ranges in the northern portion of the NER, Hunt Area 80, and in southern Grand Teton National Park (GTNP).

Preseason elk classification surveys were flown by GTNP personnel July 31 and August 1, 2013. A total of 923 elk were classified in the Central Valley, Elk Ranch/Uhl Hill, and Willow Flats areas of GTNP including 588 cows, 176 calves, 106 mature bulls and 53 yearling bulls. Ratios were 34 calves:100 cows and 38 mature bulls:100 cows.

Postseason calf:cow ratios have improved in the upper Gros Ventre, east of Crystal Creek, over the past two years. Calf:cow ratios were lowest in 2009 and 2010, being observed at 13:100 and 11:100 respectively. Ratios improved in 2012 at 23:100 and were similar this year at 22:100. Mature bull ratios continue to be low; this year the ratio was 8 mature bulls per 100 cows. Spike bull ratios were up slightly at 8:100 compared to 5:100 in 2012 and 6:100 in 2011. In comparison, calf:cow ratios were higher this year on the National Elk Refuge at 20:100 versus 15:100 in 2012.

Increased numbers of elk on southern portions of the NER this year suggests that current management direction to maintain liberal seasons on elk that migrate from the southern portion of the herd unit is needed, while keeping a conservative season structure for elk that migrate longer distances from the northern segments of the herd. 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 2013 harvest continued to focus hunting pressure on southern GTNP elk with most cow harvest occurring in Area 75 (226 cows), followed by Area 77 (134 cows). The most mature bull harvest occurred in Area 81 (263 bulls). Hunter numbers in 2013 increased for the first time in the past 6 years to 2,874, an increase 183 from 2012. Hunter success was also the highest it has been in the past 6 years at 50%.

Total bull harvest has been declining in the Jackson herd since 2001. However, bull harvest increased substantially this year to 736 mature bulls, a 40% increase over last year. This was partly due to weather events during the 2013 season that increased harvest success. 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 2012 or 2013. Spikes excluded seasons were initiated in 2007 in Areas 81-83 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.

Population

The 2013 mid winter trend count indicates that this population remained relatively stable near the population objective of 11,000. The small increase observed this year (372 more animals counted) may be a factor of improved counting conditions due to consistent deep snow in the region and or a potential increase in the population.

Management Summary

Hunting seasons in 2014 will again focus hunting pressure on southern resident elk 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 the same as 2013, closing on November 2. 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 on November 16 to protect northern migrants while allowing hunters to access these areas when Snake River corridor elk are likely available to harvest. The southern portion of Area 80 (south of the Sheep Creek Road) will close on November 30 to coincide with winter closures on Bridger-Teton National Forest. Area 75 will close on December 7, Area 77 will close on December 14, and Area 78 will close on January 31. The Antelope Flats portion of Area 75 will remain open until November 30 this year, which is 2 weeks longer than last year. These later closing dates are designed to maintain hunting pressure on elk from southern GTNP and private lands along the Snake River. In addition, Type 6 licenses will be increased in Area 75 and Area 80, and a Type 7 (archery or muzzleloader only) license will be added in Area 78 to facilitate antlerless harvest on private lands. Recent pre-season classification surveys indicate that elk in the southern portion of the herd unit reproduce at twice the rate of migratory elk from the northern migratory herd segments. Land along the Gros Ventre River south of Kelly Road will remain open to hunting this year and elk hunters will again be allowed to access the NER in this area while the Snake River Bottom portion of Area 75 will be closed to hunters again this year. The annual Grand Teton National Park elk reduction program are attached in Appendix A.

Bibliography

Anderson, C.C. 1958. The elk of Jackson Hole. Bull. 10. WY. Game and Fish Comm. 184pp.

Anderson C.R., D.S. Moody, B.L. Smith, F.G. Lindzey, and R.P. Lanka. 1998. Development and evaluation of sightability models for summer elk surveys. Journal of Wildlife Management. 62:1055–1066.

Bailey, J. R. 1999. A working model to assist in determining initiation of supplemental feeding of elk and a carrying capacity model for the National Elk Refuge, Jackson, Wyoming. M.S. Thesis. University of Wyoming. Laramie, Wyoming. 83pp.

Barbknecht, A. E., W. S. Fairbanks, E. J. Maichek, J. D. Rogerson, and B. Scurlock. 2008. Elk parturition site selection at local and landscape scale in western Wyoming. M. S. Thesis, Iowa State University, Ames, IA. 97pp

Boyce M.S. 1989. The Jackson herd: intensive wildlife management in North America. Cambridge University Press, Cambridge, United Kingdom.

Brown, R.C. 1947. The Jackson Hole Elk Herd. WY. Wldl.11(12);4-32.

Casebeer, R.L. 1960. A preliminary chronology and bibliography on the Jackson Hole elk herd and closely related materials. Special Report by USFS, Jackson WY.16pp.

Cole, G. F. 1969. The elk of Grand Teton and southern Yellowstone National Parks. National Park Service Res. Rpt. GRTE – N – 1. Washington, D. C. 80pp.

Craighead, J .J. 1958. A biological and economic appraisal of the Jackson Hole elk herd. New York Zoological Society, New York, NY, USA.

Cromley, C.M. 2000. Historical Elk Migrations Around Jackson Hole, Wyoming. *In* "Developing Sustainable Management Policy for the National Elk Refuge, Wyoming. Yale School of Forestry and Environmental Studies. Bull. No. 104. pp. 53-65.

Cross, P. C., W. H. Edwards, B. M. Scurlock, E. J. Maichak, and J. D. Rogerson. 2007. Effects of management and climate on elk brucellosis in the Greater Yellowstone Ecosystem. Ecological Applications 17: 957-964.

Dean, R. E., B. B. Compton, P. Douglas, J. Ellenberger, J. McGowan, E. Miquez, and S. Werbelow. 2004. Feeding deer and elk by state governments in the Western U.S.A. *In* S. Tessmann, editor, Proceedings of 2003 Western States/Province Deer and Elk Workshop. Wyoming Game and Fish Department.

Dean, R. E., S. Werbelow, and B. Holz. 2004. A note on the effects of introduced wolves on the operations of elk feedgrounds in Western Wyoming. *In* S. Tessmann, editor, Proceedings of 2003 Western States/Province Deer and Elk Workshop. Wyoming Game and Fish Department.

Hobbs, N. T., G. Wockner, and F. J. Singer. 2003. Assessing management Alternatives for ungulates in the Greater Teton Ecosystem using simulation modeling. Natural Resources Ecology Laboratory, Fort Collins, CO., 63pp.

Houston D.B. 1982. The Northern Yellowstone elk. Macmillan Publishing, New York, New York, USA.

Middleton AD, Morrison TA, Fortin JK, Robbins CT, Proffitt KM, White PJ, McWhirter DE, Koel TM, Brimeyer DG, Fairbanks WS, Kauffman MJ. 2013. Grizzly bear predation links the

loss of native trout to the demography of migratory elk in Yellowstone. Proc R Soc B 280: 20130870. http://dx.doi.org/10.1098/rspb.2013.0870

Preble, E.A. 1911. Report on Conditions of elk in Jackson Hole, Wyoming, in 1911. U.S.D.A. Biol. Bull. 40, 23 pp.

Sauer J.R., and M.S. Boyce. 1983. Density dependence and survival of the elk in northwestern Wyoming. Journal of Wildlife Management. 47:31–37.

Smith B.L., and R.L. Robbins. 1994. Migrations and management of the Jackson elk herd. National Biological Survey Resource Publication 199, Washington, D.C., USA.

Smith B.L., and S.H. Anderson. 1996. Patterns of neonatal mortality of elk in northwestern Wyoming. Canadian Journal of Zoology. 74:1229–1237.

Smith, B. L. 2001. Winter feeding of elk in western North America. Journal of Wildlife Management 65: 173-190.

Smith B.L., and T.L. McDonald. 2002. Criteria for improving field classification of antlerless elk. Wildlife Society Bulletin. 30:200–207.

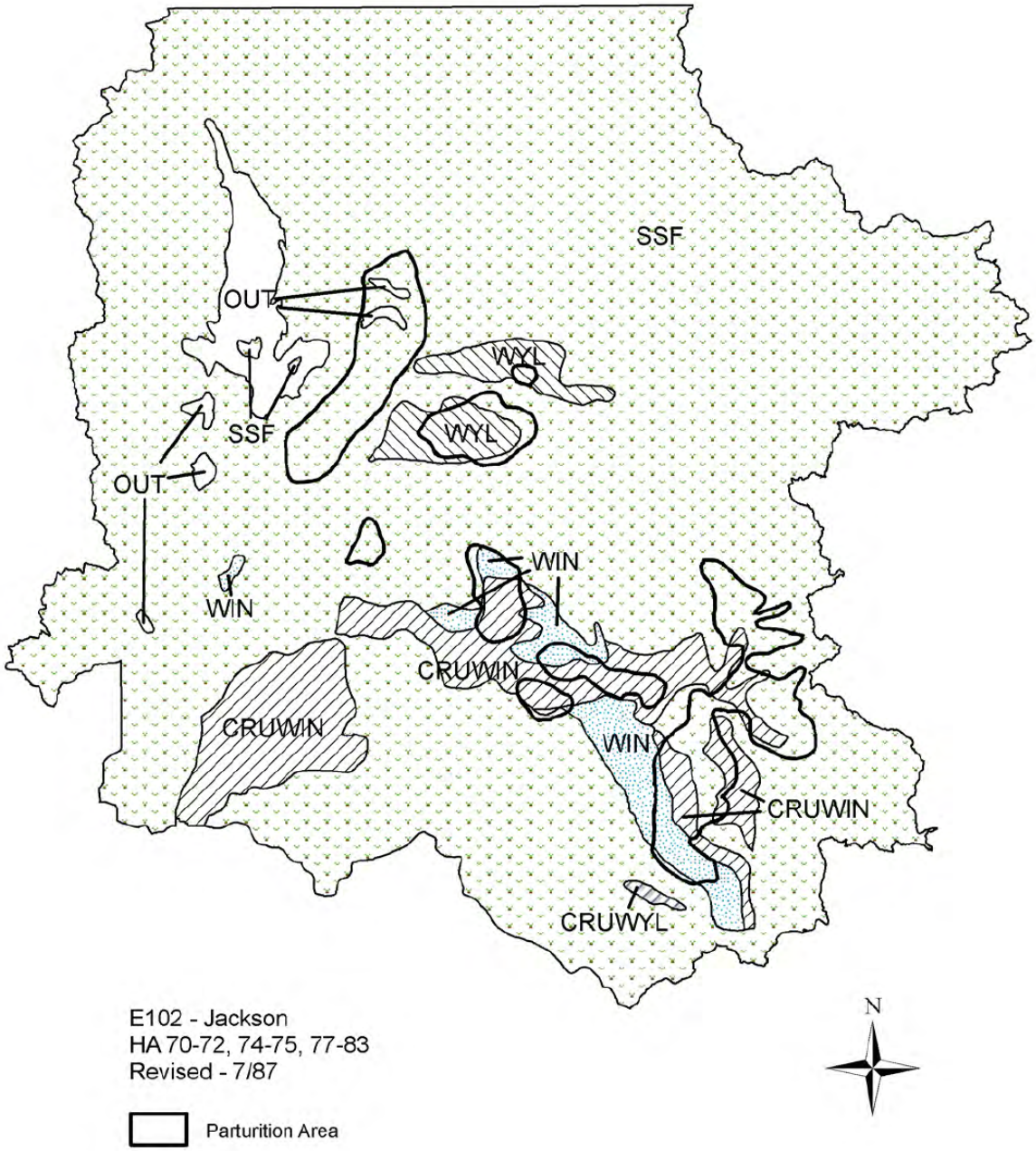
Smith B.L., R.L. Robbins, and S.H. Anderson. 1997. Early development of supplementally fed, free-ranging elk. Journal of Wildlife Management. 61:26–38.

