

**GREEN RIVER REGION
TABLE OF CONTENTS**

Antelope

Sublette..... 1
Uinta-Cedar Mountain..... 13
South Rock Springs..... 21
Bitter Creek..... 31
Carter Lease..... 41
Baggs..... 49

Mule Deer

Uinta..... 59
South Rock Springs..... 67
Baggs..... 79

Elk

Uinta..... 93
South Rock Springs..... 101
Sierra Madre..... 113
Steamboat..... 127
West Green River..... 139
Petition..... 147

Moose

Uinta..... 155
Lincoln..... 163

2016 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2016 - 5/31/2017

HERD: PR401 - SUBLETTE

HUNT AREAS: 85-93, 96, 107

PREPARED BY: PATRICK BURKE

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	35,020	38,000	30,000
Harvest:	3,844	3,357	2,800
Hunters:	3,992	3,495	3,000
Hunter Success:	96%	96%	93 %
Active Licenses:	4,531	3,911	3,200
Active License Success:	85%	86%	88 %
Recreation Days:	14,665	10,971	10,000
Days Per Animal:	3.8	3.3	3.6
Males per 100 Females	54	57	
Juveniles per 100 Females	67	57	

Population Objective (\pm 20%): 48000 (38400 - 57600)

Management Strategy: Recreational

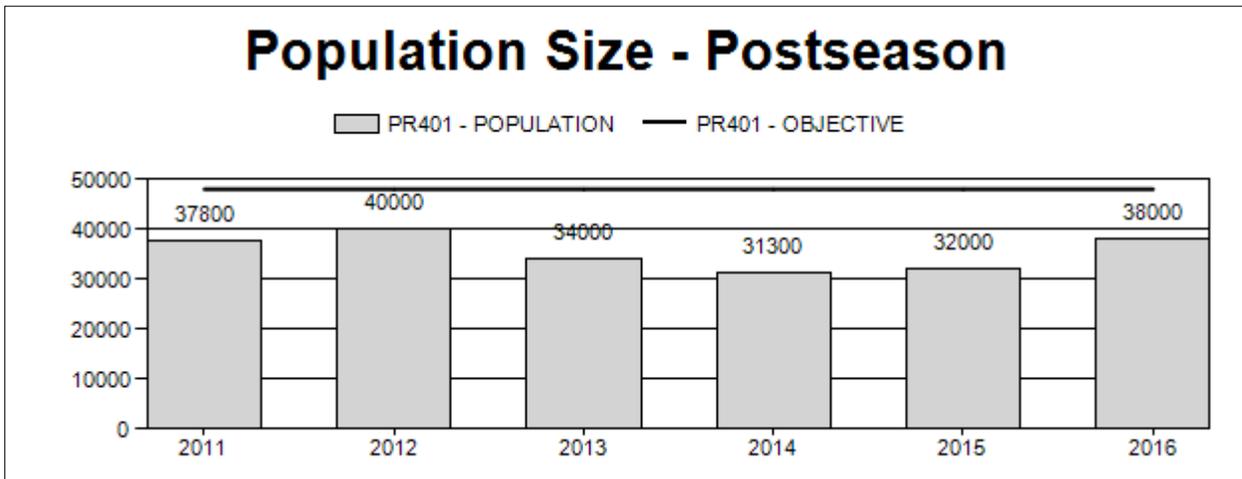
Percent population is above (+) or below (-) objective: -20.8%

Number of years population has been + or - objective in recent trend: 6

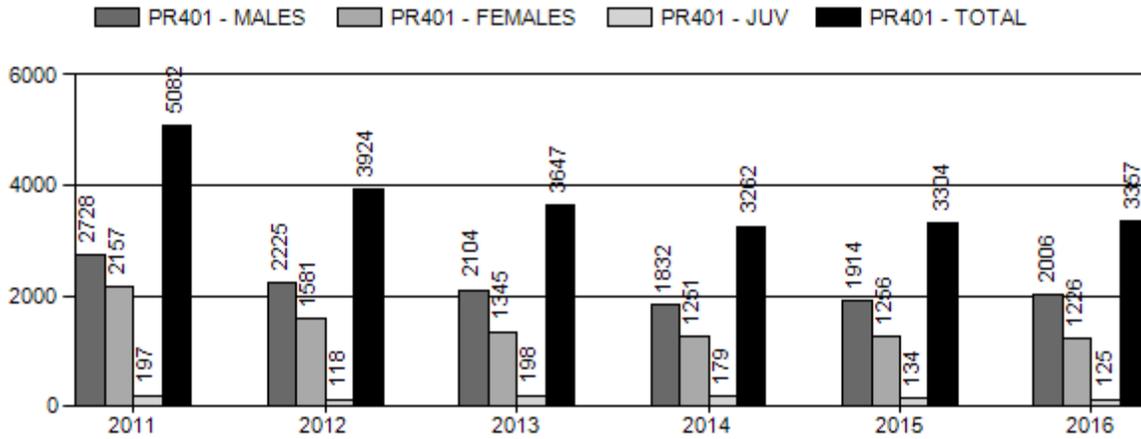
Model Date: 2/15/2017

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

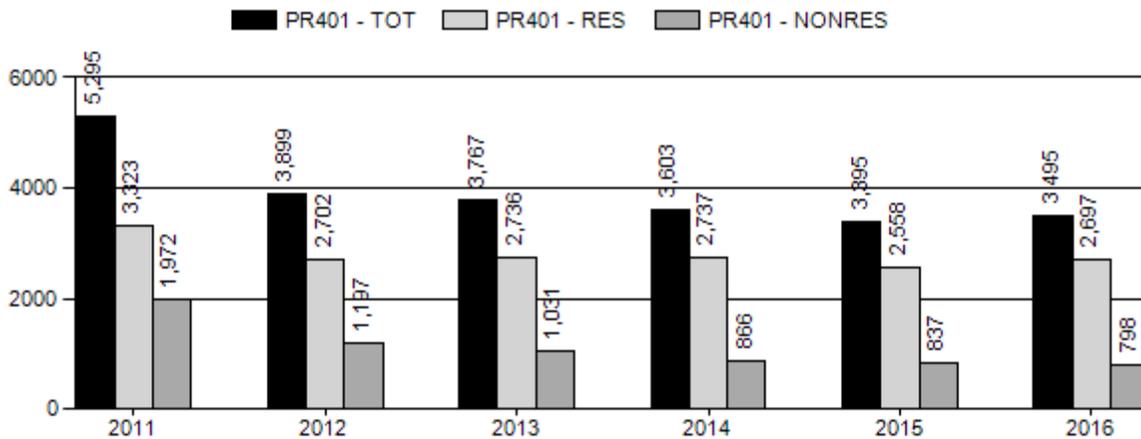
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	9%	9%
Males \geq 1 year old:	25%	27%
Total:	10%	9%
Proposed change in post-season population:	0%	-20%



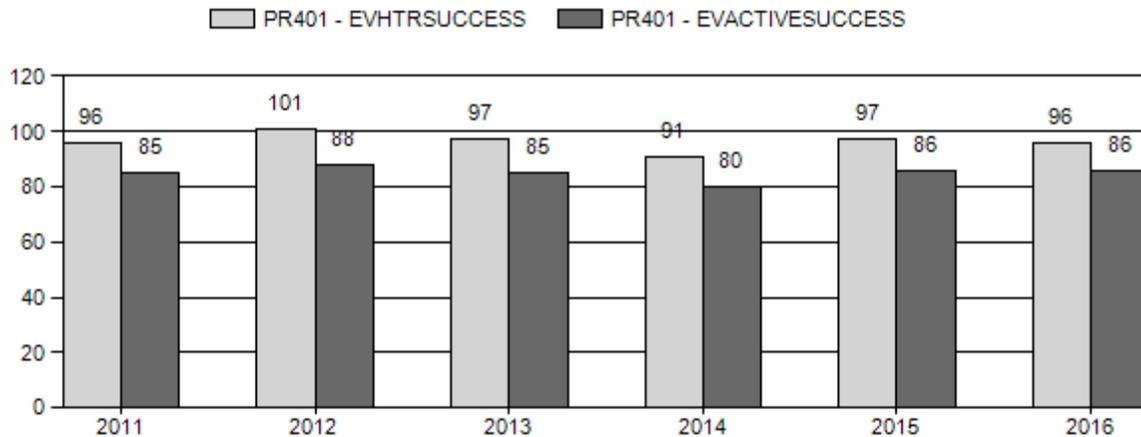
Harvest



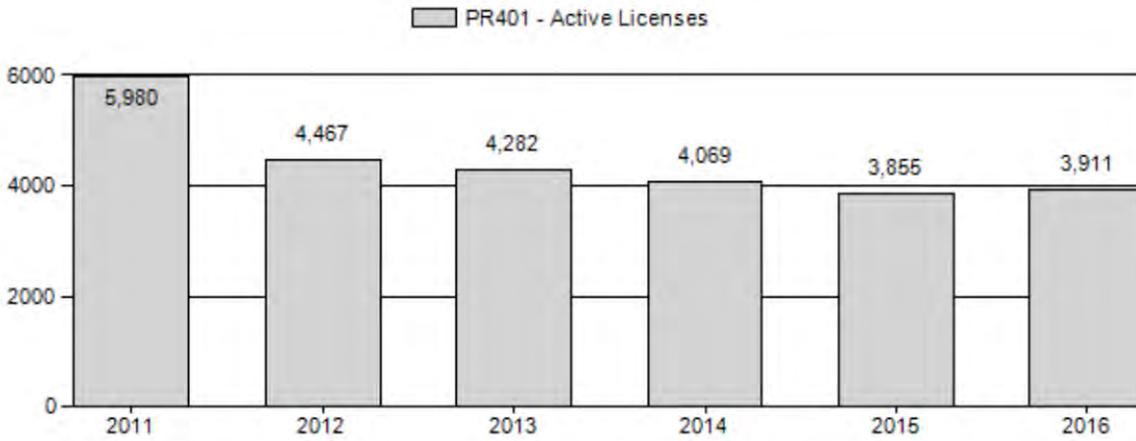
Number of Active Licenses



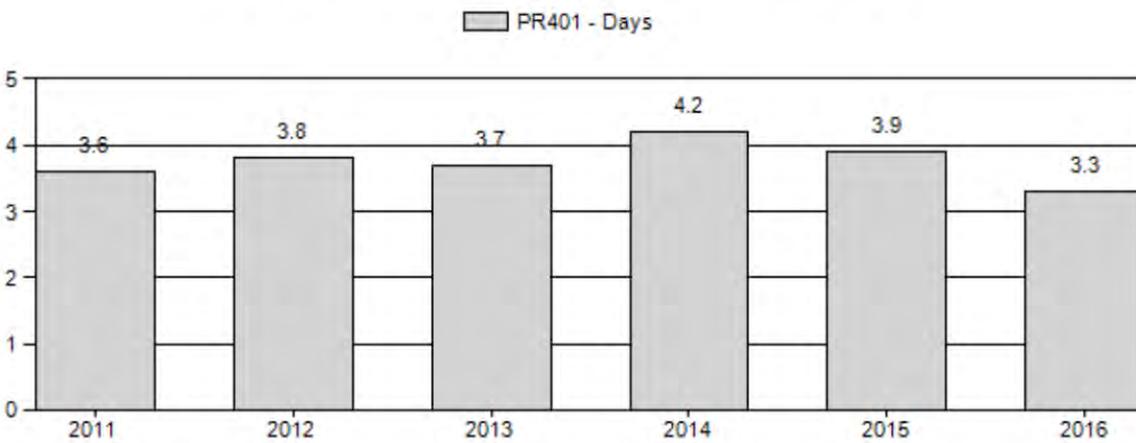
Harvest Success



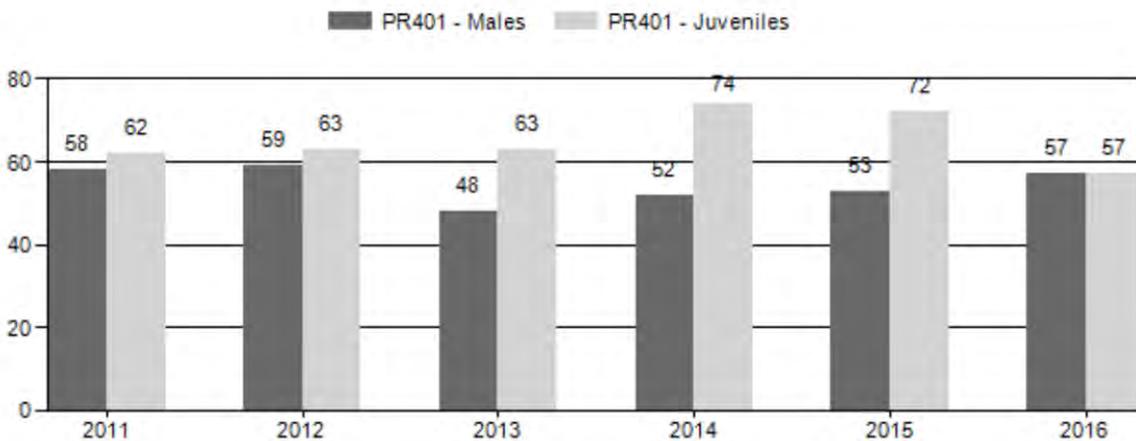
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR401 - SUBLETTE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	43,400	684	2,043	2,727	26%	4,713	45%	2,936	28%	10,376	2,163	15	43	58	± 2	62	± 2	39
2012	45,000	646	1,967	2,613	27%	4,439	45%	2,800	28%	9,852	1,986	15	44	59	± 2	63	± 2	40
2013	38,000	517	1,848	2,365	23%	4,975	48%	3,123	30%	10,463	2,065	10	37	48	± 2	63	± 2	43
2014	35,000	786	1,687	2,473	23%	4,791	44%	3,529	33%	10,793	2,614	16	35	52	± 2	74	± 2	49
2015	35,500	864	1,651	2,515	24%	4,764	45%	3,408	32%	10,687	2,603	18	35	53	± 2	72	± 2	47
2016	41,500	1,050	1,983	3,033	27%	5,295	47%	3,006	27%	11,334	2,291	20	37	57	± 2	57	± 2	36

**2017 HUNTING SEASONS
SUBLETTE PRONGHORN HERD (PR401)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
85	1	Sep. 10	Oct. 31	20	Limited quota	Any antelope
86	1	Sep. 10	Oct. 31	50	Limited quota	Any antelope
	6	Sep. 10	Oct. 31	25	Limited quota	Doe or fawn
87	1	Sep. 10	Oct. 31	175	Limited quota	Any antelope
	2	Sep. 25	Oct. 31	125	Limited quota	Any antelope
	6	Sep. 10	Oct. 31	100	Limited quota	Doe or fawn
	7	Sep. 25	Oct. 31	100	Limited quota	Doe or fawn
88	1	Sep. 10	Oct. 31	275	Limited quota	Any antelope
	6	Oct. 1	Oct. 31	300	Limited quota	Doe or fawn
89	1	Sep. 10	Oct. 31	175	Limited quota	Any antelope
	2	Oct. 10	Oct. 31	125	Limited quota	Any antelope
	6	Oct. 1	Oct. 31	325	Limited quota	Doe or fawn
	6	Nov. 1	Nov. 15			Doe or fawn valid south of Middle Piney Creek and south of Wyoming Highway 351
	7	Sept. 10	Nov. 15	50	Limited quota	Doe or fawn valid south of Middle Piney Creek and south of Wyoming Highway 351
90	1	Sep. 10	Oct. 31	175	Limited quota	Any antelope
	6	Sep. 10	Oct. 31	75	Limited quota	Doe or fawn
	8	Aug. 15	Sep. 9	50	Limited quota	Doe or fawn valid on private land
91	1	Sep. 10	Oct. 31	275	Limited quota	Any antelope
	6	Sep. 10	Oct. 31	100	Limited quota	Doe or fawn
	7	Aug. 15	Oct. 31	50	Limited quota	Doe or fawn valid on private land and Bureau of Reclamation land within Sweetwater

						County
92	1	Sept. 10	Oct. 31	125	Limited quota	Any antelope
	7	Sept. 10	Oct. 31	25	Limited quota	Doe or fawn valid within the Farson-Eden Irrigation Project
93	1	Sept. 10	Oct. 31	325	Limited quota	Any antelope
	6	Sept. 10	Oct. 31	25	Limited quota	Doe or fawn
	7	Oct. 1	Nov. 30	100	Limited quota	Doe or fawn valid
96	1	Sept. 10	Oct. 31	50	Limited quota	Any antelope
	7	Sept. 10	Oct. 31	25	Limited quota	Doe or fawn valid within the Farson-Eden Irrigation Project; also valid in that portion of Area 101 within the Farson-Eden Irrigation Project
101	1	Sept. 10	Oct. 31	100	Limited quota	Any antelope
107	1	Sept. 10	Oct. 22	50	Limited quota	Any antelope
	6	Sept. 10	Oct. 22	25	Limited quota	Doe or fawn
	0	Aug. 20	Sept. 9	50	Limited quota	Any antelope, muzzleloading firearms and handguns only

Special Archery Season Hunt Areas	Opening Date	Limitations
85-93, 96, 101,107	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
87	1	-25
	2	-25
	6	-50
	7	-50
88	1	-25
	6	-25

89	1	-25
	6	-50
	7	+50
90	2	-150
	6	-75
91	1	-75
	6	-100
	7	-25
92	7	-25
93	1	-175
	7	-100
	8	-100
96	1	+50
	7	+25
101	1	+100
107	6	-25
Herd Unit Total	1	-175
	2	-175
	6	-325
	7	-125
	8	-100

Management Evaluation

Current Management Objective: 48,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~38,000

2017 Projected Population Estimate: ~31,000

The post-season population objective for the Sublette pronghorn herd is 48,000 pronghorn and is designated as a recreational management herd. This objective for this population was set in 1994.

Herd Unit Issues

The 2016 post-season modeled population estimate for the Sublette pronghorn herd is approximately 38,000 pronghorn with a slightly increasing trend. The Sublette herd is one of the larger pronghorn herds in Wyoming, both in numbers and in geographic area, which makes it one of the largest herds in North America. This herd occupies very diverse habitats from Grand Teton National Park to South Pass and the Red Desert northeast of Rock Springs. The large geographic area occupied by this herd can sometimes create complications in its management, with local issues such as damage concerns influencing overall herd management and ability to achieve population objectives. This herd overlaps a wide variety of land ownerships from National Park Service and US Forrest Service lands to Bureau of Land Management administered lands and a myriad of different private

landowners. It also covers many land uses from protected, almost pristine, intact habitats to areas of extremely heavy energy development. The area this herd inhabits, the Upper Green River Basin, also often experiences extreme weather conditions, including regular (every 3-4 years) severe winters with deep snow conditions and bitterly cold temperatures. These severe winters have been a major driving force for this herd. This herd experienced above average winter mortality during the 2010-2011 winter, and it is expected that the herd will again suffer higher than normal winter mortality during the 2016-2017 winter. Losses this winter resulted in a downward turn, and fawn production may also be impacted this year due to doe condition.

Weather

Harsher than normal winter conditions during the 2010-2011 winter resulted in higher than typical over winter mortality in this herd. Winters since then have been, by comparison, significantly milder than the 2010-2011 winter. The 2016-2017 winter however, is again looking like it will result in increased winter mortality in this herd. Conditions during January 2017 were extremely cold with significant snowfall events occurring over much of the winter ranges used by pronghorn in this herd. These severe conditions during January caused many pronghorn to move in search of more favorable conditions, resulting in them ending up in highway and interstate right of ways, and on railroad tracks where many were killed by vehicle collisions. Fortunately, temperatures moderated in early February, which allowed for some snow melt which again exposed some shrubs on the winter ranges. However, late February saw the return of deep snow conditions, which will further stress pronghorn in this herd. While the full impacts of this winter will not be known until next year, it is safe to assume that this herd will again experience increased winter mortality this year.

Snowfall was in excess of 200% of normal over much of this herd unit, and some areas exceeded 50°F below zero. Crusting and drifting occurred, and pronghorn mortality was influenced by fencing and the inability to reach winter ranges. The most crucial of winter ranges north of Green River and Rock Springs received the highest recorded snowfall in history.

While this winter resulted in direct and indirect pronghorn losses (through likely reduced fawn production) it is not all bad. Recent summers have had ample, above average moisture and this winter only bolsters that. This should result in improved habitat conditions across the herd unit.

Habitat

No habitat transects targeting pronghorn range were conducted in the Sublette herd unit during the period covered by this report. However, the dry summers over the last few years have had an impact on the overall habitat conditions in the southern portion of the herd. Some large scale sagebrush die-offs have been documented in the herd unit that could have an impact on pronghorn living in these areas. While the exact cause of die-offs has not been determined, it has been speculated that the dry conditions during the summer of 2013 and then the very wet conditions in the fall of 2013 may have

drown sagebrush living in low-laying areas. Improved precipitation levels during the summers of 2015 and 2016 did result in better plant growth than had been seen in the previous three years.

Field Data

Pre-season ground classifications conducted in August of 2016 resulted in a total of 11,334 pronghorn being classified across the herd unit. That classification sample was made up of 5,295 does, 3,006 fawns, 1,983 two year old or older bucks, and 1,050 yearling bucks. This resulted in observed ratios of 57 fawns per 100 does, and 57 total bucks per 100 does, which included 20 yearling bucks per 100 does. The 2016 classification sample size was up slightly from 2015's sample size of 10,687 pronghorn, but is below the 13,029 pronghorn classified in 2010 when the population was at a larger size before the 2010-2011 winter.

Fawn ratios were less this last summer than expected, given weather conditions. It is likely this "reduction" in fawns was related to the addition of significant numbers of yearling does recruited from the prior year and the fact they do not have fawns (but are considered adults). Prior to the winter, winter losses since 2012 have been very low given mild winters.

Harvest Data

The 2016 hunting season saw a herd unit harvest that was very similar to what was seen during the 2015 season. The total number of pronghorn harvested, herd unit wide, in 2015 was 3,357, which was very close to the 3,304 pronghorn harvested in 2015.

Days per animal harvested declined slightly in 2016 to 3.3 days per harvest, compared to 2015's 3.9 days per animal harvested, which is consistent with an increase in population, all others being equal. The overall success rate in 2016 was 89% for the Type 1 licenses and 82% success for the doe/fawn licenses in the herd unit, which is a slight improvement from the success rates observed in 2015.

It is expected pronghorn hunting will be a little tougher this upcoming seasons with the winter losses we experienced. Hunters are expected to have slightly less success and require a bit more effort to harvest an antelope in 2017.

Population

The model for the Sublette herd does an OK job of tracking observed ratios and line-transect estimates for this large and geographically extensive pronghorn herd. Use of the semi-constant survival model was necessary to allow the modeled population estimates to match the line-transect

estimates, and to allow for the population to decline sharply after the 2010-2011 winter when this herd experienced above average winter mortality. The ability of the semi-constant survival model to allow for increased winter mortality was again used for the 2016-2017 winter. While the true impacts of this winter are not yet fully known, the conditions that this herd has been experiencing, along with the physical condition of many of the animals that have been struggling through deep snow and cold temperatures this winter will undoubtedly result in some increased losses this winter.

A line-transect survey was flown in the Sublette herd in June of 2013 to obtain an end of bio-year estimate for the 2012 bio-year. That survey was designed and analyzed using a stratified design to account for low, medium, and high density areas of the herd unit. The resulting end of bio-year population estimate for the herd was 31,550 (SE 7,438) pronghorn. This population estimate agrees well with the previous line-transect survey flown in 2011 and with model predictions.

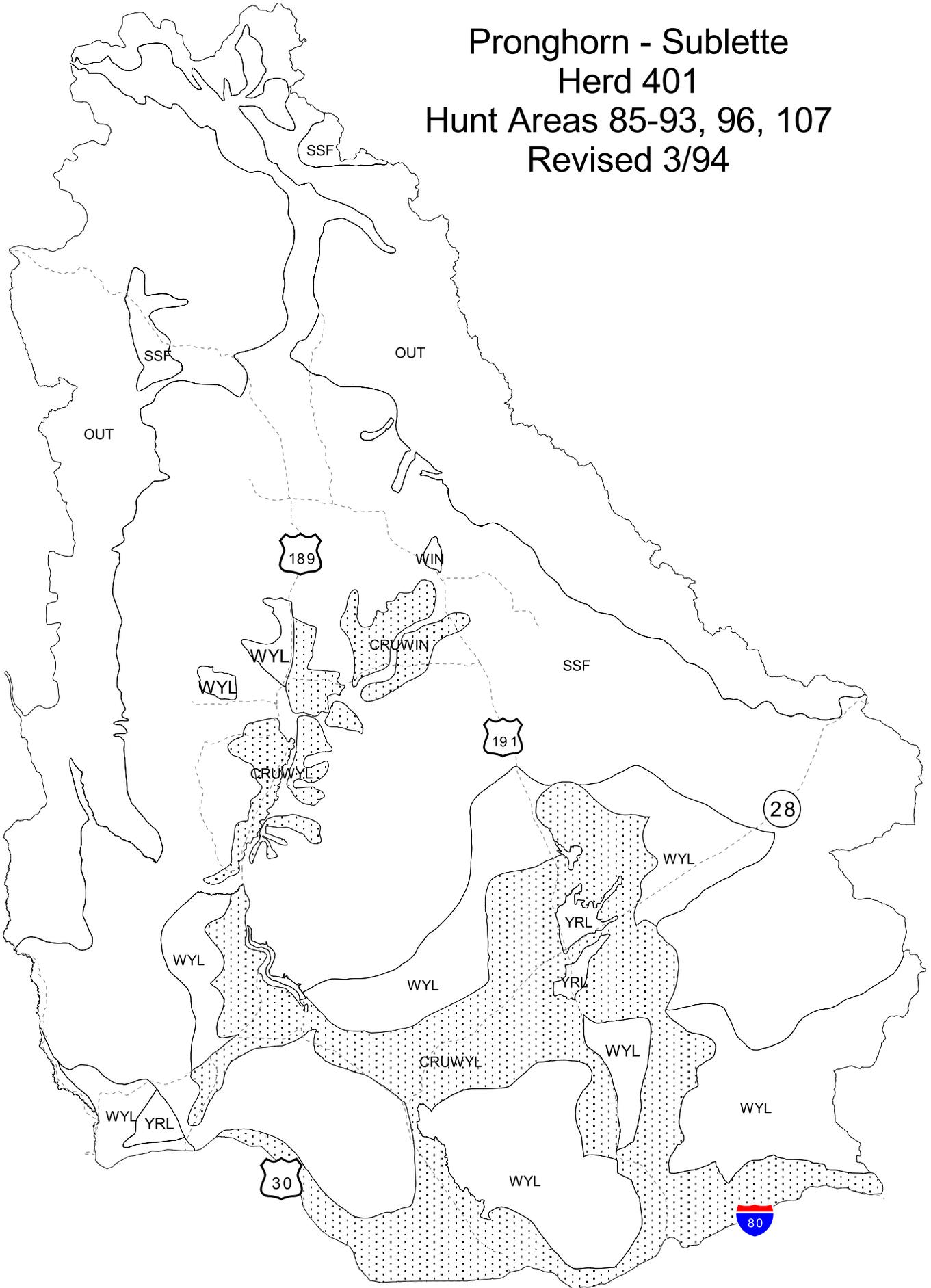
Management Summary

The 2017 hunting season does include several changes from 2016's season offering. First, because the herd has been under objective since the 2010-2011 winter, and because of the, again severe, winter conditions in the Green River Basin this winter; reductions in license numbers are being implemented in many of the hunt areas in the herd unit for the 2017 hunting season. A total of 900 fewer licenses are being issued for the 2017 hunting season than were offered during the 2016 season. Those reductions are in the Type 1, 2, 6, 8, and 0 licenses throughout the herd.

The second major change for the 2017 season is some hunt area boundary changes involving Hunt Areas 90, 93, 96, and the creation of a new hunt area, Hunt Area 101. These changes were made to simplify regulations, eliminating the need for individual hunt areas to have four or five license types in them to direct hunters to areas with higher pronghorn densities, while protecting areas where pronghorn numbers are lower than desired. The changes also eliminate the need to hunt some areas in combination because densities were so low in one area that there was concern over restricting hunters to harvest animals in those areas. The first change was to split HA90 on US 191, with the portion east of the highway remaining HA90, and making the western portion, along with the portion of HA96 north of WY 28 into a new hunt area, HA101. The second change was to split HA93 along WY 240 north of Opal, with the area west of that highway remaining HA93, and combining the area east of that highway with HA96. These changes will result in more consistent pronghorn densities in the hunt areas and will simplify the regulations for the public.

The 2017 seasons should result in approximately 2,600 pronghorn being harvested, with 1,700 bucks, 800 does and 75 fawn projected to be harvested; assuming similar success rates to previous seasons.

Pronghorn - Sublette
Herd 401
Hunt Areas 85-93, 96, 107
Revised 3/94



2016 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2016 - 5/31/2017

HERD: PR411 - UINTA-CEDAR MOUNTAIN

HUNT AREAS: 95, 99

PREPARED BY: JEFF SHORT

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	9,520	6,176	6,230
Harvest:	877	882	840
Hunters:	929	893	900
Hunter Success:	94%	99%	93%
Active Licenses:	1,022	1,002	1,000
Active License Success:	86%	88%	84%
Recreation Days:	3,866	3,721	3,700
Days Per Animal:	4.4	4.2	4.4
Males per 100 Females	63	55	
Juveniles per 100 Females	61	56	

Population Objective (± 20%) : 10000 (8000 - 12000)

Management Strategy: Recreational

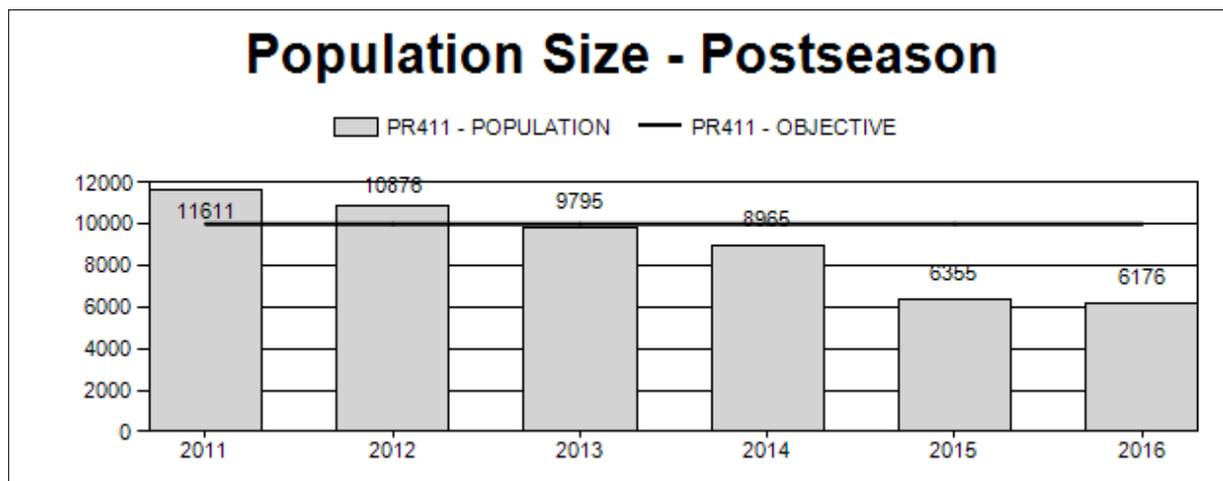
Percent population is above (+) or below (-) objective: -38.2%

Number of years population has been + or - objective in recent trend: 4

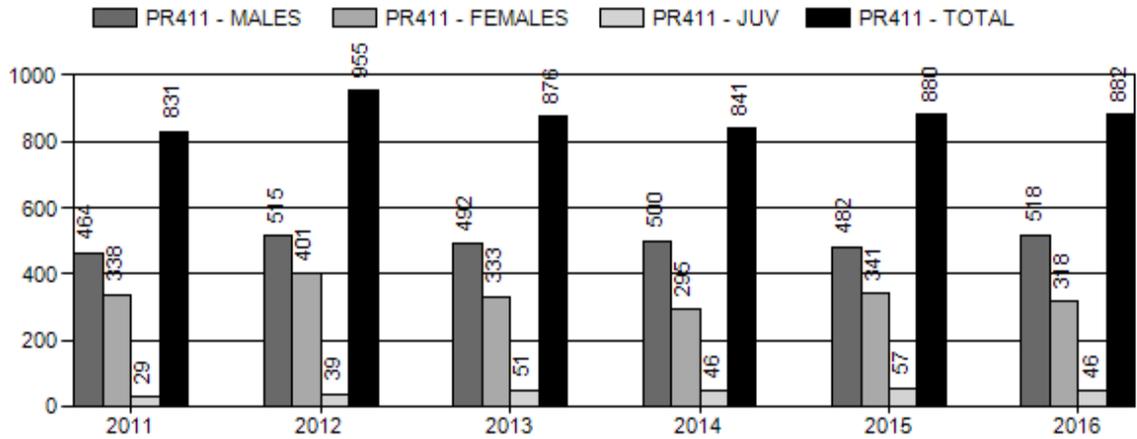
Model Date: 02/14/2017

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

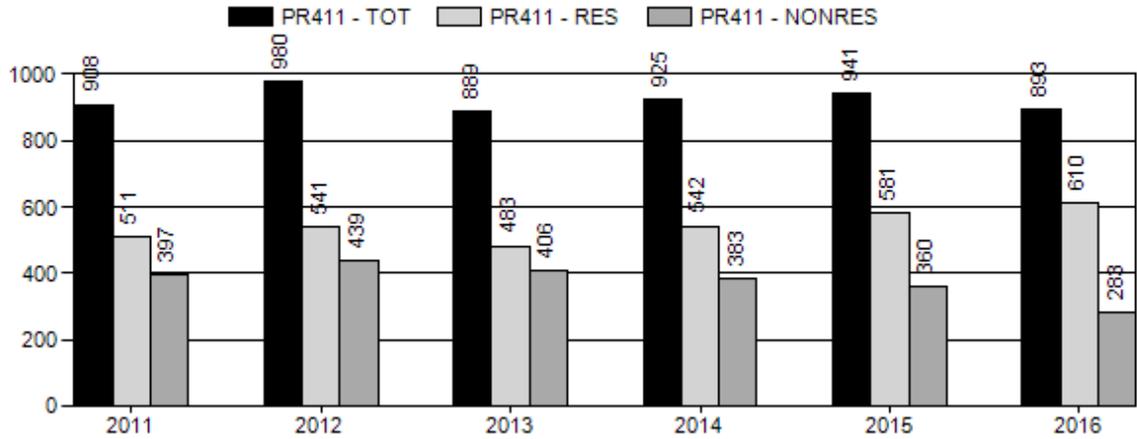
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	9.3%	8.8%
Males ≥ 1 year old:	29.1%	28.8%
Total:	12.3%	11.7%
Proposed change in post-season population:	0.12%	.08%



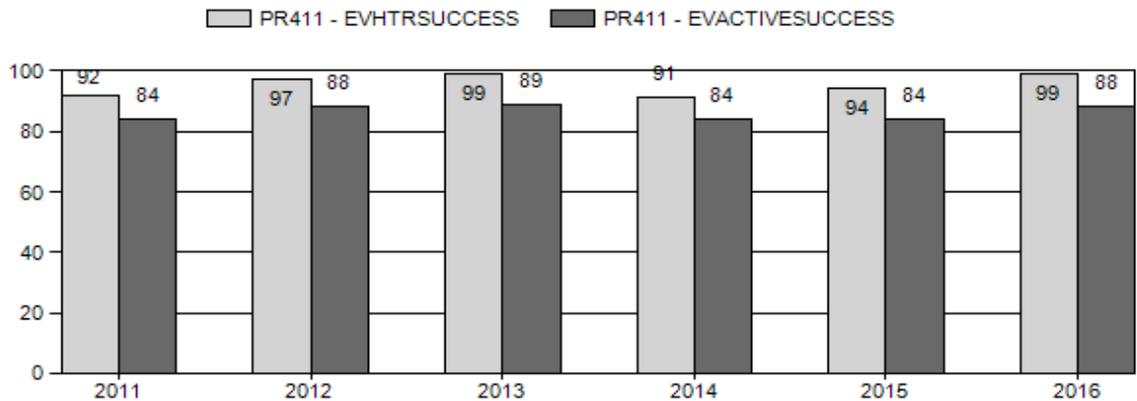
Harvest



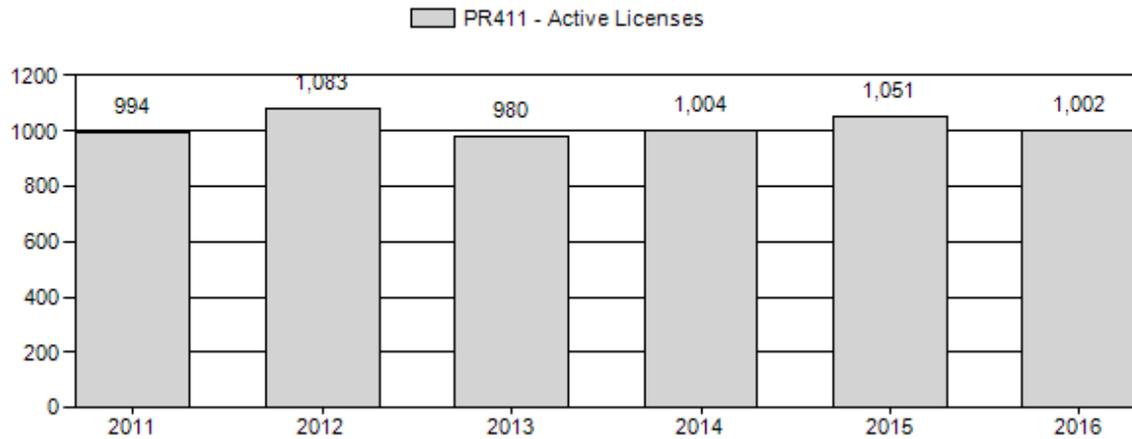
Number of Active Licenses



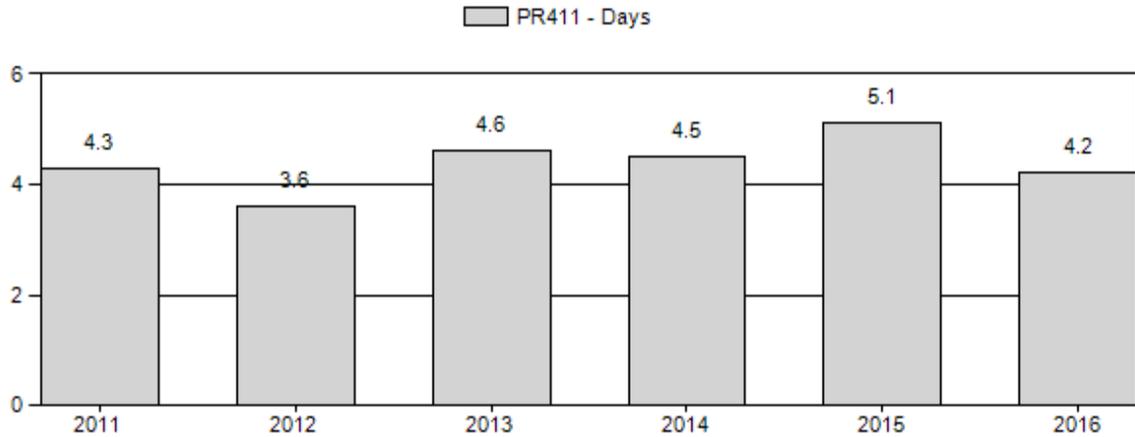
Harvest Success



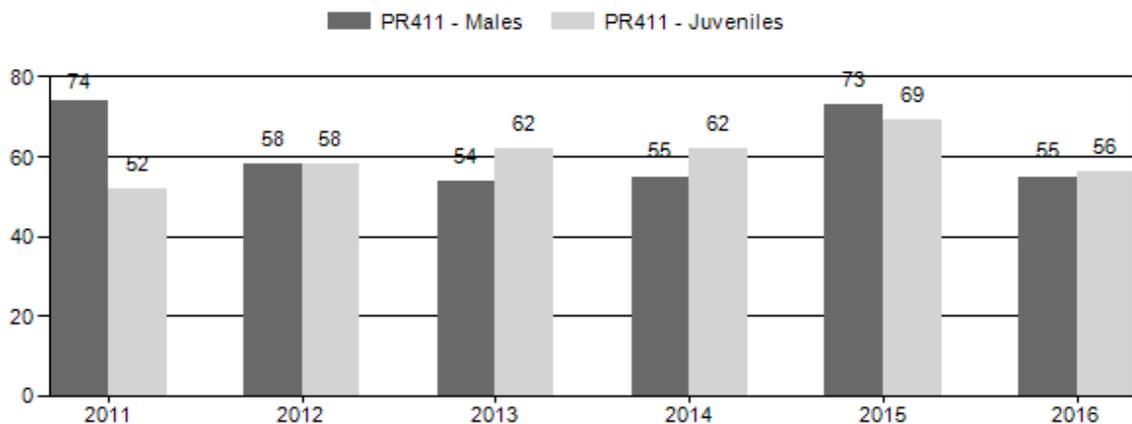
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR411 - UINTA-CEDAR MOUNTAIN

Year	Pre 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
2011	12,525	120	317	437	33%	589	44%	309	23%	1,335	0	20	54	74	± 7	52	± 6	30
2012	11,916	88	378	466	27%	799	46%	460	27%	1,725	0	11	47	58	± 5	58	± 5	36
2013	10,759	80	210	290	25%	536	46%	332	29%	1,158	0	15	39	54	± 6	62	± 7	40
2014	9,891	152	374	526	25%	960	46%	598	29%	2,084	0	16	39	55	± 4	62	± 5	40
2015	7,323	201	392	593	30%	812	41%	563	29%	1,968	0	25	48	73	± 6	69	± 5	40
2016	7,146	175	384	559	26%	1,014	47%	570	27%	2,143	0	17	38	55	± 4	56	± 4	36

2017 HUNTING SEASONS

SPECIES: Pronghorn

HERD UNIT: Uinta-Cedar Mountain (411)

HUNT AREAS: 95, 99

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
95	1	Sep. 10	Oct. 31	325	Limited quota	Any antelope
95	7	Aug. 15	Oct. 31	200	Limited quota	Doe or fawn valid on irrigated land
99	1	Sep. 10	Oct. 31	225	Limited quota	Any antelope
99	6	Sep. 10	Oct. 31	25	Limited quota	Doe or fawn
99	7	Aug. 15	Nov. 30	250	Limited quota	Doe or fawn valid north and west of Wyoming Highway 410 and west of Uinta County Road 271
99	0	Sep. 1	Oct. 31	50	Limited quota	Any antelope, muzzle-loading firearms only

95, 99 Archery Aug. 15 Sept. 9 Limited quota Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2016
99	6	-75
99	7	+50
Herd Unit Total	6	-75
	7	+50

Management Evaluation

Current Postseason Population Management Objective: 10,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~6,176

2017 Proposed Postseason Population Estimate: ~6,230

Herd Unit Issues

The two hunt areas in this herd are very different in several characteristics. Hunt Area 95 is mostly public land, more xeric, and has much lower fawn ratios. Hunt Area 99 has much better conditions for fawn production and survival. Hunt Area 99 has much more private land where the majority of HA 95 is administered by the Bureau of Land Management.

Throughout the herd unit there is a low tolerance for pronghorn on some of the irrigated land holdings. Conflict with agriculture producers can be a significant issue for this herd and results in harvest rates that keep us below the population objective. Damage complaints primarily occur on irrigated lands during the summer and early fall. Irrigated lands are uncommon relative to native ranges, but tend to concentrate pronghorn and therefore have a disproportionately large influence on the overall management of this herd unit. Significant efforts have been made to direct harvest toward those problem areas. Perceived reduction in livestock forage due to pronghorn foraging is an issue that can be brought up, primarily by sheep producers. However, dietary overlap and pronghorn impacts are negligible in native rangelands.

Energy development on crucial habitat is a continuing issue for this herd. Development is present in some areas, in relatively high densities, but has yet to impact habitats on a population scale. Developments range from trona mines to oil and gas fields to wind energy developments. Additionally, fencing associated with Wyoming Highway 414 has created a significant movement barrier between the two hunt areas in this herd unit, limiting historic interchange.

Weather

The winters from 2011 until 2015 were fairly mild with low snowpack and relatively warm temperatures resulting in easy winter conditions. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production. Winter weather during 2016 and 2017 was highly variable, ranging from an extremely mild winter in 2015-16 to one of the most severe in eight decades in 2016-17. In the early part of 2016 the winter started out harsh with high snow loads but it warmed up in February and March to finish fairly mild. A moist spring and early summer followed. In July and August conditions dried up considerably and into late December fairly low precipitation was received. Winter did not really begin until late December 2016. Following late December, temperatures plunged to -45°F and deep, persistent snows fell. However, pronghorn were able to move from the worst conditions to pockets of milder weather, unlike herds to the north. Direct losses of pronghorn were light, and most losses may be revealed through reduced fawn production and recruitment in 2017.

Habitat

Habitat data has been inconsistently collected in this herd unit and has been absent in the recent past. Some areas of significant sagebrush mortality occurred during the 2012-13 droughts, but young plants are growing in these areas in response to ample moisture.

Field Data

The 2016 post-season population estimate for this herd is 6,176 animals, with a downward trend since 2011, significantly below the objective (10,000) for this population. A line transect survey was flown in 2015. Survey variance has been high for this herd unit in the past and a new survey design was used in 2015. This was an end of bio year 2014 estimate of 4,923 with a relatively low variance. The previous line transect survey conducted in this herd unit was in June 2009. Originally, that survey was reported as an estimate of 10,997 pronghorn for the end of bio year

2008 with a huge variance on the estimate. A new method was used to reanalyze that survey data which resulted in a much lower estimate of 6,009 with a much lower variance. The addition of this information has significantly changed population estimates for this herd from previous estimates.

Harvest Data

Despite the fact this herd is well below the population objective, and particularly low in area 95, we continue to issue doe-fawn licenses for irrigated lands to alleviate damage concerns. We have increased those licenses over time to address continual complaints. Hopefully this will help to alleviate private land problems. Conservative seasons continue to be warranted overall in area 95 due to low productivity in this dry environment.

Doe-fawn harvest opportunity was increased every year for several years in area 99. This was to alleviate pressure on limited winter ranges and to address landowner concerns. The 2009, 2010 and 2011 season structures offered substantial doe/fawn harvest opportunity to try to control growth of that part of the herd. Those seasons allowed significant doe-fawn harvest with large increases in permits. These seasons had good success rates, and this strategy has reduced this population segment. However, public land areas of hunt area 99 have much lower antelope populations due to those licenses. We are now greatly reducing this harvest pressure since the herd is well below objective. For 2017 we will again reduce these licenses in response to pronghorn abundance. Doe-fawn licenses are still issued in this area to alleviate specific damage complaints.

Population

The TSJ,CA model was selected due to the low relative AICc score, and its good fit with the data. The CJ,CA model scored slightly better but it did not fit the data as well as the TSJ,CA model. The TSJ,CA model fits very well with the variable fawn survival common in the high elevation winter ranges in the herd unit.

It is imperative we continue to obtain a reliable population estimate periodically through line transect surveys to proof herd status and anchor the model. With this, it is likely we can continue to provide a reasonable population model and track the trend of this population. Without this anchor point, it will be unclear if our current harvest levels can be sustained or if we are on the right management track.

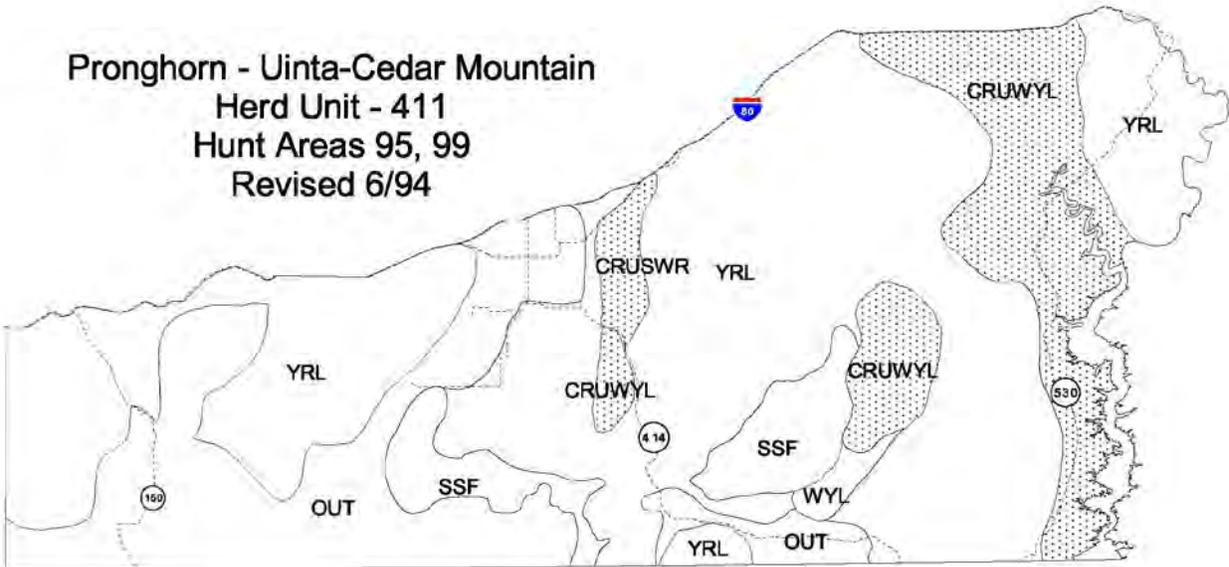
Due to significant documented differences in density and productivity between hunt areas within this herd unit models generated for this herd should be used with some caution. However, with consistent good line transect data it should be able to perform in the future. In 2012 the Department switched from POPII models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

The model underwent a lot of change in 2016 with the addition of new and refined line transect data. The addition of this information has significantly changed population estimates for this herd from previously reported estimates. Currently the model is estimating we have around 6,200 pronghorn in the herd, and has estimated a downward trend since 2011. This is substantiated by a reduction in classification sample sizes and field observations throughout the herd unit. Despite concerns from landowners, a long term reduction in harvest pressure is warranted in this herd if objectives are to be met.

Management Summary

The Uinta-Cedar Mountain pronghorn herd is nearly 40% below objective. For the 2017 season, we will be maintaining a more conservative harvest strategy to allow for population recovery. Some doe-fawn opportunity will be maintained and directed to areas of damage complaints. However, additional cuts will be warranted if fawn production does not increase. The model for this herd predicts a 2017 post-season population of about 6,200. The objective and management strategy were last revised for this herd in 2014.

Pronghorn - Uinta-Cedar Mountain
Herd Unit - 411
Hunt Areas 95, 99
Revised 6/94



2016 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2016 - 5/31/2017

HERD: PR412 - SOUTH ROCK SPRINGS

HUNT AREAS: 59, 112

PREPARED BY: PATRICK BURKE

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	7,205	7,300	7,300
Harvest:	316	351	430
Hunters:	353	378	465
Hunter Success:	90%	93%	92 %
Active Licenses:	360	382	470
Active License Success:	88%	92%	91 %
Recreation Days:	1,148	1,234	1,300
Days Per Animal:	3.6	3.5	3.0
Males per 100 Females	43	50	
Juveniles per 100 Females	55	47	

Population Objective (± 20%): 6500 (5200 - 7800)

Management Strategy: Recreational

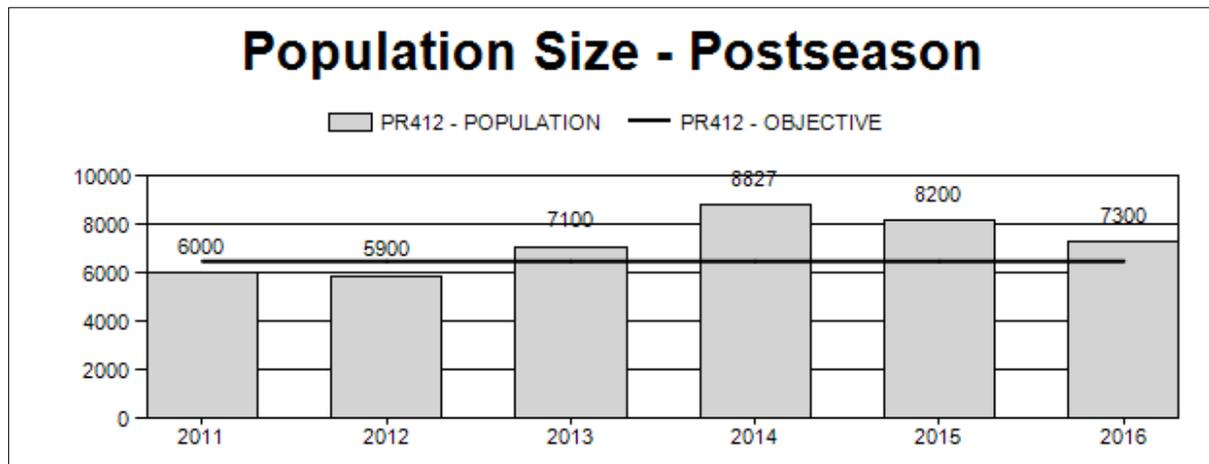
Percent population is above (+) or below (-) objective: 12%

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

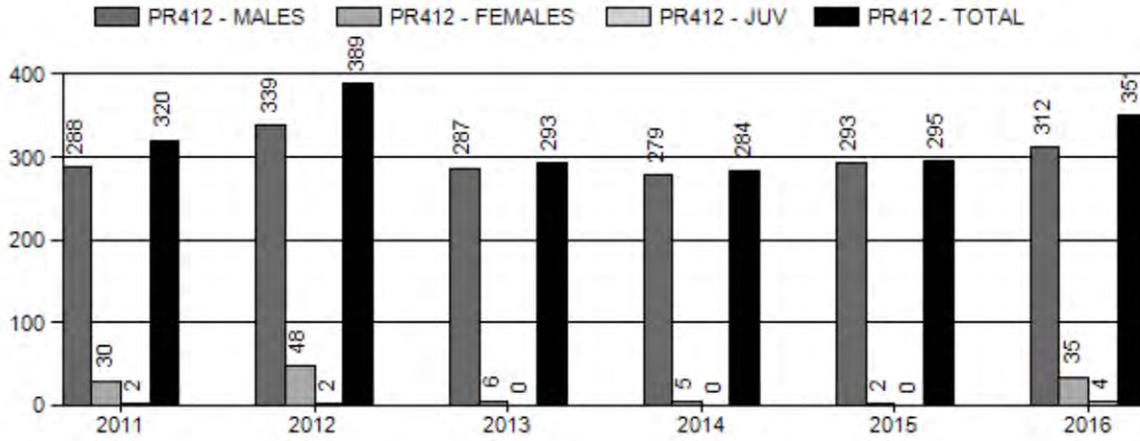
Model Date: 2/21/2017

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

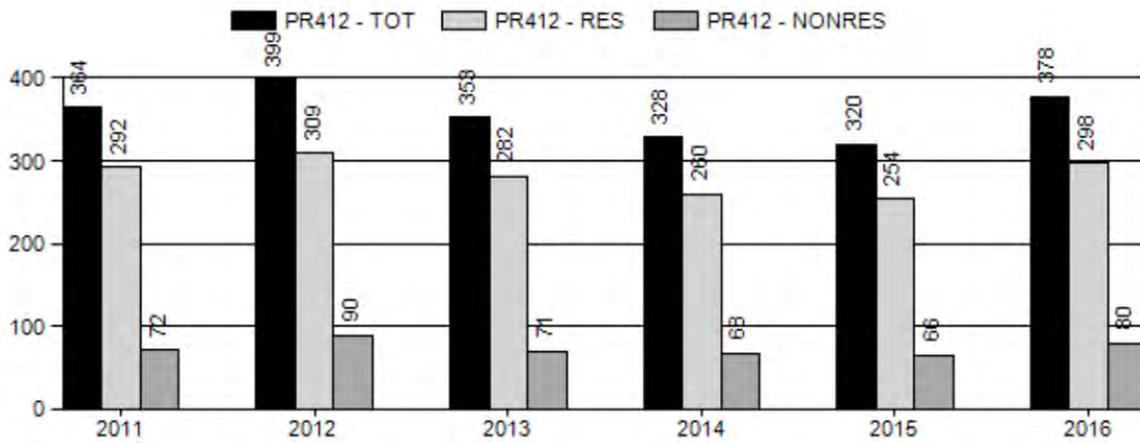
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.1%	3%
Males ≥ 1 year old:	18%	18%
Total:	4%	5%
Proposed change in post-season population:	-1%	0%



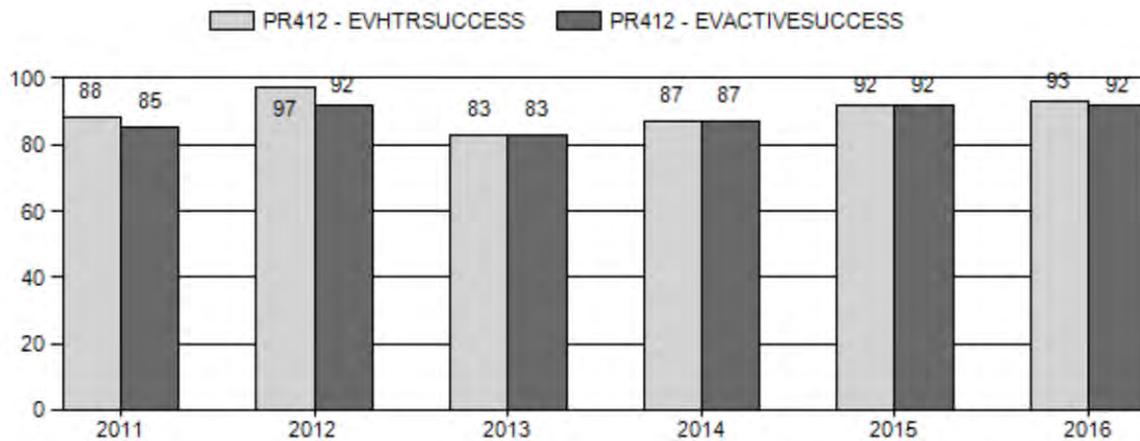
Harvest



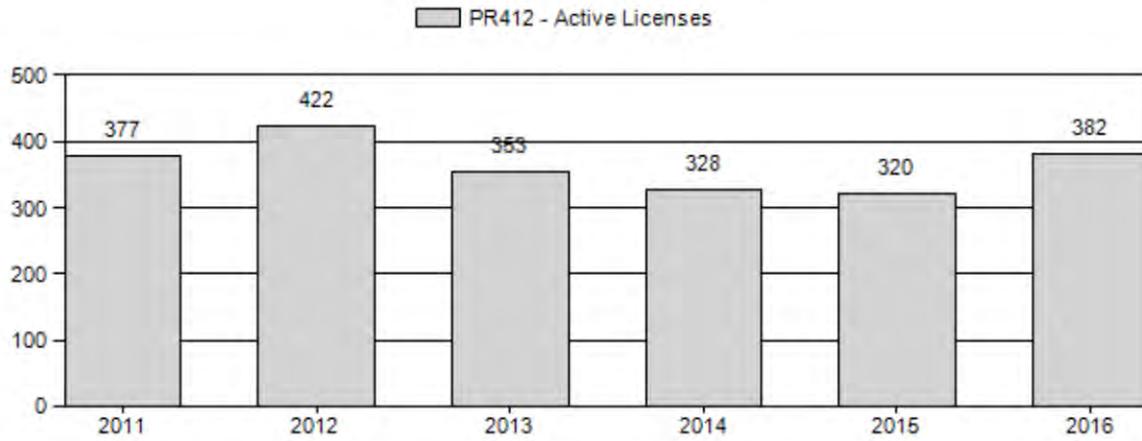
Number of Active Licenses



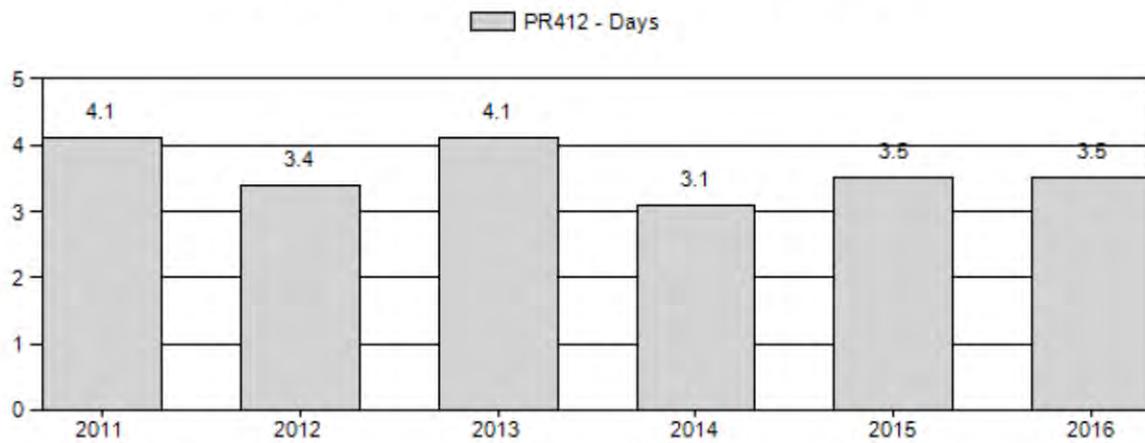
Harvest Success



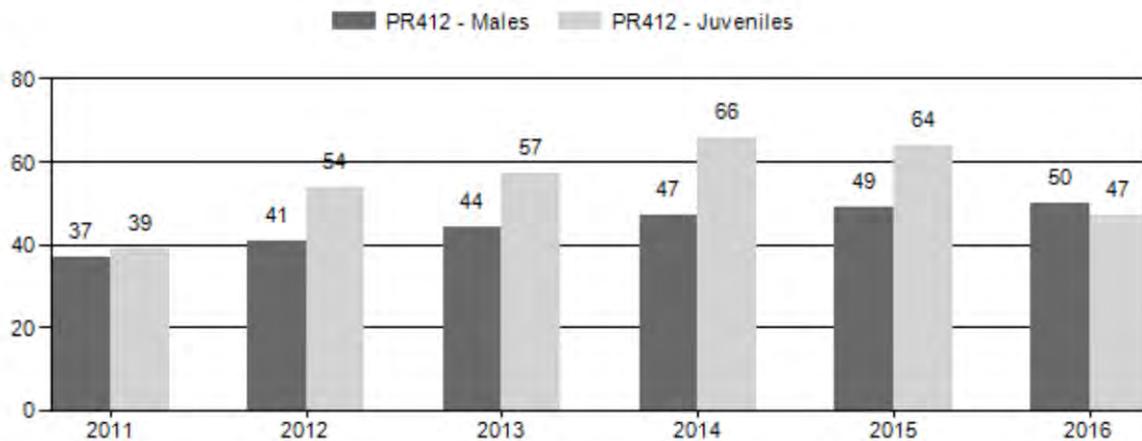
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR412 - SOUTH ROCK SPRINGS

Year	Pre 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
2011	6,350	114	274	388	21%	1,045	57%	404	22%	1,837	1,084	11	26	37	± 3	39	± 3	28
2012	6,300	120	268	388	21%	936	51%	505	28%	1,829	931	13	29	41	± 3	54	± 4	38
2013	7,450	119	256	375	22%	848	50%	482	28%	1,705	944	14	30	44	± 4	57	± 5	39
2014	9,139	144	195	339	22%	724	47%	480	31%	1,543	1,773	20	27	47	± 5	66	± 6	45
2015	8,500	179	250	429	23%	873	47%	558	30%	1,860	1,940	21	29	49	± 4	64	± 5	43
2016	7,700	217	333	550	25%	1,097	51%	519	24%	2,166	1,648	20	30	50	± 4	47	± 4	32

**2017 HUNTING SEASONS
SOUTH ROCK SPRINGS PRONGHORN HERD (PR412)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
59	1	Sept. 20	Oct. 31	300	Limited quota	Any antelope
	6	Sept. 20	Oct. 31	75	Limited quota	Doe or fawn
112	1	Sept. 20	Oct. 31	100	Limited quota	Any antelope
	6	Sept. 20	Oct. 31	25	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Limitations
59, 112	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
59	1	+50
	6	+50
Herd Unit Total	1	+50
	6	+50

Management Evaluation

Current Management Objective: 6,500

Management Strategy: Recreational

2016 Postseason Population Estimate: ~8,000

2017 Projected Postseason Population Estimate: ~7,500

The post-season population objective for the South Rock Springs pronghorn herd is 6,500 animals under recreational management. The objective for this herd was changed to its current level in 2002. The objective was reviewed in the summer of 2013, when no changes were made.

