

2017 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2017 - 5/31/2018

HERD: EL531 - IRON MOUNTAIN

HUNT AREAS: 6

PREPARED BY: BRYAN LAMONT

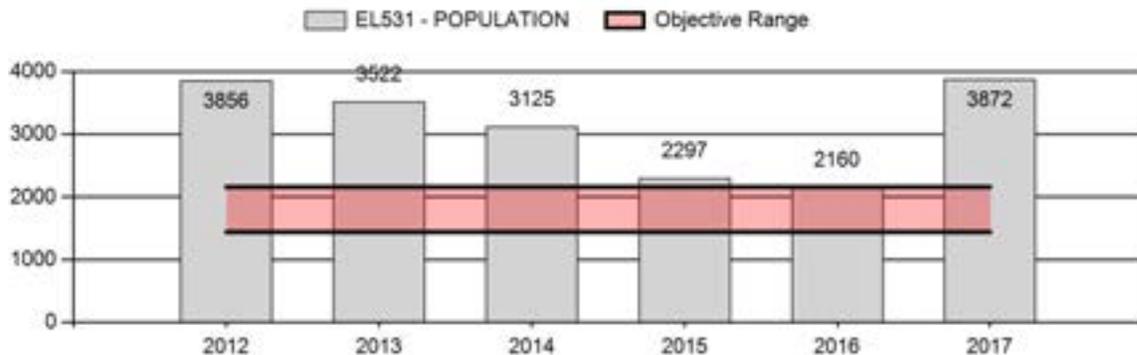
	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Population:	2,992	3,872	3,000
Harvest:	800	545	800
Hunters:	1,781	1,337	1,500
Hunter Success:	45%	41%	53%
Active Licenses:	1,844	1,392	1,700
Active License Success:	43%	39%	47%
Recreation Days:	11,277	10,447	15,000
Days Per Animal:	14.1	19.2	18.8
Males per 100 Females	33	24	
Juveniles per 100 Females	52	50	

Population Objective (\pm 20%) :	1800 (1440 - 2160)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	115%
Number of years population has been + or - objective in recent trend:	2
Model Date:	5/14/2018

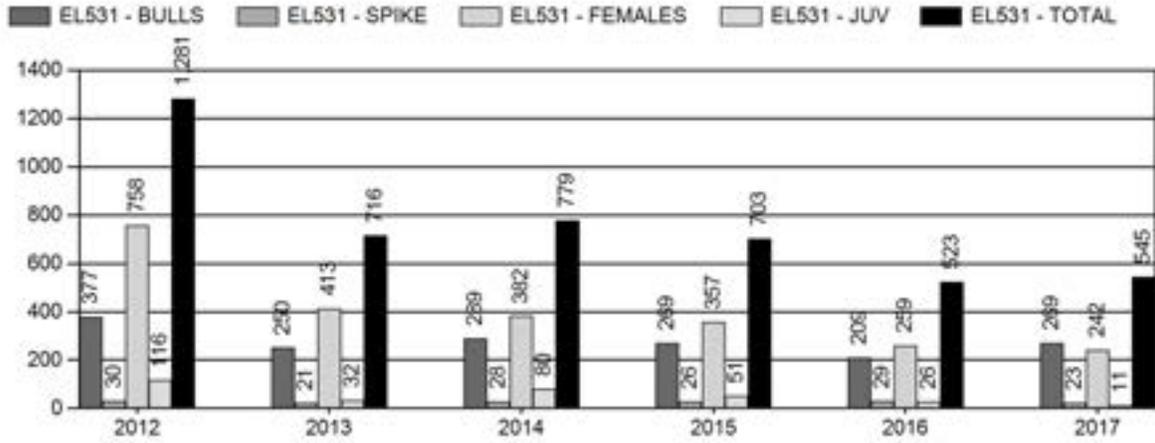
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	10%	15%
Males \geq 1 year old:	29%	30%
Total:	15%	17%
Proposed change in post-season population:	4%	5%

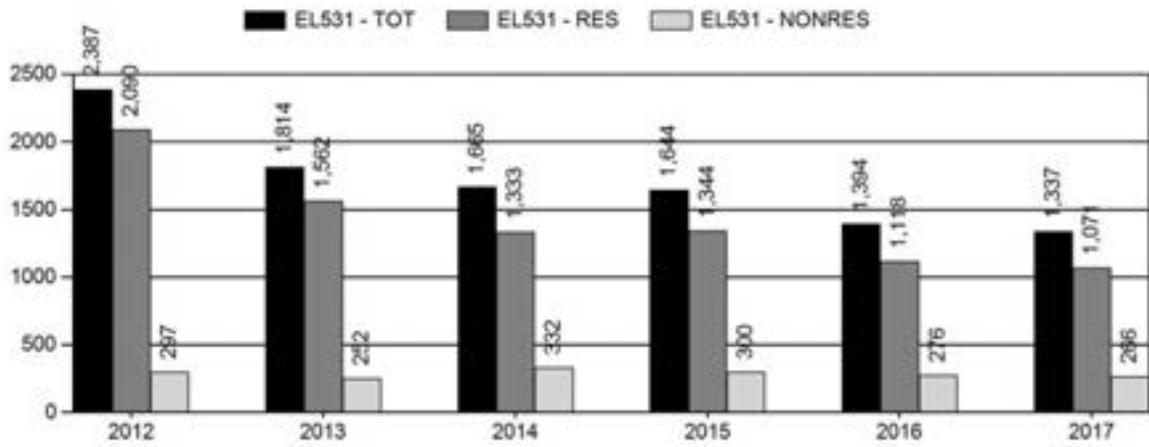
Population Size - Postseason



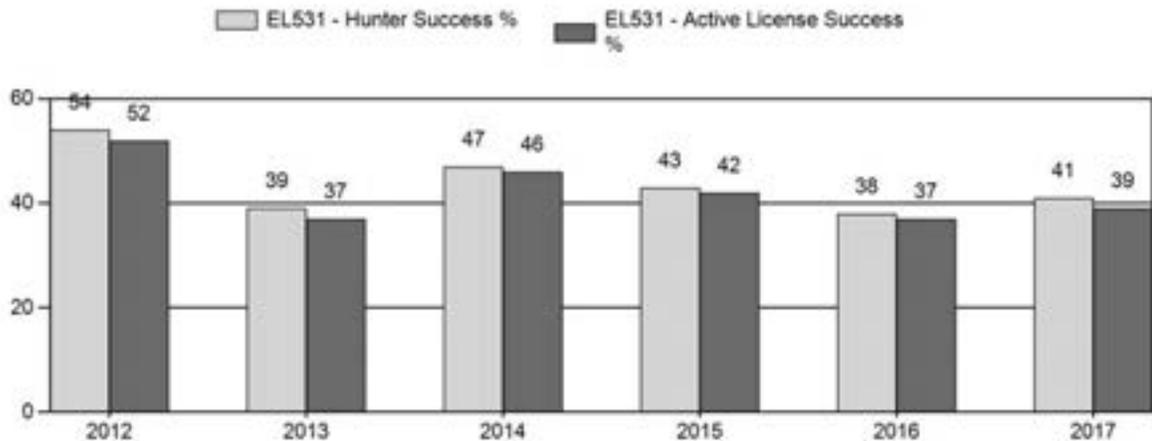
Harvest



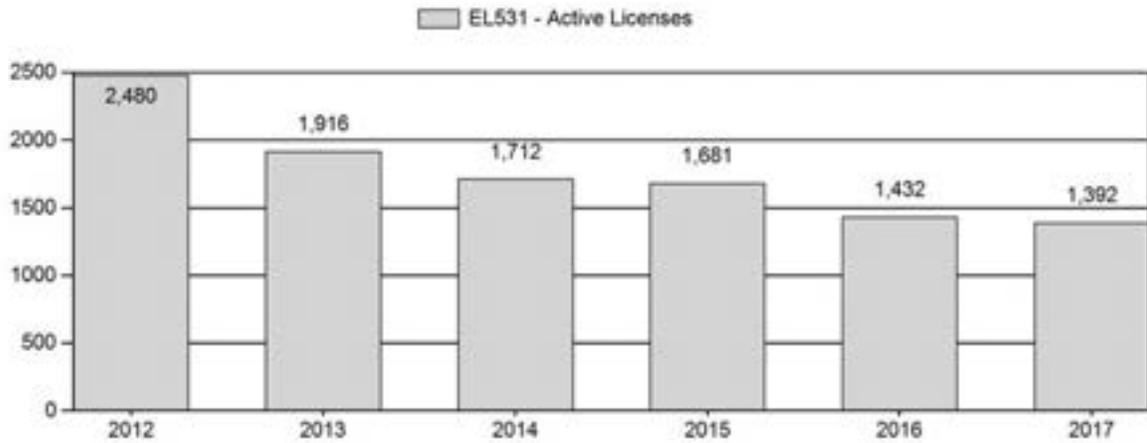
Number of Hunters



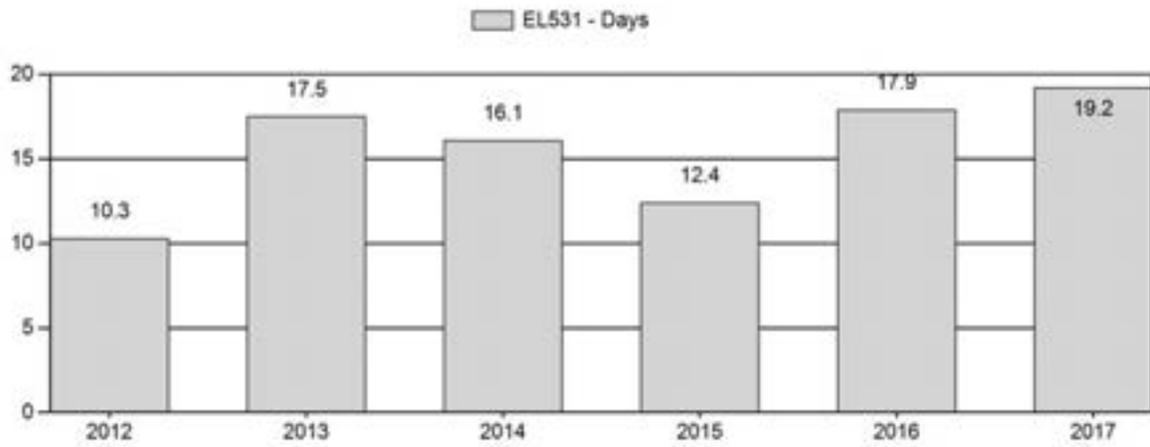
Harvest Success



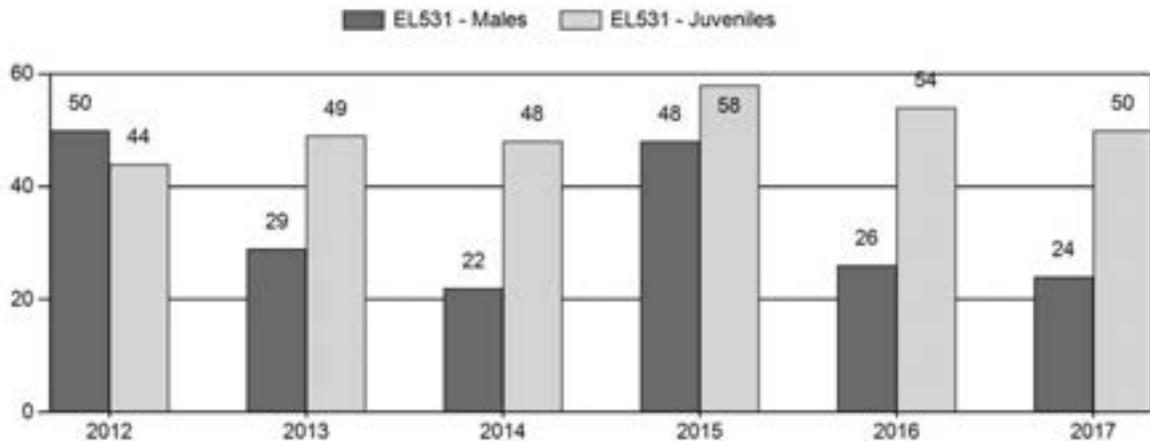
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary

for Elk Herd EL531 - IRON MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2012	3,856	52	46	98	26%	196	51%	87	23%	381	617	27	23	50	± 8	44	± 7	30
2013	3,522	75	86	161	16%	557	56%	273	28%	991	707	13	15	29	± 3	49	± 4	38
2014	3,125	44	67	111	13%	499	59%	238	28%	848	671	9	13	22	± 3	48	± 4	39
2015	2,297	152	142	294	23%	616	49%	355	28%	1,265	743	25	23	48	± 3	58	± 3	39
2016	2,160	123	50	173	15%	657	55%	357	30%	1,187	631	19	8	26	± 2	54	± 3	43
2017	3,903	155	150	305	14%	1,269	58%	629	29%	2,203	614	12	12	24	± 1	50	± 2	40

**2018 HUNTING SEASONS
IRON MOUNTAIN ELK (EL531)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
6		Oct. 1	Oct. 31		General	Any elk valid off national forest
6		Nov. 1	Nov. 30		General	Antlerless elk valid off national forest
6	1	Oct. 15	Oct. 31	75	Limited Quota	Any elk
6	1	Nov. 1	Jan. 31			Antlerless elk
6	4	Nov. 1	Jan. 31	50	Limited Quota	Antlerless elk
6	6	Aug. 15	Jan. 31	1100	Limited Quota	Cow or calf valid off national forest
6	Archery					Refer to Section 3 in Elk Regulations

Hunt Area	License Type	Changes from 2017
6	1	0
	4	0
	6	0
Herd Unit Totals		0

MANAGEMENT EVALUATION

Current Postseason Population Management Objective: 1,800 (1,440-2,160)

Management Strategy: Recreational

2017 Postseason Population Estimate: ~3,900

2018 Proposed Postseason Population Estimate: 3000

2017 Hunter Satisfaction: 30.7% Very Satisfied, 32.2% Satisfied, 17.8% Neutral, 15.9% Dissatisfied, 3.3% Very Dissatisfied

The management objective for the Iron Mountain Elk herd unit is a post-season population objective of 1,800 elk. The management strategy is recreational, which requires maintaining a post-hunt bull ratio of 15 to 29:100 cows. The population management objective and management strategy were reviewed in 2016.

Herd Unit Issues

The Iron Mountain Elk herd unit includes Hunt Area 6, which is comprised of mostly private lands, except for the Pole Mountain Unit of the Medicine Bow National Forest and several sections of Bureau of Land Management and State of Wyoming lands. Urban sprawl and non-traditional land owners are increasing in the herd unit, adding to the already limited hunter access within the hunt area. The Iron Mountain elk herd continues to be a concern to many landowners due to large wintering herds, sometimes exceeding 1,000 elk (during the 2017 classification flight, a herd of 1,600 elk were observed together). Many of the landowners in the herd unit offer bull elk hunts to clients, therefore bull quality and quantity are a concern. Some, but not all, landowners have expressed concerns about the length of the overall elk season in Hunt Area 6 and have expressed interest in eliminating the January portion of the season. The lengthy season (August 15th-January 31st) is a result of damage issues and an effort to reduce the overall population to the population management objective (1,800). The 2017 post-season population estimate was 3,872 elk, with the population slowly trending downward from a high of 5,500 in 2011.

Weather

Precipitation from October 2016 – September 2017 in the herd unit was slightly less than the 30-year average. Precipitation during the growing season (April thru June 2017) across all seasonal ranges was at the level of the 30-year average. As is consistent with most prominent mountain ranges in Wyoming, the majority of precipitation fell during the period outside of the primary growing season, likely in the form of snow, particularly at higher elevations. While average annual precipitation occurred, late summer and fall precipitation was lacking across the herd unit. Post hunting season conditions remained very mild, with little snow cover, and most elk continued to live at higher elevations within the herd unit.

One late snowstorm in mid-May produced heavy, wet snows on winter and transitional ranges. Warm temperatures allowed this moisture to enter the soil profile rather quickly, resulting in rapid uptake and use by perennial vegetation. During the 2017-2018 winter, lower elevations remained relatively free of persistent snow. Winter conditions for wild ungulates have been excellent, with a lack of deep snows and consecutive days of sub-zero temperatures.

Habitat

Growing season precipitation was normal across the herd unit in 2017, resulting in excellent growth of cool season grasses, forbs, and shrubs, particularly in lower elevation seasonal ranges. In spite of precipitation received, many important shrub habitats on winter and transitional ranges continue to under-perform due to maturity and decadence, caused by a general lack of disturbance. With the lack of public lands, in particular, state owned lands within this herd unit, the opportunities to treat and improve under-performing areas is limited.

Field Data

A total of 2,203 elk were classified in 2017, exceeding well above the estimated classification objective of 614 elk. Bull ratios in 2017 (24:100) were similar to 2016 (26:100), but significantly lower than 2015 (48:100). This reduction is more than likely an effect of survey effort and weather, rather than an actual decline in the overall number of bulls in the herd. This herd has historically been very productive and continues to be with 50 calves per 100 cows. Moreover, within one large herd (~1,600) that was included in the 2017 classification sample, around 600 calves were observed. After changing the license issuance from limited quota to general in 2012, hunter numbers have been on a steady decline from a high of 2,480 hunters in 2012 to 1,300 hunters in 2017.

Harvest Data

Harvest appears to be somewhat stabilizing after changing to a general season strategy in 2012, however, harvest did decline in 2017 (545) and 2016 (523) from 2015 (703) and 2014 (779). Both the Type 1 and Type 4 licenses remain very popular with the public. Type 1 license drawing odds are less than 10% for residents, and non-residents require five or more preference points to be successful in drawing this license. Hunter success decreased on the Type 1 license in 2017 (38%) compared to 2016 (62%). The Type 4 license hunt has always been more difficult and success remained low in 2017 (4%). Harvest was poor with only 2 elk harvested on the 50 available Type 4 licenses in 2017. Counter to what we would expect with low hunter success, hunter satisfaction remained relatively high, with 63% of hunters being either very satisfied or satisfied. The decline in harvest and low success with some license types in 2017 suggests a continued issue with hunters not being able to find adequate access to the large herds of elk that are able to find refuge within the Iron Mountain elk herd unit. Without increased landowner willingness and cooperation in providing access to hunters, managers will continue to struggle to reach the desired population management objective (1,800).

Population

This is the fourth year that we have collected adequate classification data to allow the population model to perform. The “Constant Juvenile and Adult Survival” (CJ, AS) model was selected as the most biologically reasonable model for the Iron Mountain herd, and produced an AIC score of 449 and a Fit score of 440. This model did not have the lowest AIC score, but the lower scoring models (TSJ, CA and TSJ, CA, MSC) do not appropriately describe this herd (i.e. there are not factors (predation or weather events) that would lead to large variations with juvenile survival) and the post-season population estimates for these models were below the total number of elk classified, which is not realistic. Although AIC and Fit scores are provided herein, using AIC ranking is not recommended as the best model selection method because we have no sample-based population estimates or survival estimates incorporated into the models. The CJ, CA model predicts the Iron Mountain population declining from a high of 5,500 in 2011 to the current population estimate of 3,872 in 2017. While this model is ranked “Poor” due to a lack of

inclusion of juvenile and adult survival rates and inadequate samples of historical classification data, the population estimate provided seems biologically reasonable.

Management Summary

The Iron Mountain Elk Herd continues to be a very productive herd, but also a difficult herd to reach an adequate harvest as a result of access issues. The 2017 hunting season accomplished below average harvest (545), which is well below an estimated minimum of around 700 annually needed to reduce the overall population closer to the population management objective (1,800). With the lack of public land, Hunter Management Areas, and consistent landowner cooperation, the Iron Mountain Elk Herd will continue to present challenges to managers into the future.