Smith B.L., E.S. Williams, K.C. Mcfarland, T.L. McDonald, G. Wang, T.D. Moore, and F.G. Lindzey. In press Colonizing carnivores and predation on neonatal elk in Wyoming. Biological Technical Publication R6001-2005. U.S. Fish and Wildlife Service, Washington, D.C., USA.

Thorne E. T., J. K. Morton, and W. C. Ray. 1979. Brucellosis, its effect and impact on elk in western Wyoming. Pages 212-220 *in* M. S. Boyce and L. O. Hayden-Wing editors. North American elk: ecology, behavior, and management. University of Wyoming, Laramie, WY, USA.

Thorne, E. T., T. J. Walthall, and H. A. Dawson. 1981. Vaccination of elk with strain 19. Proceedings of the United States Animal Health Association 82:359-374.

Wachob & C, Smith 2003. Elk migration through a human dominated landscape in Jackson Hole, Wyoming. Final report.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Parturition Area

2013 Jackson Elk Monitoring Annual Report
Permit #798

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Project Background

The Jackson elk herd ranges across 2,100 square miles, about 98 percent of which is federally administered. The herd is composed of four segments that migrate to distinct summer ranges in Grand Teton National Park, the Gros Ventre drainage, Teton Wilderness, and southern Yellowstone National Park. Herd management is complex because the elk occupy two national parks, and large expanses of designated wilderness. During the winter elk migrate to winter ranges on and adjacent to the National Elk Refuge or the three feedgrounds in the Gros Ventre drainage.

The postseason population objective for the Jackson Elk herd is 11,000 elk. The current trend counts indicate the Jackson elk herd is within 10% of the postseason objective. While the overall population may be at objective managers believe resident elk populations from Yellowstone National Park (YNP), Teton Wilderness and Gros Ventre are below desired population goals and that the current population estimate is influenced by a growing elk population residing along the Snake River corridor near Jackson.

Migratory elk from the northern portion of the Jackson Elk Herd have lower calf:cow ratios than do elk in the southern portion of the herd unit near developed areas. The lower calf:cow ratios observed in the northern portion of the herd unit are likely influenced by predation.

In addition to the lower calf:cow ratios, winter trend data collected from the northern portion of the herd unit also indicate elk numbers have declined. These changes are in part due to lower calf:cow ratios although predator densities are likely influencing elk distribution in this area. In the Buffalo Valley, an average of 766 elk was observed annually on winter ranges from 1999 – 2005. During surveys conducted from 2006 – 2012 the average number of elk observed was 70 percent lower (230 elk) (Figure 1).

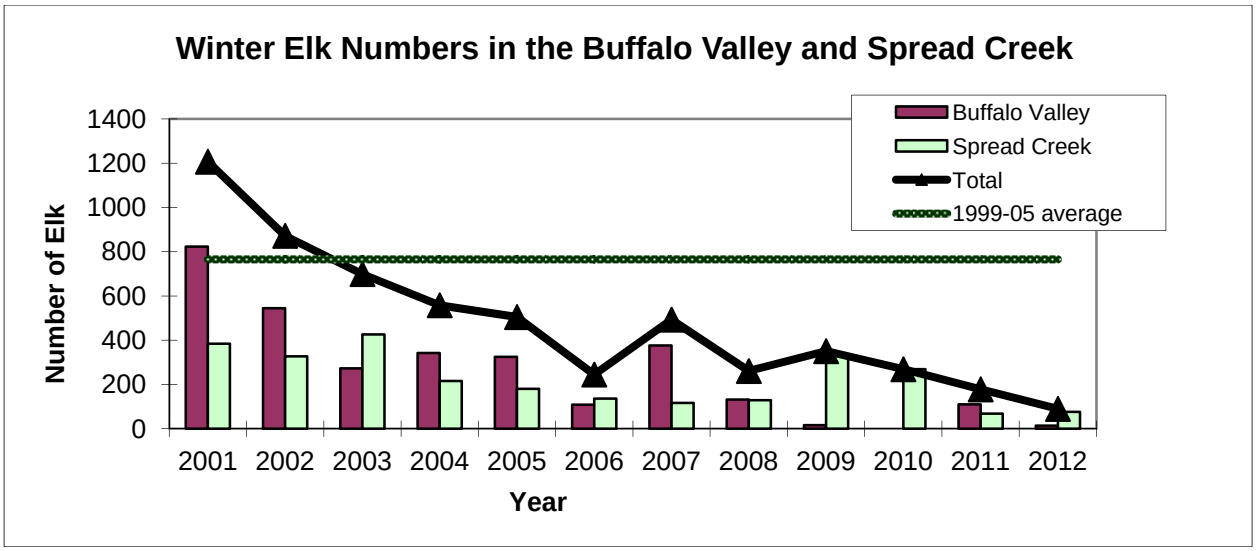


Figure 1. Winter elk numbers within the Buffalo Valley/Spread Creek area 1999 – 2011.

Harvest strategies have also changed during this time. Since the 1990s Hunt Area 79 has been managed as a limited quota hunt area focusing on resident elk in northern GTNP and migratory elk from YNP. An average of 1,760 licenses were issued annually from 1994 – 2000. During 2001 managers began to decrease the number of licenses available for this area. A total of 25 antlerless licenses were issued in 2012 and in 2013 no licenses were issued specifically for Area 79(Figure 2). Instead hunters with an Area 75 Type 4 license were allowed to hunt in Area 79 through November 3.

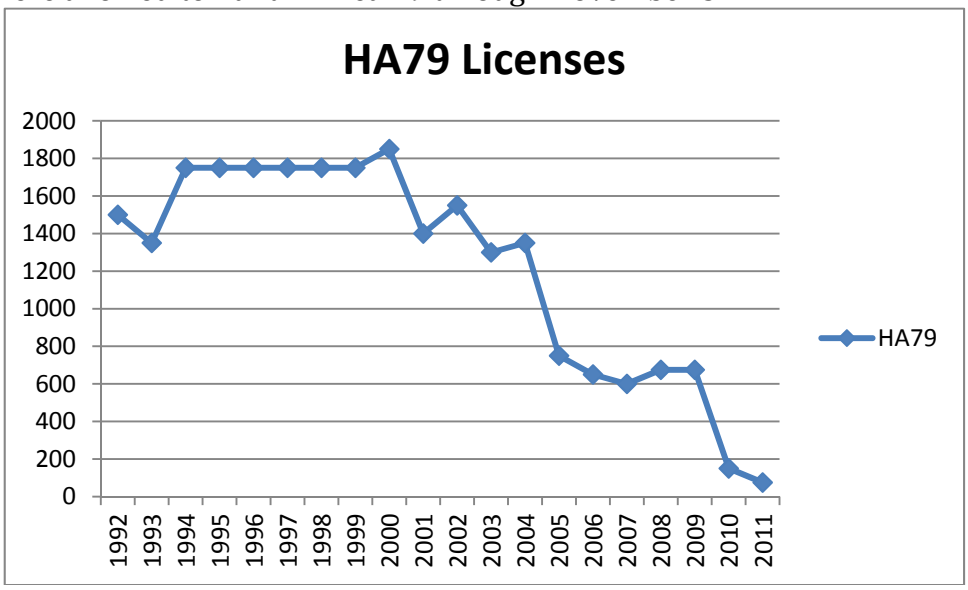


Figure 2. Limited quota license quotas for Hunt Area 79 in GTNP from 1992 - 2011.

Results

In January 2012, eight adult female elk were captured and radio collared in the Buffalo Valley near the southern boundary of Hunt Area 70 (Table 1). A breakaway mechanism on the GPS collar is programmed to release when elk are on winter ranges during March 2014.

Elk were also collared with a micro VHF collar which will begin transmitting continuously during the daytime hours after the GPS collars drop off in 2014. Depending on temperature these collars are expected to transmit through 2019.

During 2013 elk caputred in the Buffalo Valley were relocated periodically during the year. Additional efforts will be made during February and March 2014 to locate these animals before scheduled collar drop.

Table 1. Radio collared elk markings and capture locations during 2012. Note: Elk 707 radio collar put on an elk at the Patrol Cabin Feedground after 707 was killed by wolves in the Buffalo Valley.

VISnumber	ID	GPSFREQ	MODFREQ	EARTAG1	EARTAG2	AGE	CaptureE	CaptureN
1A	**701**	166.3870	SAME	G8404	8405	**5**	545575	4852465
2A	**702**	166.4670	SAME	G8406	8407	**5**	547746	4854433
3A	**703**	166.4880	SAME	G8408	8409	**6**	549894	4852379
4A	**704**	167.6400	SAME	G8410	8411	**4**	546253	4852138
5A	**705**	166.6800	SAME	G8412	8413	**2**	544633	4853057
6A	**706**	166.6900	SAME	G8414	8415	**4**	547746	4851514
7A	**707**	166.7100	SAME	35DXV7199		**4**	547377	4855213
8A	**708**	166.7600	SAME	G8418	8419	**ad**	544540	4853210
7A	**540**	166.7100	SAME	gv0033	gv0034		556643	4824440

Note: Elk 7A originally tagged by Iowa State in the Buffalo Valley March 1, 2006.

