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Acknowledgement

The field data contained in these reports was collected by the combined efforts of the Laramie Region Wildlife Division personnel including District Wildlife Biologists, District Game Wardens, the Wildlife Technicians, the Habitat Biologist, the Wildlife Management Coordinator and Region Supervisor, and other Department personnel and volunteers working at check stations. The authors wish to express their appreciation to all those who assisted in data collection.

2016 - JCR Evaluation Form

SPECIES: Pronghorn

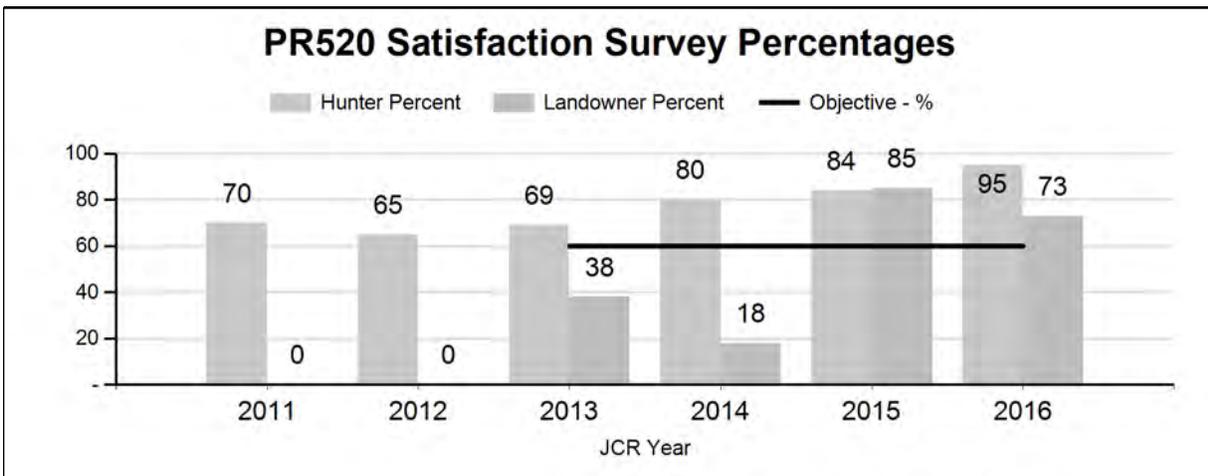
PERIOD: 6/1/2016 - 5/31/2017

HERD: PR520 - CHALK BLUFFS

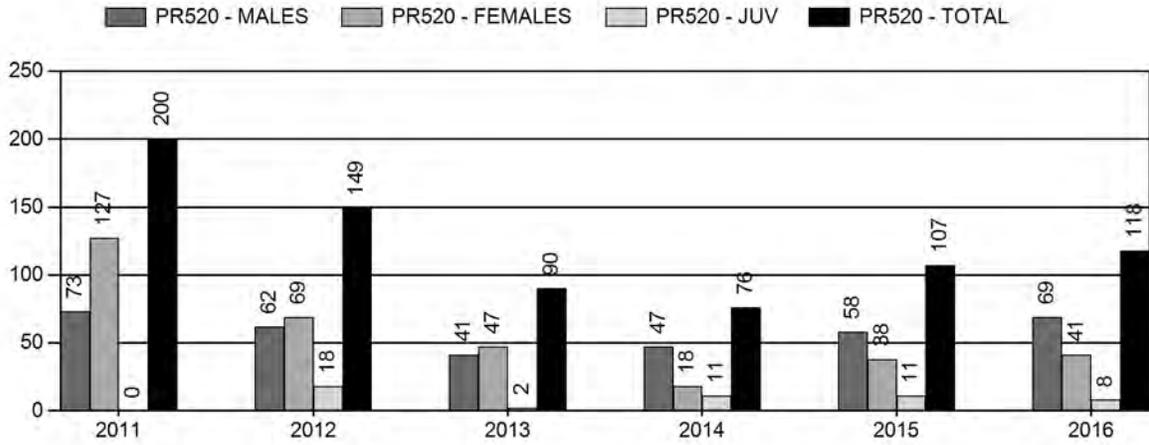
HUNT AREAS: 111

PREPARED BY: MARTIN HICKS

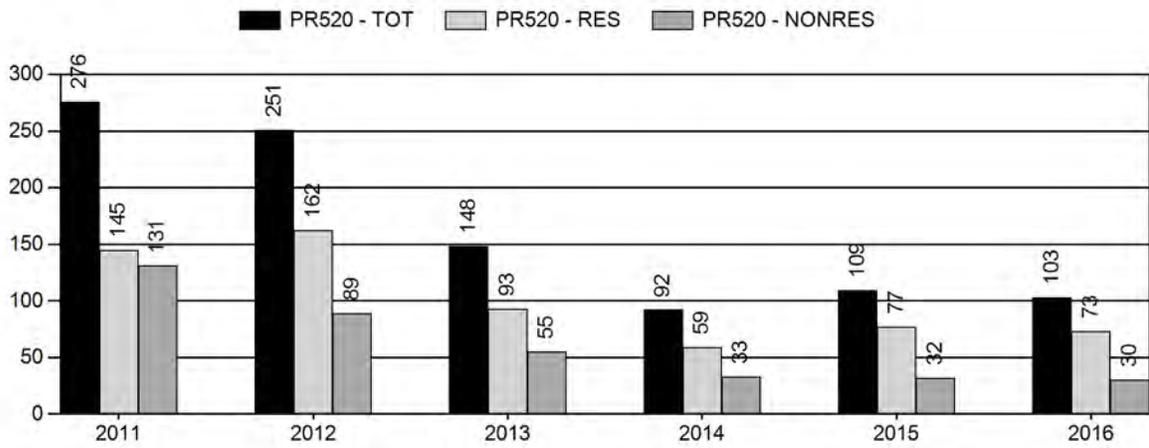
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	73%	73%	95%
Landowner Satisfaction Percent	49%	49%	75%
Harvest:	124	118	120
Hunters:	175	103	100
Hunter Success:	71%	115%	120 %
Active Licenses:	202	139	140
Active License Success:	61%	85%	86 %
Recreation Days:	829	394	395
Days Per Animal:	6.7	3.3	3.3
Males per 100 Females:	21	36	
Juveniles per 100 Females	49	71	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			24%
Number of years population has been + or - objective in recent trend:			1



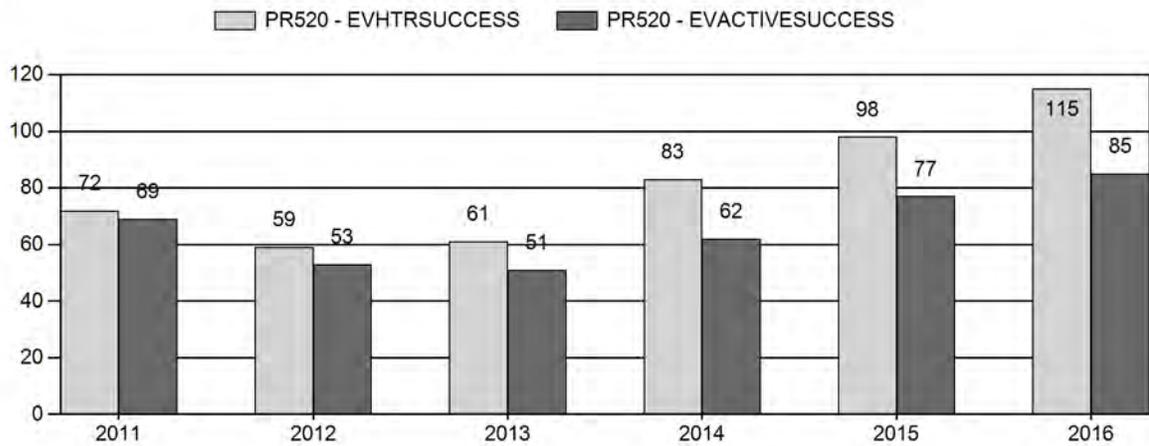
Harvest



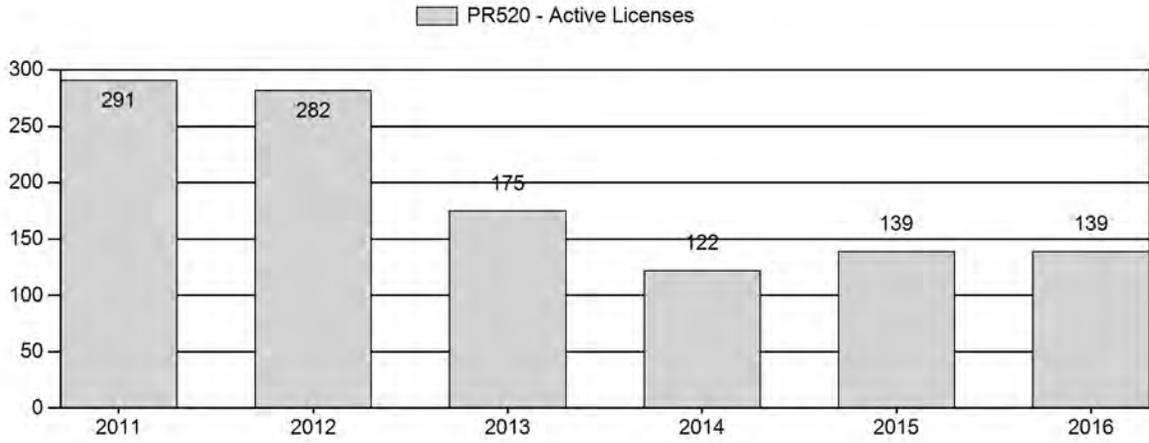
Number of Active Licenses



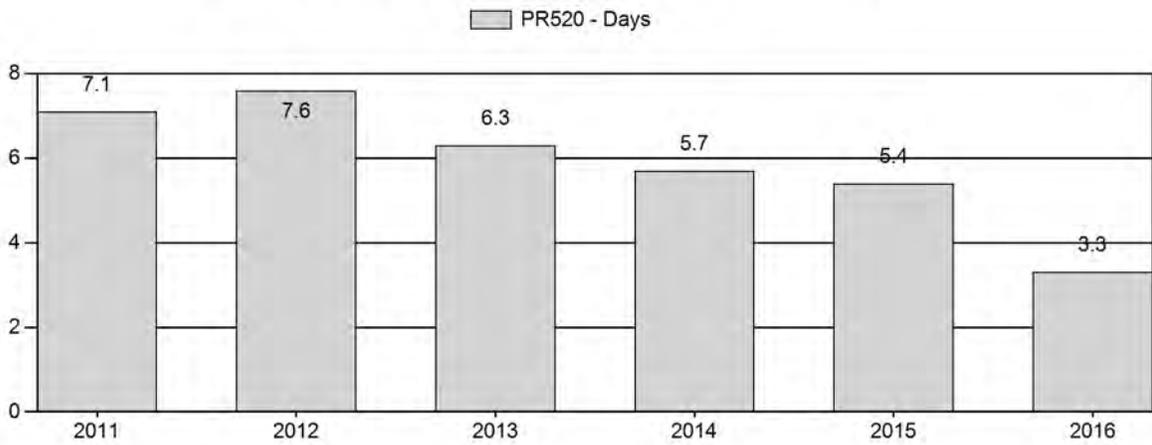
Harvest Success



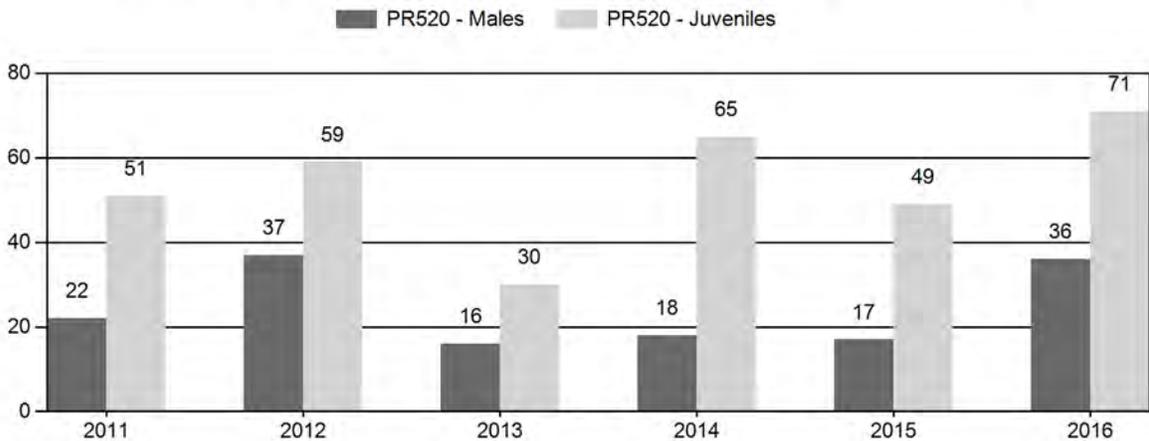
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



**2017 HUNTING SEASONS
CHALK BLUFFS PRONGHORN HERD (520)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
111	1	Sept. 20	Oct. 14	100	Limited quota	Any antelope
111	1	Nov. 15	Dec. 31			Doe or fawn
111	6	Sept. 20	Oct. 14	50	Limited quota	Doe or fawn
111	6	Nov. 15	Dec. 31			Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
111	Aug. 15	Sept. 19	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
111	1	0
	6	0

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: Landowner and hunter satisfaction; Target goal \geq 60%

Management Strategy: Private Land

2016 Hunter Satisfaction Estimate: 94%

2016 Landowner Satisfaction Estimate: 73% (58% response)

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 86%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 60%

Herd Unit Issues

The management objective for the Chalk Bluffs Pronghorn Herd Unit numeric post-season population objective was changed starting the 2013 season to a landowner and hunter satisfaction based objective with a private land management strategy. The change was based on public involvement during the 2013 herd objective review process. Classification is now collected to gauge pronghorn numbers and locations prior to the season opener.

There is not a postseason population estimate for a variety of reasons: 1) Open population with Colorado and Nebraska, 2) Restricted access due to urban encroachment and industrial gas

development, which prevents our ability to influence harvest, 3) Poor classification data, which is always well below the adequate sample size and 4) No reliable working model.

Oil and gas along with rural development have become an increasing problem in the past 5 years. It appears this development has shifted pronghorn movement and habitat occupation.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Chalk Bluffs herd unit the reviewer is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability was similar to 2015 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. However, precipitation events decreased and temperatures increased as the summer progressed resulting in drier than normal conditions July through August. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant species. The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species.

Field and Harvest Data

Due to our inability to collect data there is little confidence in classification data. In the adjacent Hawk Springs Herd Unit's fawn ratios remained about the same as 2014 which contributed to a slight increase in the population, it was expected the same is true for this herd unit. However, without a reliable population estimate, interstate movement with Colorado, and an increase in industrial and residential expansion, license numbers will remain conservative. Type 1 license success in 2016 (84%) increased compared to 2015 (75%) but well above the 5-year average of 63%. Effort in 2016 (2.9 days/harvest) dropped drastically compared to 2015 (6.5 days/harvest), and slightly lower than the five-year statewide effort of 3.8 days/harvest. The increase in success was most likely the result of increased pronghorn movement from Colorado into Wyoming. The significant decrease in effort is most likely a result of the same interstate pronghorn movement. Type 6 license success in 2016 (81%) was slightly higher than 2015 (81%) and significantly higher than the five-year average (61%). Type 6 license effort in 2016 (4.2 days/harvest) was slightly higher than 2015 (3.3 days/harvest) but moderately lower than the five-year average (5.7 days/harvest) and more in line with the five-year statewide effort (3.9 days/harvest). There could be two possibilities for the increase in success: 1) the population increased and/or 2) increased

movement into Wyoming. The improvement in effort is somewhat confusing given the lack of access. A possible explanation is hunters waited to harvest a doe when they came into Wyoming from Colorado during the late season (November/December) when access was easier to obtain.

Two years of improved harvest data does not warrant an increase in Type 1 or Type 6 license numbers given poor access and as increase in residential and industrial development. Harvest is dependent on movement into Wyoming from Colorado, which is not reliable. In addition the majority of landowners (73%) responded that population is at or about at the desired level (Appendix A). The sportsmen echoed landowner comments with 83% of the hunters satisfied with their overall hunt, indicating pronghorn are at desired levels for sportsmen. Response rate was 58% which exceeded the minimum return threshold of 25%.

The number of pronghorn classified each August is always well below the adequate samples size. Typically pronghorn are still in Colorado during survey time so it is difficult to infer any population parameters. Managers will still use classification data to give hunters anecdotal information for the upcoming hunting season (e.g. distribution, buck quantity and quality).

Management Summary

The opening date will remain the same at September 20 with no change in Type 1 and Type 6 license numbers. Landowners are still in favor of the late season hunt from November 15 – December 31 to address any damage concerns. Based on past seasons we predict a harvest of 50 bucks, 20 does and 10 fawns for a total of 80 pronghorn.

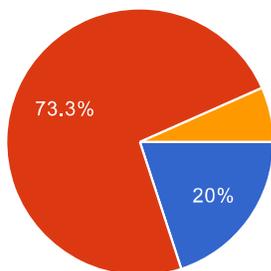
Appendix A

17 responses

[View all responses](#)

Summary

Please indicate your satisfaction level with the current pronghorn population



Above Desired Levels	3	20%
At or About at Desired Levels	11	73.3%
Below Desired Levels	1	6.7%

Additional Comments

we don't get many antelope but are getting overrun with whitetail!

very rare to see any antelope any more

this does not concern me I am not a hunter-janet smith

Population seems more balanced here than west of Albin and up on Iowa Flats at Chugwater- those herds do damage.

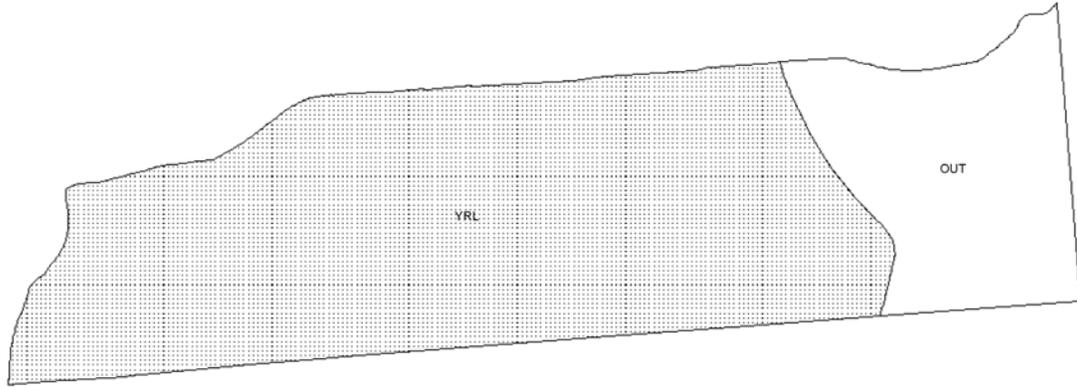
Charles Dunning

Population is above satisfactory levels. The size of the bucks is below satisfactory levels.