Appendix A:
Herd Unit Objective Review Form – Iron Mountain Elk Herd Unit (HA6)

Date of Last Herd Objective Review – 2012

Current Objective – 1,800

Current Sub-objectives – none

Current Management Strategy – Recreational management which requires maintaining a post hunt bull ratio of 15 to 29:100 cows.

Is the herd at or trending toward the current objective, sub-objectives and management strategy? Provide details for each below.

Objective:

2016 is the third year that we have collected adequate classification data. The TSJ/CA MSC model was selected as the best model and estimates the population has been declining from a high of 3,500 in 2011 to the current population estimate of 2,100 in 2016. This model has a tendency to jump around each time an additional year of data is added and although the population trend may be accurate, the population estimate is most likely not. This model is ranked Poor for a variety of reasons including: little data available; ratio data from past years is considered highly biased because of poor sample sizes; herd unit closure issues apparent with the Laramie Peak herd unit. Harvest data also indicates a declining population with hunter success declining, and hunter effort increasing since 2012. Although most landowners feel there are still too many elk, most will agree there has been a decrease in the total population.

Sub-objectives:

None

Management Strategy

Given the lack of public land, bull ratios tend to be on the high end of recreational to falling within special management guidelines. The season structure was changed in 2012 from limited quota to general. Hunt area 5 was merged with hunt area 6 for simplification. Season dates and quotas have been liberalized to maximize antlerless elk harvest. General season structure was changed from Oct. 15th through November 20th to Oct. 1st through Oct. 31st to encourage private land owners to allow cow elk harvest earlier in November before roads became impassable due to weather. Type 6 licenses were liberalized in season length and in number to allow anyone that had access to be able to purchase a license throughout the season.

Have private landowners, Federal land managers, hunters or others expressed concerns about the ability of the habitat to support the current objective? Provide details for each below.

Landowners:

No.

Federal or State Land Managers:

USFS managers are in the process of large scale habitat treatments and are in favor of maintaining a lower elk population.

Hunters or Others:

No.

Where applicable, do Rapid Habitat Assessment and other habitat data indicate the current objective is sustainable?

Not applicable.

Have there been any major environmental (wildfire, invasive species, drought, etc.), development (subdivision, industrial, etc.) or other changes in the herd unit that keep it from being managed toward objective?

No

Have private landowners, Federal land managers, hunters or others expressed concerns about population levels? Provide details, including trends in hunter satisfaction statistics, for each below.

Landowners- Landowners are happy with the decreasing population. A few are concerned with a decrease in older class bulls, but understand that with limited public access they control the harvest and can manage for larger bulls if desired. Most landowners are adamant at keeping the current objective of a post season population of 1,800. Most of the landowners, including Charlie Farthing, are happy with the current season structure and with the number of elk on their property. It was explained that an objective of 2,500 to 3,000 would be more reasonable and would still require a decrease in the current population, but everyone in the meeting was very concerned that if we increased the objective the elk population would reach unmanageable levels.

Federal land managers- Private land makes up 83% of the ownership in the Iron Mountain herd unit, followed by state land at 9%, BLM and USFS at 4% each (figure 1.) Most of the BLM and state lands are not congruent but in small parcels scattered throughout the herd unit. These lands do provide some limited public access (figure 2). The USFS ownership, although only 4%, is congruent and provides the most public hunting opportunity. USFS managers are in the process of large scale habitat treatments in Pole Mountain and are in favor of maintaining a lower elk population.

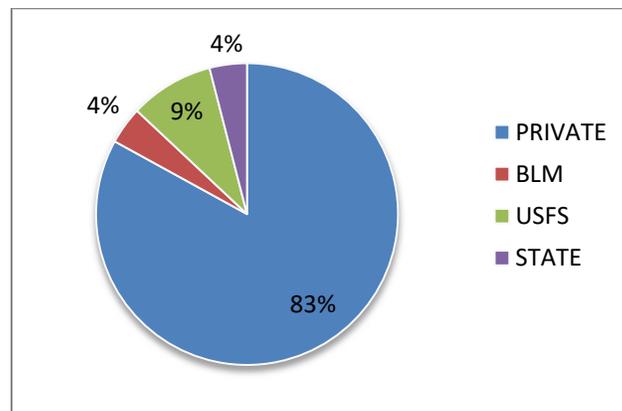


Figure 1. Ownership by percentage in the Iron Mountain elk herd unit

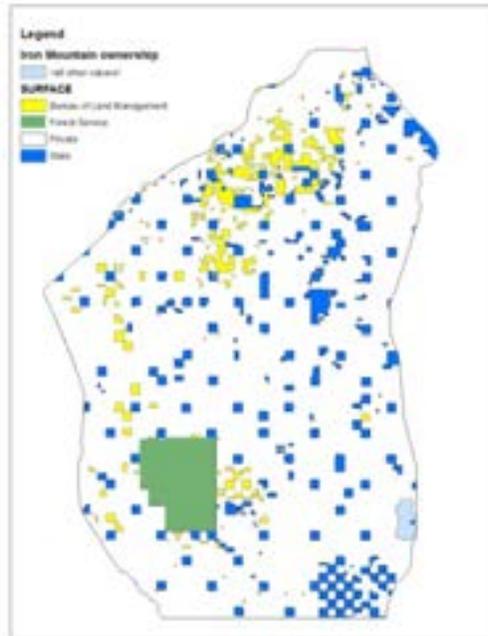


Figure 2. Map depicting distribution of landownership in the Iron Mountain elk herd unit

Hunters- The number of active licenses, harvest, and success has been declining since the first general season in 2012, but total harvest and number of active licenses still remain higher than the early 2000s when the season structure was limited quota (Figure 4, Figure 5, Figure 6). 2016 Hunter Satisfaction survey shows 62% of hunters were either satisfied or very satisfied with their hunt, just below the 2016 state wide average satisfaction of 66%. Hunter satisfaction in this herd unit has been around 60% since 2013 with the highest being the first year of general license hunting (2012) at 78%. Hunters that are able to find access remain satisfied with their hunt.

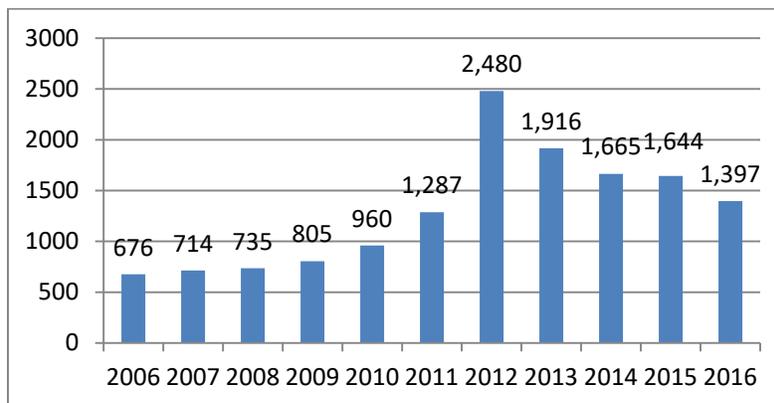


Figure 4. Number of active licenses in the Iron Mountain elk herd unit

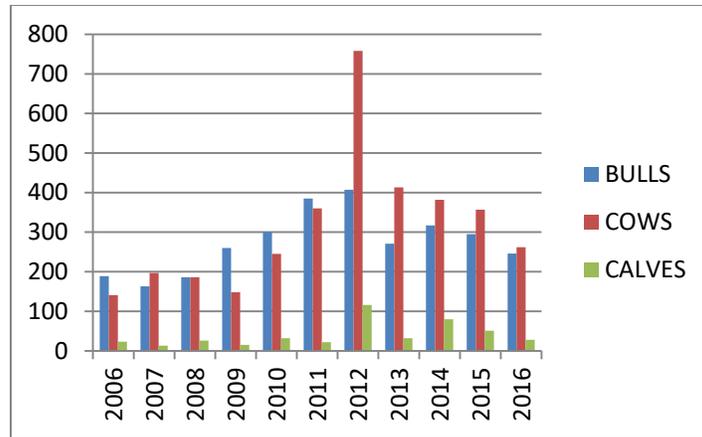


Figure 5. Harvest by classification in the Iron Mountain elk herd unit

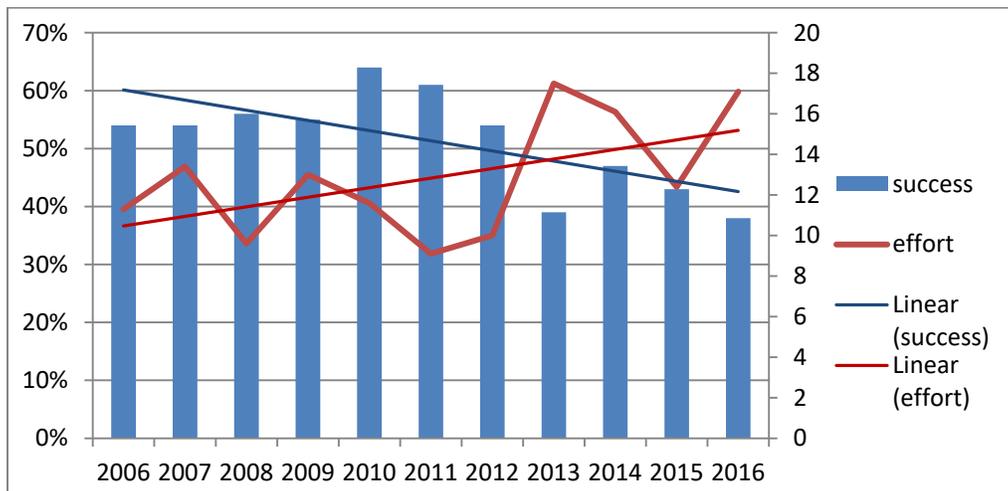


Figure 6. Total hunter success in the Iron Mountain elk herd unit

In your professional opinion, are the current objective, sub-objectives and management strategy attainable? What is your recommendation for each? Provide details for each below.

Objective- The current model predicts a 2016 post season population of 2,100 elk. From our classification flights it is likely there are 500-800 south of I-80. There are probably 500 between Rogers's canyon road and I-80, and there is probably 1,500 north of Rogers's canyon for a rough estimate of 2,800. Currently the landowners that do not want elk are able to keep them off their property through hunting pressure. Those that want more elk are limiting hunting pressure and creating refuges. Landowners are happy and there is concern that if we adjust the objective we will again have a political situation like we did in 2012. So we recommend maintaining the current objective of 1,800 elk.

Sub-objectives- Not applicable

Management Strategy- Recreational management with the general season structure and ample type 6 licenses is working. The population is trending downward and landowners are satisfied.

Date Submitted by Regional Wildlife Supervisor – 5/30/2017

Date Approved by Deputy Chief Wildlife Division – 6/14/2017

Appendix A

List of Landowners Contacted

SPRINGFIELD RANCH
153 SMALL RD
WHEATLAND, WY 82201

IRVINE RANCH
819 COONEY HILLS RD
WHEATLAND, WY 82201

GRANT RANCH
431 RICHEAU RD
WHEATLAND, WY 82201

JY RANCH
P.O. BOX 16966
TAMPA, FL 33687

DILTZ RANCH
1340 MULE CREEK RD
WHEATLAND, WY 82201

HU RANCH
1780 RD 231
IRON MOUNTAIN, WY 82009

ADA RANCH
1780 RD 231
IRON MT, WY 82009

FARTHING RANCH
224 RD 237
IRON, MOUNTAIN, WY 82009

DAVE BERRY
2880 HORSE CREEK RD
CHEYENNE, WY 82009

DOUG SAMUELSON
1960 US HWY 85
CHEYENNE, WY 82009

L3 CATTLE COMPANY
2142 SYBILLE RD
WHEATLAND, WY 82201

DON WEDEMEYER
P.O. BOX 8
CHUGWATER, WY 82210

~~JOE CORNELL
849 MULE CREEK RD
WHEATLAND, WY 82201~~

BUNKER RANCH
253 ROCK LAKE RD
WHEATLAND, WY 82201

TERRY BRANDT
GRANGE RD
WHEATLAND, WY 82201

31 BAR RANCH
737 BRUSH CREEK RD
WHEATLAND, WY 82201

MIKE HEATHERLY
PO BOX 57
CHUGWATER, WY 82210

BUD CLEMONS
2640 HWY 34
WHEATLAND, WY 82201

JON KEIL
1994 HWY 34
WHEATLAND, WY 82201

RICK WILEY
404 19TH ST
WHEATLAND, WY 82201

DON WILLIS
1380 SYBILLE RD
WHEATLAND, WY 82201

Y-CROSS RANCH
428 RD 228
HORSE CREEK, WY 82009

BILL CASTLE
ALABANY CO 12
LARAMIE, WY 82070

JOHN BUXTON
750 FOX CREEK RD
LARAMIE, WY 82070

MEYERS RANCH
4016 HWY 34
WHEATLAND, WY 82201

~~HARRY GRACIK
1474 SYBILLE RD
WHEATLAND, WY 82201~~

WAYNE SMITH
774 HWY 34
WHEATLAND, WY 82201

ROGER SCHROEDER
P.O. BOX 61
CHUGWATER, WY 82210

IRVINE RANCH
700 RICHEAU RD
WHEATLAND, WY 82201

~~HUNTON CREEK OUTFITTERS
227 EAST OAK RD
WHEATLAND, WY 82201~~

D.R. WHITAKER RANCH
ATTN: ED WEPPNER
1255 CR 228
CHEYENNE, WY 82009

LUSKAR RANCH
ATTN: TODD FAESSLER
HC 85 BOX 158
BRIDGEPORT, NE 69336

PASCOE RANCH
253 SODERGREEN RD
LARAMIE, WY 82070

~~AARON CLARK
PO BOX 249
WHEATLAND, WY 82201~~

WEST RANCH
89 RICHEAU RD
WHEATLAND, WY 82201

~~Rocking RJ Ranch
Brush Creek Rd
Wheatland, WY 82201~~

Jim McGuire
155 Happy Hollow Rd
Chugwater, WY 82210

Jack Garson
263 Wayside Rd
Laramie, WY 82070

Appendix B

Objective Review Sign in Sheets

Wyoming Game and Fish Department
Public Meeting Attendance Form



March 28, 2017

Meeting Location: Laramie

	NAME	CITY/TOWN
1.	Pete Kestras	Laramie WY
2.	Peter Sanderson	Laramie WY
3.	Ken Bore & Patricia	Laramie WY
4.	Jim P... ..	Laramie
5.	Carl Mitchell	Laramie
6.	Thomas B...	Laramie
7.	Ed Nowak	Laramie
8.	John	Laramie
9.	Walter	Laramie
10.	B. H.	Laramie
11.	Tom	Laramie
12.	Al	Laramie
13.	Walter	Laramie
14.	Byke Hattick	Laramie WY
15.	Kathryn & Ethel Greenaway	Laramie WY
16.	Jack Koch	Laramie WY
17.	Carlos	Laramie WY
18.	Lois	Laramie WY
19.		
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24.		
25.		

Wyoming Game and Fish Department
Public Meeting Attendance Form



Date: March 28, 2017

Meeting Location: Cheyenne, WY

	NAME	CITY/TOWN
1.	Natal Perkins	Cheyenne
2.	Margaret Rupert	Cheyenne
3.	Jeff Gentry	Cheyenne
4.	Paul Wood	Cheyenne
5.	Jim Mellon	Cheyenne
6.	Cliff Foster	Cheyenne
7.	Jessie VanKirk	Cheyenne
8.	Bryan Hill	Cheyenne
9.	Courtney Peterson	Cheyenne
10.	Jeffrey Reynolds	Cheyenne
11.	Michelle Taylor	Cheyenne
12.	ICAR CENTER	Cheyenne
13.	Conny Deonick	Cheyenne
14.	Talia Holt	Cheyenne
15.		
16.		
17.		
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20.		
21.		
22.		
23.		
24.		
25.		

2017 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2017 - 5/31/2018

HERD: EL533 - SNOWY RANGE

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

PREPARED BY: WILL SCHULTZ

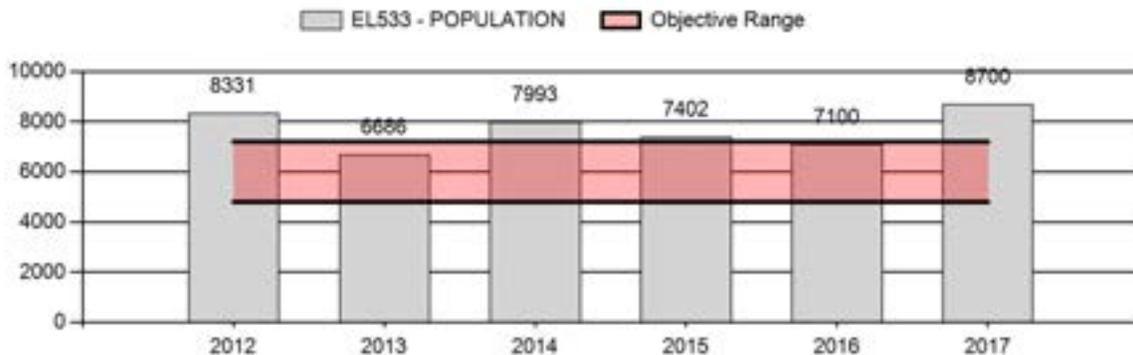
	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Population:	7,502	8,700	8,300
Harvest:	2,008	1,985	1,975
Hunters:	5,972	6,017	6,000
Hunter Success:	34%	33%	33 %
Active Licenses:	6,252	6,304	6,200
Active License Success:	32%	31%	32 %
Recreation Days:	48,232	47,784	48,000
Days Per Animal:	24.0	24.1	24.3
Males per 100 Females	28	18	
Juveniles per 100 Females	46	43	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	45%
Number of years population has been + or - objective in recent trend:	4
Model Date:	03/01/2018

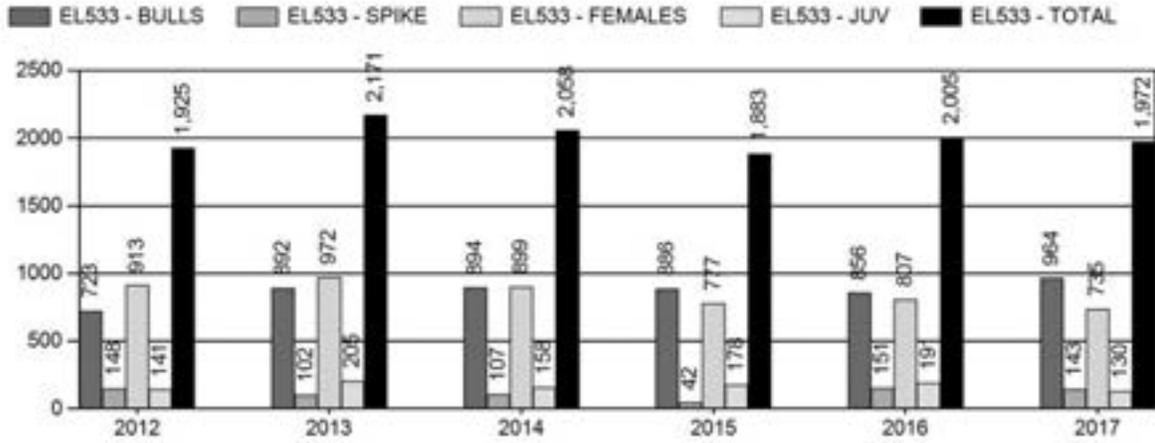
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	18%	15%
Males ≥ 1 year old:	69%	51%
Total:	26%	21%
Proposed change in post-season population:	-18%	-21%