During 2013, twelve elk were captured in southern Yellowstone National Park (Figure 3). Similar to the Buffalo Valley captures, elk were double radio collared to provide a two tiered data collection sequence including an intensive period to monitor distribution and movements followed by a less intensive period to continue monitoring demographic parameters and migration timing. To accomplish this, each elk was fitted with Lotek global positioning system (GPS) and Telonics (Mod 400) micro very high frequency (VHF) radio collar (Table 2). The micro collars transmit during a two hour interval every other day and start transmitting every day for 12 hours December 15, 2014. A breakaway mechanism on the GPS collar is programmed to release when elk are on winter ranges January 15, 2016. The transmission overlap will help when locating animals should the GPS collar fail. Two (17%) of the 12 elk captured in July tested positive for brucellosis. During the first two weeks of monitoring, elk 910 was detected on mortality. The cause of mortality was undetermined but and likely related to capture. Elk 915 was detected on mortality August 26 and due to fire activity and weather patterns this collar was not retrieved until October. The cause of death was undetermined.

Project objectives are to describe spatial and temporal patterns in elk movements and survival for the northern migrants in the Jackson elk herd, examine variations among herd segments within a year and from year to year and evaluate distribution of elk within the homeranges of the wolf packs in Jackson Hole.

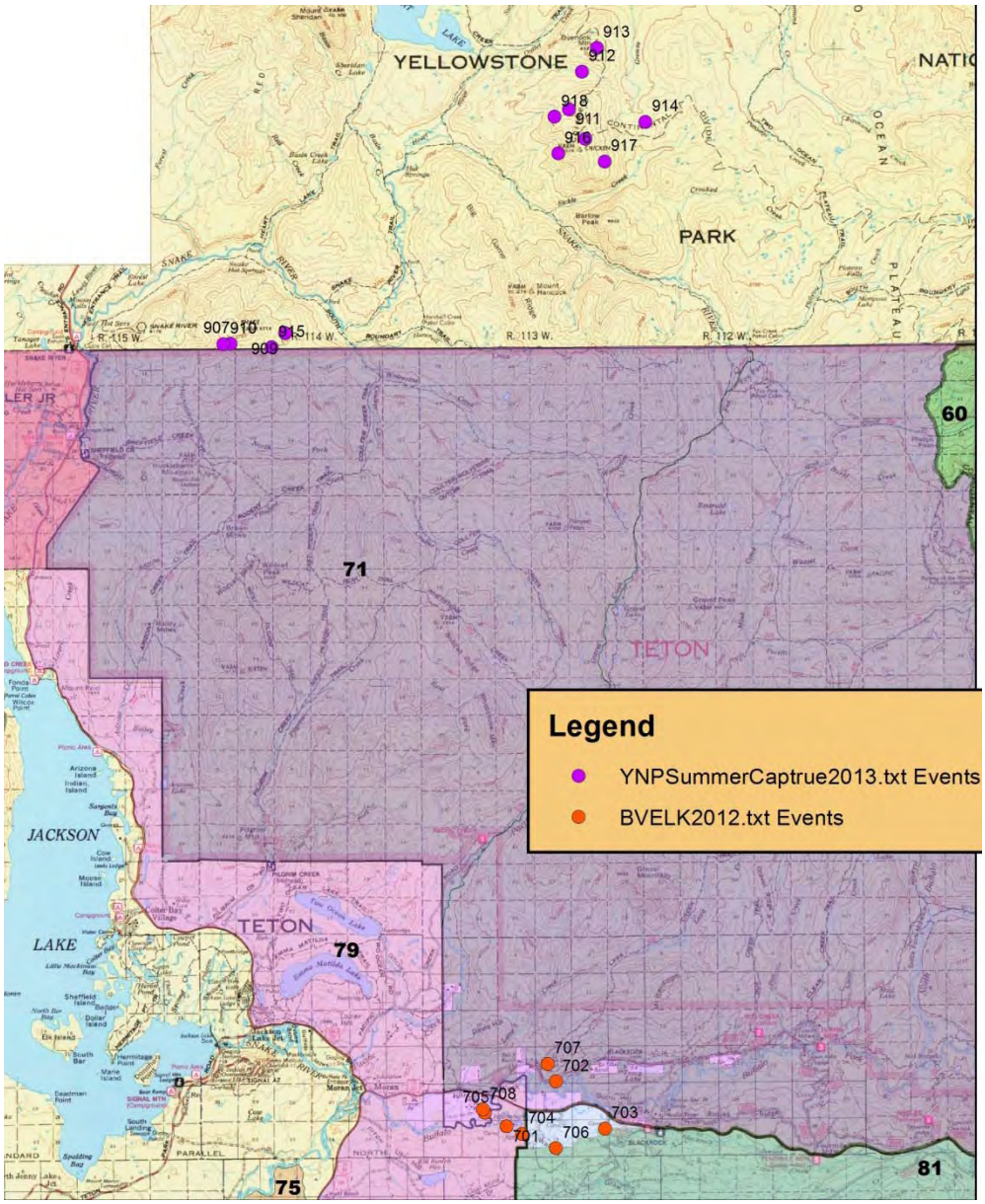


Figure 3. Elk capture locations and elk ID for elk captured during 2012 and 2013.

Specific project objectives include:

Determine migration timing and migration routes used for elk and evaluate the spatial and temporal variation in migration;
Monitor and evaluate elk survival and distribution compared to the home ranges of wolves;
Evaluate the timing and use of open hunt areas by elk;
Document areas used by elk during calving and evaluate fidelity to such areas;
Evaluate fidelity to summer ranges for elk;
Monitor winter movements of elk between native winter ranges and feedgrounds; and
Determine harvest rates and harvest locations of elk.

Table 2. Yellowstone elk ID, radio frequency, visibility tag and location of capture July 16, 2013.

ELK_ID	SerialVHF	MOD400VHF	LotekGPSFreq	VISTag1	VISTag2	Drop	CaptureE	CaptureN	CaptureDate	Age
907	671475A	166.155	166.154	Yellow28	Yellow29	1/12/2016	533432	4886960	7/16/2013	4
908	671464A	167.117	167.117	Yellow30	Yellow31	1/12/2016	548972	4895923	7/16/2013	
909	671465A	167.131	167.131	Yellow32	Yellow33	1/12/2016	535824	4887425	7/16/2013	3
910	671466A	167.194	167.194	Yellow34	Yellow35	1/12/2016	533128	4886937	7/16/2013	5 - 6
911	671467A	167.531	167.531	Yellow36	Yellow37	1/12/2016	548260	4897209	7/16/2013	7
912	671468A	167.568	167.568	Yellow38	Yellow39	1/12/2016	548820	4898878	7/16/2013	8
913	671469A	167.605	167.617	Yellow40	Yellow41	1/12/2016	549473	4899912	7/16/2013	8
914	671470A	167.669	167.669	Yellow42	Yellow43	1/12/2016	551598	4896672	7/16/2013	2
915	671471A	167.793	167.793	Yellow44	Yellow45	1/12/2016	535234	4886804	7/16/2013	9
916	671472A	167.804	167.804	Yellow46	Yellow47	1/12/2016	547778	4895292	7/16/2013	8
917	671473A	167.879	167.879	Yellow48	Yellow49	1/12/2016	549810	4894940	7/16/2013	6
918	671474A	167.93	167.93	Yellow50	Yellow51	1/12/2016	547620	4896900	7/16/2013	4 - 5

Since July elk were located during five flights (Figure 4). Elk captured in July started leaving Yellowstone National Park October 1 and the first radio collared elk arrived on the NER November 9, 2013. By mid-December, eight of the 10 elk were on or near the National Elk Refuge. Elk migrated through the Teton Wilderness along three different migration routes. These included Mink Creek, Pilgrim Creek and east of Jackson Lake (Figure 5). No radio collared elk from Yellowstone were harvested during the 2013 season.

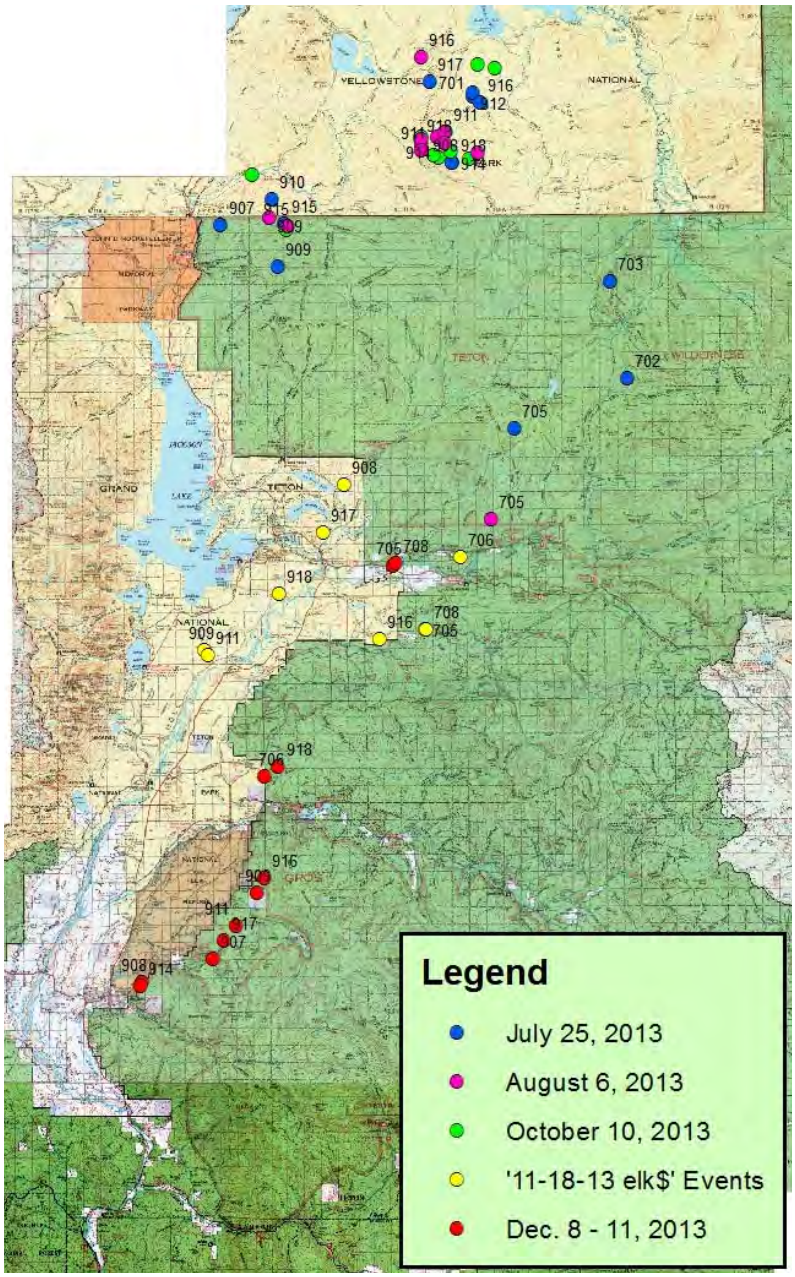


Figure 4. GPS collar locations during July, August, October, November and December 2013.