Herd Unit Issues

The population model for this herd estimates the 2016 post-season population to be a little over 8,000 pronghorn. This estimate is above recent population estimates from a few years ago that estimated the herd to be slightly under objective. This increase in the model estimate does not coincide with field observations of the pronghorn population size in the South Rock Springs area. Observations by field personnel and the hunting public suggest that the herd more likely remained stable over the last few years rather than increasing at the rate suggested by the model. The most likely explanation for the larger population estimate is a combination of somewhat higher observed buck to doe ratios in the last couple of years and slightly increased observed fawn to doe ratios over historic levels. The observed fawn ratios for the last three years have only been in the mid 50's to the mid 60's, with the 2016 fawn ratio being only 47 fawns per 100 does. Fawn ratios in this range should not cause the population to increase, especially at the rate suggested by the model. Typically, fawn ratios in this range would result in population maintenance at best, not a rapid population increase.

Weather

The most prominent weather condition present in the South Rock Springs pronghorn herd for the last several years has been dry summer conditions with relatively mild winters. Those conditions changed somewhat in 2016, which saw an improvement in summer moisture levels and a significantly more severe winter than this herd has been seen since the 2010-2011 winter. While, the country south of Interstate 80 did not receive as much in the way of deep snow conditions as the country further north, it did still receive significant snowfall and experienced bitterly cold temperatures during January 2017. Conditions moderated though during early February, which allowed for some snowmelt, which exposed some shrubs on the winter ranges, improving conditions for pronghorn in this herd. The end of February saw a return to deep snow conditions in the herd unit however. Fortunately, the extreme cold temperatures of January did not return in February, which will be beneficial to wintering wildlife. While the full impact of this winter on the South Rock Springs pronghorn herd will not be known until next year, some level of increased winter mortality can be expected this year.

Habitat

No habitat transects targeting pronghorn ranges have been conducted in the South Rock Springs pronghorn herd unit. However, based on observations made during other field work, shrubs in the South Rock Springs area have not been putting on much in the way of annual growth during the last several summers. While the summer of 2016 saw better moisture than previous years, shrub production still was poor again this year.

Field Data

Pre-season classifications conducted in August 2016 resulted in 2,166 pronghorn being classified in the herd unit. That sample consisted of 1,097 does, 519 fawns, 333 two-year-old or older bucks and 217 yearling males. The 2016 classifications produced observed fawn to doe ratios of 47 fawns per 100 does. This observed fawn to doe ratio is below the observed ratios of the last four years, when the fawn ratio averaged 60 fawns per 100 does. This year's observed ratio is not out of line for what has been observed in this herd in the past, and is actually almost identical to the overall observed fawn ratio for the herd since 1993. Pre-season classifications also resulted in observed buck ratios of 50 total bucks per 100 does for the herd unit as a whole, which is well within the approved range for a recreational management herd.

Harvest Data

Harvest statistics for the 2016 hunting season were typical for this herd. Harvest success for the herd unit was 93%. Days per harvest was 3.5 days per harvest during the 2016, which is unchanged from the 2015 results. A total of 351 pronghorn were harvested in 2016, with 312 bucks, 35 does, and 4 fawns being harvested. Broken out by hunt area, HA59 had a 92% success rate and 4.3 days per harvest on the Type 1 licenses with a total of 222 bucks harvested and the Type 1 license holders in HA112 also had a 92% success rate and 2.3 days per harvest with a total of 90 bucks. The Type 6 license holders in HA59 experienced a 100% success rate, harvesting 20 does and 4 fawns with an average of 2.0 days per harvest, while the hunters in HA112 had an 83% harvest success rate, harvesting a total of 15 does and they took an average of 1.7 days to harvest their animal.

Population

The model for this population has tracked fairly well with field observations of this herd until 2013, when the post-season population estimate moved in a direction counter to the field observations of both the managers and the public. The model performance in 2016 continues to be questionable, with the model producing a population estimate that is above what field managers feel is accurate. The model estimate has stop its drastic increase however and has at least stabilized from its unrealistic growth rates for the last several years. The growth predicted by the model from 2011 to 2015, where it estimated that the herd increased by of almost 4,000 animals is simply not possible given the fawn ratios and habitat conditions present in this herd unit during that time period. While this rapid growth predicted by the model has stopped in the 2016 estimate, the reliability of the model still must be questioned and its population estimates should be taken with a large grain of salt.

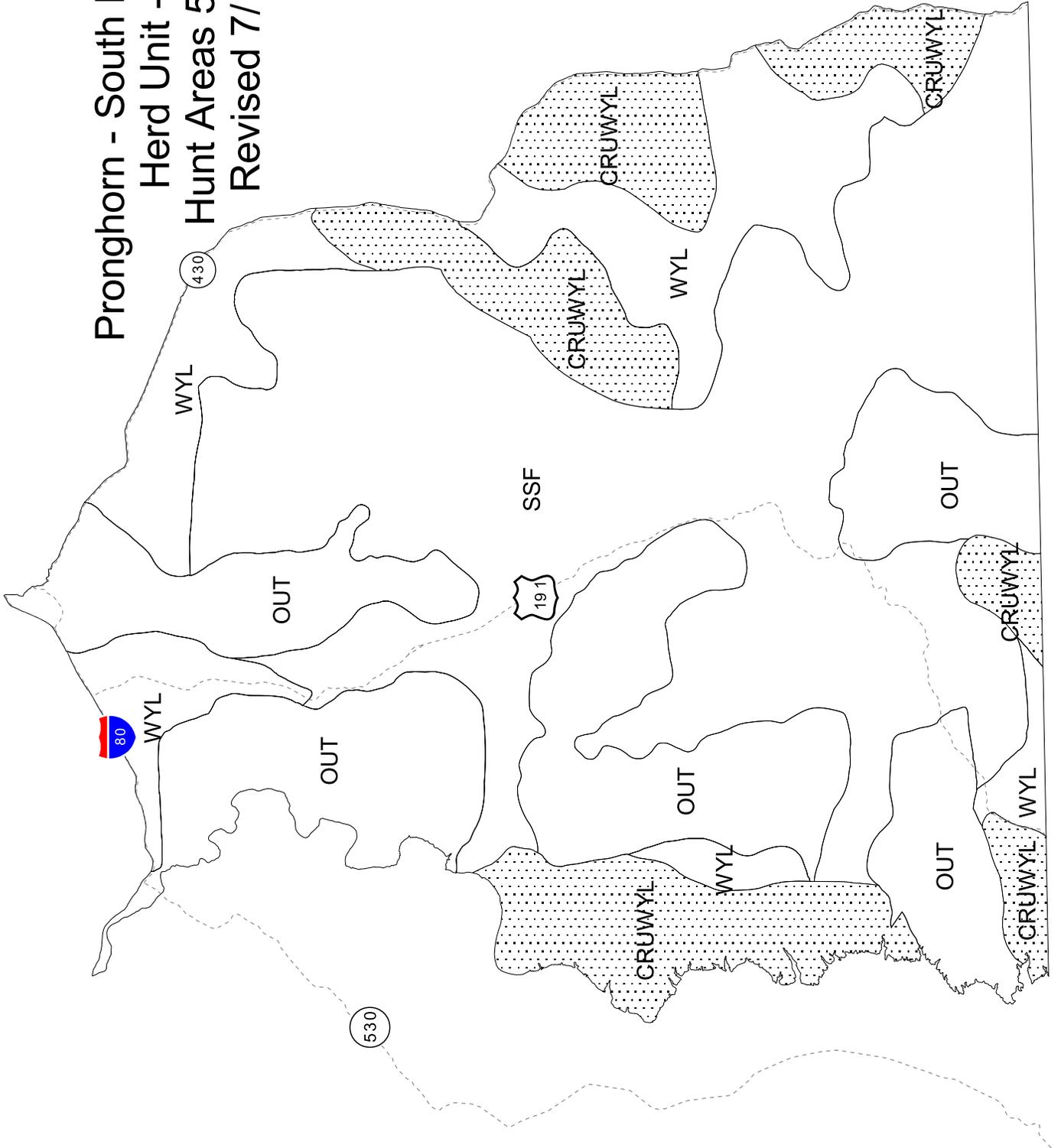
A line-transect survey was flown in this herd unit in June of 2015 for an end of bio-year 2014 estimate. The result of the LT survey was a point estimate of 6,650 pronghorn with a standard error for the estimate of 1,033. This estimate along with the model goes contrary to what is seen on the ground in August and September. It should be noted that August classification sample sizes have remained fairly consistent, with the 2016 sample size being generally in line with average sample sizes for this herd, although the 2016 classification sample size was up from recent years sample sizes.

The time-specific juvenile survival model was selected for this herd because of its relative AIC value and because that model best fit the field observations of the population and the biology of the species.

Management Summary

The hunting season for 2017 contains an increase in both the Type 1 and 6 license types for HA59. The increases in the Type 1 licenses are were implemented despite the observed ratios being well within the limits of recreational management in an attempt to decrease the observed buck ratio for the herd, since this appears to be the major driving force in the model's increasing population estimates. This increase in buck harvest is being directed at HA59, because that hunt area has higher buck ratios than HA112, and appears to be driving the higher observed buck ratios for the herd. The increased Type 6 licenses for HA59 are being put in place in hopes that harvesting more does will help move the population estimate down closer to its objective. The 2017 seasons should result in the harvest of approximately 430 pronghorn from the herd unit, 325 bucks, 100 does, and 5 fawns. Assuming no increased winter mortality from this winter, the 2017 seasons should stabilize the population at near its current level.

Pronghorn - South Rock Springs
Herd Unit - 412
Hunt Areas 59, 112
Revised 7/1999



2017 Proposed - Season Setting Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2016 - 5/31/2017

HERD: PR414 - BITTER CREEK

HUNT AREAS: 57-58

PREPARED BY: TONY MONG

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,842	13,700	13,600
Harvest:	219	422	460
Hunters:	234	416	450
Hunter Success:	94%	101%	102 %
Active Licenses:	239	473	490
Active License Success:	92%	89%	94 %
Recreation Days:	843	1,830	1,950
Days Per Animal:	3.8	4.3	4.2
Males per 100 Females	57	51	
Juveniles per 100 Females	45	38	

Population Objective (± 20%) : 13000 (10400 - 15600)

Management Strategy: Special

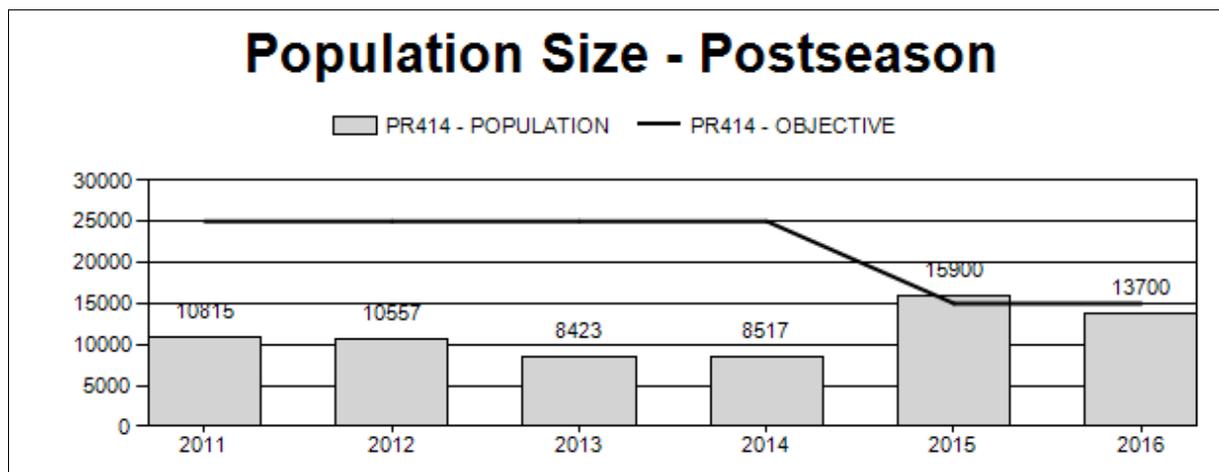
Percent population is above (+) or below (-) objective: +4.6%

Number of years population has been + or - objective in recent trend: 2

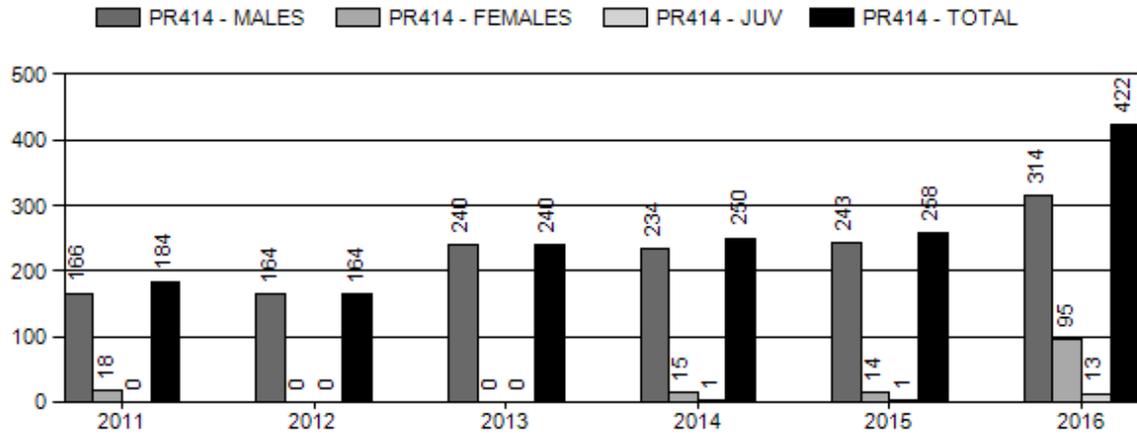
Model Date: 2/17/2017

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

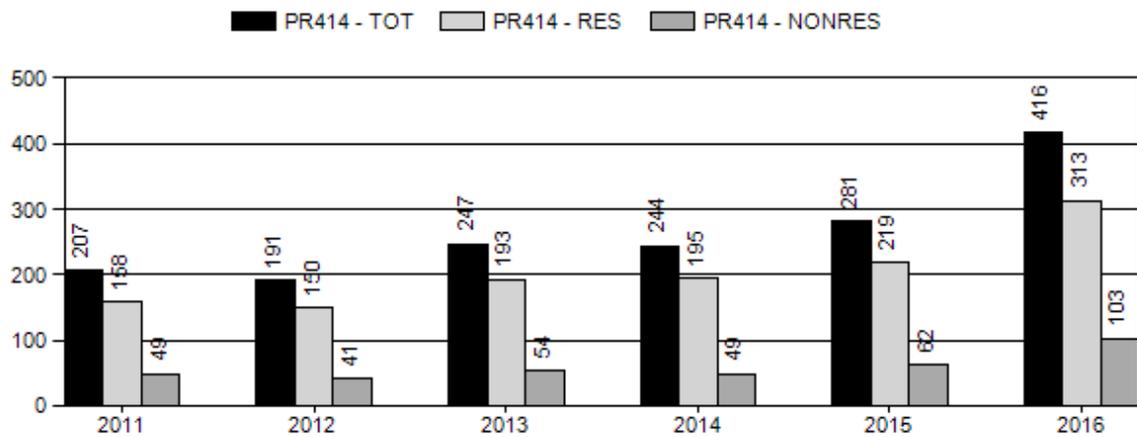
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2.1%	2%
Males ≥ 1 year old:	8.0%	9%
Total:	4%	4%
Proposed change in post-season population:	1%	0%



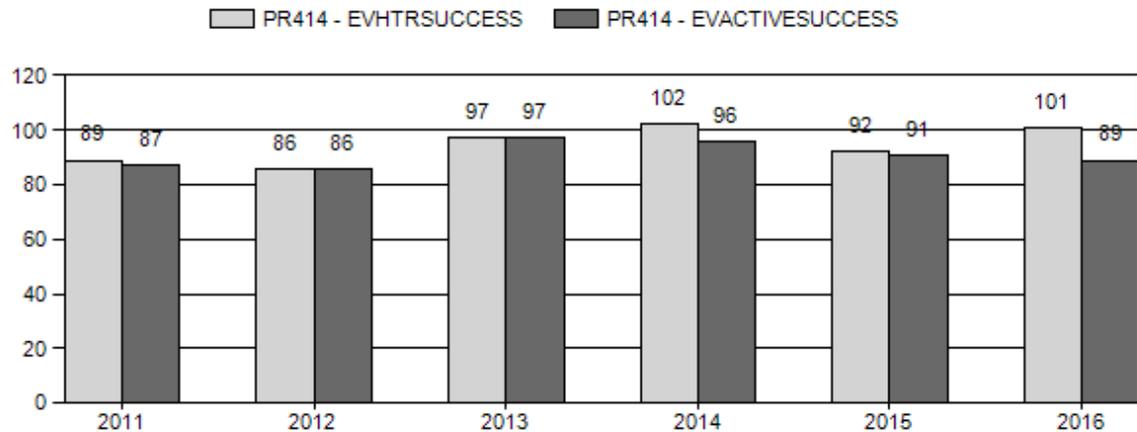
Harvest



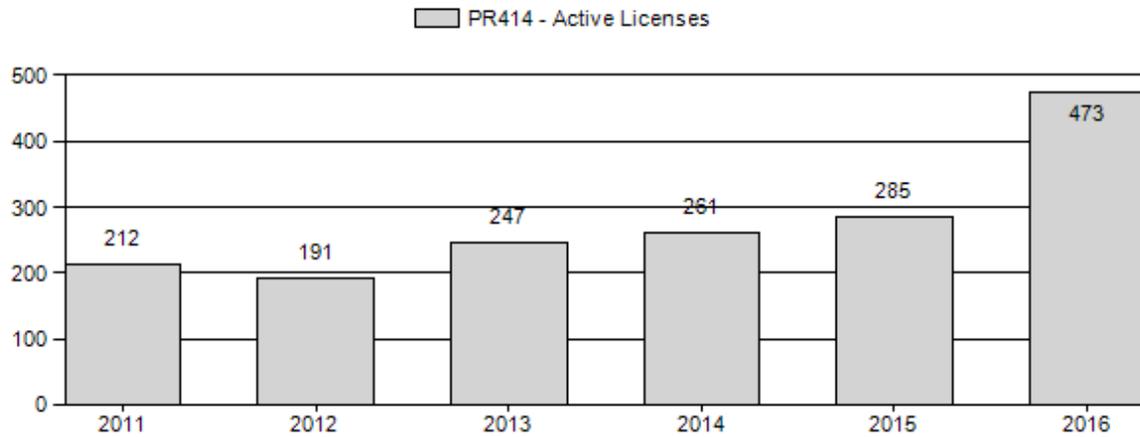
Number of Active Licenses



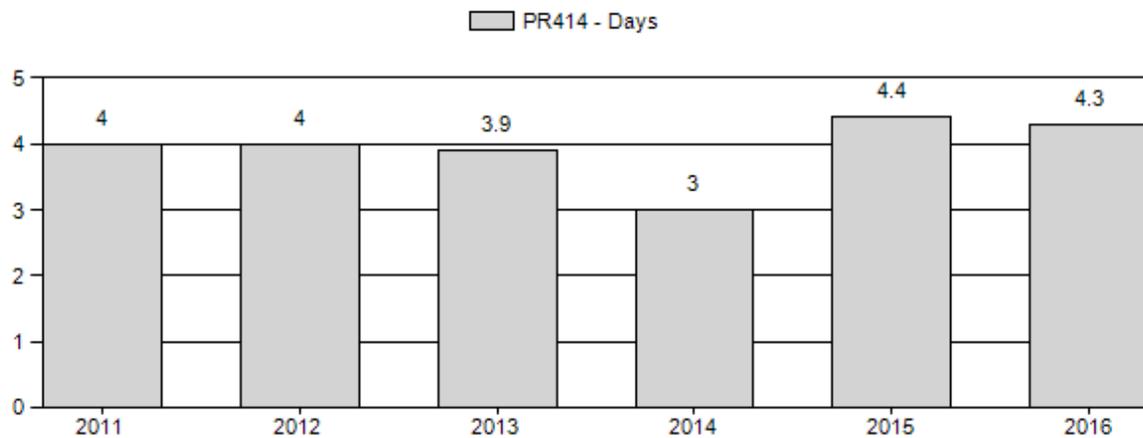
Harvest Success



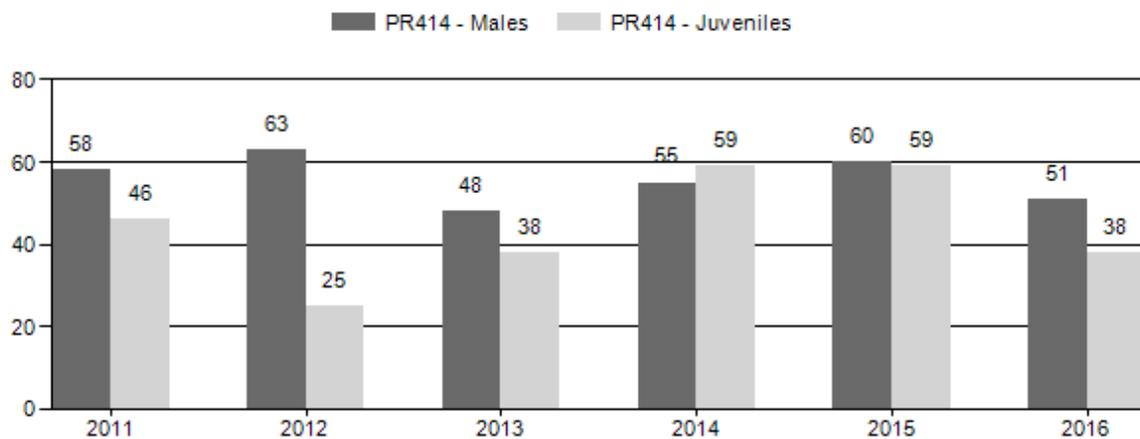
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR414 - BITTER CREEK

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	11,018	146	395	541	28%	937	49%	427	22%	1,905	0	16	42	58	± 5	46	± 4	29
2012	10,737	116	372	549	34%	866	53%	219	13%	1,634	0	13	43	63	± 5	25	± 3	15
2013	10,390	51	306	357	26%	751	54%	283	20%	1,391	0	7	41	48	± 5	38	± 4	26
2014	8,792	91	217	308	26%	563	47%	333	28%	1,204	0	16	39	55	± 6	59	± 6	38
2015	16,200	179	399	578	27%	960	46%	565	27%	2,103	0	19	42	60	± 5	59	± 5	37
2016	14,100	204	608	812	27%	1,587	53%	596	20%	2,995	0	13	38	51	± 3	38	± 3	25

2017 PROPOSED HUNTING SEASON

SPECIES : Pronghorn
HUNT AREAS: 57, 58

HERD UNIT : Bitter Creek (414)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
57	1	Sep. 20	Oct. 31	300	Limited Quota	Any antelope
	2	Sep. 20	Oct. 31	25	Limited Quota	Any antelope valid west of Sweetwater County Road 23S and B.L.M. Road 3310, and north and east of B.L.M. Roads 4411 and 4409
	6	Sep. 20	Oct. 31	50	Limited Quota	Doe or fawn only
	7	Sep. 1	Oct. 31	75	Limited Quota	Doe or fawn valid on private land within one (1) mile of Carbon County Road 603
58	1	Sep. 20	Oct. 31	100	Limited Quota	Any antelope

Special Archery Season Hunt Areas	Opening Date	Limitations
57, 58	Aug. 15	Refer to Section 2 of this Chapter

<i>Hunt Area</i>	<i>Type</i>	<i>Quota change from 2016</i>
57	1	0
	2	0
	6	0
	7	+25
58	1	+25
<i>Herd Unit Total</i>	<i>1</i>	<i>+25</i>
	<i>2</i>	<i>0</i>
	<i>6</i>	<i>0</i>
	<i>7</i>	<i>+25</i>

Management Evaluation

Current Management Objective: 13,000 (2015)

Management Strategy: Special

2016 End-of-bio-year Estimate: 11,200

2017 Proposed postseason Estimate: 13,700

The Bitter Creek herd is slightly above the new objective of 13,000 (established in 2015). Our current management strategy is to maintain herd size by providing a mixture of buck and doe harvest. We are proposing to increase type 1 licenses in hunt area 58 to allow for more opportunity, and a modest increase in type 7 licenses in hunt area 57. The private land type 7 has been a successful tool in alleviating damage concerns on irrigated meadows in the southeastern portion of hunt area 57.

Herd Unit Issues

The main issues impacting the Bitter Creek herd include continued large scale energy development, and competition with feral horses. The Bitter Creek herd is facing many challenges through the expansion of the Continental Divide-Creston Junction (CDC) and Desolation Flats gas fields, along with developments associated with the Hiawatha field in the western portion of the herd unit. Currently there are nearly 5,000 wells in the CDC and an EIS for an additional 8,950 infill wells. A majority of these wells occur within occupied pronghorn ranges. The Hiawatha field is expanding in a more piece-meal fashion, and continues to expand its area of influence on all wildlife in this herd unit.

Wild horses have been shown to “defend” open water sources in this area of limited available water, and studs have been observed driving all other ungulates from this water. Recent fecal analysis has indicated a major dietary overlap exists between feral horses and pronghorn, given high shrub use by horses in the Adobe Town-Salt Wells HMA. It will be important to work with the Bureau of Land Management to identify horse distribution and scientifically supported population estimates for these animals, so appropriate levels can be managed for in this increasingly impacted landscape.

Weather

Recent increased precipitation within this herd unit has resulted in filling of long dry reservoirs and has had a positive response on vegetation (Figure 1). The western portion of the unit (area 58) saw the highest increases in precipitation. Although we did not see a direct response with higher fawn ratios in 2016, we expect to see fawn ratios respond favorably in 2017.

The higher moisture levels seen throughout the unit is somewhat deceptive due to the timing of when the area received the moisture. Most of the moisture fell during spring and late fall with very little rain fall during the middle portion of the summer. This resulted in an early curing of herbaceous vegetation, which likely negatively influenced fawn survival during 2016.

Winter Severity

The weather was unseasonably warm well into December across the herd unit during 2016. These warmer temperatures paired with late fall moisture resulted in some fall green-up which may have benefitted pronghorn prior to winter.

However, January brought several big snowfall events throughout the area followed by sustained temperatures well below zero. It is expected some losses occurred due to the severe energy demands on pronghorn. Winter losses were light on this species, but it may impact this year's fawn production or fawn survival if nutritional status of the doe was reduced. However, conditions were significantly milder in this area than much of the remaining areas in the Green River Region, and it is likely pronghorn were little affected. High winds and a sustained warming trend in February helped to melt off nearly all lower elevation habitats in this herd. Overall, the warming trend allowed food resources to become more available for pronghorn, likely resulting in normal levels of winter survival.

Figure 1. Percent of normal precipitation for the Bitter Creek herd unit from February 2016 to February 2017.



Field Data

We saw a significant drop in fawn ratios this year driven primarily by hunt area 58 numbers. Hunt area 57 maintained a reasonable fawn ratio at 54:100, but hunt area 58 dropped to numbers not seen since the dry summers of 2012 and 2013. This drop may be attributed to an extremely dry summer in Area 58, reducing the nutritional status of nursing does, and available nutritious herbaceous vegetation typically available to older aged and fawns.

Given conservative seasons in response to population status, buck ratios seem to be trending up over the last 3 years with an average of 56:100 when compared to an average of 38:100 from the previous 5 years. Higher fawn ratios in 2014 and 15 contributed to this increase but we can expect a reduction (at least in yearling bucks) next year due to the low fawn ratios in 2016. Hunt Area 57 buck ratios have responded to recent allowable increased harvest, decreasing from a high ratios in 2014 (67:100) to 59:100 in 2016.

Harvest Data

Hunters within the Bitter Creek herd unit experience typically high harvest success, and remain extremely satisfied with their experience in both hunt areas. Harvest success dipped slightly from previous years but remains at 89%. In this herd, hunters tend to be highly selective due to the reputation for larger than average males, and this impacts both effort and success in an artificial manner. Some hunters choose to not harvest if they do not find a (or *the*) buck they are

seeking. Many of the hunter comments we receive at check stations and field checks appear to be ecstatic with both the number of bucks available, and the number of total pronghorn seen. Hunt area 58 returned to 100% success after a dip in success during the 2015 season. The satisfaction survey reveal that hunters were satisfied with their hunt in area 58 as 100% of those surveyed (n=24) were either “satisfied” or “very satisfied” with the overall hunt quality.

Population

The current population model estimates the 2016 end-of-bio-year population to be around 13,700 animals. Despite the CJ, CA model having the lowest AICc value we chose the SCJ, SCA model based on what we believe to be a better representation of the actual population trend and size, adjusted with line transect estimates obtained in 2009 and 2015. Within the SCJ, SCA model we restrained juvenile survival rates for 2007 (0.1 to 0.4) and 2010 (0.1 to 0.4) based on known winter die off occurring at a higher rates than normal (model estimate for all other years, 0.414). We also restrained adult survival for the same reason for 2007 (0.4 to 0.75) and 2010 (0.6 to 0.85).

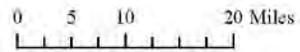
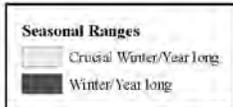
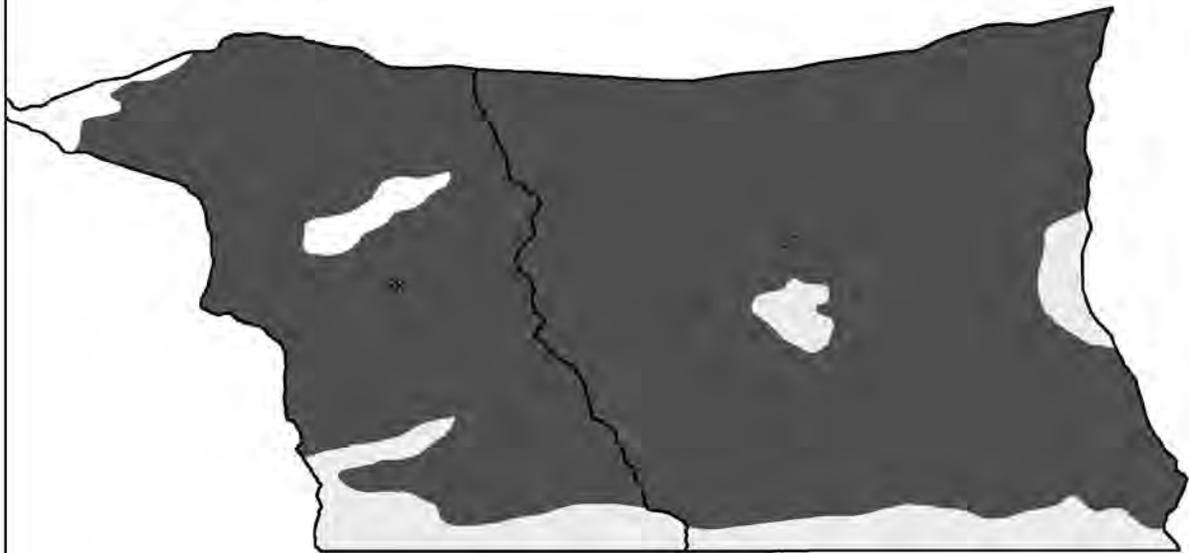
Management Summary

This proposal will allow us to begin to continue to offer opportunity in order to maintain current population levels and buck ratios. Since precipitation has improved in the typically drier western portion of the herd (hunt area 58), improvements in both pronghorn densities and buck ratios have been observed. A decline in fawn ratios in 2016 is somewhat concerning, but expected given a return to dry conditions during the 2016 summer, but dramatically increased moisture in 2017 should result in vastly improved conditions for lactating does. Overall population numbers seem to have remained consistent and stable under current management. The area 57-2 license was extremely successful in adding harvest into the northern portion of area 57 and allowed us the opportunity to direct harvest and increase opportunity in a little used portion of the herd unit.

We have made an impact on the damage concerns we were having in the southeastern portion of the herd. Despite the harvest in the type 7 area we are proposing a change to the limited area to further focus harvest on three specific landowners; those having the greatest damage issues and concerns. The increase in type 7 licenses along with the change to a more focused area should alleviate the irrigated meadow damage issues.

Population Estimates

Bitter Creek PR414 Herd Seasonal Ranges



2016 - JCR Evaluation Form

SPECIES: Pronghorn

PERIOD: 6/1/2016 - 5/31/2017

HERD: PR419 - CARTER LEASE

HUNT AREAS: 94, 98, 100

PREPARED BY: JEFF SHORT

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	6,082	5,964	6,051
Harvest:	1,514	1,460	1,300
Hunters:	1,598	1,424	1,300
Hunter Success:	95%	103%	100%
Active Licenses:	1,780	1,652	1,450
Active License Success:	85%	88%	90%
Recreation Days:	6,053	5,152	4,500
Days Per Animal:	4.0	3.5	3.5
Males per 100 Females	60	51	
Juveniles per 100 Females	63	72	

Population Objective ($\pm 20\%$) : 6000 (4800 - 7200)

Management Strategy: Recreational

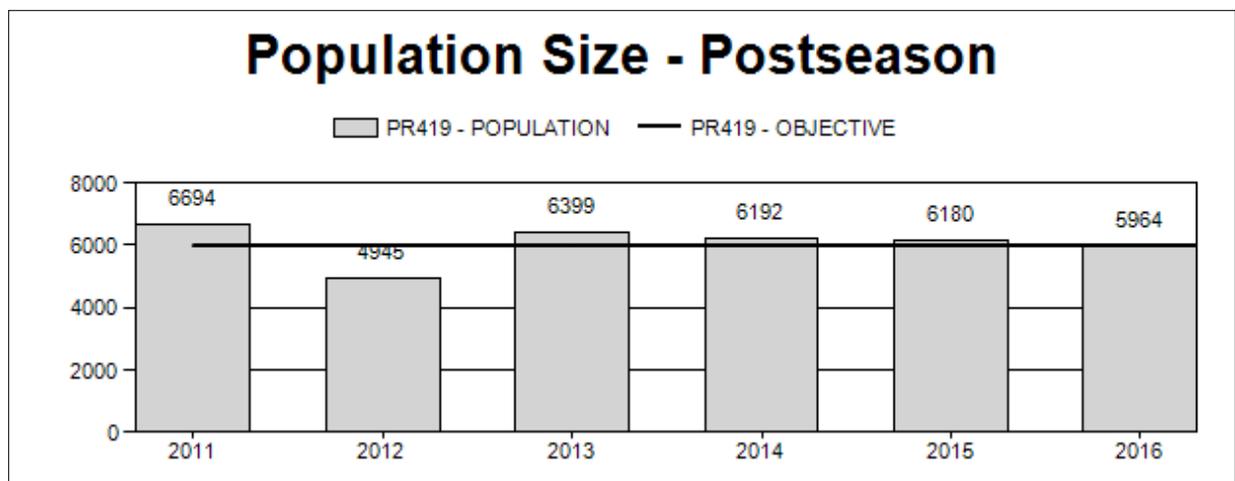
Percent population is above (+) or below (-) objective: -0.6%

Number of years population has been + or - objective in recent trend: 1

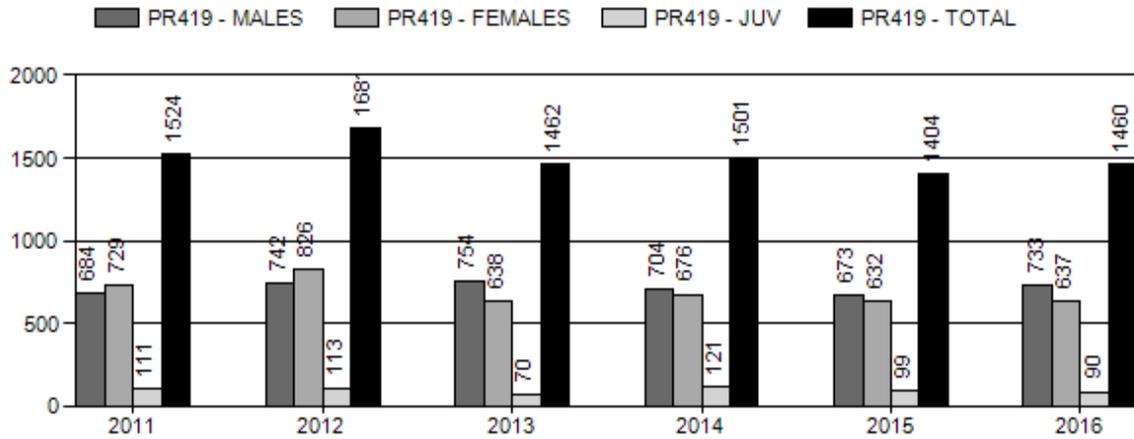
Model Date: 02/14/2017

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

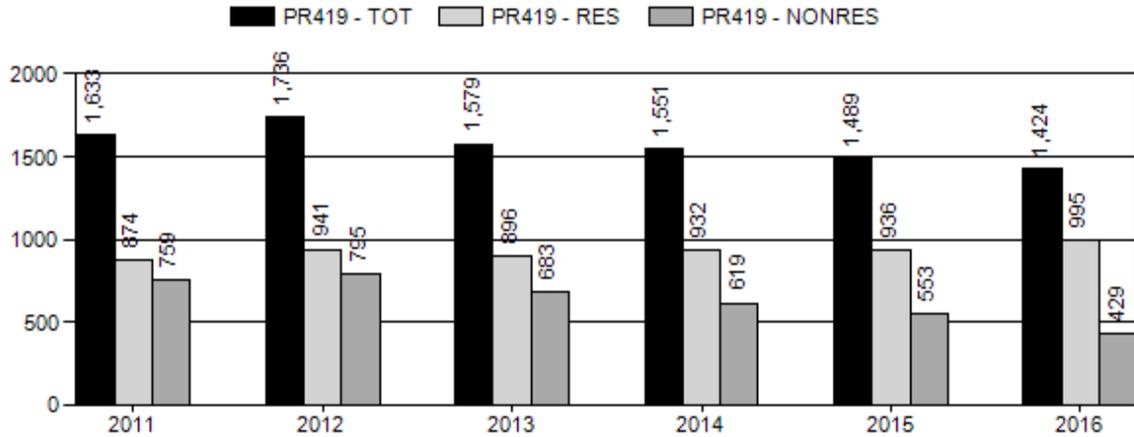
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	13.0%	12.2%
Males ≥ 1 year old:	27.8%	24.6%
Total:	13.6%	12.6%
Proposed change in post-season population:	-0.56%	+1.4%



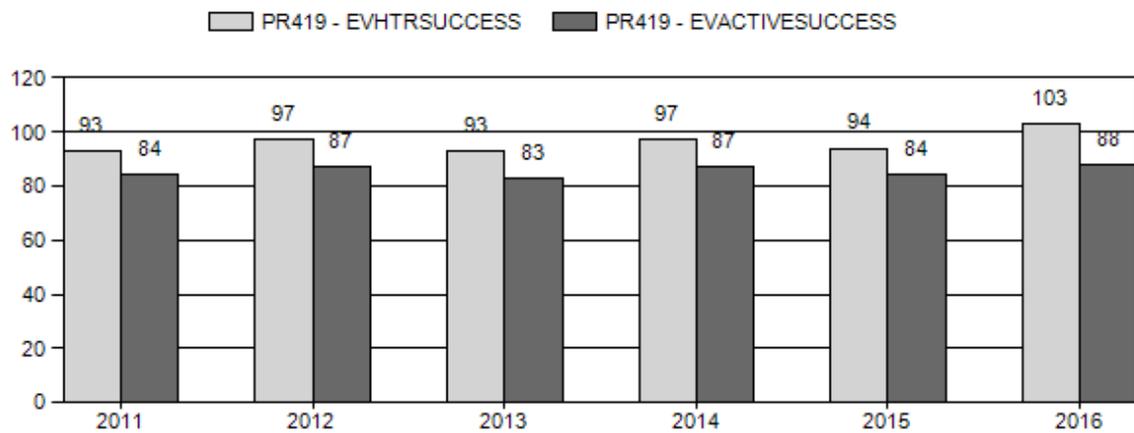
Harvest



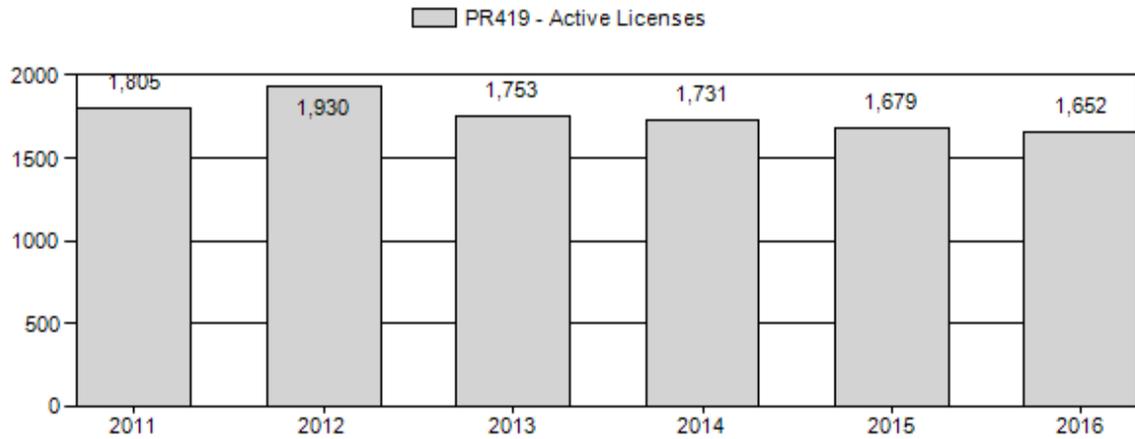
Number of Active Licenses



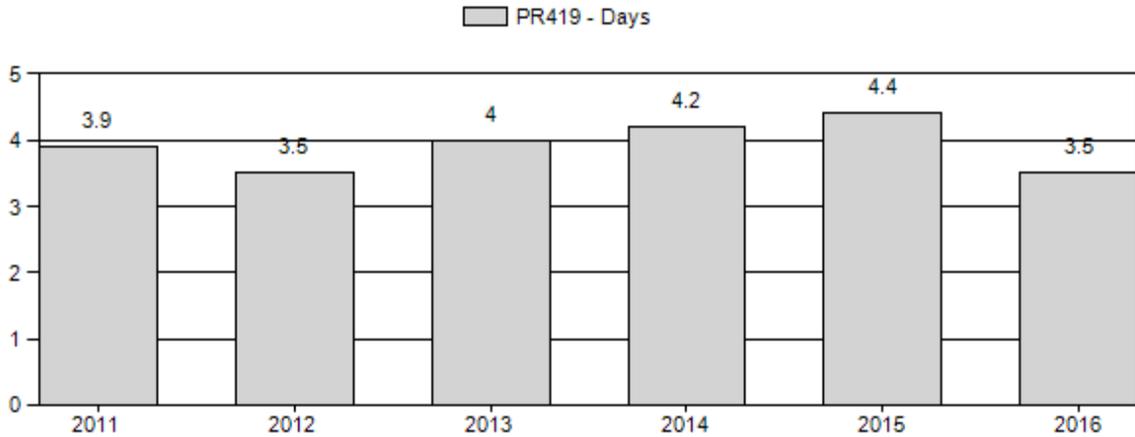
Harvest Success



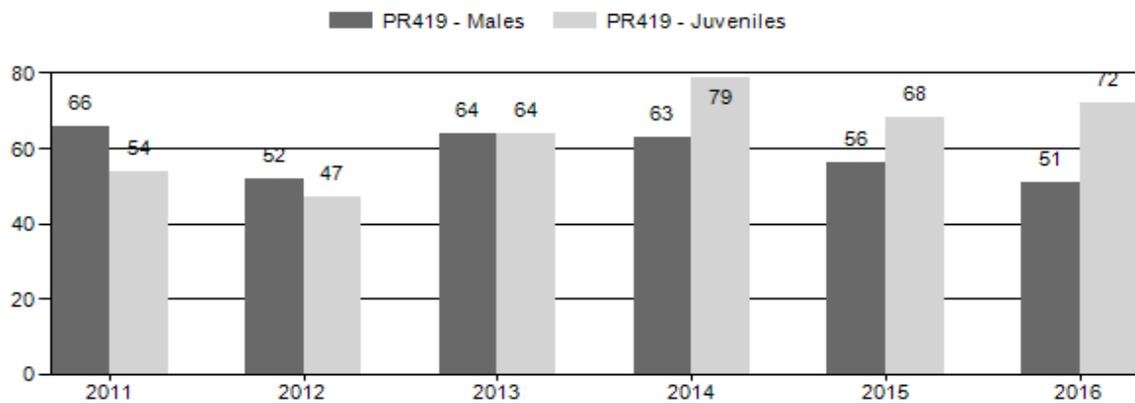
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR419 - CARTER LEASE

Year	Pre 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
2011	7,614	174	537	711	30%	1,071	45%	582	25%	2,364	0	16	50	66	± 4	54	± 4	33
2012	6,060	114	430	544	26%	1,051	50%	498	24%	2,093	0	11	41	52	± 4	47	± 3	31
2013	7,273	106	475	581	28%	904	44%	576	28%	2,061	0	12	53	64	± 5	64	± 5	39
2014	7,073	152	511	663	26%	1,058	41%	838	33%	2,559	0	14	48	63	± 4	79	± 5	49
2015	6,984	281	419	700	25%	1,252	45%	849	30%	2,801	0	22	33	56	± 3	68	± 4	43
2016	6,838	258	400	658	23%	1,297	45%	939	32%	2,894	0	20	31	51	± 3	72	± 4	48

2017 HUNTING SEASONS

SPECIES: Pronghorn

HERD UNIT: Carter Lease (419)

HUNT AREAS: 94, 98, 100

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
94	1	Sep. 10	Oct. 31	450	Limited quota	Any antelope
94	6	Sep. 10	Oct. 31	100	Limited quota	Doe or fawn
94	7	Aug. 15	Oct. 31	200	Limited quota	Doe or fawn valid on or within one (1) mile of irrigated land
98	1	Sep. 10	Oct. 31	200	Limited quota	Any antelope
98	6	Sep. 10	Oct. 31	200	Limited quota	Doe or fawn
98	7	Nov. 1	Nov. 30	50	Limited quota	Doe or fawn valid within the Smiths Fork drainage
100	1	Sep. 10	Oct. 31	200	Limited quota	Any antelope
100	6	Sep. 10	Oct. 31	225	Limited quota	Doe or fawn

94, Archery Aug. 15 Sept. 9 Limited Refer to Section 2 of this chapter
 98, quota
 100

Hunt Area	License Type	Quota change from 2016
94	1	-50
94	6	-150
98	7	+50
100	7	-25
Herd Unit	1	-50
Total	6	-150
	7	+25

Management Evaluation

Current Postseason Population Management Objective: 6,000

Management Strategy: Recreation

2016 Postseason Population Estimate: ~5,964

2017 Proposed Postseason Population Estimate: ~6,051

Herd Unit Issues

Energy development on crucial habitat is an issue for this herd. Development is present and has had impacts to habitats in the eastern portion of the herd unit. Additionally, hunt areas in this herd are very different in several characteristics. Hunt Area 94 is more xeric and has classic pronghorn habitat. Hunt Areas 98 and 100 have more hilly terrain, are slightly wetter and are very important winter range for the Wyoming Range mule deer herd. A large number of mule deer migrate into that area to winter on shrub browse. Therefore, we manage for low pronghorn numbers in 98 and 100 to reduce browse competition for mule deer. The herd unit has a split objective of 5,000 antelope in Hunt Area 94 and 1,000 antelope in Hunt Areas 98 and 100 combined.

In some years, high recruitment rates can make it difficult to maintain this population at such a low level. This is especially true in Hunt Areas 98 and 100 where the desired population is approximately 1,000 antelope, ≤ 1 antelope per square mile. Due to low pronghorn densities hunter success is usually lower than adjacent areas.

Within the herd unit there can be a low tolerance for the presence of pronghorn on some private land holdings or on BLM grazing allotments. Conflict with agriculture producers can be a primary issue for this herd. Damage complaints primarily occur on irrigated lands during the summer and early fall or among sheep producers. Irrigated lands are uncommon relative to native ranges but tend to have a disproportionate influence on herd management due to the level of complaint. Significant efforts have been made by field personnel to target harvest toward those problems. Perceived reduction in livestock forage due to pronghorn foraging is an issue commonly brought up, despite the fact domestic livestock numbers far outweigh the number of pronghorn in the herd. Landowners appear to be somewhat satisfied when pronghorn are kept at current levels through aggressive harvest.

Weather

The winters from 2011 through 2015 were mild with low snowpack and relatively warm temperatures resulting in easy winter conditions. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production, and resulted in significant loss of sagebrush, some of which has shown regrowth since precipitation returned to more normal levels. Winter weather during the 2015-16 and 2016-17 winters has been highly variable, ranging from a very mild winter in 2015-16, to one of the worst winters in 100 years in 2016-17. Direct pronghorn loss was significant in this herd, and numerous pronghorn vehicle (trains and semi-trucks) collisions occurred involving groups of pronghorn. The winter of 2016/17 created adverse conditions for antelope that have not been seen in decades in this herd, not since 1992-93 or before. Winter conditions more approximated that recorded in 1928, one of the most severe winters on record for southwestern Wyoming.

Habitat

Habitat data has been inconsistently collected in this herd unit and has been absent in the recent past. A new effort is underway to resume data collection in the form of Rapid Habitat Assessments.

Pronghorn habitats are largely intact in much of the herd unit, dominated by a mixture of sage species, winterfat, Douglas rabbitbrush, salt desert shrubs, and, in higher elevations, mountain

shrubs. Habitats have been heavily impacted by energy development in the eastern end of area 94 and portions of area 100, including oil and gas developments, wind energy projects, and coal mines. Ground disturbing projects of all types, including pipelines, have resulted in significant invasion of non-native undesirable vegetation ranging from halogeton to cheatgrass to black henbane. Efforts are underway to reduce this concern through the Kemmerer field office of the Bureau of Land Management.

Field Data

Fawn ratios in this herd unit have been high in the past, averaging over 75:100 from 2007-2010. During that time observed ratios ranged from 73:100 in 2010 to 83:100 in 2007. This population had been suppressed by harvest due to an intentionally low overall population objective when compared to carrying capacity. This, combined with large blocks of undisturbed and relatively healthy habitats explains the productive nature of this herd. However, the 2011 herd unit fawn:doe ratio data was significantly lower at 54:100 and even lower in 2012 at 47:100. Those were the lowest fawn:doe ratios in over 12 years. The harsh winter conditions in the winter of 2010/11 decreased doe condition enough to cause poor fawn production in 2011 and the extremely dry conditions in 2012 caused significant observed pre-season fawn mortality. From 2013 through 2016 fawn ratios rebounded greatly to 64:100 in 2013, 79:100 in 2014, 68:100 in 2015 and 72:100 in 2016. We can expect a reduction in fawn ratios in 2017 due to winter related doe condition. Numerous small fawns and stillborn fawns have been documented this spring in the north end of area 94.

Line transect survey data was most recently conducted in 2014 in Hunt Area 94. Hunt areas 98 and 100 are not conducive to this type of survey due to low antelope densities and broken terrain. Hunt Area 94 is difficult to attain minimum sample sizes with this type of survey without flying closely spaced (more than normal) transects. An increased effort was made in 2011 and 2014 to survey HA 94 with high enough intensity to develop a better estimate. The Hunt area 94 population had been declining for several years due to aggressive harvest strategies. That harvest has been reduced and we have now leveled off at or near objective.

Harvest Data

Hunters spent about 3.5 days to harvest a pronghorn in 2016, and experienced a success rate in excess of 88%, common for this species in Wyoming. Harvest has been remarkably similar since 2013, with similar seasons, hunters, harvest, success, and effort. It is expected, given conditions and winter losses, that pronghorn hunters will have a more difficult time harvesting an antelope in 2017.

Doe/fawn harvest opportunity was increased every year for several years in area 94 to address population levels, and livestock producer/landowner concerns. Beginning in 2006, season structures offered substantially increased doe/fawn harvest opportunity to try to reduce pronghorn abundance and reduce damage problems on irrigated lands and throughout the herd. Seasons allowed significant doe/fawn harvest. This management framework along with two years of very poor fawn production brought this population to objective in 2012. Since that time, seasons have remained similar and pronghorn abundance leveled. Given winter losses in the 2016-17 winter, pronghorn licenses were reduced to achieve objectives.

Population

A total Herd Unit 419 (Carter Lease) model is very unreliable due to much different population parameters in Hunt Areas 98 and 100, when compared to Hunt Area 94. Additionally the line transect survey method is incompatible with terrain and pronghorn density in areas 98 and 100. Given these constraints, it makes more sense to model hunt area 94, only, since the method is picture perfect for this large area. Efforts have been made to tighten line transect estimates through tightening of lines and increased effort, and we now have two surveys that resulted in tight confidence intervals. The current model tracks very well and we have fairly good confidence in the estimates. Herd unit population estimates are reported as the area 94 model plus 1,000 animals to account for the populations we are unable to model in HA 98 and 100. The TSJ,CA model was selected due to its excellent fit with the data, a reasonably low relative AICc score, proper population dynamics fit with the nature of this herd, and the fact the population estimate is reasonable. Another reason we have good confidence in the strength of this model is that all three model variations produce a very similar population estimate.

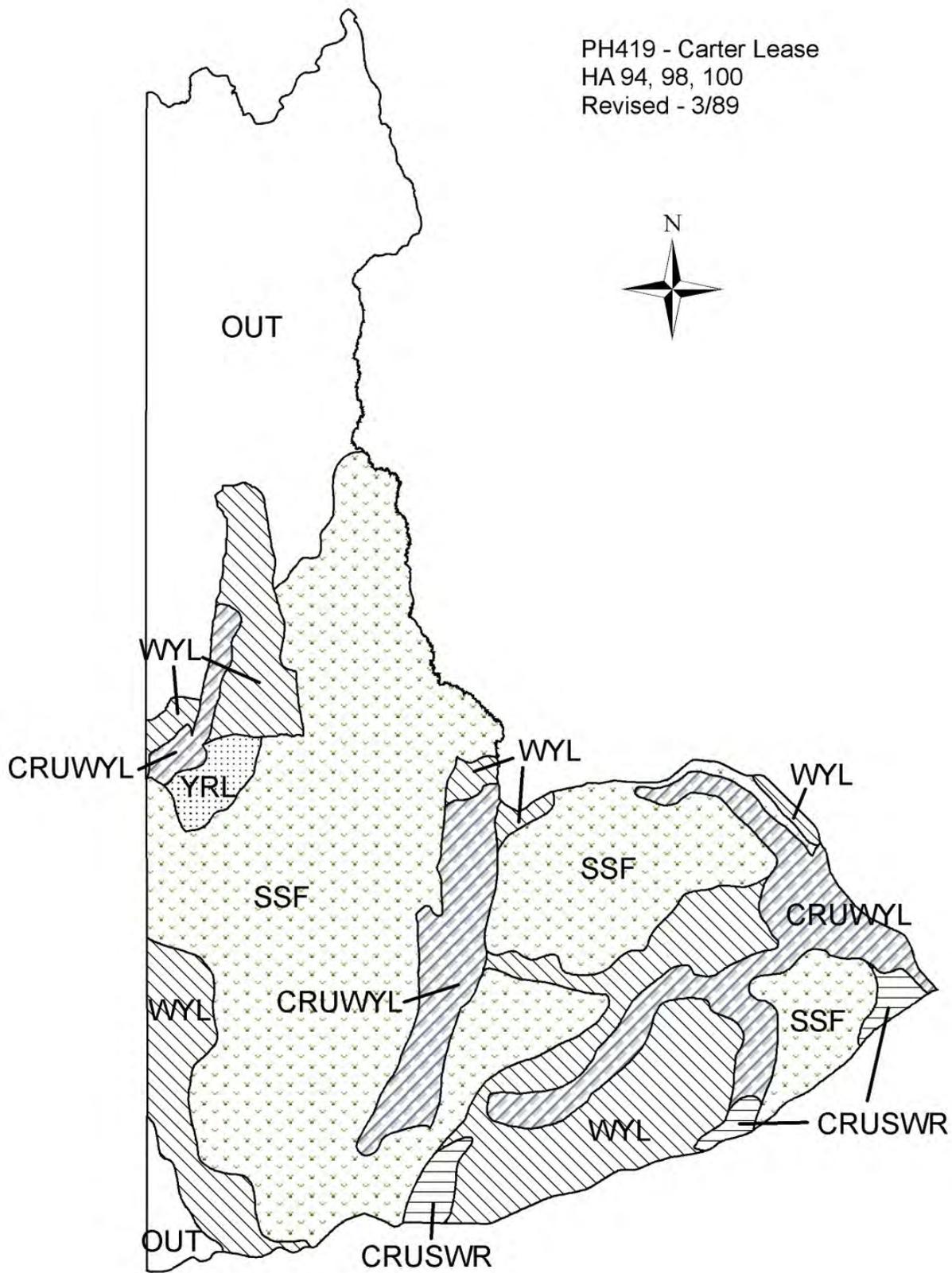
It will be imperative that we continue to obtain a reliable population estimate periodically through line transect surveys to anchor the model. With this it is likely that we can continue to provide a good population model and track the trend of this population. Model efforts are now conducted on a spreadsheet model developed in 2012 since POP-II software is no longer supported.