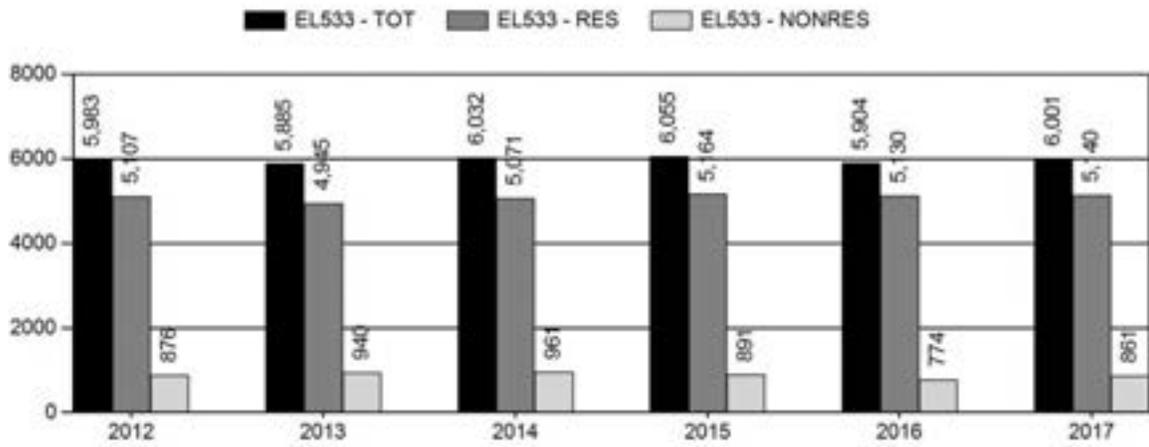
Population Size - Postseason



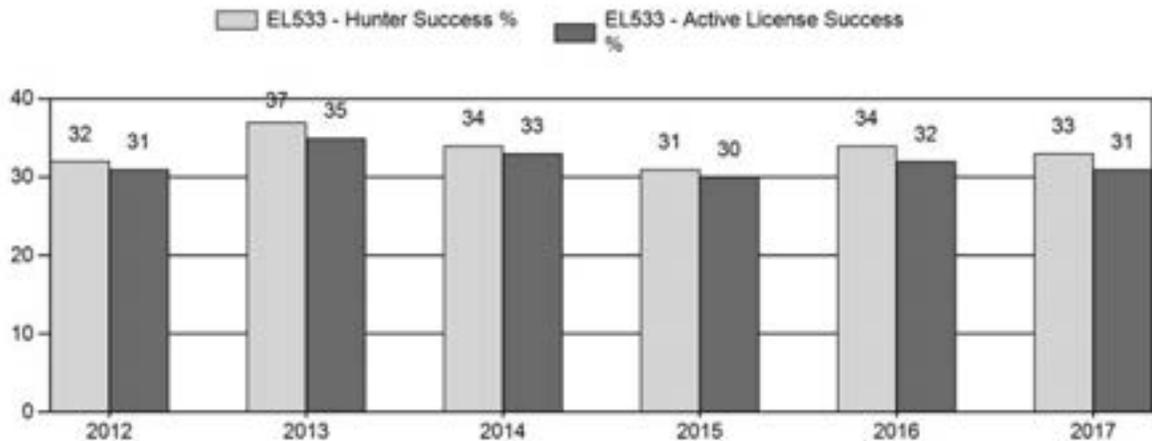
Harvest



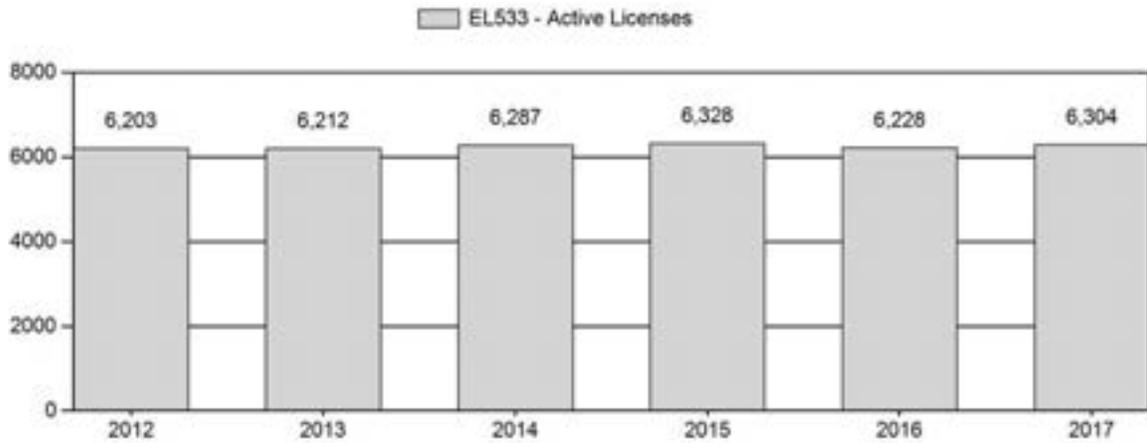
Number of Hunters



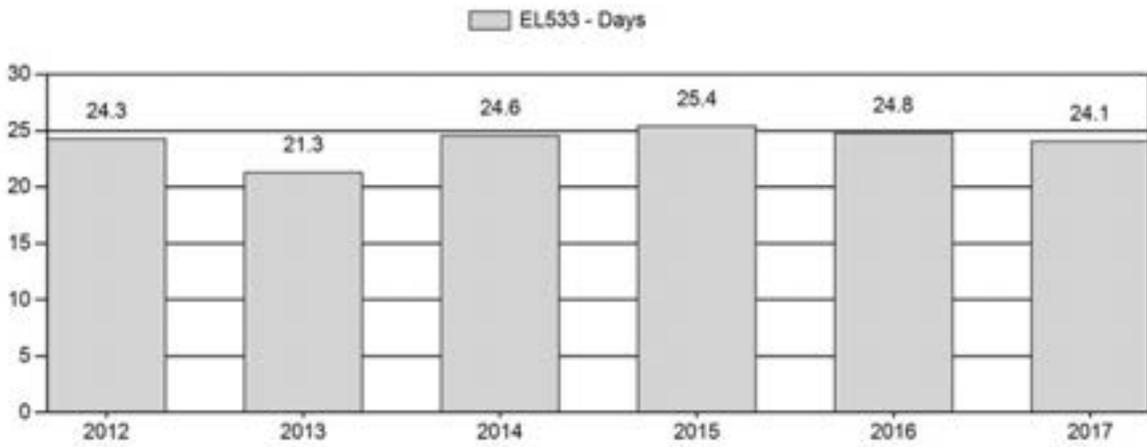
Harvest Success



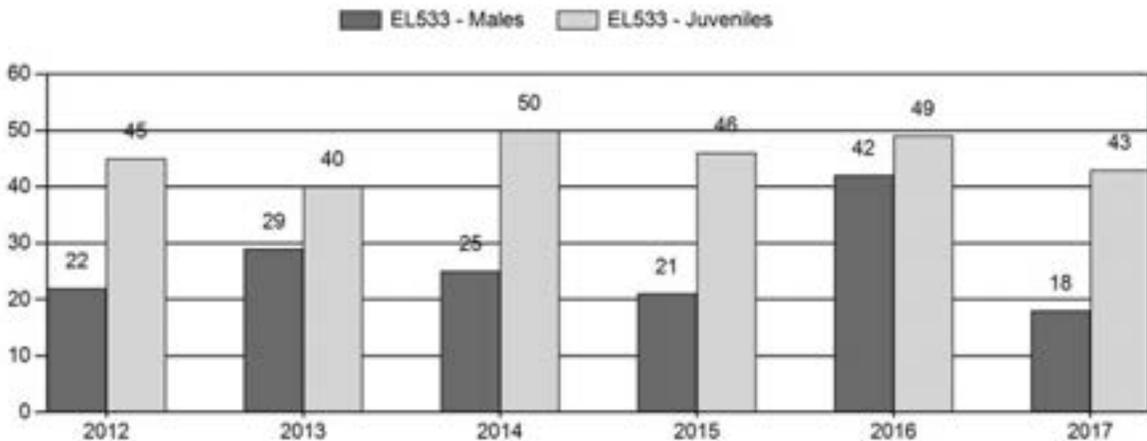
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary

for Elk Herd EL533 - SNOWY RANGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2012	8,331	252	218	470	13%	2,181	60%	990	27%	3,641	664	12	10	22	± 1	45	± 2	37
2013	6,686	292	456	748	17%	2,539	59%	1,023	24%	4,310	646	12	18	29	± 1	40	± 1	31
2014	7,993	259	148	407	14%	1,609	57%	800	28%	2,816	640	16	9	25	± 1	50	± 2	40
2015	7,402	206	190	396	13%	1,885	60%	876	28%	3,157	693	11	10	21	± 1	46	± 2	38
2016	7,100	242	470	712	22%	1,697	52%	837	26%	3,246	657	14	28	42	± 2	49	± 2	35
2017	8,700	182	146	328	11%	1,778	62%	768	27%	2,874	707	10	8	18	± 1	43	± 2	36

**2018 HUNTING SEASON RECOMMENDATIONS
SNOWY RANGE ELK (EL533)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
8	1	Oct. 1	Jan. 31	100	Limited quota	Any elk
	6	Aug. 15	Jan. 31	100	Limited quota	Cow or calf
9		Oct. 15	Oct. 31		General	Any elk
	6	Aug. 15	Sep. 30	150	Limited quota	Cow or calf valid on private land
		Oct. 1	Dec. 31			Cow or calf
		Jan. 1	Jan. 31			Cow or calf valid off national forest
9, 10	7	Aug. 15	Jan. 31	50	Limited quota	Cow or calf valid off national forest
10		Oct. 15	Oct. 31		General	Any elk
	6	Aug. 15	Sep. 30	200	Limited quota	Cow or calf valid on private land
		Oct. 1	Nov. 30			Cow or calf
		Dec. 1	Jan. 31			Cow or calf valid off national forest
11	1	Oct. 1	Nov. 14	150	Limited quota	Any elk
	4	Oct. 1	Nov. 14	300	Limited quota	Antlerless elk
	6	Aug. 15	Jan. 31	50	Limited quota	Cow or calf valid off national forest and off the Wyoming Game and Fish Commission's Wick Wildlife Habitat Management Area
	9	Sep. 1	Sep. 30	50	Limited quota	Any elk, archery only
12		Oct. 15	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	150	Limited quota	Cow or calf
		Nov. 15	Jan. 31			Cow or calf valid west of Wyoming Highway 130
12, 13, 15, 110	7	Aug. 15	Jan. 31	100	Limited quota	Cow or calf valid on private land
110		Oct. 15	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	50	Limited quota	Cow or calf
114	1	Oct. 1	Nov. 30	50	Limited quota	Any elk
	6	Aug. 15	Jan. 31	200	Limited quota	Cow or calf
125	1	Oct. 1	Dec. 31	200	Limited quota	Any elk
		Jan. 1	Jan. 31			Valid for antlerless elk
	6	Oct. 1	Jan. 31	200	Limited quota	Cow or calf

Hunt Area	License Type	Quota change from 2017
9, 10	7	+50
Herd Unit Total	7	+50

Management Evaluation

Current Management Objective: 6,000 (4,800 – 7,200)

Management Strategy: Recreational

2017 Postseason Population Estimate: 8,700

2018 Proposed Postseason Population Estimate: 8,300

2017 Hunter Satisfaction: 62% Satisfied, 21% Neutral, 17% Dissatisfied

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

Herd Unit Issues

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

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2017 (Figures 1 and 2). These figures also include data from January - May of bio-year 2016 to describe the weather conditions immediately preceding bio-year 2017. Monthly mean temperatures in the winter months of bio-year 2016 and 2017 were slightly warmer than the 50-year monthly means but otherwise temperatures were similar to the 50-year monthly means. Precipitation in the latter part of bio-year 2016, primarily received in the form of snow, was stressful for elk deer in this herd unit. The summer of bio-year 2017 was drier than the 50-year average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2017.

Figure 1. January 2017 - January 2018 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

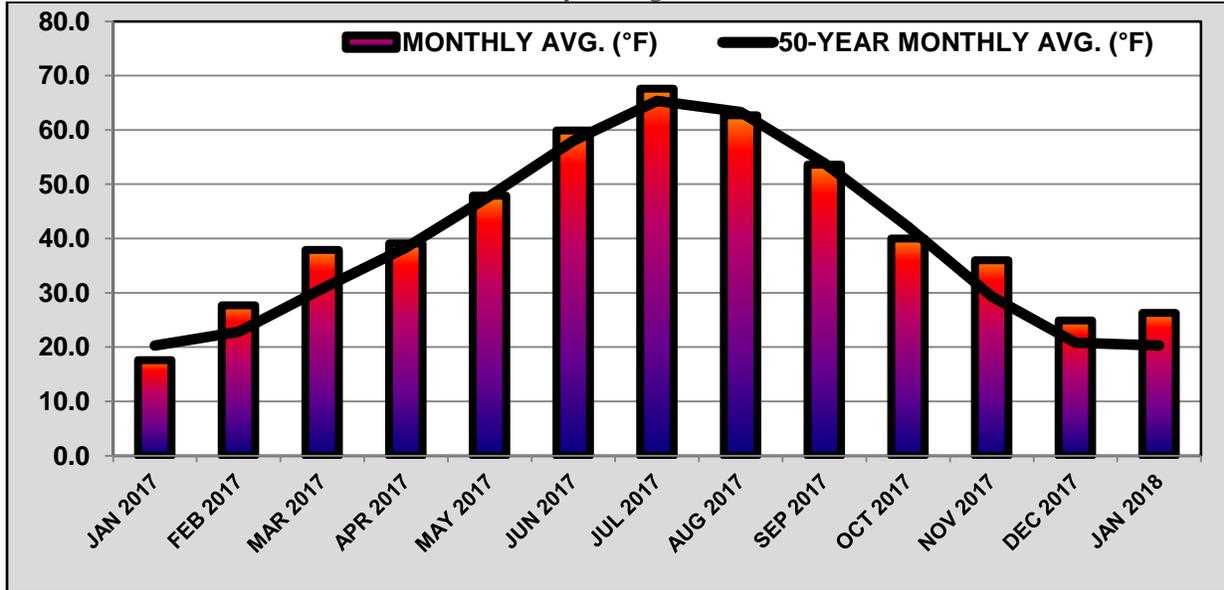
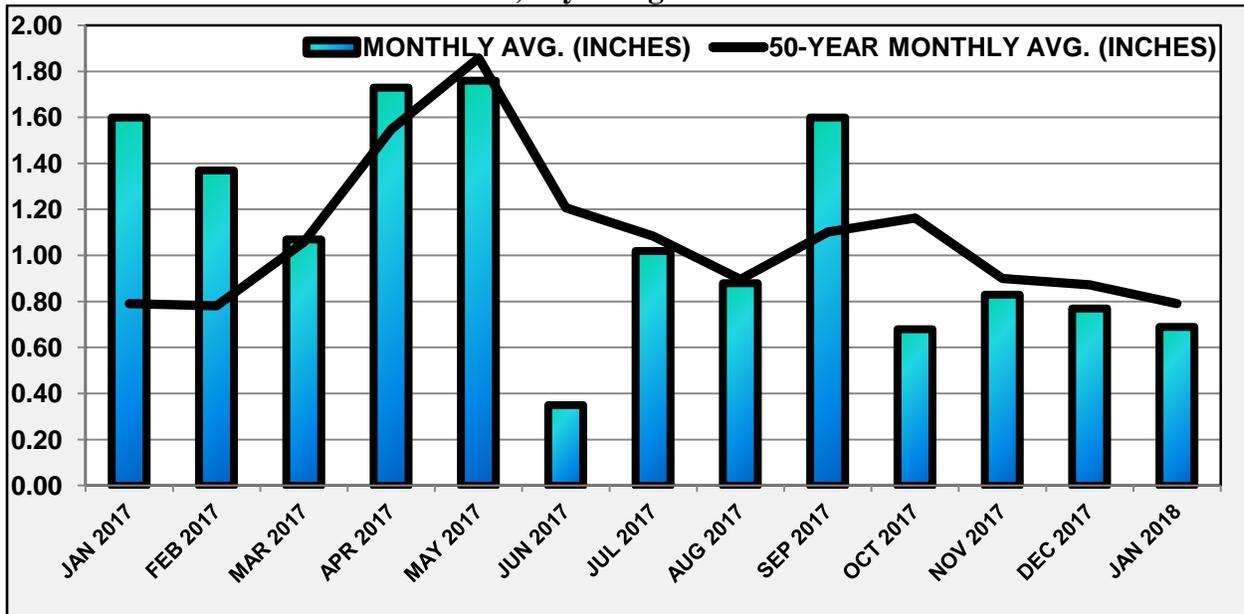


Figure 2. January 2017 - January 2018 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

- Compiled by WGFD Terrestrial Habitat Biologist, Katie Cheesbrough
 Growing season precipitation was below normal across the herd unit in 2017, resulting in slower and less growth of cool season grasses, forbs, and shrubs, particularly in lower elevation seasonal ranges. Vegetation production sampling conducted on the Pennock Wildlife Habitat Management Area showed lower production (474.76 lbs/acre) during the 2017 growing season

than seen in the past 3 years (562.16 lbs/ac average). However, these production values were still high enough to cover the previous year’s wildlife utilization estimates (271.69 lbs/acre).

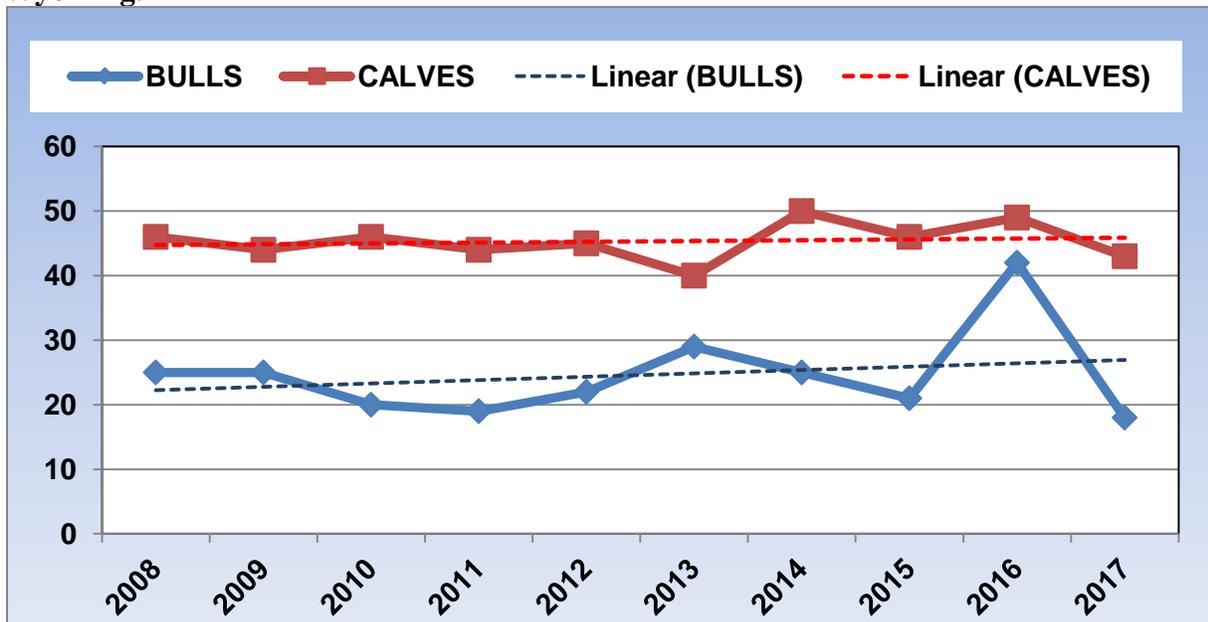
The lack of growing season moisture, a buildup of fine fuels from the two previous years of high grass production, and the abundance of dead beetle killed lodgepole pine created an environment conducive to wildfires in the Snow Range. The 2,527 acre Keystone Fire could potentially serve to increase aspen production and diversify forest species age class and herbaceous production within mule deer summer range in the areas affected.