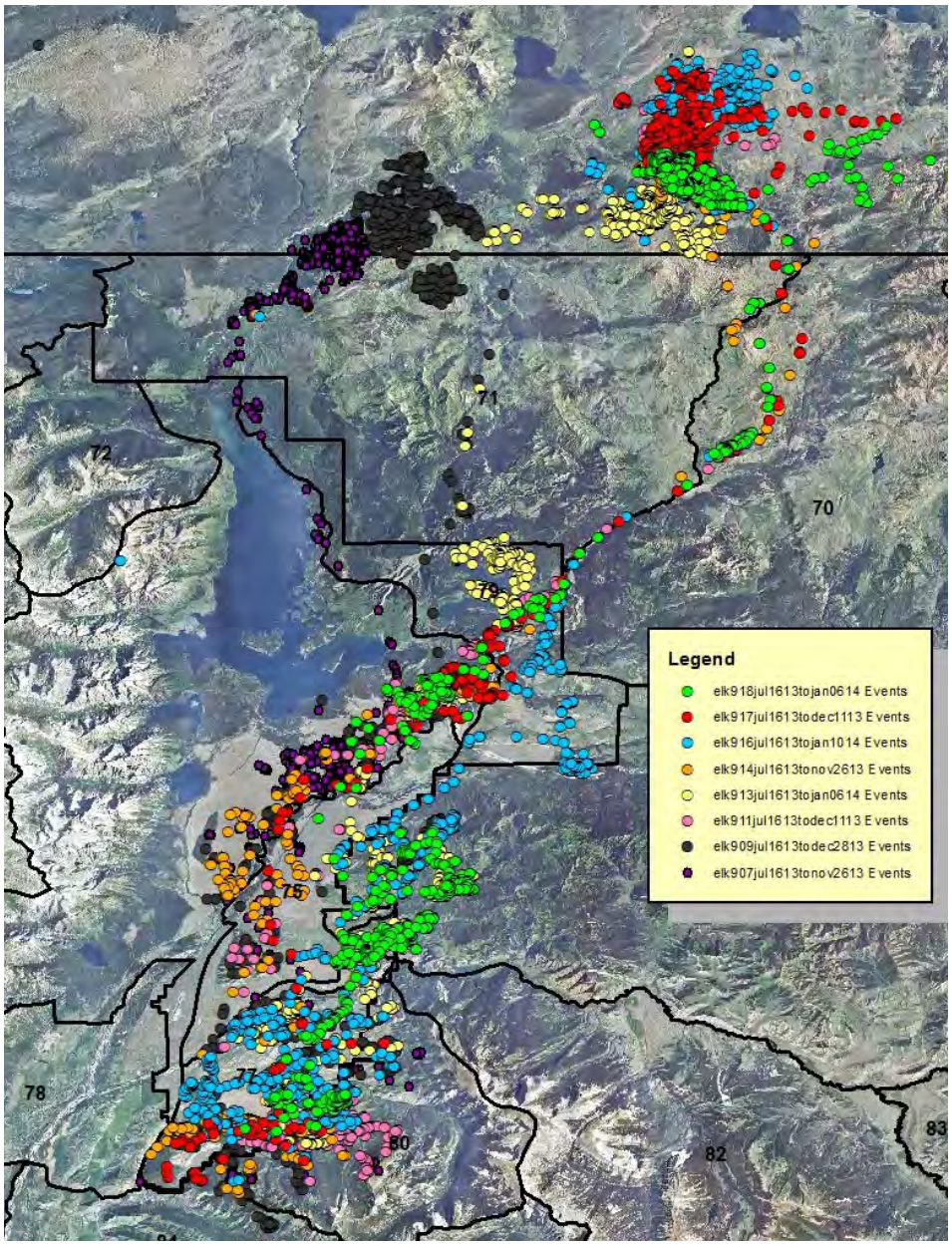


Figure 5, Radio collar down loads from eight GPS collared elk from Yellowstone National Park during late summer to early winter 2013.

2013 - JCR Evaluation Form

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

HERD: EL103 - FALL CREEK

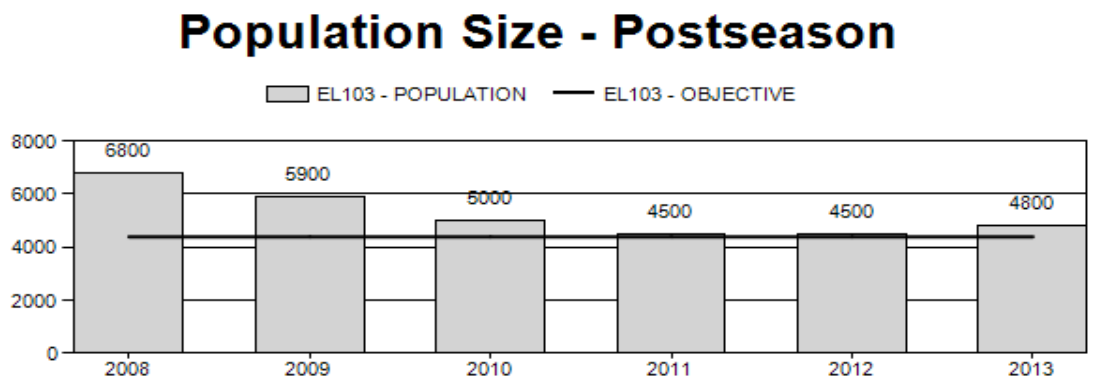
HUNT AREAS: 84-85 | PREPARED BY: GARY FRALICK

	2008 - 2012 Average	2013	2014 Proposed
Population:	5,340	4,800	4,400
Harvest:	1,029	726	582
Hunters:	2,648	2,123	2,000
Hunter Success:	39%	34%	29%
Active Licenses:	2,783	2,231	2,000
Active License Percent:	37%	33%	29%
Recreation Days:	21,343	15,271	13,967
Days Per Animal:	20.7	21.0	24.0
Males per 100 Females	23	25	
Juveniles per 100 Females	28	34	

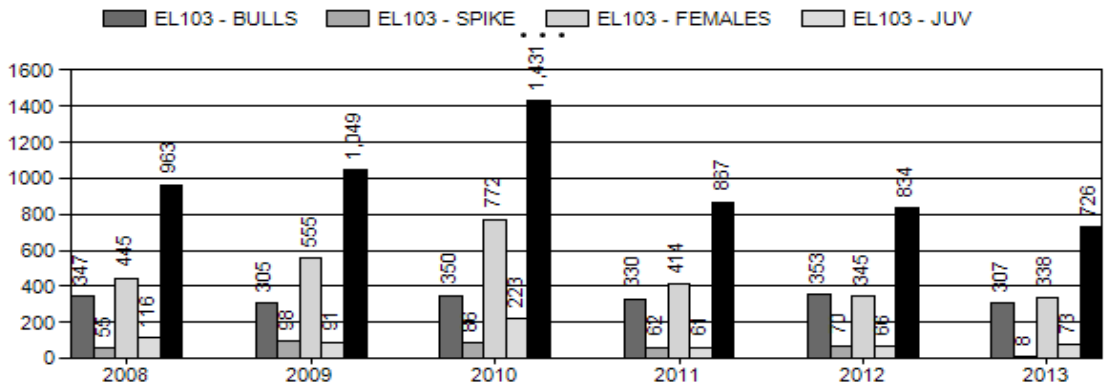
Population Objective:	4,400
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	9%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/23/2014

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

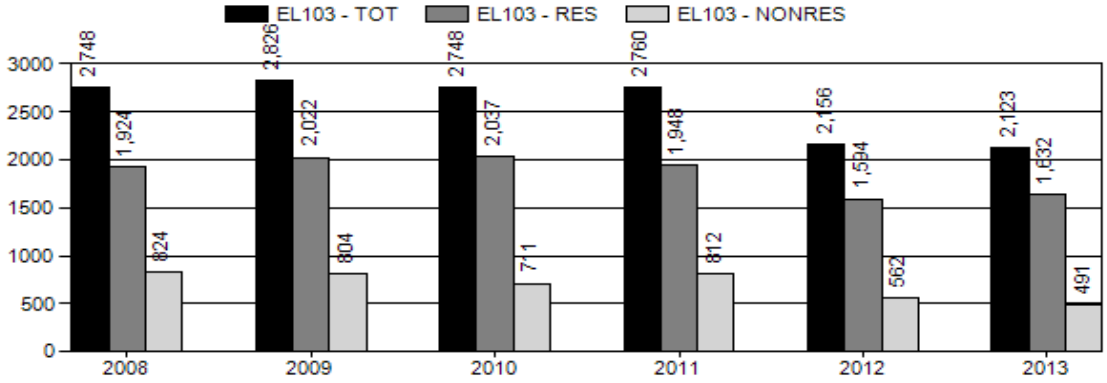
	JCR Year	Proposed
Females ≥ 1 year old:	10%	10%
Males ≥ 1 year old:	43%	27%
Juveniles (< 1 year old):	5%	9%
Total:	12%	15%
Proposed change in post-season population:	16%	10%