Currently the model is estimating we have around 5,000 pronghorn following the 2016 season in hunt area 94, meaning we are at objective. The model estimates that we were on a steep downward trend from 2009 to 2012. This was due to a severe winter in 2010/11, very poor fawn production in 2011/2012 and harvest designed to reduce the population. The population reduction was substantiated by reductions in classification sample sizes and field observations. Since 2012 we have relaxed harvest slightly and had very mild winters, allowing the herd to climb to objective. This herd has the potential for rapid growth as consecutive years with high fawns ratios have occurred in the past. Therefore, adequate female harvest has been needed to curtail growth. The winter of 2016/17 will end up having negative impacts on this herd. The total impact will not be known until later but we are proposing reductions in harvest to account for this winter.

Management Summary

For 2017, we are reducing doe-fawn licenses due to winter severity. We will also decrease hunt area 94 “any antelope” licenses in a modest manner. All areas in the herd unit still have ample hunting opportunity, and it is likely hunters will generally have good success with limited extra effort. We are now right at the objective in Hunt Area 94 according to the model and are striving to maintain very low antelope densities in both areas 98 and 100. We will maintain levels of directed doe-fawn harvest in hunt area 94 to alleviate damage concerns on irrigated lands. The Objective and management strategy were last revised in 2015 and no changes were made.

PH419 - Carter Lease
HA 94, 98, 100
Revised - 3/89



2017 Proposed - Season Setting Evaluation Form

SPECIES: Pronghorn
 HERD: PR438 - BAGGS
 HUNT AREAS: 53, 55

PERIOD: 6/1/2016 - 5/31/2017

 PREPARED BY: TONY MONG

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	8,248	8,400	8,500
Harvest:	203	425	460
Hunters:	217	386	400
Hunter Success:	94%	110%	115 %
Active Licenses:	233	470	500
Active License Success:	87%	90%	92 %
Recreation Days:	648	1,122	1,200
Days Per Animal:	3.2	2.6	2.6
Males per 100 Females	53	64	
Juveniles per 100 Females	58	53	

Population Objective (± 20%) : 9000 (7200 - 10800)

Management Strategy: Recreational

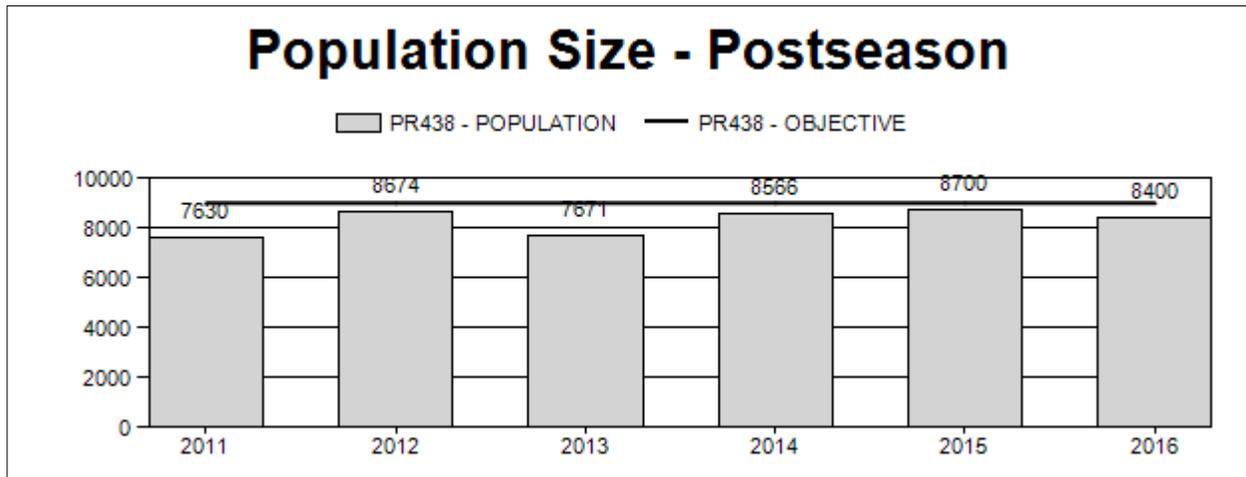
Percent population is above (+) or below (-) objective: -6.7%

Number of years population has been + or - objective in recent trend: 0

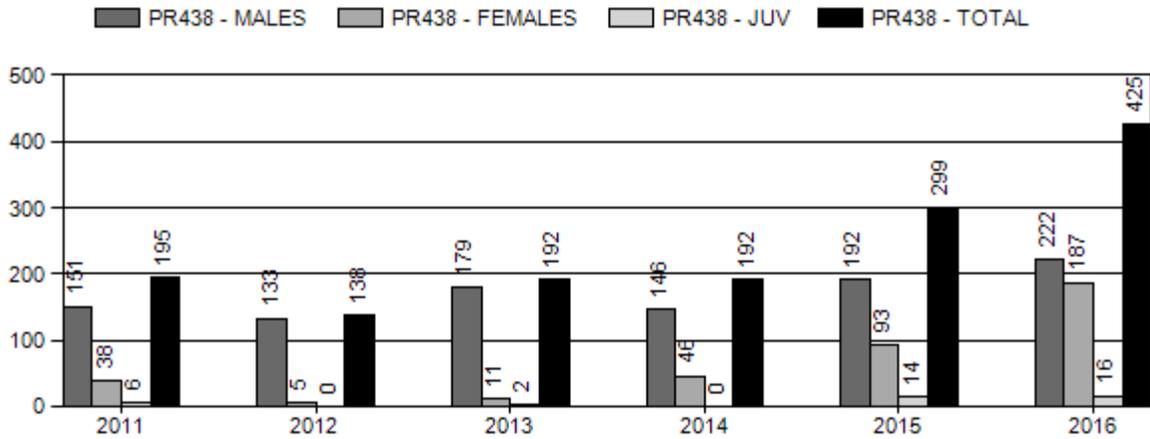
Model Date: 2/21/2017

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

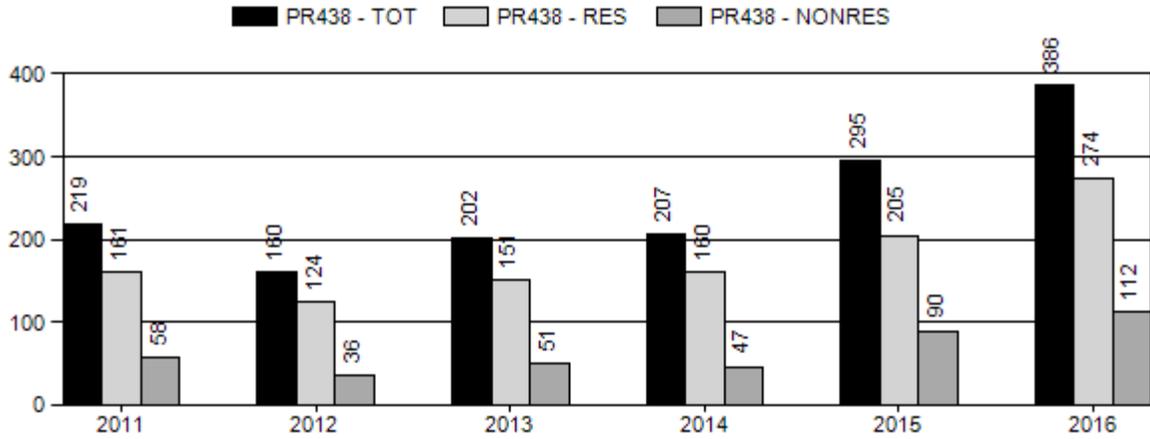
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2.7%	5%
Males ≥ 1 year old:	7.3%	9%
Total:	2.5%	3%
Proposed change in post-season population:	3.0%	0%



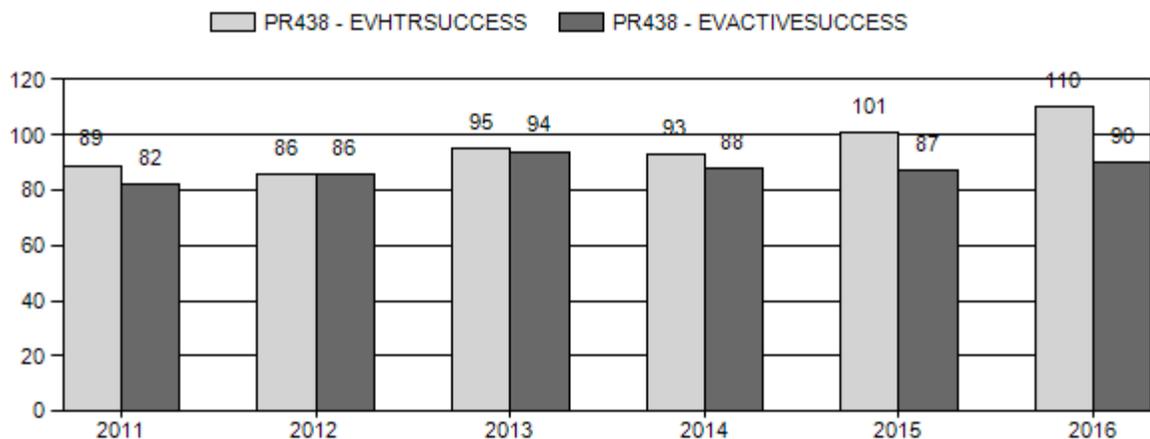
Harvest



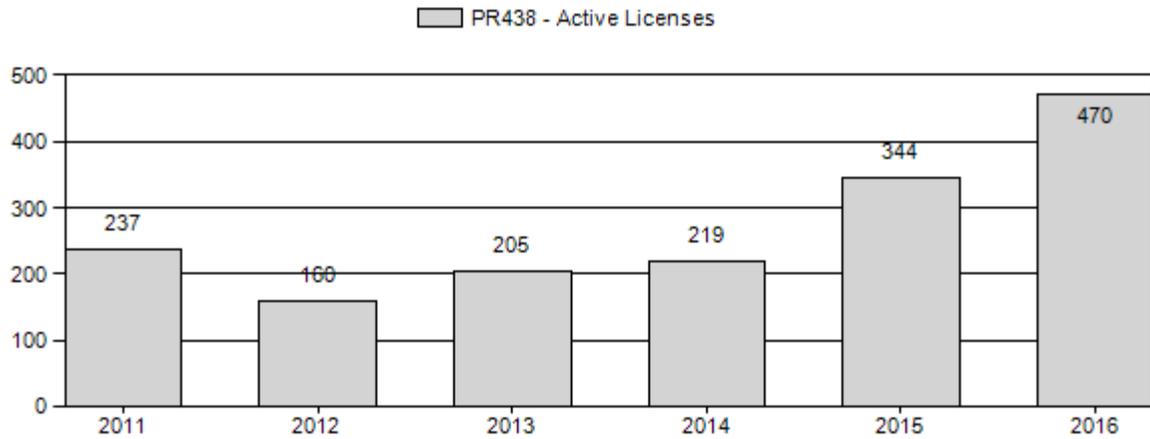
Number of Active Licenses



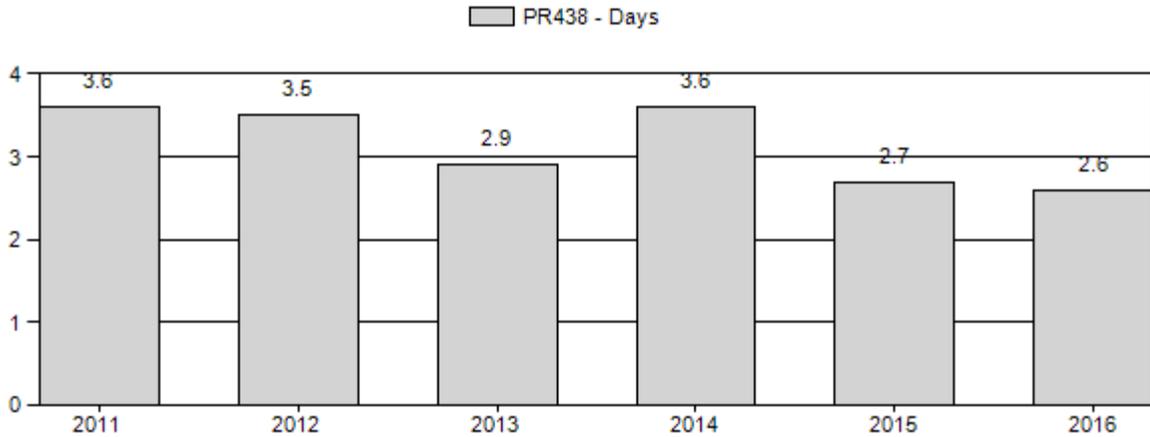
Harvest Success



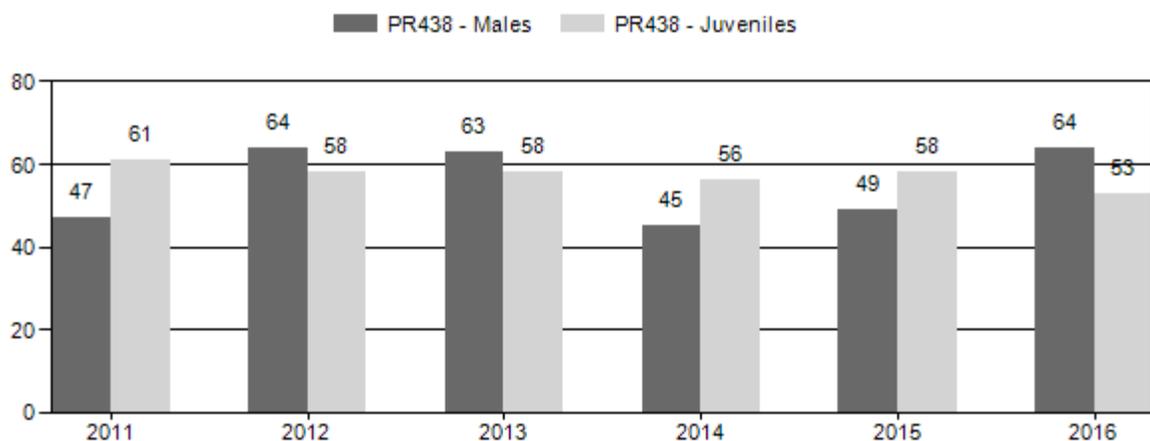
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR438 - BAGGS

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Int	Conf	100 Fem	Conf
2011	7,884	75	222	297	23%	628	48%	381	29%	1,306	0	12	35	47	± 5	61	± 6	41
2012	8,825	107	358	465	29%	728	45%	425	26%	1,618	0	15	49	64	± 6	58	± 5	36
2013	9,571	89	314	403	29%	638	45%	373	26%	1,414	0	14	49	63	± 6	58	± 6	36
2014	8,783	92	258	350	22%	776	50%	437	28%	1,563	0	12	33	45	± 4	56	± 5	39
2015	9,000	89	265	354	24%	728	48%	422	28%	1,504	0	12	36	49	± 5	58	± 5	39
2016	8,800	219	537	756	30%	1,174	46%	625	24%	2,555	0	19	46	64	± 4	53	± 4	32

2017 PROPOSED HUNTING SEASON

SPECIES : Pronghorn
 HUNT AREAS: 53, 55

HERD UNIT : Baggs (438)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
53	1	Sep. 20	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	100	Limited quota	Doe or fawn
	7	Sep. 1	Oct. 31	125	Limited quota	Doe or fawn valid on private land within one (1) mile of Wyoming Highway 70, Carbon County Road 561 or Carbon County Road 702
55	1	Sep. 20	Sep. 31	200	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	100	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Limitations
53, 55	Aug. 15	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
53	1	+50
	6	0
	7	+75
55	1	+50
	6	0
	7	+75
Herd Unit Total	1	+100
	6	0
	7	+75

Management Evaluation

Current Management Objective: 9,000 (2015)

Management Strategy: Recreation

2016 End-of-bio-year Estimate: 6,700

2017 Proposed Postseason Population Estimate: 8,500

The Baggs pronghorn herd is within the 20% range of the objective of 9,000. Therefore, our current management strategy is to maintain current population levels through some additional doe harvest. In addition we have seen a slight increase in buck ratios in both hunt areas in this herd, and we are proposing increases in both areas. Due to continued complaints from private landowners in the southern portion of the herd unit we are proposing an increase of 75 doe-fawn licenses to address these concerns.

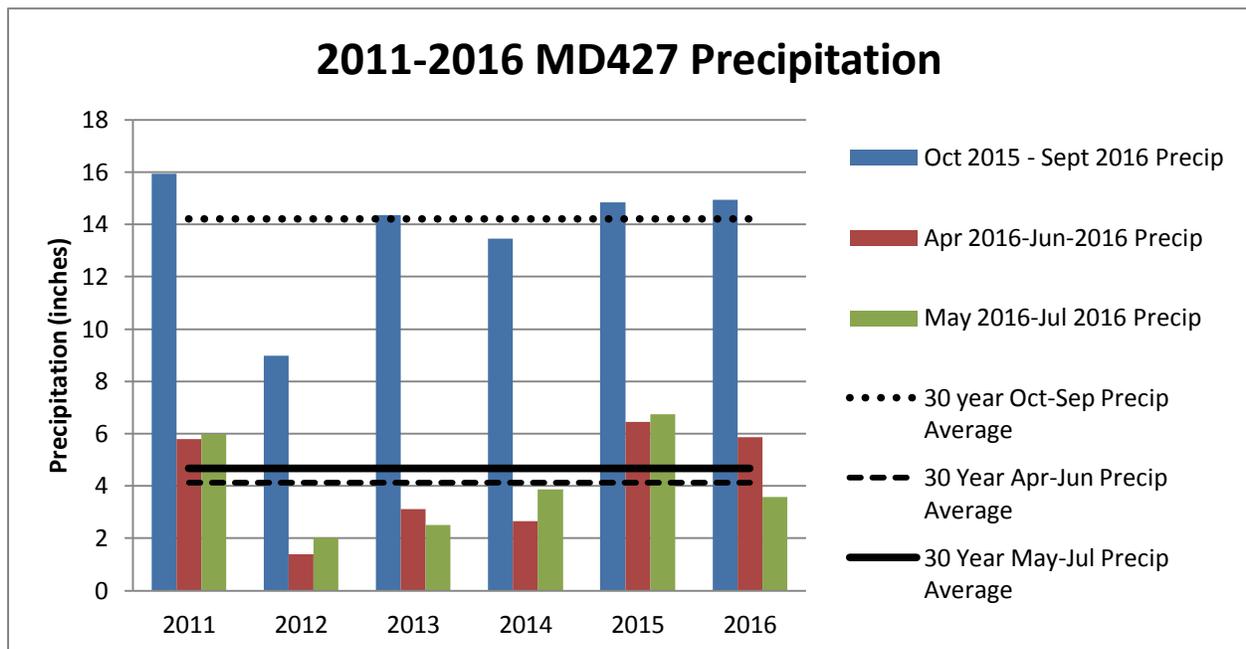
Herd Unit Issues

There are three main issues impacting the Baggs herd: 1) energy production, 2) poor hunter access in hunt area 55, and 3) increasing numbers of summering pronghorn on irrigated meadows in hunt area 53, on drainages north and east of Baggs. Throughout the Baggs herd unit development of oil and gas fields associated with the Atlantic Rim Project continues, and year we will soon begin to see the development of the largest wind turbine project in North America, the Chokecherry-Sierra Madre Wind Project. We are uncertain of the potential impacts to the herd, but this development will likely represent an additional negative impact to this population through direct and indirect habitat loss.

Hunt area 53 retains decent hunter access, with a majority of the land under public ownership. However, we continue to have significant access concerns in Area 55, with a checkerboard (federal/private) landscape and much of the private land under lease from outfitters or shut down from any use. Licenses numbers have remained limited in number in this area to accommodate known access issues. An increase of 50 licenses in the area last year did not result in a decrease in the harvest success, which could indicate access was not an issue for the majority of those hunters.

Over the last 4 years we have seen an increase of pronghorn using irrigated meadows along the Little Snake River, the lower end of Savery Creek, and now an irrigated fields located a few miles north and east of Baggs. Landowner complaints regarding pronghorn numbers in these areas and interest in licenses focusing harvest solely on those private lands, have been increasing in recent years. Because of the willingness of the landowners to address this issue through harvest, we have increased the designated licenses for those areas for 2017, and have expanded the area where these private land licenses are valid.

Weather



Parameter-Elevation Relationships on Independent Slopes Model (PRISM) was utilized to estimate precipitation by calculating a climate-elevation regression for each Digital Elevation Model grid cell (4 km resolution).

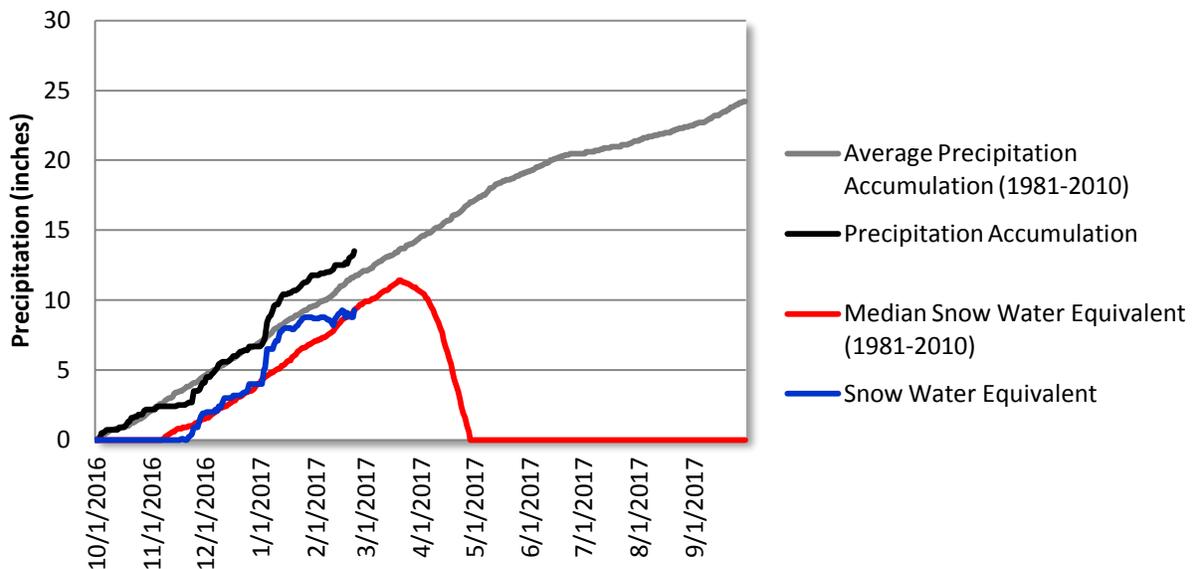
Precipitation

Annual bio-year precipitation from October 2015 through September 2016 was slightly higher than the 30 year average. Growing season precipitation (April-June 2016) across the herd unit was higher than the 30 year average, but later season precipitation from May-July 2016 (higher elevation growing season) was notably lower than the 30 year average. As illustrated by the above graph, most of the precipitation occurred outside of the primary growing season, primarily in the form of snow. Although there was significant spring moisture in 2016 from both early spring snows and significant late spring rain events, precipitation slowed by early June. June through October 2016 was extremely dry causing vegetation to dry and cure fairly early in the growing season. The dry summer in conjunction with fine fuel loading from the high vegetative production seen in 2014 and 2015, big wind events, and the abundance of beetle killed lodgepole created an environment conducive to large wildfires throughout the Sierra Madres.

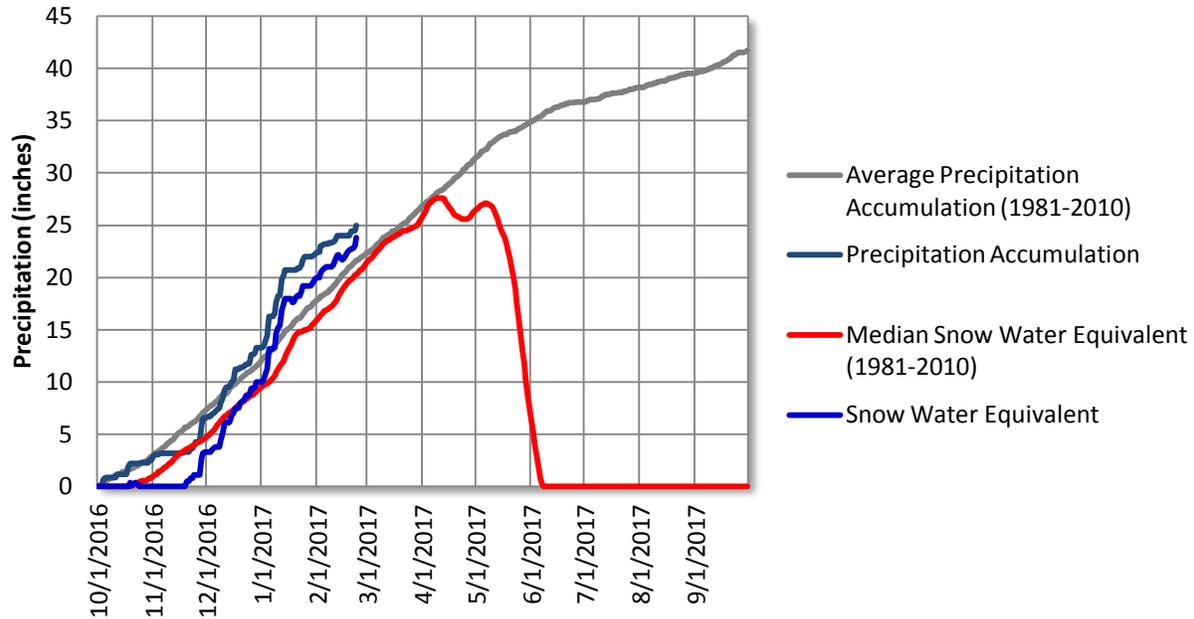
Winter Severity

The early portion of the winter in 2016 was unseasonably warm well into December across the herd unit. These warmer temperatures, paired with late fall moisture, resulted in a late fall green-up at some elevations, providing pronghorn with an extra nutritional boost prior to winter. January brought several significant snowfall events in the herd unit and sustained temperatures well below zero, which may have created severe energy demands on pronghorn with very little access to forage. High winds and a sustained warming trend in February helped to melt off lower elevation habitats, and losses in this herd will likely be less than in herds north and west of Baggs. At mid-range elevations, as reported by the Battle Mountain Snotel Site, snowpack (snow water equivalent) is currently at 100% of normal; however it was at 151% in mid-January reflecting those big snow events. Higher elevations have slightly higher current winter snowpack with the Whiskey Park Snotel Site reporting a snowpack that is 117% of normal (2/23/2017) also showing significantly higher snowpacks in mid-January of 146%.

Battle Mountain Snotel Site - 7,440 ft



Whiskey Park Snotel Site - 8,950 ft



Field Data

A downward trend in herd unit wide pronghorn fawn ratios is slightly concerning, but likely reflects issues involving short term drying of native habitats and the influence that plays on doe condition and fawn survival. This may also explain the increased use of irrigated lands by pronghorn in this herd unit. As is typical for this population, fawn production was most affected in hunt area 53 with a drop from 62 to 51. It is unclear why we saw such a dramatic drop in fawn ratios within the herd unit because there did not seem to be any major weather issues to cause this decline, except for a decline in summer precipitation and relatively dry summer. There has been some discussion from area residents centered around the increase in predator (coyote) populations in the area but we have no data to support these claims, and this is certainly not a new or unique phenomenon in Wyoming. It is likely coyote populations have responded favorably to recent past increases in lagomorphs and small rodents, but this typically results in reduced focus on young ungulates.

In the past we have seen a dichotomy between area 53 and area 55 adult buck ratios. However, this year's data does not reflect that difference. Hunt areas 53 and 55 adult buck ratios were the same in 2016, with Area 53 remarkably increasing from 27 bucks:100 does to 46:100. This increase may have been impacted in either year (2015 vs 2016) by sample size issues, or movement of bucks from area 55 where buck ratios are typically much higher. Regardless of cause, bucks appear to be doing well in the herd and more opportunity is available for hunters in 2017.

Harvest Data

Hunters within the Baggs pronghorn herd had good hunter success and required limited effort to harvest pronghorn in 2016, typical for this species, and hunters appeared to be satisfied during their hunts in 2016. Hunter success rates were the highest seen in the herd unit with an overall active license success rate of 90% which is higher than the previous 5-year average of 89%. This success equated to 91% of hunters surveyed indicated they were either satisfied or very satisfied

with the overall quality of the hunt in the Baggs herd unit. Unlike many previous years, we saw similar success and satisfaction rates between areas 53 and 55.

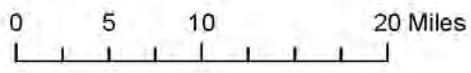
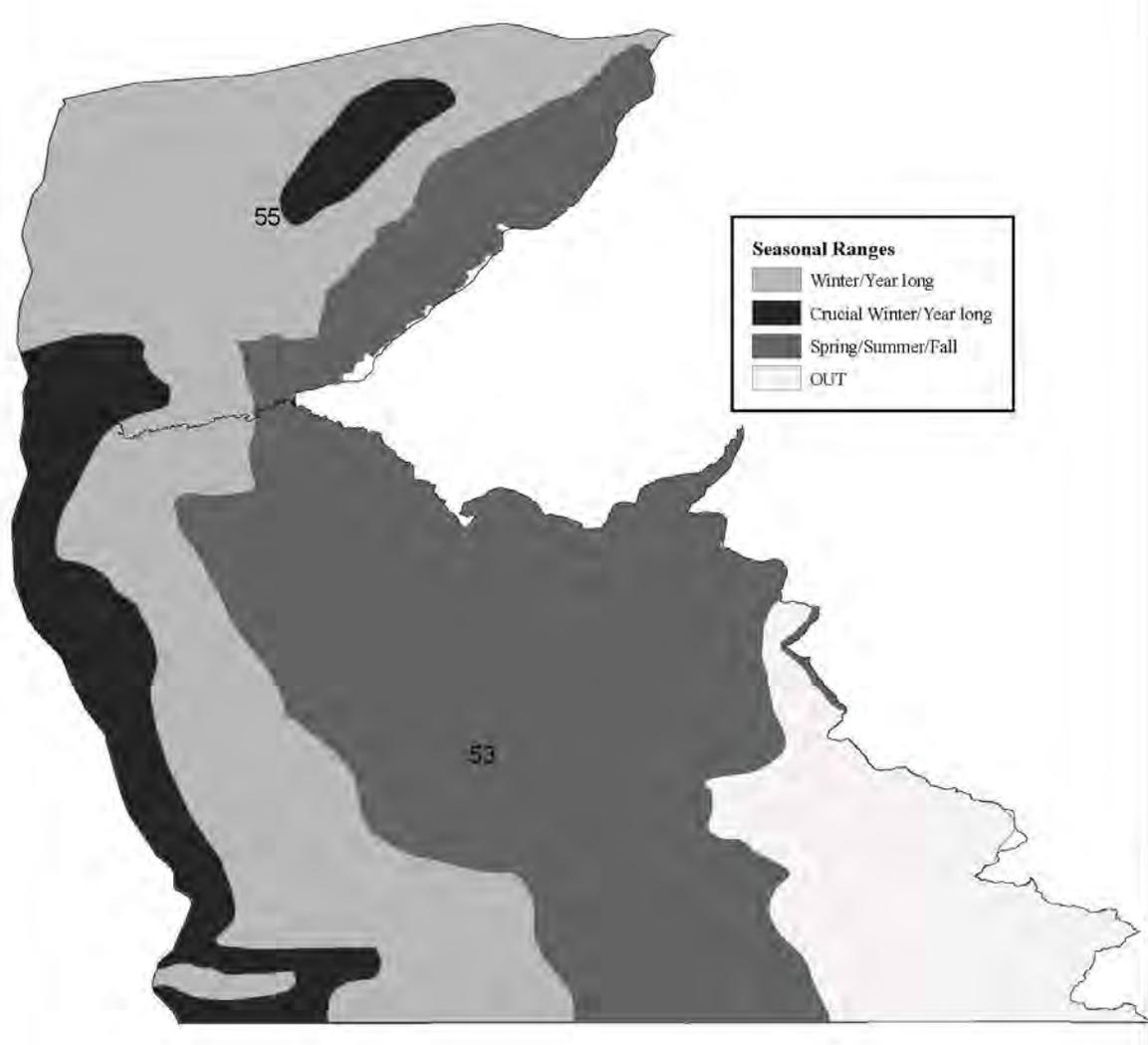
Population

The current population model estimates the 2016 posthunt population to be around 8,400 pronghorn, approaching the current objective of 9,000. The CJ, CA model seemed to perform best, and was selected based on the lowest AICc value and what we believe to be the best representation of the actual population trend and size. Results are consistent with line transect estimates obtained in 2008, and with observations of field personnel, hunters and local residents. The spreadsheet model is tracking below the 2012 line transect population estimate, and despite efforts to parameterize the model to try and better fit the line transect estimate, efforts were not successful. As is common with these models, buck ratios in this model have not been able to track actual ratios. This may be related to the highly variable nature of buck ratios in this herd. Despite some questionable model performance, current harvest rates should allow us to maintain pronghorn numbers at current levels.

Management Summary

The Baggs pronghorn herd has seen a slow recovery from reduced numbers over the last 10 years. Currently, the population appears to be at levels that will allow for limited doe harvest and increased opportunities for buck harvest. Challenges include a disproportionate growth of antelope along the more mesic southern end of the unit causing concern for landowners. An increase of type 7 licenses should address those concerns allowing for a decrease in the number of pronghorn on irrigated hay meadows.

Baggs PR438 Herd Seasonal Ranges



2016 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2016 - 5/31/2017

HERD: MD423 - UINTA

HUNT AREAS: 132-133, 168

PREPARED BY: JEFF SHORT

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	15,153	15,924	16,469
Harvest:	1,103	1,289	745
Hunters:	2,518	2,684	2,200
Hunter Success:	44%	48%	34%
Active Licenses:	2,540	2,694	2,200
Active License Success:	43%	48%	34%
Recreation Days:	12,425	13,896	12,000
Days Per Animal:	11.3	10.8	16.1
Males per 100 Females	27	34	
Juveniles per 100 Females	60	61	

Population Objective (± 20%) : 20000 (16000 - 24000)

Management Strategy: Recreational

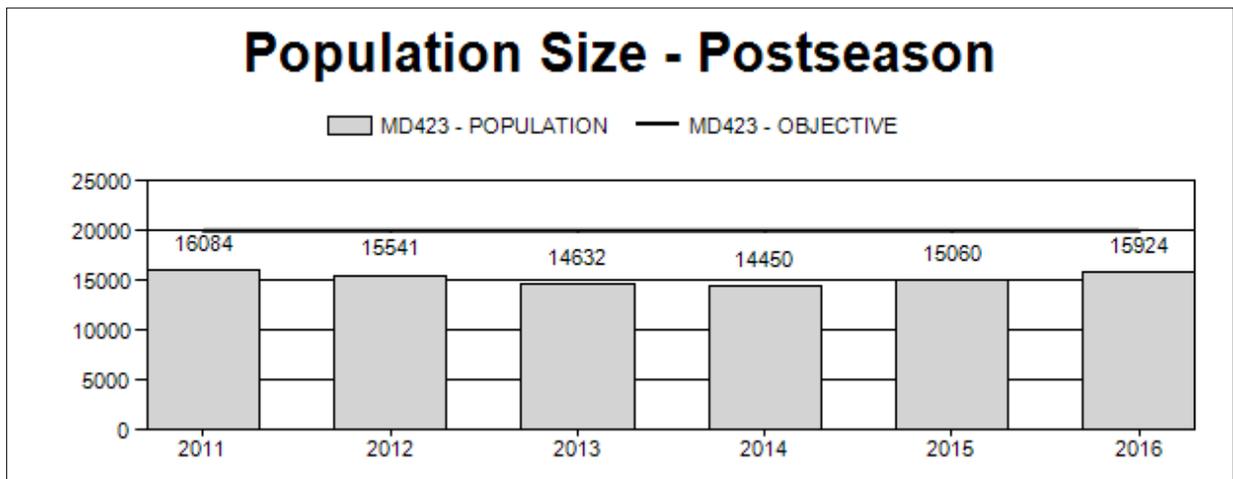
Percent population is above (+) or below (-) objective: -20.4%

Number of years population has been + or - objective in recent trend: 10

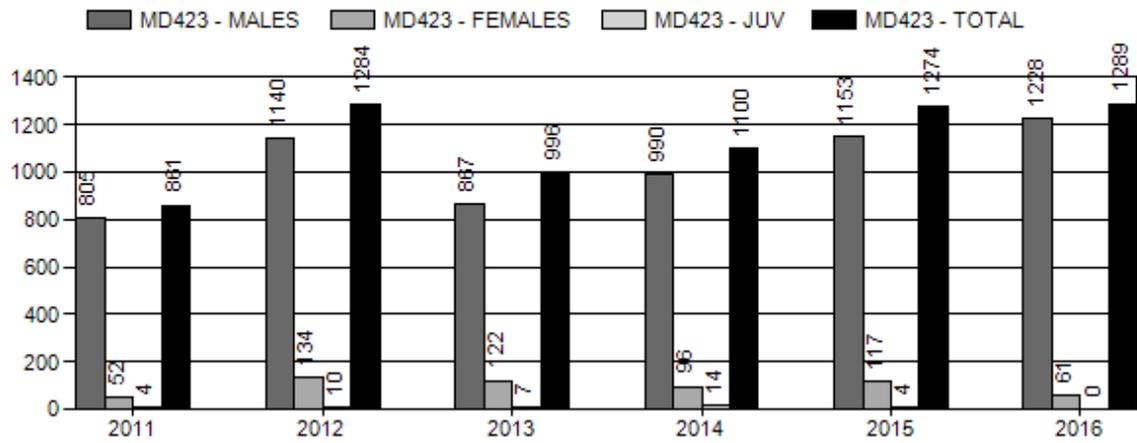
Model Date: 02/20/2017

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

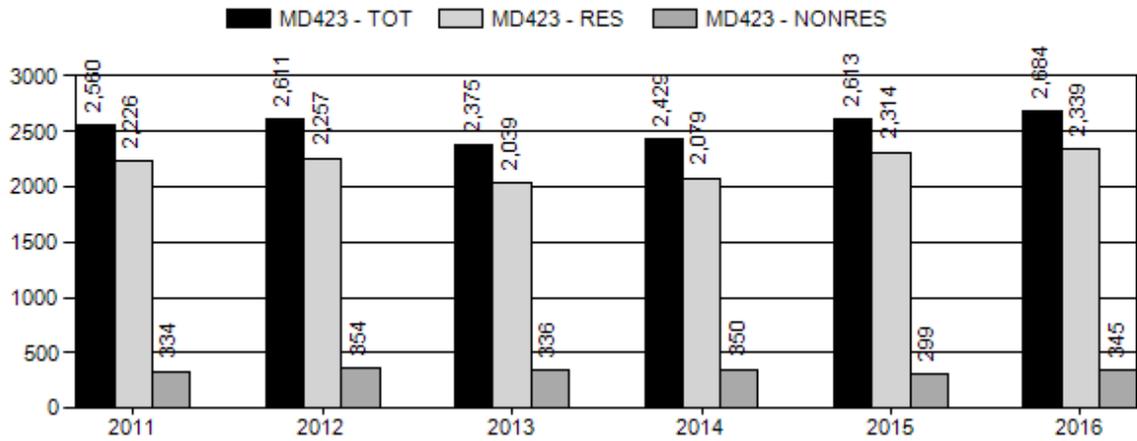
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	.007%	.005%
Males ≥ 1 year old:	33.24%	18.97%
Total:	7.4%	4.3%
Proposed change in post-season population:	+3.0%	+3.4%



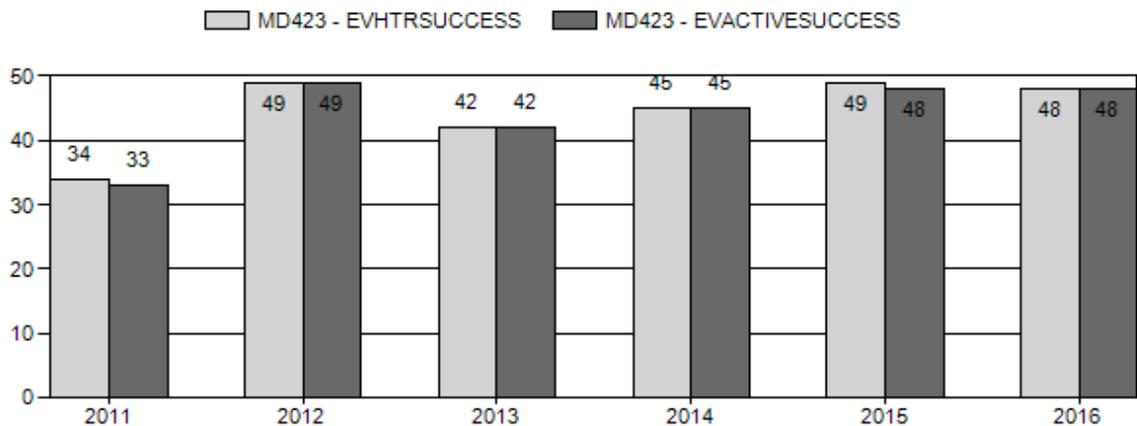
Harvest



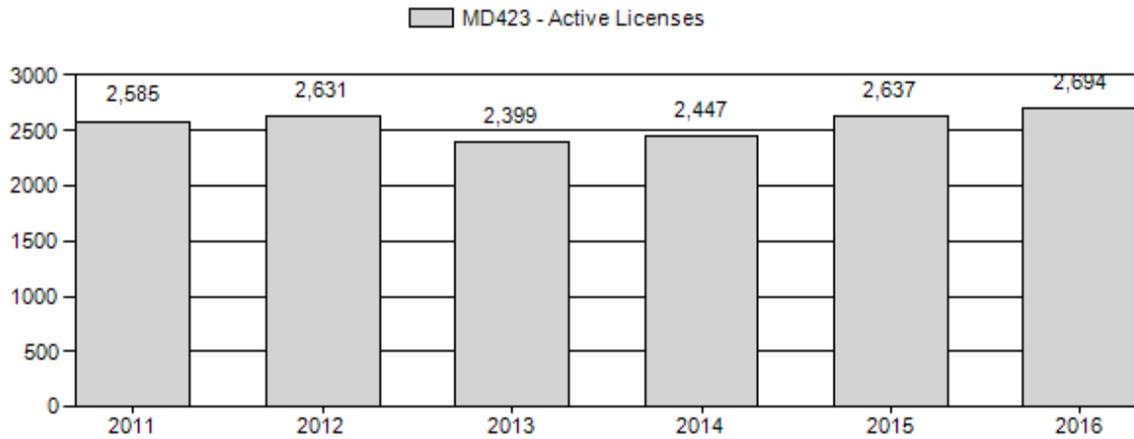
Number of Active Licenses



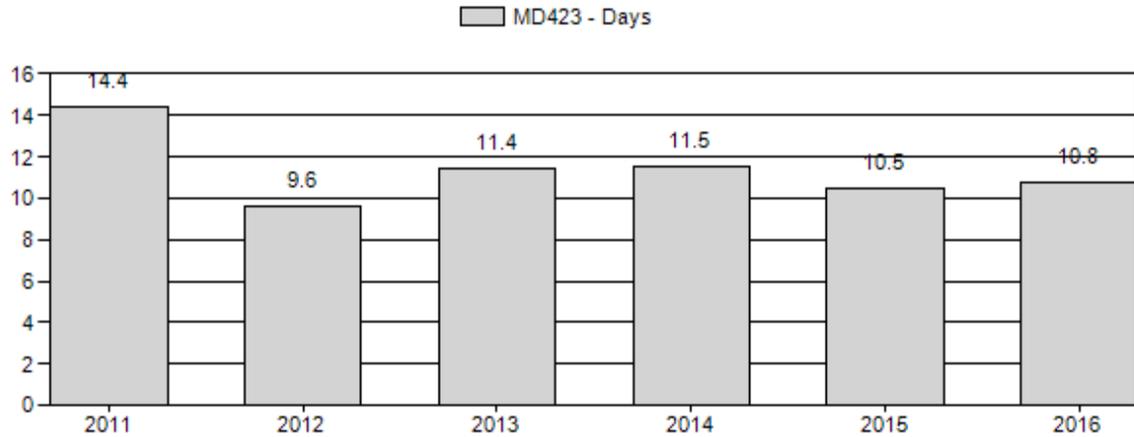
Harvest Success



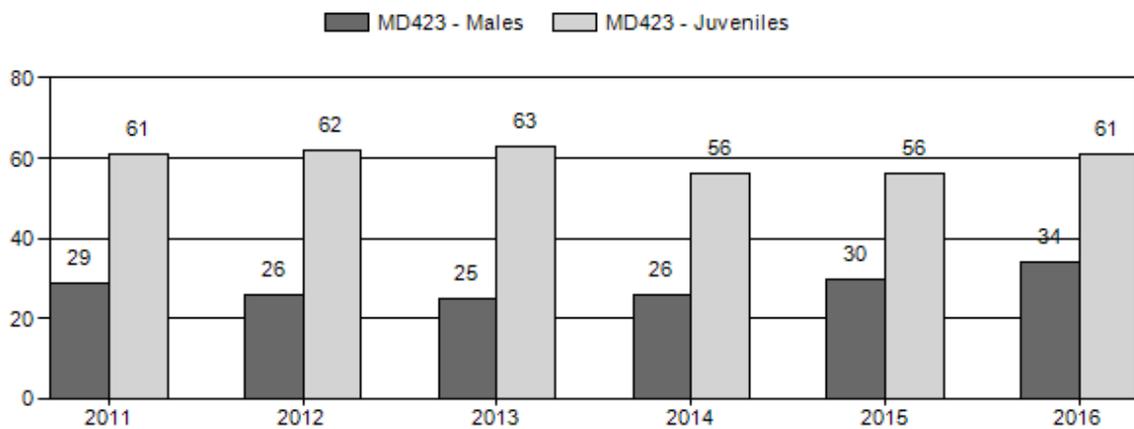
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD423 - UINTA

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females			Young to 100 Adult			
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	UnCls	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	16,084	93	0	0	0	313	406	15%	1,393	53%	846	32%	2,645	0	7	22	29	± 2	61	± 3	47
2012	15,541	119	0	0	0	311	430	14%	1,642	53%	1,025	33%	3,097	0	7	19	26	± 2	62	± 3	49
2013	14,632	151	0	0	0	235	386	13%	1,551	53%	974	33%	2,911	0	10	15	25	± 2	63	± 3	50
2014	14,450	224	298	222	50	0	520	14%	1,982	55%	1,112	31%	3,614	0	11	15	26	± 1	56	± 2	44
2015	15,060	176	95	74	12	0	357	16%	1,204	54%	675	30%	2,236	0	15	15	30	± 2	56	± 3	43
2016	15,924	228	229	120	30	0	607	17%	1,798	51%	1,104	31%	3,509	0	13	21	34	± 2	61	± 3	46

2017 HUNTING SEASONS

SPECIES : Mule Deer

HERD UNIT : Uinta (423)

HUNT AREAS: 132, 133, 168

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
132		Oct. 1	Oct. 8		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
132, 133, 168	7	Oct. 1	Oct. 14	25	Limited quota	Doe or fawn valid on irrigated land
133		Oct. 1	Oct. 8		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer
168		Oct. 1	Oct. 8		General	Antlered mule deer three (3) points or more on either antler or any white-tailed deer

132, 133, Archery Sep. 1 Sep. 30 General Refer to Section 2 of this chapter 168

Region K Nonresident Quota: 500

Hunt Area	License Type	Quota change from 2016
132, 133, 168	7	-25
Herd Unit Total	7	-25

Management Evaluation

Current Postseason Population Management Objective: 20,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~15,924

2017 Proposed Postseason Population Estimate: ~16,469

Herd Unit Issues

Energy development on crucial deer habitat is a looming issue for this herd. Extensive development has occurred over their range. Xeric environments and limited and isolated high quality fawning habitats greatly affect deer productivity in several areas in this herd. This limited fawning habitat affects the ability of fawns to evade predation, and makes predators more efficient since these isolated sites are easily covered by a coursing predator. Winter severity every three to five years is the major limiting factor for this deer herd. This is especially true in the western part of the herd around Evanston, Fort Bridger and Leroy where deer densities are vastly higher than remaining winter areas. The eastern portion of the herd around Cedar Mountain experiences a rain shadow effect and has not received severe winter conditions over the last 10 years.

Highway mortality and impediments to migration is a significant issue in this herd unit. Mule deer have to cross highways to migrate to crucial winter ranges in several locations, especially in that winter range that receives the highest use. In the Leroy area mule deer are crossing Interstate 80 to get to and from important winter ranges. Deer fencing is present in most of this area but deer crossing structures are limited and the fence is ageing and showing signs of wear. Additionally, large numbers of mule deer from the Bear River Divide move to this same complex, and the crossings of Highway 189 between the Carter Cutoff and Interstate 80 represent the single most significant area of human caused deer mortality in this herd. This issue is likely to become much larger due to increasing traffic on this section of the road, especially if the Haystack Coal Mine becomes active. Deer must also cross Highway 414 in several areas between Mountain View and McKinnon to migrate to summer and winter ranges. Mortalities are also common in those areas.

Weather

Weather during 2016 and into 2017 has been highly variable. In the early part of 2015 the winter started out harsh with high snow loads but it warmed up in February and March to finish fairly mild. A moist spring and early summer followed. In July and August conditions dried up considerably and into late December fairly low precipitation was received. Winter did not set in until late December 2016. The winter of 2016-2017 has since been very cold with high snowfall and deer migrated to crucial winter ranges. Mortality from this winter was very high, similar to that observed in 2010/11. The winters from 2011-2015 were fairly mild with low snowpack and relatively warm temperatures resulting in easy winter conditions. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production.

Habitat

Habitat data collection has been inconsistently conducted in this herd unit and has been absent in the recent past. Anecdotal data suggests winter ranges in this herd unit are particularly poor, with decadent, heavily used (wildlife and livestock) shrubs, significant areas of juniper invasion, and areas of heavy juniper use by browsing ungulates (due to the lack of more quality forage). As mentioned previously, high quality fawn habitats are limited in portions of the herd (primarily in Area 132), but significant areas of better habitat for this function occurs in other portions of the herd.

Field Data

The winter of 2010/11 was very severe in some areas and the population in the western part of the herd unit declined significantly due to it. Mortality surveys at the LeRoy winter range

complex showed significant fawn and adult doe mortality. However, conditions were much milder in the eastern part of the herd unit. A radio collar study in that area showed a 92% survival rate from December of 2010 to December of 2011, a very high survival rate for mule deer does. From 2011 through the 2015-16 winter, conditions have been very mild in this herd unit creating a situation where fawn and adult survival was relatively high and populations have been able to grow even with low fawn production. However, the 2016/17 winter was very severe with a long period of sub-zero weather (to around -45°F) and deep snows. Snowfall exceeded 200% of normal throughout much of the herd unit, and significant crusting occurred, increasing the difficulty in deer pawing for forage. Significant mortality will be attributed to this winter with very high fawn mortality and significant adult mortality as well. In the adjacent herd unit, radio-collared deer suggested fawn losses exceeded 90% and adult mortality was in excess of 40%.

Classification data is collected yearly by helicopter in Hunt Areas 132, 133, and 168. Sample sizes are very good with around 3,000 deer classified during the last 5 years. Post season buck ratios in 2016 were very good with 34 bucks per 100 does. This is the high end of the range for the objective in the herd unit. Yearling buck ratios and adult buck:doe ratios were good at 13:100 and 21:100.

For 2016 the fawn:doe ratios as a whole were up and are reasonable at 61:100. This is better than the ratios in the 50's observed in 2014 and 2015. This is still below where we would like to see fawn:doe ratios. Low fawn recruitment in this population is of concern. It may be due to several factors including winter range habitat condition, summer range habitat condition, elk competition on summer habitats, neonate predation on summer ranges, aspen stand condition on summer habitats, limited areas of effective parturition habitats and doe age structure, and potentially adenovirus, which has been documented in the adjacent Wyoming Range herd unit during the past two years. We would like to continue to improve future fawn:doe ratios through habitat improvement and predator manipulation to promote growth of this herd but will be costly to implement, and will require significant funding.

Hunt Area 132 is very dry and is dominated by low productivity habitats when compared to the rest of the herd unit. It also has limited and isolated areas of suitable fawning habitat, making newborn fawns more susceptible to predation (especially from coyotes) due to small patch size. Since 2012 we have procured funding and implemented targeted predator control on mule deer fawning sites in area 132. Control work, funded through the ADMB, is conducted during the fawning period, and occurred during the past five years.

Harvest Data

Hunter harvests from seasons recently offered for mule deer do not impact overall population size, recruitment or productivity. They only influence buck:doe ratios and we have been able to maintain buck:doe ratios well within or above management guidelines for recreational management. Doe harvest is only allowed by youth hunters and in a very limited type 7 hunt on irrigated lands. The overall doe harvest is negligible and insignificant, and is far surpassed in this herd by vehicle related mortality. Buck harvest has fluctuated greatly over the past five years due to changes in populations from winter severity and fluctuations in weather conditions during the hunting season.

Population

We feel somewhat confident in the current model since it reflects field information and seems reasonable, especially regarding predicted trends. However, caution should be used since this an

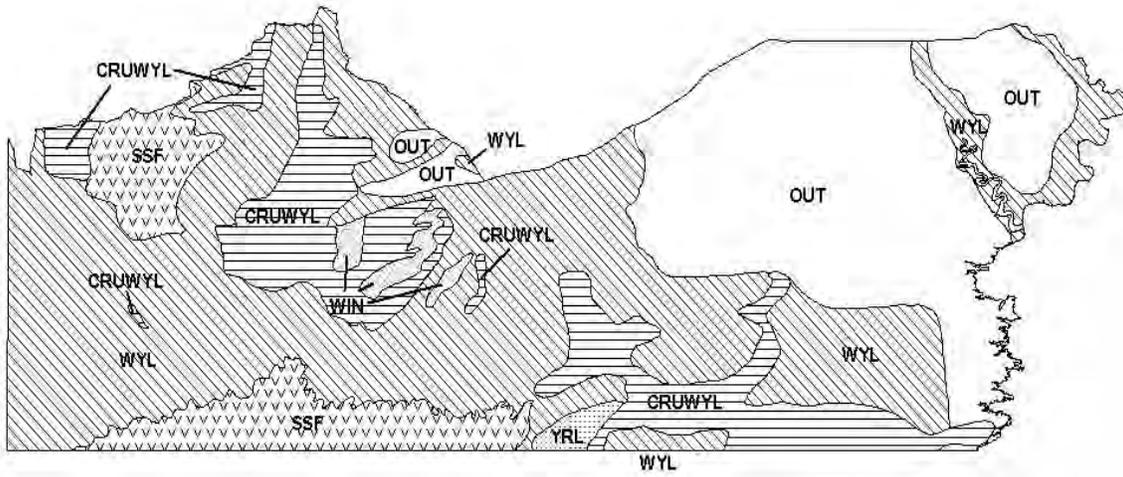
interstate population with some interchange across state boundaries (herd shared with Utah). Recent radio collar data documents over 12% interchange with our neighbor to the south and west. However, this rate of interchange is far lower than we once thought occurred. More significant radio collar studies in the area would help determine the extent of these movements, and Utah is planning on collaring a large number of mule deer in this area beginning this upcoming winter. The TSJ,CA model was selected due to the low relative AICc score and its good fit with the data. The TSJ,CA model fits very well with mule deer population dynamics in this type of system. Unfortunately model estimates do not seem to track very well with known significant winter mortality events in the winters of 2007/2008 and 2010/2011, which concerns us. An independent population estimate would be helpful in validating the model but is not very feasible for this recreational herd.

In 2012 the Department switched from POPII models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

The current model predicts a post-season population of around 15,900 mule deer in 2016. This is a decrease in the modeled population from 2010 levels. This reduction is substantiated by hunter comments, winter mortality surveys and field observations. This supporting information gives us some confidence in model results. However, the reduction modeled from 2010 levels is not totally realistic considering the severity of winter mortality observed on the western winter ranges where the vast majority of the deer herd winters. The reduction should have been much greater than model output.

Management Summary

The 2017 season in hunt areas 132, 133 and 168 will allow for 8 total days of general deer hunting. In this part of the state it is standard to offer a 14 day season and include 2 weekends of hunting opportunity. A 14 day deer season in early October with harvest targeting bucks only is a very conservative season structure. With the recent severe winter and survival conditions in 2016/17 some people felt that a significant reduction in days was warranted. The reduction to 8 days will end the season on a Sunday and cut six days off of the end of the season. Even with buck:doe ratios that are within objective it was felt that we should be more conservative due to the extreme winter. A three point or more antler restriction is also in place in the entire herd unit largely due to pressures from a local sportsmen group. The use of the restriction for limited time periods is warranted in parts of the herd unit where buck security cover and fawn productivity is lacking but other parts of the herd unit do not require this type of management. As mentioned previously, a very small number of antlerless licenses are issued in this herd unit to address a few damage complaints. Only 25 of these licenses remain for the entire herd unit following this past winter.