Rapid Habitat Assessments conducted throughout the herd unit in from 2018-2017 suggest that many important shrub habitats continue to underperform due to maturity and decadence caused by a lack of disturbance.

Field Data

In 2017, we classified elk from a helicopter in conjunction with local mule deer classifications. A postseason classification sample of 2,874 elk produced ratios of 18 bulls and 43 calves per 100 cows in this herd unit. This bull ratio was 57% less than the 2016 ratio and 36% less than the average for the last 5-years. However, the past 10 years of bull and calf ratio data indicated both ratios have been increasing in trend (Figure 3). High calf ratios continued to provide for an excellent recruitment rate in this herd unit.

Figure 3. Bull and calf ratios per 100 cows in the Snowy Range elk herd unit, 2008 - 2017, Wyoming.



Harvest Data

The 2017 harvest survey data indicated 6,001 active licensed hunters harvested 1,972 elk, which was a 3% decrease in harvest from 2016. The total harvest success rate of 33% was a 1% decrease from 2016. Branch antlered bulls accounted for 87% of the male harvest in 2017 and

48% of the overall harvest. The proportion of spikes in the male harvest for the entire herd unit increased from decrease to 13% in 2017 from 15%. Antlerless elk accounted for 45% of the total 2017 elk harvest. Harvest rates, days per harvest, and harvest success rates under the current liberal hunting season structure continued to be considered acceptable. In 2017, 27% of the branch antlered bull harvest was attributed to archery; while 21% of the branch antlered bull harvest was attributed to archery in 2016.

Chronic wasting disease (CWD) was first observed in the Snowy Range herd unit in 2004. Since 1997, we have tested a total of 1,234 elk in this herd unit and have found 12 to be positive for CWD. In 2017, we increased our surveillance efforts for CWD in this herd unit. Results of the 2017 samples (n=127) collected from hunter-harvested elk indicated an annual prevalence of 0% CWD positive.

Population

In 2017, we continued to use the CJ,CA spreadsheet model to simulate Snowy Range herd unit population dynamics. The other 2017 models in the spreadsheet model suite had either higher AICc scores or were not biologically realistic. Without other important information such as an independent abundance estimate or historical survival data to incorporate into the model, accuracy of estimates will continue to be unknown. We rated this model as poor, and not biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

The 2017 postseason population estimate for the Snowy Range herd unit was 8,700 elk. A decreasing trend in the annual estimate continued with CJ,CA model and was considered to be consistent with the observations by field managers. We considered the 2017 postseason population estimate produced by the CJ,CA spreadsheet model to be somewhat plausible.

Management Summary

The hunting seasons in the Snowy Range herd unit continued to provide recreational opportunities while reducing the overall elk population. Elk numbers appeared to be declining. The season closing date for Hunt 11 Type 1 licenses was increased to 14 November to address landowner concerns about damage from bull elk. The season closing date for Hunt area 114 Type 1 licenses was decreased to 30 November because landowners didn't feel the longer season was needed to address damage concerns.

Literature Cited

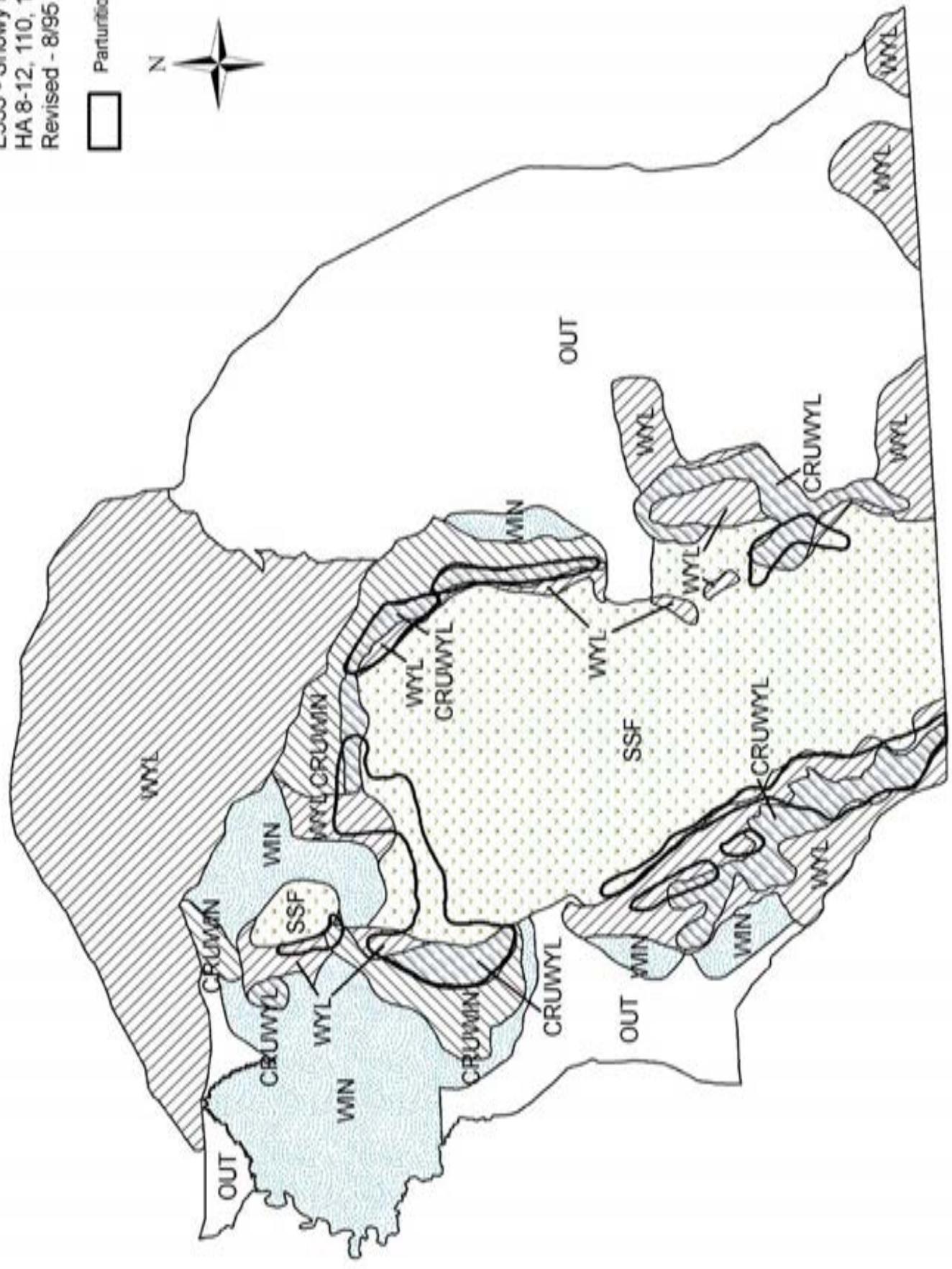
Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

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

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

□ Parturition Area



2017 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2017 - 5/31/2018

HERD: EL534 - SHIRLEY MOUNTAIN

HUNT AREAS: 16

PREPARED BY: WILL SCHULTZ

	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Trend Count:	812	1,808	1,600
Harvest:	349	384	500
Hunters:	608	706	800
Hunter Success:	57%	54%	62%
Active Licenses:	632	752	800
Active License Success	55%	51%	62%
Recreation Days:	4,834	5,659	5,700
Days Per Animal:	13.9	14.7	11.4
Males per 100 Females:	43	40	
Juveniles per 100 Females	43	39	

Trend Based Objective (± 20%) 800 (640 - 960)

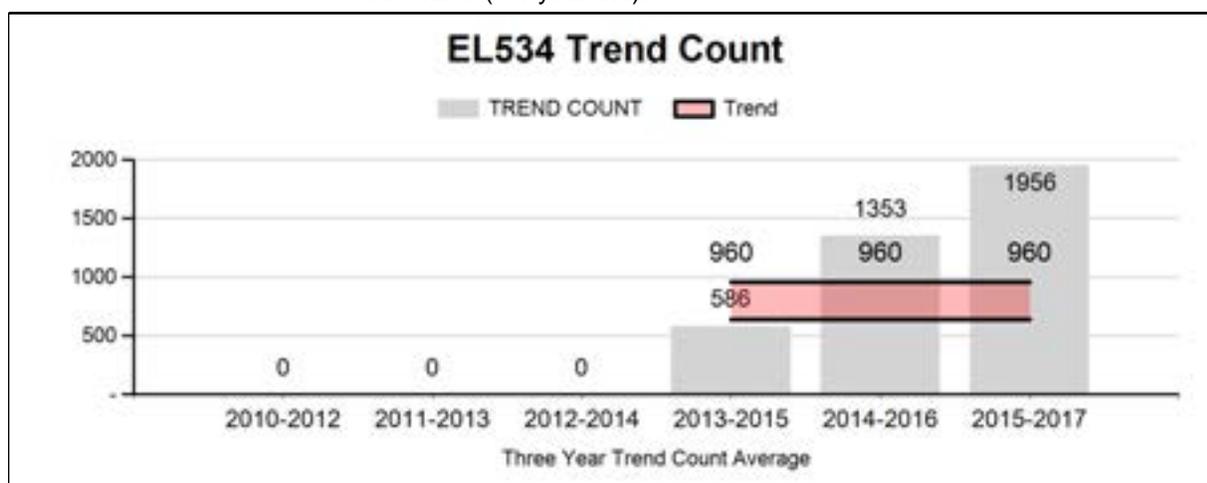
Management Strategy: Special

Percent population is above (+) or (-) objective: 126%

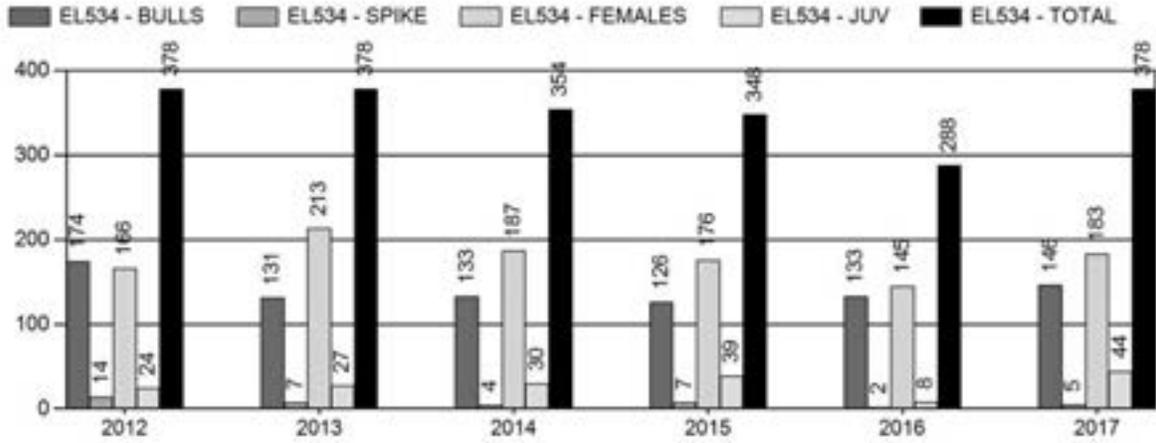
Number of years population has been + or - objective in recent trend: 3

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

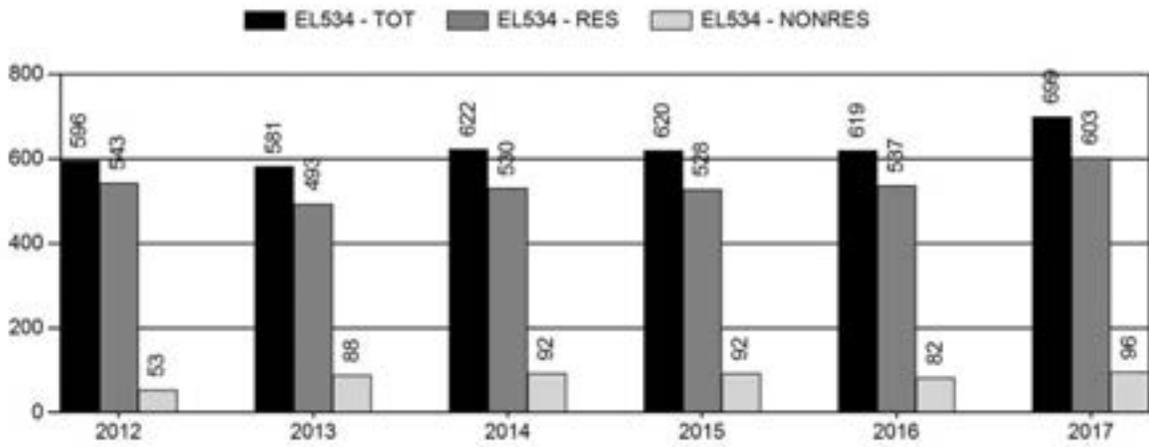
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%



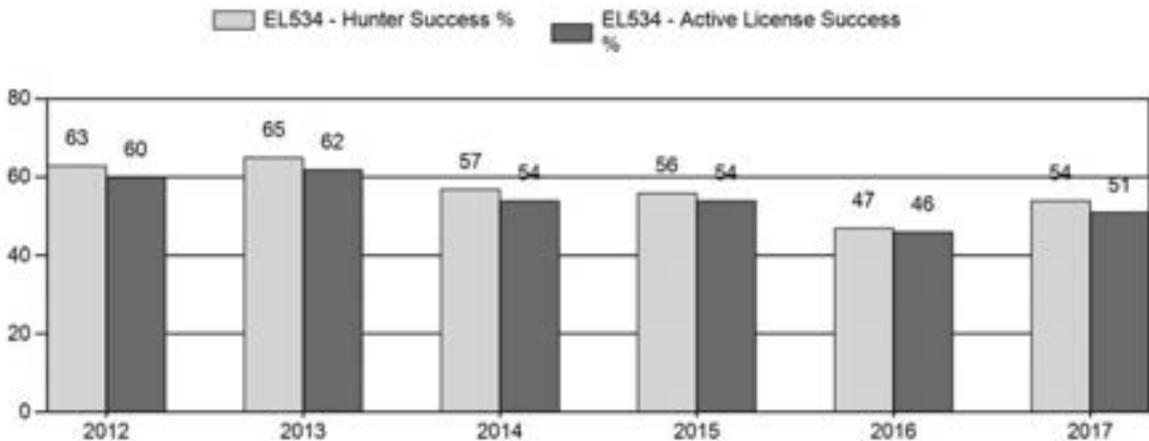
Harvest



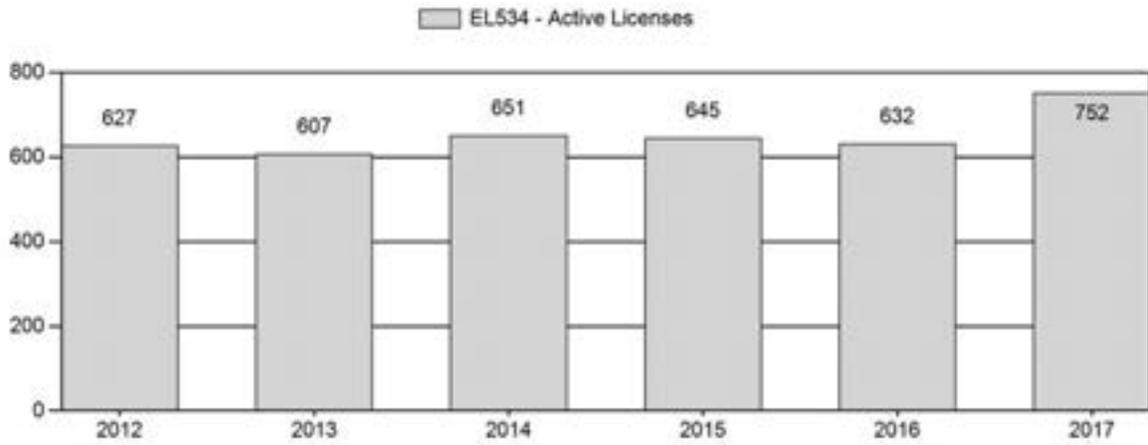
Number of Hunters



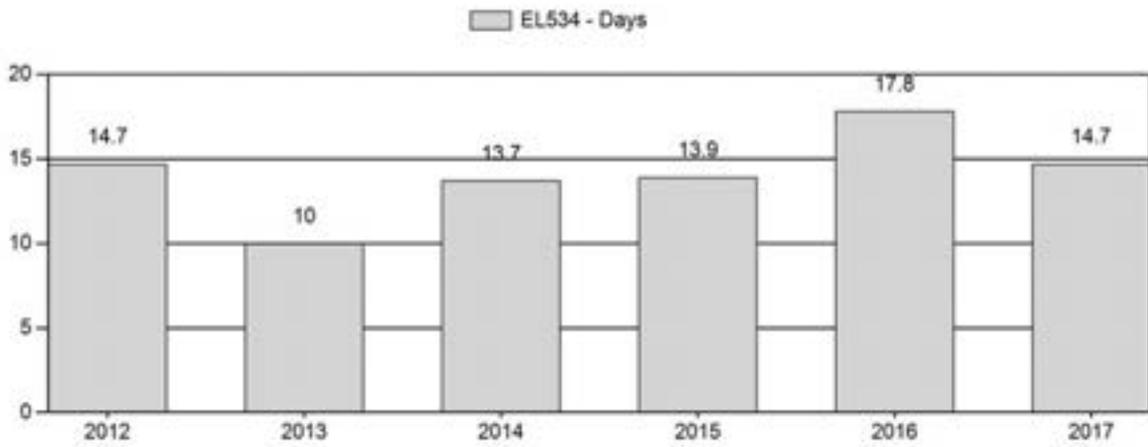
Harvest Success



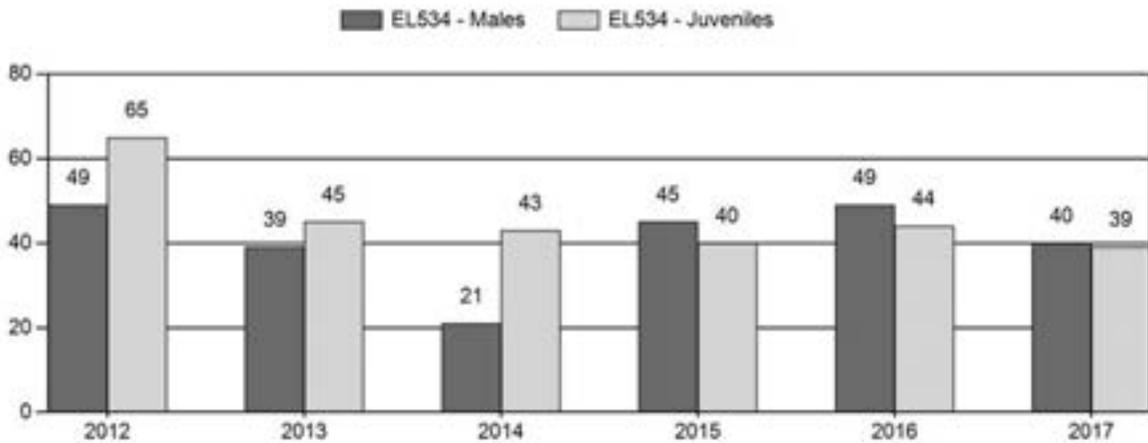
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary

for Elk Herd EL534 - SHIRLEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2012	880	8	32	40	23%	81	47%	53	30%	174	420	10	40	49	± 11	65	± 13	44
2013	1,462	52	90	142	21%	365	54%	165	25%	672	568	14	25	39	± 4	45	± 4	33
2014	767	14	47	61	13%	294	61%	127	26%	482	395	5	16	21	± 2	43	± 4	36
2015	0	86	342	428	24%	948	54%	383	22%	1,759	596	9	36	45	± 0	40	± 0	28
2016	0	160	422	582	25%	1,196	52%	523	23%	2,301	634	13	35	49	± 0	44	± 0	29
2017	0	99	301	400	22%	1,012	56%	396	22%	1,808	0	10	30	40	± 0	39	± 0	28

**2018 HUNTING SEASON RECOMMENDATIONS
SHIRLEY MOUNTAIN ELK (EL534)**

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

Hunt Area	License Type	Quota change from 2017
Herd Unit Total		None

Management Evaluation

Current Mid-Winter Trend Count Management Objective: 800 (640-960)

Management Strategy: Special

2017 Trend Count: 1,808

Most Recent 3-year Running Average Trend Count: 1,956

2017 Hunter Satisfaction: 80% Satisfied, 7% Neutral, 13% Dissatisfied

Elk in the Shirley Mountain herd unit are managed toward a mid-winter trend count of 800. The management strategy was changed in 2015 from recreational management to special management. The management objective was reviewed in 2015 and changed from a postseason population objective of 800 elk to a mid-winter trend count of 800 elk.