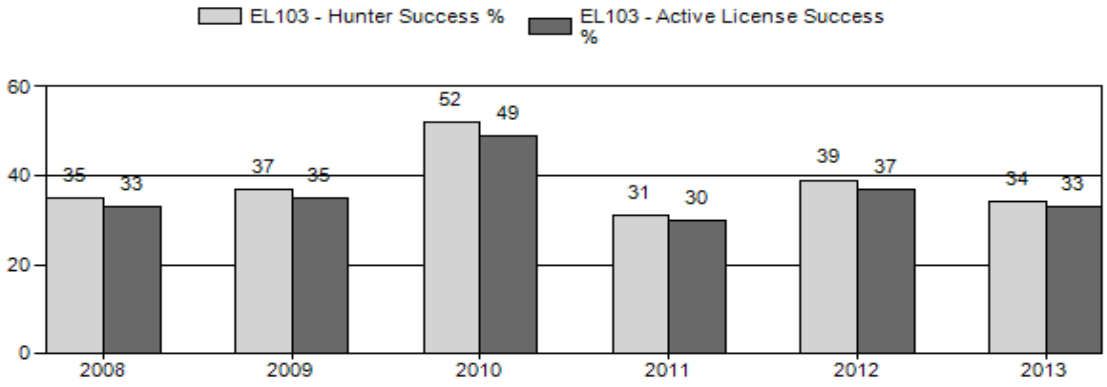
Harvest



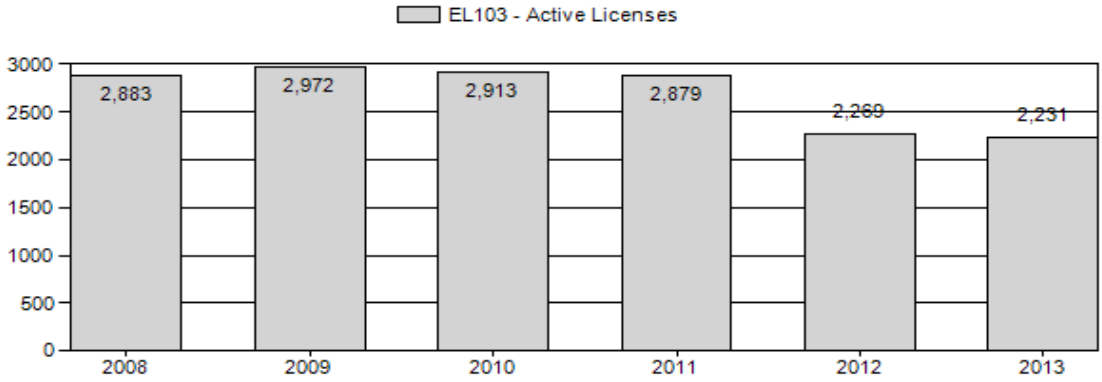
Number of Hunters



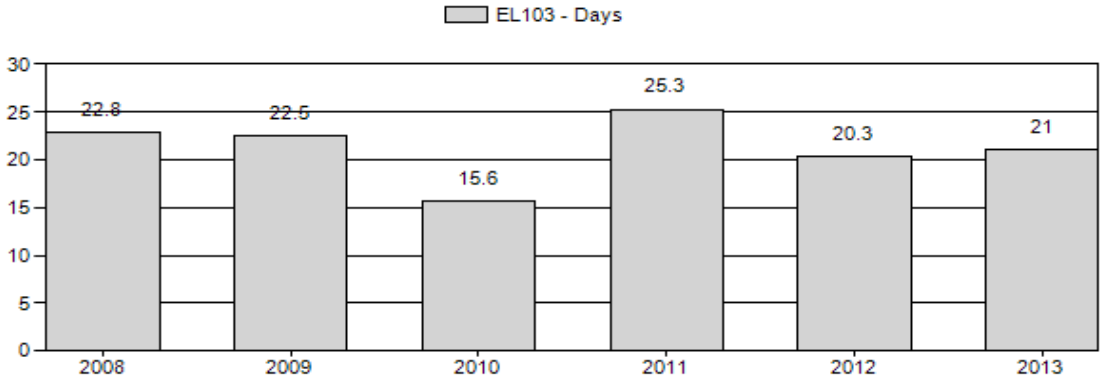
Harvest Success



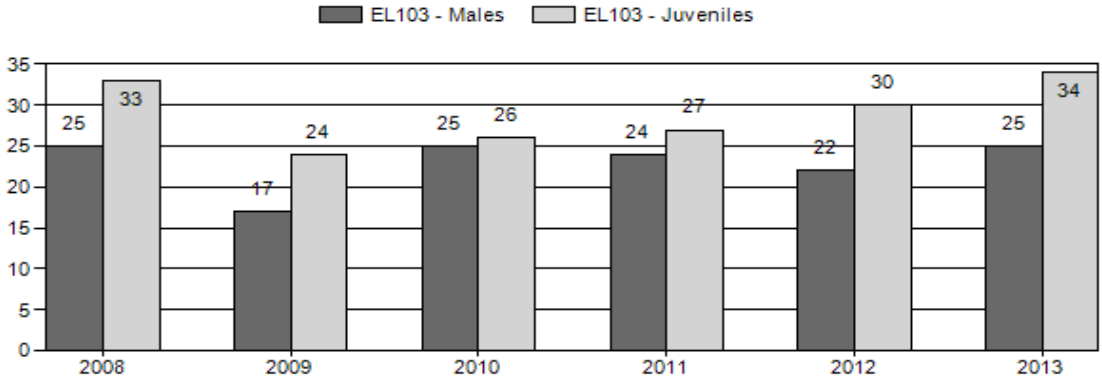
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Elk Herd 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
2008	6,800	371	508	879	16%	3,556	63%	1,177	21%	5,612	405	10	14	25	± 0	33	± 1	27
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	0	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	0	8	14	22	± 0	30	± 0	25
2013	4,400	318	309	627	16%	2,498	63%	842	21%	3,967	0	13	12	25	± 0	34	± 1	27

2014 HUNTING SEASON

SPECIES: ELK **HERD UNIT: FALL CREEK (EL103)**

HUNT AREA	TYPE	OPENS	CLOSES	QUOTA	LIMITATIONS
84		Sep. 26	Oct. 31		General license; Any elk, spikes excluded – SEE SECTION 6.
	1	Nov. 1	Jan. 31	20	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.
	6	Sep. 26	Nov. 20	100	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.
		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.
	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. 31		General license; Any elk, spikes excluded – SEE SECTION 6
	6	Sep. 26	Oct. 31	25	Limited quota; Cow or calf – SEE SECTION 6.
		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
84, 85		Sep. 1	Sep. 25		General license; Archery only - SEE SECTION 3.

SUMMARY OF CHANGES BY LICENSE NUMBER

Area	Type	Change from 2013
84	General	Eliminate Nov. 1-30 antlerless elk hunt in Cache Cr drainage
84	6	Decrease Type 6 licenses from 400 to 100
84	7	Increase number of licenses from 50 to 75 and open season on August 15 instead of September 1
85	6	Reduce Type 6 licenses from 50 to 25 licenses
Herd Unit Total	6	-325
	7	+25
	Total	-300

Management Evaluation

Current Postseason Population Management Objective: 4,400
Management Strategy: Recreational
2013 Postseason Population Estimate: ~4,800
2014 Proposed Postseason Population Estimate: ~4,400

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 4800 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 the 2013 were extremely dry during the early portion of the summer. 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 late winter 2014 snowpack in western Wyoming watersheds were estimated to be well-above normal. Please refer to the following web sites for specific weather station data: http://www.ncdc.noaa.gov/temp-and-precip/time-series and **http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html** .

Habitat

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 2012 Annual Report Strategic Habitat Plan Accomplishments, pages 61-77 for 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.

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 2014 hunt season will be the second consecutive year of spikes excluded hunting seasons.

Harvest Data

Hunter success was estimated at 34% in 2013 with a total harvest over 726 elk. Limited quota license hunters typically account for a much higher success than general licenses hunters. Limited quota license hunters represent at least 40-55% of the total annual antlerless harvest, especially in Hunt Area 84. In 2013, 45% of the antlerless elk were harvested by limited quota license holders. The high harvest success for Type 6 cow/calf license holders is the primary factor which has resulted in the desired population decline in this herd.

The spikes excluded hunt in 2013 resulted in the fewest number of yearling bulls harvested in the Fall Creek herd in at least 22 years. The reduction in yearling harvest achieved the desired result, and addressed concerns regarding the low yearling bulls:100 cows ratio in Area 85.

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=183, Relative AICc=305). 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.

During March and April of 2014 approximately 80 elk, primarily calves, died at or near the Camp Creek feedground due to disease and wolf predation. Investigations concluded the presence of Fusobaterium necrophorum from many of the carcasses, the bacterium responsible for foot rot and necrotic stomatitis in elk. Foot rot is a term used for infection of the bacteria when it enters cuts and other openings around the hooves; necrotic stomatitis is the descriptive term for infection of the same bacteria in the mouth. This infectious disease is not uncommon to feedgrounds in west central Wyoming, with occasional outbreaks documented when certain winter and spring conditions increase the prevalence of the disease. *F. necrophorum,* has been linked to elk mortality on the National Elk Refuge as early as the 1920s. The most recent outbreak of note occurred in 2006. This past winter, conditions in western Wyoming likely led to the increased prevalence of the disease, as above average snowfall in February and March, combined with above average temperatures, created some unusually wet conditions. *F. necrophorum* is a naturally-occurring bacteria that thrives in wet, anaerobic environments. Northwestern Wyoming elk were exposed to many freeze/thaw cycles this winter, which formed heavy crusting of snow and areas of sharp, jagged ice and mud. Such conditions can cause lesions to an animal's hoof, or tissues between the toes, allowing the bacteria to enter the animal's system. From there, the bacteria can spread to vital organs, often overwhelming the liver, resulting in death. Calves are typically more susceptible, likely because they have not had a chance to build up immunity to the bacteria like adults.

Hoof rot and necrotic stomatitis are previously observed ailments of elk associated with feedgrounds and often occur at low rates in early spring, prior to the ending of supplemental feeding. The estimated calf loss account for roughly one-quarter of the calves counted on the Camp Creek and Horse Creek feedgrounds this past

Management Summary

The 2014 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 2013 levels in Area 84, but continue to be valid into November.

In Area 84 the limited quota Type 6 licenses will be valid through November 20. The number of Type 6 licenses will be reduced from 400 to 100 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. The Horse Creek drainage was included in the limitations for unused Area 84 and Area 85 Type 6 licenses during the November to January hunt valid only on private property. This management action is an effort to prevent elk from comingling with horses on private property in the Horse Creek drainage. An additional limited quota Type 7 license will be maintained for the second consecutive year; however, the

number of licenses will be increased from 50 to 75 licenses. The opening date for the Type 7 license will be August 15 instead of September 1. 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 reducing the number of Type 6 cow/calf licenses from 50 to 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 2014 hunting seasons are projected to harvest a total of 582 elk. The projected harvest should maintain the population at approximately 4400 elk following the 2014 hunting season.