Mule Deer (MD423) - Uinta
 HA 132, 133, 168
 Revised - 3/94



2016 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2016 - 5/31/2017

HERD: MD424 - SOUTH ROCK SPRINGS

HUNT AREAS: 101-102

PREPARED BY: PATRICK BURKE

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	5,720	4,100	4,000
Harvest:	288	163	160
Hunters:	366	210	200
Hunter Success:	79%	78%	80 %
Active Licenses:	366	210	200
Active License Success:	79%	78%	80 %
Recreation Days:	2,402	1,237	1,200
Days Per Animal:	8.3	7.6	7.5
Males per 100 Females	27	47	
Juveniles per 100 Females	64	31	

Population Objective (\pm 20%): 8500 (6800 - 10200)

Management Strategy: Special

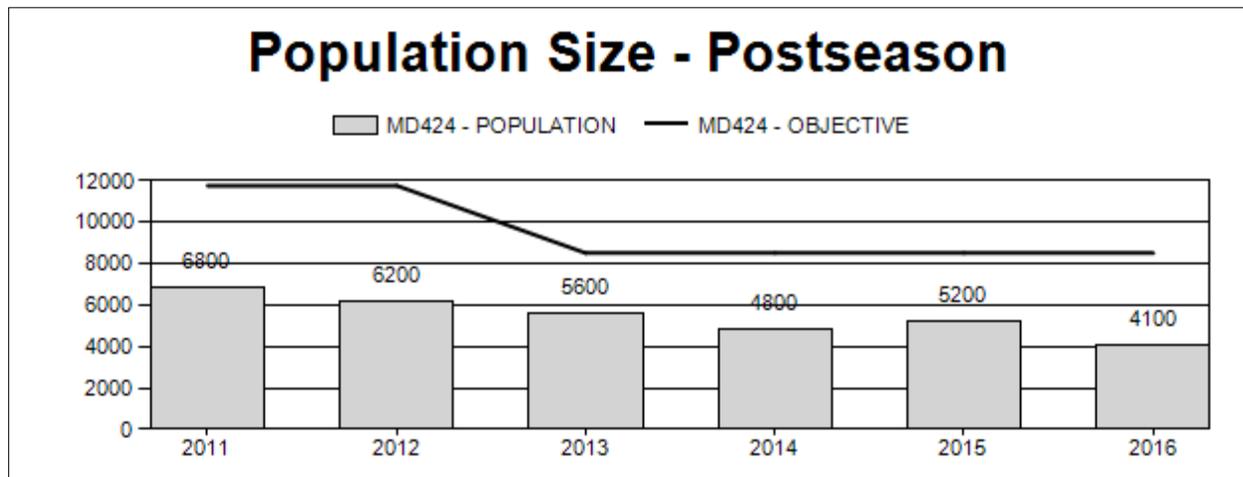
Percent population is above (+) or below (-) objective: -51.8%

Number of years population has been + or - objective in recent trend: 20

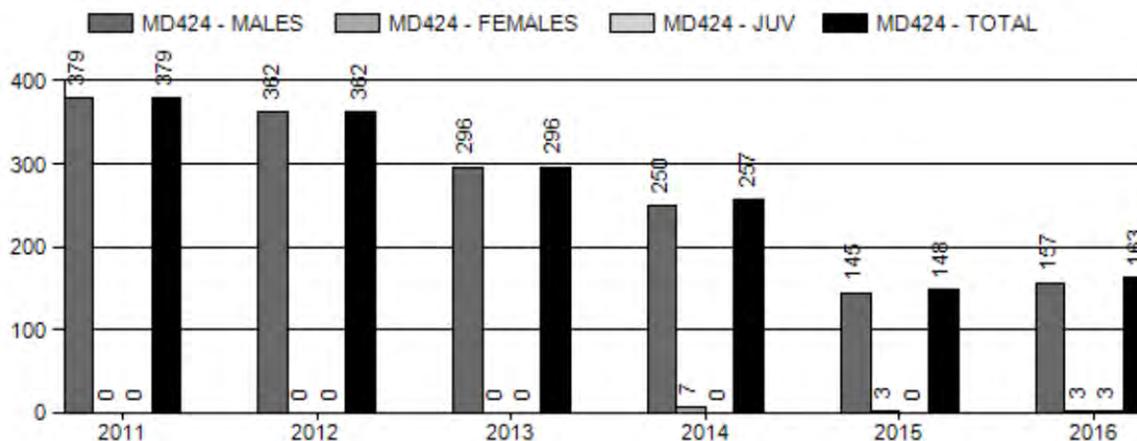
Model Date: 2/24/2017

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

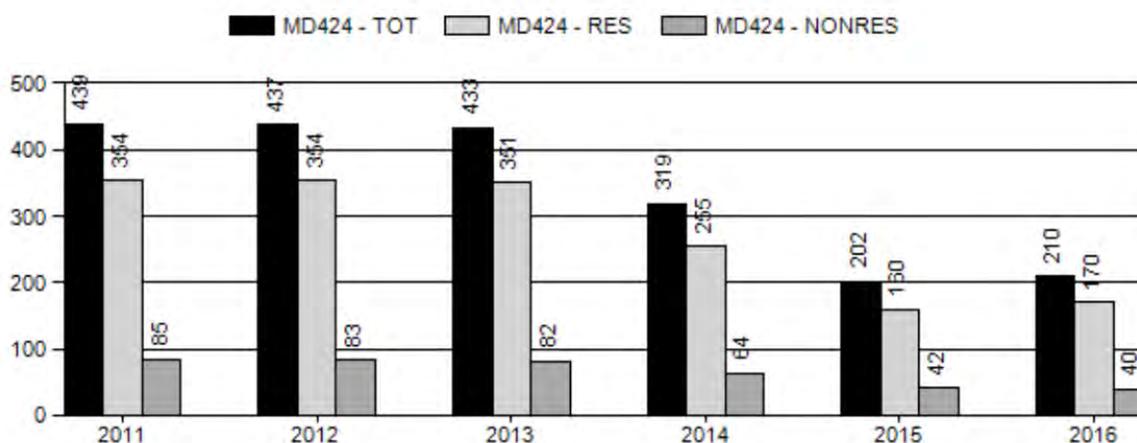
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	0%	0%
Males \geq 1 year old:	20%	15%
Total:	3%	3%
Proposed change in post-season population:	10%	-5%



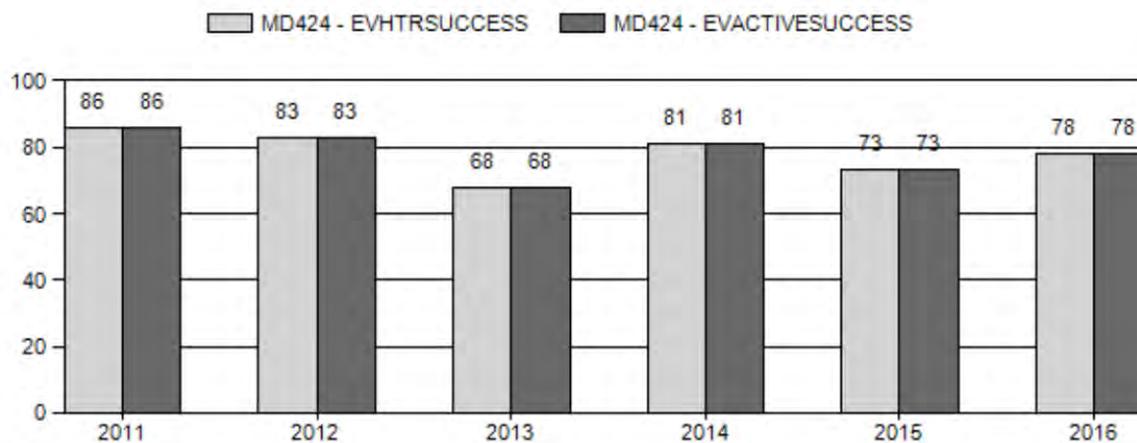
Harvest



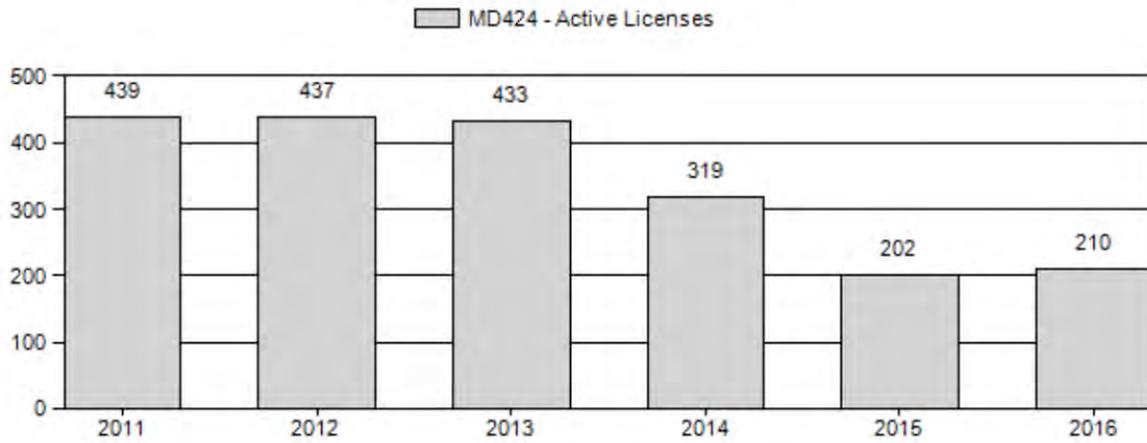
Number of Active Licenses



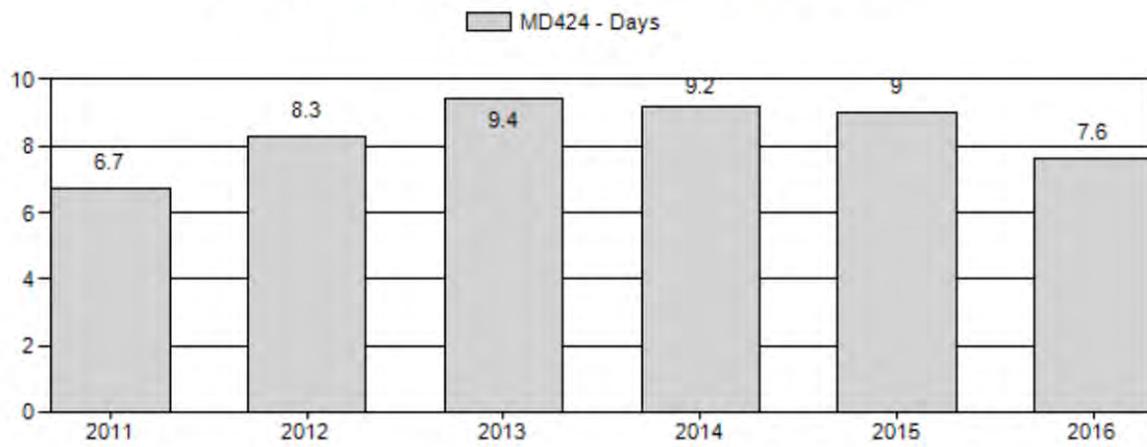
Harvest Success



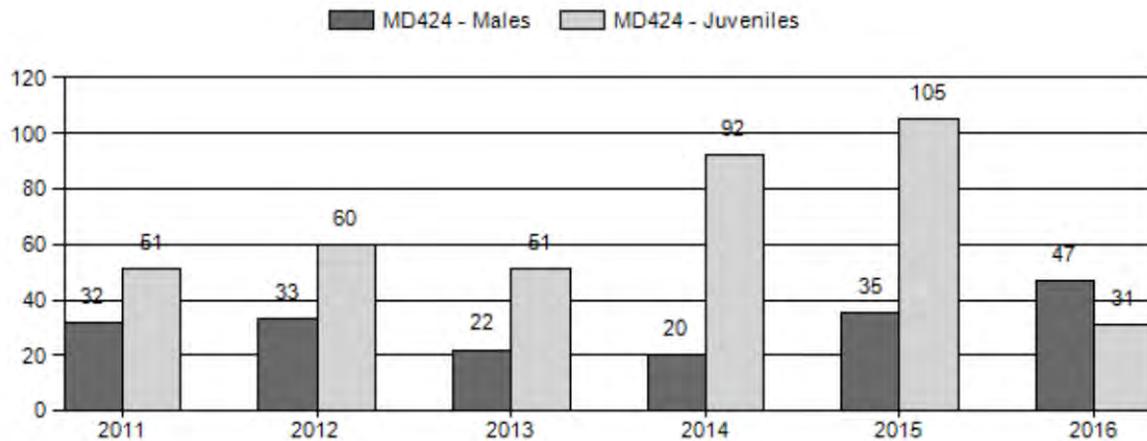
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD424 - SOUTH ROCK SPRINGS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls		Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,800	38	0	0	0	108	146	18%	453	55%	229	28%	828	1,030	8	24	32	± 4	51	± 5	38
2012	6,200	55	0	0	0	129	184	17%	558	52%	334	31%	1,076	680	10	23	33	± 3	60	± 5	45
2013	5,600	40	0	0	0	89	129	13%	593	58%	305	30%	1,027	767	7	15	22	± 2	51	± 4	42
2014	4,800	30	0	0	0	55	85	10%	417	47%	383	43%	885	1,242	7	13	20	± 3	92	± 8	76
2015	5,200	22	0	0	0	23	45	15%	129	42%	135	44%	309	1,124	17	18	35	± 8	105	± 16	78
2016	4,100	72	0	0	0	129	201	27%	426	56%	130	17%	757	943	17	30	47	± 5	31	± 4	21

**2017 HUNTING SEASONS
SOUTH ROCK SPRINGS MULE DEER HERD (MD424)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
101	1	Oct. 15	Oct. 31	25	Limited quota	Antlered deer
102	1	Oct. 15	Oct. 31	200	Limited quota	Any deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
101,102	Sep. 1	Sep. 30

Hunt Area	Type	Quota change from 2016
Herd Unit Total		No Changes

Management Evaluation

Current Management Objective: 8,500

Management Strategy: Special

2016 Postseason Population Estimate: ~4,100

2017 Projected Postseason Population Estimate: ~4,000

The post-season population objective for the South Rock Springs mule deer herd is 8,500 deer under special management. The objective for this herd was changed to its current level in 2013, when it was lowered from 11,750.

Herd Unit Issues

The largest issue facing this herd continues to be its consistent underperformance, both in relation to its population objective and in the quality of bucks it is able to produce as compared to what is expected by the public. This herd has been well below this objective since South Rock Springs and Black Butte herds were combined in the 1980's, and most likely will continue to remain below objective for the foreseeable future. Current population estimates suggest this herd may be somewhere around 4,000 deer following the 2016 hunting season.

The lack of growth in this herd despite very conservative hunting seasons can be attributed to poor fawn recruitment year after year after year. Observed fawn to doe ratios for this herd have averaged only 60 fawns per 100 does for the last decade, with some years generating observed ratios of only 45 to 50 fawns:100 does, far below the minimum typically needed for population growth (65:100). The observed fawn ratio in 2016 was only half of the 10 year average, at only 31 fawns per 100 does. The low number of fawns observed going entering winter combined with above average winter severity this herd experienced during the 2016-2017 winter does not make for a promising outlook for the herd. The DEER (Deer Elk Ecology Research) project currently occurring in this herd has shed some light on fawn mortality in this herd, ranging from poor fawning site selection to adenovirus and high rates of coyote predation (a function of poor fawn habitat or site selection).

Another major issue for this herd is that despite increasingly conservative buck harvest, this herd has been unable to live up to the expectations that the public has for it in regards to the quality of bucks available for harvest. Probably in large part due to the low drawing odds for hunt areas in this herd unit, hunters that draw licenses in the South Rock Springs herd unit have extremely high expectations concerning the antler size of the bucks they will be hunting, far in excess of this herd's historic potential. Antler quality of the bucks in this herd unit is not what most hunters hunting in the herd unit are envisioning.

Weather

The most prominent weather condition present in the South Rock Springs mule deer herd for the last several years has been dry summer conditions with relatively mild winters. Those conditions changed somewhat in 2016, which saw an improvement in summer moisture levels and a significantly more severe winter than this area has been seen since the 2010-2011 winter. While, the country south of Interstate 80 did not receive as much in the way of persistent, deep snow

conditions as the country further north, it did still receive significant snowfall and experienced bitterly cold temperatures during January 2017. Conditions moderated though during early February, which allowed for some snowmelt, exposing some shrubs on the winter ranges, improving conditions for animals in this herd. The end of February saw a return to deep snow conditions in the herd unit. Fortunately, the extreme cold temperatures of January did not return in February, which benefitted wintering wildlife. While the full impact of this winter on the South Rock Springs deer herd will not be known until next year, some level of increased winter mortality can be expected this year.

Habitat

The Green River aquatic habitat biologist has established six aspen regeneration monitoring transects throughout Hunt Area 102. These transects are designed to evaluate browsing impacts from ungulates on young aspen suckers. Two transects were established on Little Mountain in 2007, as well as four additional transects that were established in 2009, one each on Aspen and Miller Mountains and two in the Pine Mountain area. These transects have been read each summer since their establishment. One of the Pine Mountain transects was not read in 2013 due to difficulty in accessing that site caused by the amount of rain and snow received that fall, and the South Pine Mountain site was not read in 2014 due to the aspen stand that it was located in dying off. Because of the loss of the South Pine Mountain site, a new transect was established near the Tri-State marker in 2014.

A detailed accounting of the technique and results from these monitoring efforts can be found in the aquatic habitat annual report. In general, this method compares the height of the initial growth point for the current year’s terminal leader to the height of the tallest previous terminal leader branch that was killed as a result of browsing. A positive Live-Dead (LD) value suggests growth of young trees, while a negative value or value near zero suggests that browsing may be suppressing vertical tree growth and recruitment of that tree into the overstory. Results of monitoring efforts are presented in the following table (Table 1) taken from the aquatic habitat annual progress report, but in general, four of the six monitored sites showed positive LD values for 2016. Two of the sites had LD values at or below zero, suggesting browsing pressure was suppressing the ability of these trees to grow beyond the browse zone. It should be noted, the majority of browsing pressure on these stands appears to be elk dominated.

Table 1. Trends in aspen regeneration LD Index values (vertical inches) for the SRS herd unit 2013-2016

Monitoring site	2013	2014	2015	2016
Pine Mt/Red Ck.	NA	-7.8	-1.8	0
Tri-State /Red Ck.	NA	+3.36	+7.2	+13.2
Miller Mt.	+6.6	+4.6	+3.6	+18.6
Aspen Mt.	+4.6	-4.5	+1.2	+4.6
Little Mt./Dipping Spr.	0	-0.9	+1.2	-0.6
Little Mt./West Currant Ck.	0	-1.6	0	+5.5

Field Data

This herd was classified from a helicopter during December 2016 in conjunction with the South Rock Springs elk herd. A total of 757 deer were observed during that flight, resulting in observed ratios of 31 fawns per 100 does, and 47 total bucks per 100 does, 17 of which were yearling bucks (per 100 does). The observed fawn ratio is extremely low, even for this herd which tends to have lower than desired fawn ratios. This level of fawn recruitment will not allow for even population maintenance, and a reduction in the 2017 population, when compared to last year, should be expected. We hope some form of sampling error resulted in the fawn ratio observed during the classification flights, and is lower than what is actually present in the herd. Based off of fawn survival rates from collared deer associated with the DEER project, fawn ratios for those collared deer was around 56 fawns per 100 does at this same time, much more in line with what this herd normally produces.

In contrast to the low fawn ratio, the buck ratio observed during those classification flights, was one of the highest buck ratios ever observed in the herd. While the conservative buck harvest of the last two years should have led to some increase in the herd's buck population, the drastic increase observed this year is larger than what would be reasonably expected from just conservative hunting seasons. Therefore, the observed ratio may have just been partially caused by sampling bias as the overall classification sample size was fairly small this year, and was likely influenced by increased observability due to snow conditions.

Harvest Data

The 2016 hunting season saw a harvest rate that was very similar to the 2015 harvest, which was the lowest harvest documented in this herd in quite some time. A reported total of 157 bucks and 3 does as well as 3 fawns were harvested in the herd unit. Success rates for the two hunt areas that make up this herd unit were 69% for HA101 and 79% for HA102, giving the herd unit as a whole a success rate of 78%. This herd unit has historically exhibited success rates in the mid-80s, so the success rates reported of 73% in 2015 and 78% in 2016 were below average success rates for these hunt areas. Hunter success is likely to worsen in this herd barring a return to fawn ratios that support population growth.

Because the South Rock Springs mule deer herd is a special management herd and because of its significant local status, successful hunters are asked to voluntarily submit tooth samples for cementum annuli aging analysis. Successful hunters submitted 62 samples for analysis from the 2016 hunting season. Three of those samples were unable to be aged by the tooth aging laboratory and one tooth was submitted from a harvested doe aged at 1.5 years old. Based on the 59 useable samples from buck deer, the average age of harvested bucks was just over 4.7-years-old in 2016. This compares to an average age of 5.3 in 2015, and 2014, 5.1-years-old in 2013, 4.5-years-old in 2012, and 5.0-years-old in both 2010 and 2011. Based on hunter submitted tooth samples, the oldest deer harvested during the 2016 season was a 9.5-year-old buck from HA102 and a 6.5-year-old buck from HA101.

Population

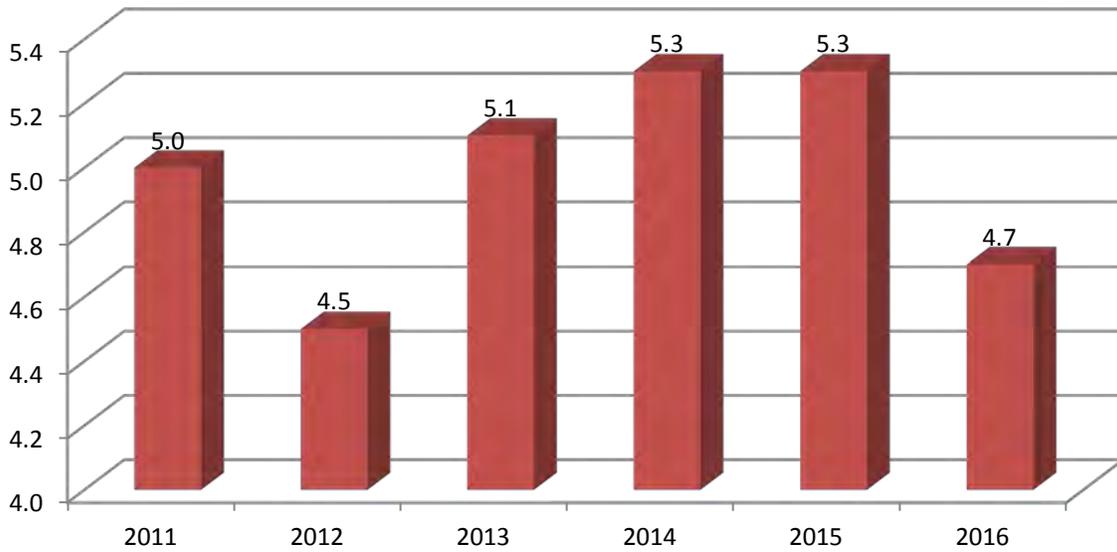
The model selected for this herd is the time-specific juvenile survival model based since it produces the most realistic estimate for this population, and is consistent with the biology of mule deer. However, the model seems to be unable to track the trend for the population and will often change the previous year's estimate by over 1,000 animals from what it had produced last year. For example, last year the model estimated the 2015 post-season population estimate to be nearly 5,200 deer; this year the model changed the estimate for 2015's post-season population to be only 4,200 deer. While the model will change the current years population estimate to what is probably a believable number each year, it shows that the herd has been fairly steady over the past 20 years instead of showing that the population was at higher levels in the past. The model also bounces fawn survival rates back and forth from the maximum allowed to the minimum allowed by the model constraints from one year to the next, which is an indication that the model is not functioning very well. Part of this can probably be explained by the inconsistency in classification data from year to year, as classifications in this herd usually alternate between ground classifications and aerial classifications every other year. Because of differences in the areas that can be accessed and the amount of ground that can be covered between years when a helicopter is available and years when classifications are conducted from the ground, those data may not be comparable to each other, and may lead to some of the inconsistency seen in the model.

In addition to herd composition surveys, information from the harvest survey, and age data from lab-aged teeth from hunter-harvested deer, as well as field observations by field managers combined with the model help in management of this locally high profile herd. All forms of data, from harvest data to classifications to field manager and public observations suggest this population continues to slide downward in abundance.

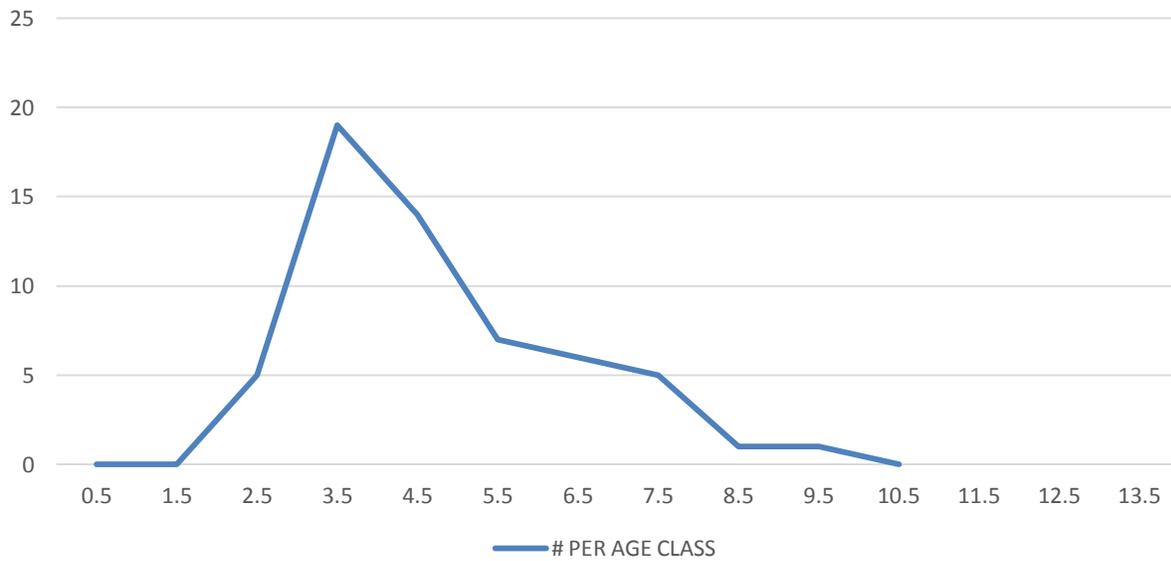
Management Summary

The 2017 hunting season is identical both to the 2015 and 2016 seasons. Because of the problems with the model for this herd, and fact that management actions seem to have no impact on herd size, or up until this year, observed buck to doe ratios; this herd is managed mostly by the public desire for larger antlered deer and a less crowded hunting experience. This herd has a loyal following by members of the public, especially in Sweetwater County that show a keen interest in the progress of this deer herd. Many members of the public have expressed their desire that the condition of this herd be improved and would like to see the population at a higher level with more, larger antlered, bucks in the herd unit. Those desires for more and bigger deer are the main driving forces in the management of this herd.

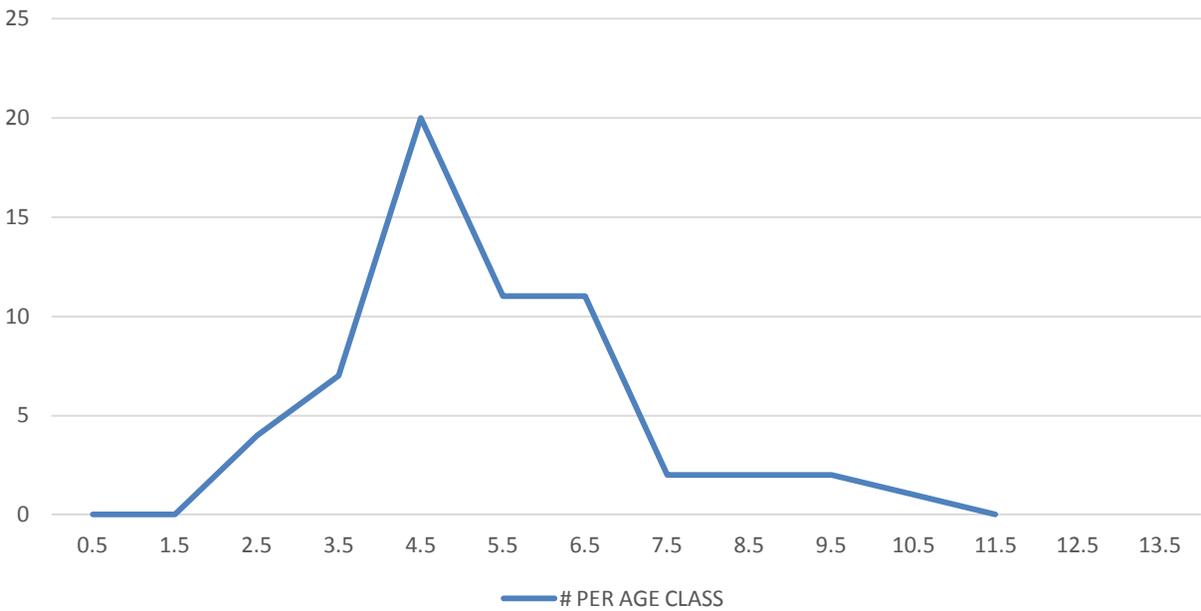
SRS Deer Average Age of Harvested Bucks



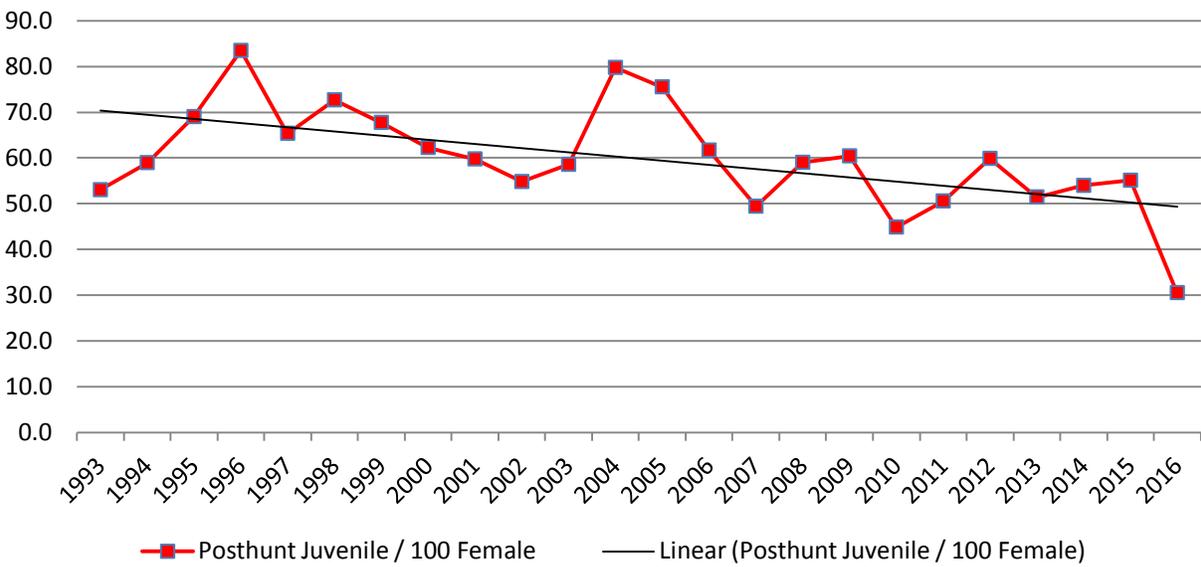
2016 SRS DEER # HARVESTED PER AGE CLASS

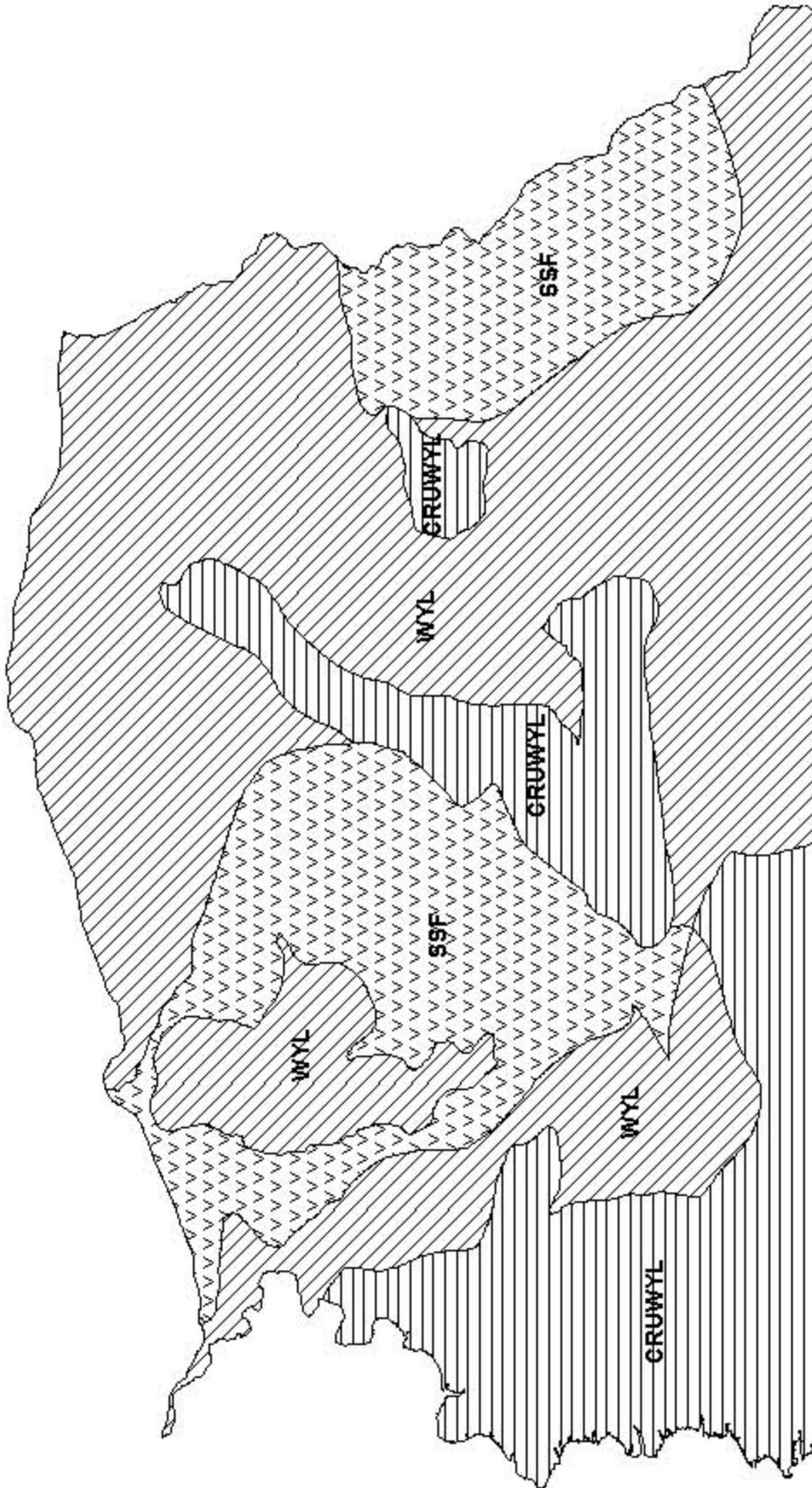


2015 SRS DEER # HARVESTED PER AGE CLASS



Posthunt Juvenile / 100 Female





Mule Deer (MD424) - South Rock Springs
HA 101, 102
Revised - 3/94

2017 Proposed - Season Setting Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2016 - 5/31/2017

HERD: MD427 - BAGGS

HUNT AREAS: 82, 84, 100

PREPARED BY: TONY MONG

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	18,820	18,600	21,200
Harvest:	1,199	2,016	1,700
Hunters:	2,387	3,326	3,000
Hunter Success:	50%	61%	57 %
Active Licenses:	2,400	3,453	3,200
Active License Success:	50%	58%	53 %
Recreation Days:	10,990	16,168	16,500
Days Per Animal:	9.2	8.0	9.7
Males per 100 Females	33	23	
Juveniles per 100 Females	62	52	

Population Objective (± 20%) : 19000 (15200 - 22800)

Management Strategy: Recreational

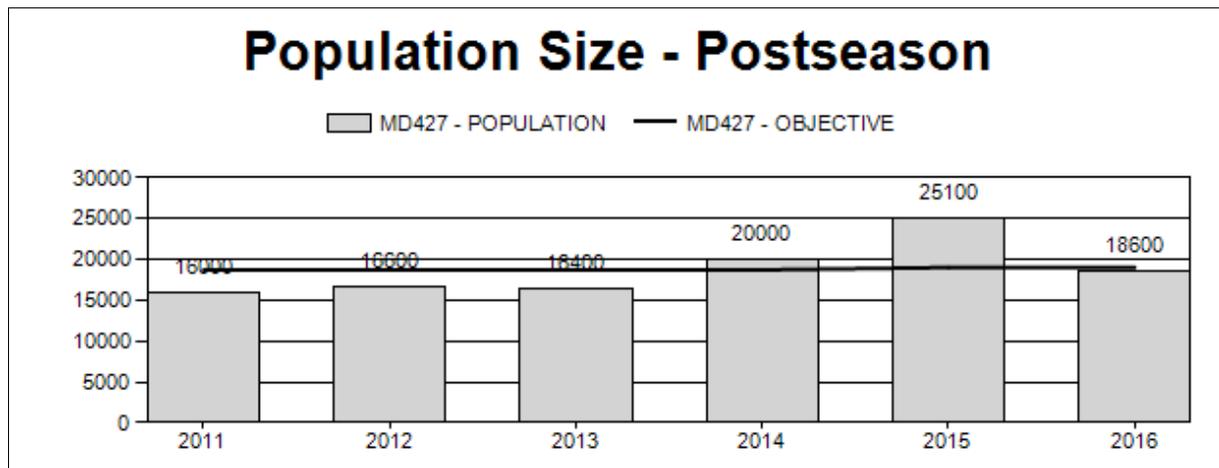
Percent population is above (+) or below (-) objective: -2.1%

Number of years population has been + or - objective in recent trend: 1

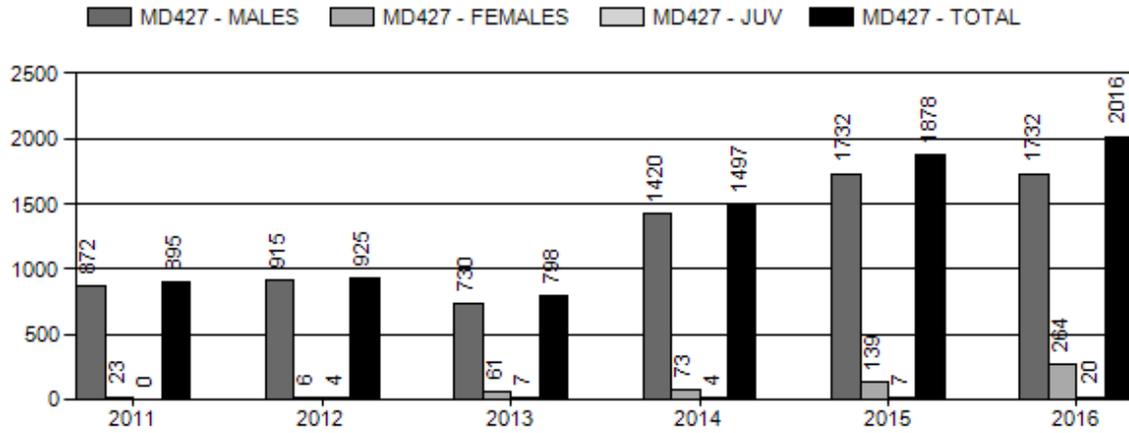
Model Date: 2/23/2017

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

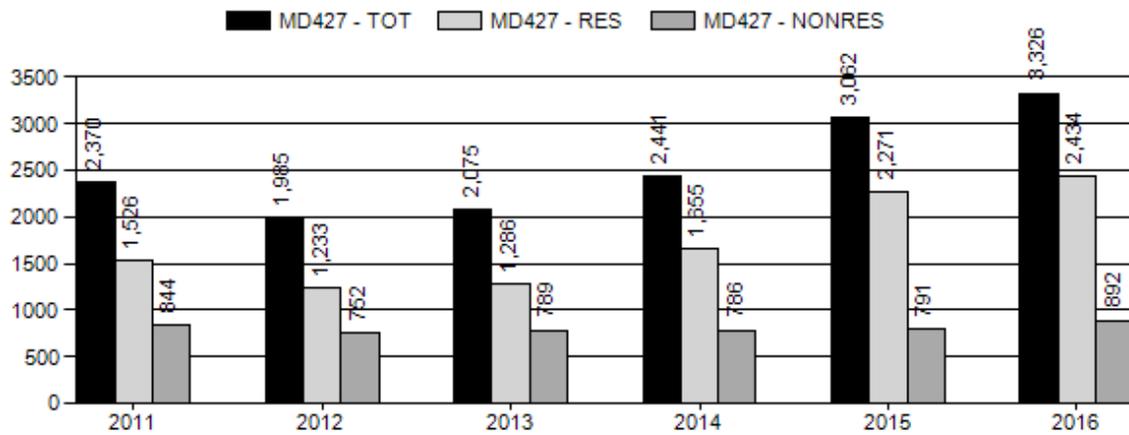
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	3.4%	3%
Males ≥ 1 year old:	35.2%	32%
Total:	9%	10%
Proposed change in post-season population:	6%	1%



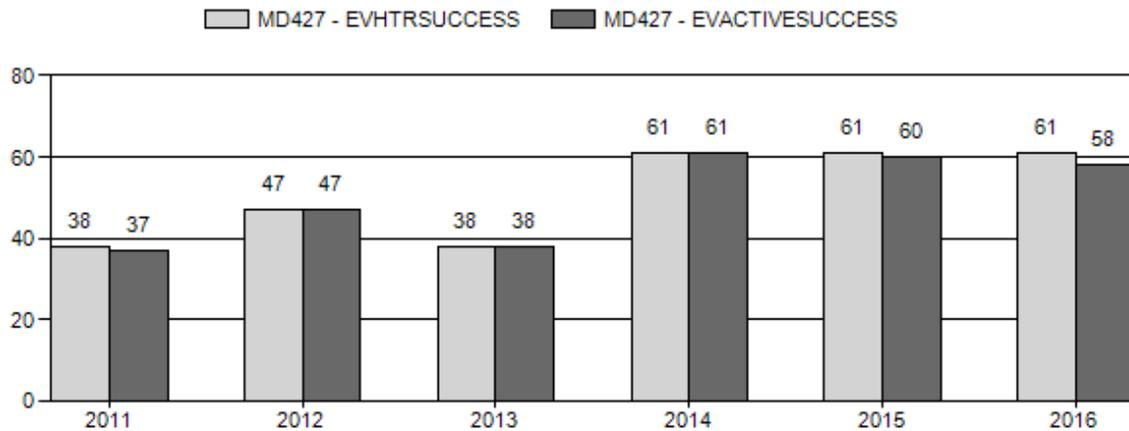
Harvest



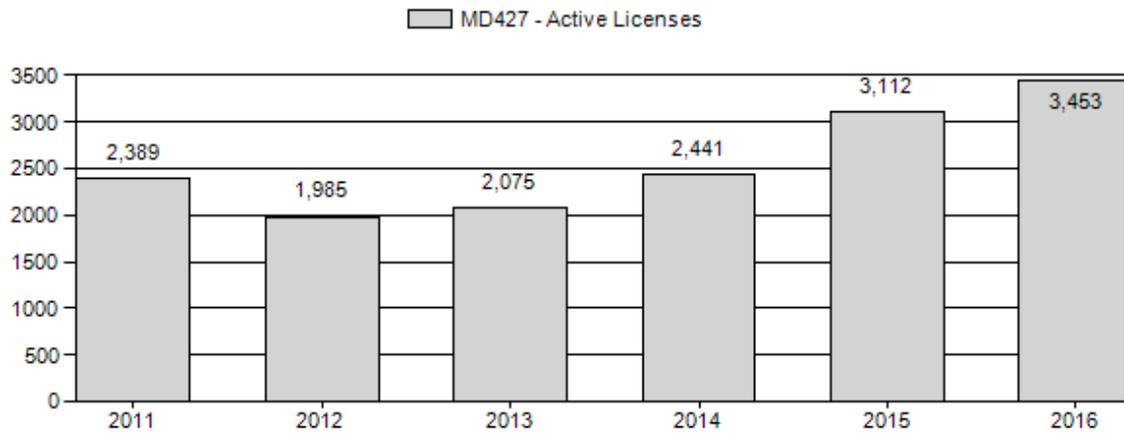
Number of Active Licenses



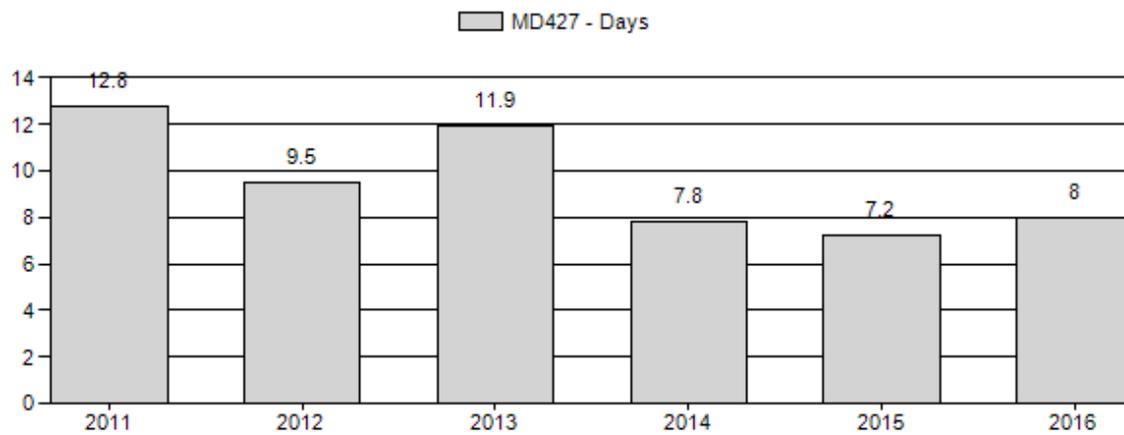
Harvest Success



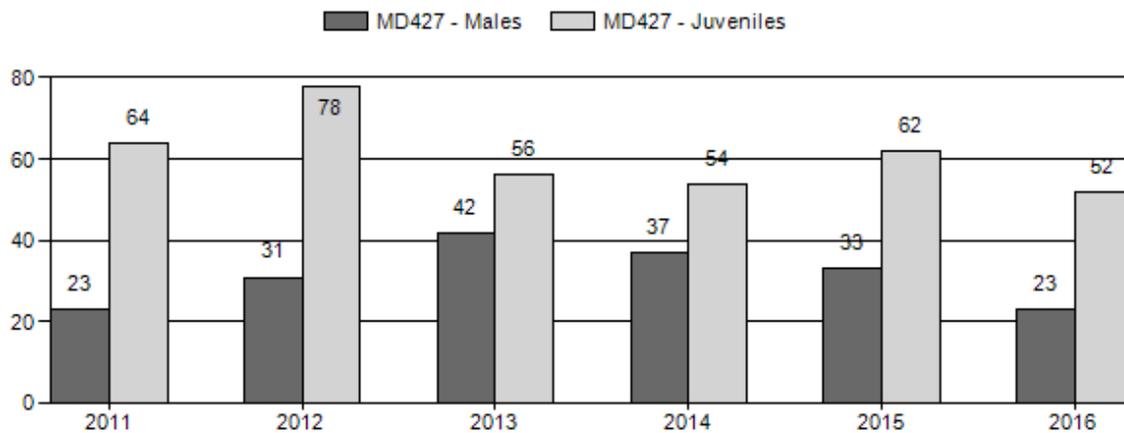
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD427 - BAGGS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls	2+ Cls	2+ Cls	3 UnCls	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	16,000	133	0	0	0	337	470	12%	2,059	54%	1,308	34%	3,837	0	6	16	23	± 1	64	± 3	52
2012	16,600	198	130	112	47	0	487	15%	1,592	48%	1,235	37%	3,314	0	12	18	31	± 2	78	± 3	59
2013	16,400	346	274	168	72	0	860	21%	2,066	51%	1,152	28%	4,078	0	17	25	42	± 2	56	± 2	39
2014	20,000	272	230	189	82	0	773	19%	2,112	52%	1,151	29%	4,036	0	13	24	37	± 2	54	± 2	40
2015	25,100	267	300	212	77	0	856	17%	2,603	51%	1,604	32%	5,063	0	10	23	33	± 1	62	± 2	46
2016	18,600	227	163	279	117	0	786	13%	3,391	57%	1,772	30%	5,949	0	7	16	23	± 1	52	± 2	42

2017 PROPOSED HUNTING SEASONS

SPECIES : Mule Deer
 HUNT AREAS: 82, 84, 100

HERD UNIT : Baggs (427)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
82		Oct. 1	Oct. 12		General	Antlered mule deer four (4) points or more on either antler or any white-tailed deer
		Oct. 1	Oct. 14		General youth	Any deer
	6	Oct. 1	Oct. 16	50	Limited quota	Doe or fawn
82, 100	8	Dec. 1	Jan. 15	25	Limited quota	Doe or fawn white-tailed deer valid on private land
84	1	Oct. 1	Oct. 14	75	Limited quota	Antlered mule deer or any white-tailed deer
100		Oct. 1	Oct. 5		General	Antlered mule deer four (4) points or more on either antler or any white-tailed deer
		Oct. 1	Oct. 7		General youth	Any deer

Special Archery Season Hunt Areas	Season Dates	
	Opens	Closes
82	Sep. 1	Sep. 30
84	Sep. 1	Sep. 30
100	Sep. 1	Sep. 30

<i>Hunt Area</i>	<i>Type</i>	<i>Quota change from 2016</i>
<i>Region W</i>	<i>Gen</i>	<i>0</i>
82	6	-200
	7	0
84	1	+25
100	7	+25
<i>Herd Unit Total</i>	<i>1</i>	<i>0</i>
	<i>6</i>	<i>+25</i>
	<i>7</i>	<i>0</i>
	<i>Region W</i>	<i>0</i>

Management Evaluation

Current Management Objective: 19,000 (2015)

Management Strategy: Special (2015)

2016 Postseason Population Estimate: 18,600

2017 Proposed Postseason Population Estimate: 21,200

The most recent estimate for the Baggs mule deer herd is within the population objective range of 15,200 – 22,800 (set in 2015). However, given higher than normal winter mortality and lower survival estimates of doe deer in this and the adjacent herd in Colorado, doe harvest will be reduced next year to account for this and our current unknown population status. The herd unit was changed to special management in 2015 and due to low buck survival over the winter of 2015/16 and high harvest of bucks (based on collaring data), current buck ratios have dropped below special management guidelines (30-45 bucks:100 does). Because of this drop we are proposing the implementation of a temporary antler point restriction to boost buck numbers back to special management levels. The 2016 type 8 season did not result in the desired harvest of doe white-tailed deer in the area. A shift in dates as well as an expansion to include 100 is being proposed.

Herd Unit Issues

Major issues impacting the Baggs mule deer herd include large scale energy development on some of the most important areas to this herd, both winter and transitional range habitat quality, increasing hunter pressure, and low deer densities in the desert portion of the herd. Throughout the Baggs herd unit we continue to see development of oil and gas fields associated with the Atlantic Rim Project and GRMR exploratory operation that encompasses the high deer use area between Muddy Mountain and Battle Mountain. In addition, this summer we will see the beginning of the Chokecherry-Sierra Madre Wind Project which will have unknown impacts to summer range and migration routes in the Miller Hill area.

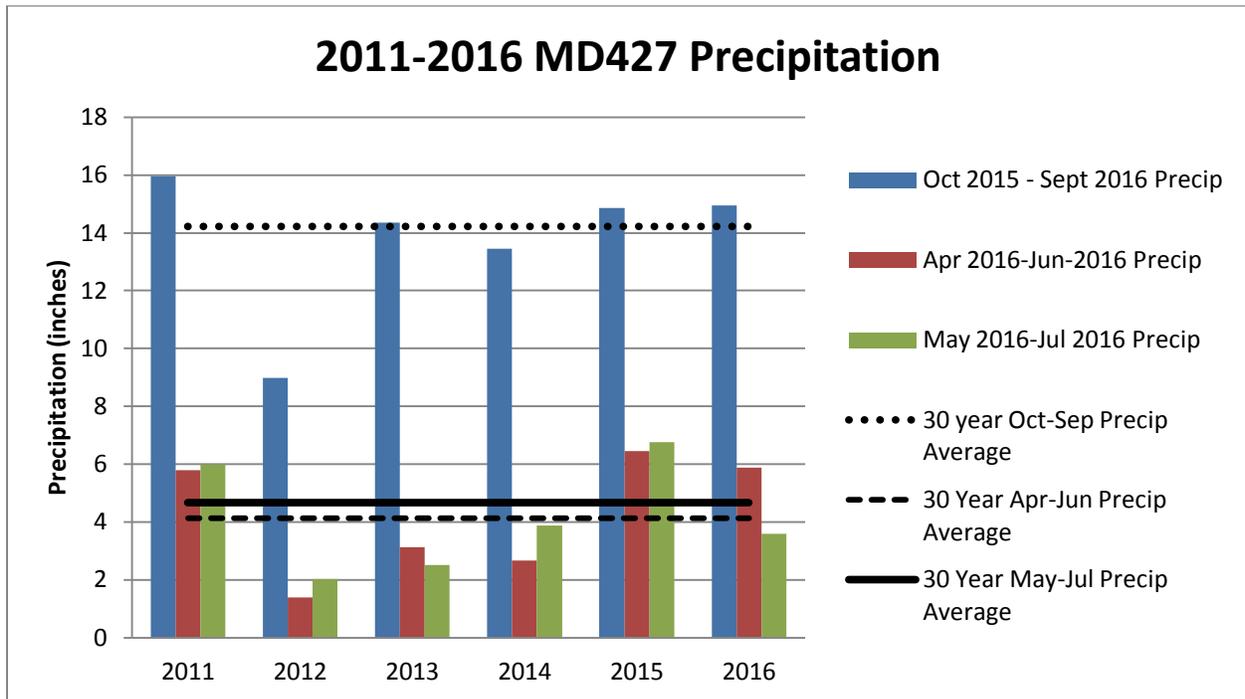
Habitat quality within transitional and winter ranges has been documented as poor and in need of treatment and enhancement. This is being addressed through a large effort to collect funds from a variety of sources to start treating cheatgrass, address juniper encroachment, and rehab decadent mountain shrubs throughout winter and transitional ranges.

In 2016 we saw hunter participation levels reach the highest levels since the 2010 (any deer) season. With the expansion of the use of off-road vehicles and new two track roads being pioneered throughout hunt areas 82 and 100, the satisfaction with deer hunting in this herd unit is dropping. This may be partially addressed in future hunting seasons through the implementation of a new hunting season structure.

In hunt areas 84 and 100 we are not seeing the same positive population response as we are seeing in hunt area 82, a phenomenon not unique to 2016. Although hunt areas 84 and 100 are significantly more xeric and significantly less productive, the divergence between the “core” population in hunt area 82 and these “fringe” areas is becoming more prominent. This issue may become more relevant if we do not see a response by resident mule deer in these hunt areas in the next few years.

A separate issue from those impacting mule deer is the issue of white-tailed deer along the Little Snake River corridor which has led to some localized landowner complaints concerning damage. During the 2016 hunting season, we saw only 7 doe white-tailed deer harvested on either a type 6 or 8 license. We believe this is due to the season being too early in December before the white-tailed deer move into the Little Snake River Valley. Landowners in HA 100 also indicated they have observed an increase in white-tailed deer numbers, and desire some harvest. For next year, we are addressing these concerns by including area 100 in the type 8 season, and by pushing the dates for the season back to January 15.

Weather



Parameter-Elevation Relationships on Independent Slopes Model (PRISM) was utilized to estimate precipitation by calculating a climate-elevation regression for each Digital Elevation Model grid cell (4 km resolution).

Precipitation

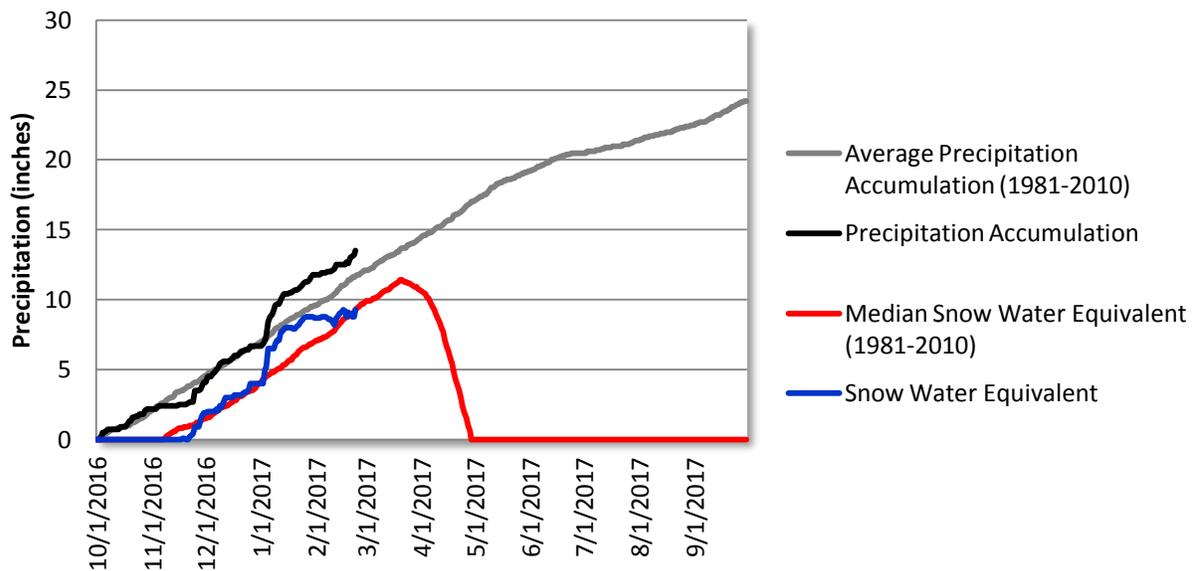
Annual bio-year precipitation from October 2015 through September 2016 was slightly higher than the 30 year average, as was growing season precipitation (April-June 2016). However later

season precipitation from May-July 2016 (higher elevation growing season) was notably lower than the 30 year average. As illustrated by the above graph, most of the precipitation occurred outside of the primary growing season, primarily in the form of snow. Although there was significant spring moisture in 2016 from both early spring snows and significant late spring rain events, precipitation slowed by early June. The period from June through October 2016 was extremely dry, causing vegetation to cure fairly early in the growing season, reducing its value as forage.

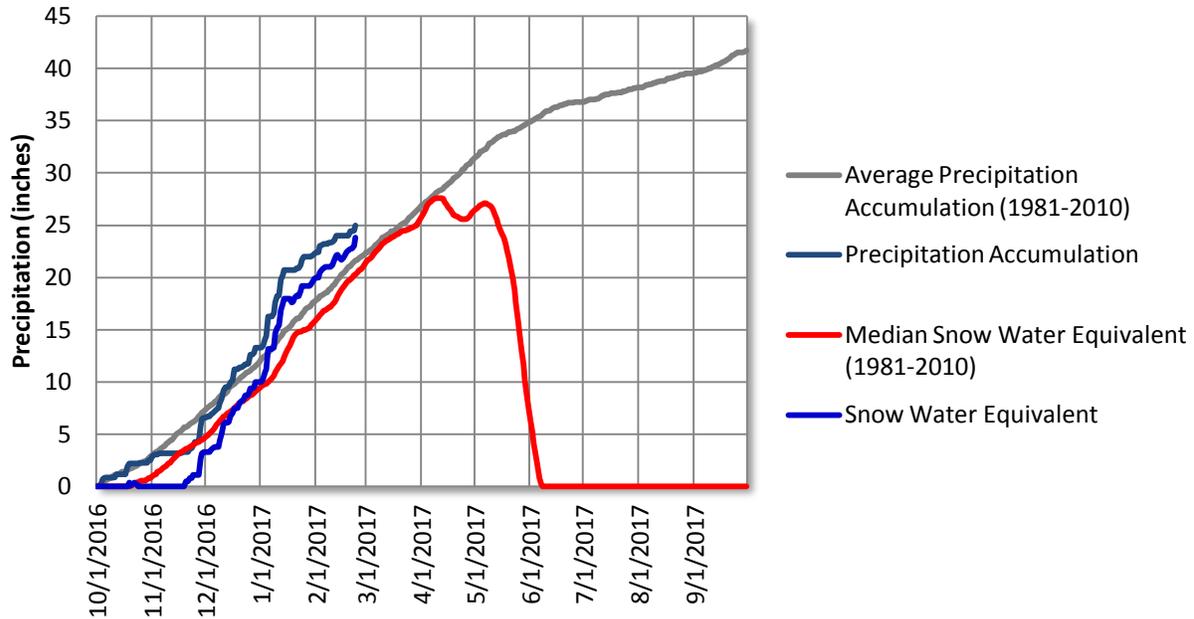
Winter Severity

Early winter of 2016 was unseasonably warm well into December across this herd unit. Warmer temperatures paired with late fall moisture resulted in a late fall green-up at some elevations, which may have provided deer with an extra nutritional boost prior to winter. January brought several big snowfall events throughout the area followed by sustained temperatures well below zero, creating severe energy demands on mule deer with very little access to food even in crucial winter range for a few weeks. High winds and a sustained warming trend in February helped to melt off lower elevation habitats, and mitigated what could have been a period of extreme deer loss. Deer numbers observed returning to transitional ranges in March and April. At mid-range elevations, as reported by the Battle Mountain Snotel Site, snowpack (snow water equivalent) is currently at 100% of normal. However snowpack was at 151% in mid-January, reflecting those big snow events.