We are seeing more levels or numbers-I can't say if the herds overall are larger or if due to increased housing and increase in population of the cityerey is forcing more on our grazing operation-more people forces more intense numbers.

Number of daily responses

PH520 - Chalk Bluffs
HA 111
Revised - 8/87



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR521 - HAWK SPRINGS

HUNT AREAS: 34

PREPARED BY: MARTIN HICKS

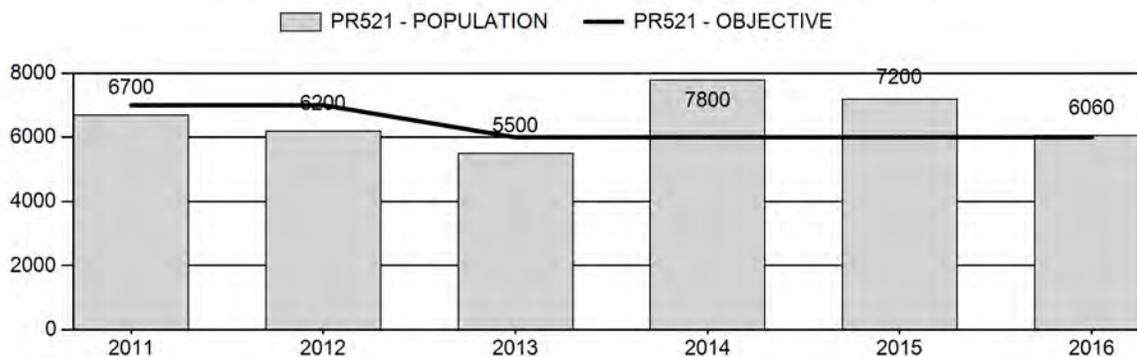
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	6,680	6,060	5,800
Harvest:	1,136	1,170	1,150
Hunters:	1,267	1,511	1,500
Hunter Success:	90%	77%	77%
Active Licenses:	1,413	1,557	1,550
Active License Success:	80%	75%	74%
Recreation Days:	4,786	4,544	4,500
Days Per Animal:	4.2	3.9	3.9
Males per 100 Females	43	46	
Juveniles per 100 Females	54	38	

Population Objective (\pm 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	1%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/22/2017

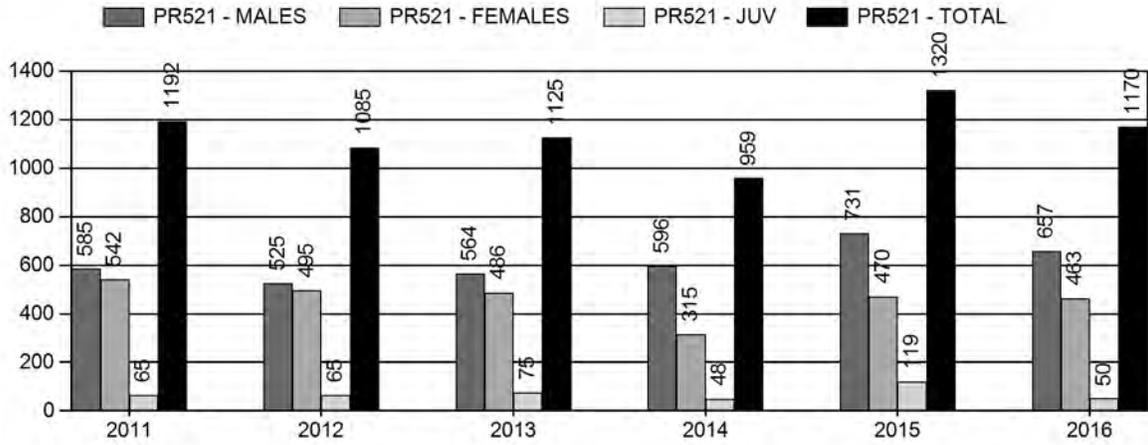
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	13%	13%
Males \geq 1 year old:	44%	57%
Total:	16%	16%
Proposed change in post-season population:	-18%	-5%

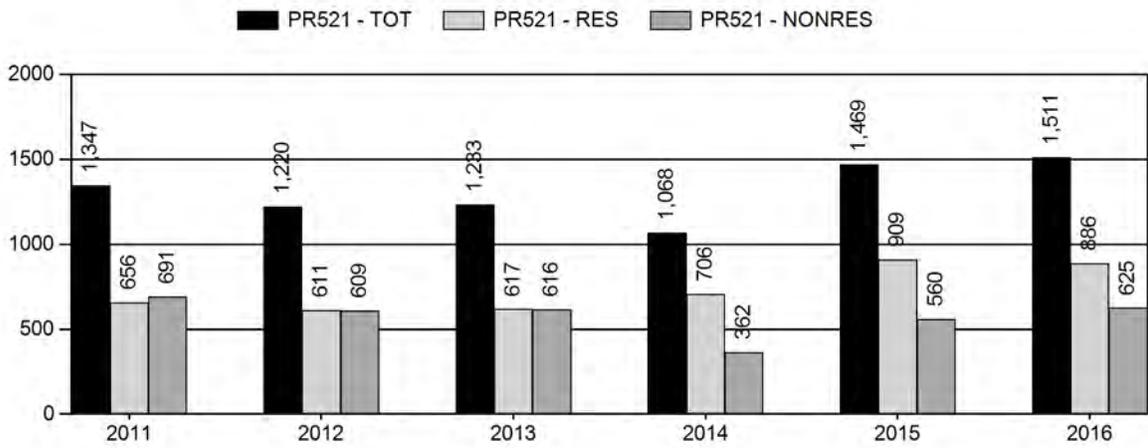
Population Size - Postseason



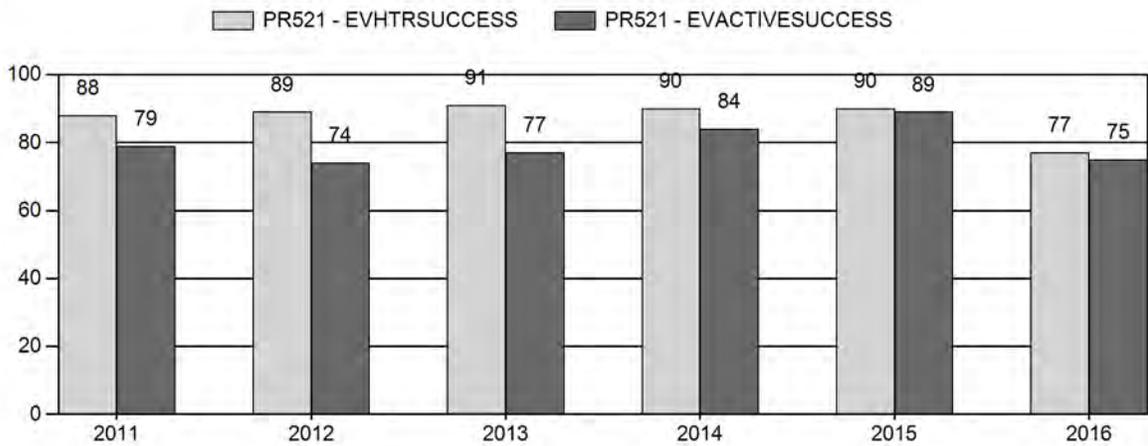
Harvest



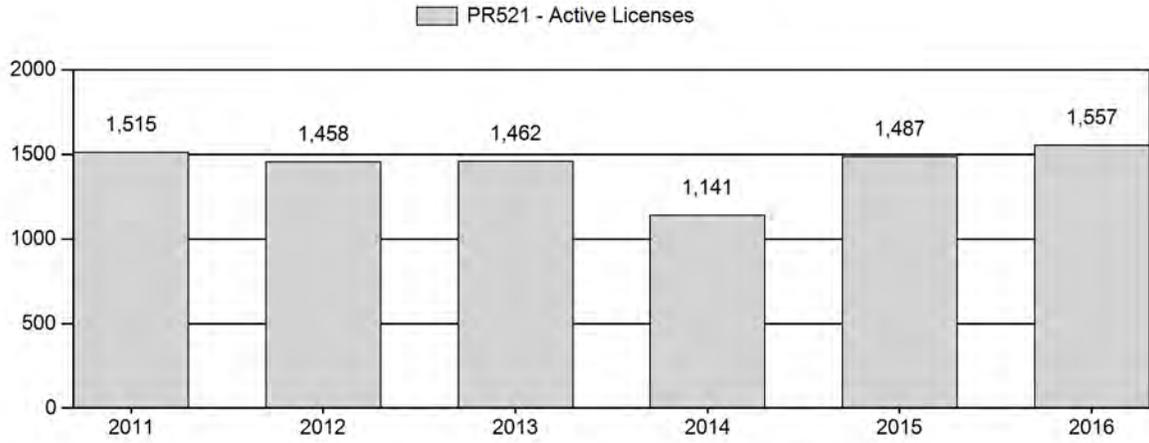
Number of Active Licenses



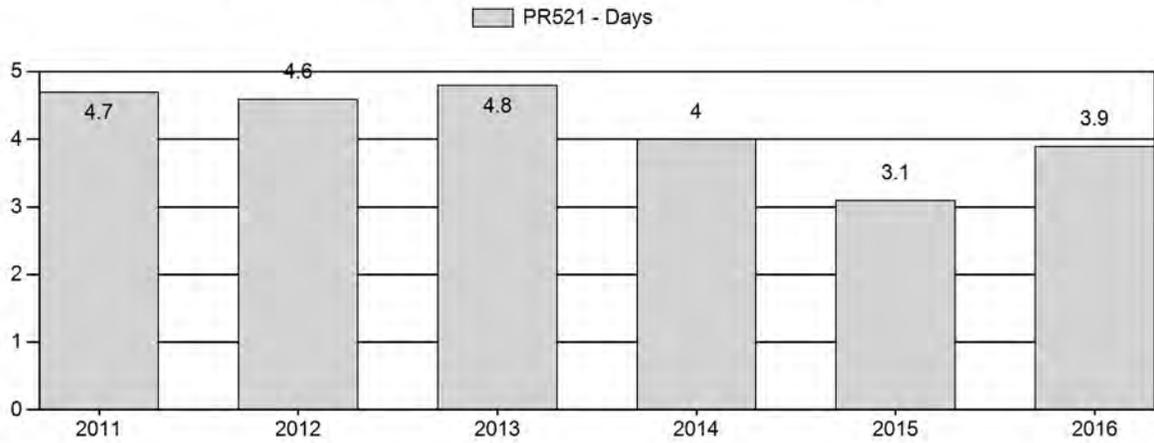
Harvest Success



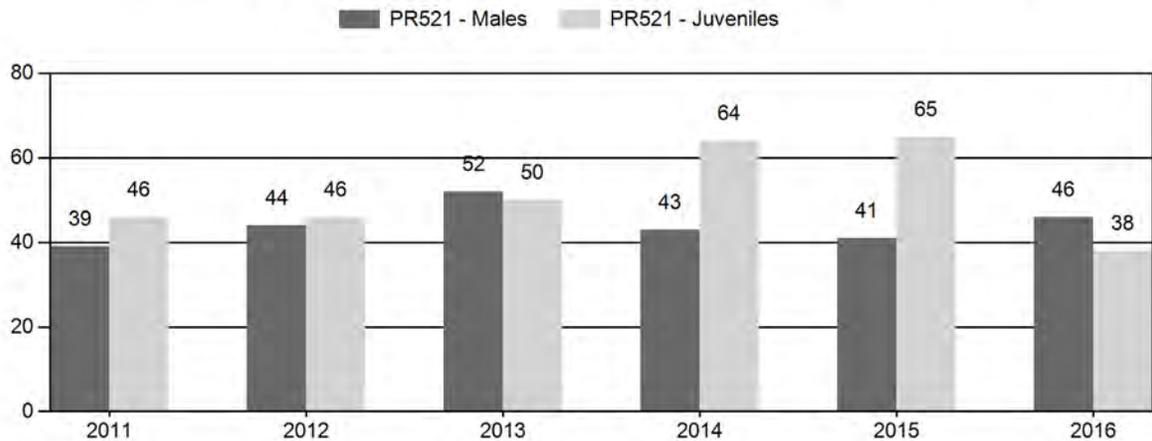
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR521 - HAWK 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	Int	100 Fem	100 Int	100 Adult
2011	8,000	104	160	264	21%	669	54%	309	25%	1,242	1,378	16	24	39	± 4	46	± 5	33
2012	7,400	94	132	226	23%	517	53%	240	24%	983	1,297	18	26	44	± 5	46	± 6	32
2013	6,800	88	201	289	26%	558	50%	279	25%	1,126	1,184	16	36	52	± 6	50	± 6	33
2014	8,800	59	155	214	21%	498	48%	317	31%	1,029	1,151	12	31	43	± 5	64	± 7	45
2015	8,600	117	179	296	20%	729	49%	472	32%	1,497	1,849	16	25	41	± 4	65	± 6	46
2016	7,300	126	194	320	25%	696	54%	262	21%	1,278	1,243	18	28	46	± 5	38	± 4	26

**2017 HUNTING SEASON
HAWK SPRINGS PRONGHORN HERD (PR521)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
34	1	Sept. 20	Oct. 14	1,000	Limited quota	Any antelope
	1	Oct. 15	Dec. 31			Doe or fawn
	6	Sept. 20	Dec. 31	900	Limited quota	Doe or fawn

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

Hunt Area	Type	Quota change from 2016
34	1	0
34	6	0
Total		0

Management Evaluation

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

Management Strategy: Recreational

2016 Postseason Population Estimate: ~6,060

2017 Proposed Postseason Population Estimate: ~5,800

2015 Hunter Satisfaction: 88% satisfied, 6% Neutral, 6% Dissatisfied

Herd Unit Issues

The management objective for the Hawk Springs Herd Unit is a post-season population objective of 6,000 pronghorn. The objective was changed in 2014 from 7,000 to 6,000 and Hunt Areas 34-36 were combined into Hunt Area 34. These changes were a direct result of the herd unit objective review process in 2013. The management strategy is recreational management with a pre-season buck ratio range of 30-59 Bucks:100 Does.

The 2016 post-season population estimate was about 6,060 pronghorn putting the population 1% above the objective of 6,000. The last line-transect survey conducted in this herd unit was June 2007 that resulted in a population estimate of 21,000 pronghorn. This survey implied the herd increased by 62% from the previous line-transect conducted in 2003 with a population estimate of 8,100. Given poor fawn production, poor habitat conditions, and loss of habitat this estimate does not seem plausible. As a result this model is anchored to the 2003 line-transect estimate.

The southern end of the herd unit along Interstate Highway 80 to U.S. Highway 85 has experienced an increase in urban and industrial development resulting in a decrease in usable habitat. The northern 2/3 of the unit is comprised of dryland farming, irrigated farming and land enrolled into the Conservation Reserve Program (CRP) and native rangeland. The majority of issues with landowners occur when there are high densities of pronghorn on irrigated and non-irrigated agricultural fields. This typically results in damage issues which is the rationale behind the late season doe/fawn licenses.

A majority of this herd unit is comprised of private land (84%). Access is available through the Department's PLPW program and limited access to 350 square miles of state land.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Hawk Springs herd unit the reviewer is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

Habitat fragmentation caused by urban sprawl east of Cheyenne, and on-going oil exploration in eastern Laramie County are likely having negative impacts on pronghorn in this portion of the herd unit.

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

Field Data

The Hawk Spring Pronghorn Herd Unit has experienced a steady decline in population since 2014 as a result of increased harvest on the female segment of the population and average to poor fawn production (5-year average 52 fawns:100 does). Doe/fawn license issuance has fluctuated around 800 licenses for the past 5 years to bring the population towards objective.

The 2016 preseason buck ratios were slightly higher compared to 2015 and are within the upper recreational management range of 20-59 bucks: 100 Does (46 bucks:100 does in 2016). Type 1 licenses were increased in 2016 to take advantage of the surplus bucks, however, the number of active licenses in 2016 were similar to 2015 which suggests the hunter saturation point has been reached. The sample size for field check tooth data collected in the field was too small to provide any relevancy for population parameters. Of the hunters surveyed in 2015, 88% were satisfied with their hunt, similar to 2015's level. Based on comments in the field during the 2016 hunting season hunters had more success accessing private land and they appreciated the number of acres enrolled into the PLPW program.

Harvest Data

Active license success of 77% in 2016 was the same as the five-year average of 79% and slightly lower than the five-year state-wide average of 84%. Access is still difficult to obtain in the southern portion of the herd unit, but with the addition of the Nimmo HMA and over several thousand acres of private land enrolled into walk-in areas are enough to maintain adequate success. Hunter effort of 3.9 days per harvest in 2016 was slightly higher than the herd unit's and state-wide's five-year average of 4.1 and 3.5 days per harvest respectfully. The department's Access Yes Program along with landowners opening up access in the northern portion of the herd unit most likely contributed to help prevent a more drastic increase in hunter effort.

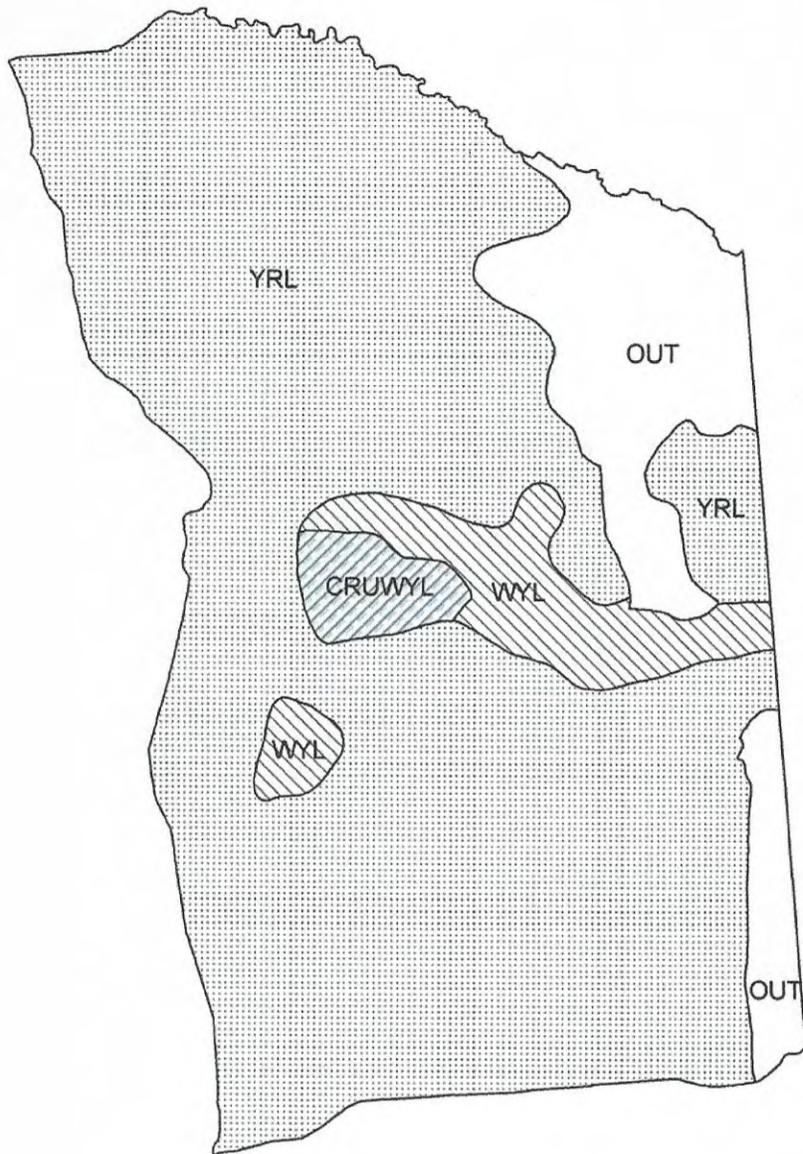
Population

The "Constant Juvenile – Constant Adult Survival" (CJ,CA) spreadsheet model was chosen for the post season population estimate of this herd and until survival data has been collected it will more than likely remain the model of choice. The model did have the lowest AIC score, and the population estimate appears reasonable. The line-transect in 2007 was ignored because it doubled the population in three years and given poor fawn recruitment this is biologically improbable. The independent estimates of 2001 and 2003 are similar to model estimates, which the model does run through. The model predicted a decreasing trend since 2007; given poor fawn production despite years (2014, 2015) with good forage production and consistent harvest of around 500 doe pronghorn, this seems plausible. WGFD personnel observations indicate that pronghorn densities would support this trend in certain portions of the herd unit. Trends in harvest statistics (stable success, and a increase in effort) suggest the population is stable to declining. Given constant survival rates for the adults and juveniles the model is trying to align with a slowly decreasing buck ratio, thus bringing the population down. Given the increase in harvest and a decline in buck ratios this appears plausible. This model is ranked fair since the only data available is harvest and classification data and the most recent LT estimate is from back in 2003.