INPUT	
Species:	Elk
Biologist:	Gary Fralick
Herd Unit & No.:	Fall Creek
Model date:	02/23/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	170480	170489	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	353	487	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	183	305	☑ TSJ,CA Model	
TSJ,CA,MSC	Time-Specific Juv, Constant Adult Survival, Male survival coefficient	9469	9571	☐ 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				1647	2083	7453	11183	1558	1591	6918	10066	
1994				2738	2251	7312	12301	2558	1453	6269	10280	
1995				1734	2128	6703	10565	1691	1630	6276	9598	
1996				1990	1972	6385	10347	1858	1577	5928	9362	
1997				1705	1963	6096	9763	1640	1454	5674	8768	
1998				1656	2018	6028	9702	1615	1551	5810	8976	
1999				1406	2054	6100	9560	1304	1541	5725	8570	
2000				1945	1791	5766	9502	1886	1334	5502	8722	
2001				2045	1738	5699	9483	2004	1275	5430	8709	
2002				1590	1712	5660	8963	1546	1392	5316	8254	
2003				2191	1857	5584	9632	2130	1384	5249	8762	
2004				1687	1847	5519	9053	1555	1260	4931	7746	
2005				1802	1936	5423	9160	1754	1446	5143	8343	
2006				1822	1961	5473	9255	1685	1486	5052	8223	
2007				1750	1833	5221	8804	1647	1323	4806	7777	
2008				1613	1669	4978	8260	1486	1227	4488	7201	
2009				1071	1537	4635	7243	971	1093	4025	6089	
2010				1123	1500	4285	6908	878	1020	3436	5334	
2011				934	1386	3681	6002	868	944	3220	5032	
2012				1008	1309	3471	5788	933	838	3090	4860	
2013				1049	1239	3378	5666	970	887	2993	4850	
2014				787	1122	3123	5032	713	825	2854	4392	
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

Year	Winter Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.95			0.95		
1994	0.58			0.95		
1995	0.50			0.95		
1996	0.50			0.95		
1997	0.78			0.95		
1998	0.72			0.95		
1999	0.50			0.95		
2000	0.50			0.95		
2001	0.50			0.95		
2002	0.69			0.95		
2003	0.50			0.95		
2004	0.95			0.95		
2005	0.67			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	0.58			0.95		
2014	0.95			0.95		
2015						
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 =	0.692

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

	Classification Counts							Harvest						
Year	Juvenile/Female Ratio			Total Male/Female Ratio									Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/ 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	23.00	19.65	15.72	0.81	81	147	300	487	1015	23.6	7.2
1994		40.81	1.49	23.17	27.84	22.27	1.02	163	241	485	948	1837	35.5	14.3
1995		26.95	1.08	25.98	29.24	23.39	0.99	39	147	305	388	879	23.4	6.4
1996		31.34	1.22	26.60	25.74	20.59	0.95	120	71	288	416	895	20.0	7.2
1997		28.90	1.23	25.63	23.83	19.06	0.96	59	114	348	383	904	25.9	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	25.0	6.1
2000		34.28	1.28	24.24	25.11	20.09	0.93	53	89	327	240	709	25.5	4.6
2001		36.90	1.28	23.49	27.44	21.96	0.93	38	149	272	244	703	26.6	4.7
2002		29.09	1.13	26.19	22.33	17.86	0.85	40	70	221	313	644	18.7	6.1
2003		40.58	1.34	26.37	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	31.8	10.6
2005		34.11	1.18	28.12	28.49	22.79	0.92	43	79	366	255	743	25.3	5.2
2006		33.35	1.17	29.40	29.51	23.61	0.94	124	109	323	382	938	24.2	7.7
2007		34.27	1.16	27.53	29.57	23.66	0.93	94	102	361	377	934	27.8	7.9
2008		33.10	1.11	27.33	30.90	24.72	0.93	116	55	347	445	963	26.5	9.8
2009		24.13	0.98	27.17	20.77	16.61	0.79	91	98	305	555	1049	28.8	13.2
2010		25.55	1.01	29.70	31.06	24.85	1.00	223	86	350	772	1431	32.0	19.8
2011		26.96	1.10	29.32	30.14	24.11	1.03	60	65	337	419	881	31.9	12.5
2012		30.19	1.21	27.11	27.88	22.31	1.01	68	72	357	347	844	36.0	11.0
2013		32.41	1.29	29.62	30.17	24.13	1.07	72	8	312	350	742	28.4	11.4
2014		25.00	0.99	28.91	28.91	23.13	0.94	67	10	260	245	582	26.5	8.6
2015														
2016														
2017														
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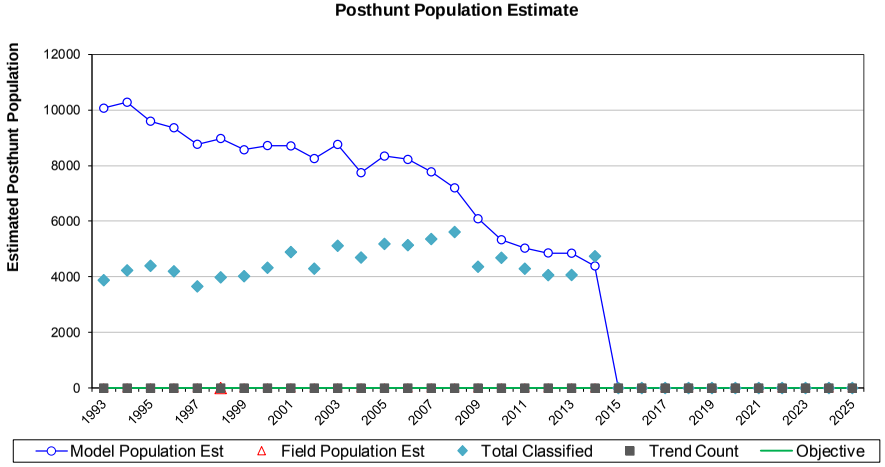
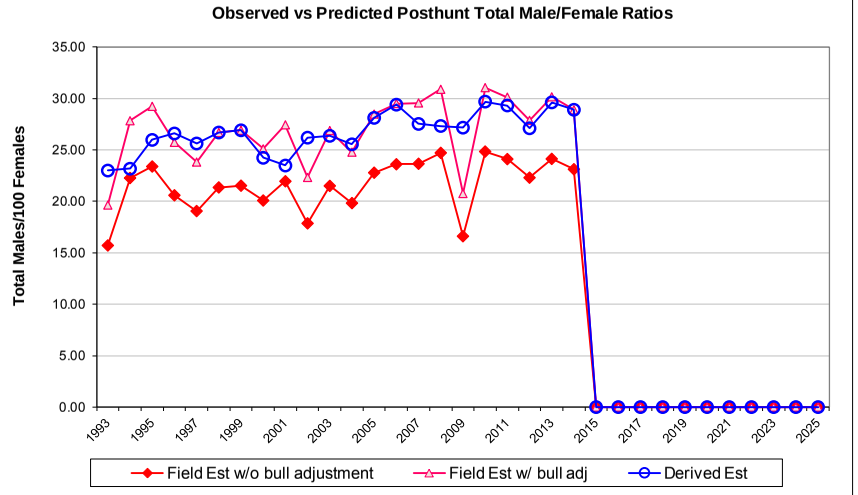
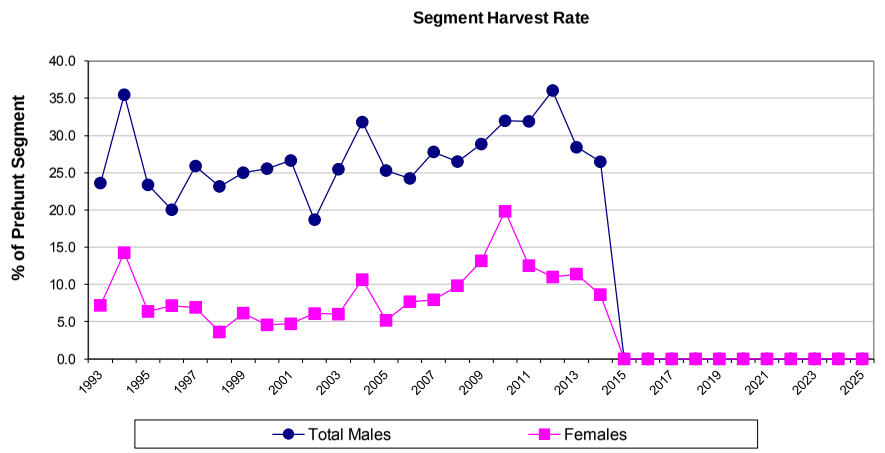
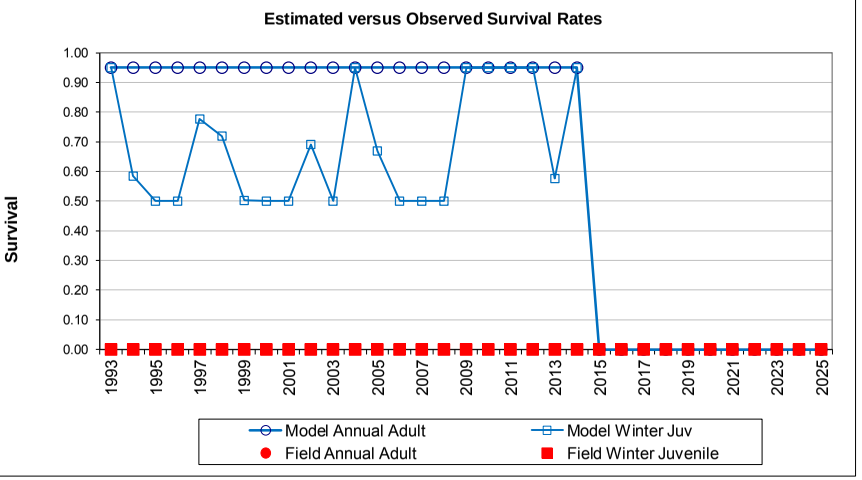
2021														
2022														
2023														
2024														
2025														