Battle Mountain Snotel Site - 7,440 ft



Whiskey Park Snotel Site - 8,950 ft



Habitat

Precipitation data provided above reflects that although early spring moisture was above average, summer moisture levels were relatively low. These precipitation patterns were reflected in high early spring vegetative production, which provided excellent forage during early parturition. However, as precipitation slowed in June, vegetation cured much earlier than usual. These dry conditions along with other environmental conditions discussed above allowed for several large wildfires to burn in 2016 in the Sierra Madres including the Snake Fire which was located within the herd unit. This was a high elevation wildfire that will likely improve summer range mule deer habitat by increasing aspen production, diversifying forest species age class, and increasing herbaceous forage production within the burn area.

Rapid Habitat Assessments conducted throughout the herd unit in 2015 and 2016 suggest that shrub habitats throughout winter and transition range continue to underperform due to maturity and decadence caused by a lack of natural disturbance. In addition, cheatgrass, desert alyssum, and other invasive plant species continue to degrade important mule deer habitats throughout winter and transitional ranges.

The Baggs Mule Deer Working Group recently completed their long-term habitat planning and project recommendations for this herd unit, and the final draft is in review. This document will be appended to the 2017 JCR for Baggs mule deer.

Field Data

We have been fortunate over the last several years to see the Baggs herd return to and surpass objective levels. However, 2016 classification data is showing that we need to remain cautious as we move forward with observed declines in both fawn and buck ratios.

Fawn ratios for 2016 (52:100) are the lowest we have observed since 2008, and well below the previous 5-year average of 63:100. This low fawn ratio was unexpected because of the relatively good conditions found throughout most of the summer with good feed available. The extremely

dry period of July through October may have had a bigger impact on doe and fawn nutrition than we would have predicted leading to these lower fawn ratios, or like some adjacent herds, we may have experienced some loss due to adenovirus. These low ratios must be factored into management and is one reason we are limiting doe harvest at a lower rate than would normally be prescribed with a population at the top end of the population objective.

Buck ratios in the area had been at high levels following the APR implemented in 2012 and 2013 (average = 37:100) but we observed a dramatic drop in that ratio in 2016. The drop in this ratio is stark and should be analyzed closely in order to understand how this could have occurred, but is likely due to increased harvest pressure. During the winter of 2016 we deployed 40 collars on adult buck mule deer. Through the course of this study over the last year we lost four to winter mortality, and 9 collared adult males were harvested during the hunting season. Two additional bucks currently are considered mortalities but have not been verified. Considering the proportion of bucks lost over the year based on these data, equates to a 38% mortality rate on adult males, higher than we expected.

In addition, recent discussions with adjacent Colorado managers revealed 2016 was a difficult year for fawns adjacent to the Baggs herd. They report a fawn survival rate of only 32% (Darby Finley, pers. comm.; however, this fawn survival rate is significantly higher than adjacent herds to the north and west). Considering this information, coupled with the harvest rates of adults, demonstrates what is occurring in our classification data, especially observed buck categories (Figure 1). Low yearling rates can be attributed to both harvest and low fawn survival. The low ratios of class I bucks may be a reflection of higher than normal harvest on that group of bucks. It is positive that the class II and III bucks remained steady in our counts from this year but a noticeable lack of these classes can be expected in the near future. It is because of this information that we are proposing an antler point restriction (APR) again to be run similar to the last, protecting the younger buck classes and increasing total buck ratios through that protection. The APR will differ from last time in that we are shifting to a 4 point or better APR (versus 3 point or better in 2013 and 2014), since field data suggest a large percentage of Baggs mule deer yearlings are 3 point deer. High hunter participation, coupled with a typical harvest favoring more vulnerable younger bucks, could further depress buck ratios over the next few years without this strategy. A two year use of this strategy should allow buck ratios to rise again to levels above 30:100. The strategy will require periodic use if hunter numbers remain high in this herd unit.

We do not have separate data for those resident mule deer in hunt area 100 and 84 (most deer in these areas are migrants from 82) to specifically assess issues facing these portions of the population. However, known issues include poorer habitat conditions, lower potential for deer herd growth, and competition with other ungulates and horses.

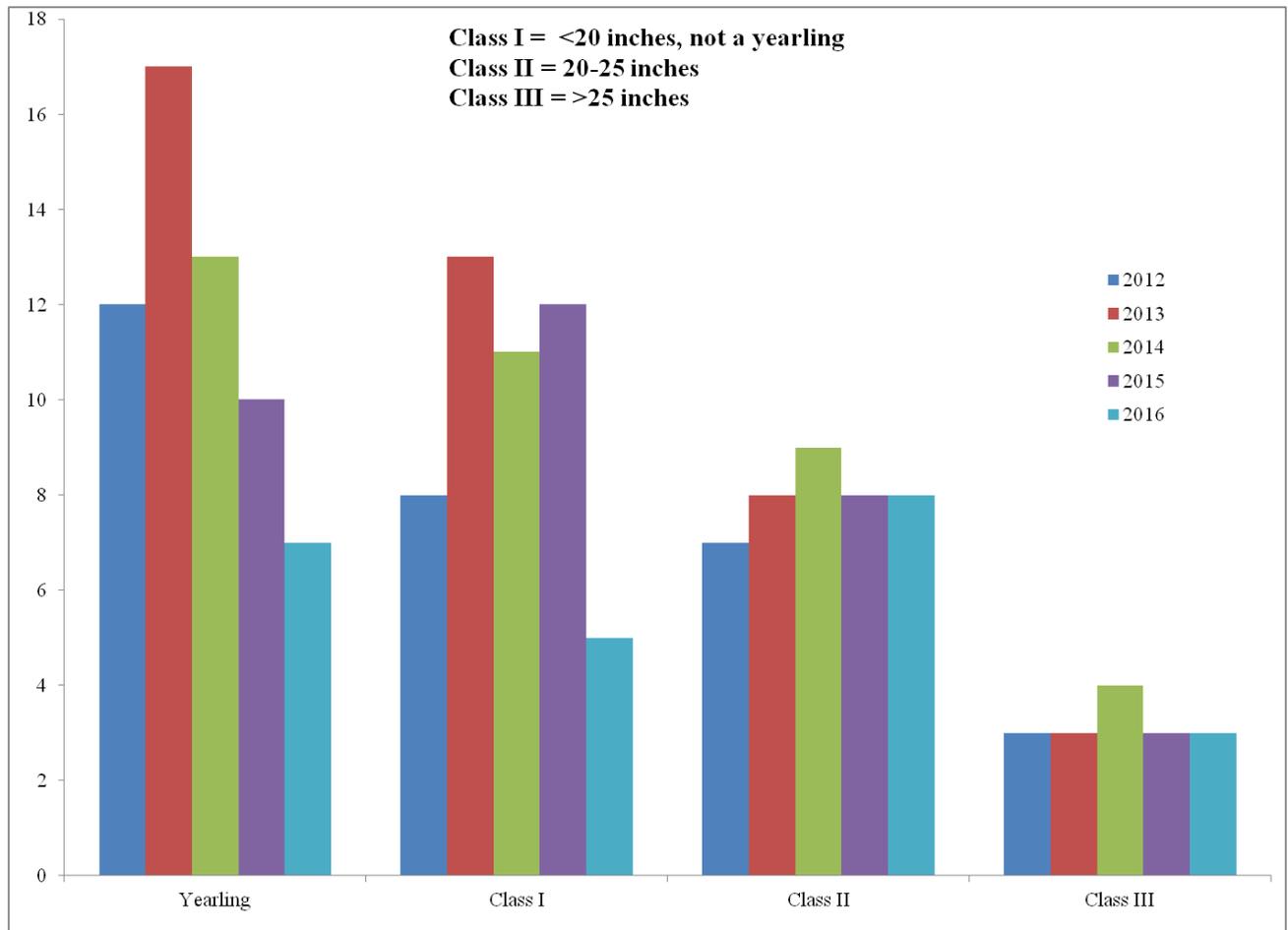


Figure 1. Buck classification (ratio data) data broken out into the different buck categories. APR seasons were implemented during 2012 and 2013.

Harvest Data

The 2016 hunting season saw a return to pre-2007/08 buck harvest levels (2003 to 2007 average buck harvest, 1,600, 2016 buck harvest, 1,700). The 2016 hunting season brought a higher than average (10 year average, 55%) hunter success rate at 61% and a higher than average (10 year average, 2,700) hunter participation at 3,300. Despite the high harvest rates, hunter satisfaction is not as high as one would expect, especially among resident hunters. In hunt area 100 53% of resident hunters that responded were satisfied or very satisfied with their hunt, and only 64% in area 82, an area with significantly higher deer and buck numbers. This satisfaction level is likely heavily influenced by increasing hunter crowding issues and the increasing use of ATVs (especially in area 82), two of the primary issues always expressed at public meetings and within the written comments we receive.

The youth season seemed to have an increase in participation this year throughout hunt area 82 and less so in hunt area 100. Within hunt area 82 there were 76 usable youth hunter harvest surveys, which may or may not have taken advantage of the special extended season. From those 76 hunters, 29 bucks and 23 does were harvested for a success rate of 68%.

Population

The current post-hunt population model estimates for 2016 indicate we are now within the objective range at 18,600 animals, although unknown losses from this winter further reduced this

population at an unknown rate. We chose the TSJ, CA model based on both the lowest AICc value and what we believe to be a better representation of the actual population trend, buck ratio comparison, and population size. Results appear consistent with hunter satisfaction, plausibility and field observations. Within the TSJ, CA model we constrained adult survival to lower levels (0.3 to 0.82) during the 2007-08, 2010-11 and 2015-16 winters (based on Colorado collar data) to match the difficult winter conditions found during those winters.

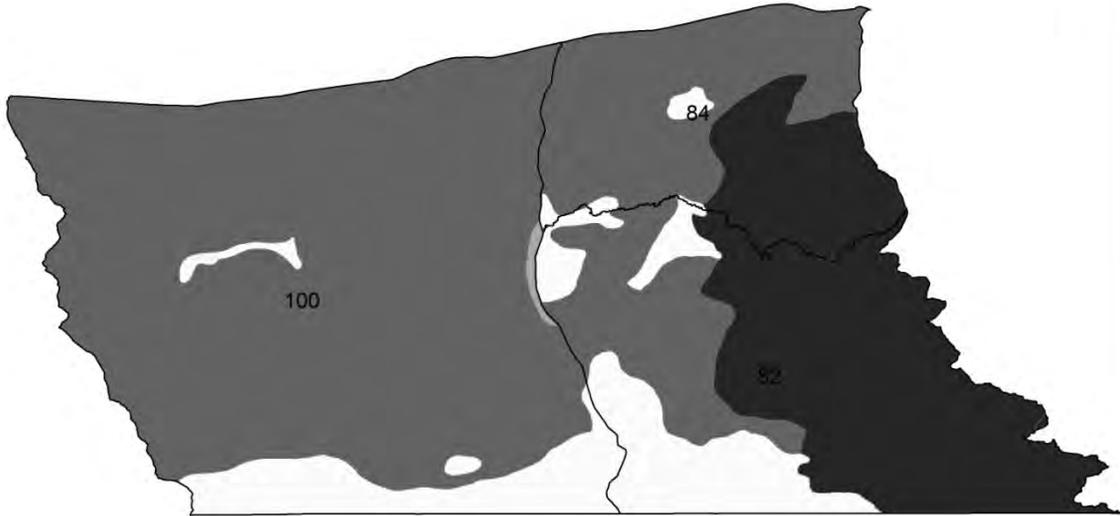
The spreadsheet model seems to be a useful tool for this herd; however, without an independent estimate of the population size and the indication from studies from WGFD and Colorado Parks and Wildlife showing high interchange between the two states, we must be cautious in the use of this model as our only source of information.

Management Summary

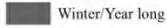
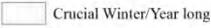
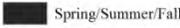
This year has been challenging for the mule deer in the Baggs herd based on our data and “shared” data from Colorado. Our data indicates that during 2016 we had relatively low fawn survival, and a fairly significant loss of bucks from this population, creating model alignment issues, and management challenges regarding population status (at objective) and buck ratio status (below guidelines). We are addressing this through a mix of limited doe harvest to maintain population numbers and by limiting buck harvest through an APR to allow for a flush of young bucks to enter the population. The APR may also help to reduce hunter crowding as hunter numbers typically dip when an APR is implemented. We are proposing a 4-point restriction in order to have the best results in protecting the 1 and 2 year old portion of our population. Typically we see many 2 year old and some 1 year old bucks exhibit 3-points on at least one of their antlers, leading to legal harvest of the cohorts we are trying to protect with the APR. This will be a temporary APR with reanalysis after the hunting season and with no more than 1 additional year for the APR. This method should allow for a boost to buck numbers and then a “spreading out” of harvest to ensure that the harvest does not negatively impact one cohort of bucks.

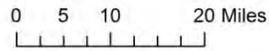
Over the course of the last 2.5 years the Baggs Mule Deer Working group has been meeting to discuss mule deer management and habitat issues occurring within the Baggs mule deer herd unit. Most recently a survey that will attempt to gather public input on a season structures to maintain opportunity and allow for a more quality experience with reduced crowding was distributed to sportsmen. The majority of individuals completing this survey supported the new season structure., which is an “area general license” concept with a split season.

MD427 Baggs Mule Deer Herd Seasonal Ranges



Baggs Mule Deer Seasonal Range

 Winter/Year long	 Crucial Winter/Year long	 Spring/Summer/Fall	 Crucial Winter
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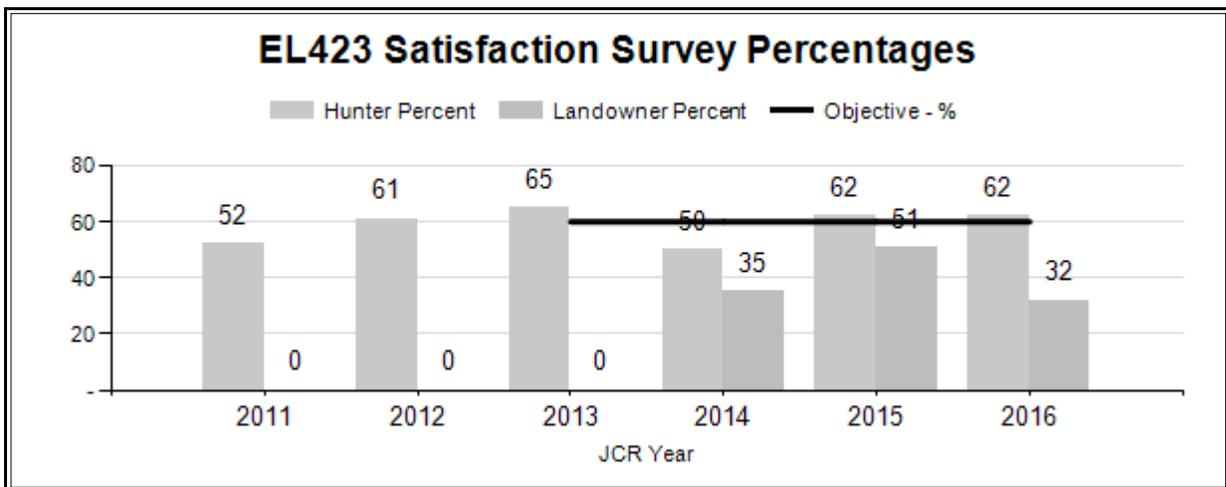


2016 - JCR Evaluation Form

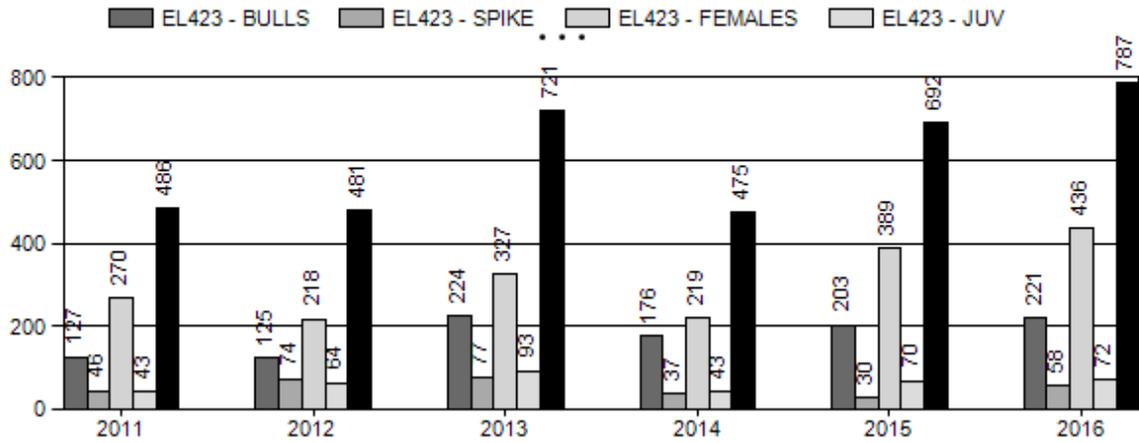
SPECIES: EIK
 HERD: EL423 - UINTA
 HUNT AREAS: 106-107

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: JEFF SHORT

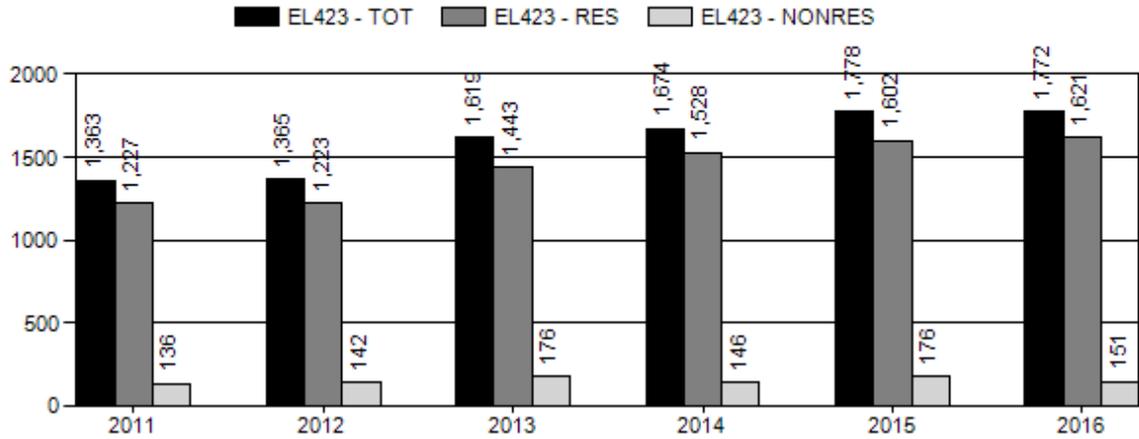
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	58%	62%	60%
Landowner Satisfaction Percent	42%	32%	50%
Harvest:	571	787	700
Hunters:	1,560	1,772	1,750
Hunter Success:	37%	44%	40%
Active Licenses:	1,609	1,842	1,800
Active License Success:	35%	43%	39%
Recreation Days:	10,130	10,973	11,000
Days Per Animal:	17.7	13.9	15.7
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			-13%
Number of years population has been + or - objective in recent trend:			3



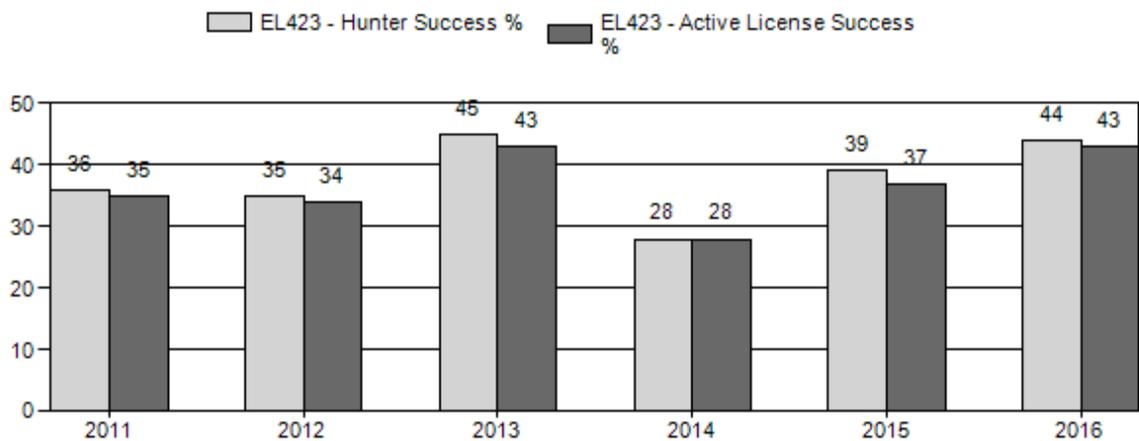
Harvest



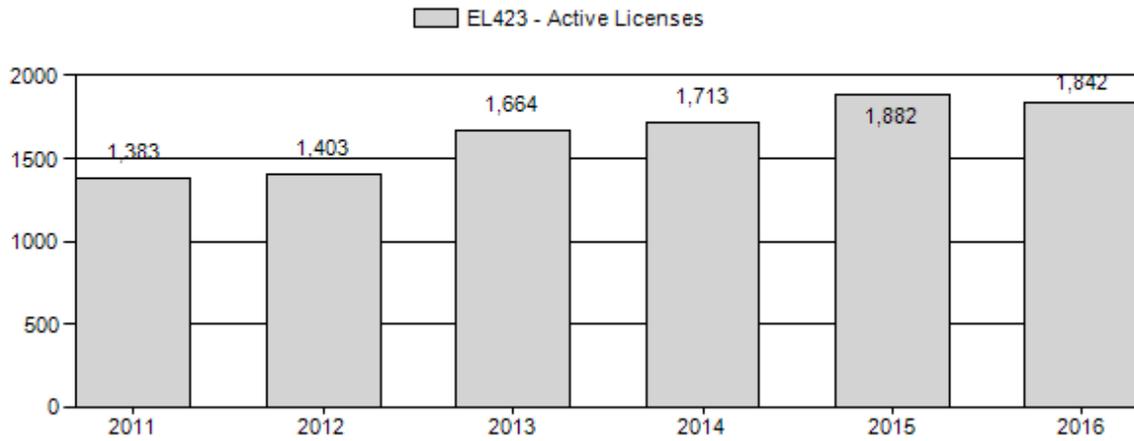
Number of Hunters



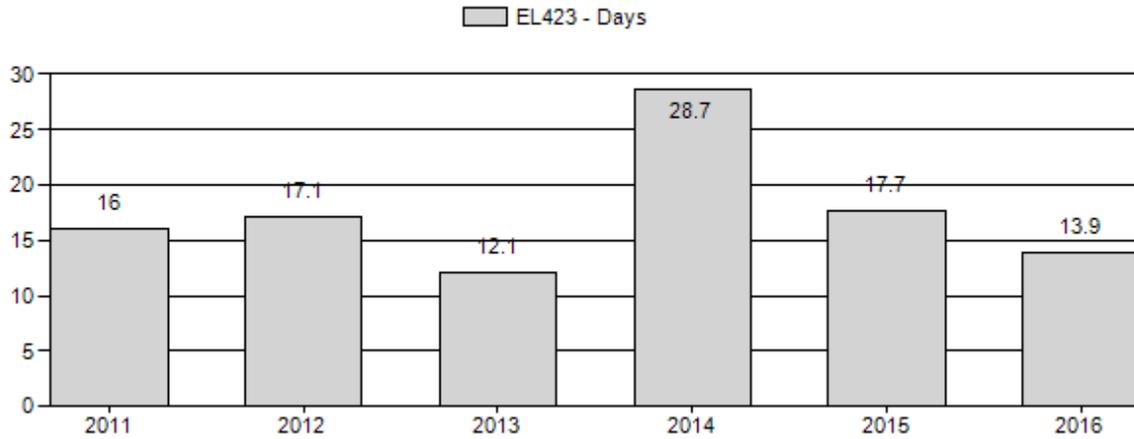
Harvest Success



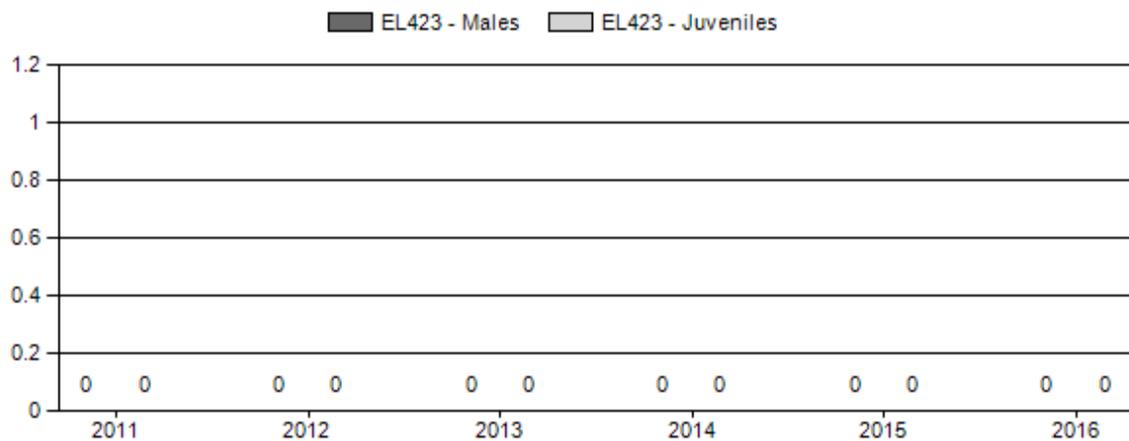
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



No classification data for this herd

2017 HUNTING SEASON

SPECIES : **Elk**

HERD UNIT : **Uinta (423)**

HUNT AREAS: **106, 107**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
106		Oct. 15	Oct. 31		General	Any elk
106		Nov. 1	Nov. 14		General	Antlerless elk
106	1	Nov. 15	Dec. 31	50	Limited quota	Any elk valid west of the Black's Fork River or north of Wyoming Highway 410; also valid in Area 105 west of the Bear River
106	1	Jan. 1	Jan. 31			Any elk valid in Area 105 west of the Bear River
106	4	Nov. 15	Dec. 31	100	Limited quota	Antlerless elk
106	4	Jan. 1	Jan. 31			Antlerless elk valid on private land or west of the Black's Fork River or north of Wyoming Highway 410
106	7	Aug. 15	Jan. 31	300	Limited quota	Cow or calf valid on private land or west of the Black's Fork River or north of Wyoming Highway 410
107		Oct. 15	Oct. 31		General	Any elk
107		Nov. 1	Nov. 14		General	Antlerless elk
107	4	Nov. 15	Dec. 31	150	Limited quota	Antlerless elk
107	4	Jan. 1	Jan. 31			Antlerless elk valid off national forest within the Henry's Fork River drainage
107	7	Aug. 15	Aug. 31	50	Limited quota	Cow or calf valid in Sweetwater County
107	7	Dec. 15	Jan. 31			Cow or calf valid off national forest within the Henry's Fork River drainage

106, 107 Archery Sep. 1 Sep. 30 Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2016
Herd Unit Total		

Management Evaluation

Current Postseason Population Management Objective: Satisfaction

Management Strategy: Recreational

2016 Postseason Population Estimate: ~1300

2017 Proposed Postseason Population Estimate: ~1100

Herd Unit Issues

This is an interstate recreational elk herd shared with Utah. Elk summering in the Uinta Mountains in Utah come to Wyoming to winter. Elk hunting is a popular pastime for Uinta County locals in this herd unit, but limited access occurs, primarily on USFS lands on the Wasatch-Cache National Forest. Much of the remaining private land areas are leased to outfitters or otherwise restricted for access. Limited publicly owned winter range is the primary issue for this herd. With winter range in short supply conflict with agriculture producers becomes an issue. Damage complaints occur on bad winters. Summer damage also occurs on crops in limited areas. Significant efforts have been made by field personnel to alleviate these problems. Perceived reduction in livestock forage due to elk grazing is an issue brought up by livestock producers.

Local livestock producers hosted a meeting through the County Farm Bureau Agency in February 2013 to discuss elk management in this herd. During the meeting ranchers expressed significant dissatisfaction with elk in areas of the herd unit. This meeting prompted us to take an even more aggressive approach to elk harvest. In difficult winters problems have occurred in parts of hunt area 106 with elk comingling with livestock along the Bear River and Blacks Fork River where cattle feeding operations occur. However, hunters feel that elk numbers in the public lands in the southeast part of the hunt area are too low and would like that segment to increase. The area in question has historically drawn large hunter numbers due to its easy access. We direct pressure onto the northern and western portions of the hunt area with type 7 permits. The hunt area 106 Type 7 licenses also help deal with an early damage problem on growing crops.

Antlerless licenses in hunt area 107 are used to maintain pressure on elk on the Wyoming side of the state boundary during a hunt held on the Utah side. Damage complaints on the HA 107 side of the herd unit are typically low even during severe winters. However, ranchers will complain about elk numbers and the herd has been over objective. The late portions of antlerless hunts are designed to target elk that have potential to cause depredation problems while protecting elk in those areas where they can winter with low probability of problems. Hunters would like to see more elk in accessible public land areas in HA 107. These areas and a small portion of public land in HA 106 are the main areas for elk hunter access in the herd unit.

The strategy in this herd unit has been to ultimately minimize elk damage problems. However, it is difficult to manage a herd for limiting damage based solely on a number. Elk damage changes relative to many other factors. In 2014 the objective was reviewed and a new Satisfaction based objective was approved. This objective is to have a landowner satisfaction of 60% and a hunter satisfaction of 60%. In the third year of this objective we are meeting the hunter satisfaction objective but are not meeting the landowner satisfaction objective. However, the landowner survey returns show the majority of the landowners are satisfied with the current season structure. There is also a secondary objective of having $\geq 60\%$ branch-antlered bulls in the harvest. We are meeting that objective. The objective and management strategy were last revised in 2014.

Weather

Weather during 2016 and into 2017 has been highly variable. In the early part of 2016 the winter started out harsh with high snow loads but it warmed up in February and March to finish fairly mild. A moist spring and early summer followed. In July and August conditions dried up

considerably and into late December fairly low precipitation was received. Winter did not set in until late December 2016. The winter of 2016-2017 has since been very cold with high snowfall and elk migrated to winter ranges.. The winters from 2011 until 2016 were fairly mild with low snowpack and relatively warm temperatures resulting in easy winter conditions. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production.

Habitat

Habitat data has been inconsistently collected in this herd unit and has been absent in the recent past.

Field Data

Elk surveys are flown in cooperation with Utah DNR, most recently in February 2013. The results are shown below. No classification data is available. The 2011 count in Wyoming was higher than previous counts, the result of severe winter weather. The winter of 2012/13 was very mild but forage availability was a problem due to severe drought conditions. Damage involving elk has occurred but has not been a large problem. However, the 2013 count was still very high indicating we needed to increase harvest which we have done.

	YEAR								
	1992	1994	1996	1998	2001	2004	2007	2011	2013
Utah West Daggett	920	970	1408	919	923	716	863	No data	1055
Utah Summit	332	131	200	80	101	215	228	268	1006
Wyoming	298	238	635	299	512	446	746	1723	1810
Total	1550	1339	2243	1298	1536	1377	1837	1991	3871

Harvest Data

Antlerless harvest opportunity was increased for several years in this herd unit. The 2010, 2011 and 2012 season structures offered substantially increased antlerless harvest opportunity to reduce the possibility of damage in the herd unit. Those seasons allowed significant antlerless harvest with increases in permits and season lengths. These hunts had good success rates if weather conditions resulted in elk movement out of Utah and were largely successful at reducing damage issues. In 2013 we again made significant increases in antlerless hunting opportunity to further reduce elk numbers and damage concerns. Harvest numbers responded to the increased opportunity. Success rates were high at 45%. That combined with higher hunter numbers produced a harvest of 732 elk in the herd unit. That was well above the previous five year average of 450. In 2014 through 2016 we continued that harvest strategy. In 2014, weather conditions made elk hunting more difficult and harvest was low at 489 animals harvested. In 2015 weather was more favorable and harvest was up at 692 for the herd unit. For 2016 harvest was gain high at 787 elk harvested. For 2017 we will continue this aggressive hunting strategy to maintain harvest pressure on this herd.

Population

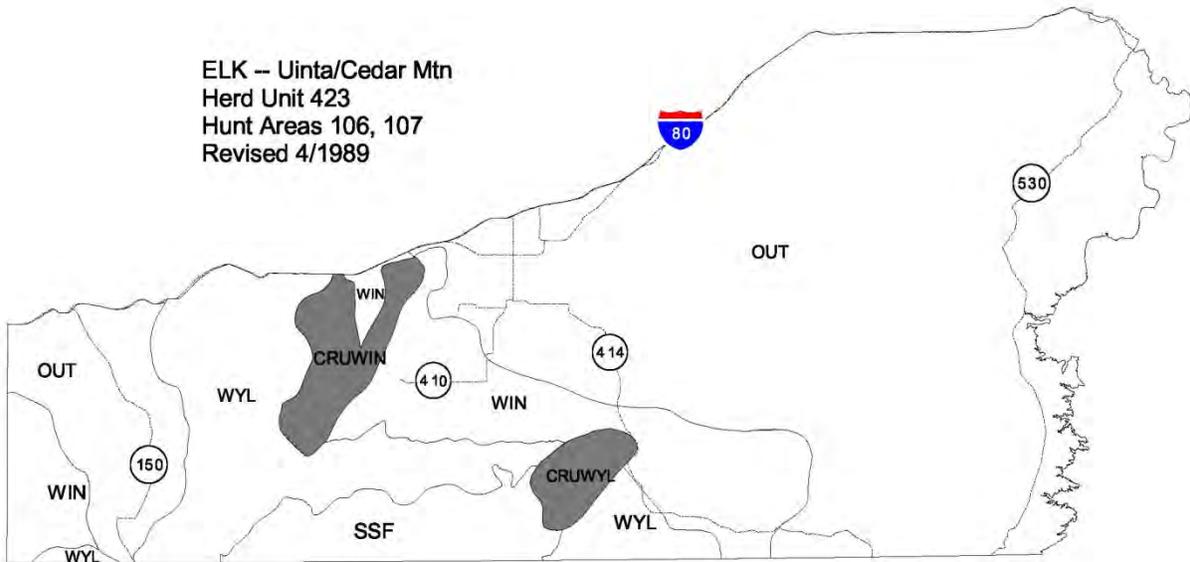
There is no population model for this interstate herd. Weather severity and forage availability are the determining factors in the number of elk that come into Wyoming from Utah during the winter. This and other factors make data collected in Wyoming unreliable.

Since data is very limited in this herd it is very difficult to look at data trends. It is not possible to model this interstate herd. Classification data is not collected. Harvest rates are highly variable due to weather conditions pushing elk into the state from Utah. Harvest survey data indicate that we have likely had adequate harvest in recent years to reduce this herd.

Management Summary

Starting in 2013 we greatly increased hunter opportunity for antlerless elk. Comments from landowners in areas around Lonetree and in large portions of area 106 are that elk numbers are still an issue. We will continue with hunt timing and license management to maximize elk harvest opportunities throughout the season to target elk causing problems. It appears that these new season structures will reduce this elk herd. The August 15 – 31 portion of the area 106 and 107 type 7 hunts is to address specific damage issues on private lands. The Hunt Area 106 Type 1 licenses are in place to help deal with late damage problems in the area for which they are valid. They are also valid in a far western portion of HA 105 and extend that part of the season into January. This is to address a specific problem where Utah elk from Deseret Land and Livestock are coming over to Wyoming and damaging stored hay on years with hard winters. This hunt has been very helpful during the difficult winter we are having in 2016/17.

ELK – Uinta/Cedar Mtn
Herd Unit 423
Hunt Areas 106, 107
Revised 4/1989



2016 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2016 - 5/31/2017

HERD: EL424 - SOUTH ROCK SPRINGS

HUNT AREAS: 30-32

PREPARED BY: PATRICK BURKE

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	0	0	0
Harvest:	233	250	275
Hunters:	366	391	400
Hunter Success:	64%	64%	69 %
Active Licenses:	366	391	400
Active License Success	64%	64%	69 %
Recreation Days:	2,822	3,111	3,200
Days Per Animal:	12.1	12.4	11.6
Males per 100 Females:	42	38	
Juveniles per 100 Females	35	30	

Trend Based Objective (± 20%) 1,000 (800 - 1200)

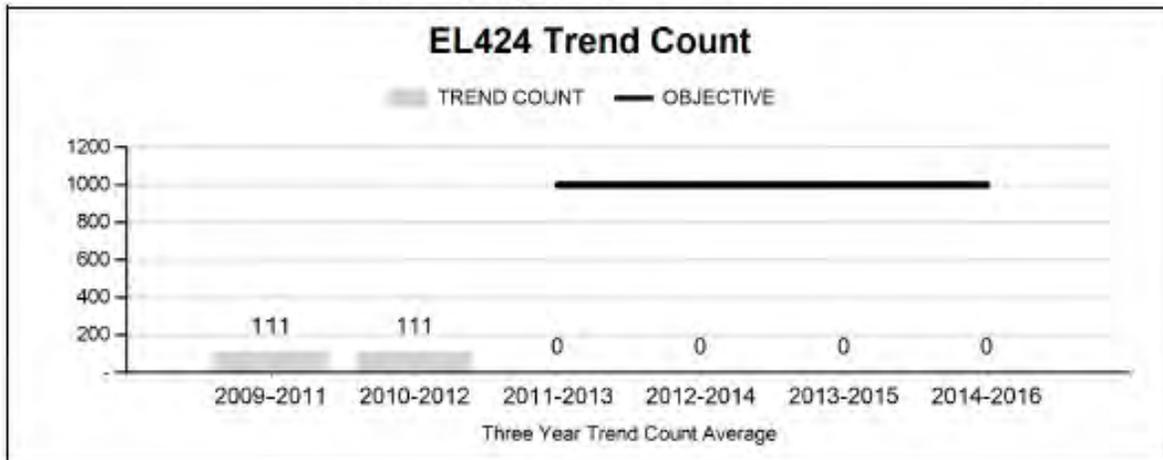
Management Strategy: Special

Percent population is above (+) or (-) objective: N/A%

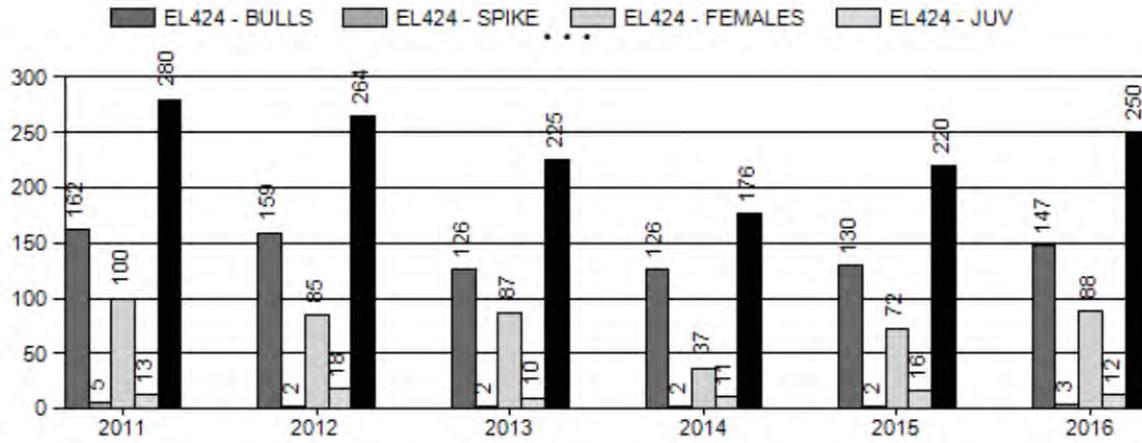
Number of years population has been + or - objective in recent trend: 0

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

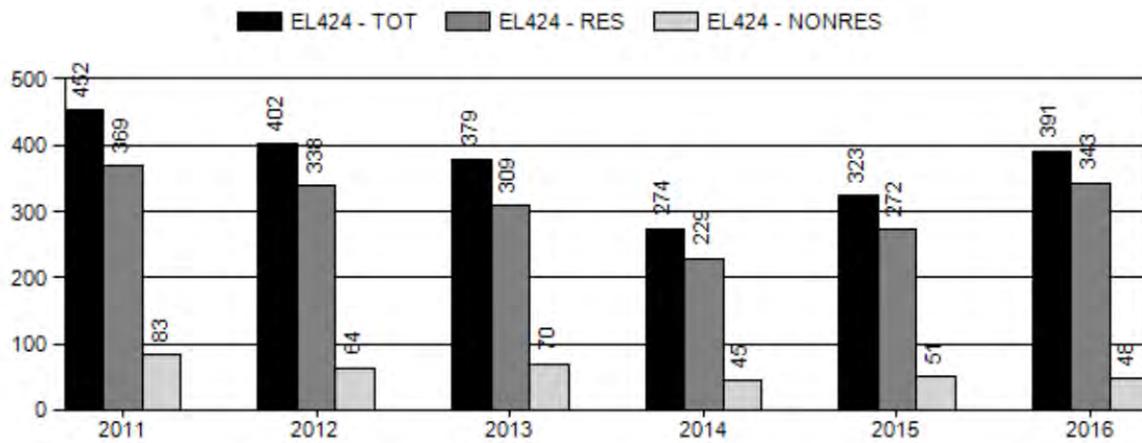
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



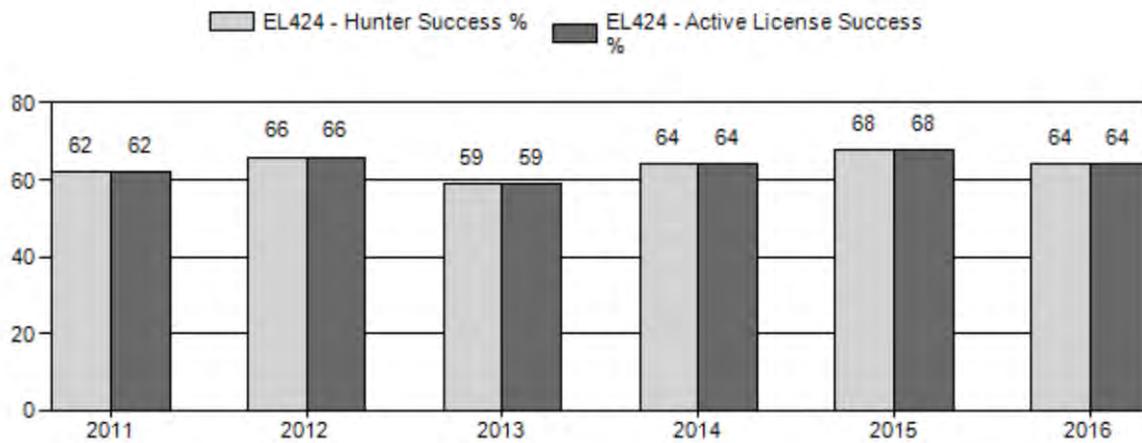
Harvest



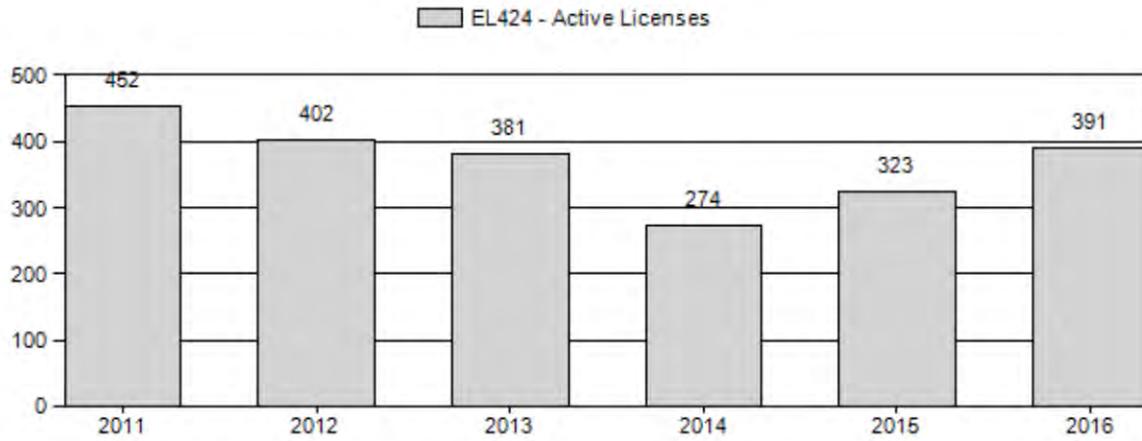
Number of Hunters



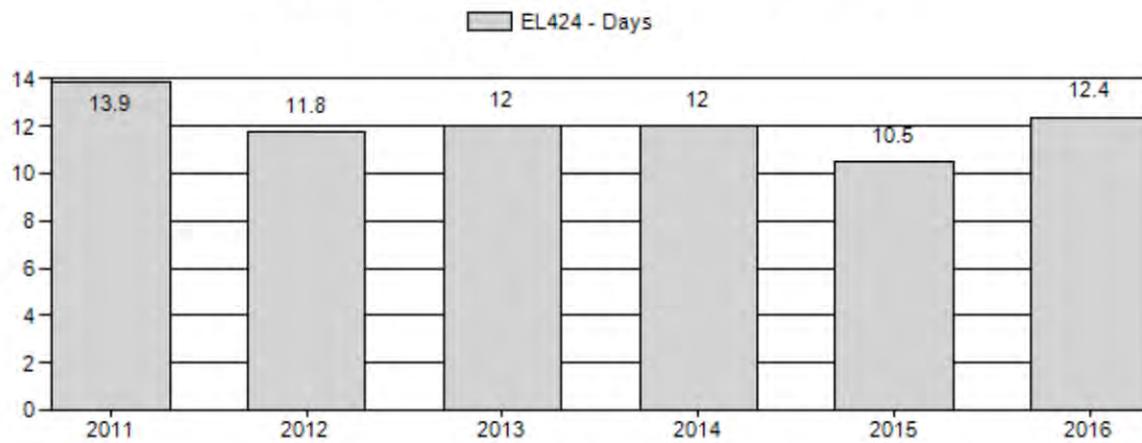
Harvest Success



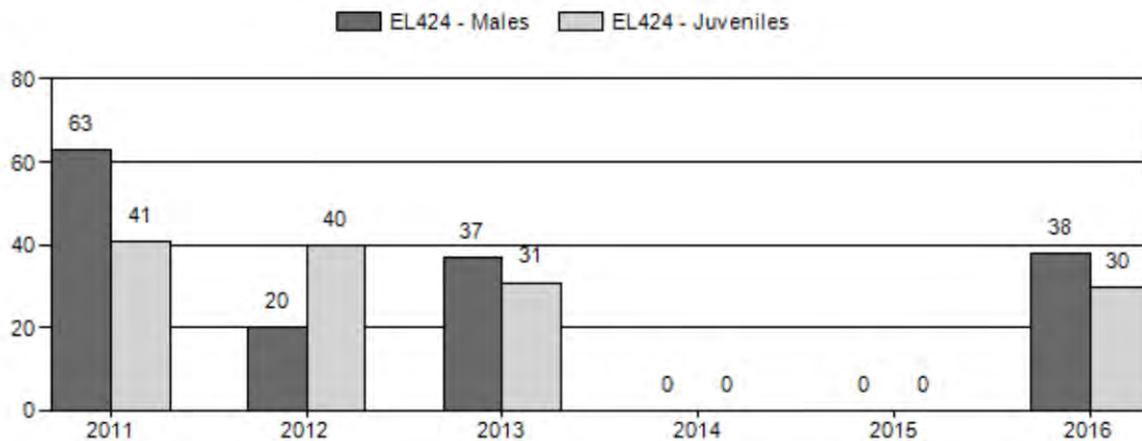
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL424 - SOUTH ROCK SPRINGS

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf	100 Fem	Conf Int	100 Adult
															Int			
2011	1,100	60	116	176	31%	280	49%	116	20%	572	485	21	41	63	± 5	41	± 4	25
2012	799	18	7	25	12%	126	62%	51	25%	202	361	14	6	20	± 5	40	± 7	34
2013	0	78	135	213	22%	582	60%	181	19%	976	398	13	23	37	± 0	31	± 0	23
2014	0	0	0	0	0%	0	0%	0	0%	0	397	0	0	0	± 0	0	± 0	0
2015	0	0	0	0	0%	0	0%	0	0%	0	397	0	0	0	± 0	0	± 0	0
2016	0	76	78	154	22%	410	60%	124	18%	688	485	19	19	38	± 0	30	± 0	22

**2017 HUNTING SEASONS
SOUTH ROCK SPRINGS ELK HERD (EL424)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
30	1	Oct. 1	Oct. 31	50	Limited quota	Any elk
	4	Oct. 1	Oct. 31	50	Limited quota	Antlerless elk
31	1	Oct. 1	Oct. 31	100	Limited quota	Any elk
	4	Oct. 1	Oct. 31	100	Limited quota	Antlerless elk
32	1	Oct. 1	Oct. 31	50	Limited quota	Any elk
	4	Oct. 1	Nov. 12	50	Limited quota	Antlerless elk
	9	Sept. 1	Sept. 30	25	Limited quota	Antlerless elk, archery only

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
30-32	All	Sept. 1	Sept. 31	Valid in the entire area(s)

Hunt Area	Type	Quota change from 2016
30	1	+10
	4	+20
Herd Unit	1	+10
Total	4	+20

Management Evaluation

Current Management Objective: 1,000

Management Strategy: Special

2016 Postseason Population Estimate: N/A

2017 Projected Postseason Population Estimate: N/A

The South Rock Springs elk herd is a special management herd, and has a mid-winter trend count objective of 1,000 elk. This objective was set in 2013, when the objective was changed from a population based objective to a trend count based objective. This change was made due to the difficulty and unreliability of attempting to model this interstate elk population.

Herd Unit Issues

This herd is shared between the states of Wyoming, Colorado, and Utah, with the largest segment of the population probably residing in Colorado. Because of the interstate nature of this population, the number of elk actually residing in Wyoming has been difficult to estimate since it changes on a nearly day-to-day basis, especially during the hunting season since significant interchange has been documented between the three states, with most of the interchange occurring between Wyoming and Colorado. There is a fairly large group of elk living near the Tri-State marker that tend to bounce back and forth between Middle Mountain in Colorado and the Little Red Creek, 4-J Basin areas in Wyoming, with some of the elk using areas further south in Colorado and Utah. This segment of the herd has particularly difficult to target for harvest as they have learned that they can use the state line as a refuge from hunting pressure.

Weather

The most prominent weather condition present in the South Rock Springs herd unit for the last several years has been dry summer conditions with relatively mild winters. Those conditions changed somewhat in 2016 however, which saw an improvement in summer moisture levels and a significantly more severe winter than this area has been seen since the 2010-2011 winter. While, the country south of Interstate 80 did not receive as much in the way of persistent, deep snow conditions as the country further north, it did still receive significant snowfall and experienced bitterly cold temperatures during January 2017. Conditions moderated though during early February, which allowed for some snowmelt, which exposed some shrubs on the winter ranges, improving conditions for animals in this herd. The end of February saw a return to deep snow conditions in the herd unit however. Fortunately, the extreme cold temperatures of January did not return in February, which will be beneficial to wintering wildlife. While the harsh winter condition of this winter may result in a few of the weaker calves and older adults succumbing to the winter, it is not expected to have any noticeable effects of the South Rock Springs elk herd.

Habitat

The Green River aquatic habitat biologist has established six aspen regeneration monitoring transects throughout the herd unit. These transects are designed to evaluate browsing impacts from ungulates on young aspen suckers, especially elk. Two transects were established on Little Mountain in 2007, as well as four additional transects that were established in 2009, one each on Aspen and Miller Mountains and two in the Pine Mountain area. These transects have been read each summer since their establishment, except that one of the Pine Mountain transects was not read in 2013 due to difficulty in accessing that site caused by the amount of rain and snow received that fall and the South Pine Mountain site was not read in 2014 due to the aspen stand that it was located in dying off resulting in an insufficient number of aspen suckers left alive to measure. Because of the loss of the South Pine Mountain site, a new transect was established near the tri-state marker in 2014.

A detailed accounting of the technique and results from these monitoring efforts can be found in the aquatic habitat annual report. In general, this method compares the height of the initial growth point for the current year's terminal leader to the height of the tallest previous terminal leader branch that was killed as a result of browsing. A positive Live-Dead (LD) value suggests growth of young trees, while a negative value or value near zero suggests that browsing may be suppressing tree growth. Results of monitoring efforts are presented in the following table (Table 1) taken from the aquatic habitat annual progress report, but in general, four of the five monitored sites showed positive LD values for 2016, while two of the sites had LD values at or just below zero.

Table 1. Trends in aspen regeneration LD Index values (vertical inches) for the SRS herd unit 2013-2016.

Monitoring site	2013	2014	2015	2016
Pine Mt/Red Ck.	NA	-7.8	-1.8	0
Tri-State /Red Ck.	NA	+3.36	+7.2	+13.2
Miller Mt.	+6.6	+4.6	+3.6	+18.6
Aspen Mt.	+4.6	-4.5	+1.2	+4.6
Little Mt./Dipping Spr.	0	-0.9	+1.2	-0.6
Little Mt./West Currant Ck.	0	-1.6	0	+5.5

Field Data

The South Rock Springs elk herd was classified from a helicopter in conjunction with the South Rock Springs deer herd during December 2016. During those classification flights, a total of 688 elk were classified in the herd unit, consisting of 410 cows, 124 calves, 78 adult bulls, and 76 yearling bulls. That resulted in observed ratios of 30 calves per 100 cows, and 38 bulls per 100 cows which included 19 yearling bulls per 100 cows.

The majority of the elk observed during those flights were seen in HA31, with 574 of the classified elk coming from that hunt area. Hunt Area 30 contained the next largest sample of elk, with 68 elk being found in that hunt area, and HA32 contained the smallest number of elk with only 46 elk being located in that hunt area during the classification flights.

Harvest Data

In 2016 there were a total of 391 active licenses in the herd unit. The overall harvest success rate for those 391 hunters across all hunt areas and license types in the herd unit was 64%, and it took the average hunter 12.4 days to harvest an elk in the herd unit. The 2016 hunting season resulted in a harvest of 250 elk across the herd unit. Of those 250 harvested elk, 147 of them were two year or older bulls, three were spike bulls, 88 of them were cows, and 12 were calves.

When broken out by individual hunt area, the hunt area with the highest harvest success rate in 2016 was HA30, with reported a 90% success rate for Type 1 and 4 license types combined, with 92% success for the Type 1 license holders and 86% for the Type 4 hunters. Hunt Area 31 reported a 68% overall success rate, with Type 1 licenses having a success rate of 82%, and a 54% success rate for Type 4 license holders. Hunt Area 32 reported a 43% overall success rate, with the Type 1 license holders experiencing a 64% success rate, and a 31% success rate for Type 4 license holders, along with a 24% success rate for the Type 9 license holders.

Because of the special management status and the local prominence of the South Rock Springs elk herd, successful Type 1 license holders are asked to voluntarily submit tooth samples from harvested elk for cementum annuli analysis. In 2016, tooth samples were submitted from 62 bull elk or about 42% of the bulls harvested based on the harvest survey. Based on these submissions, the average age of harvested bulls in 2016 was 6.2 years old. This compares with an average age of 5.6 in 2015, 6.2 in 2014, and 5.7 in both 2013 and 2012. The oldest bull aged from the herd unit in 2016 was one 11.5 year old bull that was harvested in HA31. The oldest bull aged from HA30 a 10.5 year old bull, and the oldest from HA32 was also 10.5 years old. In past years, the oldest age class of bull harvested was 9.5 in 2015, 10.5 in 2014, 9.5 in 2013, 7.5 in 2012, and 11.5 in 2011.

Population

Since collar data from three separate studies being conducted in Colorado, Utah, and Wyoming have demonstrated that at least portions of this herd move freely between Wyoming, Colorado, and to a lesser extent Utah; attempting to model this herd is not feasible because it violates the fundamental assumption of a closed population. Therefore, there is no population estimate for this herd and classification numbers are probably the best approximation for the number of animals in the herd in years when trend-counts are not conducted.

Due to the fact that funds were available for a classification flight in 2016 and an adequate number of elk were encountered during that flight, the 2016 data can be used to examine the number of elk in the herd. The classification sample size of 688 elk, while not a trend count and only a sample of the herd is generally in line with previous sample sizes and suggests that the herd is still at an appropriate level.

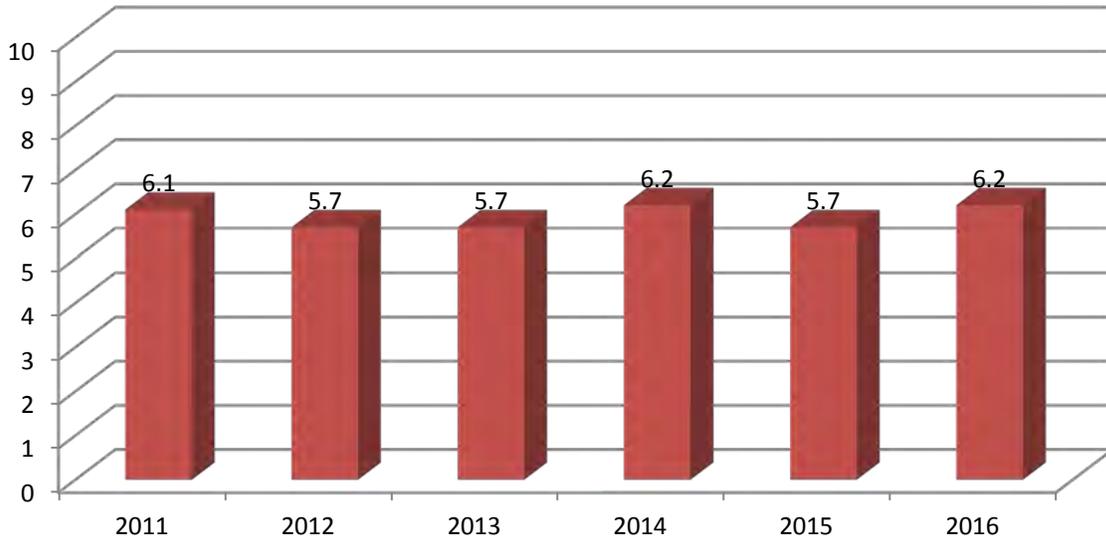
Due to budget restrictions and the need for data from higher profile herds in the region, no trend count flight was conducted in the herd unit in 2016.

Management Summary

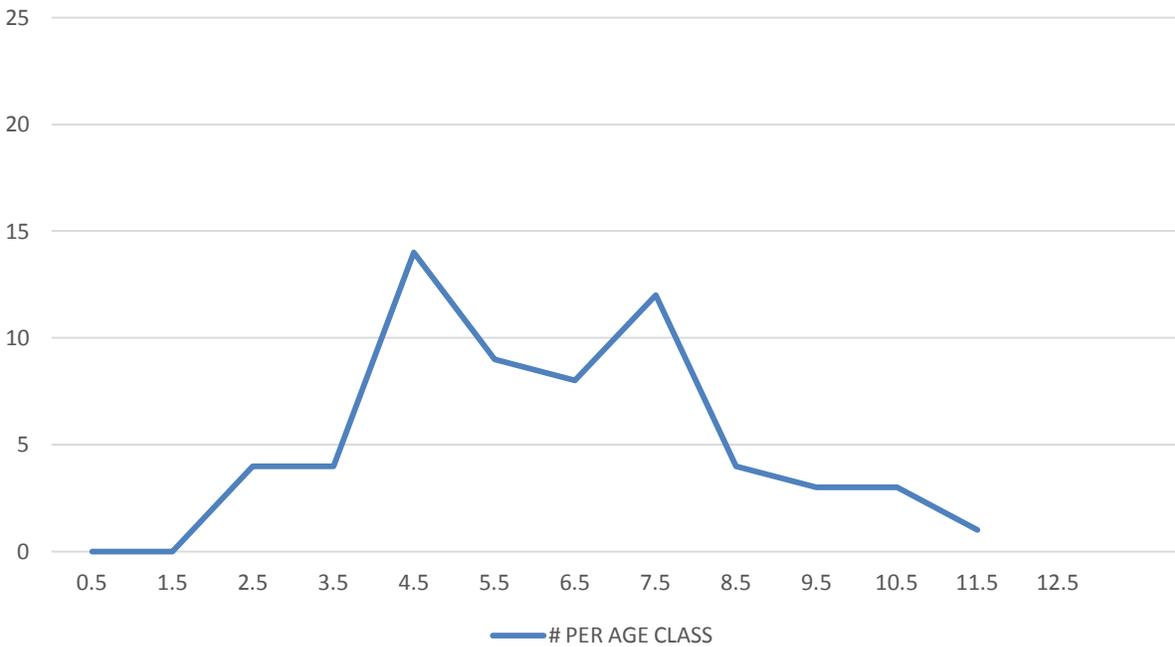
The 2017 hunting season is generally similar to season structures from the past few years. The only changes for 2017 are slight increases in both the Type 1 and Type 4 license types in Hunt Area 30. These increases were implemented due to the feeling by some of the local managers that the available elk population in that hunt area would allow for some increased hunter opportunity there.