Management Summary

The 2017 season is designed to maintain not only the population within the objective but buck ratios within the recreational management range as well. We will offer 1,000 Type 1 and 900 Type 6 licenses to achieve this goal. Given previous harvest rates and the 1,900 licenses available we expect to harvest around 1,150 pronghorn, resulting in a post-season population estimate of 5,800 pronghorn.

PH521 - Hawk Springs
HA 34-
Revised - 12/88



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR522 - MEADOWDALE

HUNT AREAS: 11

PREPARED BY: MARTIN HICKS

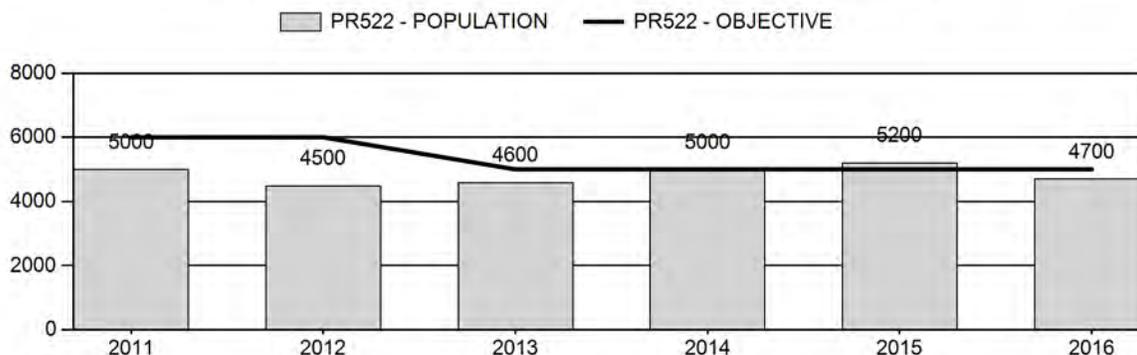
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,860	4,700	4,500
Harvest:	461	462	615
Hunters:	523	501	650
Hunter Success:	88%	92%	95%
Active Licenses:	584	551	700
Active License Success:	79%	84%	88 %
Recreation Days:	1,704	1,506	2,500
Days Per Animal:	3.7	3.3	4.1
Males per 100 Females	38	50	
Juveniles per 100 Females	58	47	

Population Objective (\pm 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-6%
Number of years population has been + or - objective in recent trend:	1
Model Date:	03/24/2017

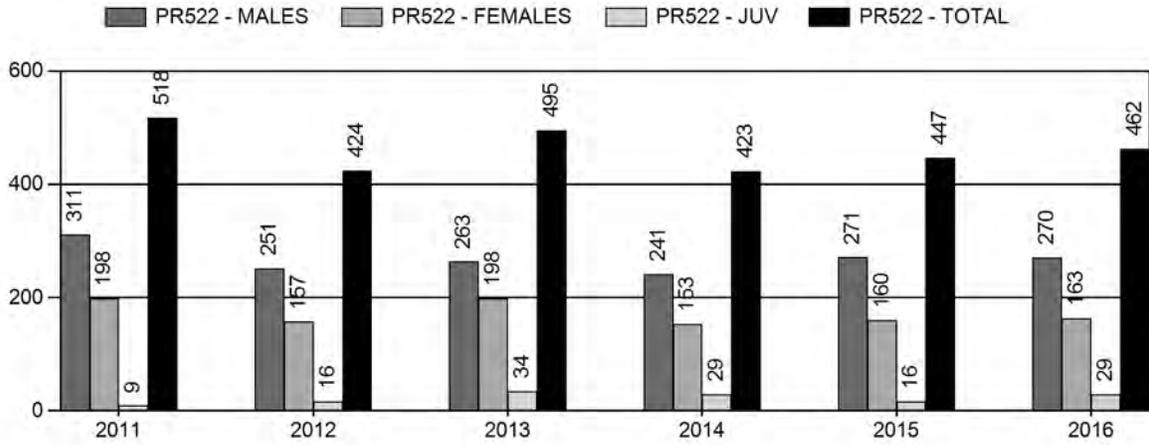
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	6%	6%
Males \geq 1 year old:	31%	34%
Total:	9%	12%
Proposed change in post-season population:	-10%	-4%

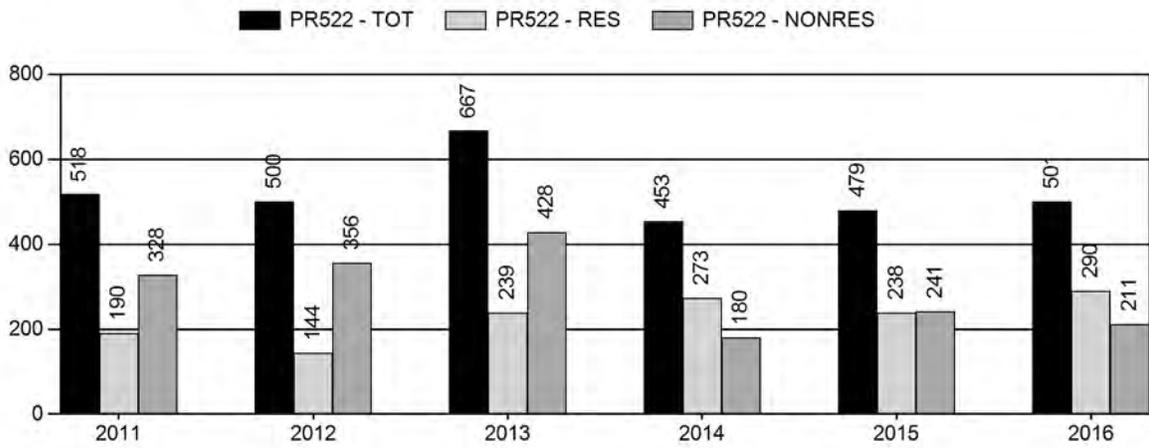
Population Size - Postseason



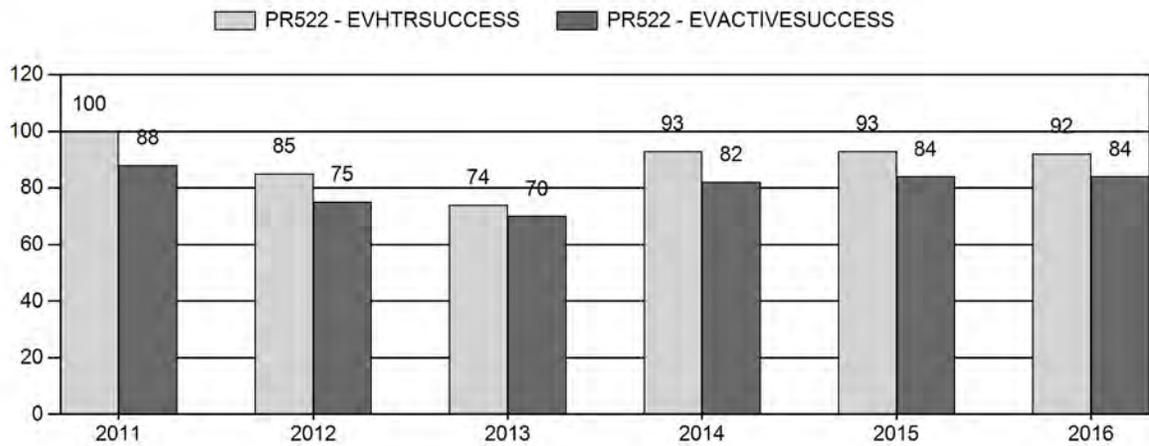
Harvest



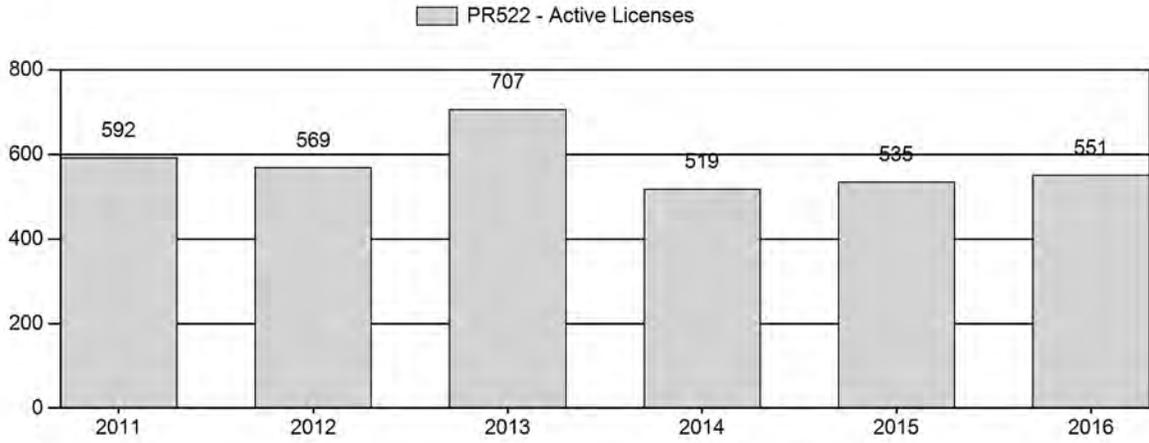
Number of Active Licenses



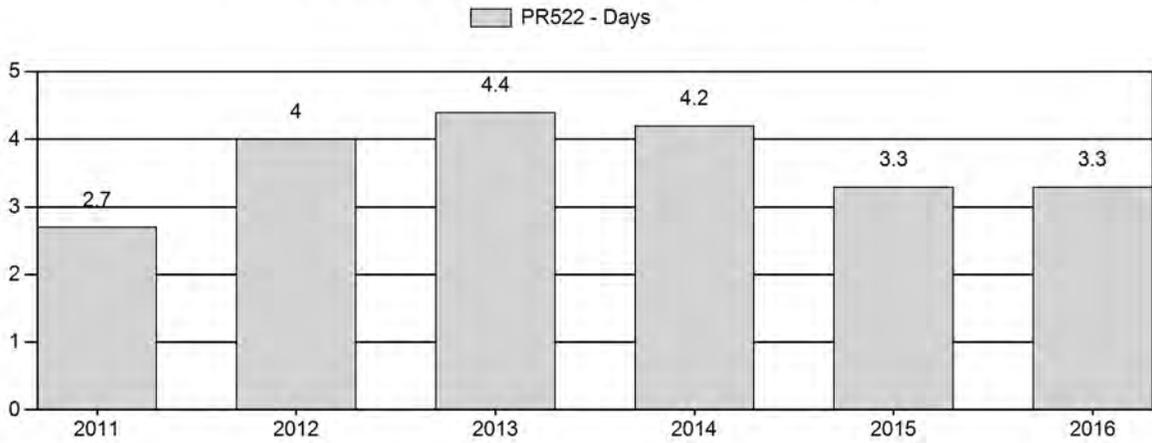
Harvest Success



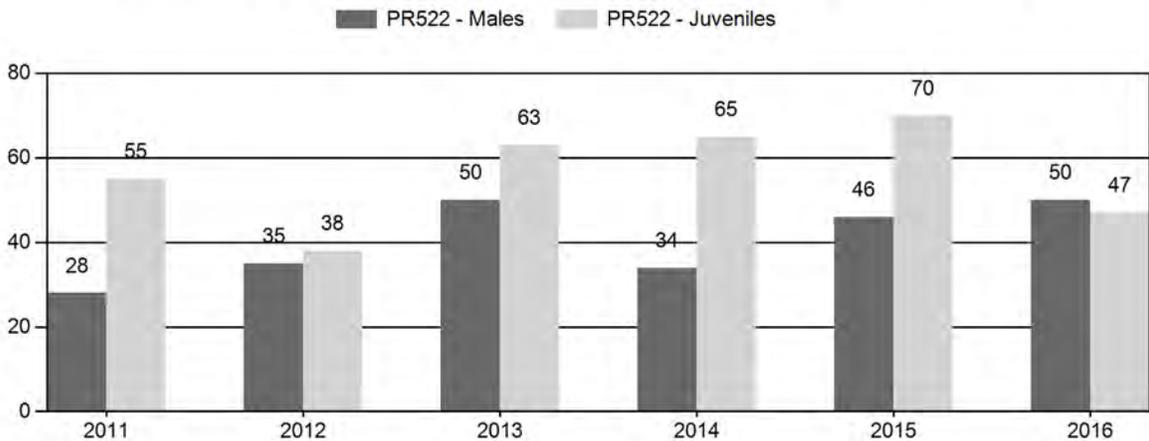
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR522 - MEADOWDALE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Int	100 Fem	100 Int	100 Adult
2011	5,500	32	140	172	15%	612	55%	334	30%	1,118	1,426	5	23	28	± 4	55	± 5	43
2012	4,900	62	133	195	20%	553	58%	211	22%	959	838	11	24	35	± 4	38	± 5	28
2013	5,100	60	139	199	23%	402	47%	252	30%	853	1,154	15	35	50	± 6	63	± 8	42
2014	5,400	49	169	218	17%	637	50%	411	32%	1,266	1,327	8	27	34	± 4	65	± 6	48
2015	5,600	104	165	269	21%	590	46%	412	32%	1,271	1,441	18	28	46	± 5	70	± 6	48
2016	5,100	142	251	393	25%	786	51%	368	24%	1,547	1,330	18	32	50	± 4	47	± 4	31

**2017 HUNTING SEASONS
MEADOWDALE PRONGHORN HERD (PR522)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
11	1	Oct. 1	Oct. 31	450	Limited quota	Any antelope
11	6	Oct. 1	Oct. 31	300	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
11	Aug. 15	Sept. 30	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
11	1	+100
11	6	+100

Management Evaluation

Current Management Objective: 5,000 (4,000-6,000)

Management Strategy: Recreational

2016 Post-season Population Estimate: ~4,700

2017 Proposed Post-season Population Estimate: ~4,500

2016 Hunter Satisfaction: 85% Satisfied, 12% Neutral, 3% Dissatisfied

Herd Unit Issues

The management objective for the Meadowdale Pronghorn Herd Unit of 6,000 was decreased to 5,000 as a result of internal and public input received during the 2013 herd objective review process. The management strategy is recreational management, which is a 30-59 buck:100 doe range.

The 2016 post-season population estimate was about 4,600 pronghorn with the population fluctuating around 5,000 pronghorn since 2010. The last line-transect was conducted in June of 2003 that resulted in an estimate of 5,800 pronghorn. The northern portion of the herd unit continues to have the highest densities of pronghorn resulting in more acres of private lands enrolled into the Access Yes walk-in hunting program as well as landowners allowing access, particularly during the doe/fawn season.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter

range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Meadowdale herd unit the reviewer is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

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

Field Data

The Meadowdale population has been stable since 2010. In 2016 fawn ratios (46 fawns: 100 does) decreased significantly compared to 2015 (69:100) as well as the five-year average of 58 fawns:100 does. Buck to doe ratios have fluctuated to a low of 35:100 to a high of 50:100 within the past 5 years. Above average fawn ratios in 2014 and 2015 help to increase buck ratios in 2015 and 2016, which resulted in a slight increase in population despite below average fawn production in 2016. The sample size was 16% above the 90% CI so herd classification data appears valid. Spring conditions of cold, heavy wet snow coupled with dry conditions in July/August most likely contributed to the drop in fawn production.

With the population at a desired level there is not a proposal to increase Type 6 licenses, and given buck ratios are within the recommended recreation management strategy parameters there is not a proposal to increase Type 1 licenses. Sample size for tooth data collected in the field is too small to infer any population dynamics.

Harvest Data

The 2016 hunter success rate of 92% was only slightly higher than the five-year average of 89%, and similar as the 2015 success rate of 93%. Effort in 2016 was 3.3 days per harvest which is slightly lower than the five-year average of 3.7 days per harvest, and the same as 2015. The 2016 harvest statistics (more or less stable success and effort) support a population that has been fluctuating slightly the past five years. License numbers have remained the same the past three years, the only change in season structure was to increase the Type 1 season length by 16 days which did not increase buck harvest as expected. The majority of harvest typically comes the first week of the season then tapers off, which might explain why more bucks were not harvested. Five-year trends in success and effort have slightly ebbed and flowed which mirrors

the population trend. The hunter satisfaction survey showed that 85% of the hunters were satisfied or very satisfied with their hunt. Based on positive comments received from the field and the amount of opportunity of access through the Department's Access Yes program the survey seems plausible.