Herd Unit Issues

Wind energy developments are a relatively new land use in this herd unit. There are currently 2 wind farms in this herd unit and there is interest in developing more wind farms. Our ability to manage elk numbers through harvest is difficult because a large portion of the elk habitat in this herd unit is owned by one landowner who provides a very limited amount of access. Elk damage in this herd unit is minimal. Interchange of elk with adjacent herd units may compromise the closed population assumption for this herd unit. Annual population monitoring efforts and results have been highly variable.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2017 (Figures 1 and 2). These figures also include data from January - May of bio-year 2016 to describe the weather conditions immediately preceding bio-year 2017. Monthly mean temperatures in the winter months of bio-year 2016 and 2017 were slightly warmer than the 50-year monthly means but otherwise temperatures were similar to the 50-year monthly means. Precipitation in the latter part of bio-year 2016, primarily received in the form of snow, was stressful for elk in this herd unit. The summer of bio-year 2017 was drier than the 50-year average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2017.

Figure 1. January 2017 - January 2018 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

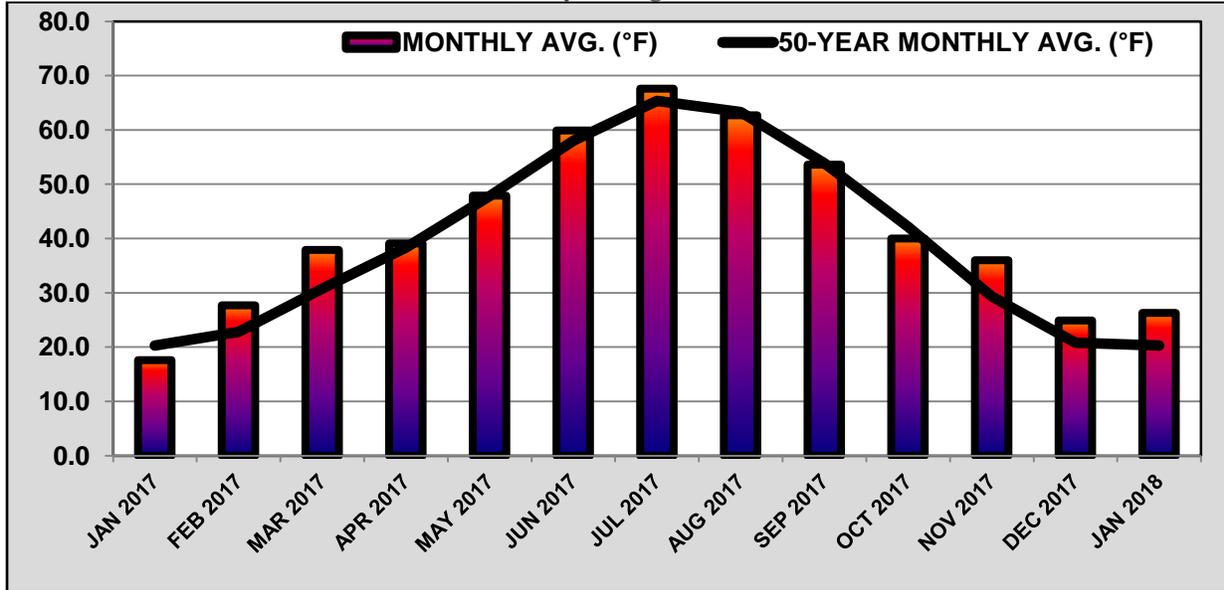
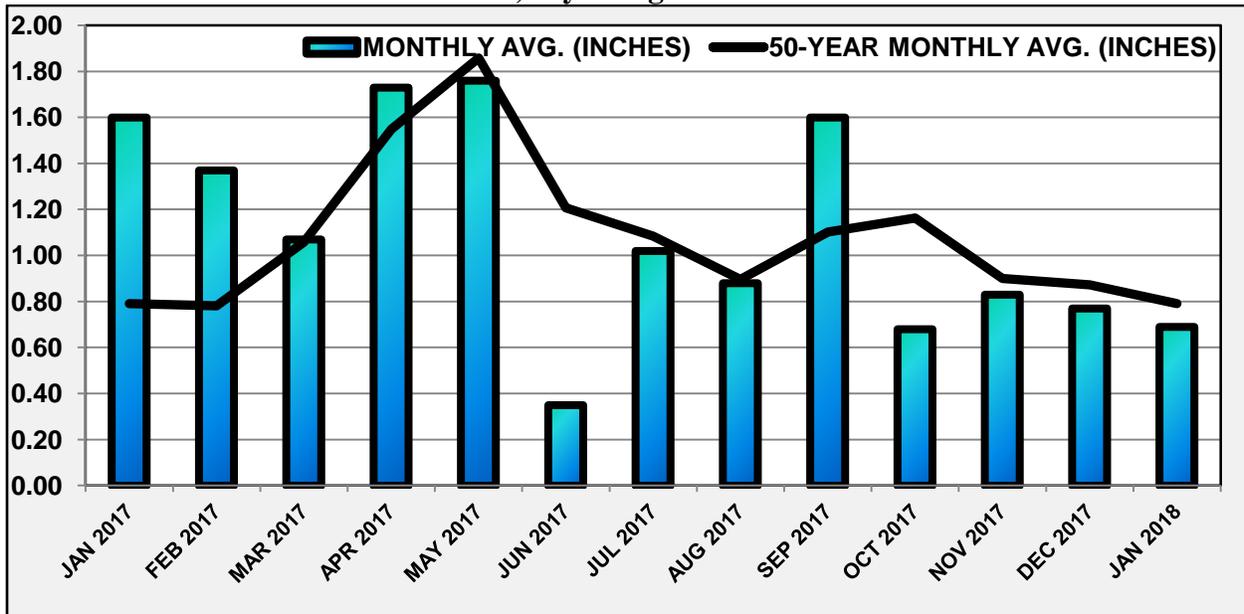


Figure 2. January 2017 - January 2018 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were observed in bio-year 2017 due to adequate amounts of early spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most shrub-steppe habitat in this herd unit

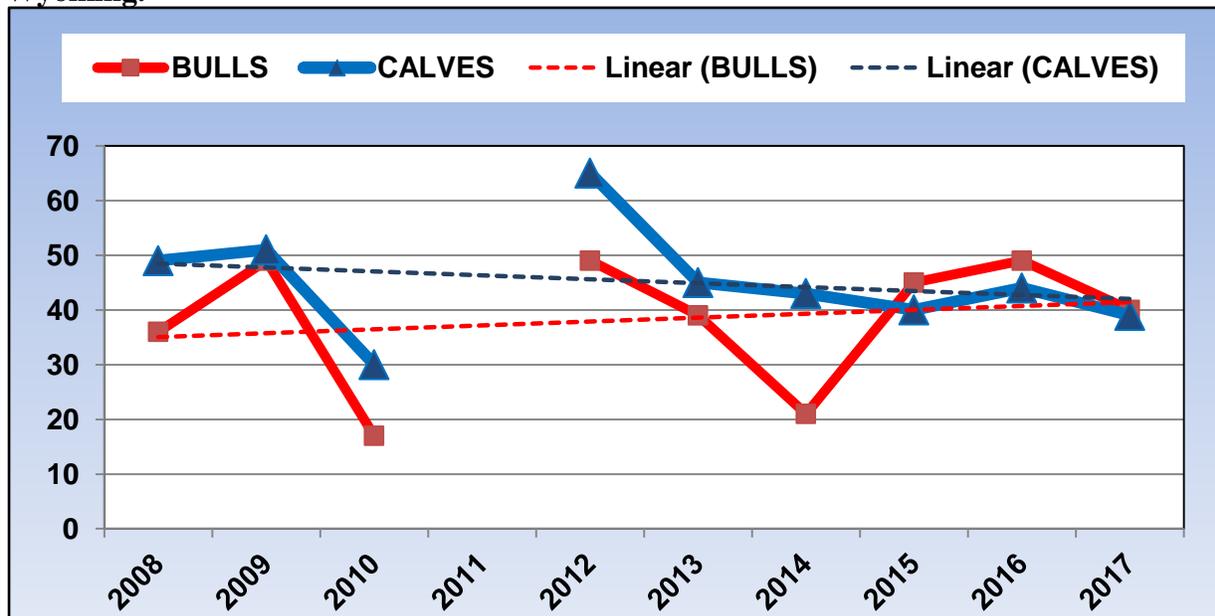
is decadent and in need of treatments designed to improve the nutritional value of sagebrush and other plants.

The seasonal range map for this herd unit was updated using data from a recent radio-collar monitoring project and the Wyoming Game and Fish Department’s Wildlife Observation System (Appendix A). This update provided an improved description for elk use of habitat in the herd unit.

Field Data

Postseason sex and age classifications were conducted in conjunction with a mid-winter trend survey in January of 2017. The results were a total of 40 bull and 39 calves per 100 cows, from a sample of 1,808 elk. Figure 3 illustrates how the 2016 postseason ratios compared to previous classification results during the past 10-years.

Figure 3. Shirley Mountain elk herd unit bull and calf ratios per 100 cows, 2008 - 2017, Wyoming.



In previous years, the collection of classification data varied annually in methodology, primarily due to no dedicated survey flight budget for this herd. With the change in management objective type from a postseason population objective, to a mid-winter trend count objective, a dedicated budget for annual helicopter surveys has been established. This has resulted in more consistent sampling for trend, sex, and age data collection.

Harvest Data

Preliminary elk harvest survey data indicated 699 active licensed hunters harvested 378 elk in 2017, with an overall success rate of 54%. The 2017 harvest success increased 24% from 2016 due in part to the addition of 100 more Type 6 licenses. Bull harvest increased as well although Type 1 and 2 licenses numbers remained the same as in 2016. The 2017 branch bull harvest (n=148) was a 7% increase from 2016. Antlerless harvest (n=231) increased 6% in 2017.

Overall, harvest in 2017 was relatively more successful with more elk being harvested and less days being expended for each elk harvested.

Chronic wasting disease (CWD) was first observed in the Shirley Mountain herd unit in 2006. In 2017, we increased our surveillance efforts for CWD in this herd unit. Since 1997, we have tested a total of 141 elk in this herd unit and have found 2 to be positive for CWD. Results of the 2017 samples (n=18) collected from hunter-harvested elk indicated an annual prevalence of 0% CWD positive.

Population

In 2015, we reviewed the management objective and converted from a population management objective of 800 elk postseason, to a mid-winter trend count objective of 800 elk postseason. The spreadsheet model which was previously used to develop the annual population estimate for elk in this herd unit did not function adequately enough to provide managers with a reliable estimate. This was the primary reason for changing from a population based management objective to a mid-winter trend count objective. Maintaining sustainable numbers of elk in the Shirley Mountain herd unit, while also maintaining bull ratios within the special management parameters, is the ultimate management objective. Improving our monitoring techniques is keystone to insuring we are meeting these management objectives. Replacing the spreadsheet model derived population estimate with the mid-winter trend count as our management benchmark will provide for a more accurate assessment of annual elk numbers in the is herd unit.

A mid-winter trend count survey was completed in January of 2017 (Figure 4). A total of 1,808 elk were observed in the herd unit. This sample size was relatively similar to the sample (n=2,301) observed last year. Both of these latest surveys' sample sizes are substantially greater when compared to previous helicopter surveys, covering relatively the same area in the herd unit. In 2010 we observed 691 elk and in 2013 we observed 672 elk during helicopter classification surveys. It would appear we have significantly under estimated the number of elk wintering in this herd unit.

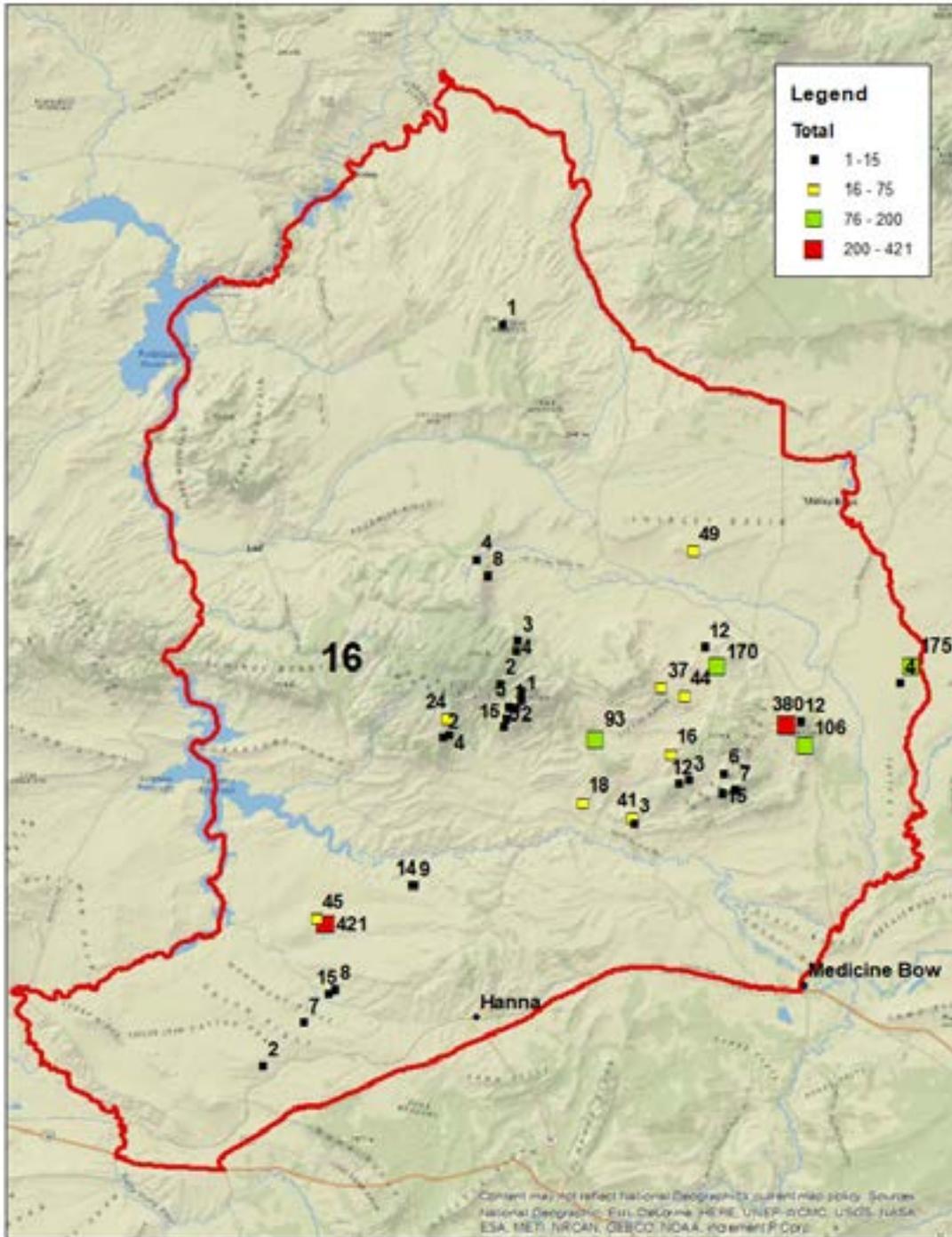
Management Summary

The 2018 hunting season recommendations were prescribed with the continued objectives of maintaining bull ratios within the special management parameters and reducing elk numbers. Access in the Beer Mug HMA was similar to the 2017 season. Access in the Hanna Draw HMA continued with a September period for Type 4 and Type 6 licensed hunters and more overall permit numbers for all hunt periods. We retained the same number of licenses for the 2018 hunting season

Literature Cited

None

Figure 4. 2017 Mid-winter trend count observations in the Shirley Mountain elk herd unit, Wyoming.



Bibliography of Herd Specific Studies

None

Shirley Mountain Elk Herd Unit (EL534) Seasonal Range Map Update

Will Schultz, Saratoga Wildlife Biologist, Wyoming Game and Fish Department

18 December 2017

Introduction

The seasonal range map for the Shirley Mountain elk herd unit (EL534) was last updated in May 1988 (Figure 1). Since 1988, the herd unit's boundaries have changed several times, elk distribution has expanded, and Wyoming Game and Fish Department's (WGFD) documentation of elk distribution has increased. Recently, the seasonal range map was reviewed and it was determined there was a need to update this map to describe the current seasonal distribution of elk. Elk observation data collected from global positioning system (GPS) radio-collars and the WGFD Wildlife Observation System (WOS) were used to update the seasonal range map for the Shirley Mountain elk herd unit.

Methods

In January 2010, the University of Wyoming (UW) began an elk telemetry project near the Dunlap Wind Farm, located in the southeastern portion of the Shirley Mountain herd unit. Thirty (30) cow elk were captured and equipped with GPS radio-collars in January of 2010. An additional 29 cow elk were captured and equipped with GPS radio-collars in December of 2012. These radio-collars remained deployed for approximately 2 years on each of the respective groups, collecting GPS locations at approximately 7 hour intervals. The radio-collars dropped off the elk automatically after the 2 year period. The radio-collars were then retrieved and the GPS location data was downloaded from the radio-collars.

The WGFD has developed standardized definitions for seasonal wildlife ranges (Appendix A). These definitions include beginning date and ending date parameters for most seasonal ranges. In order to develop robust seasonal range polygons to describe elk use, subsets of the radio-collared elk observation data were binned by "core" time periods of use within the boarder WGFD seasonal range date parameters (Table 1). This sub-sampling of "core" time periods allowed for a greater level of confidence in the DRAFT seasonal range polygons accurately representing the associated seasons of use.

The elk radio-collar datasets were analyzed using kernel density estimation (KDE) (Walter et al. 2011) to update the seasonal ranges. The KDE spatial analyst tool was used in ArcGIS® (Environmental Systems Research Institute, Redlands, CA) to perform this analysis. KDE quantified seasonal elk use by the number of radio-collared elk observations per square kilometer, during the time period described in column 3 of Table 1. Raster files were created for each KDE seasonal range subset by selecting an 80%, 95%, or 98% inclusion rate for the square

kilometers which contained the greatest number of radio-collared elk observations. The 80% inclusion rate was selected to delineate parturition range and crucial winter yearlong range because it represented the “core” area of elk use during the respective time periods. The 95% inclusion rate was selected to delineate yearlong range, spring, summer, fall range, and winter yearlong range as these seasonal ranges generally described a greater area of elk use but also included areas with lower use per square kilometer rates when compared to the 80% inclusion rate. Raster files were then converted to simplified polygons for each seasonal range.