License increases were not proposed for Hunt Area 32 due to the lower success rates for hunters in that area, and due to the fact that almost all of the elk in the hunt area leave the state and move into Colorado as soon as hunters show up for rifle season. Comments received from the harvest survey and conversations with hunters in the field continue to revolve around hunter's inability to locate elk anywhere in the hunt area. During field contacts, many hunters say that they never encountered any elk during the hunting season. Instead of increasing Type 4 license numbers, which will probably not result in an increased elk harvest, the 2017 hunting season again includes offering the Type 9 license valid in September for cow elk only. While success was minimal on this license type in 2015 and 2016, it is still hoped that this strategy will help harvest some cow elk from the hunt area before they move into Colorado and are no longer available to Wyoming hunters.

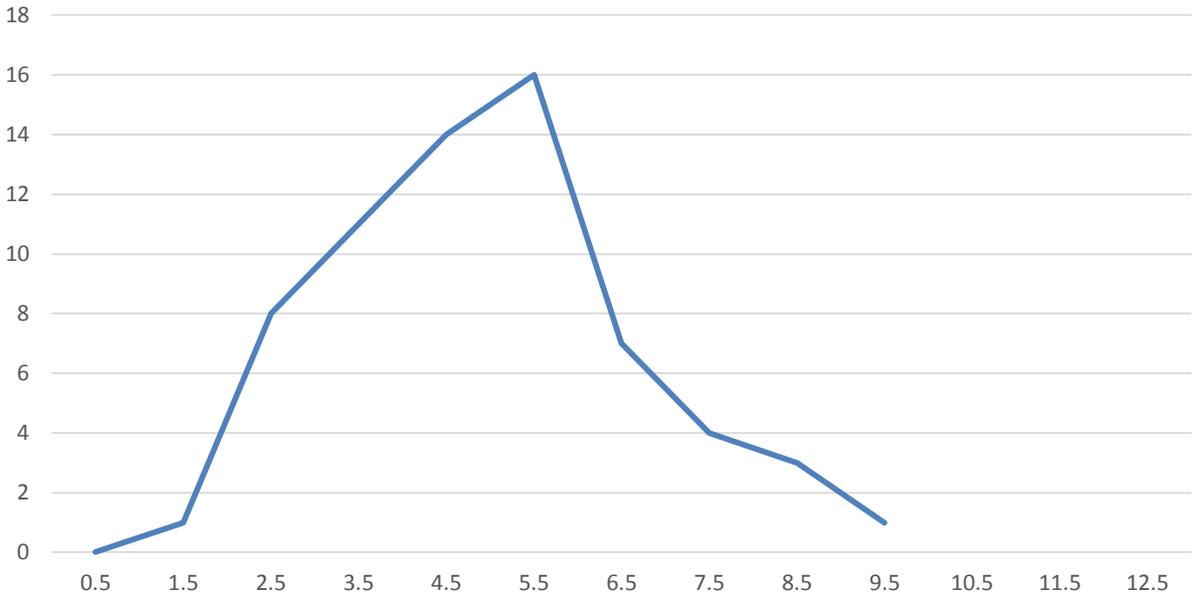
SRS Elk Average Age of Harvested Bulls



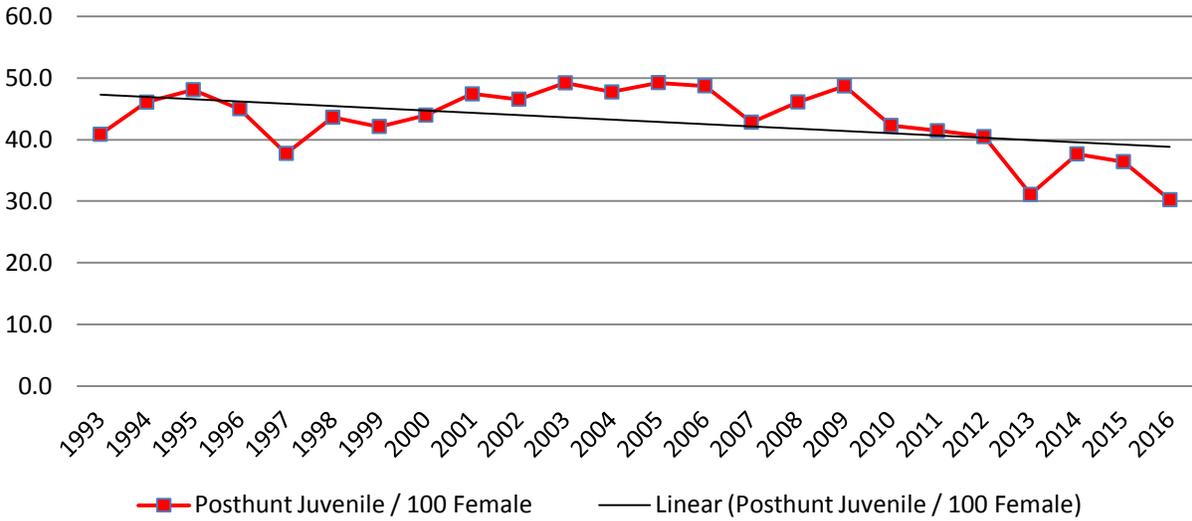
2016 SRS ELK # HARVESTED PER AGE CLASS



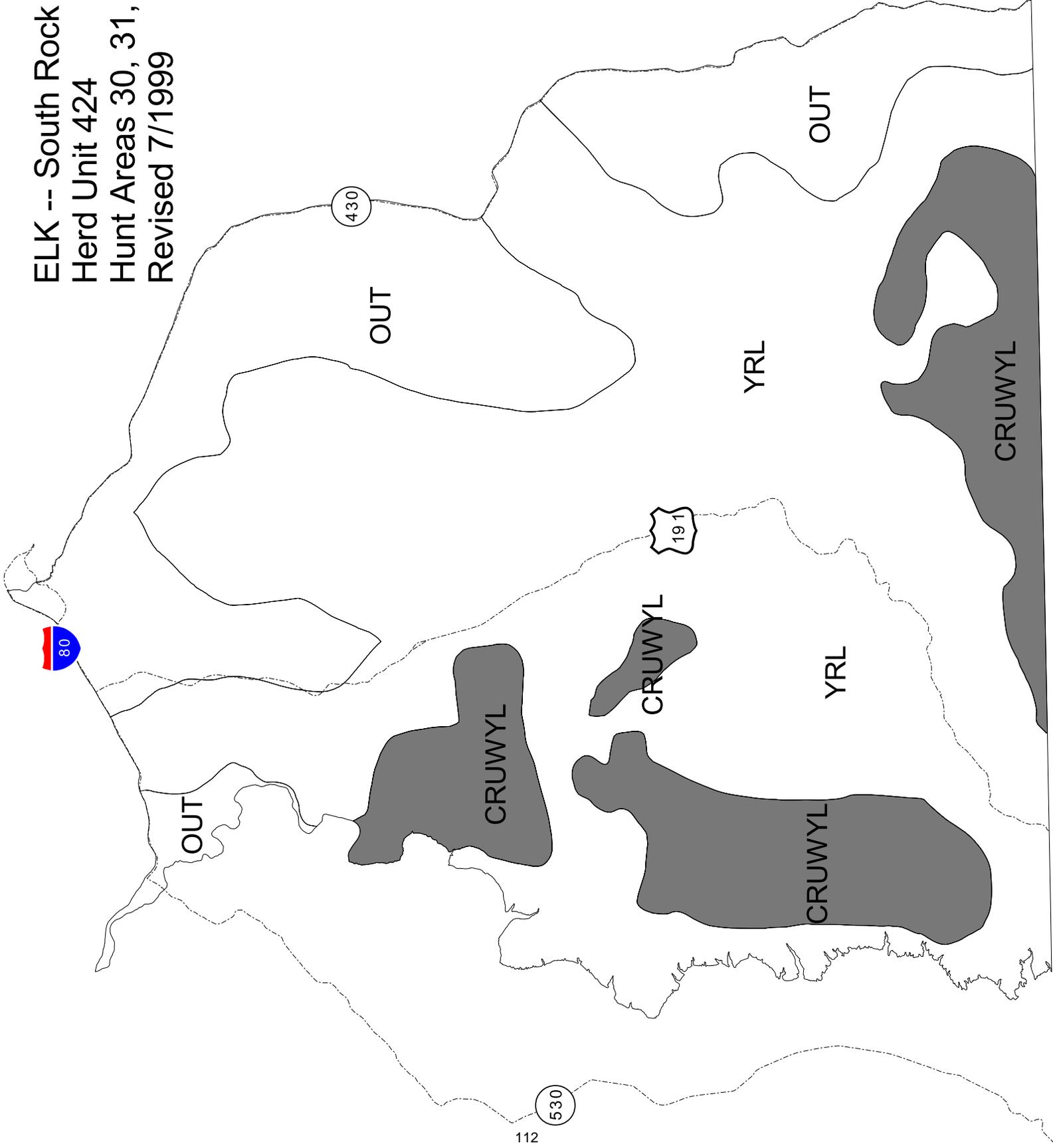
2015 SRS BULL ELK HAVESTED # PER AGE CLASS



Posthunt Juvenile / 100 Female



ELK -- South Rock Springs
Herd Unit 424
Hunt Areas 30, 31, 32
Revised 7/1999



2017 Proposed - Season Setting Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2016 - 5/31/2017

HERD: EL425 - SIERRA MADRE

HUNT AREAS: 13, 15, 21, 108, 130

PREPARED BY: TONY MONG

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,503	6,700	5,500
Harvest:	2,359	2,194	1,500
Hunters:	5,834	6,038	5,800
Hunter Success:	40%	36%	26%
Active Licenses:	6,089	6,324	6,000
Active License Success:	39%	35%	25 %
Recreation Days:	40,253	45,825	35,000
Days Per Animal:	17.1	20.9	23.3
Males per 100 Females	27	39	
Juveniles per 100 Females	38	41	

Population Objective (\pm 20%) : 5000 (4000 - 6000)

Management Strategy: Recreational

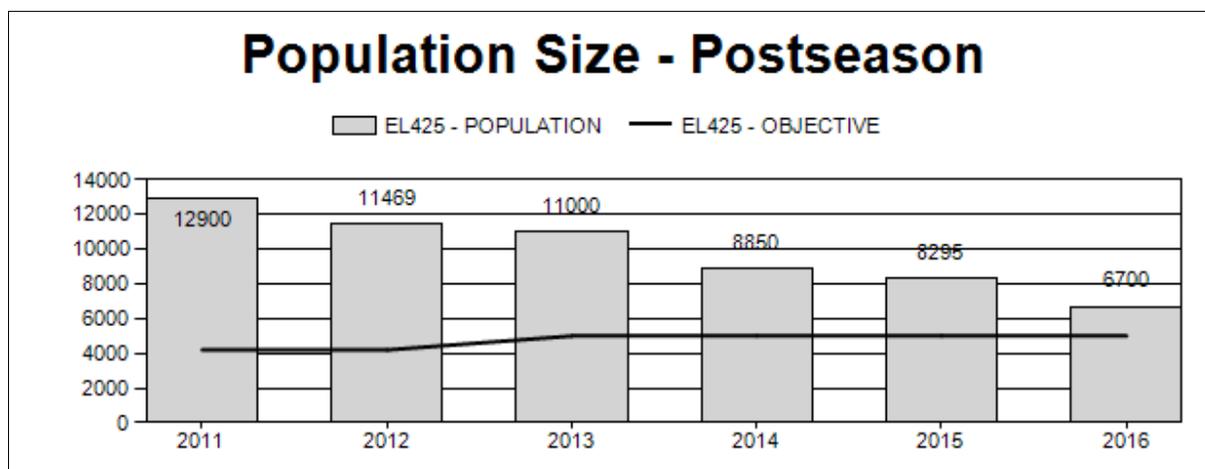
Percent population is above (+) or below (-) objective: 34%

Number of years population has been + or - objective in recent trend: 10

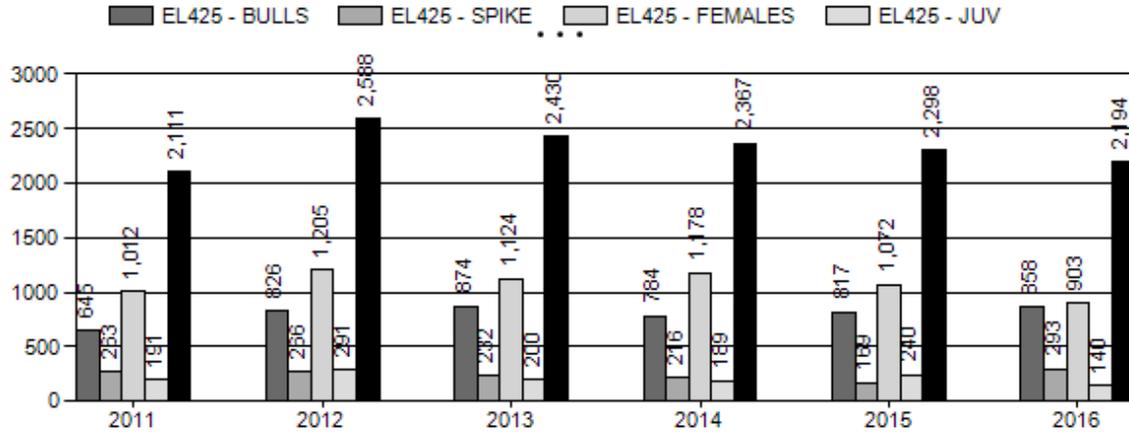
Model Date: 2/21/2017

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

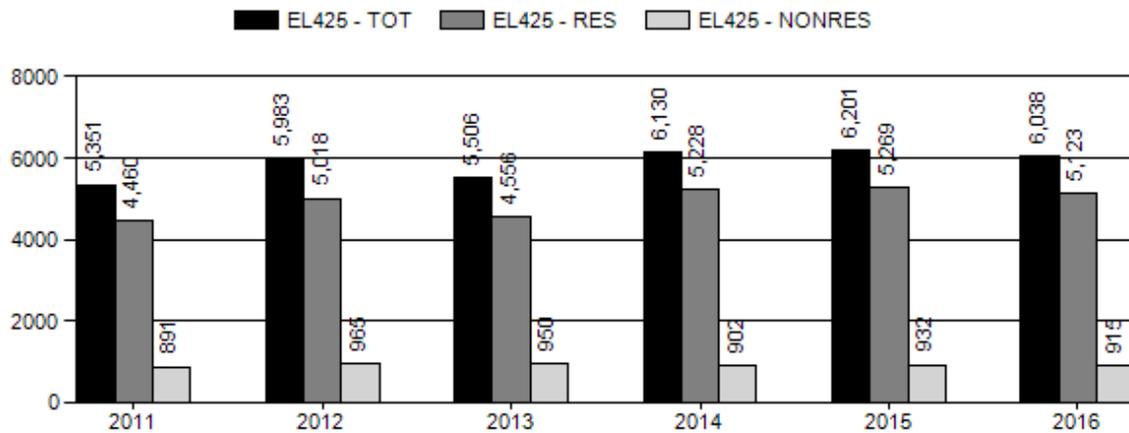
	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	18%	9%
Males \geq 1 year old:	55%	72%
Total:	22%	20%
Proposed change in post-season population:	10%	10%



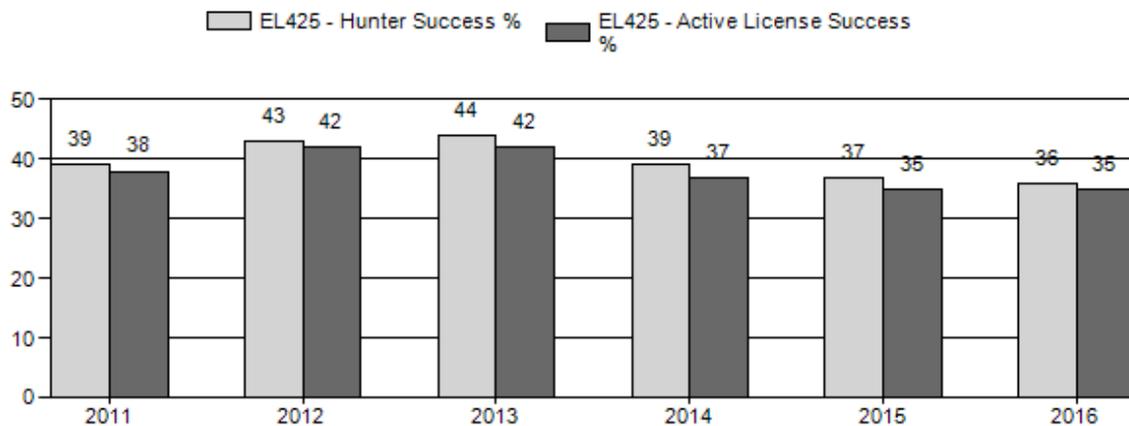
Harvest



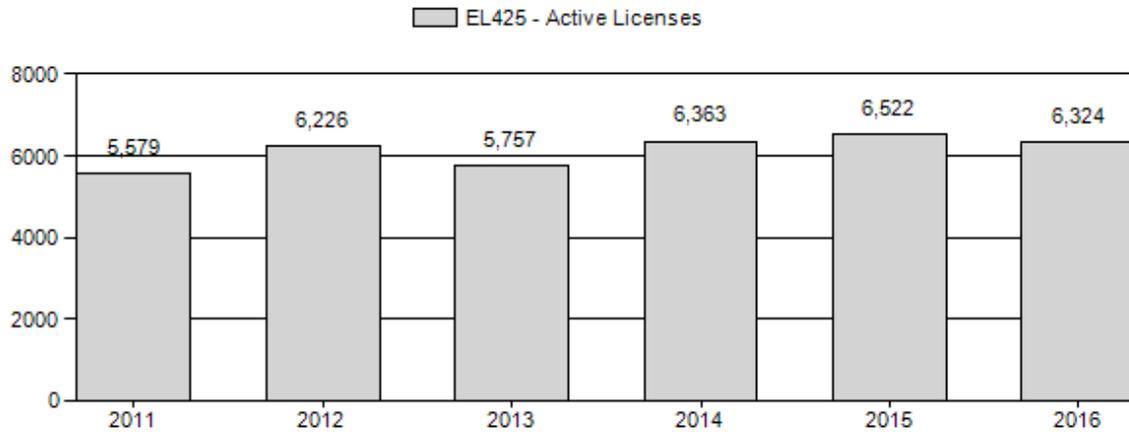
Number of Hunters



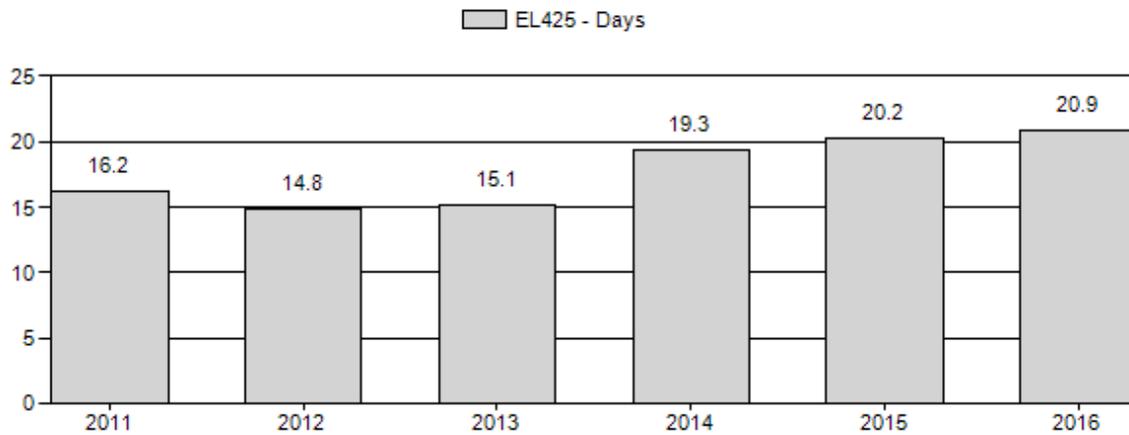
Harvest Success



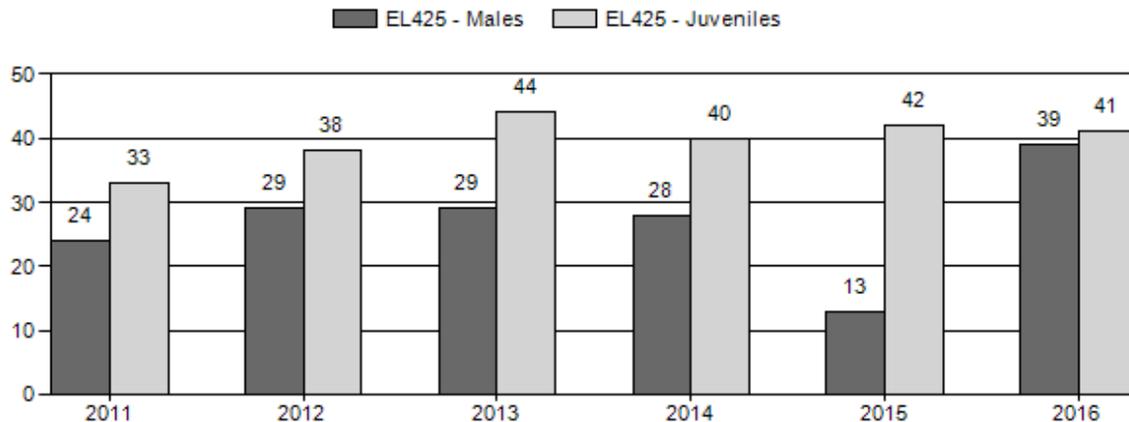
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL425 - SIERRA MADRE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	12,900	398	345	743	15%	3,113	64%	1,041	21%	4,897	0	13	11	24	± 1	33	± 1	27
2012	11,469	323	342	665	18%	2,259	60%	851	23%	3,775	0	14	15	29	± 1	38	± 2	29
2013	11,000	158	124	282	17%	985	58%	430	25%	1,697	0	16	13	29	± 2	44	± 3	34
2014	8,850	432	554	986	17%	3,546	60%	1,407	24%	5,939	0	12	16	28	± 1	40	± 1	31
2015	8,295	20	9	29	8%	222	65%	93	27%	344	0	9	4	13	± 3	42	± 6	37
2016	6,700	480	610	1,090	21%	2,835	56%	1,149	23%	5,074	0	17	22	38	± 1	41	± 1	29

2017 PROPOSED HUNTING SEASON

SPECIES : Elk

HERD UNIT : Sierra Madre (425)

HUNT AREAS: 13, 15, 21, 108, 130

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
13		Oct. 15	Oct. 22		General	Antlered elk
		Oct. 23	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	100	Limited quota	Cow or calf
15		Oct. 15	Oct. 22		General	Antlered elk
		Oct. 23	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	100	Limited quota	Cow or calf
21		Oct. 13	Oct. 14		General youth	Any elk
		Oct. 15	Oct. 22		General	Antlered elk
		Oct. 23	Oct. 31		General	Any elk
	6	Oct. 15	Nov. 15	200	Limited quota	Cow or calf
	7	Aug. 15	Dec. 31	25	Limited quota	Cow or calf valid on private land
108	1	Oct. 11	Oct. 31	75	Limited quota	Any elk
	4	Oct. 11	Nov. 30	50	Limited quota	Antlerless elk
	6	Oct. 11	Nov. 30	150	Limited quota	Cow or calf
	7	Dec. 1	Jan. 31	200	Limited quota	Cow or calf
130		Oct. 1	Oct. 23		General	Any elk

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
13	All	Sep. 1	Sep. 30	Valid in the entire area(s)
15	All	Sep. 1	Sep. 30	Valid in the entire area(s)
21	All	Sep. 1	Sep. 30	Valid in the entire area(s)
108	All	Sep. 1	Sep. 30	Valid in the entire area(s)
130	All	Sep. 1	Sep. 30	Valid in the entire area(s)

Hunt Area	Type	Quota change from 2016
13	6	0
15	6	0
21	6	-200
	7	0
108	1	0
	4	0
	6	0
	7	0

<i>Herd Unit Total</i>	<i>1</i>	<i>0</i>
	<i>4</i>	<i>0</i>
	<i>6</i>	<i>-200</i>
	<i>7</i>	<i>0</i>
	<i>Total</i>	<i>0</i>

Management Evaluation

Current Management Objective: 5,000 (2013)

Management Strategy: *Recreational*

2016 postseason Estimate: 6700

2017 Proposed Postseason Population Estimate: 5500

The Sierra Madre elk herd is trending toward the established objective of 5000, and will likely be at objective following the 2017 hunting season. Because of the high number of hunters recreating in this area, we are proposing to decrease overall cow harvest through a removal of the general antlerless hunt and by reducing cow/calf type 6 licenses. However, we do not want to dramatically reduce antlerless harvest so the antlerless portion of the general season has been replaced with an “any elk” season. The proposed season structure should reduce cow elk harvest by roughly ½, but continue to reduce this herd toward the objective range of 4,000 to 6,000.

Herd Unit Issues

There were three major issues discussed by hunters in the elk general comments. These issues included 1) number of hunters/ATVs, 2) reduced elk numbers, and 3) beetle kill. Not surprisingly, we continue to receive significant negative hunter comments about crowding throughout the her, but especially in the three main general license areas (areas 13, 15, 21).

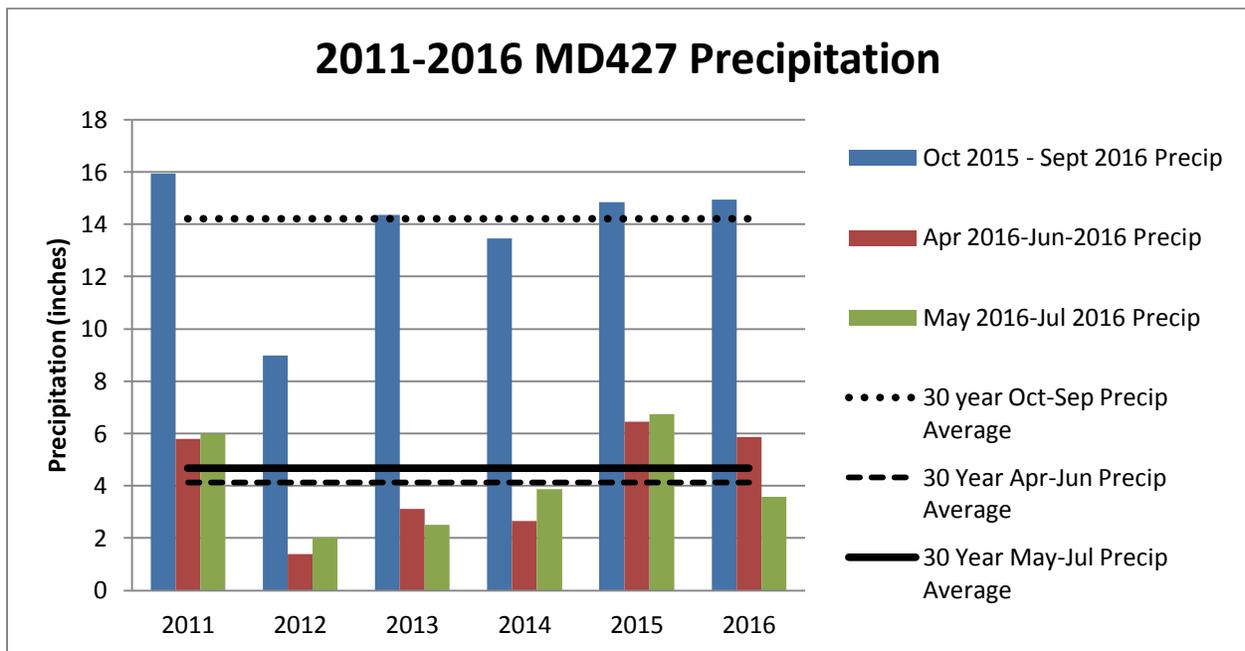
The Sierra Madre elk herd has been under a management strategy over the last 7 years designed to reduce elk numbers. This has been successful in reducing the number of elk within the herd, and numbers are now the lowest estimated in two decades. Negative comments from hunters regarding elk numbers have increased as elk numbers have decreased. Hunter numbers decreased slightly to 6,000 in 2016, while elk numbers were only slightly higher. This is alarming as we approach a 1:1 ratio of hunters and elk. As we have reported for the past few years, elk hunter opportunity in this herd unit will decrease as elk numbers decrease, and regulation complexity will increase to address a myriad of management concerns from elk numbers to bull ratios to damage management. We are currently at that point where we are implementing more conservative seasons given reduced elk numbers.

A landscape wide impact to this herd unit and hunters is the progression of beetle kill through the Sierra Madre range. Currently trees have begun to fall at alarming rates which may lead to disruption in traditional movement patterns of elk, or much more likely, the ability of hunters to access the forest and elk. One hunter commented in relation to the beetle kill “elk cannot transverse the area and are avoiding traveling corridors used in the past.” We have noted limited affect on elk, but this timber issue is definitely heavily influencing hunters. A greater effort to

work with the U.S. Forest Service to address these areas must be made in the coming years to ensure areas remain accessible for hunters.

Another issue that will need to be addressed in the coming years is related to a refuge scenario being created in hunt area 108, by restricting or eliminating hunter access on the large acreage controlled by the Overland Trail Cattle Company. We need to continue to communicate the importance of elk harvest on the vast amount of lands they own within hunt area 108, the lack of which has significant impact to their neighbors and management of this species.

Weather



Parameter-Elevation Relationships on Independent Slopes Model (PRISM) was utilized to estimate precipitation by calculating a climate-elevation regression for each Digital Elevation Model grid cell (4 km resolution).

Precipitation

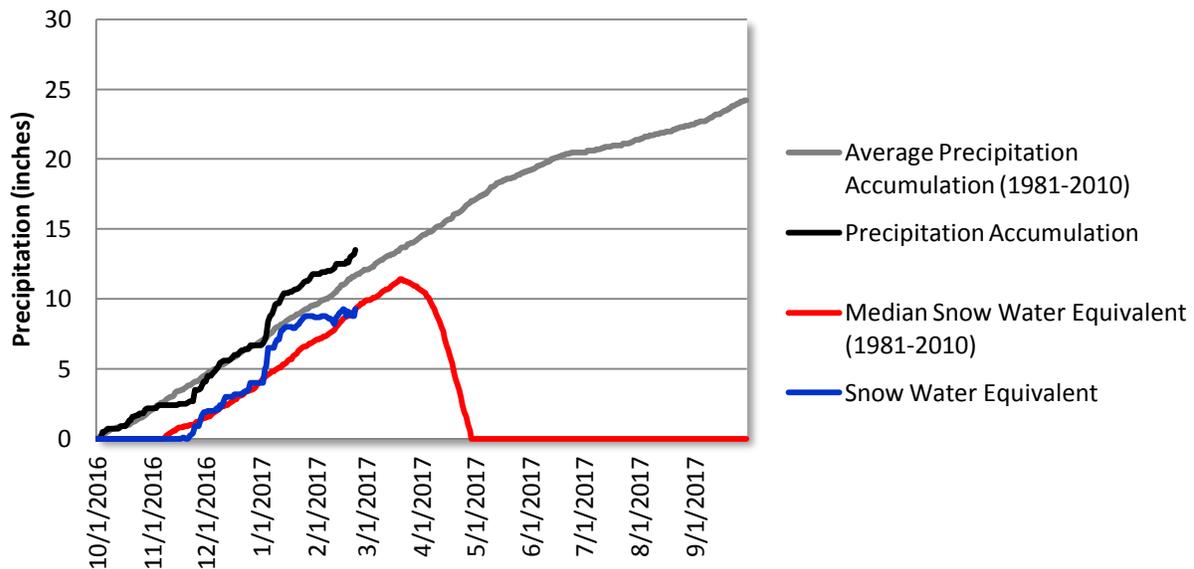
Annual bio-year precipitation from October 2015 through September 2016 was slightly higher than the 30 year average. Growing season precipitation (April-June 2016) across the herd unit was higher than the 30 year average, however later season precipitation from May-July 2016 (higher elevation growing season) was notably lower than the 30 year average. As illustrated by the above graph, most of the precipitation occurred outside of the primary growing season, likely in the form of snow. Although there was significant spring moisture in 2016 from both early spring snows and significant late spring rain events, precipitation slowed by early June. June through October 2016 was extremely dry causing vegetation to dry and cure fairly early in the growing season. The dry summer in conjunction with fine fuel loading from the high vegetative production seen in 2014 & 2015, big wind events, and the abundance of beetle killed lodgepole

created an environment conducive to large wildfires throughout the Sierra Madres. These fires will improve elk habitats through the herd unit.

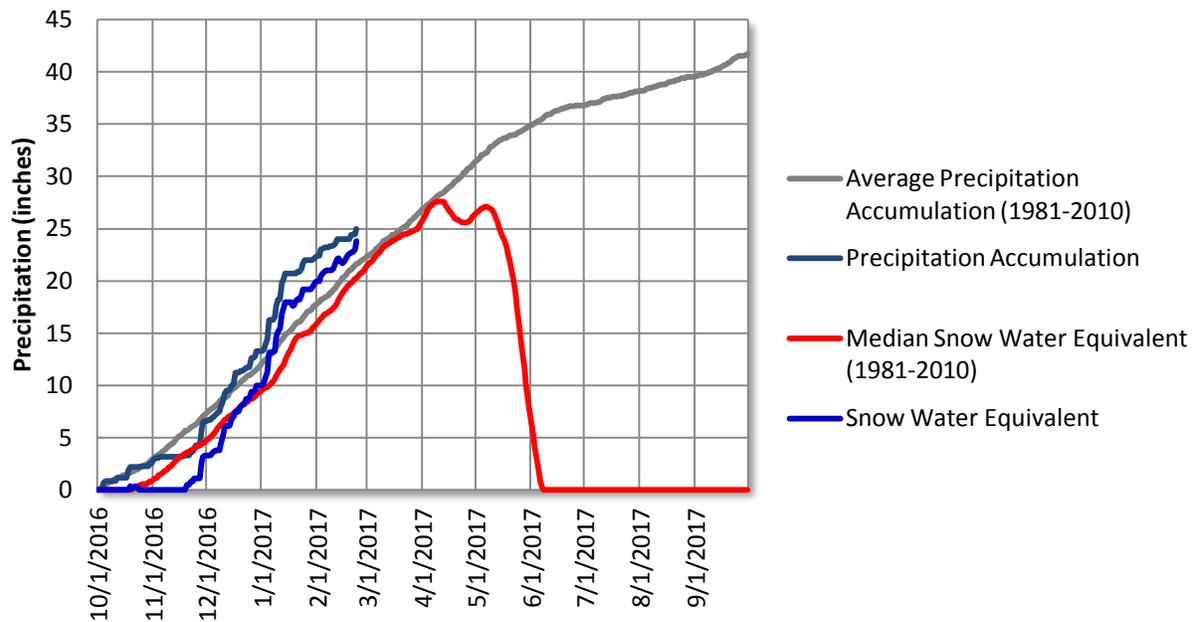
Winter Severity

Early winter 2016 was unseasonably warm well into December across the herd unit. These warmer temperatures paired with late fall moisture resulted in a late fall green-up at some elevations, which may have provided elk with an extra nutritional boost prior to winter. January brought several big snowfall events throughout the area followed by sustained temperatures well below zero, which may have created severe energy demands on elk with very little access to food even in crucial winter range for several weeks. However, high winds and a sustained warming trend in February helped to melt off lower elevation habitats, and it is expected this winter had little effect on this species. At mid-range elevations, as reported by the Battle Mountain Snotel Site, snowpack (snow water equivalent) is currently at 100% of normal; however it was at 151% in mid-January reflecting those big snow events. Higher elevations have slightly higher current winter snowpack with the Whiskey Park Snotel Site reporting a snowpack that is 117% of normal (2/23/2017) also showing significantly higher snowpacks in mid-January of 146%. This was also seen in the distribution of elk in the herd unit with very few elk in the mid-elevation areas and higher numbers of elk found in the Wild Horse area near Hwy 789.

Battle Mountain Snotel Site - 7,440 ft



Whiskey Park Snotel Site - 8,950 ft



Field Data

Field data from the herd unit seems to verify the population model trend that shows a decreasing elk herd. In 2012 we began a new elk flight dollar distribution program within the region. Each year the majority of elk flight budget would switch between the West Green River Herd and the Sierra Madre herd. During “off” years for each herd an attempt would be made to ground classify elk. The Sierra Madre years for flight classifications fall on the even years, thus bio-year 2016 classifications for this herd were conducted by helicopter. Two striking changes to observed data were noted this year when compared to previous years; a significant increase in observed bull ratios, and a decrease in the total number of elk observed on the flight (despite more effort and flight time). Both observations are consistent with increased antlerless harvest and decreased elk population.

The 2016 bull ratio was 15:100 higher than the 2014 flight, and the highest bull ratio ever recorded in the herd. This may have been due to conditions being perfect for counting bull groups out in the open, and a reduction of cows in the herd through harvest. The number of cows harvested has exceeded bull harvest over 6 of the past 7 years (except for the 2016 season). This ratio will allow us to have a more bull focused harvest this year. The increased bull ratio was not being driven by the spike cohort as may be expected but rather a mix of both adult and spikes in the population (Figure 1).

The second change that again supports the decreasing herd numbers is the total number of elk observed on flights within hunt areas 21 and 108 (where the vast majority of elk occur in this herd). If you merely look at the “total” number of elk classified without taking into account the amount of effort put into those numbers it may seem there has not been a decrease in the

population. However, once you put in some type of metric for effort and couple that with elk numbers it becomes immediately apparent the ability for us to find elk is decreasing as effort increases, even under the optimum survey conditions we had in February 2017. Figure 2 depicts the number of elk counted per mile on 3 surveys over the last 5 years. Although this may not be a perfect method it does match the trends within the population model. If we simply take the 2011 post-season population estimate (12,000) and use the percentage of change from the elk/mile parameter (56%) to decrease that number we end up with an estimate of about 5,200 which is not too far off from our current post-season population estimate of 6,700. This should not be considered an independent estimate of population size, but does support the idea that we have reduced elk and are nearing objective levels.

Figure 1. EL425 bull ratios broken into yearling and adult bull groups.

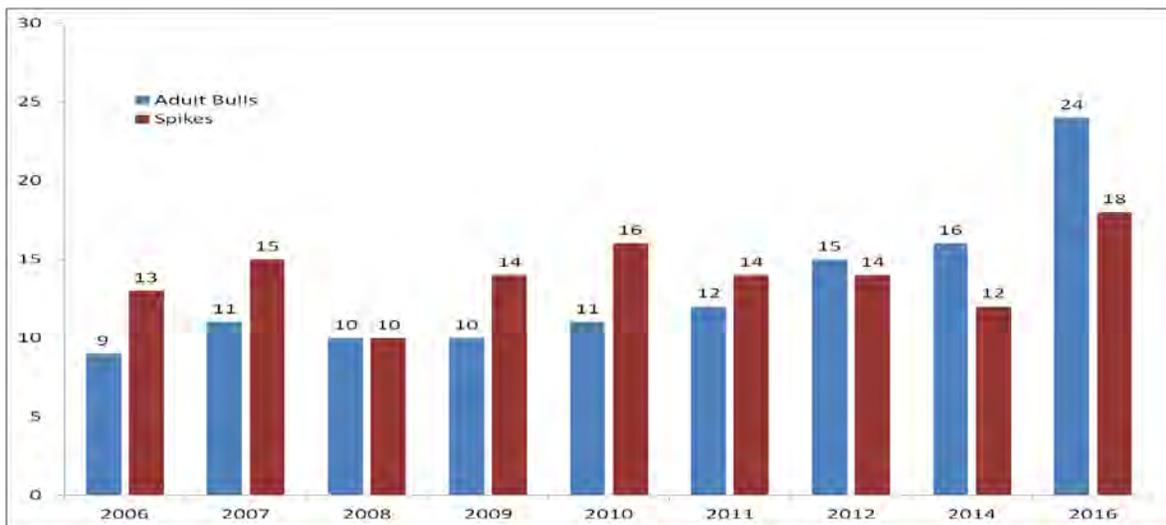
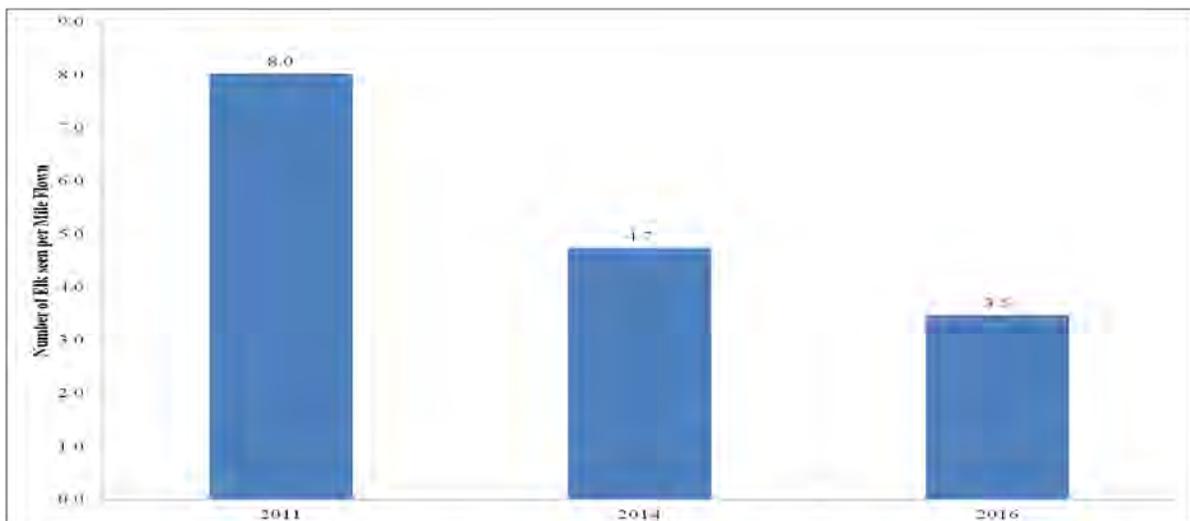


Figure 2. EL425 elk numbers per unit of effort for the 2011, 2014 and 2016 JCR years.



Harvest Data

Elk harvest data over the last several years indicates that it has become more difficult to find an elk during hunting season. Since 2013 we have seen a steady increase in effort and a decrease in hunter success (Figure 3). The increase in effort has increased by 30% and hunter success has decreased by 10%. In addition we have seen hunter satisfaction decline since 2013 with the lowest recorded “satisfied or very satisfied” rating since this data was initiated in 2011 (Figure 4).

Figure 3. EL425 hunter effort (bars associated with primary y-axis) and hunter success (line associated with the secondary y-axis) from 2011 to 2016.

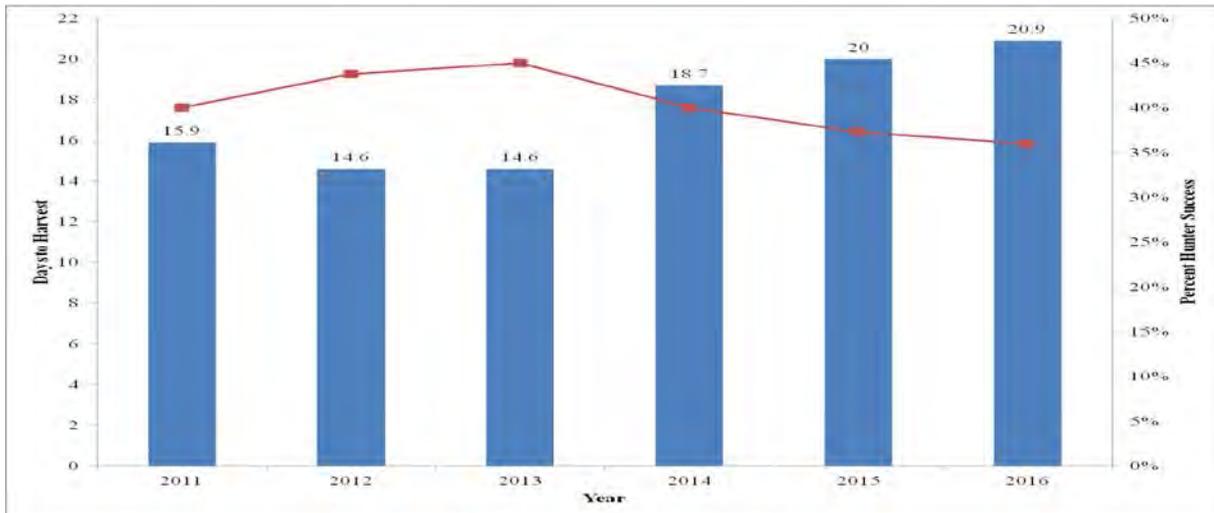
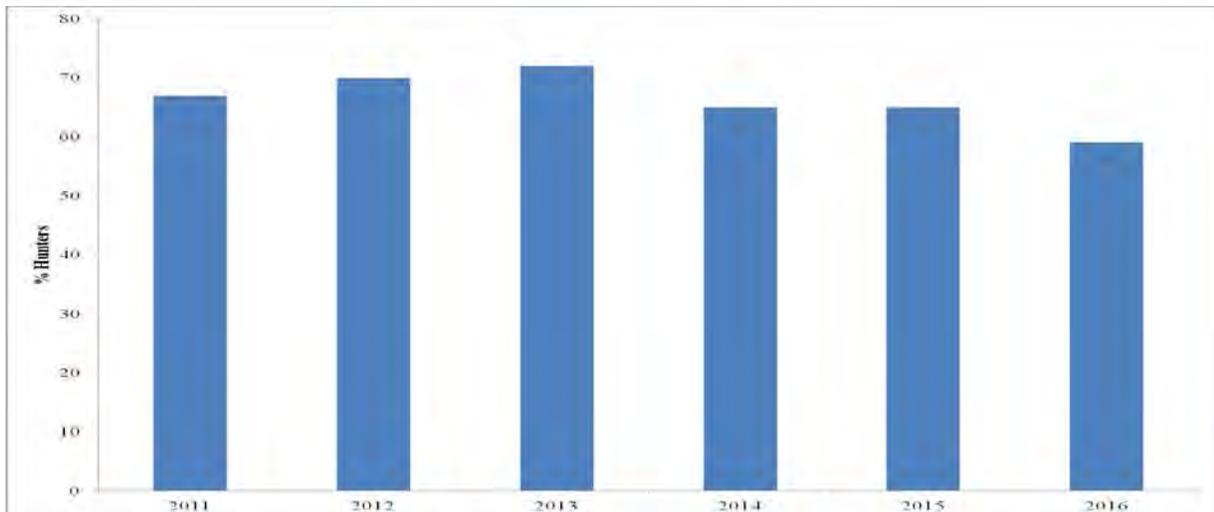


Figure 4. EL425 hunter “satisfied” or “very satisfied” responses to the satisfaction survey from 2011 to 2016.



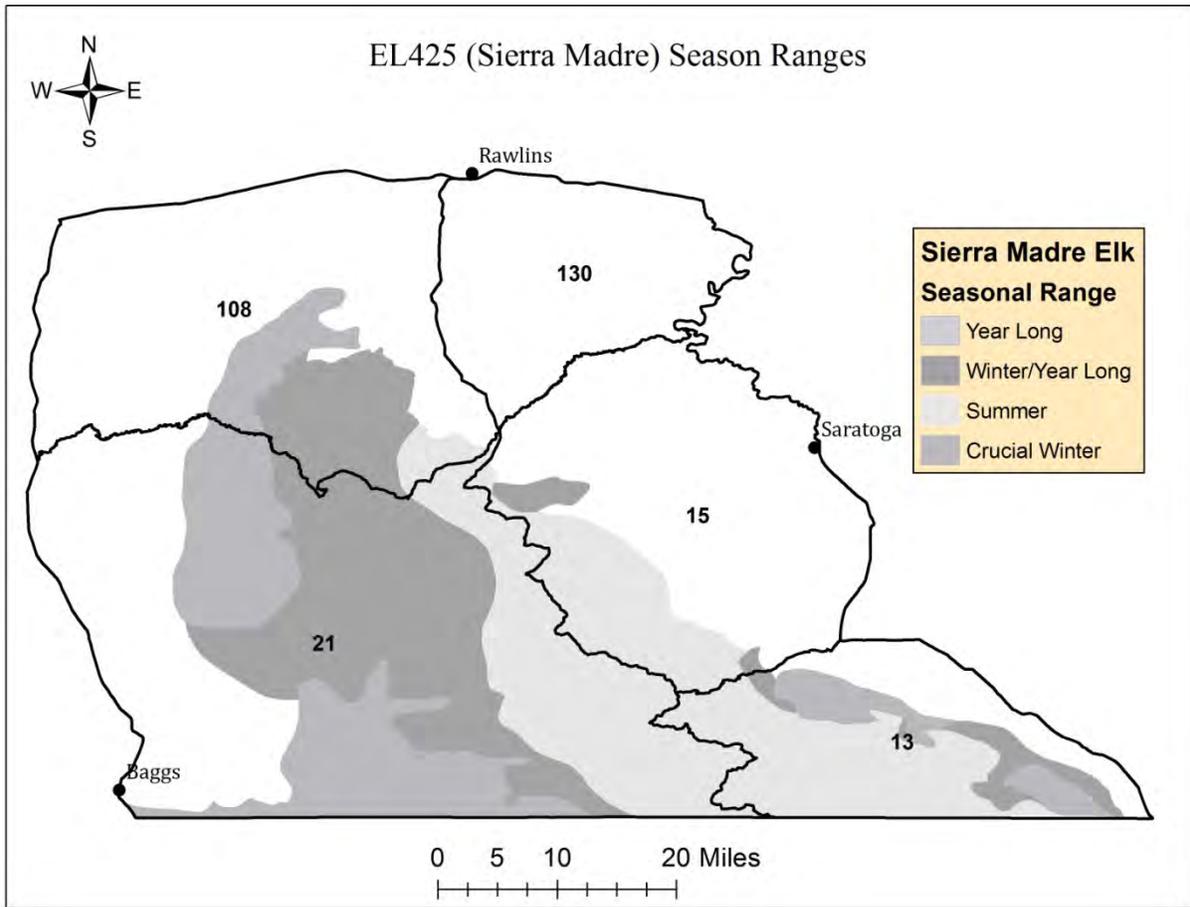
Population

The current post-hunt population model estimate for the herd indicates that we are still above the current objective of 5,000 (range 4000 to 6000) at 6,700 animals. The TSF, CA, MSC model has the lowest AICc value indicating the best model fit. The main issue with the model currently is the bull ratios are not tracking with what we observed this year. This is discussed above in the “Field Data” section. As this population continues to decrease, this model (and our experience) indicates that it cannot sustain the same harvest levels we have seen in the past, and hunter complaints will increase. In addition to the standard parameters included in the model, an independent estimate of the population was created from a sightability flight conducted in March 2013 (WGFD JCR 2012). The model indicates that the sightability estimate was most likely estimating low. However, adding that parameter does seem to restrain the model to more reasonable spreadsheet model estimates.

Management Summary

This herd has always presented a challenge due to popularity, high hunter numbers and harvest, high productivity, and typically low bull ratios. The implementation of any elk and general cow seasons starting in 2010 has been successful in providing ample opportunity for hunters in Wyoming and has actually addressed the low bull ratios issues of the past. The season structure over the last 7 years has been extremely successful in harvesting large numbers of cows (7,800 total harvested) and decreasing population sizes approaching objective. Although this is a win for managing herds to objective levels, it does create a management challenge given the popularity of the area with hunters and their expectations for success. Hunter opportunity in this herd is beginning to be reduced with reduced elk numbers and will likely be further reduced in the near future as the objective is achieved.

As we approach objective, we propose to slow the rate of reduction through a decrease in overall cow harvest. We are aligning general seasons between the three major general hunt areas (areas 13, 15, 21) in order to spread harvest and reduce season complexity. This mix of increasing the time allowed for bull harvest and any elk should still provide a cow harvest that will continue to decrease total elk numbers without falling below objective.



2016 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2016 - 5/31/2017

HERD: EL426 - STEAMBOAT

HUNT AREAS: 100

PREPARED BY: PATRICK BURKE

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	1,116	1,600	1,300
Harvest:	266	384	380
Hunters:	329	458	450
Hunter Success:	81%	84%	84 %
Active Licenses:	334	475	475
Active License Success:	80%	81%	80 %
Recreation Days:	1,456	1,755	1,800
Days Per Animal:	5.5	4.6	4.7
Males per 100 Females	49	52	
Juveniles per 100 Females	43	34	

Population Objective (± 20%): 1200 (960 - 1440)

Management Strategy: Special

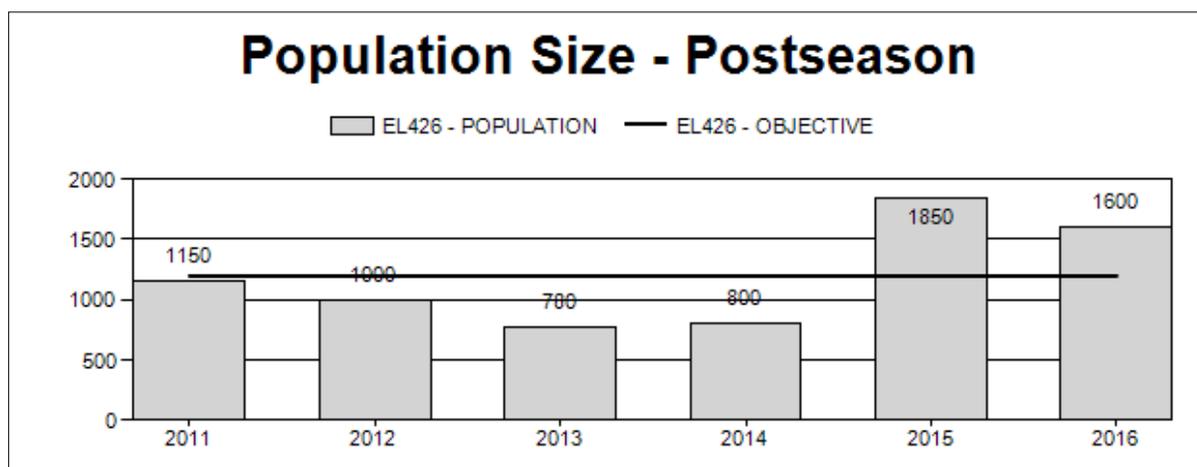
Percent population is above (+) or below (-) objective: 33%

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

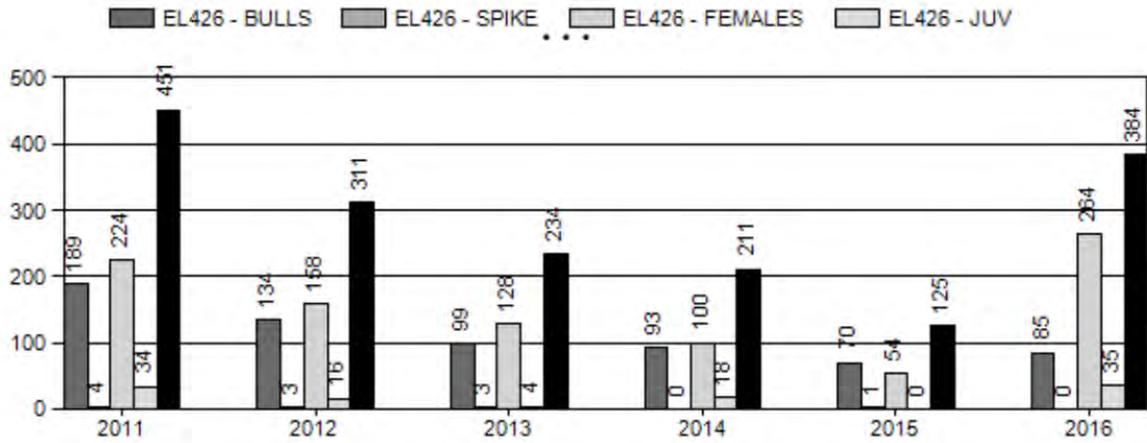
Model Date: 2/21/2017

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

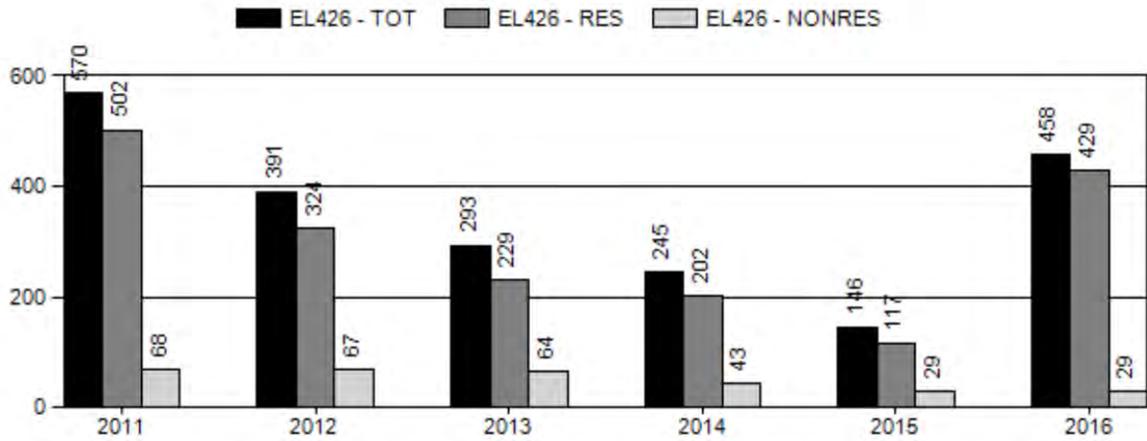
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	20%	21%
Males ≥ 1 year old:	34%	31%
Total:	22%	22%
Proposed change in post-season population:	-35%	-20%



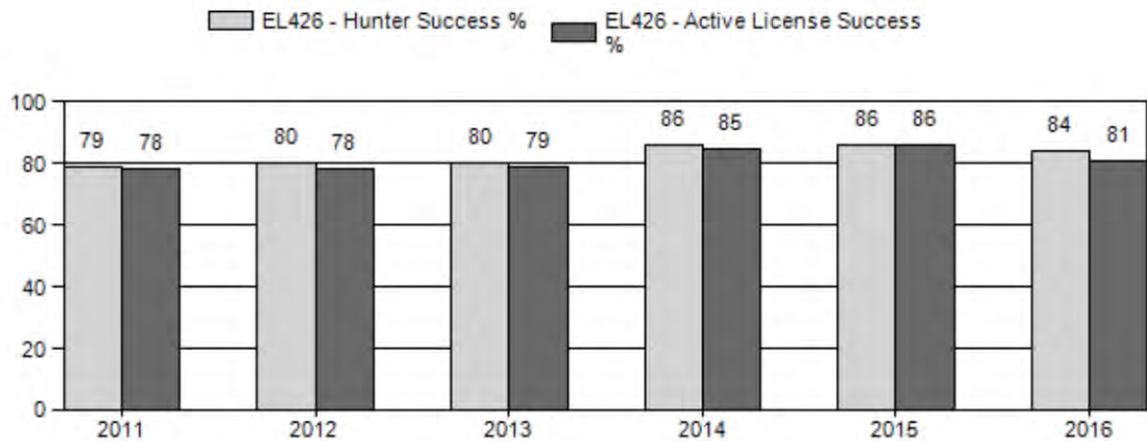
Harvest



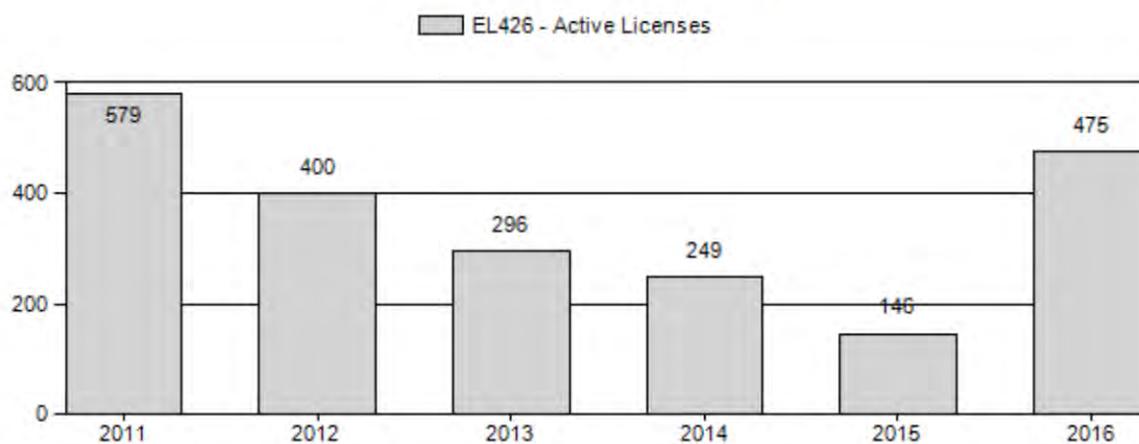
Number of Hunters



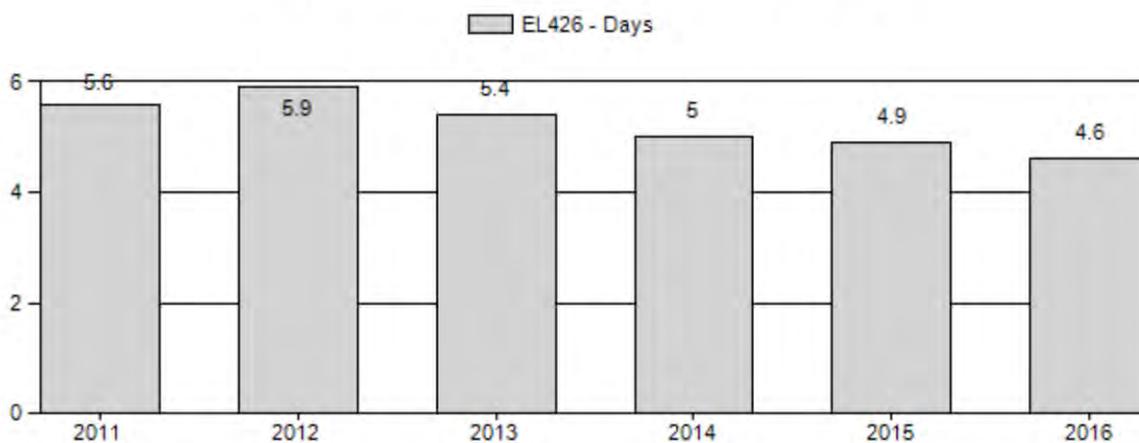
Harvest Success



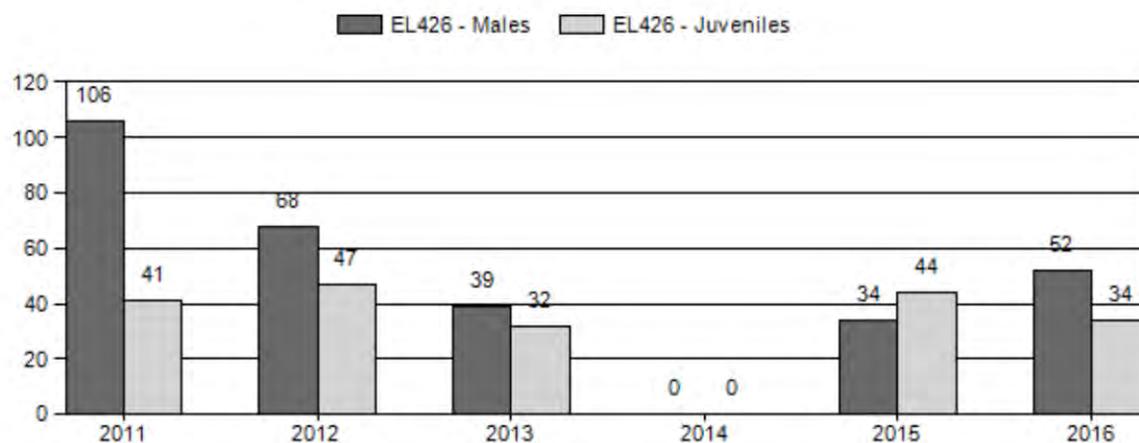
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL426 - STEAMBOAT

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	1,150	45	131	176	43%	166	40%	68	17%	410	505	27	79	106	± 12	41	± 6	20
2012	1,000	102	171	273	32%	403	47%	189	22%	865	485	25	42	68	± 3	47	± 2	28
2013	780	34	76	110	23%	280	58%	90	19%	480	432	12	27	39	± 4	32	± 3	23
2014	800	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2015	1,850	167	172	339	19%	998	56%	442	25%	1,779	540	17	17	34	± 1	44	± 1	33
2016	1,600	166	221	387	28%	749	54%	257	18%	1,393	604	22	30	52	± 1	34	± 1	23

**2017 HUNTING SEASONS
STEAMBOAT ELK HERD (EL426)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
100	1	Oct. 15	Oct. 31	100	Limited quota	Any elk
	2	Oct. 15	Oct. 31	25	Limited quota	Spike elk only
	4	Oct. 15	Oct. 31	200	Limited quota	Antlerless elk
	6	Oct. 22	Nov. 30	100	Limited quota	Cow or calf valid east of Sweetwater County Road 19, south of Sweetwater County Road 82, east of Sweetwater County Road 21, and south of Sweetwater County Road 20
	7	Oct. 1	Oct. 31	100	Limited quota	Cow or calf valid east of US Highway 191, south of Sweetwater County Road 17, and Sweetwater County Road 15 and west of Sweetwater County Road 19
	8	Aug. 15	Sept. 15	25	Limited quota	Cow or calf valid on or within one (1) mile of irrigated land

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
100	All	Sept. 1	Sept. 30	Valid in the entire area

Hunt Area	Type	Quota change from 2016
100	2	+25
	8	+25
Herd Unit	2	+25
Total	8	+25

Management Evaluation

Current Management Objective: 1,200

Management Strategy: Special

2016 Postseason Population Estimate: ~1,600

2017 Projected Postseason Population Estimate: ~1,300

The population objective for the Steamboat elk herd of 1,200 elk post-season was set in 2002 and was reviewed in 2014, when no changes were made. The Steamboat elk herd is managed under a special management prescription.