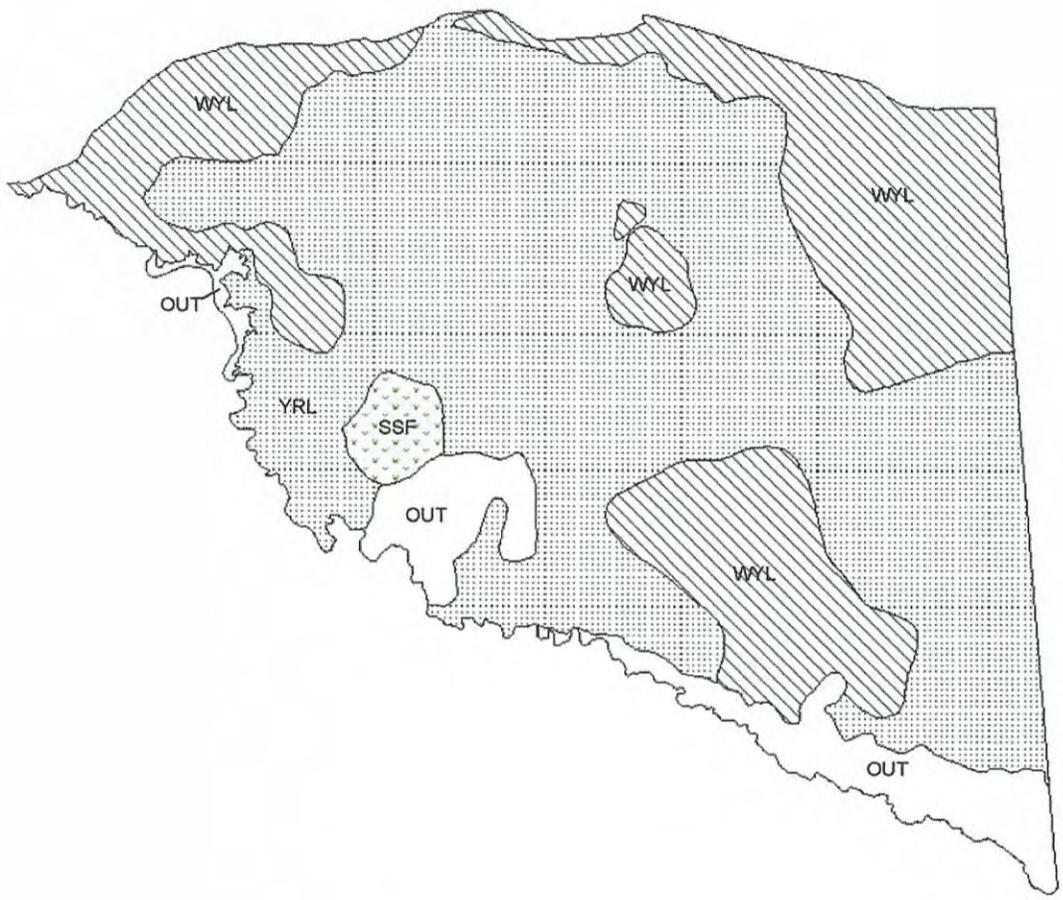
Population

The "Constant Juvenile – Constant Adult Survival" (CJCA) spreadsheet model was chosen to use for the post-season population estimate of this herd and until there is survival data specifically for this herd unit will remain the model of choice. This model did have the lowest AIC score, the best fit and the population estimate appears reasonable. We conducted line-transects in 1996, 1998, 2000 and 2003 that provide independent population estimates that were similar to the model estimates. Based on relatively consistent harvest regimes and classification surveys this population typically fluctuates around 5,000 pronghorn, (2016 post-season estimate: 4,600 pronghorn) and has not experienced a significant increase or decrease in the past 5 years. Adult and juvenile survival constraints were adjusted to account for a biologically unrealistic model (page 27, User Guide: Spreadsheet Model for Ungulate Population data). This model is ranked poor since the last LT this population was anchored to occurred in 2003, and the only other data available is harvest and classification data. WGFD personnel, landowner and hunter observations indicate that pronghorn densities remain low in the southern portion of the hunt area and high in the northern portion.

Management Summary

The 2016 season was designed to maintain the population within the objective, which is the same goal for the 2017 season. However, there appears to be additional access available in the northern portion of the herd unit where pronghorn densities are the highest and buck ratios are on the upper end of the management criteria so there will be an increase of 100 Type 1 and 100 Type 6 licenses. Given previous harvest rates we expect to attain a harvest of around 460 pronghorn. We predict a 2017 post-season population estimate of 4,500 pronghorn, 6% below the objective of 5,000, but within the $\pm 20\%$ recommended range for herd management.

PH522 - Meadowdale
HA 11
Revised - 5/88



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR523 - IRON MOUNTAIN

HUNT AREAS: 38

PREPARED BY: LEE KNOX

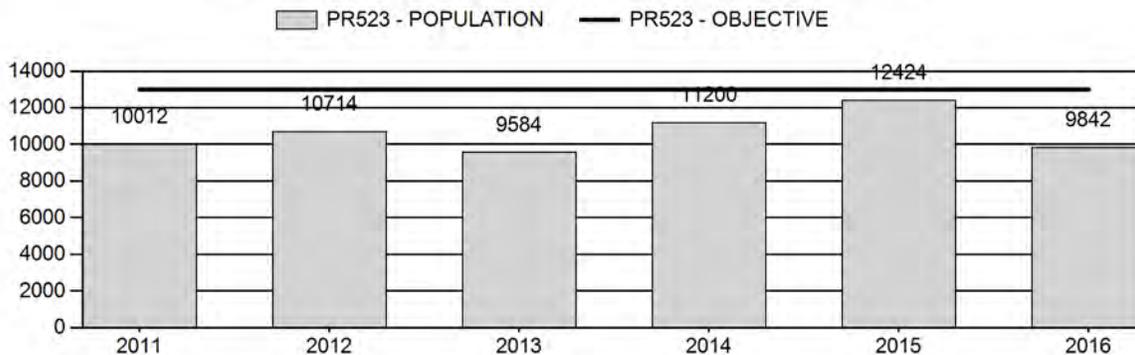
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,787	9,842	9,952
Harvest:	1,476	1,879	1,880
Hunters:	1,676	2,002	2,000
Hunter Success:	88%	94%	94 %
Active Licenses:	1,834	2,051	2,051
Active License Success:	80%	92%	92 %
Recreation Days:	5,783	5,553	5,550
Days Per Animal:	3.9	3.0	3.0
Males per 100 Females	52	49	
Juveniles per 100 Females	71	54	

Population Objective (\pm 20%) :	13000 (10,400 - 15600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-24.2%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/22/2017

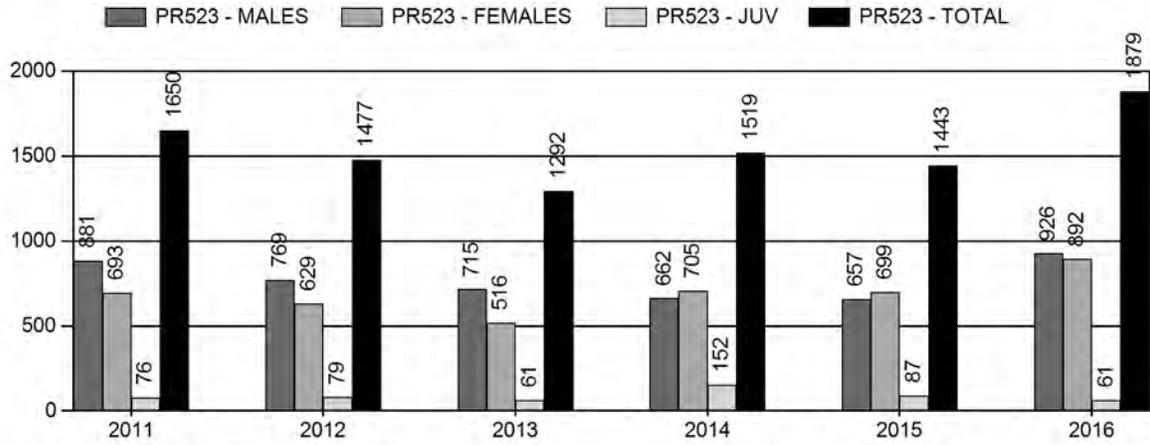
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	15%	15%
Males \geq 1 year old:	21%	21%
Total:	10%	10%
Proposed change in post-season population:	2%	2%

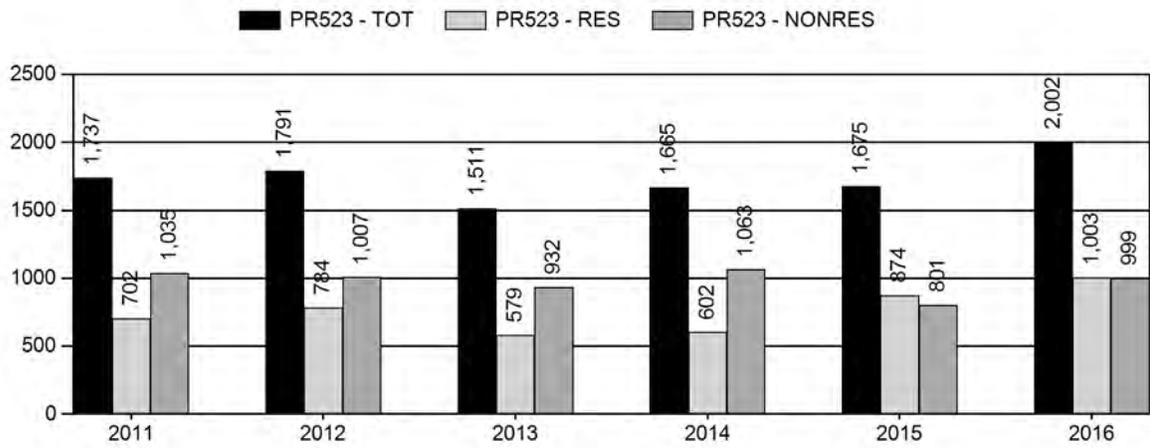
Population Size - Postseason



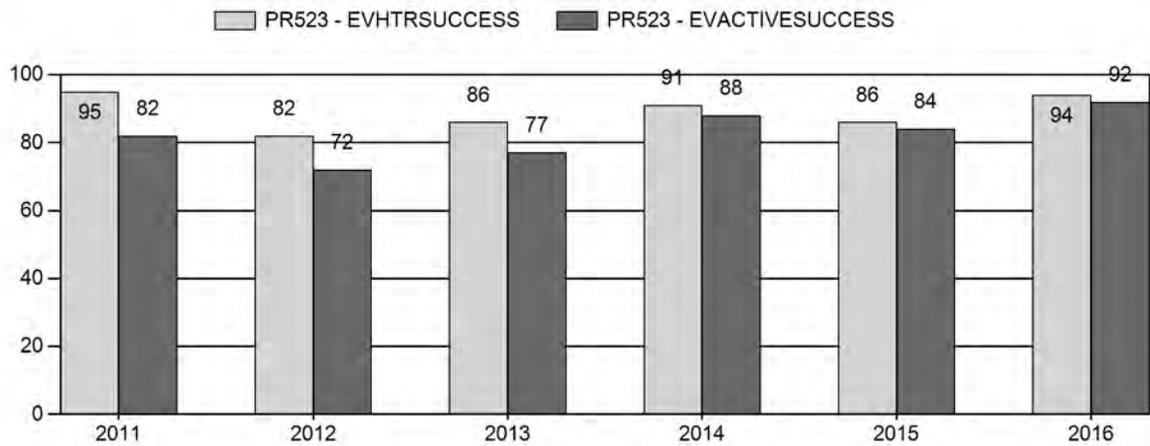
Harvest



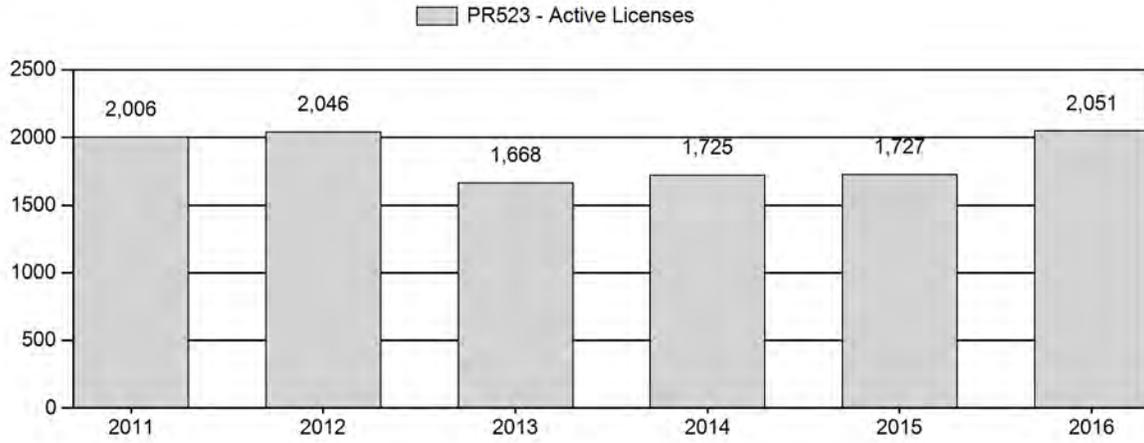
Number of Active Licenses



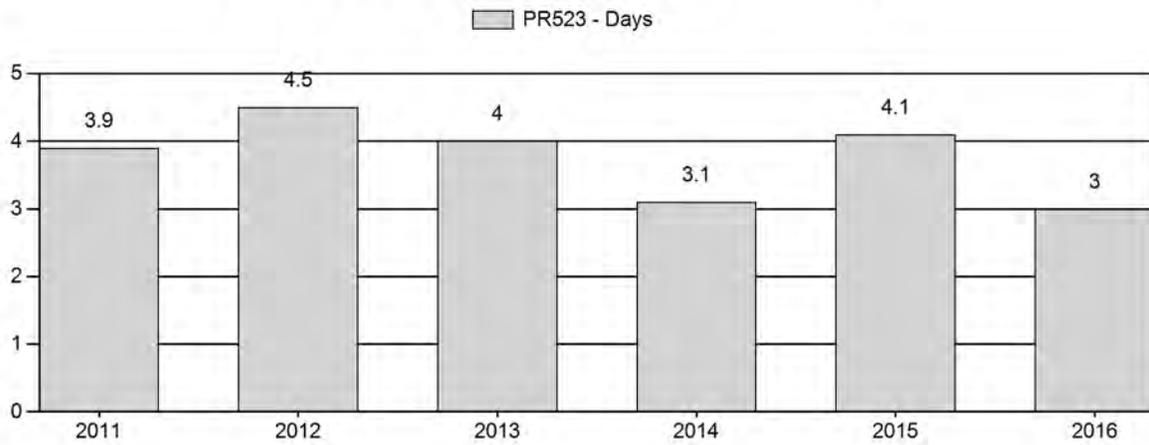
Harvest Success



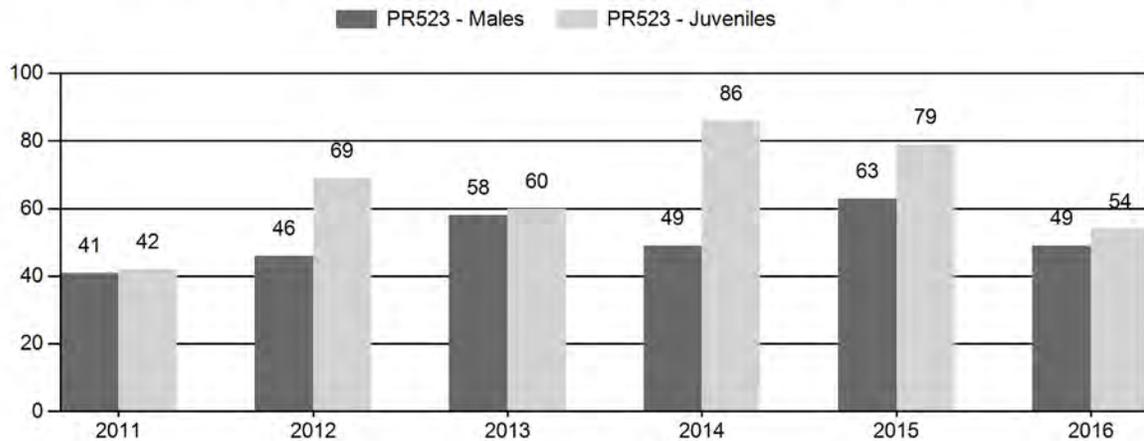
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR523 - IRON MOUNTAIN

Year	Pre Pop	MALES			FEMALES		JUVENILES		Tot Cls		Males to 100 Females			Young to 100 Adult	
		Ylg	Adult	Total	Total	%	Total	%	Clis	Obj	Ylng	Adult	Total	Conf	Int
2011	11,827	51	89	140	339	55%	141	23%	620	0	15	26	41	± 7	± 7
2012	12,359	100	260	360	789	47%	547	32%	1,696	2,355	13	33	46	± 4	± 6
2013	11,005	120	233	353	608	46%	364	27%	1,325	1,987	20	38	58	± 6	± 6
2014	12,870	145	276	421	861	43%	737	37%	2,019	2,094	17	32	49	± 4	± 6
2015	14,011	212	217	429	676	41%	536	33%	1,641	3,021	31	32	63	± 6	± 7
2016	11,909	162	259	421	862	49%	463	27%	1,746	1,586	19	30	49	± 4	± 5

**2017 HUNTING SEASONS
IRON MOUNTAIN PRONGHORN (PR523)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
38	1	Oct. 5	Oct. 31	1,250	Limited Quota	Any antelope
	6	Oct. 5	Oct. 31	1,050	Limited Quota	Doe or fawn
		Nov. 1	Dec. 31			Unused Area 38 Type 1 and Type 6 licenses valid for doe or fawn
	Archery	Aug. 15	Oct. 4			Refer to Section 2 of this Chapter

Area	Type	Change from 2016
38	1	0
	6	0
Total	1	0
	6	0
Herd Unit Total		0

Management Evaluation

Current Postseason Population Management Objective: 13,000 (10,400-15,600)

Management Strategy: Recreational

2016 Postseason Population Estimate: 9,800

2017 Proposed Postseason Population Estimate: 9,900

2016 Hunter Satisfaction: 96% Satisfied, 4% Neutral, 0% Dissatisfied

The management objective for the Iron Mountain pronghorn herd unit is a post-season population objective of 13,000 pronghorn. The management strategy is recreational management with a post hunt buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2014.

Herd Unit Issues

The Iron Mountain herd unit consists of hunt areas 38, (combined 39, 40 and 104 into hunt area 38 in 2014), which is predominately private lands with traditional agricultural uses. The 2016 post-season population estimate was 9,800 with the population stable to slightly declining. Limited public access in this herd unit has typically deterred many hunters and in past years licenses would go unsold, however, with significant license cuts state wide we have seen an increase in both residents and nonresidents hunting 38.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts

were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Iron Mountain herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking. A significant die-off of big sagebrush and antelope bitterbrush did occur in portions of the Laramie Range due to a rapid freeze event that occurred in November 2014. The die-off was widespread, from the Front Range of Colorado to the Eastern Plains of Montana. The severity of the die-off is unknown at this time, and whether or not the shrubs will recover. Affected shrubs did not show any significant signs of re-sprouting in summer 2015. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie.