Table 1. Parameters used to develop seasonal elk range polygons from GPS collar data for the Shirley Mountain herd unit, Wyoming.

Seasonal Range	Seasonal Range definition date parameters	Observation dates used to delineate seasonal range polygons	Kernel Density Estimation rates used to delineate seasonal range polygons
YEARLONG	01/01 – 12/31	01/01 – 12/31	98%
SPRING, SUMMER, FALL	05/01 - 11/14	06/01- 09/30	95%
PARTURITION	05/15 – 06/30	06/01 – 06/15	80%
WINTER YEARLONG	11/15 – 04/30	12/01 – 03/31	95%
CRUCIAL WINTER YEARLONG	11/15 – 04/30	12/01 – 03/31	80%

The WGFD WOS was queried to develop a dataset of elk observations for the Shirley Mountain herd unit, collected 2000-2017. These data were mapped in ArcGIS[®] and compared to both the current seasonal range map and the DRAFT seasonal range polygons developed from the radio-collar datasets. Casper and Saratoga WGFD district wildlife biologists further update the DRAFT seasonal range polygons to reflect elk seasonal use and distribution as documented by the WOS data. Professional inference was used to determine appropriate seasonal range revisions in areas of the herd unit where supporting elk observation data were absent.

Preliminary analyses of the elk collar data using a Brownian Bridge Movement Model (Horne, et al. 2007) indicated these elk did not exhibit strong migratory behavior (Kurt Smith, UW, personal communication) and therefore migratory ungulate ranges were not delineated in this seasonal range update.

Results

A DRAFT seasonal range map was developed from the analysis of the elk collar data and the WOS data (Figures 2 and 3). Yearlong, Winter Yearlong, and Crucial Winter Yearlong ranges were increased in area. Spring, Summer, Fall, range was decreased in area. We delineated 2 areas of Parturition range within an area Spring, Summer, Fall range. We removed the terms Winter and Crucial Winter from the ranges in this herd unit, as it was determined these terms no

longer described those areas appropriately. The DRAFT seasonal ranges appeared to illustrate a reasonable description of seasonal elk use and were considered an improvement when compared to the current seasonal range map for the Shirley Mountain elk herd unit.

Literature Cited

Horne, J. S., Garton, E. O., Krone, S. M., and Lewis, J.S. 2007. Analyzing animal movements using Brownian Bridges. *Ecology* 88:2354-2363.

Walter, W. D., Fischer, J. W., Baruch-Mordo, S., and VerCauteren, K.C. 2011. What Is the Proper Method to Delineate Home Range of an Animal Using Today's Advanced GPS Telemetry Systems: The Initial Step, *Modern Telemetry*, Dr. Ondrej Krejcar (Ed.), InTech, DOI: 10.5772/24660. Available from:

<https://www.intechopen.com/books/modern-telemetry/what-is-the-proper-method-to-delineate-home-range-of-an-animal-using-today-s-advanced-gps-telemetry->

Figure 1. Current seasonal range map (last updated May 1988) for the Shirley Mountain elk herd unit, Wyoming.

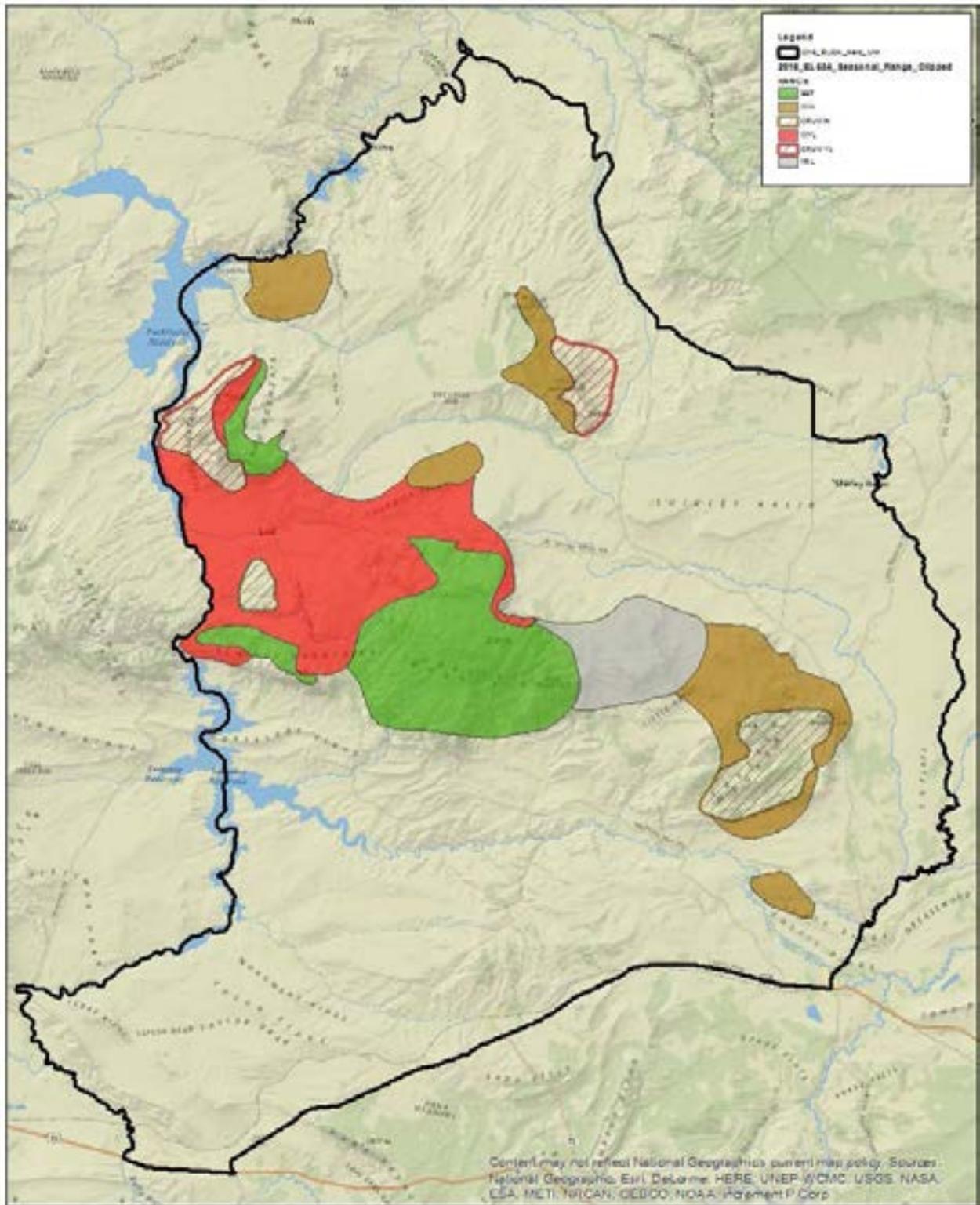


Figure 2. DRAFT seasonal range map (updated May 2017) for the Shirley Mountain elk herd unit, with elk collar data and WOS data locations used in the seasonal range update, Wyoming.

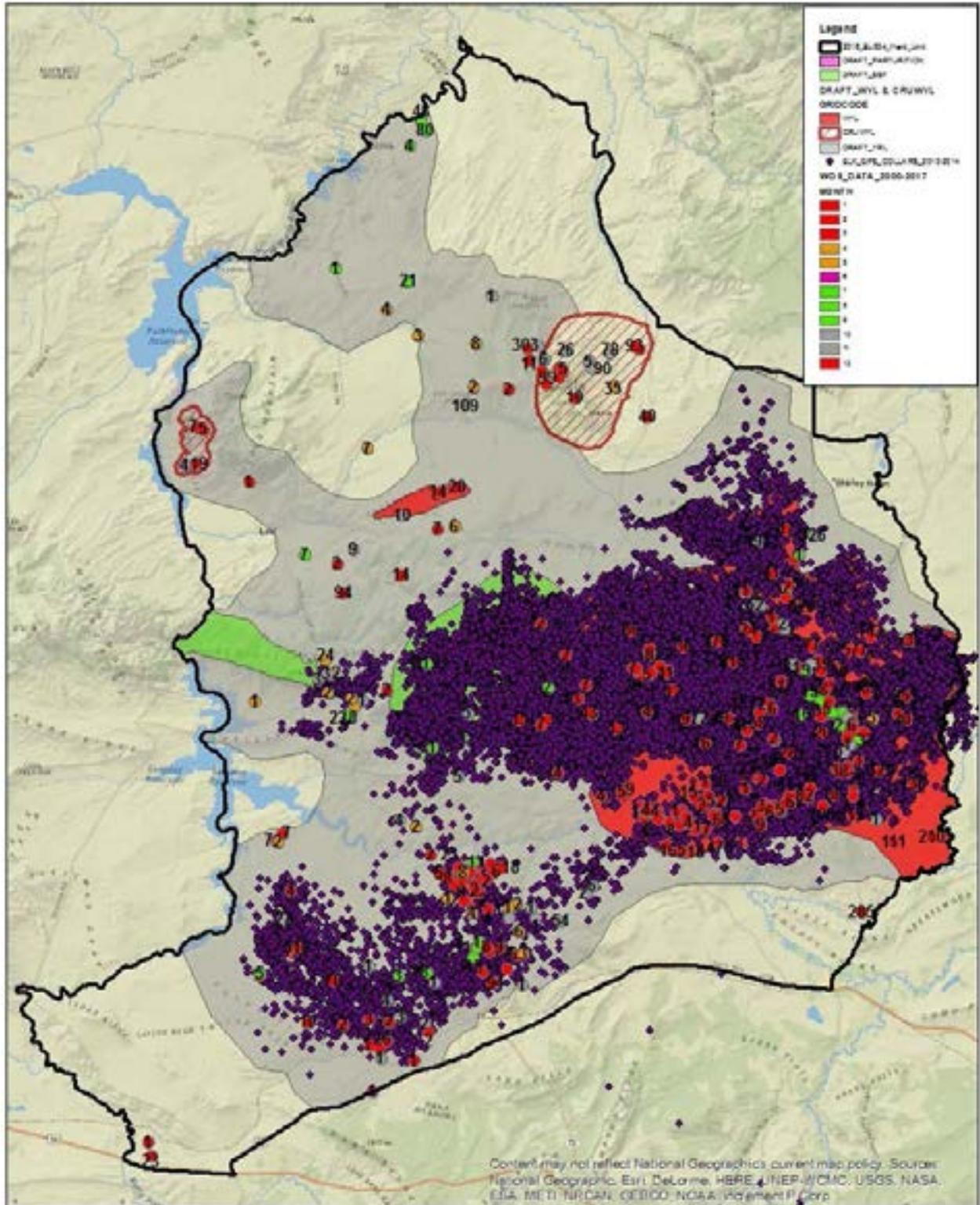
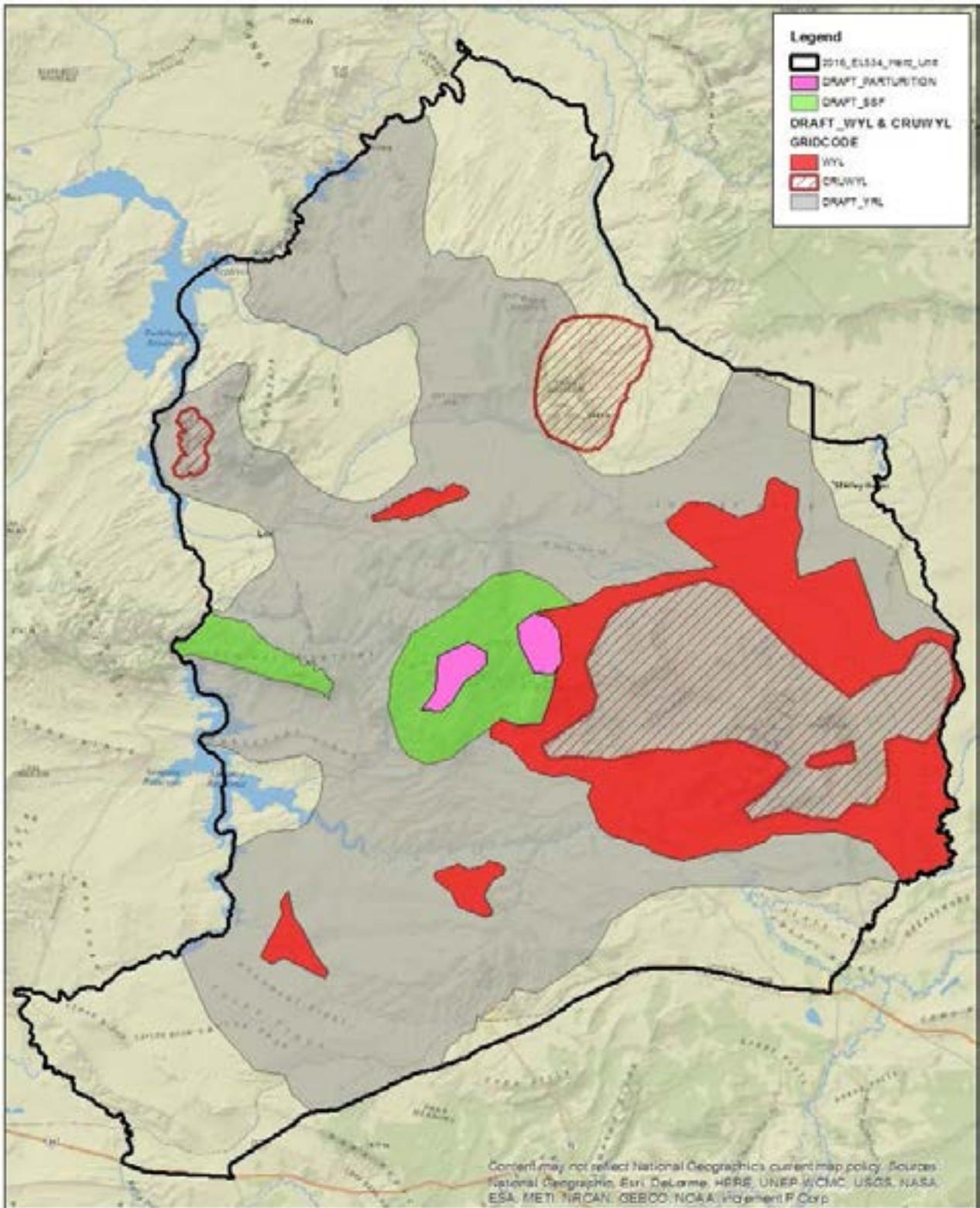
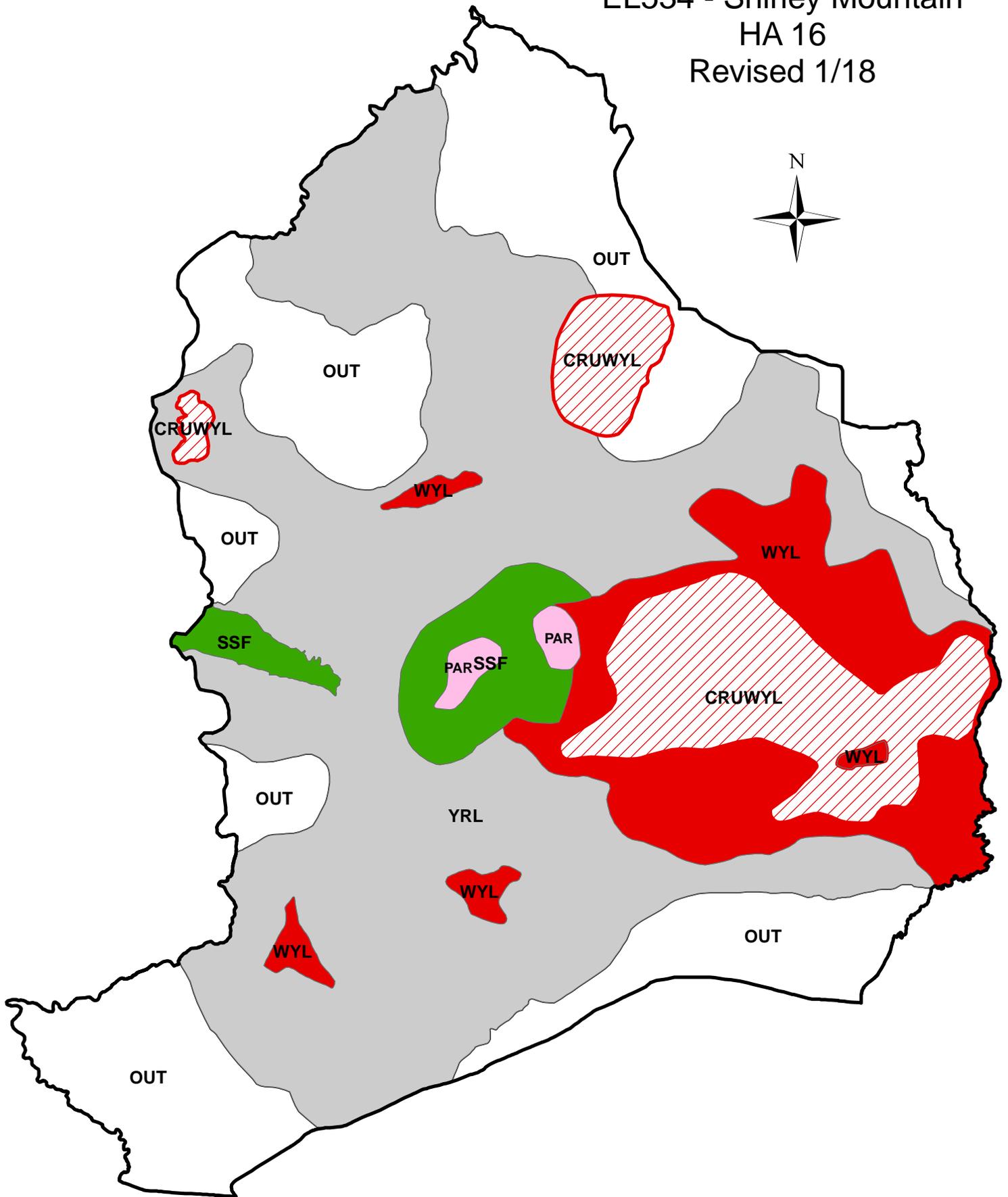


Figure 3. DRAFT seasonal range map (updated May 2017) for the Shirley Mountain elk herd unit, Wyoming.