Herd Unit Issues

The Steamboat elk herd inhabits a rather large geographic area, and occurs at relatively low densities throughout most parts of the herd unit. This can sometimes lead to difficulties in estimating the size of this herd, despite the open nature of the country present in this portion of the Red Desert. In 2015, after a classification flight where over 1,700 elk were classified, the population model for this herd was moved radically upwards to 1,900 elk, when previous model estimates had put this herd under its population objective of 1,200 elk post season. These variations in population estimate depending on varying data quality years is one of the biggest issues for this elk herd. The large geographic area occupied by this herd and its relative low density can make locating groups of elk difficult, especially in years when funds for an aerial classification flight are not available. This uncertainty in the actual number of elk present in the herd unit, and the limited ability of the model for this herd to track with observed data are probably the largest issues facing the elk herd right now.

While, it's not currently as large of an issue as it has been in the past, another issue for this herd is that a very large proportion of the post-season bull population consists of yearling bulls. In 2015, 49% of the post-season bull population consisted of spike bulls. This has caused some concern about how much harvest pressure is being applied to the older age-class bulls in this herd in the name of bringing down total bull:cow ratios. This continued high proportion of yearlings in the post-hunt population can probably be explained by the open nature of the area this herd occupies and a preference for harvesting larger branch antlered bulls by the hunting public, especially since the Area 100 Type 1 license was the hardest elk license to draw in Wyoming in 2016. The fact that hunters are actively avoiding harvesting yearling bulls can be evidenced by the fact that no spike bulls were harvested in this herd unit in 2016 or 2014 and only 1 was harvested in 2015. If this trend is allowed to continue, the size class of harvested bulls will be negatively impacted in this special management herd. Based on casual observations made during the 2016 classification flight, this is currently evident, as the bulls viewed during the data collection flight were noticeably smaller than in previous years. It should be noted, however, that antler growth was negatively affected this past summer in adjacent herds, as well.

Weather

Due to the fact much of the Steamboat herd unit is situated in the Red Desert, winter weather conditions generally do not have a large impact on elk residing in this herd. However, because

the elk in this herd live year round in a low precipitation zone, dry summers that result in little plant growth can potentially have negative impacts on elk in the unit through reduced calf survival and recruitment. Fortunately, the summers of both 2015 and 2016 received normal or above precipitation levels resulting in ample grass production throughout the herd unit.

The 2016-2017 winter was severe in some portions of the herd unit, especially in the Steamboat Mountain/Jack Morrow Hills segment in the central portion of Area 100, and in all areas near Farson-Eden. Deep snow conditions and extreme cold (-45°F) began in early January, with deep snow persisting through the winter. As mentioned previously, winter conditions do not normally affect elk in this herd unit. However, during the February 2017 classification flights, some groups of elk, especially some of the cow/calf groups around Steamboat Mountain, appeared to have been trapped by the deep snow present in that portion of the herd unit. Several groups of cows and calves were observed on top of Steamboat Mountain living in an area about 30 yards wide where the snow had been blown free by the wind right along the rim. This is an area where cow/calf groups are not usually observed and they appeared to have been unable to leave the windblown ridge due to the deep snow conditions surrounding them. It is likely some of the calves that were forced to winter in Steamboat Rim area and north into the Jack Morrow Hills probably succumbed to winter mortality, as some of them already appeared to have been weakened by winter conditions in early February. Winter mortality occurred in nearby areas as well, especially around the town of Farson. Winter conditions in the eastern portion of the herd unit were not as severe in terms of snowfall amounts or temperatures. Elk in those parts of the herd unit experienced near normal winter conditions.

Habitat

No habitat transects targeting elk habitat were conducted within the Steamboat herd unit since the Green River Region lacks a terrestrial habitat biologist. However, the drought conditions experienced from 2012 to 2014 did result in limited plant growth during those years. The grass growth that resulted from the moisture received in 2015 and 2016 was noticeably better than it had been in the preceding years, and elk definitely benefitted from this increased moisture and corresponding plant growth.

Field Data

Post-season classifications in the Steamboat herd were conducted from a helicopter during February 2017. Those aerial classification flights resulted in a total of 1,393 elk being classified and observed ratios of 34 calves per 100 cows and 51 total bulls per 100 cows (17 yearling bulls per 100 cows). Due to the concerns expressed by some landowners and grazing permittees about elk numbers in the eastern portion of the herd unit, especially in the checkerboard area, a concerted effort was made to survey that region of the herd. Those efforts led to locating 176 elk residing east of the Bar X Road near the checkerboard. Those 176 elk represented approximately 12% of the total number of elk classified this year.

Harvest Data

Due to a large increase in the number of licenses issued in the herd unit, the number of elk harvested in the Steamboat herd unit increased dramatically in 2016 when compared to the prior year. According to the number of elk reported to have been harvested in hunt area 100 from the harvest survey, harvest jumped from 125 elk in 2015 to 384 elk harvested in 2016. That was a little over a threefold increase in just one year, a necessary increase given population status and significant landowner concerns. It is likely however, the actual number of elk harvested in area 100 was closer to 400 animals in 2016. Both area 118 (Shamrock Elk to the east) Type 4 and 6 license holders were able to hunt in the eastern portion of HA100 in 2016. Given these antlerless elk hunters saw a marked increase in harvest success in 2016, it is likely that most of those elk reported to have been harvest in 118 were actually harvested in Area 100.

According to the harvest survey, the overall harvest success rate for the Steamboat elk herd in 2016 was 84%. Broken out by license type, the success rates were 91% for the Type 1 license holders, 76% for the Type 4 hunters, 78% for the Type 6 licenses, and 82% for the Type 7 hunters. These harvest success rates are very typical for this elk herd. Due to the open nature of the country that this herd inhabits, harvest success rates are unusually high and effort low because the elk in the herd inhabit open sagebrush habitats and are visible from miles away. Since this herd lives only in open habitats with little to no security cover, largely on public land, this population exhibits harvest statistics more similar to a pronghorn population than a typical Wyoming elk herd.

Because of the special management status of the Steamboat elk herd, hunters who draw a Type 1 license are asked to voluntarily submit tooth samples from harvested bulls for cementum annuli analysis. Based on the 34 bull elk tooth samples submitted from the 2016 hunting season, the average age of harvested bulls was 6.1 years old. The 34 teeth submitted for laboratory aging represent around 40% of the bulls reported harvested in the harvest survey. The 2016 average age of 6.1 compares to 5.3 years old in 2015, 5.9 years old in 2014, and 5.7 years old in 2013. Based on the teeth that were submitted for aging, the oldest bull harvested in 2016 was one 9.5 year old bull. The oldest bulls aged in 2015 and 2014 were also 9.5 years old, this compares with 10.5 in 2013, 7.5 in 2012, 9.5 in 2011, 10.5 in 2010, 12.5 in 2009, and 13.5 in 2008. This general decline in the oldest age class harvested can be attributed to the increased bull harvest rates of the last several years.

Population

The 2016 post-season population estimate for the Steamboat herd is just over 1,600 elk, down from the 2015 estimate of 1,900 elk. Since the objective for this herd is 1,200, and the estimate was significantly above that, the warranted but dramatic increase in the number of antlerless licenses issued in 2016 was necessary to move this population towards its objective. The population estimate for 2015 was driven primarily by a classification flight conducted in January 2016, when over 1,700 elk were classified. The number of elk classified in 2015 was a significant departure from the number of elk that had been classified in previous years and required that major modifications be made to the model in an attempt to try and accommodate the large number of elk observed that year. Even with those modifications, the model could not

both accommodate the number of elk classified in 2015, and still product a realistic trend for the population.

The population model for this herd tracks poorly with observed data due partly to varying data quality from year to year. In order to get the population model to accommodate the large number of elk classified after the 2015 season, population parameters range constraints had to be moved outside of the accepted limits or the model simply could not reconcile the number of elk classified that year. In order to attempt to fit the data, the model puts calf survival at an unrealistically low level and would probably put that value even lower if the constraints would allow for it. This unrealistically low calf survival rate, along with the models poor correlation with observed bull ratios suggests that its functionality is low.

The addition of possible errors in correctly placing harvested animals from the Shamrock herd unit license types that are also valid in the Steamboat herd unit, will further reduce the reliability of this model, as accurate harvest data are an important component of the model.

Management Summary

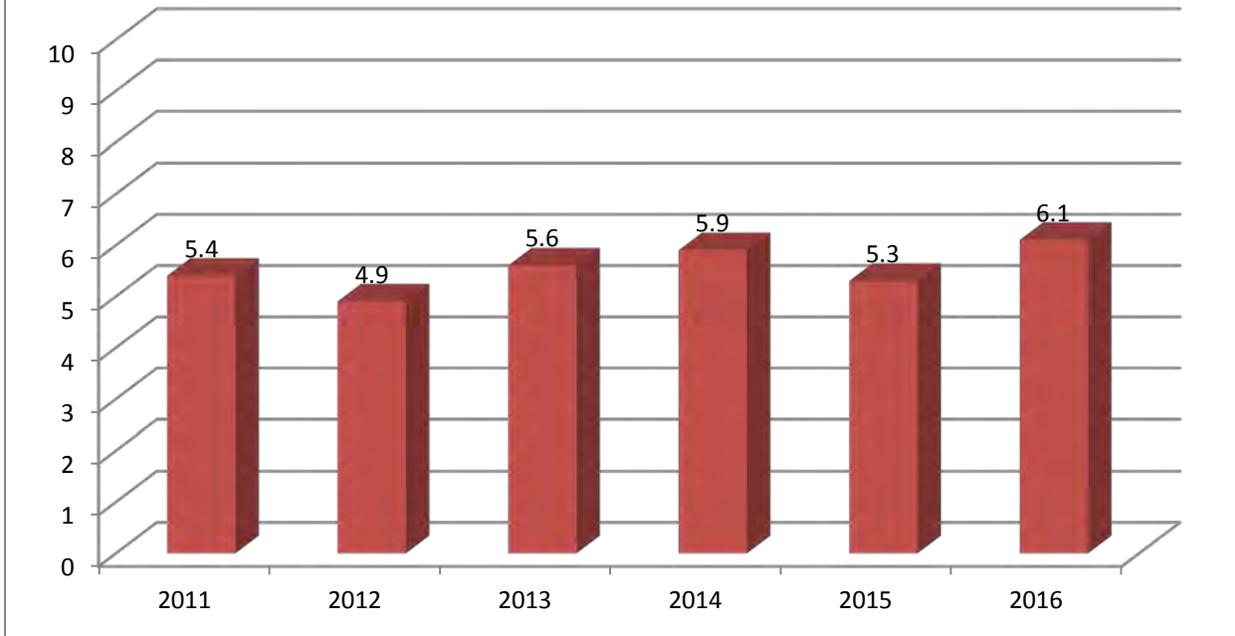
The 2017 season will maintain licenses in similar numbers as those offered in 2016. No changes will be instituted in the number of Type 1, 4, 6, or 7 license types for 2017. There will be a slight modification to the Type 1 licenses in 2017, and that is to change the license limitation from antlered elk only to an any elk offering. This was proposed because it is not felt that this restriction is needed given size of the herd and the limited number of cow elk that would potentially be harvested by Type 1 license holders.

An addition to the 2017 season offering is the creation of a Type 2 license valid for spike elk only. A consistent issue in this herd has been that a large portion of the post-season bull population is made up yearling bulls. These young bulls are not harvested by hunters with Type 1 licenses, but drive up total bull numbers and are often responsible for the higher bull ratios seen in the herd unit. The addition of these Type 2 licenses will provide additional opportunity for hunters in this extremely difficult to draw hunt area, and will help to reduce observed bull to cow ratios in the herd.

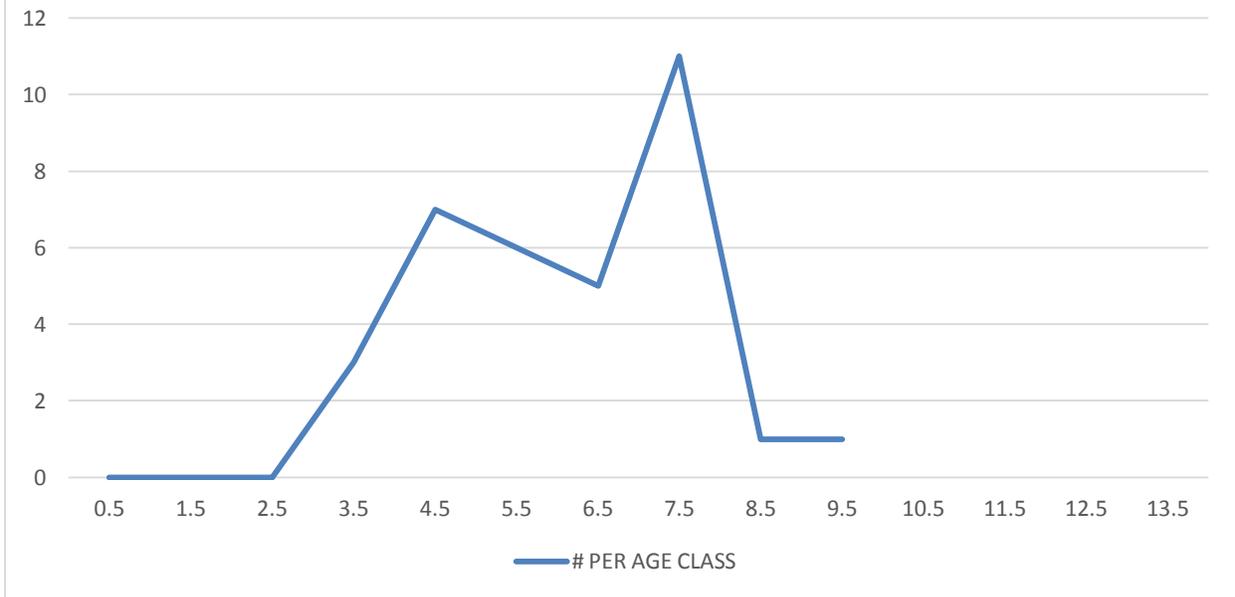
Another new license type for the 2017 season will be the addition of a Type 8 license valid on or within one mile of irrigated lands from August 15th to September 15th. This license type was added to direct some harvest towards elk that have been causing damage to crops in the Farson/Eden area, along Pacific Creek, and along the Green River.

It is anticipated that the 2017 hunting seasons will result in the harvest of approximately 380 elk on the Area 100 licenses, as well as maybe another 50 or so elk on Shamrock herd (Area 118) licenses that will again be valid in the southeastern portion of the Steamboat herd unit. The proposed seasons will also result in a projected 2017 post-hunt population of somewhere near 1,300 elk, which will be slightly above, but within 20% of its population objective of 1,200 elk post-season.

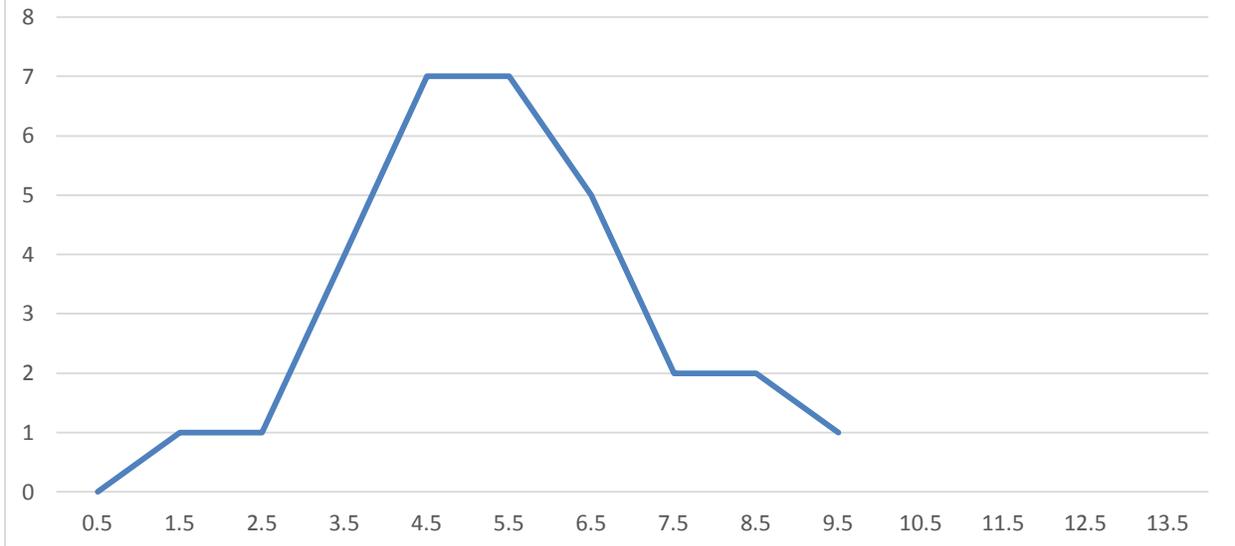
Steamboat Elk Average Age of Harvested Bulls



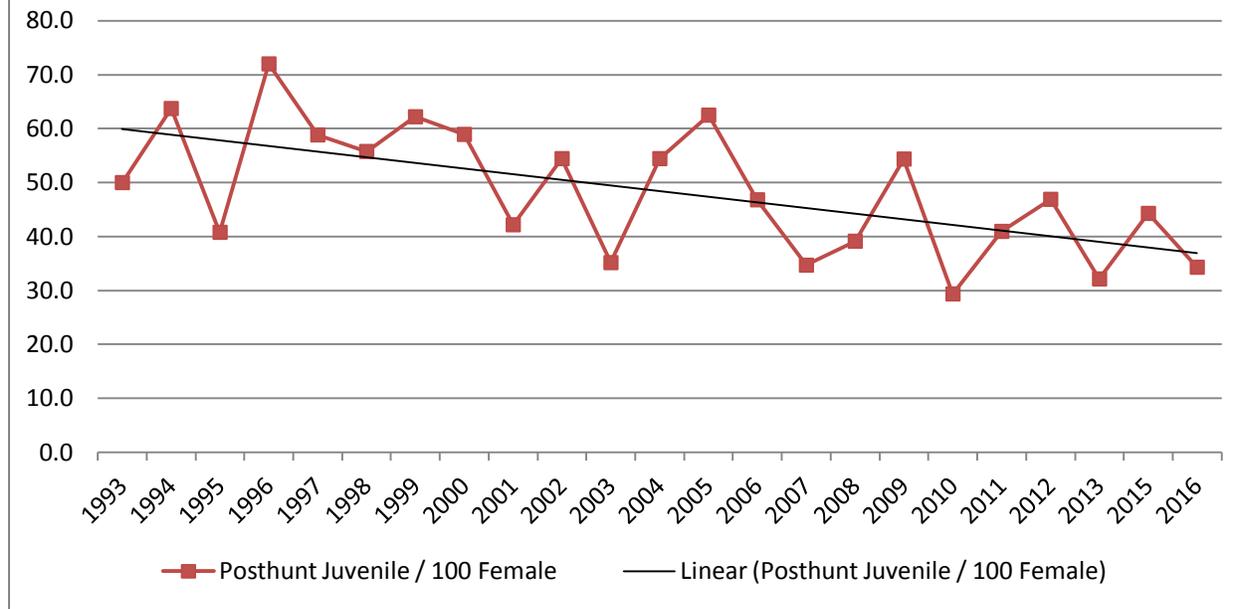
2016 STEAMBOAT ELK # HARVESTED PER AGE CLASS



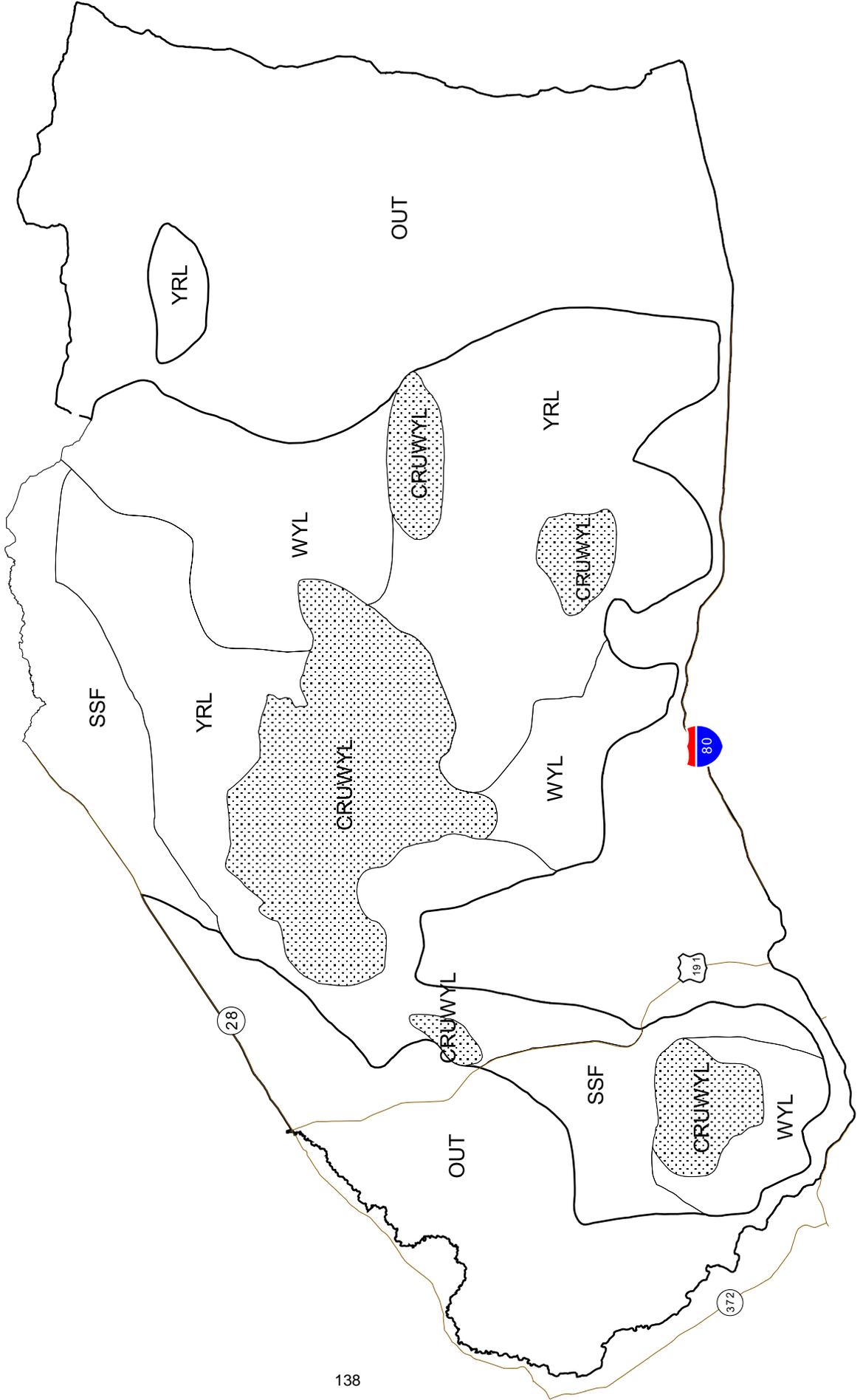
2015 STEAMBOAT BULL ELK HAVESTED # PER AGE CLASS



Posthunt Juvenile / 100 Female



ELK -- Steamboat
Herd 426
Hunt Area 100
Revised 5/2004



2016 - JCR Evaluation Form

SPECIES: EIK

PERIOD: 6/1/2016 - 5/31/2017

HERD: EL428 - WEST GREEN RIVER

HUNT AREAS: 102-105

PREPARED BY: JEFF SHORT

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,317	2,799	2,360
Harvest:	1,225	1,006	900
Hunters:	4,150	3,294	3,000
Hunter Success:	30%	31%	30 %
Active Licenses:	4,334	3,370	3,100
Active License Success:	28%	30%	29 %
Recreation Days:	30,162	21,127	20,000
Days Per Animal:	24.6	21.0	22.2
Males per 100 Females	36	0	
Juveniles per 100 Females	32	0	

Population Objective (± 20%) : 3100 (2480 - 3720)

Management Strategy: Recreational

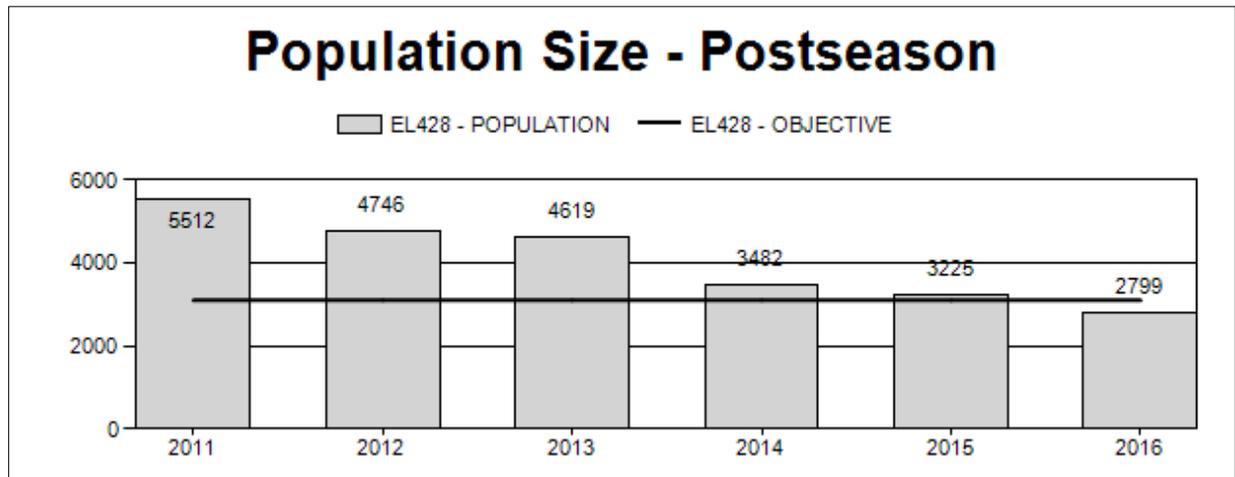
Percent population is above (+) or below (-) objective: -9.7%

Number of years population has been + or - objective in recent trend: 1

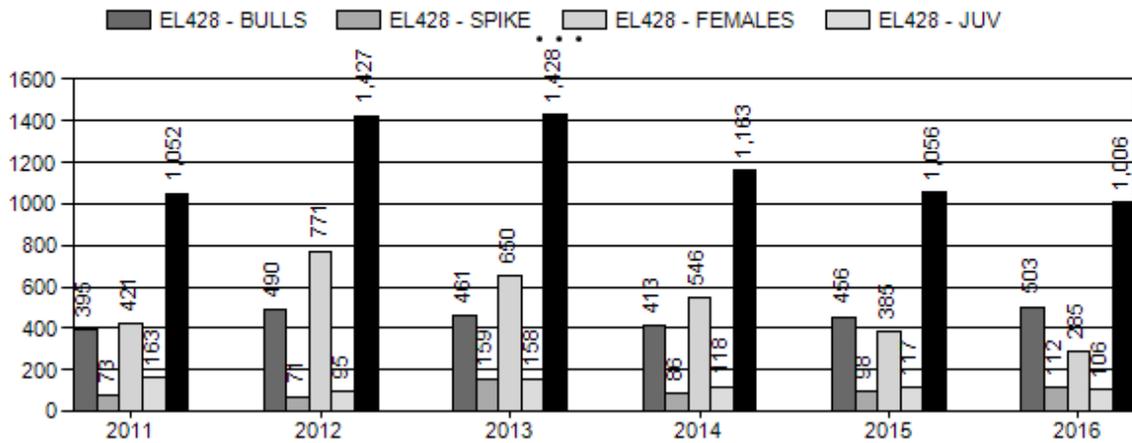
Model Date: 02/20/2017

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

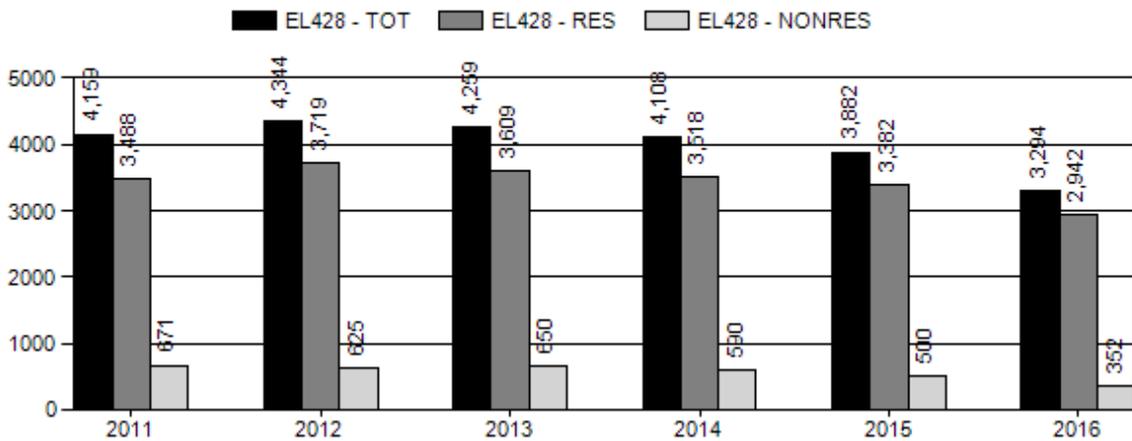
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	12.7%	11.5%
Males ≥ 1 year old:	133.5%	421.9%
Total:	25.8%	26.9%
Proposed change in post-season population:	-6.9%	-15.7%



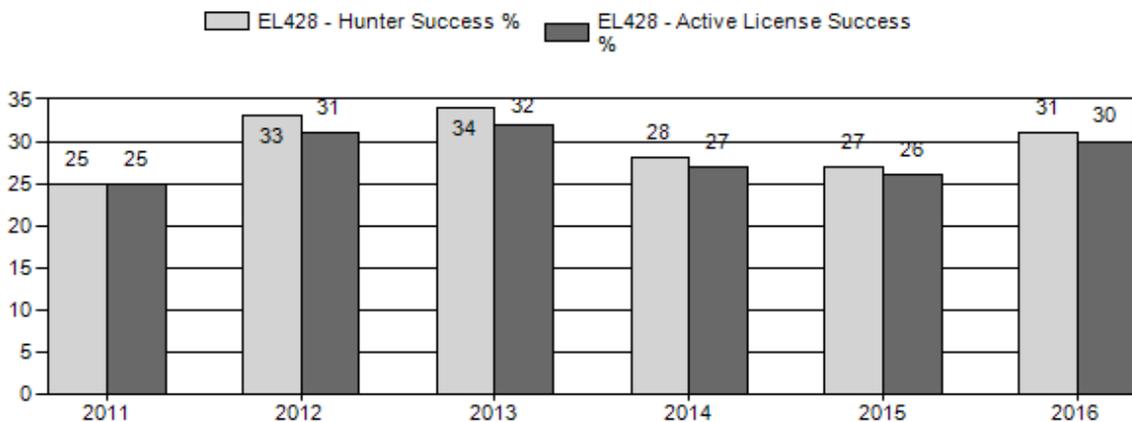
Harvest



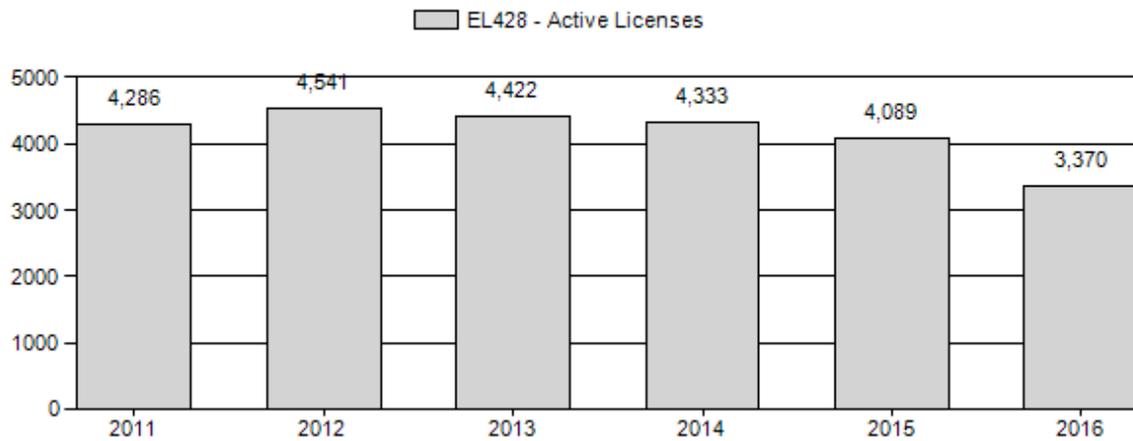
Number of Hunters



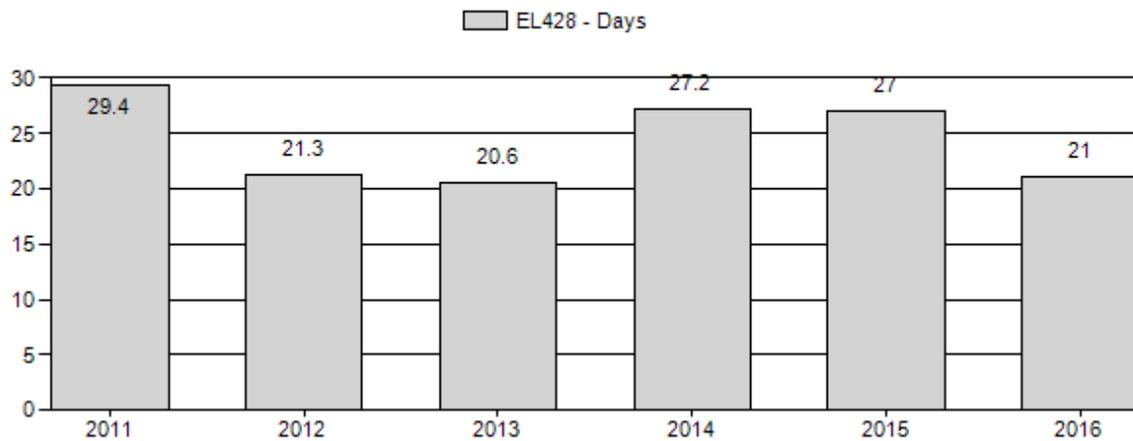
Harvest Success



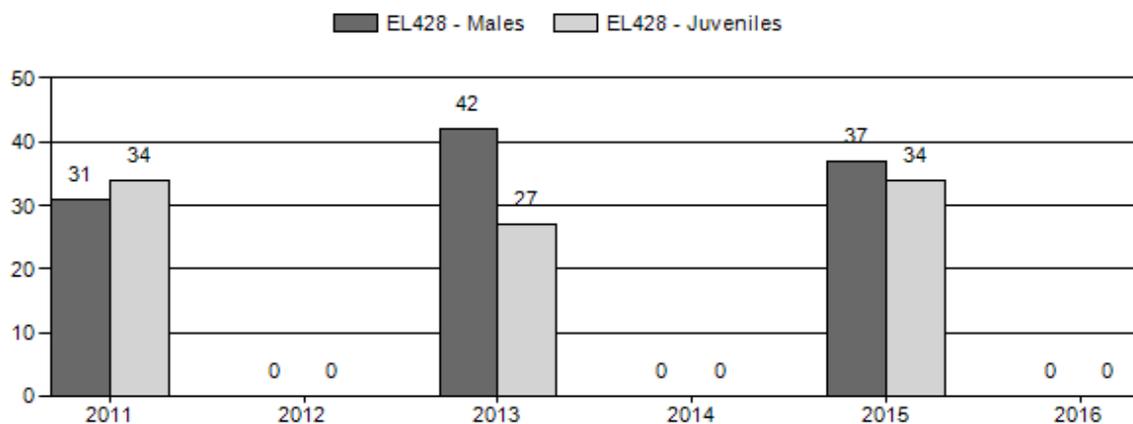
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL428 - WEST GREEN RIVER

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
2011	5,512	385	474	859	19%	2,758	61%	929	20%	4,546	0	14	17	31	± 1	34	± 1	26
2012	4,746	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	4,619	440	510	950	25%	2,285	59%	627	16%	3,862	0	19	22	42	± 1	27	± 1	19
2014	3,482	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2015	3,225	283	354	637	21%	1,740	59%	593	20%	2,970	0	16	20	37	± 1	34	± 1	25
2016	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2017 HUNTING SEASONS

SPECIES : Elk

HERD UNIT : West Green River (428)

HUNT AREAS: 102, 103, 104, 105

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
102		Oct. 15	Oct. 24		General	Any elk
102	6	Oct. 15	Oct. 31	25	Limited quota	Cow or calf
102	7	Dec. 15	Jan. 31	25	Limited quota	Cow or calf
103		Oct. 15	Oct. 24		General	Any elk
103		Oct. 25	Oct. 31		General	Antlerless elk
103	6	Oct. 15	Oct. 31	75	Limited quota	Cow or calf
103	6	Dec. 15	Jan. 31			Cow or calf
104		Oct. 15	Oct. 24		General	Any elk
104		Oct. 25	Oct. 31		General	Antlerless elk
104	6	Oct. 15	Oct. 31	25	Limited quota	Cow or calf
104	7	Dec. 15	Dec. 31	75	Limited quota	Cow or calf
104	7	Jan. 1	Jan. 31			Cow or calf valid west of U.S. Highway 30 and east of Lincoln County Road 207 or east of Rock Creek within the Twin Creek drainage
105		Oct. 15	Oct. 31		General	Any elk

Hunt Area	License Type	Quota change from 2016
103	6	+25
104	6	-25
104	7	+50
Herd Unit Total	6	0
	7	+50

Management Evaluation

Current Postseason Population Management Objective: 3,100

Management Strategy: Recreation

2016 Postseason Population Estimate: ~2,799

2017 Proposed Postseason Population Estimate: ~2,360

Herd Unit Issues

Energy development on crucial elk habitat is a potential issue for this herd. As an unfed elk herd in Western Wyoming, habitat integrity is of critical importance. Additionally, conflict with agriculture producers can be an issue for this elk herd. Damage complaints can occur during bad winters but are not common. Elk comingling with livestock during winter is rare in limited areas but needs to be considered a potential issue. Limited past problems have typically been dealt with if the Department was notified. The area was recently added to the Brucellosis surveillance area. Even though the area has a very low brucellosis prevalence in elk this adds additional concern over elk and cattle comingling. Summer damage is rare. Significant efforts have been made by field personnel to alleviate potential problems. Perceived reduction in livestock forage due to elk grazing is an issue that can be brought up.

In the last five hunting seasons hunters commonly complain that elk numbers are down significantly and they were too low for their standards. However, we have been over the set objective until last year. This herd recently went through an objective review in 2012 and it was determined that the objective should remain at 3,100 animals. This was mainly due to input from agriculture producers. Under our recent harvest strategies and attempts to get down to objective we have been successful and the population is now at the objective. Hunters are largely unhappy with the current elk population and the set objective.

In recent years elk moving onto Fossil Butte National Monument prior to the season has increased, and is estimated to be around 500 animals. Radio collar data indicates that a significant number of the marked animals moved back onto the Monument in early September. The Monument is closed to hunting. As the number of elk on the Monument increased, it has become more difficult to manage this herd to objective while still providing huntable elk for sportsmen. The Cokeville Meadows National Wildlife Refuge became open for elk hunting in 2014 and this has greatly helped to alleviate elk problems in the Bear River valley but there is no solution in sight for Fossil Butte.

Weather

Weather during 2016 and into 2017 has been highly variable. In the early part of 2016 the winter started out harsh with high snow loads but it warmed up in February and March to finish fairly mild. A moist spring and early summer followed. In July and August conditions dried up considerably and into late December fairly low precipitation was received. Winter did not set in until late December 2016. The winter of 2016-2017 was very cold with high snowfall and elk migrated to crucial winter ranges and beyond. The winters from 2011 until 2016 were fairly mild with low snowpack and relatively warm temperatures resulting in easy winter conditions. However, the dry springs and summers of 2012 and 2013 negatively impacted summer and winter range forage production.

Habitat

Habitat data collection has been inconsistently collected in this herd unit and has been absent in the recent past. A renewed effort involving the habitat section has begun, including collection of Rapid Habitat Assessment data. These data will be included in future versions of this JCR.

Field Data

Intensive helicopter based elk flights were performed in early 2012, 2014 and 2016. Idaho's sightability model correction was used for these three surveys. In the 2016 survey 2,970 elk were observed. Flight conditions were favorable and the sightability correction estimate was 3,053 elk. On these surveys a low sightability correction factor is produced due to large groups of elk in high snow cover and open environments. This creates survey conditions where very few elk are missed during helicopter surveys. We flew the majority of available elk winter range during the survey. There is an additional area in the herd unit that is not flown in Hunt Area 105. This is not flown due to budget constraints and low elk densities in that area. This area is thought by field personnel to contain approximately 100 elk. This information is added to the sightability estimates to create a total herd unit estimate.

Recent post-season bull ratios have been excellent. Calf ratios have fluctuated recently but are still reasonable. Harvest was increased on this herd markedly over several years in an effort to get the herd to objective. It appears that this has worked and that the herd is at objective. Antlerless harvest has had to be greatly reduced now that the herd has reached objective. It is probable that bull harvest will go down in the future due to less elk production with a smaller herd and it may become difficult to maintain favorable bull:cow ratios. Another intensive helicopter survey is planned for post season 2017. This is a new sampling strategy where surveys are flown every other year and with greater intensity. In the past, classification surveys were flown on a yearly basis but with less intensity. This provided excellent classification data but did not provide any estimate of overall population size and/or trend information. The new strategy improves overall population model estimates and gives us a better estimate of trend.

Harvest Data

Antlerless harvest opportunity was increased every year for several years in this herd unit. The 2010 to 2014 season structures offered substantially increased cow/calf harvest opportunity to reduce the herd. Those seasons allowed significant antlerless harvest with large increases in licenses and season lengths. These hunts had good success rates as weather moved elk to winter ranges during those hunts. This management framework has reduced this population to objective. The public has voiced many concerns about the population reduction but it was required to get the herd to objective. In 2016 antlerless harvest was reduced substantially since the herd had reached objective. For 2017 we have a similar low antlerless license allocation since the estimates indicate we are at or below the population objective. The current elk population level is very unpopular with the hunting public who feel elk numbers are too low.

Population

The post season 2016 population model estimate is 2,799 elk with the population still trending downward. The TSJ,CA model was selected due to the low AICc score and its good fit with the data. The TSJ,CA, MSC model scored very similar but there is no information to indicate that a MSC model would be appropriate for this herd.

The addition of aerial population estimates every other year since 2012 has been very valuable to check the status of the herd and anchor the model. With this continuing into the future it is likely that we can provide a reasonable population model and track the trend of this population. Without this it will be unclear if our current harvest levels can be sustained or if we are on the right management track relative to objective.

Due to documented interchange with adjacent herd units, models generated for this herd should be used with some caution. This interchange has been affirmed in recent years with several radio collared elk from multiple studies crossing the herd unit border at different times of year. More radio collar studies would help determine the extent of these movements. In 2012 the Department switched from POPII models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

Currently the model is estimating we have around 2,799 elk in the herd. This is a significant reduction in the herd over the last five years and is essentially at the objective of 3,100 elk. The sharp decline in population was driven by antlerless harvest. This is substantiated by hunter comments and field observations. Harvest survey data indicate that we have had more than adequate harvest in the past four years to reduce this herd and move to objective. This supporting information gives us confidence in model results.

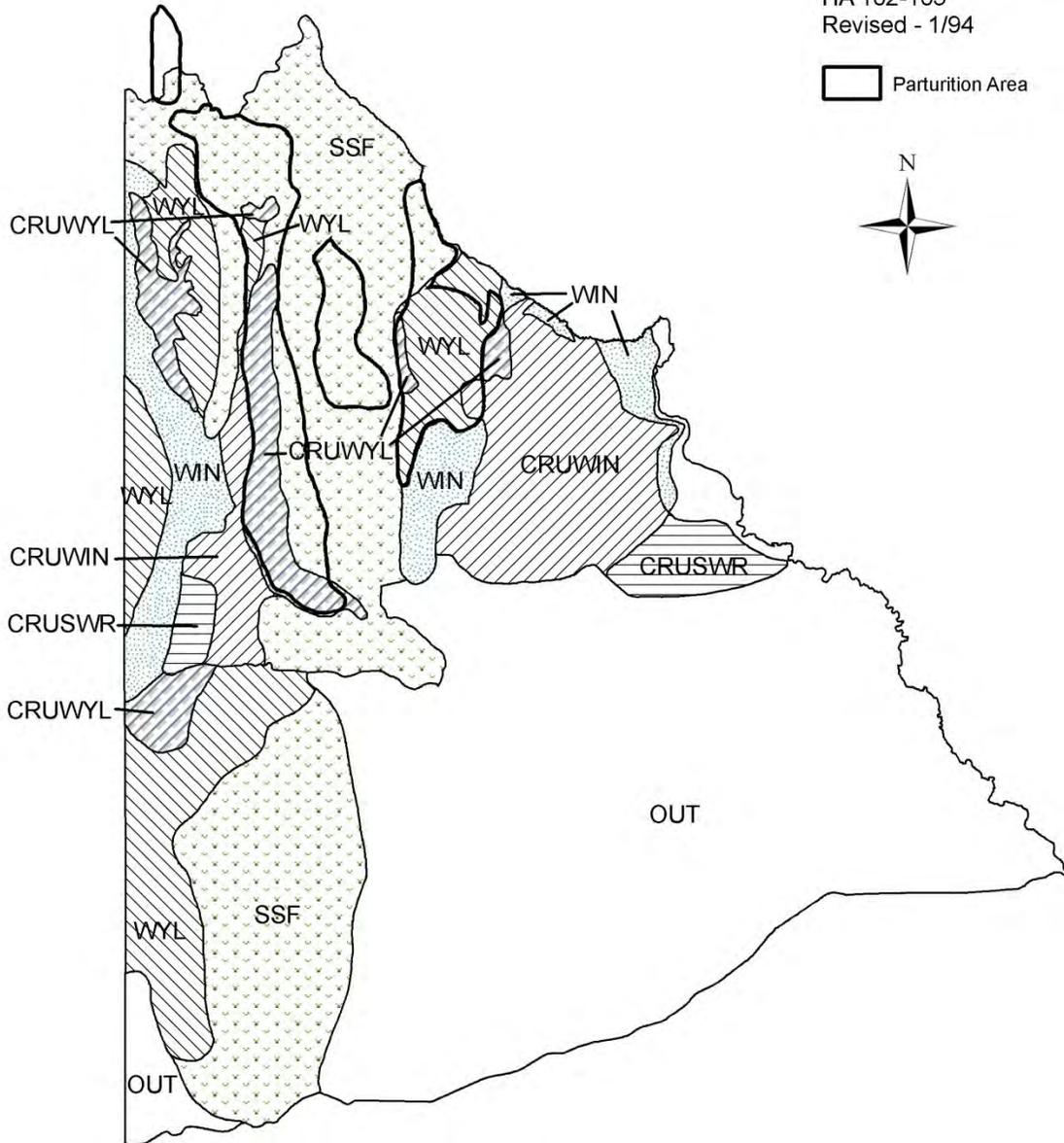
Management Summary

For the 2017 hunting season we will stay with the reduced antlerless harvest started in 2016 to reduce population decline since the population is at the objective. We are planning hunt timing and license management to minimize antlerless harvest. The harvest system in place should keep this herd near objective in the near future. This will need to be evaluated carefully each year to avoid taking this population further below objective.

During the winter of 2016/17 we have had extreme conditions on all the winter ranges in this herd unit. High ridges that usually blow clear of snow and south facing slopes that usually melt off have been covered in deep snow for several months. Deep crusted snows and extremely cold temperatures have pushed elk long distances to very low elevations. This has created high conflicts in several places. Elk have been getting hit on highways and railroad tracks. Elk have been down on private ranches where cattle are fed in the winter. Game Wardens have spent considerable time addressing problem areas. Elk have had to be pushed into places where they will cause less problems. In some extreme cases we have had to “bait” elk away from feed lines to keep them away from problems. This has been very unfortunate. Even with the lowest elk population we have had in decades we still experienced problems in this extreme winter. Some of our late season antlerless hunts were helpful in alleviating issues but the problems were too severe and persistent to be solved with those hunts alone.