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

Field Data

A total of 1,750 pronghorn were classified, above the recommended classification objective of 1,580. Fawn ratios declined to 54:100 does, the lowest ratio since 2011. Fawn ratios on the east side of the hunt area were as low 30:100 does in areas, while fawns ratios on the west side were higher near 60:100 does. The buck ratio declined to 49:100 does but the decline was mostly in yearling bucks while adult buck ratios remained similar to 2015 and 2014. The hunter satisfaction survey showed an increase from 89% in 2015 to 96% in 2016 of hunters that were either satisfied or very satisfied with their hunt, which has been increasing since 2012.

Harvest Data

Hunter success increased from 86% to 94% in 2016, one of the highest success rates in the Laramie region. This herd is typically a low priority area for resident hunters due to lack of public access, and many of the licenses are purchased by nonresidents, typically 60% -65% of the license holders. In 2016 nonresidents accounted for 50% of the licenses due to an increase in resident license holders. License issuance was the same from 2013 through 2015. Type 6 licenses increased in 2016. In 2013 there were 728 licenses leftover after the draw, in 2014 there were 230, and in 2015 and 2016 there were no leftover licenses available. We assume the increase in

interest is due to the decrease in licenses statewide in 2014, forcing hunters to draw their 2nd and 3rd choices. There is only one HMA and very little public land, however, hunter seem to be able to easily find access and pronghorn to harvest.

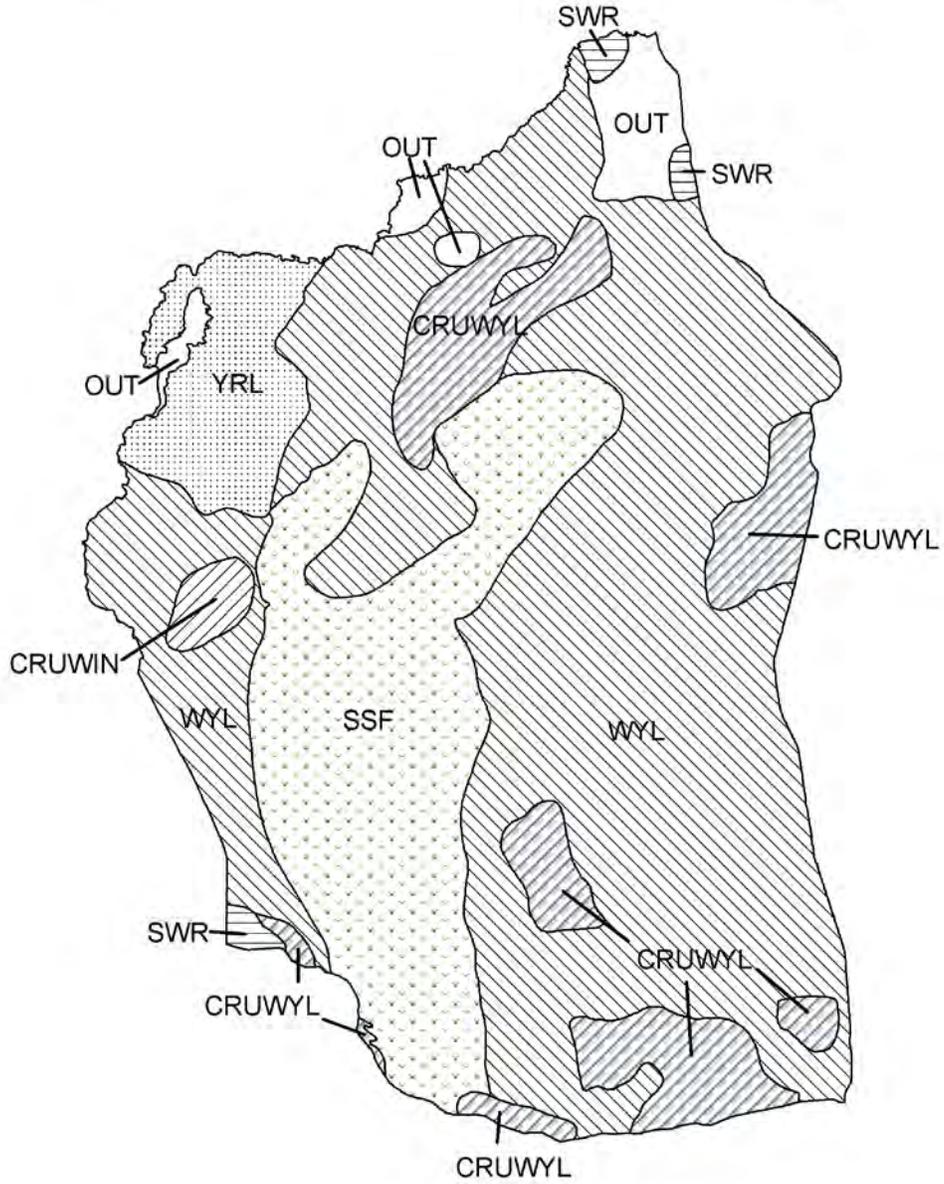
Population

The population had been increasing due to exceptional spring/summer forage the last three years producing the highest fawn ratios in a decade. With currently low fawn recruitment and high harvest, the population is predicted to remain stable to slightly decreasing. The spreadsheet model for this herd estimates a post hunt population of 9,800. This estimate uses the Constant Juvenile & Adult Survival model which had a AIC score of 28 and a best fit score of 19. This is a poor model due to little data available; ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; results not biologically defensible. To get the model to run we truncated years to 2002 to eliminate years of poor classification data. We also did not include LT estimates as they are also of poor quality due to such large deviations in terrain height resulting in large standard errors.

Management Summary

This herd has historically been difficult to manage due to limited population data and a large percentage of inaccessible private lands. hunt areas 38, 39, 40 and 104 were combined in 2014 to simplify regulations and allow hunters more opportunity to move where the pronghorn are most accessible, which seems to be working. The current season structure and license issuance adequately manages the populations to our goals.

PH523 - Iron Mtn.
HA 38-40, 104
Revised - 7/88



2016 - JCR Evaluation Form

SPECIES: Pronghorn
 HERD: PR524 - DWYER
 HUNT AREAS: 103

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: MARTIN HICKS

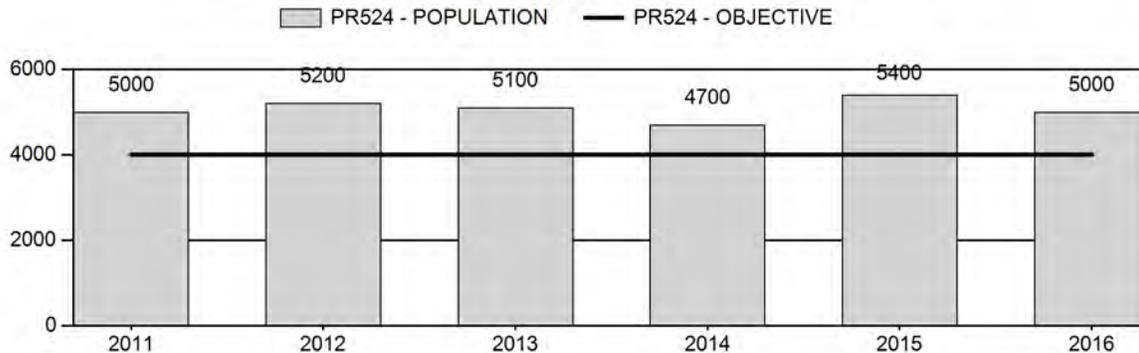
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	5,080	5,000	4,800
Harvest:	529	730	875
Hunters:	541	775	945
Hunter Success:	98%	94%	93 %
Active Licenses:	631	825	995
Active License Success:	84%	88%	88 %
Recreation Days:	1,895	2,370	3,000
Days Per Animal:	3.6	3.2	3.4
Males per 100 Females	48	39	
Juveniles per 100 Females	49	32	

Population Objective (± 20%) : 4000 (3200 - 4800)
 Management Strategy: Recreational
 Percent population is above (+) or below (-) objective: 25%
 Number of years population has been + or - objective in recent trend: 7
 Model Date: 02/22/2017

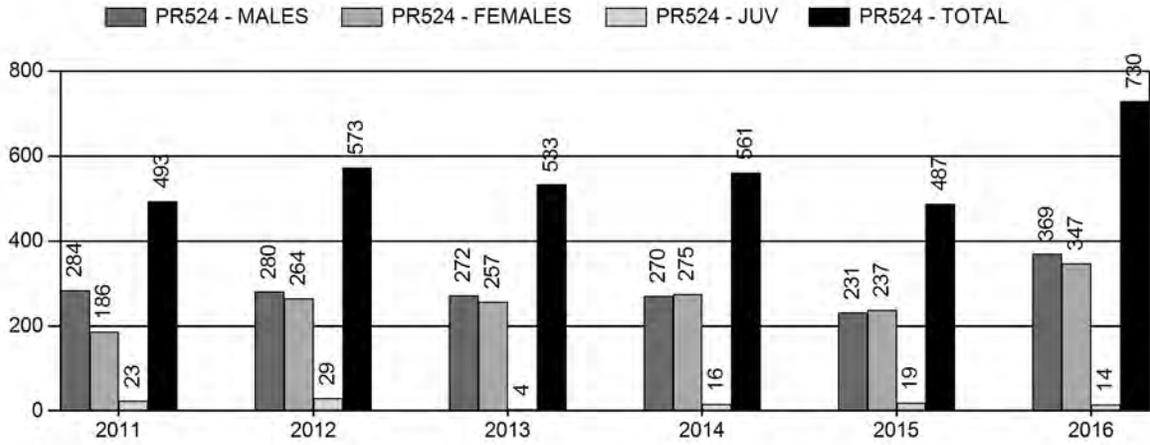
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	12%	14%
Males ≥ 1 year old:	22%	32%
Total:	12%	15%
Proposed change in post-season population:	-8%	-4%

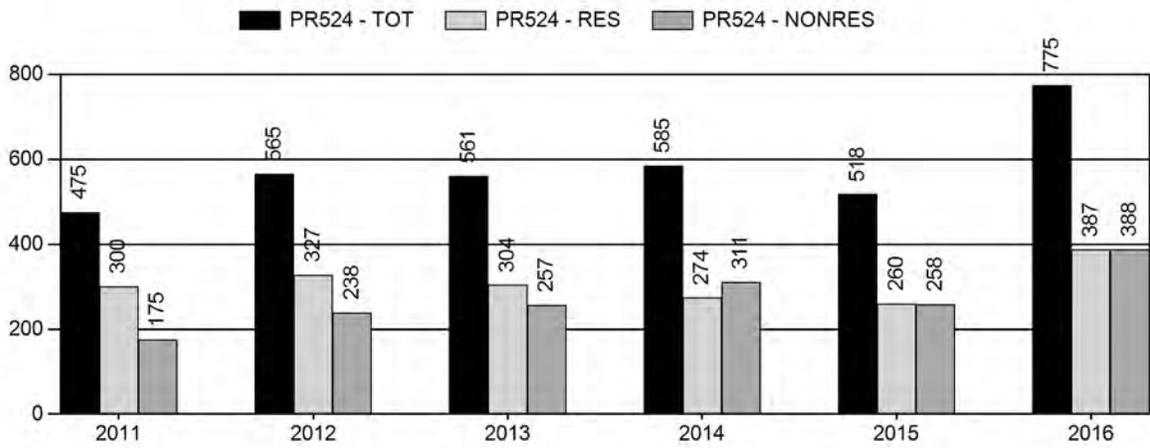
Population Size - Postseason



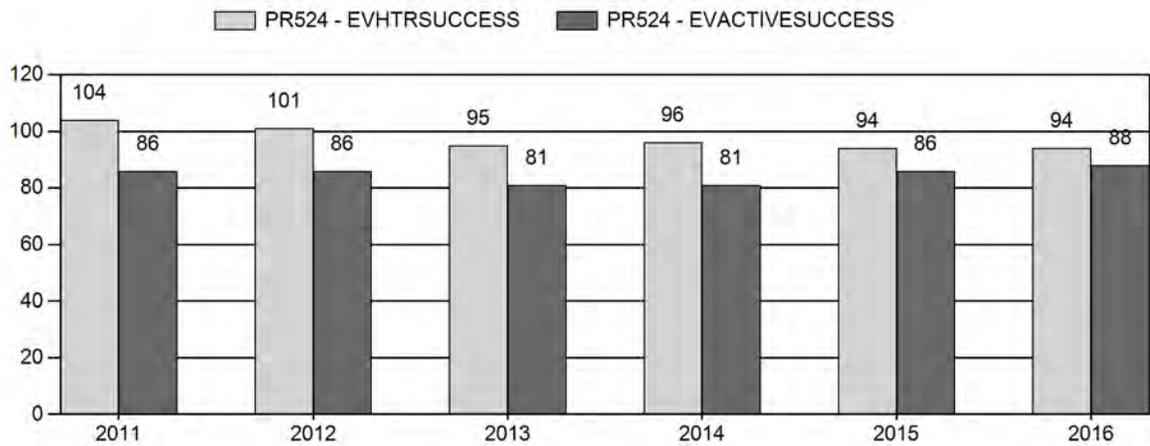
Harvest



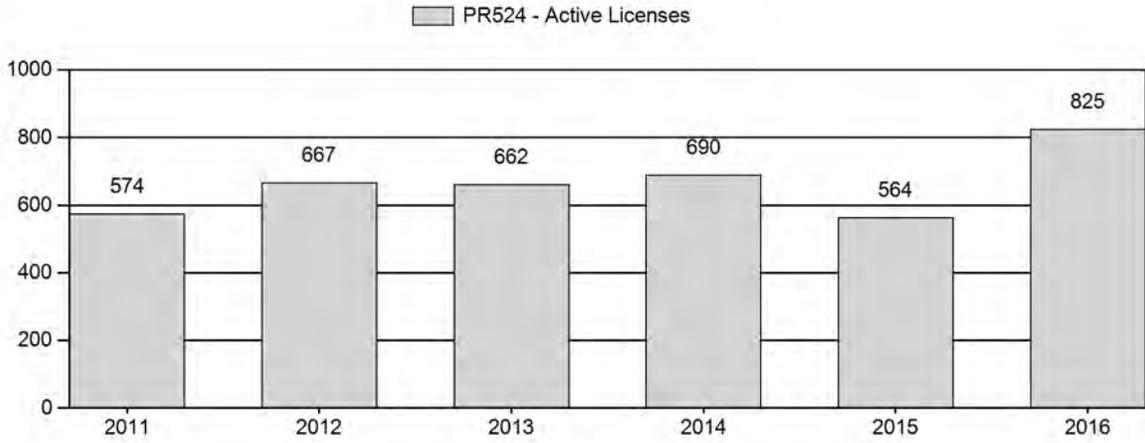
Number of Active Licenses



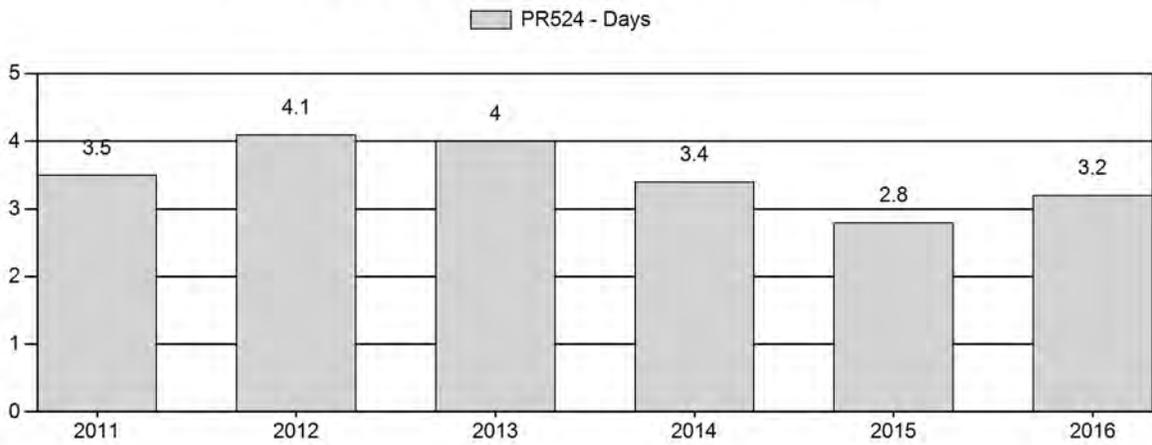
Harvest Success



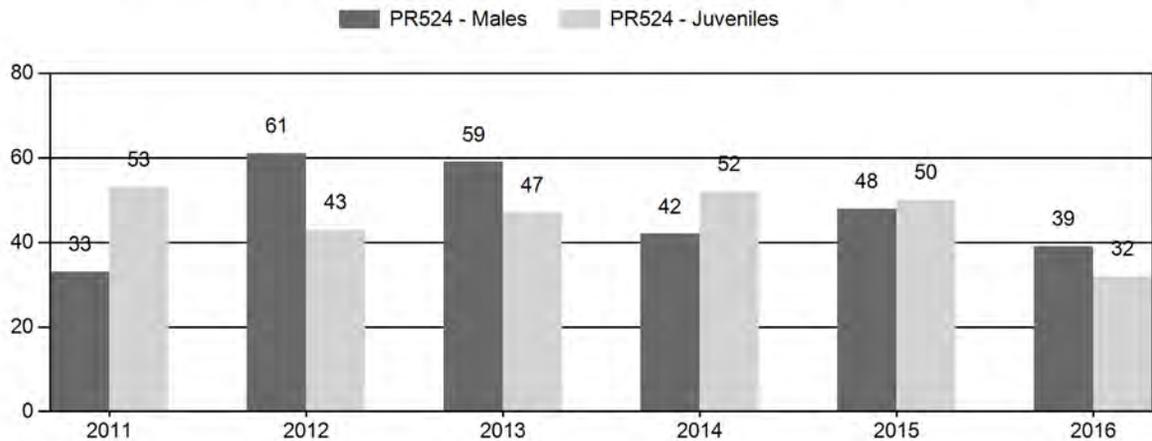
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR524 - DWYER

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	5,600	56	115	171	18%	512	54%	271	28%	954	1,345	11	22	33	± 4	53	± 6	40
2012	5,800	93	106	199	30%	326	49%	140	21%	665	1,224	29	33	61	± 8	43	± 7	27
2013	5,700	105	221	326	29%	552	49%	258	23%	1,136	1,146	19	40	59	± 6	47	± 5	29
2014	5,400	68	167	235	21%	566	52%	295	27%	1,096	1,362	12	30	42	± 5	52	± 5	37
2015	5,900	88	137	225	24%	466	50%	234	25%	925	1,091	19	29	48	± 6	50	± 6	34
2016	5,800	60	104	164	23%	416	58%	135	19%	715	1,257	14	25	39	± 6	32	± 5	

**2017 HUNTING SEASONS
DWYER PRONGHORN HERD (524)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
103	1	Oct. 5	Oct. 31	575	Limited quota	Any antelope
	6	Oct. 5	Dec. 31	550	Limited quota	Doe or fawn

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
103	Aug. 15	Oct. 4	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
103	1	+100
103	6	+100
Total		+200

Management Evaluation

Current Management Objective: 4000 (3,200-4,800)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~5,000

2017 Proposed Post-season Population Estimate: ~4,800

2016 Hunter Satisfaction: 90% Satisfied, 8% Neutral, 2% Dissatisfied

Management Issues

The management objective for the Dwyer Pronghorn Herd Unit is a post-season population objective of 4,000 pronghorn. The management strategy is recreational management with a 30-59 buck:100 doe ratio range. The herd objective and management strategy was reviewed in 2014 and to the decision was made to maintain the same population objective of 4,000 pronghorn and recreational management.