FIGURES









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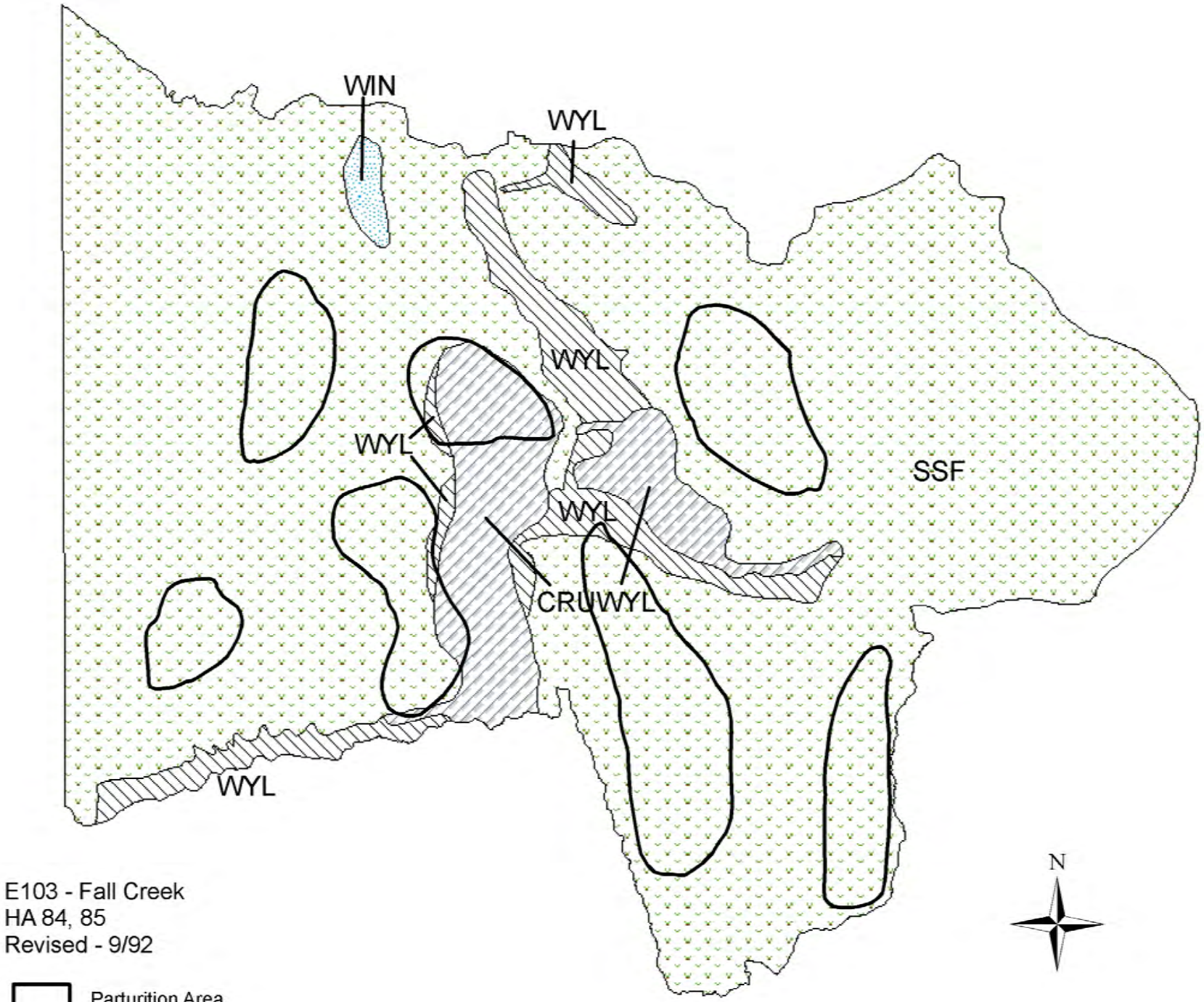


E103 - Fall Creek
HA 84, 85
Revised - 9/92

Parturition Area

2013 - JCR Evaluation Form

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

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

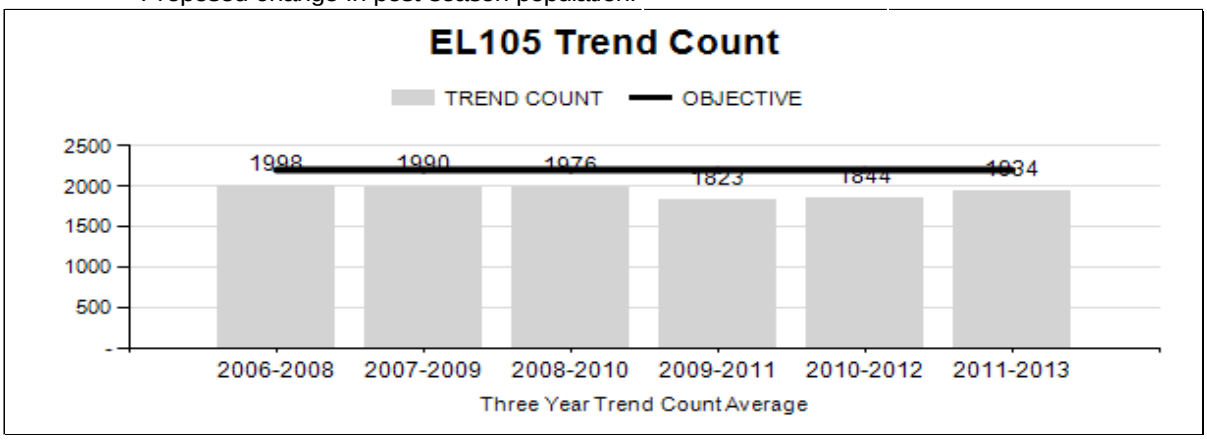
PREPARED BY: GARY FRALICK

	2008 - 2012 Average	2013	2014 Proposed
Trend Count:	1,894	2,260	1,900
Harvest:	725	813	743
Hunters:	2,297	2,445	2,376
Hunter Success:	32%	33%	31%
Active Licenses:	2,371	32%	2,376
Active License Percentage:	31%	32%	31%
Recreation Days:	15,539	15,975	15,009
Days Per Animal:	21.4	19.6	20.2
Males per 100 Females:	22	20	
Juveniles per 100 Females	37	33	

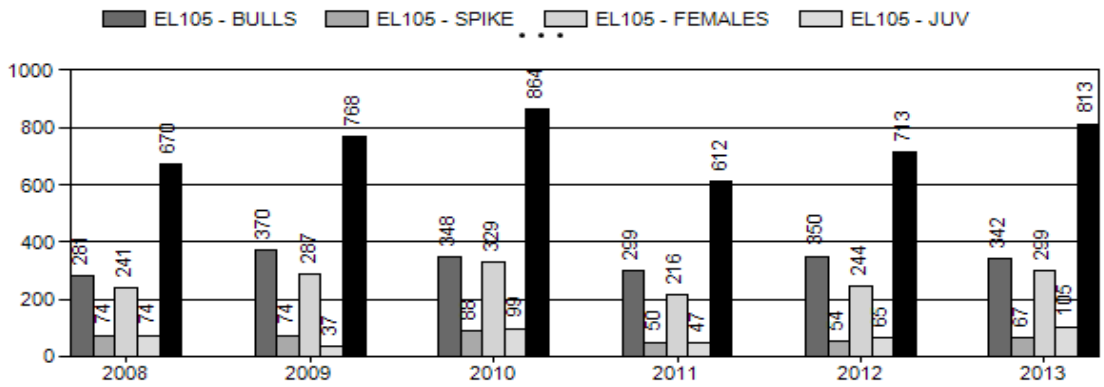
Trend Based Objective (± 20%)	2,200 (1760 - 2640)
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	3%
Number of years population has been + or - objective in recent trend:	10

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

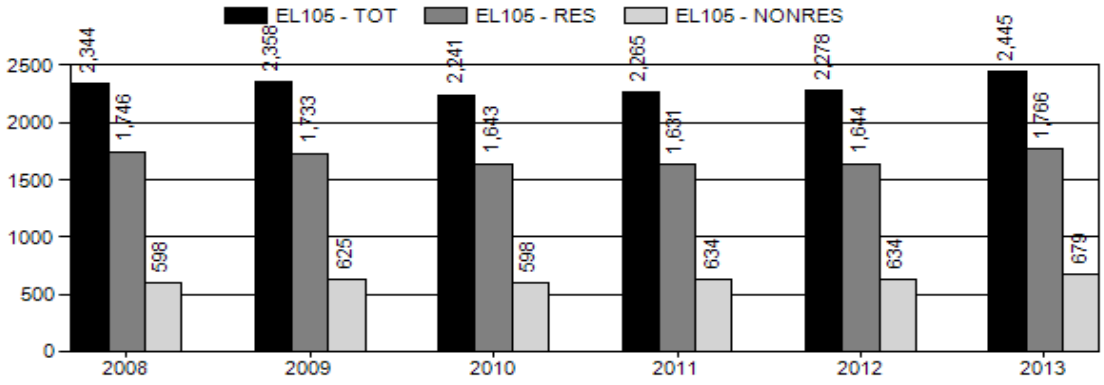
	JCR Year	Proposed
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%