E428 - West Green River
HA 102-105
Revised - 1/94

 Parturition Area



2017 Proposed - Season Setting Evaluation Form

SPECIES: EIK

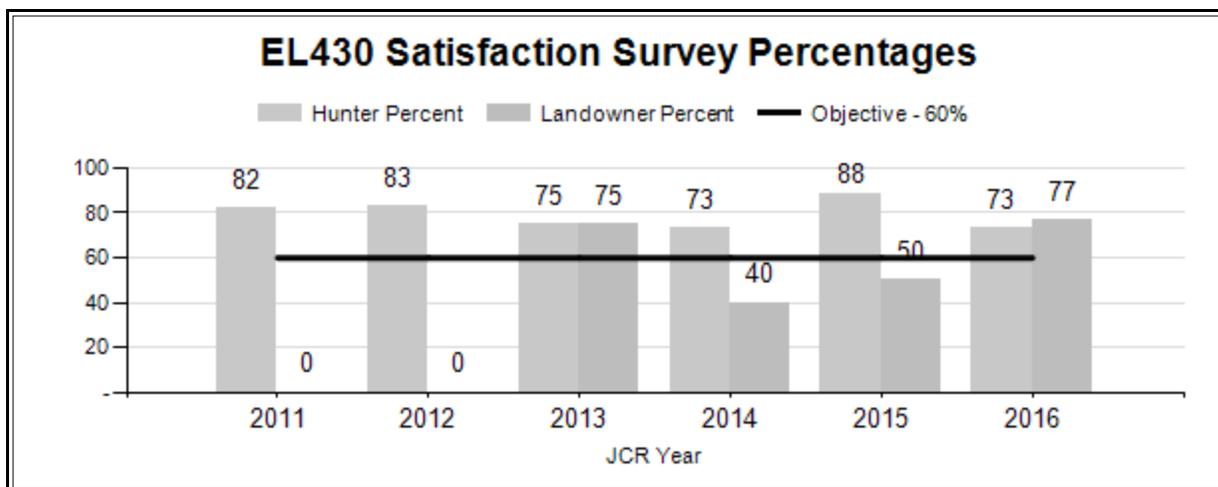
PERIOD: 6/1/2016 - 5/31/2017

HERD: EL430 - PETITION

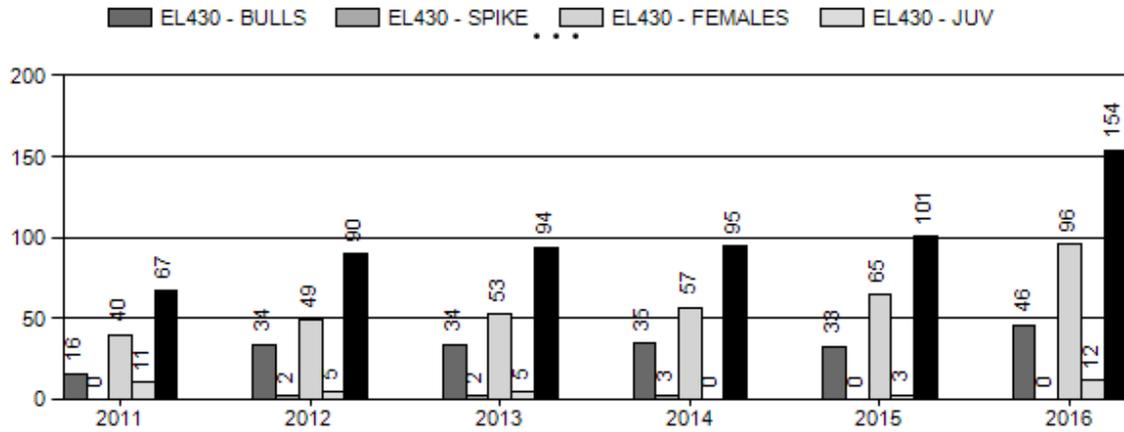
HUNT AREAS: 124

PREPARED BY: TONY MONG

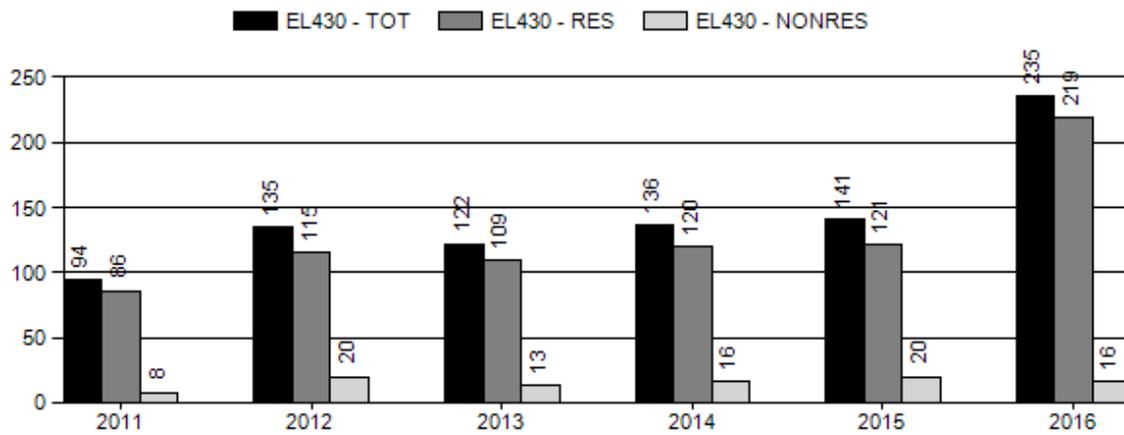
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	80%	80%	80%
Landowner Satisfaction Percent	56%	56%	75%
Harvest:	89	154	100
Hunters:	126	235	175
Hunter Success:	71%	66%	57 %
Active Licenses:	126	235	175
Active License Success:	71%	66%	57 %
Recreation Days:	933	1,687	1,100
Days Per Animal:	10.5	11.0	11
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			15%
Number of years population has been + or - objective in recent trend:			2



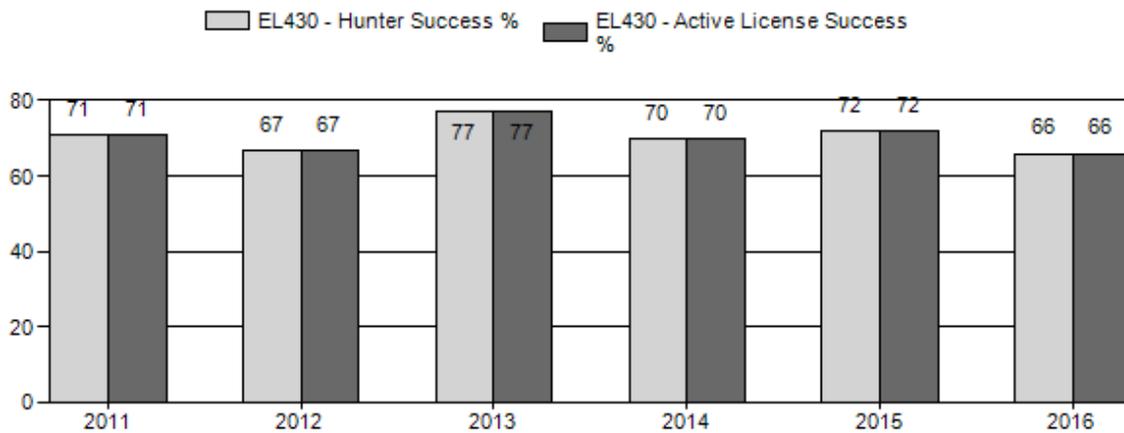
Harvest



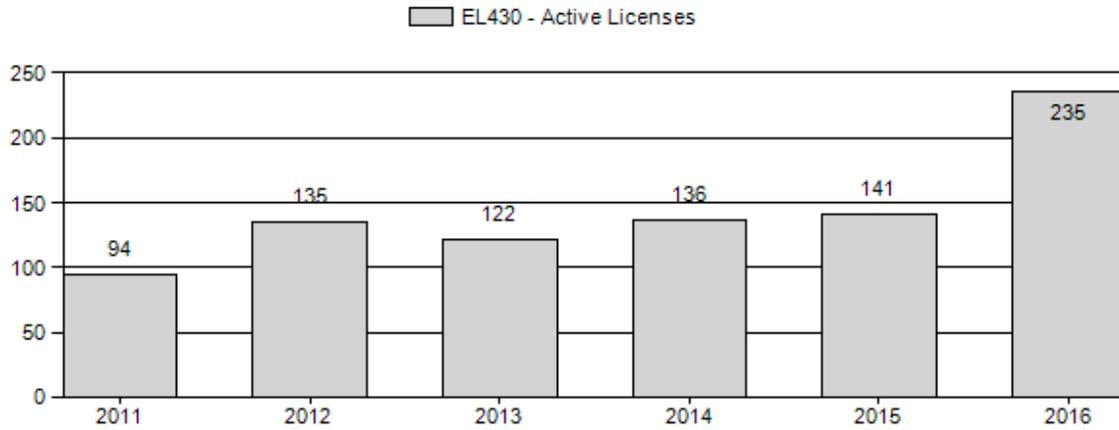
Number of Hunters



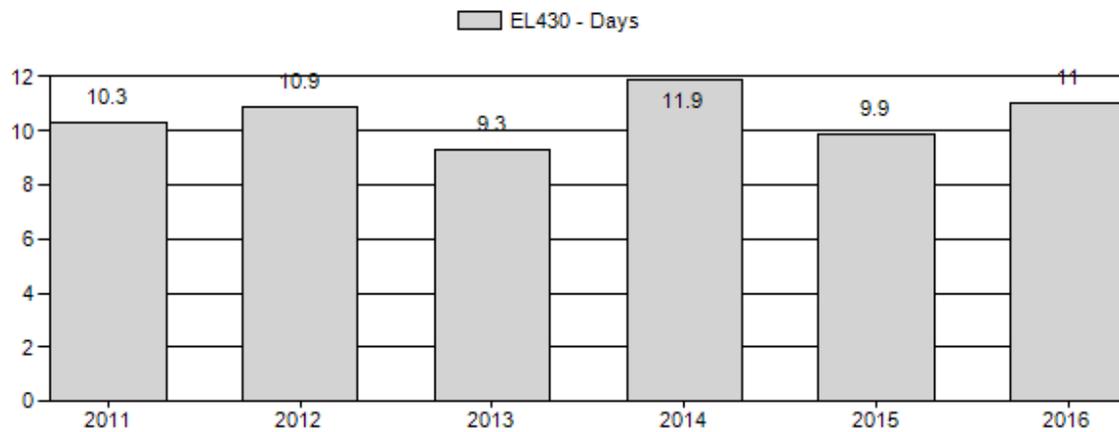
Harvest Success



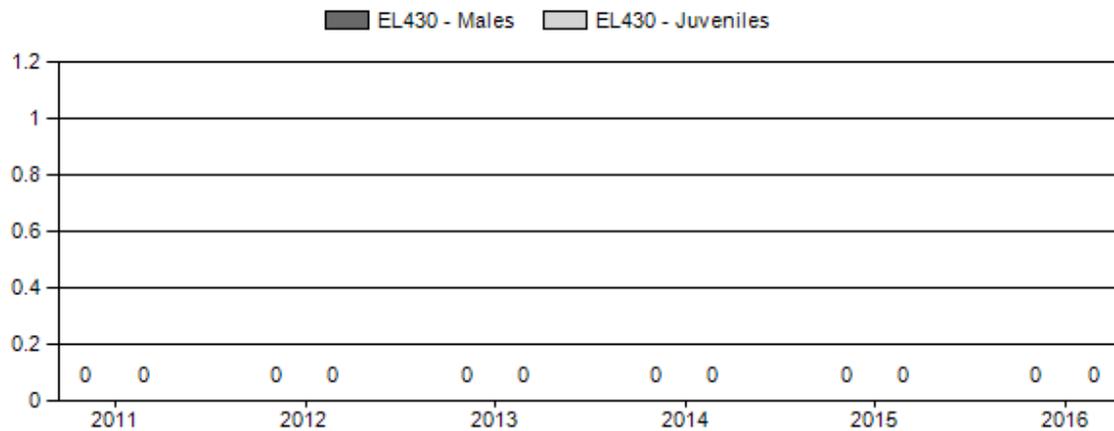
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2017 PROPOSED HUNTING SEASON

SPECIES : **Elk**

HERD UNIT : **Petition (430)**

HUNT AREAS: **124**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
124	1	Oct. 15	Nov. 30	40	Limited quota	Any elk
	4	Oct. 15	Nov. 30	150	Limited quota	Antlerless elk
	4	Dec. 1	Dec. 31			Antlerless elk valid east of Sweetwater County Road 19, and north and east of B.L.M. Roads 4409 and 4411, and west of B.L.M. Road 3310 and Sweetwater County Road 23S

Special Archery Season Hunt Areas	Type	Season Dates		Limitations
		Opens	Closes	
124	All	Sep. 1	Sep. 30	Valid in the entire area(s)

<i>Hunt Area</i>	<i>Type</i>	<i>Quota change from 2015</i>
<i>124</i>	<i>1</i>	<i>-10</i>
	<i>4</i>	<i>-50</i>
<i>Herd Unit Total</i>	<i>1</i>	<i>-10</i>
	<i>4</i>	<i>-50</i>

Management Evaluation

Current Hunter/Landowner Satisfaction Objective: 60% landowner/hunter satisfaction; bull quality sub-objective (average age of harvested elk 7.0) (2013)

Management Strategy: Recreational

2016 Hunter Satisfaction Estimate: 73%

2016 Landowner Satisfaction Estimate: 77%

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 80%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 56%

Most Recent 3-year Running Average Tooth Age: 6.8

The current management objective was established in 2013, and was set as an alternative objective of landowner and sportsmen satisfaction along with a sub-objective of bull quality as measured by average age of harvest. Our proposal is to decrease cow harvest across the area with more opportunity in the northern portion of the unit where we have had some concerned landowners, and decrease bull harvest due to average age of harvested bulls, comments from sportsmen, and concern for bull size.

Herd Unit Issues

The Petition elk herd is a small and highly mobile elk herd spread over a large area. A great deal of interchange occurs with Colorado, and hunt area 100 makes meaningful data collection and population estimation difficult. Four major issues face this herd; increasing oil and gas development throughout the herd, perceived competition with mule deer in the South Rock Springs Deer herd, competition with feral horses, and the increasing popularity of this herd for large antlered bulls.

Competition for space could occur between mule deer and elk in the western ½ of this herd (overlap with Deer Area 101). The South Rock Springs mule deer herd is a high profile population and any perception of competition between the two species could result in a call for a reduction of elk numbers in those areas where competition could be taking place. We need to ensure managers keep this in mind as we move forward with the management of this herd.

Many of the areas used by the Petition elk are also occupied by feral wild horses. Wild horses have been shown to be aggressive at water holes and may also exhibit the same behavior when it comes to feeding areas. The areas encompassed by both animals are typically low in plant production. Wild horses may be causing a shift in distribution by elk and other native wildlife and have a definite negative impact on herbaceous plants and shrubs in this area.

The popularity of this herd has increased over the last 10 years with 7 commissioner license holders choosing to hunt this herd unit in 2016. The overall “quality” of bulls harvested (as determined by antler size) was down from previous years mainly due to dry conditions from May to August. This may result in a decrease in the number commissioner licenses from this decline, but many large antlered bulls remain.

Weather

There continues to be an increasing trend in moisture within the herd unit which has resulted in the filling of reservoirs and a positive response from vegetation (Figure 1). The western portion of the unit saw the highest percent of normal precipitation falling in 2016. Most of the moisture fell during spring and late fall with very little rain falling during the middle portion of the summer, leading to earlier curing of vegetation and likely influenced antler growth in bulls.

Field Data

No population data is currently collected for this herd given the factors mentioned above, and this has a negative influence on management. Managers tend to be conservative in this herd unit

due to the overall lack of knowledge of this population, and elk numbers have definitely increased significantly in the area due to this factor. It is likely elk numbers change daily in this herd given emigration and immigration of elk to and from Colorado and adjacent areas in Wyoming. Flight budgets are insufficient to fly this very large, low density herd unit. Given the number of large bulls inhabiting this area, expanding distribution of elk, and limited antlerless harvest, it is likely elk are doing well in this area.

Tooth age data from teeth sent in to the WGFD tooth aging lab for 2016 (N = 20, 19 usable samples) yield an average age of 6.5 (range 2.5 to 10.5, Figure 2). Combined with 2014 and 2015 we have a 3-year average of a little over 6.8. There are two potential issues with the tooth data. The first is the low participation by landowner license holders within the unit. This may artificially decrease the average age of bulls harvested within the herd unit as personal discussions and knowledge of the bulls harvested on this license tend to be older age class bulls. The other potential issue is the potential lack of participation by those harvesting young bulls due to their lack of interest in the age of the animal, which could have the opposite effect of the landowner licenses. A greater effort must be made in the future to get a sample of all bulls harvested in the area.

Figure 1. Percent of normal precipitation for the herd unit from February 2016 to February 2017.



Sportsmen satisfaction in this herd is high with 73% of the 81 respondents “satisfied or very satisfied” with their overall hunting experience. There is some dichotomy between residents and non-residents though with residents showing a satisfactory rating of 75% and non-residents at 56%. This could be due to the high number of non-resident commissioner licenses (n = 5) and the lower size of bulls we saw this year in the unit. Reduced antler growth seems to be due to a very dry summer with a low quality of feed available. Non-resident commissioner license holders may have been disappointed with the money spent and the quality seen in the unit.

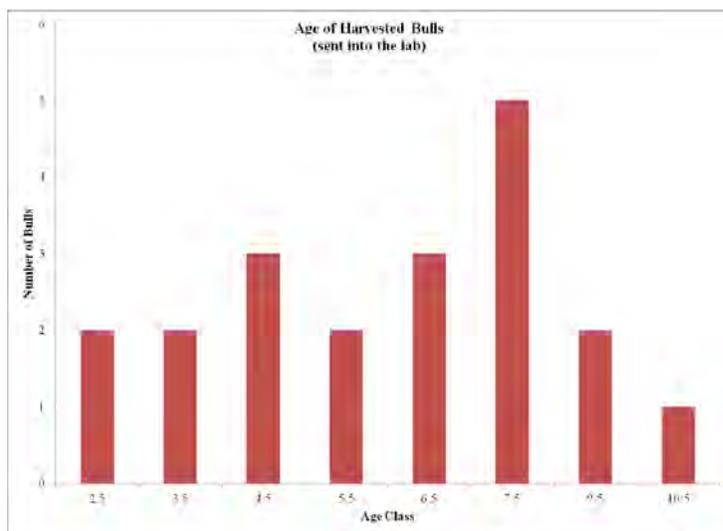
Landowner satisfaction was collected through personal contacts either via phone or face to face meetings. Fourteen landowners were contacted by 3 WGFD managers. Ten respondents felt elk numbers were “at or about at desired levels”, none felt numbers were “above desired levels” and

three felt elk numbers were “below desired levels”. One landowner did not feel like he could give an opinion on the abundance of elk in the unit.

Harvest Data and Population Indications

Hunter success declined slightly this year to 66%, primarily driven by a lower success rate on antlerless licenses (58%). This suggests it was difficult to find a cow within the unit, but is more likely affected by lower effort antlerless hunters tend to put into their hunt. Despite this lower success rate, we still were able to obtain a record cow harvest for this herd with 96 cows harvested.

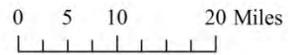
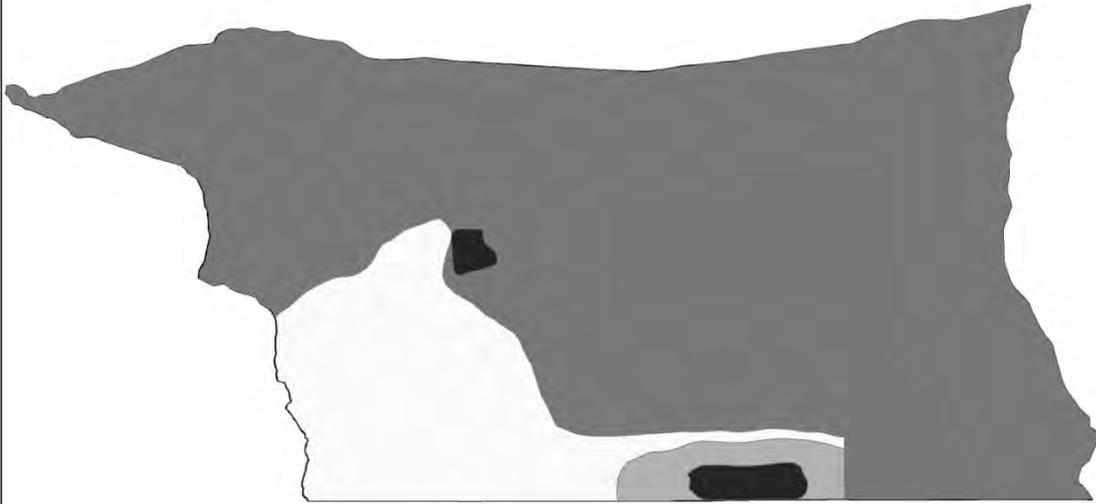
Figure 2. EL430 bull ages from teeth submitted to the WGFD laboratory.



Management Summary

It is important we balance the management of an important resource to hunters (i.e. good opportunity for large bulls) and the extremely sensitive ecosystem found in the Petition elk herd as we move forward with the management of this herd. Currently we see only few issues between landowners and the Petition elk herd and strong support from sportsmen hunting elk within the herd. Because of the relatively low density of elk in this unit we believe having flexibility in the harvest numbers between years is key. Competition between these elk and the South Rock Springs mule deer herd unit has not been determined. Preliminary analysis of data involving South Rock Springs mule deer and South Rock Springs elk has suggested some affect from elk on deer, but whether this is negatively affecting deer at a population scale is unknown at this time. A modest reduction in average age of bull harvested and a higher landowner satisfaction rate has lead to our current management strategy to decrease both antlered and antlerless licenses in the area.

Petition Elk Herd Seasonal Ranges



2016 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2016 - 5/31/2017

HERD: MO415 - UINTA

HUNT AREAS: 27, 35, 44, 901-902

PREPARED BY: JEFF SHORT

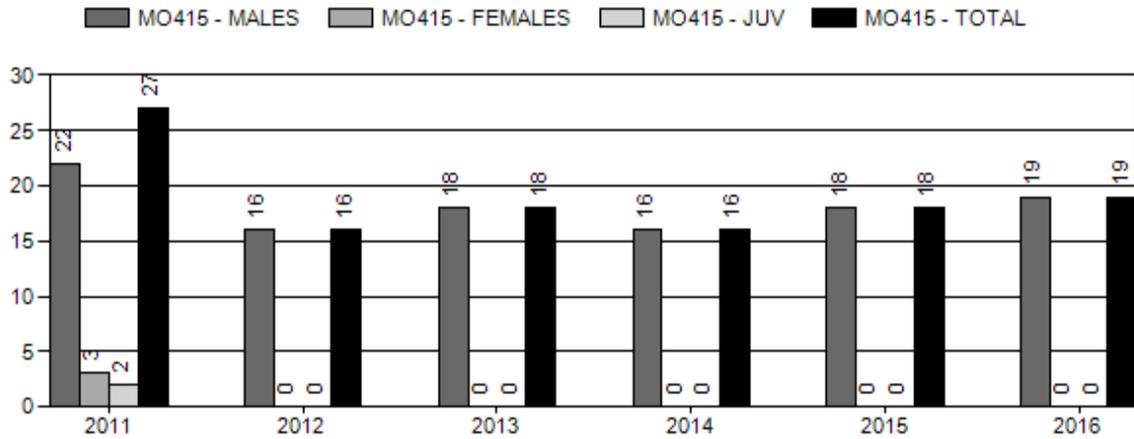
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	19	19	14
Hunters:	22	20	15
Hunter Success:	86%	95%	93%
Active Licenses:	22	20	15
Active License Success:	86%	95%	93%
Recreation Days:	177	180	140
Days Per Animal:	9.3	9.5	10
Males per 100 Females	40	25	
Juveniles per 100 Females	52	62	

Population Objective (\pm 20%) :	NA (0 - 0)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A
Number of years population has been + or - objective in recent trend:	NA
Model Date:	None

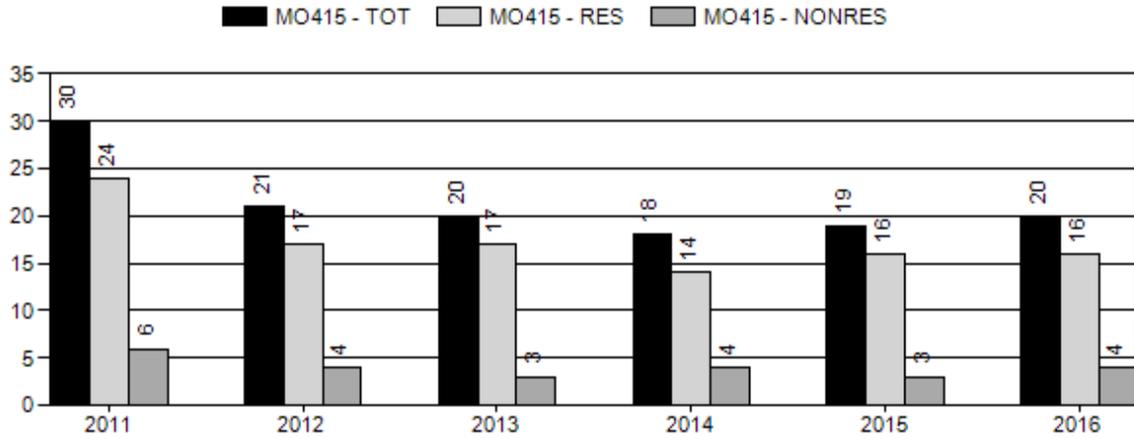
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	NA	NA
Males \geq 1 year old:	NA	NA
Total:	NA	NA
Proposed change in post-season population:	NA	NA

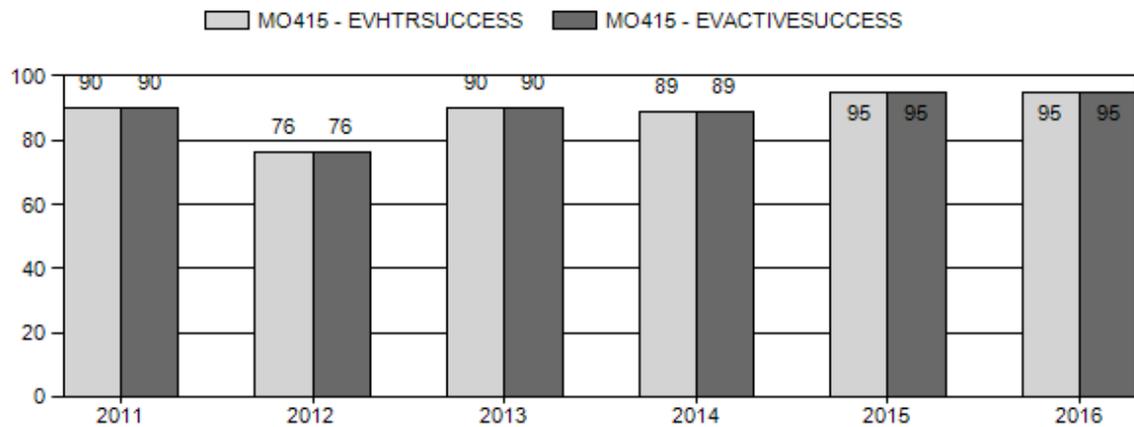
Harvest



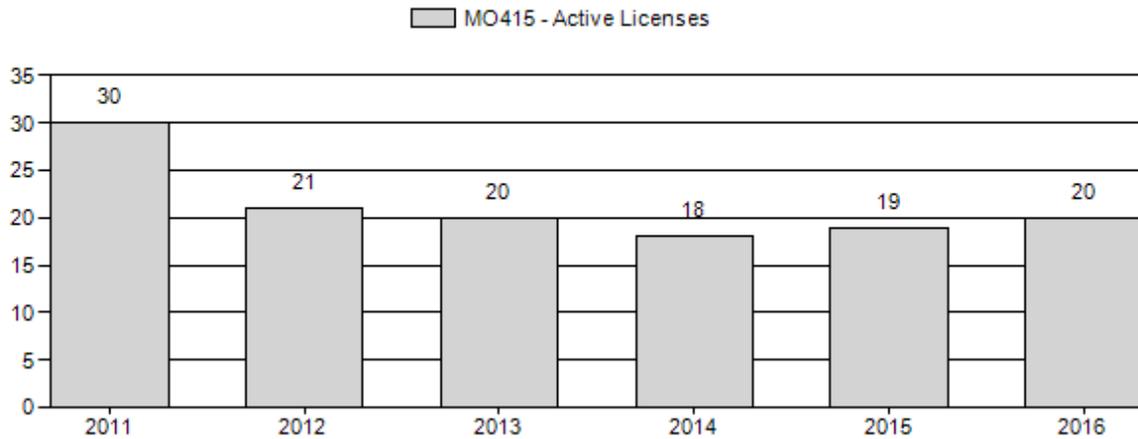
Number of Active Licenses



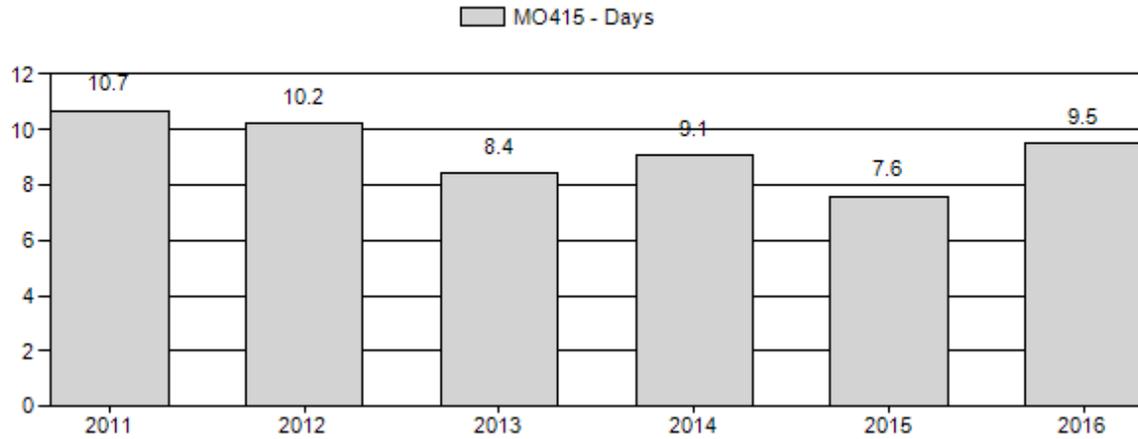
Harvest Success



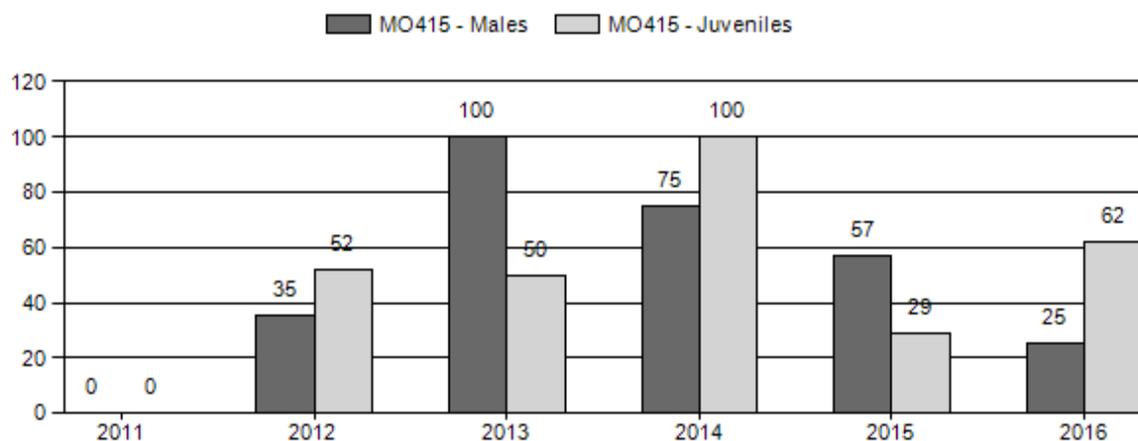
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Moose Herd MO415 - UINTA

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2012	0	0	52	52	19%	149	54%	77	28%	278	0	0	35	35	±0	52	±0	38
2013	0	0	8	8	40%	8	40%	4	20%	20	0	0	100	100	±0	50	±0	25
2014	0	1	2	3	27%	4	36%	4	36%	11	0	25	50	75	±0	100	±0	57
2015	0	1	3	4	31%	7	54%	2	15%	13	0	14	43	57	±0	29	±0	18
2016	0	0	2	2	13%	8	53%	5	33%	15	0	0	25	25	±0	62	±0	50

2017 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **UINTA (415)**

HUNT AREAS: **27, 35, 44**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
27	1	Oct. 1	Nov. 20	12	Limited quota	Antlered moose
35	1	Oct. 1	Nov. 20	3	Limited quota	Antlered moose
44						CLOSED

27, 35 Archery Sept. 1 Sept. 30 Limited quota Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2016
27	1	-3
35	1	-2
Herd Unit Total	1	-5

Management Evaluation

Current Postseason Population Management Objective: Harvest Based

Management Strategy: Special

2016 Postseason Population Estimate: ~300

2017 Proposed Postseason Population Estimate: ~300

Herd Unit Issues

This moose population is an interstate herd shared with Utah. Many moose in this unit that summer in the Uinta Mountains in Utah move into Wyoming to winter. Limited winter range continues to be an issue for this herd. A significant portion of the lower elevation moose habitat is on private land and landowner tolerance of moose can be an issue. Moose coming into towns and residing in yards has been a reoccurring issue in this population and numerous conflicts have occurred, resulting in necessary translocation of these animals. However, this issue is far less common than in the past, as moose populations have declined significantly.

The biggest issue facing this population is a lack of knowledge on disease impacts, primarily prevalence rates) in this herd. We have documented several cases of elaeophorosis and keratoconjunctivitis in this population and believe this may have had a significant population effects on the herd. While equally unknown, losses to these diseases appear to have stabilized, at least the number of reports have. However, we are continuing our conservative management strategy until we observe some increase in moose numbers.

In 2006, hunt area 44 was added to the herd unit. There have been fluctuating numbers of moose in this area, and contains limited moose habitat. When numbers are high it has created some concern to habitat managers since these moose are impacting the ability to reestablish riparian shrubs and rehabilitate aspen in these xeric habitats. The objective has been to limit the number of moose in this area. This area is sometimes hunted in combination with the adjacent area 35, sometime is hunted with its own season, or is closed, depending on moose abundance. Managers are reluctant to issue licenses in this area due to the fact moose license numbers have declined and are becoming increasingly hard to draw, and the fact harvest success in this area is very low. The ability of managers to issue fewer than 5 licenses in an area will solve this concern.

Weather

Weather during 2016 and into 2017 has been highly variable, ranging from a very mild winter in 2015-16 to a severe one in 2016-2017. In the early part of 2016 the winter started out harsh with high snow loads but it warmed up in February and March to finish fairly mild. A moist spring and early summer followed. In July and August conditions dried up considerably and limited precipitation fell through mid-December 2016. Beginning in late December, 2016, winter conditions became severe, with extreme cold and high snowfall. Most moose in this herd migrated to crucial winter ranges.. The winters from 2011 until 2015 were fairly mild with low snowpack and relatively warm temperatures resulting in easy winter conditions, and moose often remained higher on transitional habitats.

Smaller moose calves likely succumbed to winter mortality this most recent winter. The Utah Division of Wildlife has a number of moose collared in this population. Moose mortality was relatively high this year, especially on calf moose. Causes of mortality are still being investigated, but some moose succumbed to winter losses associated with winter ticks.

Habitat

Moose habitat in this herd has long been a concern, especially the quantity and quality of willow riparian habitat, and the condition of mixed mountain shrubs on transition and winter ranges. An increased effort to quantify conditions and concerns will begin next year, using locational data provided by the Utah Division of Wildlife. The lack of a local terrestrial habitat biologist in this region impacts our ability to conduct adequate habitat analyses.

Field Data

Since data is very limited in this herd, few trends are apparent other than moose numbers have declined significantly. It is not possible to model this interstate herd, and past efforts have resulted in very poor results and no confidence in outputs. Classification data is not collected consistently, usually from the air every third year with UDOW. We have experienced a significant reduction in nuisance moose complaints and reduced field observations of moose in the period between 2007 and 2011, followed by a perceived leveling since. Moose licenses were dramatically reduced in response to perceived population losses.

Limited moose flight data support our concerns about a reduction in moose numbers in the Uinta Herd Unit. The 2011 survey was conducted in ideal circumstances with high snow loads making moose highly visible and concentrated on specific wintering areas. The survey was also more intensely flown than previous surveys. This indicates that it was a good reference count and that we would have not missed large numbers of animals that may have been seen in previous surveys. The 2011 count represents the lowest total moose seen in Wyoming since the counts have been conducted. This information supported the deep cuts we made in moose harvest over those years. For 2017 we are again conservative with harvest opportunity. Despite reduced licenses, we remain below the minimum age of harvest objective. Moose harvested in areas 27 and 35 are also not meeting the % of male harvest ≥ 5 years of age objective.

Moose surveys are flown in cooperation with Utah DOW, most recently in February 2013. Past results are shown below. Utah pays for a joint elk and moose survey on average every third year. Classification data is collected during those surveys with Utah. In the off years some moose classification data is collected during aerial mule deer surveys in December. That data is reported in the JCR report graphs and tables but sample sizes are inadequate and results should be viewed with some caution.

TOTAL MOOSE COUNTED BY YEAR

	1996	1998	2001	2004	2007	2011	2013
UTAH DAGGETT (8B)	103	84	109	107	95	NA	74
UTAH SUMMIT (8A)	182	229	243	150	181	92	104
WYOMING	393	289	334	270	314	232	174
TOTAL WYOMING AND UTAH SUMMIT	575	518	577	420	495	324	278
TOTAL	678	602	686	527	590	324	352

Harvest Data

Antlerless harvest opportunity has been eliminated in this herd unit. We have dramatically reduced the number of licenses in the last six years due to perceived declines in moose abundance. Despite this, and as is typical for this species, antlered moose hunters have had very good success rates in the last five years. Tooth age data indicates at current hunting levels we are able to recruit a few older animals into the population and have them available to hunters. However, most of those older harvested animals have come from Area 44, which will again be closed for 2017 due to low moose numbers.

2011 - 2016 Harvest Summary

for Moose Herd MO415 - UINTA

Year	HUNTERS					HARVEST								SUCCESS				
	Res Htrs	NRes Htrs	% NRes	Total Htrs	Act Lic	Ylg Male	Adult Male	Total Male	% Male	Fem	% Fem	Juv	% Juv	Tot Harv	Hntrs	Act Lic	Hntr Days	Days to Harv
2011	24	6	20%	30	30	0	22	22	81%	3	11%	2	7%	27	90%	90%	288	10.7
2012	17	4	19%	21	21	0	16	16	100%	0	0%	0	0%	16	76%	76%	163	10.2
2013	17	3	15%	20	20	0	18	18	100%	0	0%	0	0%	18	90%	90%	151	8.4
2014	14	4	22%	18	18	0	16	16	100%	0	0%	0	0%	16	89%	89%	146	9.1
2015	16	3	16%	19	19	0	18	18	100%	0	0%	0	0%	18	95%	95%	137	7.6
2016	16	4	20%	20	20	0	19	19	100%	0	0%	0	0%	19	95%	95%	180	9.5

Population

Due to interstate nature of this herd no working model exists. Wyoming hunters typically have fewer moose available (especially during the early season) and moose distribution is primarily dictated by weather conditions. Weather severity is the determining factor in the number of moose that enter Wyoming from Utah during the winter. This and other factors make data collected inconsistent and unreliable.

Management Summary

For 2017 hunting seasons we will remain conservative with hunter harvest. Hunt area 44 will be closed again for 2017 and no antlerless harvest will be allowed in the herd unit. This is an effort to allow maximum growth of the herd. However, hunting is not the limiting factor for this herd. The objective and management strategy were revised in 2014. During that objective review process we moved to a new objective type for this herd. Due to the issues associated with modeling and tracking this population we have switched to a harvest statistic based objective. This entails an age of harvest objective and an average days per harvest objective.

New objective criteria (Harvest Based)

- Minimum age of Harvest (median \geq 4 years)
- Days per Harvest (average \leq 10 days)

Secondary objective:

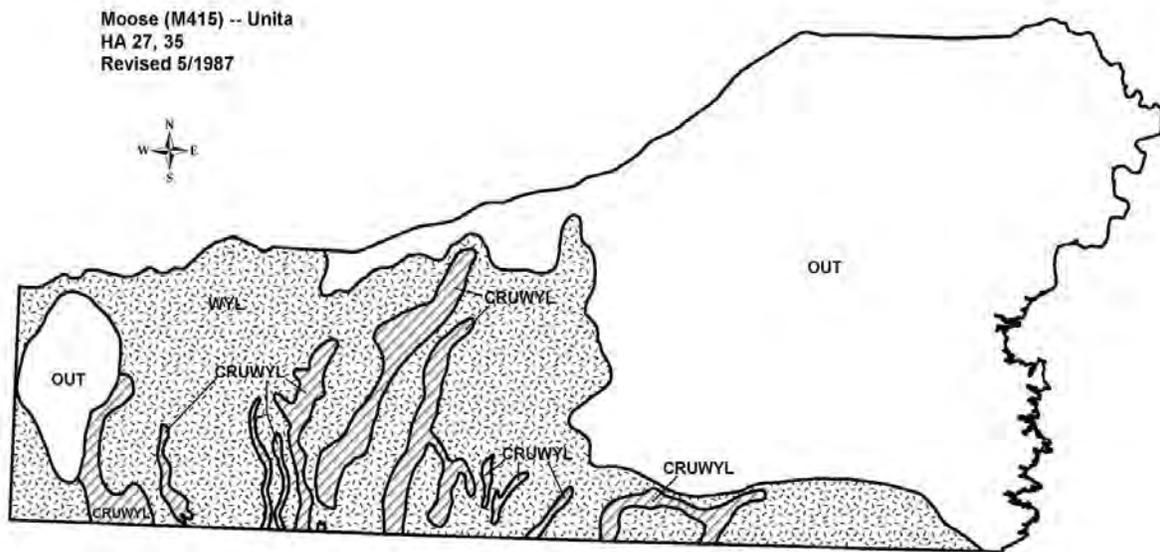
- 40% of male harvest \geq 5 years of age
(5 year average timelines for better sample sizes)

Uinta Moose Herd Harvest Data 2012 -2016

	2012	2013	2014	2015	2016	5 year average
Mean age of harvest	5.0	4.333	4.125	4.37	4.18	4.4
Median age of harvest	4	4	3	4	4	3.8
Days per harvest	10.2	8.4	9.1	7.6	9.5	9.0
% male harvest \geq 5 years	45%	33%	12%	25%	45%	32%
Average Antler spread (in)	40.35	38.8	36.0	35.75	38.2	37.8

The Uinta Herd Unit has small sample sizes for harvest so outliers or missed samples have a large affect on the data. Currently the 5 year average for the herd is slightly below objective for Minimum age of Harvest, above objective on days per harvest and below objective on percent of male harvest \geq 5 years of age.

2014 was the first year of this type of objective option. Since there are very low harvest sample sizes averages over time will be most useful. There is also an unknown amount of variation around tooth cementum analysis estimates of age. Currently, the JCR system is not set up to report this type of objective data.



2016 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2016 - 5/31/2017

HERD: MO417 - LINCOLN

HUNT AREAS: 26, 33, 36, 40

PREPARED BY: JEFF SHORT

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	835	725	680
Harvest:	47	43	35
Hunters:	48	48	40
Hunter Success:	98%	90%	88%
Active Licenses:	48	48	40
Active License Success:	98%	90%	88%
Recreation Days:	382	366	290
Days Per Animal:	8.1	8.5	8.3
Males per 100 Females	54	0	
Juveniles per 100 Females	38	0	

Population Objective ($\pm 20\%$) : 1000 (800 - 1200)

Management Strategy: Special

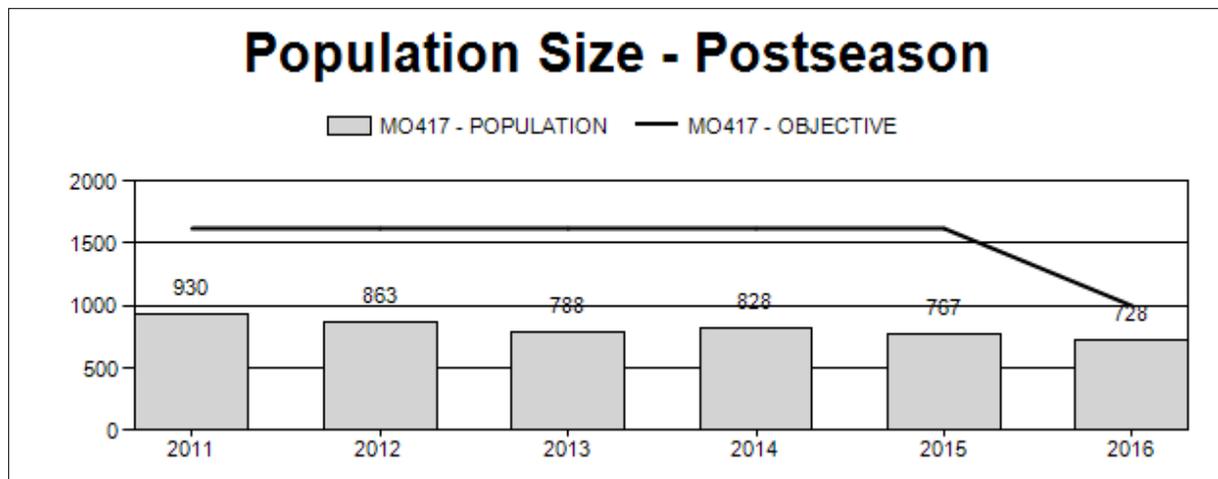
Percent population is above (+) or below (-) objective: -27.2%

Number of years population has been + or - objective in recent trend: 10+

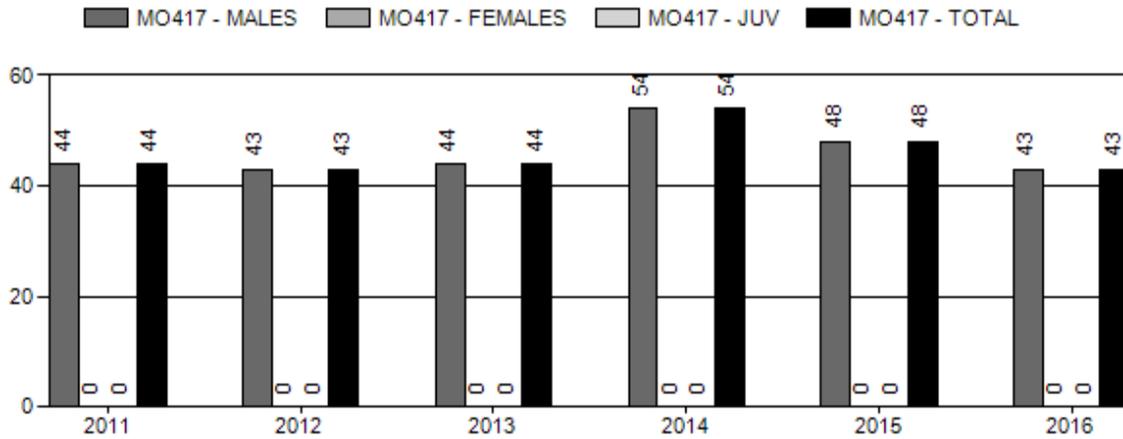
Model Date: 02/22/2017

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

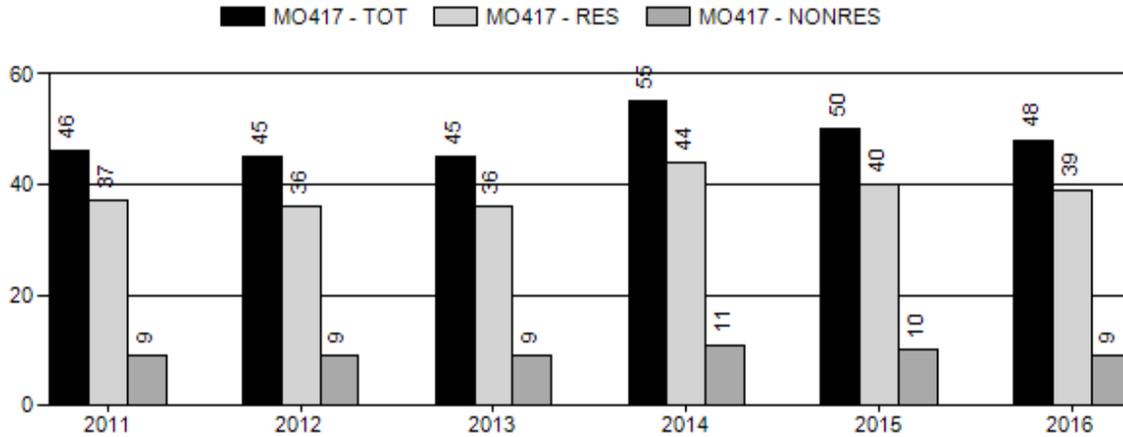
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	21.4%	20.4%
Total:	6.9%	5.0%
Proposed change in post-season population:	-6.3%	-6.3%



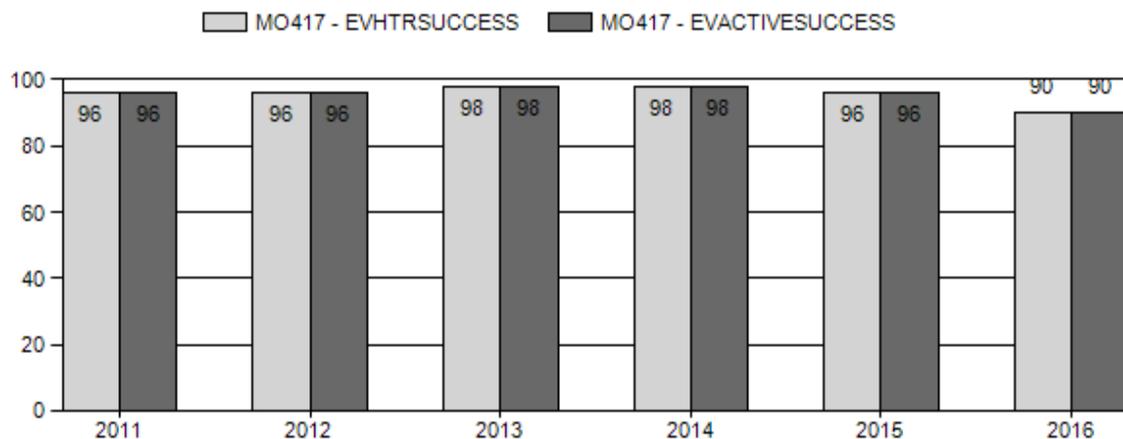
Harvest



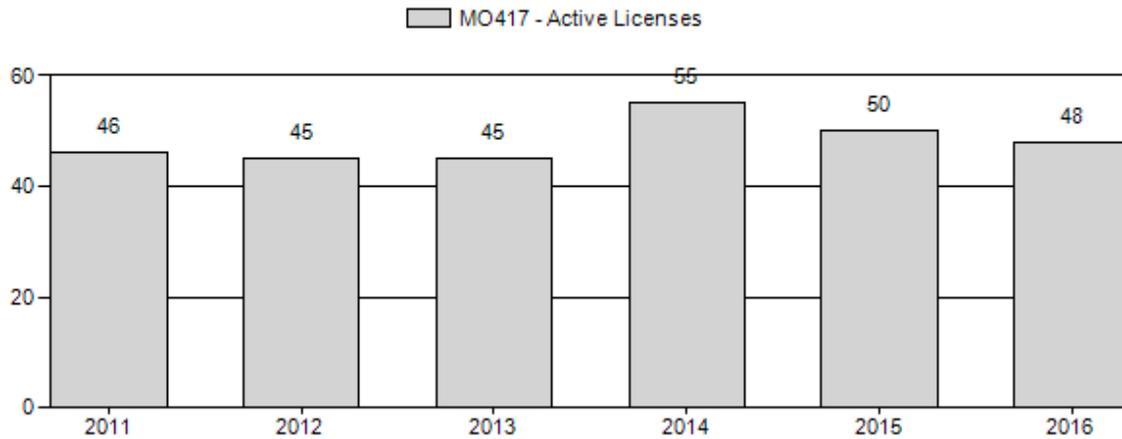
Number of Active Licenses



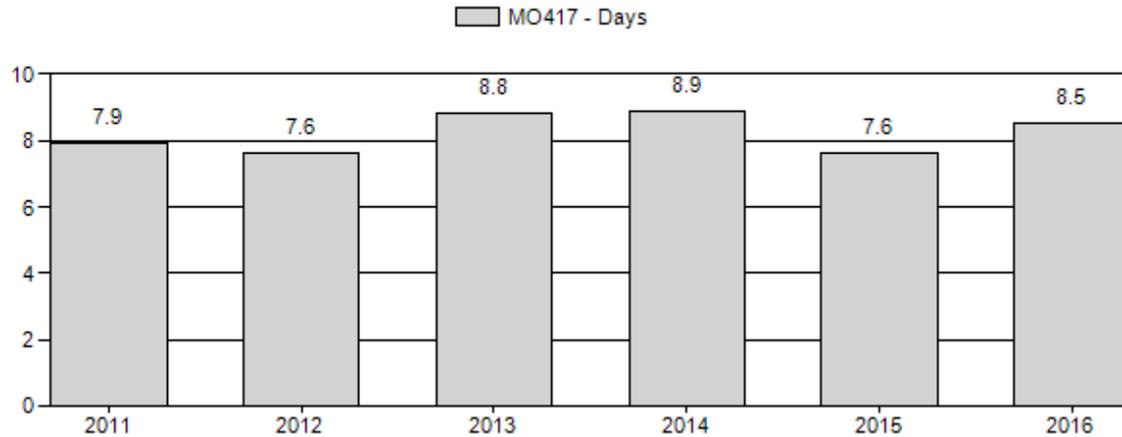
Harvest Success



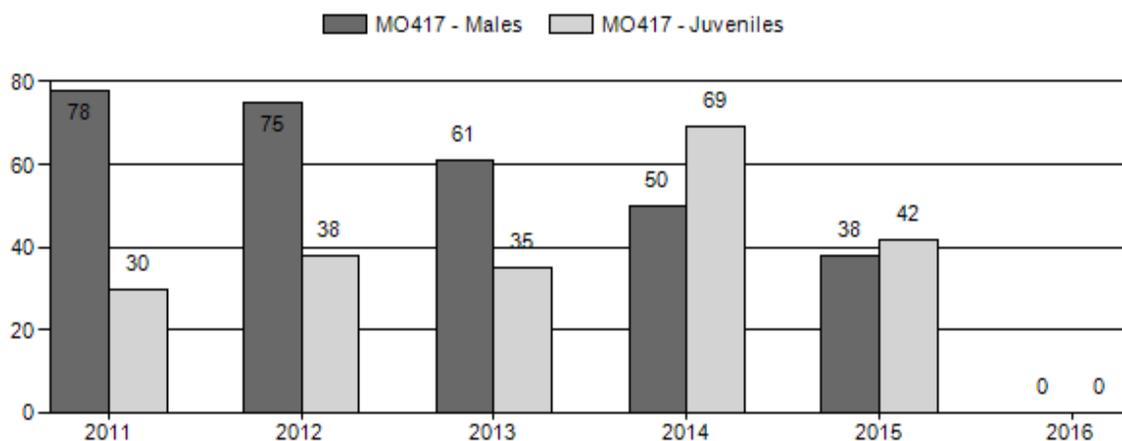
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Moose Herd MO417 - LINCOLN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	930	0	0	47	38%	60	48%	18	14%	125	0	0	0	78	± 18	30	± 10	17
2012	863	0	6	6	35%	8	47%	3	18%	17	0	0	75	75 ± 51	38	± 32	21	
2013	788	0	124	124	31%	202	51%	71	18%	397	0	0	61	61 ± 6	35	± 4	22	
2014	828	1	7	8	23%	16	46%	11	31%	35	0	6	44	50 ± 27	69	± 34	46	
2015	767	11	59	70	21%	183	55%	77	23%	330	0	6	32	38 ± 5	42	± 6	30	
2016	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0 ± 0	0	± 0	0	

2017 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **LINCOLN (417)**

HUNT AREAS: **26, 33, 36, 40**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
26	1	Oct. 1	Oct. 31	32	Limited quota	Antlered moose
33						CLOSED
36	1	Oct. 1	Oct. 31	5	Limited quota	Antlered moose
40	1	Oct. 1	Oct. 31	3	Limited quota	Antlered moose

26, 36, 40 Archery Sep. 1 Sep. 30 Limited quota Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2016
33, 36, 40	1	-10
36	1	+5
40	1	+3
26	1	-8
Herd Unit Total	1	-10

Management Evaluation

Current Postseason Population Management Objective: 1,000

Management Strategy: Special

2016 Postseason Population Estimate: ~728

2017 Proposed Postseason Population Estimate: ~683

Herd Unit Issues

This moose herd, like other moose populations in Wyoming and in most southern latitudes, has shown a marked decline in the last two decades. A portion of the lower elevation riparian moose habitat is on private land so landowner tolerance of moose can be an issue, and damage complaints are common. Moose entering towns and residing in yards has also been a considerable issue in this herd in the past, but is less so now, with reduced moose abundance. This herd unit is not a closed population with the northeast boundary line being through prime moose habitat.

Parasite caused mortalities have been a significant issue in this population, with noticeable declines in abundance and distribution. The fact this decline is of unknown magnitude complicates management and impacts population estimation efforts. We have documented several cases of elaeophorosis and keratoconjunctivitis in this population and believe this may have had a significant population effects on the herd. Additionally, ghost tick infestations are occurring, which can increase winter related mortality. Losses to these diseases appear to have stabilized, at least the number of reports received have. Moose tend to die from elaeophorosis during the summer and are often overlooked given their propensity for moving into backcountry areas. Only when they are infected in accessible areas do we receive reports. Most moose checked have the presence of the parasite in this herd. We are continuing conservative management in this herd until we observe increase in moose numbers and objectives are achieved.

Moose are of greatest abundance in the northernmost area of this herd unit; area 26. The northern boundary of this area is prime moose habitat, and it makes little sense to assume interchange of significant amount does not occur with the areas to the north. The remaining areas in the herd have much lower moose abundance and limited moose habitats, primarily associated with riparian river bottoms or scattered patches of suitable timber. Hunt area 36 has low densities of moose scattered over a large expanse of non-typical open moose habitat, dominated by mixed mountain shrubs and isolated patches of conifer (primarily subalpine fir) and aspen. This area acts as a dispersal area for adjacent larger populations of moose in the Uinta and Lincoln herds. The young average age of animal harvested there supports our concept that younger age class animals are move into this area to occupy empty home ranges. Moose in areas 33 and 40 occur primarily along major drainages only, including the Green River in area 33, and the Black's Fork and Ham's Fork in area 40. Given low numbers of moose area 33 had been closed for hunting from 2003 to 2013, was opened for the 2014-2016 seasons, and is closed again in 2017.

Weather

Weather during 2016 and 2017 was highly variable, ranging from an exceptionally mild winter in 2015-16 to the most severe winter since 1928 in 2016-17. Moose are little impacted by winter conditions unless weakened by disease or parasites. We likely lost some moose to starvation or parasites this winter, especially ghost tick.

Habitat

Habitat data has been inconsistently collected in this herd unit in the recent past. Known issues of decadence occur among willow habitats in area 26, 33, and 40, and some areas have received fairly heavy browsing pressure in past years. A renewed effort to quantify habitats throughout this herd is underway, as are efforts to address concerns of willow and aspen stand condition through habitat projects. Results of Rapid Habitat Assessment work will be included in this report in 2017.

Field Data

Moose surveys are conducted in hunt area 26 from a helicopter concurrent with West Green River elk surveys. Classification data is collected during these flights. Those surveys are conducted every other year. Areas 33, 36 and 40 are not flown due to the large geographic area and very low moose densities. The joint elk and moose survey was flown in the winter of 2015/16. Total number of moose observed during this flight was 331. The Idaho sightability model was used to estimate a total population for the area flown. That estimate was 383 moose with a standard error of 12.41. Very good coverage of occupied moose winter habitat was achieved in the survey. However, there are some peripheral habitats that were not flown due to budget constraints. For population modeling we have added 50 animals to the estimate and enlarged the SE to account for those areas. The previous survey was flown in the winter of 2013/14 and resulted in a raw count of 406 moose with a sightability estimate of 476. In the off years between elk/moose flights, some moose classification data is collected during aerial deer surveys in December. That data is reported in the JCR report graphs and tables but sample sizes are inadequate and ratios are not reliable. The extensive surveys conducted in 2014 and 2016 resulted in estimates that are lower than survey sample sizes were in the late 1990s and early 2000s with lower effort back then. This substantiates field observations that moose populations were greatly reduced around 2006/2007. Reduced habitat condition and disease were likely responsible for population reduction.

Harvest Data

Antlerless harvest opportunity has been very limited in this herd unit, and was finally eliminated. We have dramatically reduced the number of licenses in the last 10 years due to the population decline. Antlered moose hunters still have very good success rates, which is typical for this species, even during periods of low density and abundance. Hunt area 26 is considered a very good quality moose hunt with potential for trophy animals. Area 26 has ample public access and a variety of places to hunt moose. Hunts in areas 33, 36 and 40 are considered good hunts with good success rates but require more time to find moose spread out over large areas, many of which are privately owned. Public access can be more challenging in these areas but access to moose hunting is available. They are not typically considered trophy areas but mature animals do exist and are harvested. Harvest data from 33, 36 and 40 does not give us much information since sample sizes are very small. In Hunt area 26 harvest data has a better sample size. Tooth age data from Area 26 indicates we have an average age of harvest of 3.2 years old for 2016. Average antler spread in Hunt Area 26 was 35.20 for 2016.

Lincoln Moose Herd Harvest Data 2012 -2016

	2012	2013	2014	2015	2016	5 year average
Mean age of harvest	4.4	4.4	4.1	3.6	3.2	3.9
Median age of harvest	5	4	4	4	3	4
Days per harvest	7.6	8.8	8.9	7.6	8.5	8.28
% male harvest ≥ 5 years	52%	43%	34%	20%	12%	32%
Average Antler spread (in)	37.63	36.12	37.84	37.40	35.20	36.8

2011 - 2016 Harvest Summary

for Moose Herd MO417 - LINCOLN

Year	HUNTERS					HARVEST										SUCCESS			
	Res Htrs	NRes Htrs	% NRes	Total Htrs	Act Lic	Ylg Male	Adult Male	Total Male	% Male	Fem	% Fem	Juv	% Juv	Tot Harv	Hntrs	Act Lic	Hntr Days	Days to Harv	
2011	37	9	20%	46	46	0	44	44	100%	0	0%	0	0%	44	96%	96%	348	7.9	
2012	36	9	20%	45	45	0	43	43	100%	0	0%	0	0%	43	96%	96%	326	7.6	
2013	36	9	20%	45	45	0	44	44	100%	0	0%	0	0%	44	98%	98%	386	8.8	
2014	44	11	20%	55	55	0	54	54	100%	0	0%	0	0%	54	98%	98%	482	8.9	
2015	40	10	20%	50	50	0	48	48	100%	0	0%	0	0%	48	96%	96%	366	7.6	
2016	39	9	19%	48	48	0	43	43	100%	0	0%	0	0%	43	90%	90%	366	8.5	

Population

Prior to 2015, there was no recent working model for this moose population. It was not possible to build a reasonable model with the available data. With the new sightability estimates we now have 2 population estimate data points to anchor the model, a spreadsheet version adopted in 2012 to replace POP-II. The reader should be cautioned this new model is to be used with a great deal of caution. This modeling technique is not designed to be used for moose populations. It is based on an elk population model and some parameters may be different. With a new model, population trends will often be unrealistic in the early timeframe as the model works to try to normalize and accommodate the data. Results should be truncated and all focus placed on the last few years of model estimates, which are anchored by aerial population estimates. The reported model is for hunt area 26 only. It is not feasible to collect adequate data for modeling in the remainder of the herd unit. Total herd unit estimates in the JCR are reported as model estimates plus ~120 animals to account for the overall objective.

The CJ,CA model was selected due to the low Relative AICc score, and its relatively good fit with the data. The CJ,CA model fits reasonably within the population characteristics of moose. In the future it will be important that we obtain a population estimate periodically to proof the status of the herd and anchor the model. Without this anchor, it is unlikely we can provide a working population model and track the trend of this population.

For several consecutive years in Area 26 we saw very low numbers of moose on post-season classification surveys. This was very concerning considering counting conditions were ideal in several of those surveys. We had also experienced a reduction in nuisance moose complaints and reduced field observations of moose. This information prompted us to reduce harvest on this herd significantly during that time.

Management Summary

2016 seasons remained conservative for the hunting season, and we are proposing to become even more conservative in 2017. We now have the ability to issue licenses in a split quota style, wherein we are not required to issue license per area in increments of 5 to accommodate the nonresident quota, as long as these percentages balance on a statewide manner, similar to how we have issued wild sheep licenses. For the 2017 season in area 26, we reduced licenses from 40 to 32, given the area has fallen below objective in bull:cow ratio and mean age of harvested bulls. In Hunt Areas 33, 36 and 40 we split the hunt areas into separate licenses per area (they were combined in 2016). We authorized 5 licenses in area 36 and 3 licenses in hunt area 40. Hunt Area 33 will again be closed.

M417 - Lincoln
HA 26, 33, 36, 40
Revised 1/2006