There has been little urban and industrial development within this herd unit. The herd unit is comprised of 90% private land and some accessible state land. Land use is comprised of native range land, irrigated and dry land agriculture fields, and land enrolled into the Conservation Reserve Program (CRP). The majority of access is in the northern portion of the herd unit via the PLPW program and private land opened up address damage situations.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late

summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Dwyer herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

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

Field Data

Based on the 2014 line-transect density estimate of 5,400 the previous 5 years of population data was retrofitted to reflect population trends that are anchored to the 2014 end-of-the-year line-transect density estimate of 5,400 pronghorn. The model simulates a population that from 2011-2016 fluctuated around 5,000 pronghorn. The sample size for pre-season classifications has not been met in the past 7 years so herd composition data should be interpreted with caution. Fawn ratios have fluctuated around 49 fawns:100 does from 2011-2016 which is a level that does not grow a herd and in 2016 they decreased significantly to 32 fawns:100 does. However buck ratios that have fluctuated from a low of 39:100 to a high of 61:100 from 2011-2016 are well within recreational management levels. In fact they fall at the upper level of the recreation management range, which indicates that fawns are recruiting into adults, providing for a healthy population that is maintaining itself. Sample size for tooth data collected in the field is too small to infer any population dynamics.

Harvest Data

Active license success (88%) in 2016 was slightly higher to the herd unit five-year average (84%) and the five-year state-wide average (82%). Effort (3.2 days per harvest) slightly decreased in 2016 compared to the five-year herd unit average of 3.5 and state-wide average of 3.8 days per harvest. Private land access dynamics have remained stable but additional access has opened up in central portion of the herd unit which could explain the decrease in effort. The hunter satisfaction survey showed that 90% of the hunters were either satisfied or very satisfied with their hunt. Additional hunting opportunity most likely affected hunter attitudes.

Population

The "Time Specific Juvenile- Constant Adult Survival" (TSJ, CA) spreadsheet model was chosen over the simpler Constant Juvenile-Constant Adult (CJ,CA) model, and resulted in a post-season population of 5,400 pronghorn. The simpler CJ,CA model tries to run through the

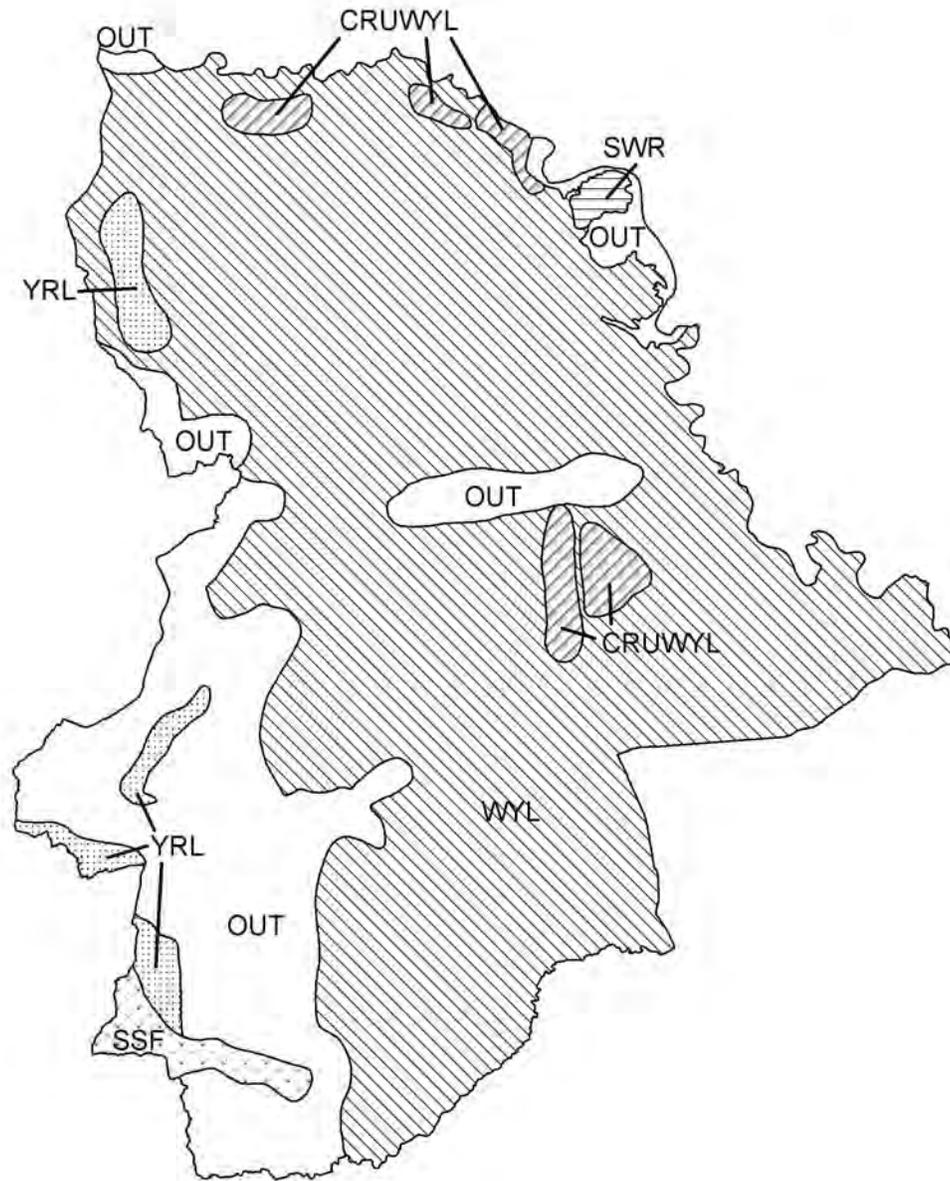
previous LT's and underestimates the 2014 LT density estimate by 1,000 pronghorn. By allowing for a variation in juvenile survival the TSJ,CA model runs through the 2014 LT and provides a plausible population estimate. The CJ,CA's AIC score was slightly lower than the TSJ,CA score, but the TSJ,CA has a better fit than the CJ,CA model. This model is ranked fair since it runs through one sample-based population estimate and has ratio data for all the years.

Management Summary

To minimize population growth and take advantage of above average buck ratios we propose to increase the Type 1 licenses by 100 and to bring the population towards the objective the Type 6 licenses will increase by 100. Managers want to take small steps in reducing the herd by not flooding the area with too many doe/fawn licenses.

If the projected harvest of 875 pronghorn is attained coupled with normal fawn recruitment the pronghorn population will slightly decrease to 4,800, 20% above the objective of 4,000.

PH524 - Dwyer
HA 103
Revised - 7/88



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR525 - MEDICINE BOW

HUNT AREAS: 30-32, 42, 46-48

PREPARED BY: LEE KNOX

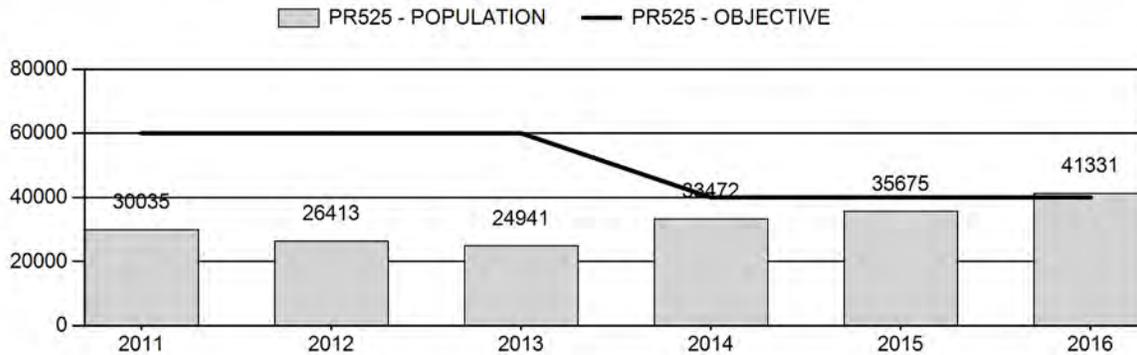
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	30,107	41,331	40,412
Harvest:	4,303	2,312	3,000
Hunters:	4,911	2,440	3,100
Hunter Success:	88%	95%	97 %
Active Licenses:	5,439	2,681	3,200
Active License Success:	79%	86%	94 %
Recreation Days:	15,843	6,698	7,500
Days Per Animal:	3.7	2.9	2.5
Males per 100 Females	45	47	
Juveniles per 100 Females	67	68	

Population Objective (± 20%) :	40000 (32000 - 48000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	3%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/23/2017

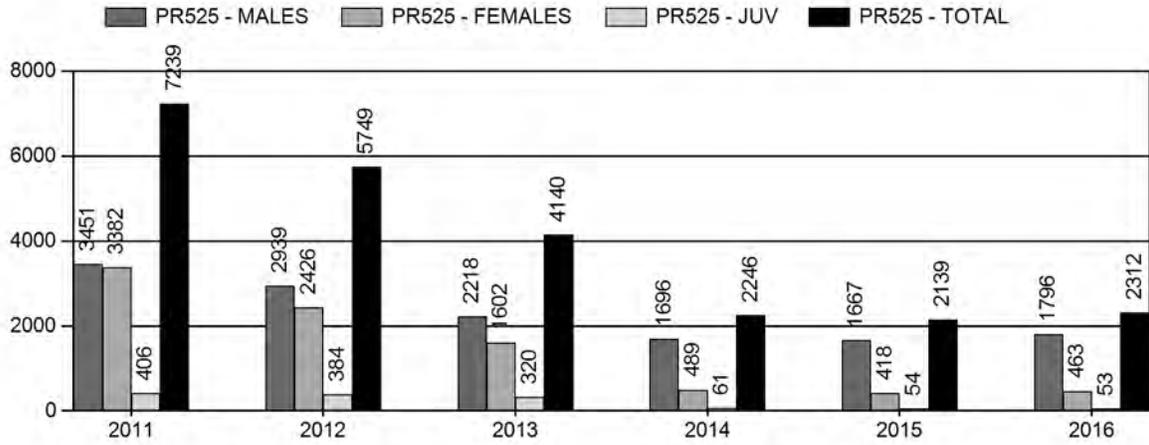
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	2%	4%
Males ≥ 1 year old:	21%	28%
Total:	13%	1%
Proposed change in post-season population:	13%	2%

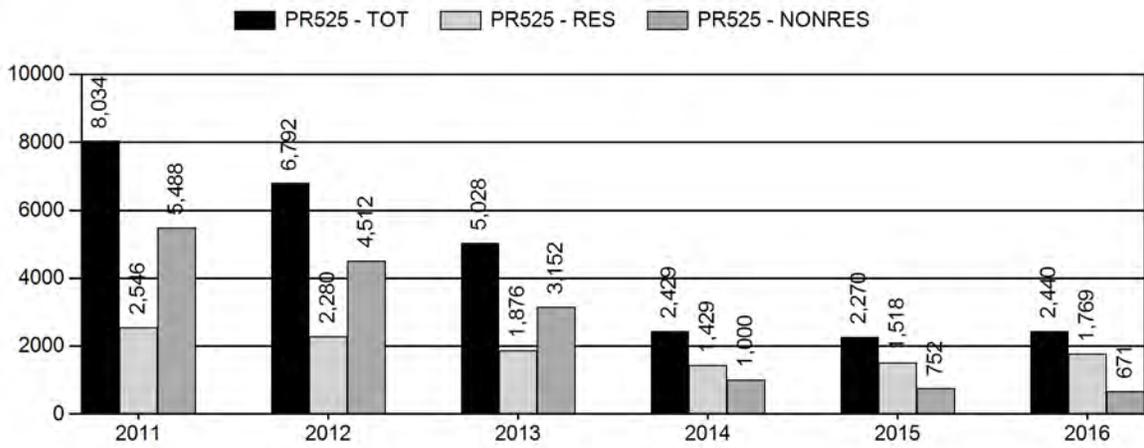
Population Size - Postseason



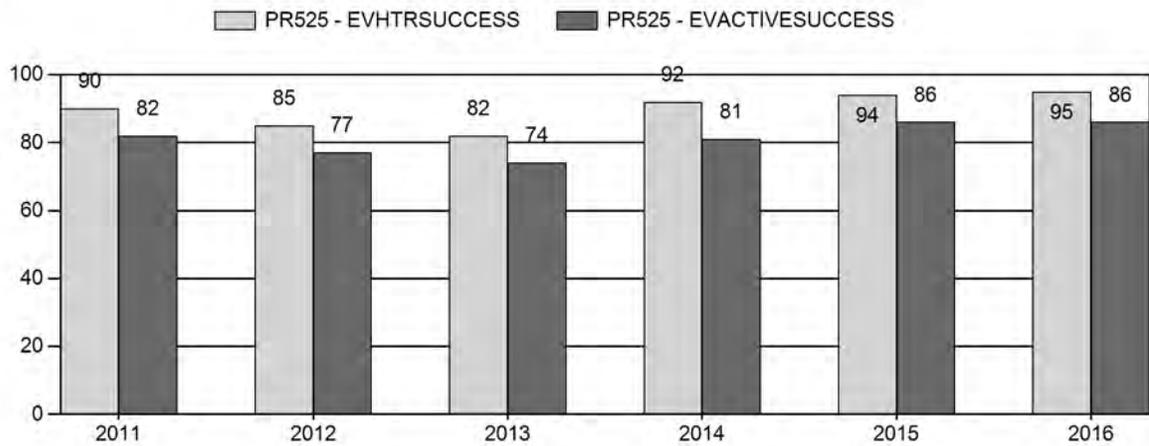
Harvest



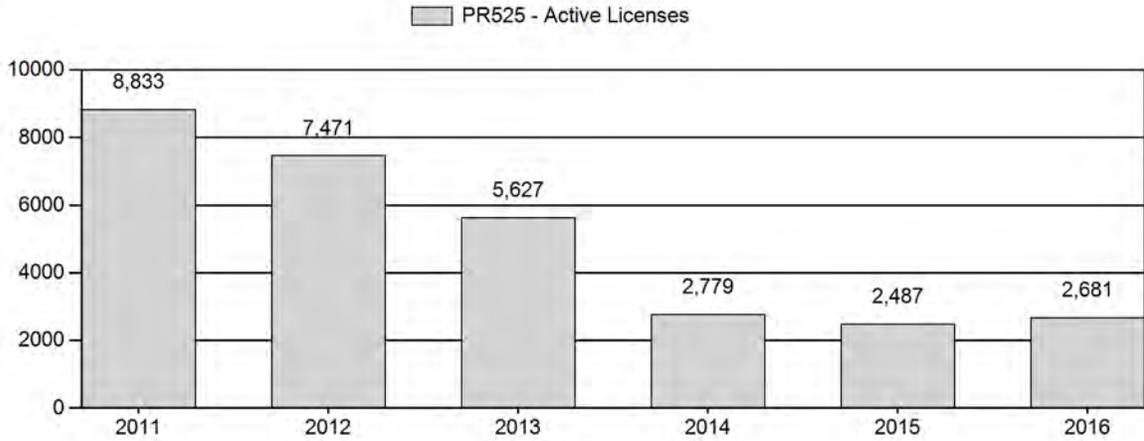
Number of Active Licenses



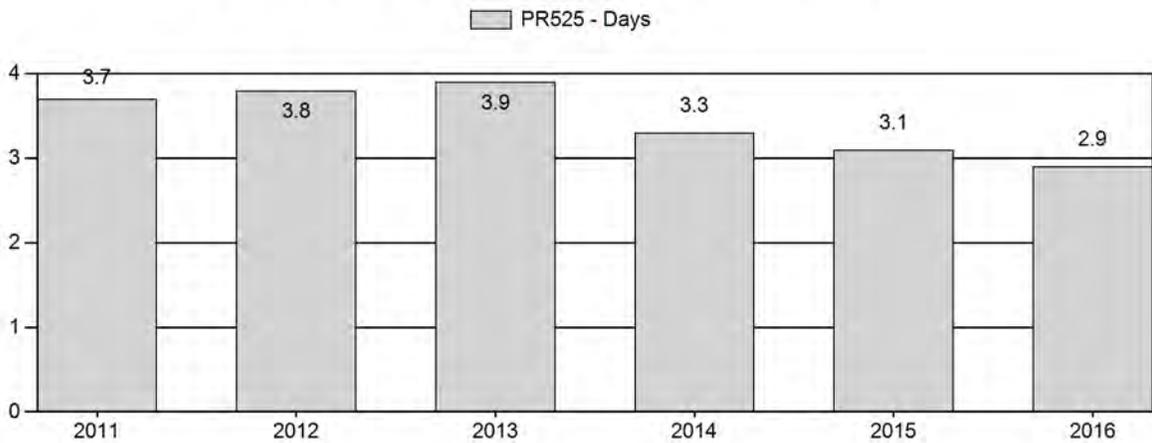
Harvest Success



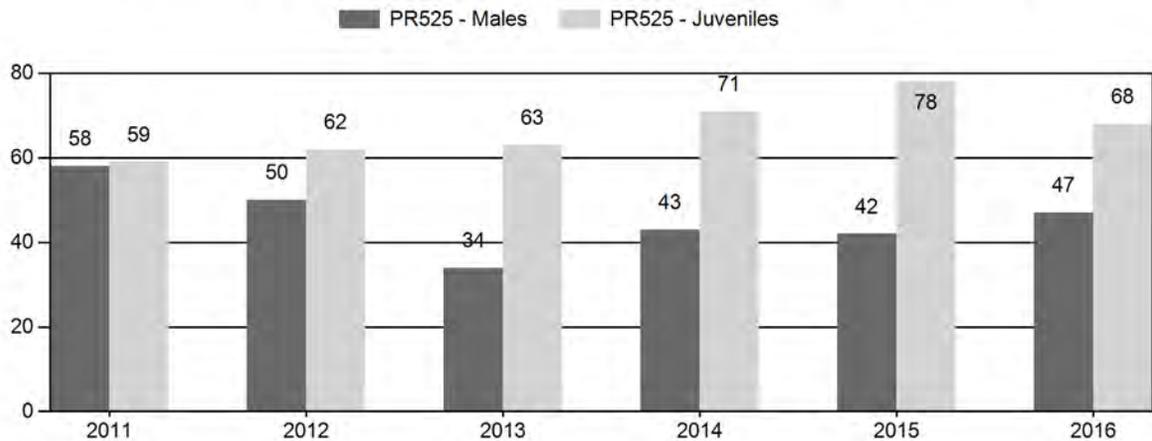
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR525 - MEDICINE BOW

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ying	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	37,998	299	994	1,293	27%	2,222	46%	1,306	27%	4,821	2,104	13	45	58	± 3	59	± 3	37
2012	32,743	312	616	928	24%	1,857	47%	1,143	29%	3,928	2,433	17	33	50	± 3	62	± 4	41
2013	29,495	301	614	915	17%	2,708	51%	1,698	32%	5,321	2,221	11	23	34	± 2	63	± 3	47
2014	35,942	514	617	1,131	20%	2,655	47%	1,882	33%	5,668	2,598	19	23	43	± 2	71	± 3	50
2015	38,028	424	529	953	19%	2,249	45%	1,747	35%	4,949	2,810	19	24	42	± 3	78	± 4	55
2016	41,331	614	806	1,420	22%	3,007	46%	2,046	32%	6,473	2,492	20	27	47	± 2	68	± 3	46

**2017 HUNTING SEASONS
MEDICINE BOW PRONGHORN (PR525)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
30	1	Oct. 5	Oct. 31	500	Limited quota	Any antelope
	6	Oct. 5	Oct. 31	100	Limited quota	Doe or fawn
31	1	Sep. 25	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
32	1	Sep. 25	Oct. 31	400	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	200	Limited quota	Doe or fawn
	7	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn valid on private land
42	1	Sep. 25	Oct. 31	500	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	150	Limited quota	Doe or fawn
46	1	Sep. 25	Oct. 31	150	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	200	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	75	Limited quota	Doe or fawn
47	1	Sep. 25	Oct. 31	400	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	250	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	250	Limited quota	Doe or fawn
48	1	Sep. 25	Oct. 31	150	Limited quota	Any antelope
	2	Oct. 5	Oct. 31	150	Limited quota	Any antelope
	6	Sep. 25	Oct. 31	50	Limited quota	Doe or fawn
30,	Archery	Aug. 15	Oct. 4			Refer to Section 2 of this Chapter
31, 32, 42, 46, 47, 48	Archery	Aug. 15	Sept. 24			Refer to Section 2 of this Chapter

Hunt Area	License Type	Changes from 2016
30	1	+100
	6	+50
32	1	+100
	6	+100
42	1	+100
	6	+100
46	1	+50
	2	+50
47	2	+100
	6	+100
48	1	+50
	2	+50
TOTAL	1	+400
	2	+200
	6	+350
Herd Unit Total		+950

Management Evaluation

Current Postseason Population Management Objective: 40,000 (32,000 – 48,000)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~ 41,300

2017 Proposed Postseason Population Estimate: ~ 40,400

2016 Hunter Satisfaction: 90% Satisfaction, 6% Neutral, 4% Dissatisfied

The management objective for the Medicine Bow pronghorn herd unit is a postseason population objective of 40,000. The management strategy is recreational management which requires managing for buck ratios of 30 to 59:100 does. The objective and management strategy were last revised in 2014.