EL534 - Shirley Mountain
HA 16
Revised 1/18



2017 - JCR Evaluation Form

SPECIES: Elk

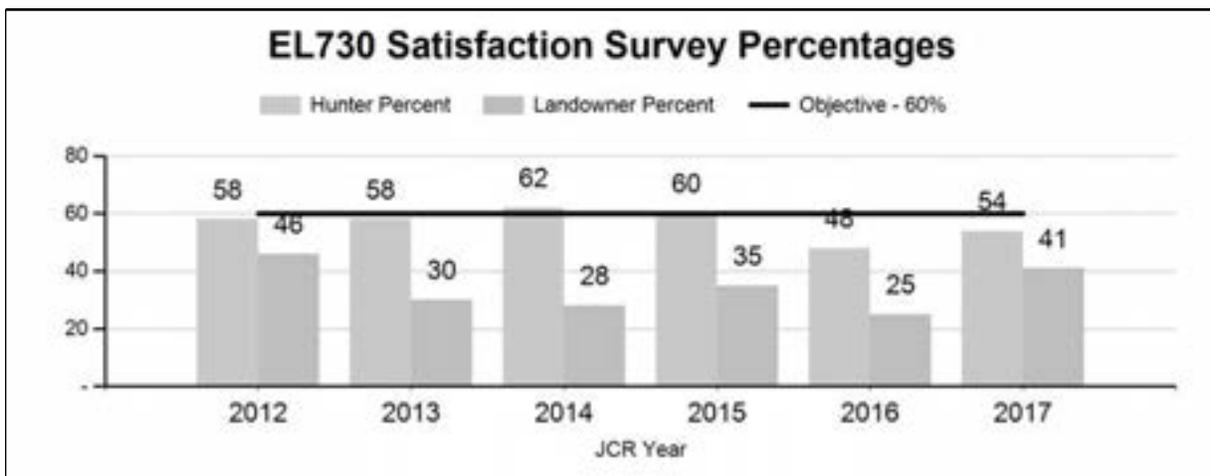
PERIOD: 6/1/2017 - 5/31/2018

HERD: EL730 - RAWHIDE

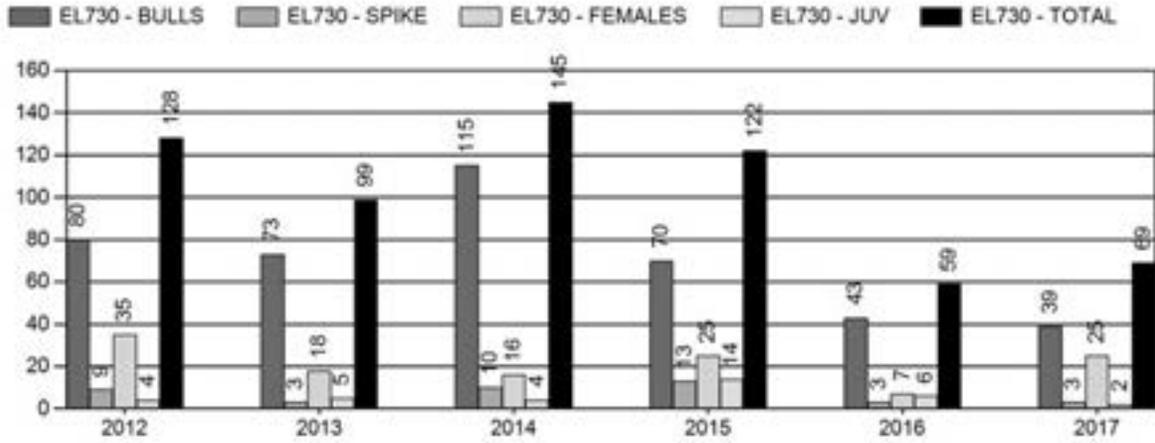
HUNT AREAS: 3

PREPARED BY: MARTIN HICKS

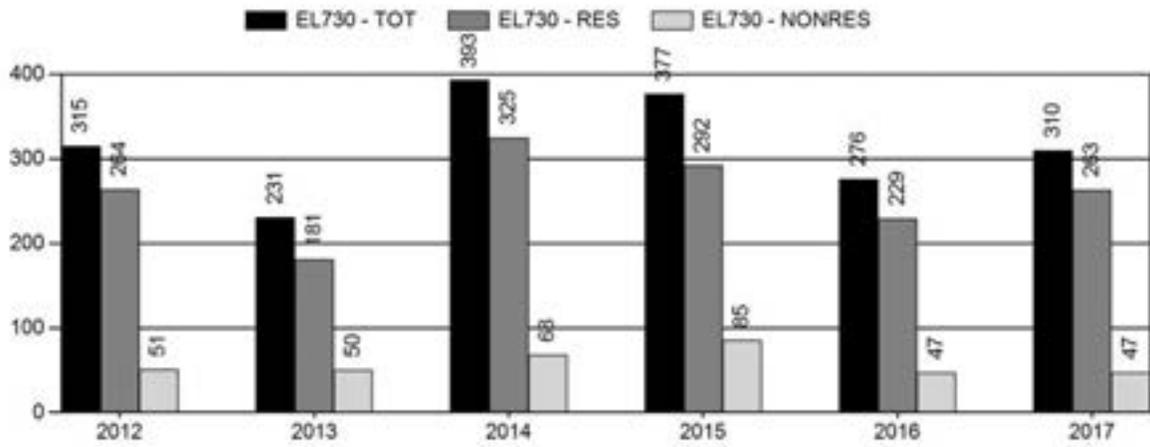
	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Hunter Satisfaction Percent	58%	54%	60%
Landowner Satisfaction Percent	35%	41%	60%
Harvest:	111	69	70
Hunters:	318	310	300
Hunter Success:	35%	22%	23%
Active Licenses:	336	321	305
Active License Success:	33%	21%	23%
Recreation Days:	2,289	2,041	1,975
Days Per Animal:	20.6	29.6	28.2
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	
Satisfaction Based Objective			60%
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-12%
Number of years population has been + or - objective in recent trend:			6



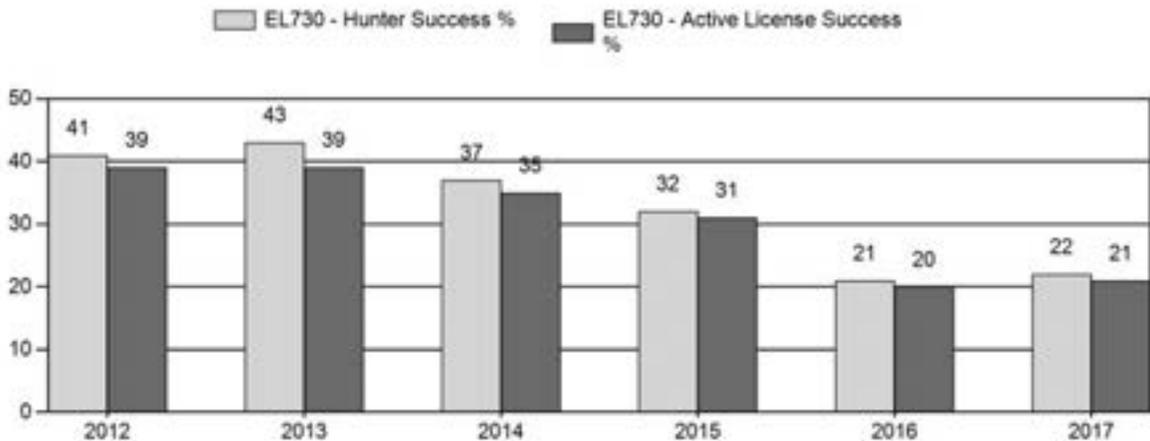
Harvest



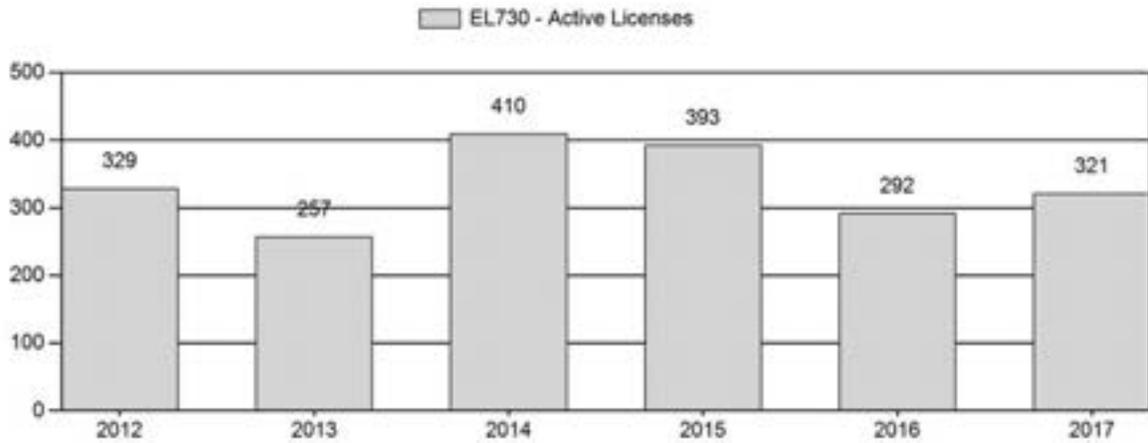
Number of Hunters



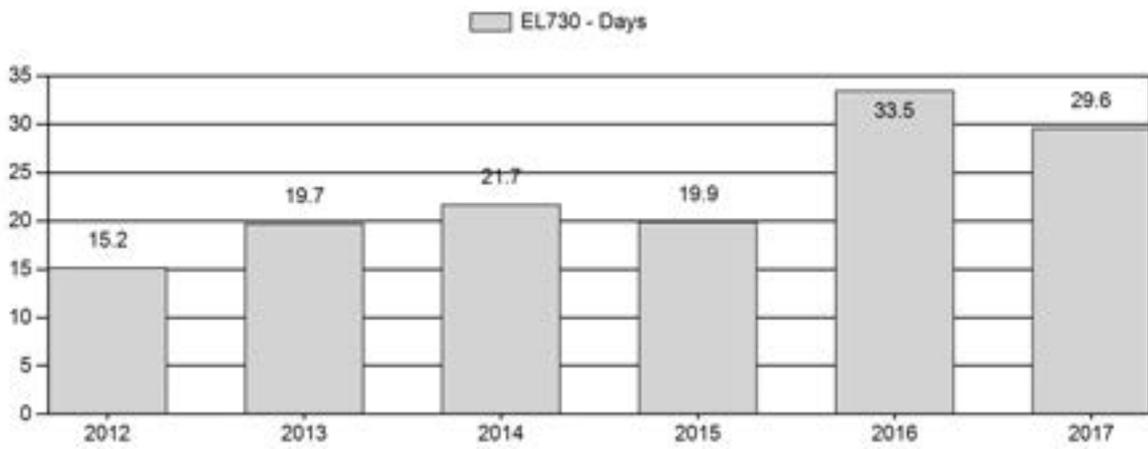
Harvest Success



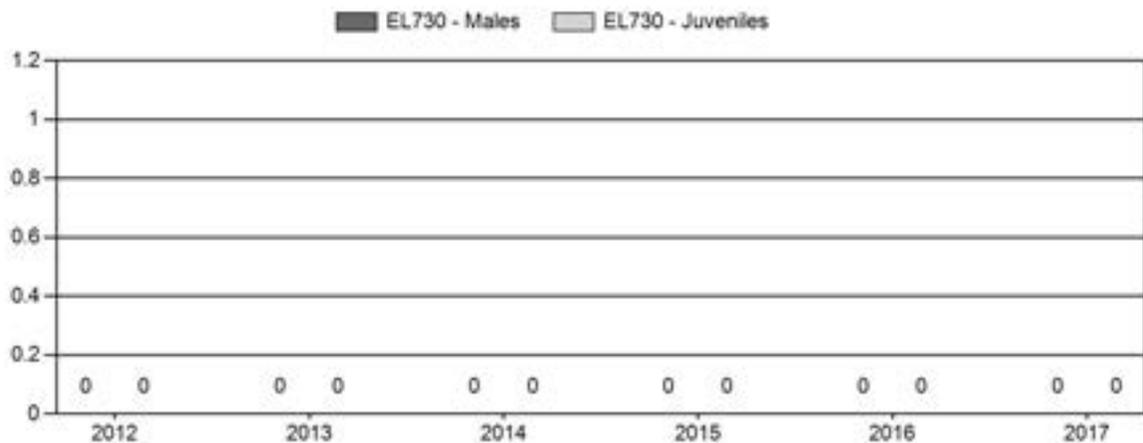
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**RAWHIDE ELK HERD (730)
2018 HUNTING SEASONS**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
3	Gen	Sept. 15	Oct. 14		General	Any elk
		Oct. 15	Jan. 31			Any elk south of U.S. Highway 26
3	6	Aug. 15	Nov. 30	200	Limited quota	Cow or calf
3	6	Dec. 1	Jan. 31			Cow or calf elk south of U.S. Highway 26

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
3	Sept. 1	Sept. 14	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2017
3	6	0

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: 60% landowner/hunter satisfaction

Management Strategy: Private Land Management

2017 Hunter Satisfaction Estimate: 53%

2017 Landowner Satisfaction Estimate: 41%

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 54%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 33%

The management objective for this herd was changed in 2012 from a post-season population objective of 40 elk to a nonnumeric population objective based on landowner and hunter satisfaction and the percentage of branch antlered bulls in the harvest. In 2017 the percentage of branch antlered bulls in the harvest was removed and the management strategy changed to Private Land Management during the herd objective process. We will follow trends over time to make management decisions based on constituent satisfaction. There is not a working model for this herd unit due to our inability to collect adequate population data. The herd will be taken to the public in 2022 for the 5-year review.

Herd Unit Issues

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

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

During the 2017/18 winter 29 elk were captured and fitted with GPS radio collars that will be deployed for three years to look at habitat selection, identify seasonal ranges, document calving areas and map movement patterns. This is a cooperative study with the Wyoming Military Department.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Weather patterns in this portion of Wyoming are typically never severe enough to affect elk survival. When heavy snow events do happen, then herds will move down to agricultural fields to seek out stored hay. For specific meteorological information for the Rawhide herd unit the reviewer is referred to the following link: <http://www.ncdc.noaa.gov/cag/>

Habitat

Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands and riparian areas.

Areas burned by wildfires within the last 10 years have responded favorably due to reduction in conifers and enhancement of herbaceous plant communities. Cheatgrass continues to be a major threat to native rangelands and big game ranges in this herd unit. Some portions of burned areas are predominantly cheatgrass, and will likely remain in that state unless treated with herbicides. In 2017 there were 62 landowners that utilized this data throughout Platte County to treat over 19,000 acres of areas severely infested with cheatgrass with a soil amendment bacteria (MB906) and the herbicide Plateau (imazapic). The combination of herbicide and soil amendment has shown promising results as an effective way to control cheatgrass and there are plans to continue and treat additional acres in 2018.

Field/Harvest Data

Harvest success and effort has fluctuated around 31% and 20 days per harvest for the past five years. Harvest is driven by access and if hunters are limited to public land, success decreases and effort increases. Finding elk in this herd unit can be difficult due to landownership patterns. Access is restricted to the Broom Creek HMA north of US Hwy 26 and is dependent on crop damage south of US Hwy 26. A majority of landowners do not want elk south of the highway and are willing to allow access. In 2011 elk were plentiful and hunters were successful. In 2012 the severe drought displaced elk and they were not found in traditional places (i.e. alfalfa fields). In 2014, 2015 and 2016 above average spring and summer precipitation re-distributed elk which increased forage production and as a result elk were not dependent upon irrigated crops. In 2017

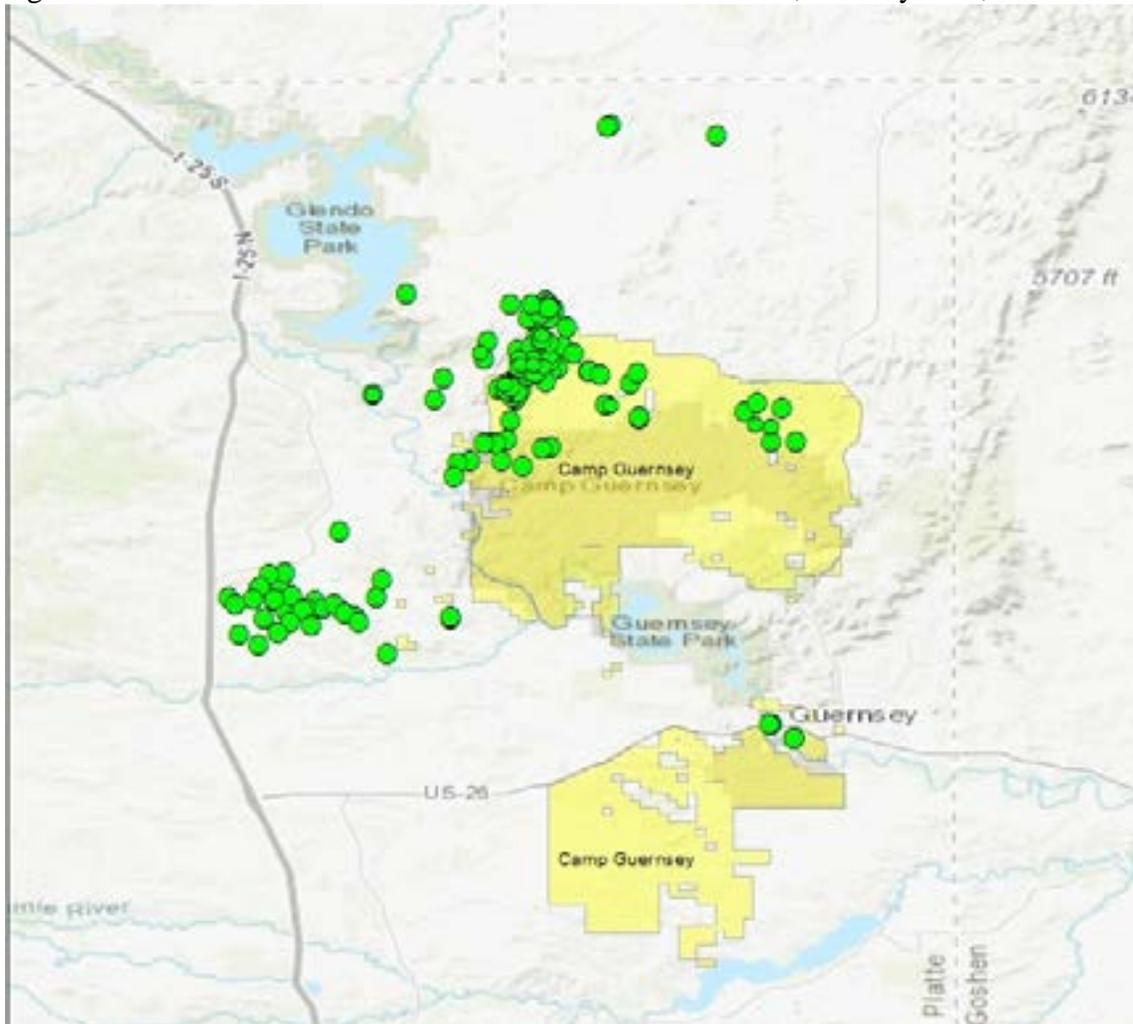
spring precipitation decreased and elk were causing damage on irrigated croplands south of Hwy 26. Elk that were traditionally found within Whalen Canyon appear to have re-distributed to other areas of the herd unit. Our ability to manage this segment of the population is limited by hunter access and so the target goal: of $\geq 61\%$ branch antlered bulls in harvest survey was changed to a private land management strategy.

Active license numbers have fluctuated around 330 for the past five years. Starting in 2011 that portion of Hunt Area 3 south of U.S. Highway 26 became a general season. After several public meetings over the past three years coupled with a landowner survey it was decided to convert that portion of Area 3 north of US Hwy 26 from a limited quota area to a general hunt area. However, in 2015 and 2016 landowners north of U.S. Hwy 26 voiced their concern that elk were no longer in their traditional areas and therefore damage issues have decreased. There are now fewer active licenses as a general season then when this herd was managed under a limited quota regime.

Since this herd unit changed to a satisfaction management evaluation in 2012 and a private land management strategy in 2017 classification data is no longer collected.

Between January and February of 2018 the Wyoming Game and Fish Department partnered with the Wyoming Military Department and contracted Native Range Capture Services to aerial netgun 29 female elk, which were fitted with GPS Satellite collars that will be deployed for three years. This project is designed to look at elk distribution, document calving areas, further define seasonal ranges, estimate elk survival and determine habitat selection as it relates to the recent wild fire activity and ongoing military training exercises. The elk were captured within the Wyoming Military Department's boundary and adjacent private property. The first month of data shows that a majority of the elk have remained within or close to the military department (Figure 1).

Figure 1. Hunt Area 3 elk locations from 20 different cow elk, February 1-28, 2018.