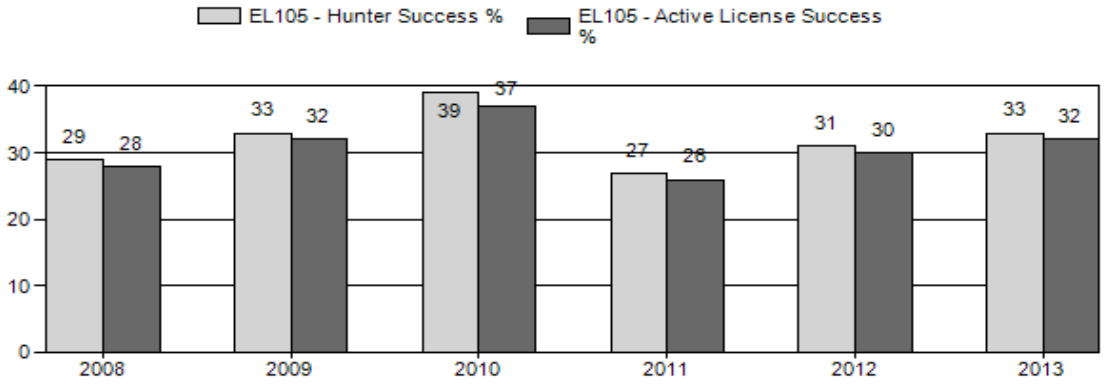
Harvest



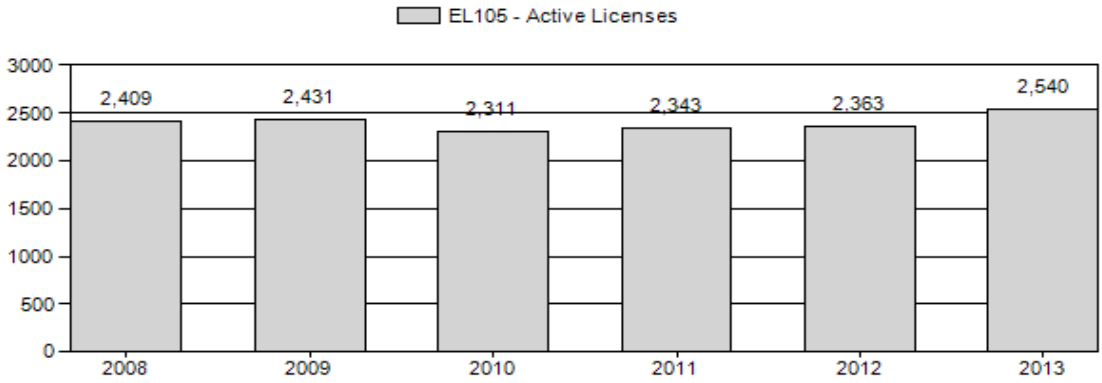
Number of Hunters



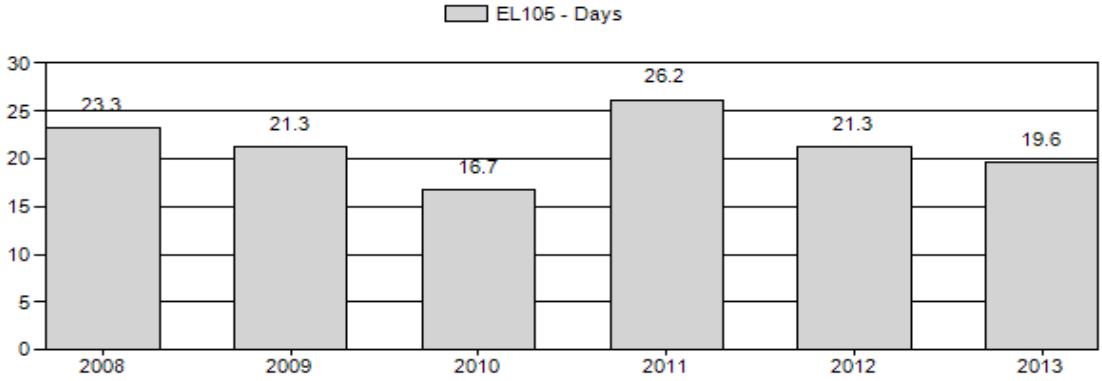
Harvest Success



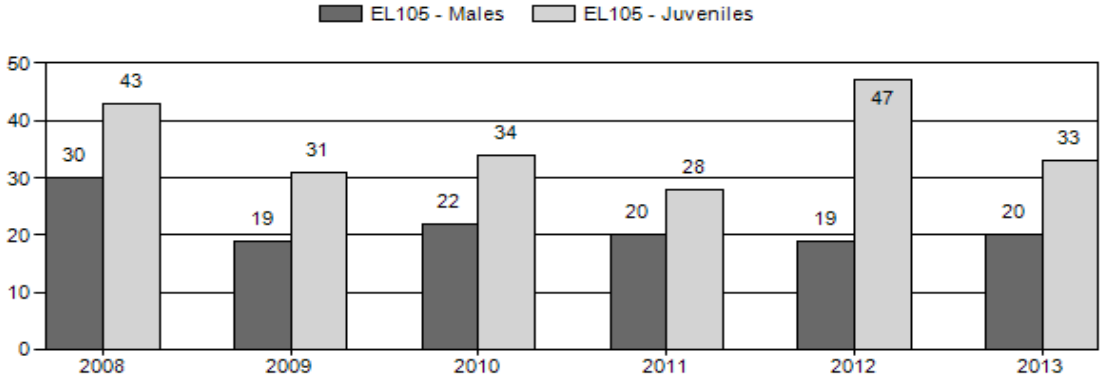
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 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
2008	2,401	136	227	363	17%	1,202	58%	516	25%	2,081	475	11	19	30	± 1	43	± 1	33
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	0	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	0	6	13	19	± 1	47	± 2	39
2013	2,400	109	166	275	13%	1,409	66%	461	21%	2,145	0	8	12	20	± 1	33	± 1	27

2014 HUNTING SEASON

SPECIES: ELK **HERD UNIT: AFTON (EL105)**

HUNT AREA	TYPE	OPENS	CLOSES	QUOTA	LIMITATIONS
88		Oct. 1	Oct. 31	40	Limited quota; Any elk – SEE SECTION 6.
89		Oct. 15	Oct. 17		General license; Any elk – SEE SECTION 6.
		Oct. 18	Oct. 24		General license; Antlered elk – SEE SECTION 6.
90		Oct. 15	Oct. 31		General license; Any elk – SEE SECTION 6.
		Nov. 1	Nov. 15		General license; 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 license; 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	Nov. 1	Dec. 31	150	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		Sept. 1	Sept. 30		Limited quota; Archery only; SEE SECTION 3.
89, 90		Sept. 1	Sept. 30		General license; Archery only – SEE SECTION 3.
91		Sept. 1	Sept. 30		Archery only ; SEE SECTION 3.

SUMMARY OF CHANGES BY LICENSE NUMBER

Area	**Type**	**Change from 2013**
90	6	+50 cow or calf licenses
91	6	-25 cow or calf licenses and change the limitation wording for clarification.

Management Evaluation
Current Mid-Winter Trend Count Management Objective: 2,200
Management Strategy: Recreational
2013 Mid-Winter Trend Count: 2200
Most Recent 3-Year Running Average Trend Count: 1900

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 2200 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 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. 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 2013 were extremely dry during the early portion of the summer. By late summer the moisture regime had changed to more frequent precipitation events 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 late winter 2014 snowpack in western Wyoming watersheds were estimated to be well-above normal. Please refer to the following web sites for specific weather station data: http://www.ncdc.noaa.gov/temp-and-precip/time-series and **http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html** .

Habitat

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 2012 Annual Report Strategic Habitat Plan Accomplishments, pages 61-77 for 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 33% in 2013. Hunt seasons that offer any and antlerless elk hunting opportunities during the October portion of the hunt, and into November, have produced the desired population reduction and stability. These management goals are maintaining the population near the population objective and postseason bull:cow ratios of at least 20 bulls:100 cows.

Population

The population is trending towards stable. 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 1800 elk over the last three years.

Management Summary

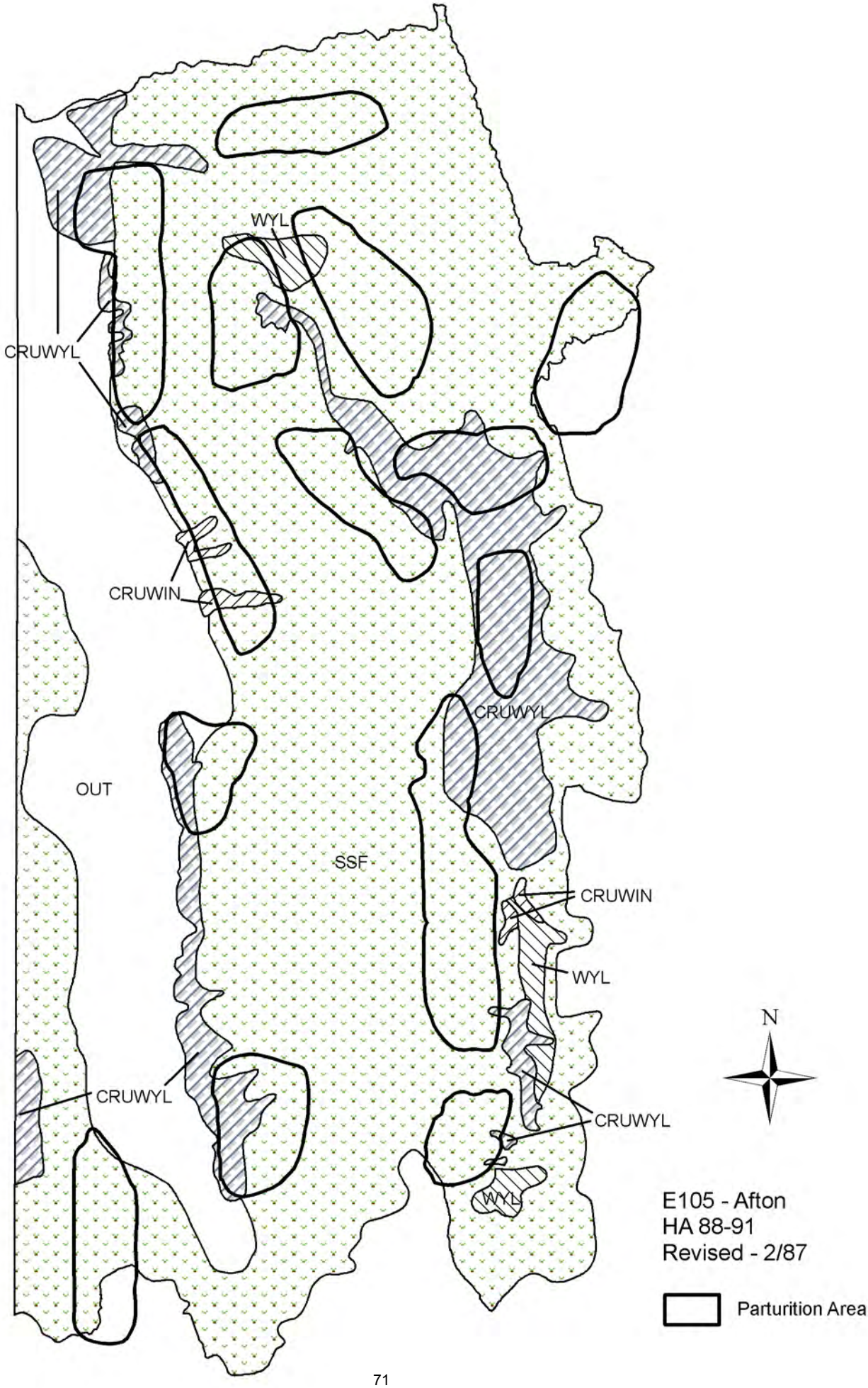
The 2014 hunting season is designed to maintain the mid-winter trend count management objective. The lower Greys River (HA 89) will close at least one week earlier than the typical October 31 closure. The earlier closure in Area 89 is designed to reduce harvest of antlered elk in order to recruit more bulls into the posthunt population, and increase overall antlered elk numbers in the lower Greys River. By shortening the hunting season in Area 89 the effect is to encourage hunters to shift their efforts to Area 90 where elk numbers have been difficult to reduce. The additional hunting pressure that is anticipated in Area 90 may result in increased antlerless elk harvest in the upper Greys River. In addition, a total of three (3) days of any elk hunting will occur in Area 89 in an effort to boost overall elk numbers on the Greys River feedground, and reduce early season hunting pressure on antlered elk. Elk numbers on this feedground have been below the Commission-established quota for 17 consecutive years.

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 increase from 200 to 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 decrease from 175 to 150 licenses in response to fewer elk being observed on native winter ranges, and decrease in 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 2014 hunting seasons will result in a harvest of 740 elk. The 2014 harvest should maintain the population within +/- 20% of the annual three-year trend count average of 1800 following the 2014 hunting season.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