Herd Unit Issues

The Medicine Bow herd unit encompasses hunt areas 30, 31, 32, 42, 46, 47 and 48. These hunt areas vary between predominantly public land to exclusively private land. Large scale wind farms and coal mining within this herd may be negatively impacting habitat and productivity. More wind farms are proposed. The population saw a large decline from a high of 50,000 in 2004 to 25,000 in 2013. Most recently the population has been increasing to the current estimate of 41,300. In the early 2000s the Department was trying to reduce the population to try and prevent irreparable habitat damage in the Shirley Basin and Bates Hole areas. At the same time this herd was hit hard by harsh winters, drought, and disease, causing the herd to decline below 30,000 pronghorn. The herd objective was last reviewed in 2014; the herd objective was decreased from 60,000 to 40,000 pronghorn post season. This will still allow the herd to increase substantially and at the same time manage for a more sustainable population in line with habitat.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Medicine Bow herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking. The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or quality and consequently heavily influence population management for any particular big game species.

Field Data

A total of 6,500 pronghorn were classified in 2016, exceeding the estimated classification objective of 2,500. Classification methods were changed from aerial to ground in 2013 due to budget constraints. Buck ratios increased to 47 bucks: 100 does in 2016. Adult buck ratios accounted for most of the increase with 27:100 does, still the yearling buck ratio of 20:100 is above the 10 year average of 16:100. Since 2012 we have seen a steady increase in fawn ratios which has corresponded in an increasing population. This year we did see a decline from 78 fawns: 100 does in 2015 to 68 fawns: 100 does 2106. The decline could be from severe spring weather or an increase in yearlings, however, 68 fawns per 100 is still above the 10 year average of 66:100 and should maintain a growing population. The hunter satisfaction survey shows 90% of hunters were either satisfied or very satisfied with their hunt and 6% remaining neutral, comparable to past years.

Harvest Data

Hunter success for all active licenses types is 96%, continuing to increase annually from 82% in 2013. Hunter effort for the herd unit declined for the third straight year to 2.9 days to harvest in 2016. We expected to have high success and lower effort with the current license issuance and a growing population. Total harvest increased from 2,100 in 2015 to 2,300 in 2016 with 2,400 active licenses, a significant reduction in harvest compared to 2010 with 7,700 pronghorn and 8,900 active licenses. Adult bucks harvested over 3 years old has increased from 53% in 2012 to 64% in 2016. Adult doe harvest over 3 years old also has increased from 32% in 2014 to 52% in 2016, signs of a growing population with limited harvest.

Population

The spreadsheet model for this herd indicates the population is increasing with a post hunt population of 41,300. This estimate was derived using the Time-Specific Juvenile and Constant Adult Survival model which had a AIC score of 280 and a best fit score of 171. The last line transect (LT) survey was conducted spring of 2016 with a 2015 postseason population estimate of 36,250 and a standard error of 4,300 (Appendix A). The model is of good quality, predicted end of year population trends align well with past line transect estimates, and is comparable with what field personnel have noted from landowner and hunter comments. The model has 15-20 years of data; ratio data available for all years in model; juvenile and adult survival estimates with standard errors available at least 2 out of 10 years, (Grogan et al and Taylor, 2014) and at least one sample-based population estimate with standard error available.

Management Summary

If the projected harvest of 3,100 is attained, and we have an average fawn ratio of 70 fawns: 100 does, the population is estimated to stabilize near 40,000. Given the increase in the buck ratio throughout the herd unit, we are increasing Type 1 licenses by a total of 500 in the hunt areas that can best offer that opportunity. We are also increasing Type 6 licenses by 250 to start to address the population reaching objective. Given the varying winter from harsh to mild conditions we are hesitant to increase doe harvest to much the first year, and will evaluate more increases in 2018.

Bibliography of Herd Specific Studies

Grogan, R. Lindzey, F. *Pronghorn survival in Wyoming*. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, WY, 82071, USA

Taylor, K. L. 2014. Pronghorn (*Antilocapra americana*) Response to Wind Energy Development on Winter Range in South-Central, Wyoming. Master's Thesis. Department of Ecosystem Science and Management. University of Wyoming. Laramie. 141 pp.

Appendix A

2016 PR525 - MEDICINE BOW Pronghorn Line-Transect Summary

Survey Dates: 6/1/2017 - 6/6/2017
Survey Cost: \$ 6,725.00
Flight Service: LAIRD FLYING SERVICE
Aircraft: HUSKY
Observers: Will Shultz, Lee Knox, Cody Bish 24 hours at 250 an hour

Weather Conditions:

Temperature (Degrees Fahrenheit): 70
Cloud Cover (%): 0
Wind Speed (MPH): 0 - 20

Transect Limits: 106 35' to 105 30'

Transect Direction: North/South

Transect Interval (Minutes of Longitude): 5

Transect Length: (Mi.): 16,226

Transect Altitude (AGL): 315 ft.

Occupied Habitat (mi²): 3,000

Density Estimate (Animals/mi² with Confidence Intervals): 36249 (28729 - 45736)

Population Estimate (with Confidence Intervals): 30,408 (0 - 0)

Effort : 2374.700
 # samples : 99
 Width : 210.0000
 Left : 0.0000000
 # observations: 953

Model

Hazard Rate key, $k(y) = 1 - \text{Exp}(-(y/A(1))^{**}-A(2))$

Point	Standard	Percent	Coef.	95 Percent	
Parameter	Estimate	Error	of Variation	Confidence	Interval
A(1)	45.15	9.028			
A(2)	1.000	0.1190			
f(0)	0.10732E-01	0.88037E-03	8.20	0.91390E-02	0.12603E-01
p	0.44370	0.36396E-01	8.20	0.37782	0.52105
ESW	93.176	7.6432	8.20	79.343	109.42

Sampling Correlation of Estimated Parameters

A(1) A(2)
 A(1) 1.000 0.827
 A(2) 0.827 1.000
 Detection Fct/Global/Plot: Detection Probability

Expected cluster size estimated based on regression of: $\log(s(i))$ on $g(x(i))$
 ** Warning: Exact distance values, rather than distance intervals,
 have been used in size bias regression calculations. **

Regression Estimates

Slope = -0.638401E-01 Std error = 0.795540E-01
 Intercept = 0.593026 Std error = 0.508798E-01
 Correlation= -0.0260 Students-t = -0.802476
 Df = 951 Pr(T < t) = 0.211239

Expected cluster size = 2.1663 Standard error = 0.54657E-01

Mean cluster size = 2.3820 Standard error = 0.86746E-01
 Cluster size/Global/Regression plot

Effort : 2374.700
 # samples : 99
 Width : 210.0000
 Left : 0.0000000
 # observations: 953

Model

Hazard Rate key, $k(y) = 1 - \text{Exp}(-(y/A(1))^{**}-A(2))$

Point Parameter	Standard Estimate	Percent Error	Coef. of Variation	95% Percent	Confidence Interval
DS	5.5776	0.64672	11.60	4.4437	7.0008
E(S)	2.1663	0.54657E-01	2.52	2.0617	2.2763
D	12.083	1.4338	11.87	9.5765	15.245
N	36249.	4301.4	11.87	28729.	45736.

Measurement Units

Density: Numbers/Sq. miles
 ESW: meters

Component Percentages of Var(D)

Detection probability : 47.8
 Encounter rate : 47.7
 Cluster size : 4.5
 Estimation Summary - Encounter rates

Estimate	%CV	df	95% Confidence Interval	
n	953.00			
k	99.000			
L	2374.7			
n/L	0.40131	8.19	98.00	0.34117 0.47206
Left	0.0000			
Width	210.00			

Estimation Summary - Detection probability

Estimate	%CV	df	95% Confidence Interval	
Hazard/Cosine				
m	2.0000			
LnL	-1524.7			
AIC	3053.3			
AICc	3053.3			
BIC	3063.0			
Chi-p	0.59605E-07			
f(0)	0.10732E-01	8.20	951.00	0.91390E-02 0.12603E-01
p	0.44370	8.20	951.00	0.37782 0.52105
ESW	93.176	8.20	951.00	79.343 109.42

Estimation Summary - Expected cluster size

Estimate %CV df 95% Confidence Interval

Average cluster size

2.3820 3.64 952.00 2.2177 2.5584

Hazard/Cosine

r -0.26013E-01

r-p 0.21124

E(S) 2.1663 2.52 951.00 2.0617 2.2763

Estimation Summary - Density&Abundance

Estimate %CV df 95% Confidence Interval

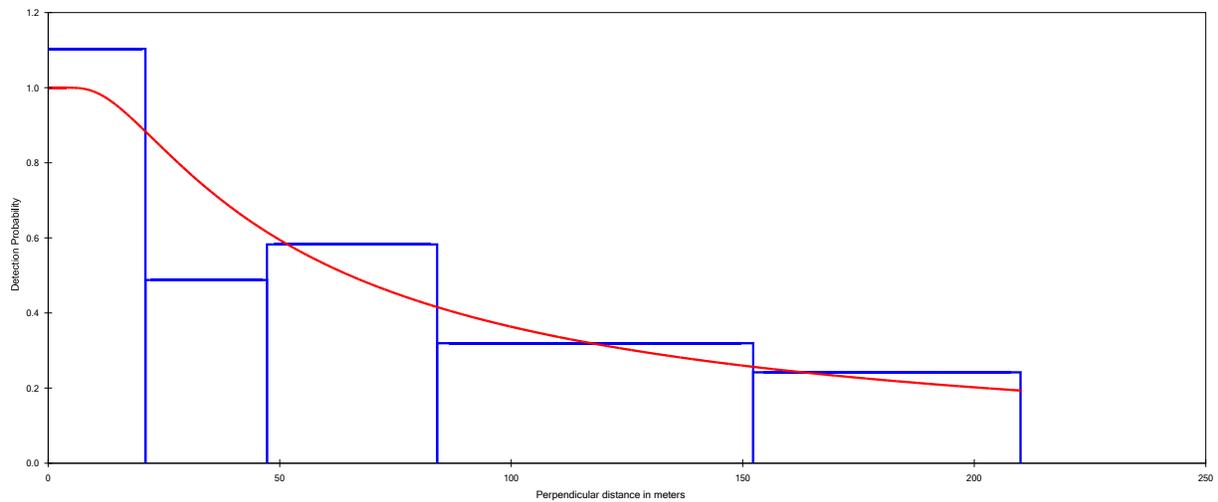
Hazard/Cosine

DS 5.5776 11.60 355.95 4.4437 7.0008

D 12.083 11.87 390.13 9.5765 15.245

N 36249. 11.87 390.13 28729. 45736.

C1 C2 C3 C4



PH525 - Medicine Bow
HA 30-32, 41, 42, 46-48
Revised - 6/04



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR526 - COOPER LAKE

HUNT AREAS: 43

PREPARED BY: LEE KNOX

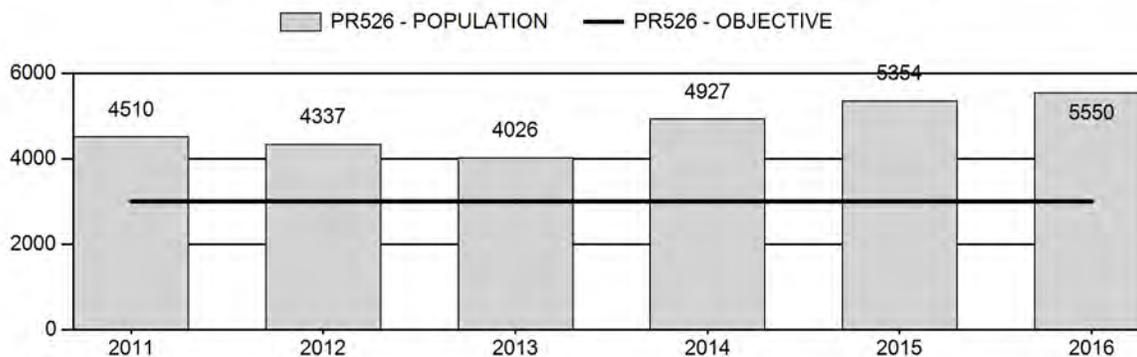
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,631	5,550	5,317
Harvest:	654	807	928
Hunters:	730	883	1,000
Hunter Success:	90%	91%	93 %
Active Licenses:	792	926	1,050
Active License Success:	83%	87%	88 %
Recreation Days:	2,479	2,212	2,250
Days Per Animal:	3.8	2.7	2.4
Males per 100 Females	44	72	
Juveniles per 100 Females	84	94	

Population Objective ($\pm 20\%$) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	85%
Number of years population has been + or - objective in recent trend:	20
Model Date:	02/22/2017

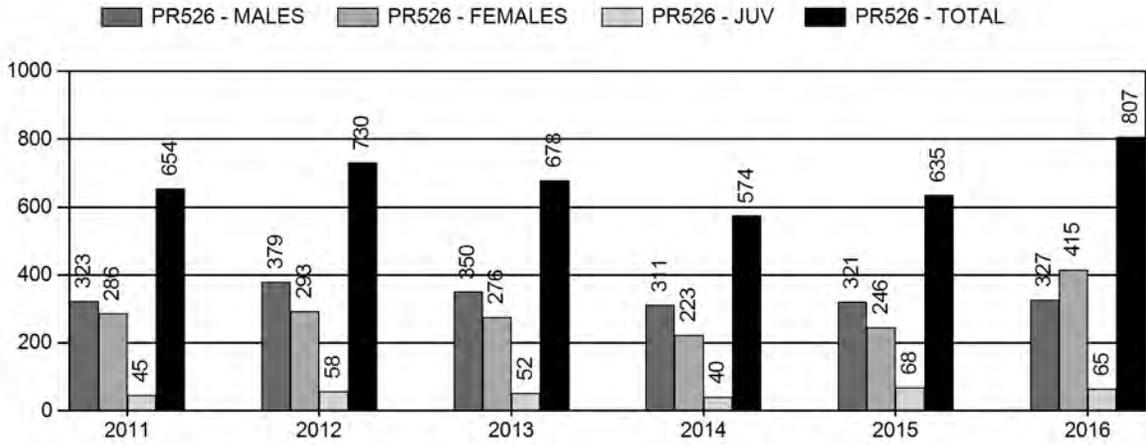
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	18%	18%
Males ≥ 1 year old:	31%	28%
Total:	13%	13%
Proposed change in post-season population:	-15%	-15%