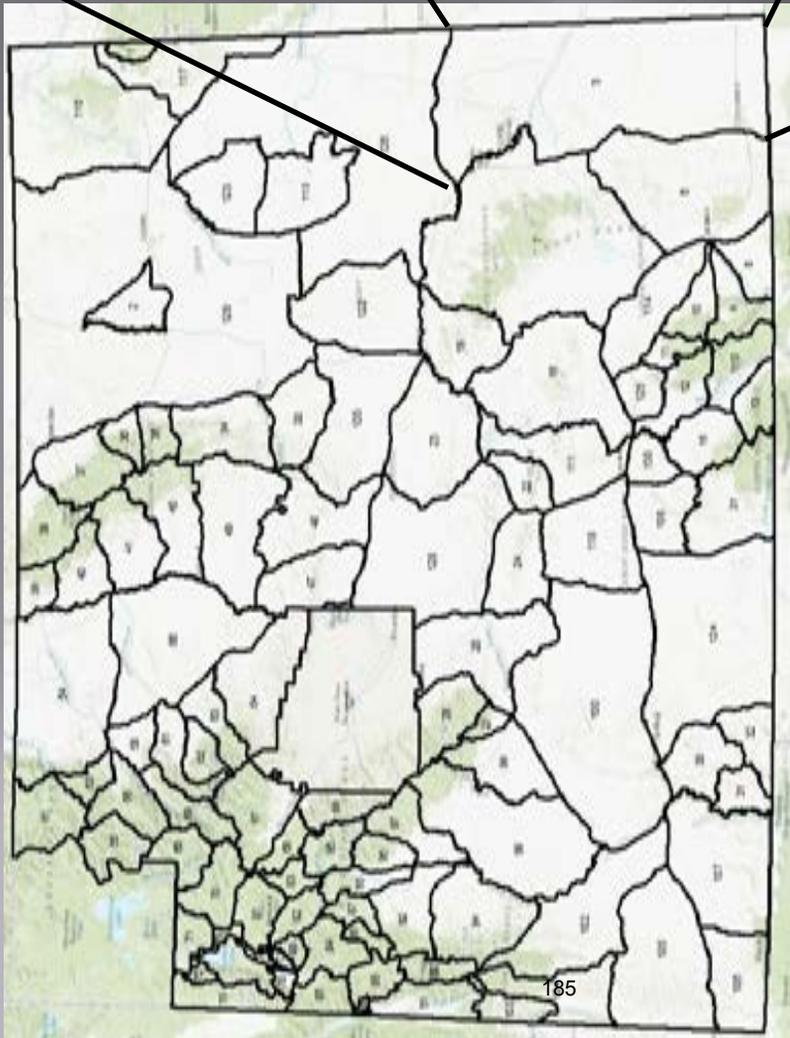
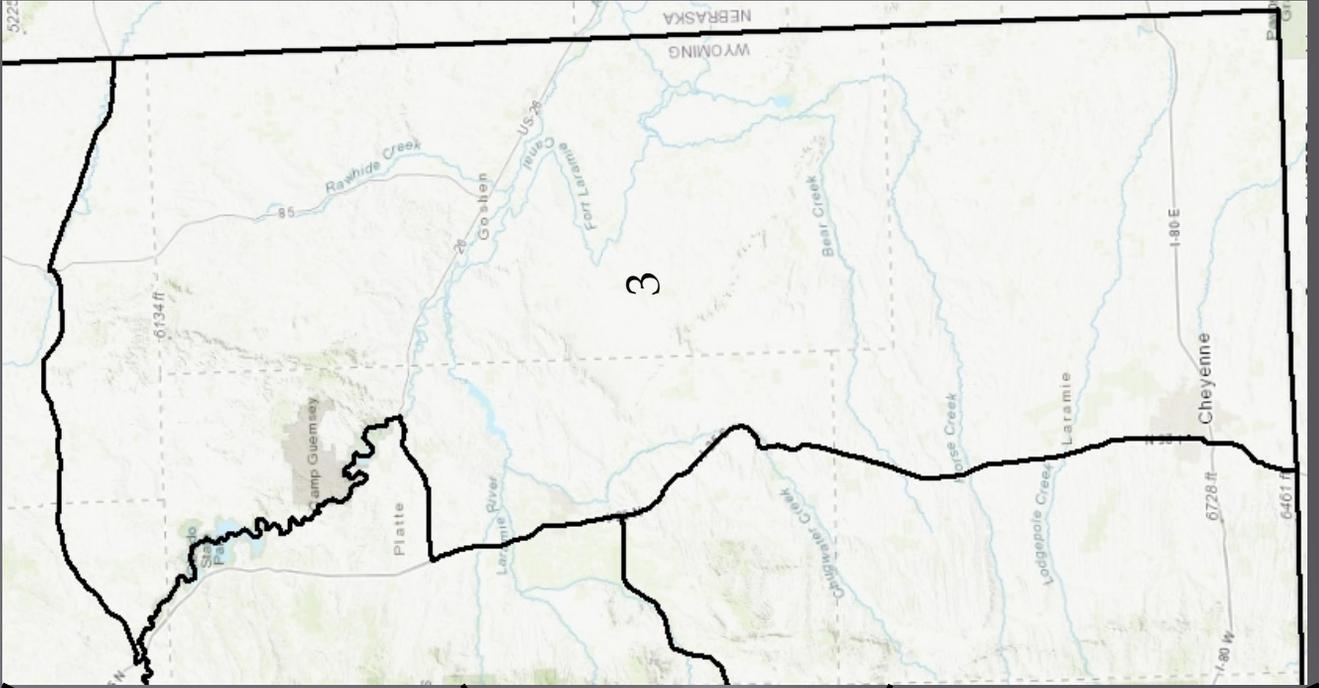


Landowner/Hunter Satisfaction Survey Results

The landowner satisfaction survey results (Appendix A) showed that 41% of the landowners were satisfied the elk population is at or about at desired levels, 11% indicated the elk population is above desired levels and 48% indicated the elk population was below desired levels. There were 27 surveys returned for a 45% return rate, slightly higher than 2016, which had a return rate of 40%. In 2019 an electronic survey will be sent out via email in hopes to further increase the sample size. The return rate exceeded the 25% threshold required for the satisfaction survey. Based on the past three years of surveys landowners are still not pleased with the number of elk. Based on input from the field, meeting and survey comments, the majority of landowners south of US Hwy 26 want to reduce elk and the majority north of the highway wants to see more elk and manage for trophy bulls. Bringing their satisfaction up to 60% continues to be a challenge. The hunter satisfaction survey indicated that 54% were satisfied with their hunt, which was an increase from 2016. This is somewhat of a surprise given the conversations with hunters in the field that are frustrated with the lack of access and elk.

Management Summary

In summary, the 2018 season is designed to reduce elk numbers particularly in the southern portion of the herd unit. We hope to attain a harvest of 70 elk.



Appendix A

Herd Unit Objective Review Form – Rawhide Elk Herd Unit (E730) Hunt Area 3

Date of Last Herd Objective Review – 2012

Current Objective – Satisfaction Survey

Current Sub-objectives – Bull Quality (target goal $\geq 60\%$ branch antlered bulls in harvest survey)

Current Management Strategy – Special

Is the herd at or trending toward the current objective, sub-objectives and management strategy? Provide details for each below.

Objective: The objective is to maintain a sportsmen and landowner satisfaction of 60% or greater. The most recent 3-year running average satisfaction for sportsmen and landowners is 56% and 31% respectfully. Sportsmen appear to have obtained sufficient access and enough success to be satisfied; maintaining the satisfaction rate of $\geq 60\%$ appears obtainable for sportsmen. However, based on surveys mailed to landowners within occupied habitat from 2012-2016 the desired population level is well below the objective of $\geq 60\%$ satisfaction. On average the return rate, all be it low, for the landowner survey has exceeded the desired 25% threshold (~32% of the surveys have been returned in the past 4 years) so the sample size is valid. Based on these results and individual conversations with landowners there are differing opinions on how this herd should be managed. Landowners north of US Highway 26 have expressed the following concerns: 1) Drawing odds- Several landowners indicated they would like the nonresidents to have a 100% chance of drawing a general license in the random draw. Based on the quota set at 7,250 this does not appear obtainable. The nonresident draw is confusing and can be frustrating at times but to put it in simplest terms if a nonresident has 1 preference point they will draw a general license- basically having the opportunity to hunt every other year. 2) Trespassing and poaching- Comments from landowners from both the survey and personal conversations indicate they have seen an increase in poaching and trespassing violations north of the North Platte River. Game wardens from Wheatland, Torrington and Lusk were contacted to see if they received reports or issued more poaching and trespassing violations. There were a total of 2 trespassing cases filed from 2011-2016 and no poaching cases from that same time frame. Law enforcement personnel try and make a presence in the area during the opening day and opening weekend to try and deter these actions. For the most part landowners south of US Hwy 26 would prefer to see fewer elk. 3) Crop Damage- There continues to be concerns and crop damage claims from landowners along and south of the North Platter River. 4) Bull quality- Landowners throughout the herd unit that allow or charge access would all like to see better bull quality. Elk have been displaced somewhat post 2010 wildfires and increased military activity on the Guernsey Guard Camp and it is speculated that the older age class bulls have moved to areas with heavier conifer cover and less disturbance. However, based on harvest data the majority (5-year average 89%) of bulls harvested are branch antlered.

Sub-objectives: Bull quality has far exceeded the goal of 60% antlered bulls in the harvest survey the last five years (5-year average 89%)

Management Strategy: The Department no longer collects classification data and over 88% of the occupied habitat is under private ownership which hampers our ability to manage bull quantity and quality. We propose to change Special Management criteria to Private Land Management Strategy.

Have private landowners, Federal land managers, hunters or others expressed concerns about the ability of the habitat to support the current objective? Provide details for each below.

Landowners: There are several habitat concerns as it relates to private land within the Rawhide Elk Herd. One concern south of US Hwy 26 is crop damage. During late summer elk will move into irrigated corn fields along the North Platte River corridor between Ft. Laramie and Lingle. They have also inhabited the following drainages south of US Hwy 26: Deer Creek, Boxelder Creek, Fox Creek and Bear Creek where they are causing damage to both irrigated and dryland crops.

The 30,000 acres that burned in 2006 from wild fires appear to have displaced elk patterns. There is concern that elk are no longer using traditional yearlong range where landowners in the past have had opportunities to harvest elk.

Federal or State Land Managers: There is concern on range conditions, particularly cheatgrass invasion, on the Guernsey Guard Camp where the majority of the wild fire activity occurred. The Guernsey Guard Camp is in the process of evaluating range conditions to determine if cheatgrass control measures need to be implemented.

As a result of the recent wildfires and military activity on the Guard Camp, which has over 30,000 acres within yearlong elk range, the Guard Camp and the WGFD have secured funds to evaluate elk resource selection. Starting in the winter of 2018 a proposal is in place to capture twenty elk which will be fitted with Globalstar GPS collars. The collars will be deployed for three years and at the end of that time location data will be analyzed to determine the following:

- Define and validate seasonal ranges at a finer scale than currently mapped
- Map habitat use of seasonal ranges, winter and summer, in relation to fire activities and military exercises.
- Identify migration movement
- Document calving areas
- Determine impacts to irrigated cropland
- Estimate adult mortality rates

Hunters or Others: There has been some concern voiced from hunters that the quality of bulls has decreased in the northern portion of the herd unit. However, this has not shown up in the harvest data. Other than the Broom Creek Hunter Management Area (Guernsey Guard Camp) there are few public places to hunt elk in Area 3. For the most part hunters with an unfilled general elk licenses contact the department looking for a place to hunt in December and January. Unless we can direct them to a damage situation there typically is not a place to hunt, which can be frustrating for the hunter.

Where applicable, do Rapid Habitat Assessment and other habitat data indicate the current objective is sustainable? Not applicable

Have there been any major environmental (wildfire, invasive species, drought, etc.), development (subdivision, industrial, etc.) or other changes in the herd unit that keep it from being managed toward objective?

There were two major wild fires in 2006 that burned over 30,000 acres of occupied habitat. In addition the Guernsey Guard Camp has acquired over 60,000 acres of land to train on, which depending on the intensity of training can negatively affect elk use. The intensities of the fire coupled with the military training appears to have displaced elk, the Rawhide Elk Study, which will commence in 2018, should shed light on habitat selection within the Guard Camp and adjacent properties.

Have private landowners, Federal land managers, hunters or others expressed concerns about population levels? Provide details, including trends in hunter satisfaction statistics, for each below.

Landowners: Based on the landowner survey there is concern with the population level. The five-year average satisfaction level is 38% well below the target goal of 60%. In 2015, 17% surveyed indicated there were too many elk and 48% indicated there were not enough elk. Generally speaking the landowners north of US Hwy 26 want to see more elk and those south want to see fewer elk. Generally speaking the northern portion is traditional elk habitat- conifer stands within the Rawhide Hills- the southern portion is cropland along the Goshen Rim. The northern portion has experienced wild fires and land use change. Over 30,000 acres burned in 2006 and in addition the Wyoming Guard Camp has acquired over 60,000 acres within occupied elk habitat. These two impacts most likely have altered elk patterns and distributions. As a result the department will work jointly with the Army National Guard to conduct an elk habitat selection study from 2018-2020.

Two landowner meetings were held in April (Guernsey and Lusk) to discuss the past and future management of the herd unit. Four landowners were in attendance at the Guernsey meeting and seven attended the Lusk meeting (Appendix A). A presentation was given on the past five-years worth of data, survey results and what is proposed for the next five years. Those in attendance voiced concerns about drawing odds and elk numbers and season dates. Some of the attendees were there to just gather information about the herd and others were there to provide input on the future management. The main comment voiced and written was to move the season back to a later opening date (Appendix A).

Federal Land Managers: There are no USFS lands and a very small percentage of BLM lands within the Rawhide Herd Unit. We encourage the BLM to pursue consolidation of isolated BLM parcels.

Hunters or Others: Satisfaction for hunters has fallen within the minimum objected threshold of 60% for the past 5-years. This is somewhat surprising given the lack of access and recent concerns with elk availability.

Managers of this herd do receive concerns/complaints with the lack of access throughout the hunt area. The majority of access comes from the Broom Creek Hunter Management Area, which assists with the Department's management goal and issues 50 permission slips to hunt elk from September 15-October 14. Hunters have also indicated they have seen changes in distribution within the areas that burned in 2006. They are no longer seeing elk in traditional areas and are concerned about the overall quality and quantity. There are also concerns about drawing a nonresident general license.

We have received complaints from outfitters that their clients cannot draw a nonresident general license. This hunt area changed from limited quota to a general firearm season south of U.S. Hwy 26 in 2011 and the entire area went general in 2014. The number of nonresidents applying for random general licenses has increased by 42% from 2010 to 2016. The random special also experienced an increase in demand. From 2010 to 2013 it was 100% drawing odds for the random special general license. By 2016 the odds dropped to 49%. Preference points have greatly increased the odds of drawing a nonresident license but they too have seen a greater demand. In 2010 drawing odds were 100% with one point. In 2016 they decreased to 8% for 1 point. A nonresident still has a 100% chance of drawing a general license with 2 points. A nonresident hunter will draw a general license with one point under the special preference point draw but with 0 points the drawing odds went from 94% in 2010 to 31% in 2016. Resident hunters are still guaranteed to hunt with a general license in hunt area 3, prior to the change to a general firearm season the average drawing odds were 15%.

The bottom line is the demand for a nonresident general license has significantly increased. Nonresidents will need to spend more time studying drawing odds prior to applying. The Department's license drawing program is not perfect but if a hunter is willing to pay for the special draw or accumulate a preference point they will have a chance to hunt every other year.

In your professional opinion, are the current objective, sub-objectives and management strategy attainable? What is your recommendation for each? Provide details for each below.

Objective: The current objective of 60% satisfaction for both landowners and sportsmen appears to be only obtainable for sportsmen. The vocal landowners (not the majority) north of US Hwy 26 prefer going back to limited quota and want to see more elk. Landowners south of the highway want to see fewer to no elk at all. They have seen what a few elk can do to their crop production and prefer to avoid that over elk hunting opportunity. However, even with the disagreement on desired elk population levels a alternative objective is preferred over a numeric objective. Data collection needed to derive a post-season population estimate will continue to be difficult to obtain without the use of a helicopter, and given access the ability to manage this herd through hunting to obtain that objective is an issue.

Sub-objectives: It appears the sub-objective of maintaining bull quality (>60% branch antlered bulls in harvest) is and will continue to be obtainable. With access issues this herd maintains an older age class of bull in the harvest. Expectations are that the percent of branch antlered bulls will continue to remain high in the harvest survey.

Management Strategy: Maintaining the special management strategy does not appear to be necessary going forward for the next herd objective review period. Classification data is no longer collected and more than likely bull ratios will remain within the special management strategy range of 30-40 bulls:100 cows due to the nature of limited access. A Private Land Management Strategy is recommended. This herd unit is hard to manage since more than 88% of the occupied habitat is comprised of private land, which hampers our ability to manage for higher bull ratios.

Date Submitted by Regional Wildlife Supervisor – 5/30/2018

Date Approved by Deputy Chief Wildlife Division – 6/14/2017

Appendix A



WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

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

wgfd.wyo.gov

GOVERNOR
MATTHEW H. MEAD

DIRECTOR
SCOTT TALBOTT

COMMISSIONERS
T. CARRIE LITTLE - President
KEITH CULVER - Vice President
MARK ANSELM
PATRICK CRANK
RICHARD KLOUDA
CHARLES PRICE
DAVID RAEI

Rawhide Elk Herd Unit Objective Review Sportsman's Survey

We propose to maintain the current sportsmen/landowner satisfaction objective

I support this proposal

I do not support this proposal

We propose to change from special management criteria to private land management criteria

I support this proposal

I do not support this proposal

Comments:

As stated before, I would like to see an increase in numbers.

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

callen ranch @ wildblke.net

THANK YOU for your participation!

"Conserving Wildlife - Serving People"



WYOMING GAME AND FISH DEPARTMENT

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Rawhide Elk Herd Unit Objective Review Sportsman's Survey

We propose to maintain the current sportsmen/landowner satisfaction objective

I support this proposal

I do not support this proposal

We propose to change from special management criteria to private land management criteria

I support this proposal

I do not support this proposal

Comments:

ONLY ISSUE I PERSONALLY SEE IS OVERLAPPING SEASONS WITH
ARCHERY AND RIFLE. ARCHERY SEASONS FOR DEER ARE OVERLAPPED WITH
ELK RIFLE. I ASSUME IT'S THIS WAY AS MORE PEOPLE RIFLE HUNT
HERE, SO THEY LEAVE RIFLE HUNTING THE ELK OUT, BUT SEPARATING
THE SEASONS MAKES SENSE. EVERYTHING ELSE IS WORKING OUT WELL
AS DEER AND ANTELOPE NUMBERS SEEM TO BE GETTING BETTER.
THANKS FOR ALL YOU DO!

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

THANK YOU for your participation!

"Conserving Wildlife - Serving People"



WYOMING GAME AND FISH DEPARTMENT

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CHARLES PRICE
DAVID RAEI

Rawhide Elk Herd Unit Objective Review Sportsman's Survey

We propose to maintain the current sportsmen/landowner satisfaction objective

I support this proposal

I do not support this proposal

We propose to change from special management criteria to private land management criteria

I support this proposal

I do not support this proposal

Comments:

I propose moving all hunting seasons
moved to Oct 15 or at least Oct 1 for Elk area 3
Deer seasons and antelope seasons need moved
to Oct 15.

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

THANK YOU for your participation!

"Conserving Wildlife - Serving People"



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PATRICK CRANK
RICHARD KLOUDA
CHARLES PRICE
DAVID RAEI

Rawhide Elk Herd Unit Objective Review Sportsman's Survey

We propose to maintain the current sportsmen/landowner satisfaction objective *we hope*

I support this proposal

I do not support this proposal

We propose to change from special management criteria to private land management criteria

I support this proposal

I do not support this proposal

Comments:

I support this proposal Private land management if everybody get to use it.

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

THANK YOU for your participation!

"Conserving Wildlife - Serving People"