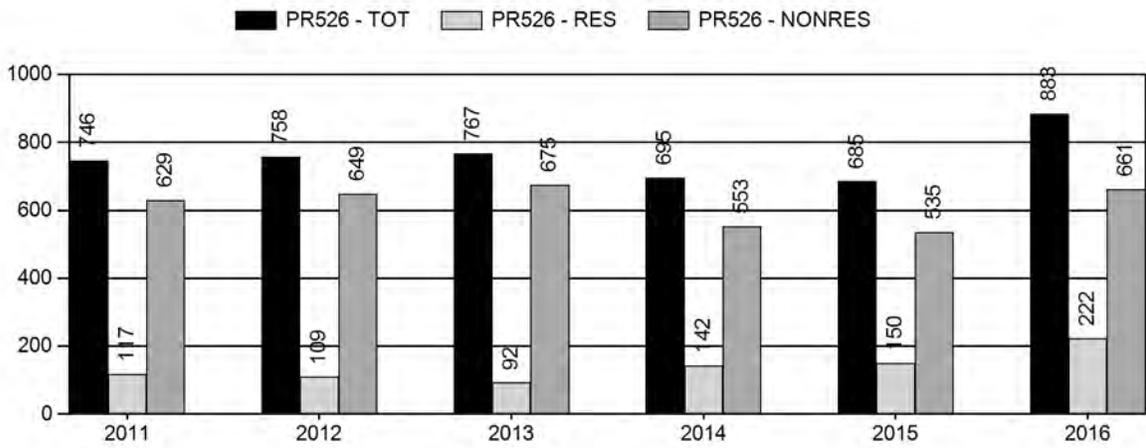
Population Size - Postseason



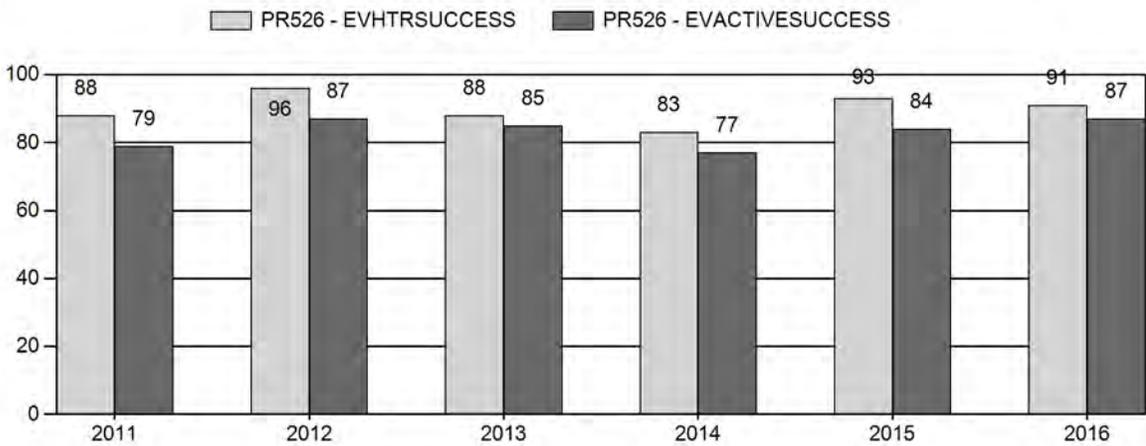
Harvest



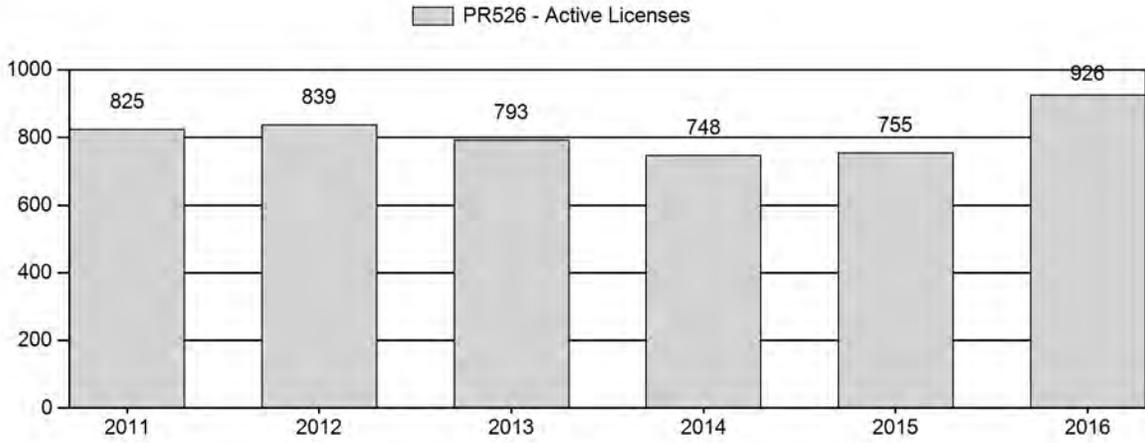
Number of Active Licenses



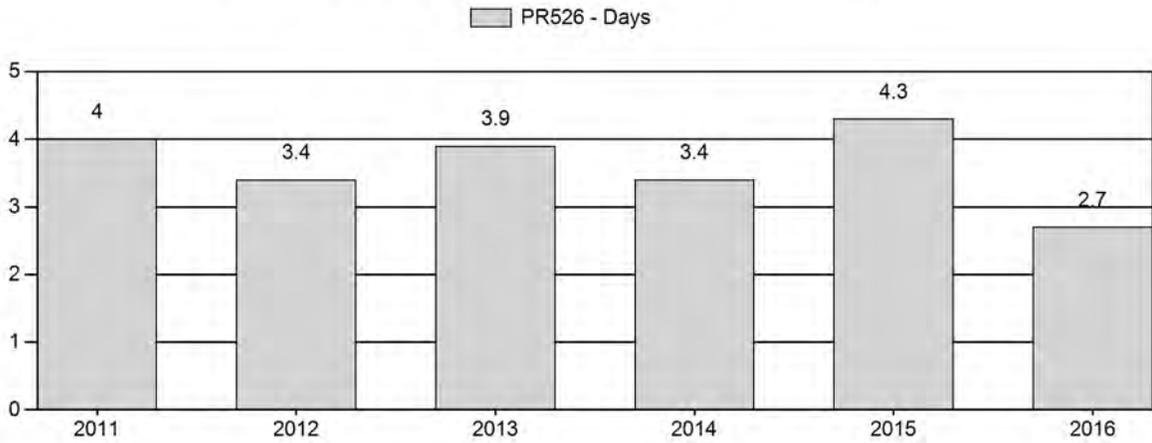
Harvest Success



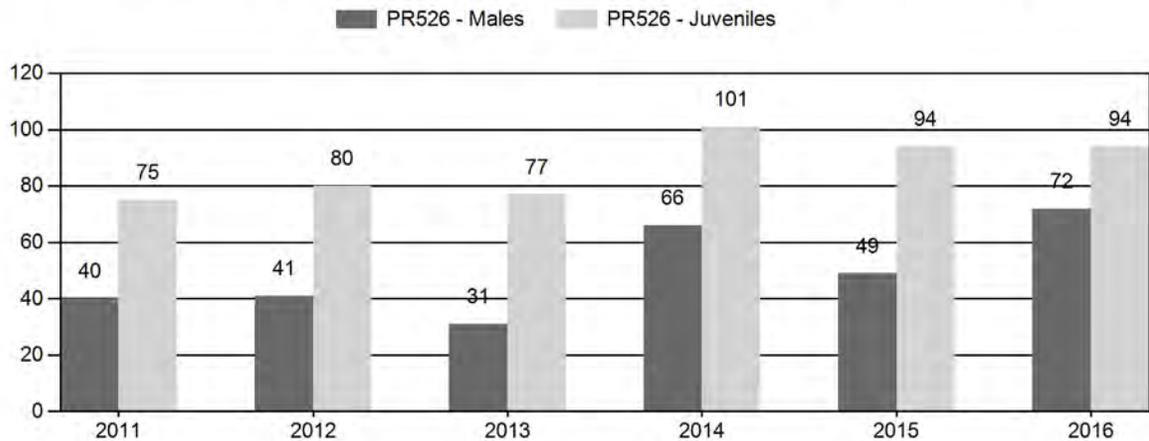
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR526 - COOPER LAKE

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	5,230	56	162	218	19%	544	47%	406	35%	1,168	2,231	10	30	40	± 5	75	± 7	53
2012	5,154	33	52	85	18%	209	45%	167	36%	461	2,064	16	25	41	± 8	80	± 13	57
2013	4,772	45	82	127	15%	409	48%	314	37%	850	1,784	11	20	31	± 5	77	± 9	59
2014	5,558	101	96	197	25%	300	38%	303	38%	800	1,538	34	32	66	± 9	101	± 13	61
2015	6,052	68	92	160	20%	325	41%	307	39%	792	2,352	21	28	49	± 7	94	± 12	63
2016	5,550	109	139	248	27%	345	38%	324	35%	917	2,878	32	40	72	± 9	94	± 11	55

**2017 HUNTING SEASONS
COOPER LAKE PRONGHORN (PR526)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
43	1	Sept. 15	Oct. 31	500	Limited quota	Any antelope
	6	Sept. 15	Oct. 31	600	Limited Quota	Doe or fawn
Archery		Aug. 15	Sept. 14			Refer to Section 3 of this Chapter

Area	Type	Change from 2016
43	1	+100
Herd Totals	TOTAL	+100

Management Evaluation

Current Postseason Population Management Objective: 3,000 (2,400-3,600)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~ 5,500

2017 Proposed Postseason Population Estimate: ~ 5,300

2016 Hunter Satisfaction: 90% Satisfied, 5% Neutral, 5% Dissatisfied

The management objective for the Cooper Lake pronghorn herd unit is a post-season population objective of 3,000 pronghorn. The management strategy is recreational management with a buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2013.

Herd Unit Issues

Recent trends show the population increasing from 4,200 in 2013 to the current population estimate at 5,500. The last line transect survey was conducted in 2013, estimating 8,953 pronghorn with an estimated standard error of 1,603. This herd is predominately private land with increasing urban sprawl near Laramie. A wind farm exists in the western portion of the herd with more proposed. Limited public access has hindered efforts to decrease this herd through harvest. Currently most public hunting is limited to the Diamond Lake and Laramie River Hunter Management Areas (HMA). Field staff documented Epizootic Hemorrhagic Disease (EHD) in the herd unit in 2012 and 2013.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of

snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Cooper Lake herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking.

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

Field Data

A total of 917 pronghorn were classified which is below the estimated sample size of 2,878. Classification samples have been below the estimated sample size since 2006. Routes were established in 2013 so that some inference can be made between classification samples year to year and since 2013 we have sampled near 800 pronghorn each year; increasing length of routes may need to be added to reach the estimated sample size. With another green spring and summer, fawn ratios remain high at 94 fawns: 100 does. Buck ratios increased in both yearling and adult bucks for a total buck ratio of 74:100 does.

Harvest Data

We issued 1,000 licenses which did not completely sell in the resident draw and non-residents account for 75% of the licenses sold. Hunter success remains high with type 1s at 91% and type 6s at 85%. The Hunter Satisfaction Survey shows 90% of hunters were either satisfied or very satisfied with their hunt.

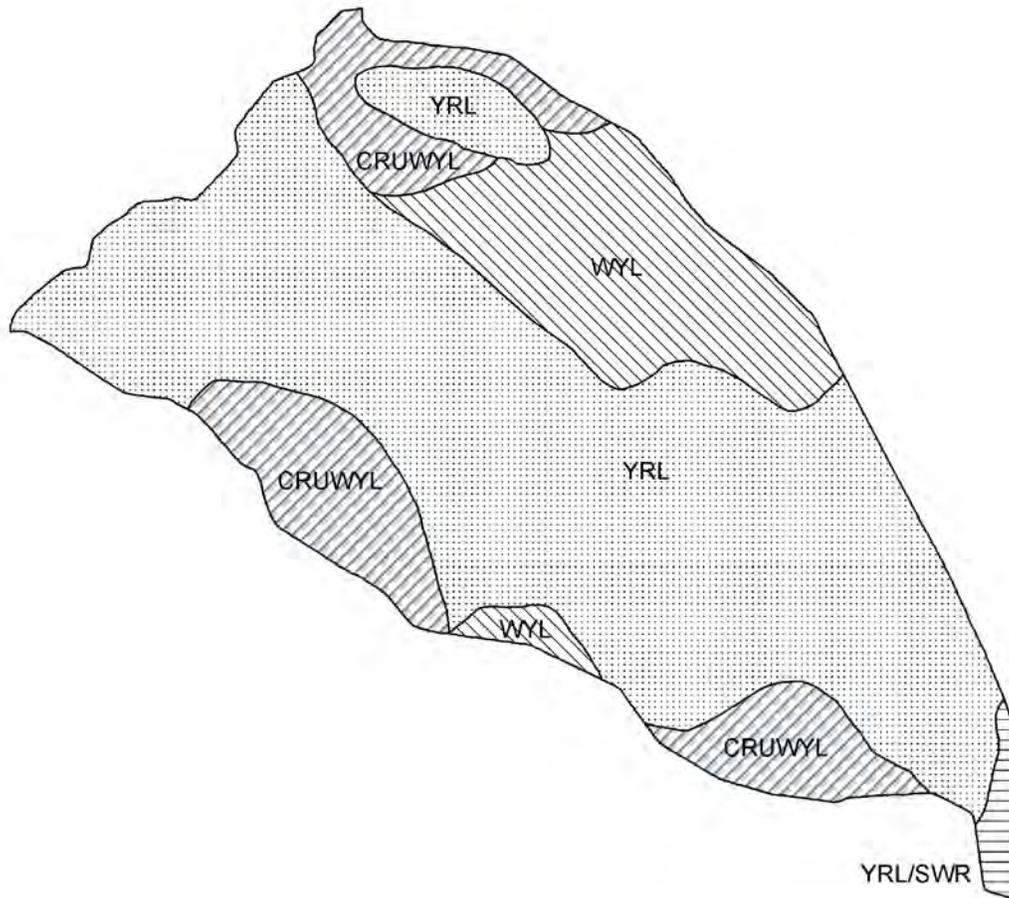
Population

The model estimates the population is near 5,500 pronghorn and predicts it will remain stable to slightly declining to 5,300 in 2017. The Constant Juvenile- Constant Adult Mortality Rate (CJCA) spreadsheet model was selected to use for the post season population estimate of this herd. The model selected had the lowest AIC of all three models and the end of year population estimate trends well with the past line transect (LT) surveys. We conducted an LT in June 2014 that estimates an end of bio year estimate of 8,900 with a standard error of 1,600. The histogram for this survey shows that the E band is higher than the B, C or D bands, and therefore breaks the first assumption. This is a poor model due to ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; lacks adult and juvenile survival data; results not biologically defensible.

Management Summary

This herd is very productive and has recovered quickly from the drought in 2012. The current population estimate is over objective and increasing. Buck ratios are well above recreational management and fawns ratios remain high. Type 1 licenses will be increased by 100 to provide more opportunity. Type 6 licenses will remain the same so that we can assess the increase in 2016 with more than one year of harvest data. We are concerned that increasing licenses could lead to hunter crowding issues given the lack of public hunting access in the herd unit. To address these concerns and the increasing population, the season will be lengthened for both Type 1 and 6 licenses to Oct. 31st to provide more time on the HMAs.

PH526 - Cooper Lake
HA 43
Revised - 3/91



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR527 - CENTENNIAL

HUNT AREAS: 37, 44-45

PREPARED BY: LEE KNOX

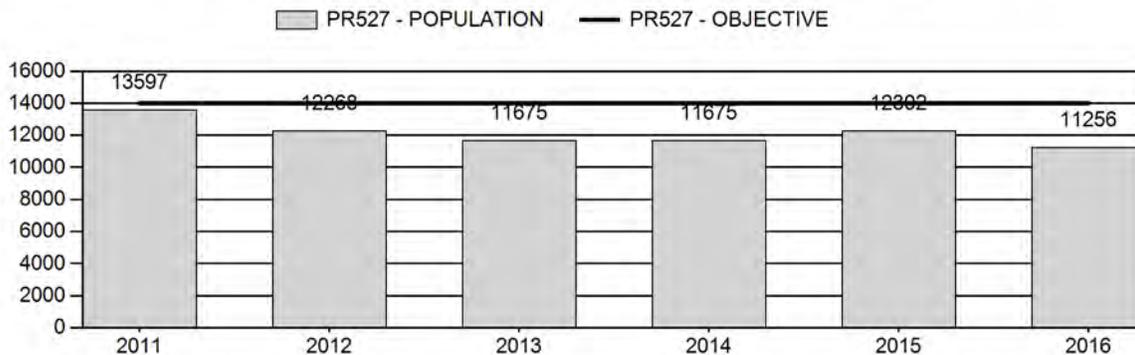
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	12,303	11,256	11,030
Harvest:	1,125	1,029	1,195
Hunters:	1,261	1,097	1,200
Hunter Success:	89%	94%	100 %
Active Licenses:	1,425	1,215	1,350
Active License Success:	79%	85%	89 %
Recreation Days:	4,649	3,649	3,700
Days Per Animal:	4.1	3.5	3.1
Males per 100 Females	39	54	
Juveniles per 100 Females	71	56	

Population Objective (± 20%) :	14000 (11200 - 16800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-19.6%
Number of years population has been + or - objective in recent trend:	6
Model Date:	02/22/2017

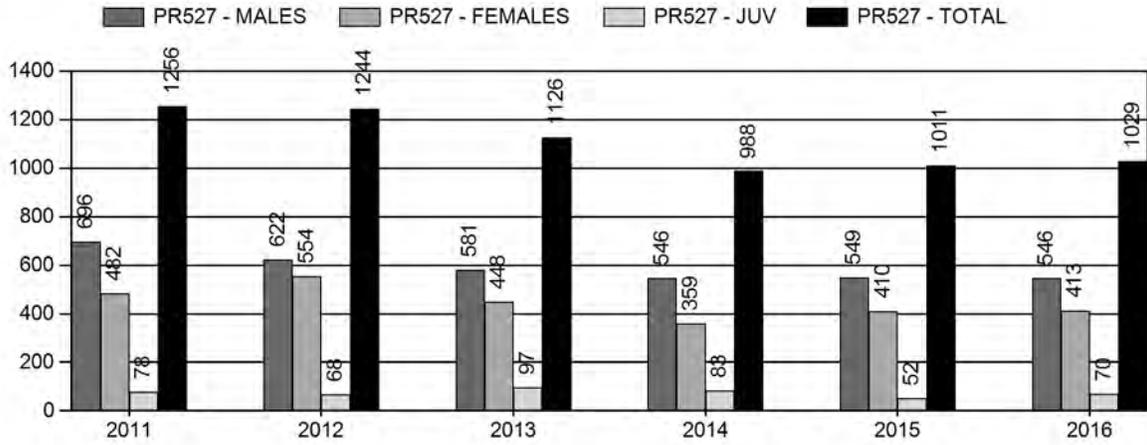
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	7%	8%
Males ≥ 1 year old:	22%	29%
Total:	8%	10%
Proposed change in post-season population:	-2%	-2%

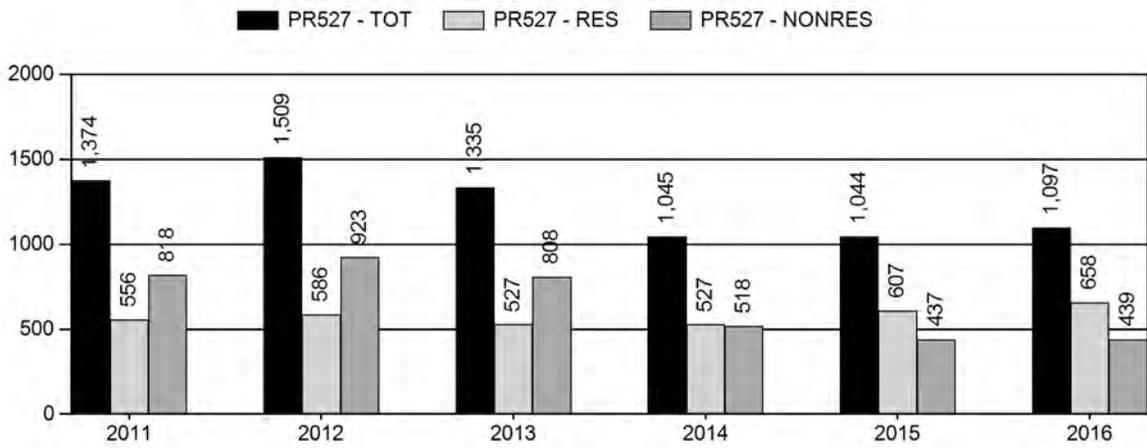
Population Size - Postseason



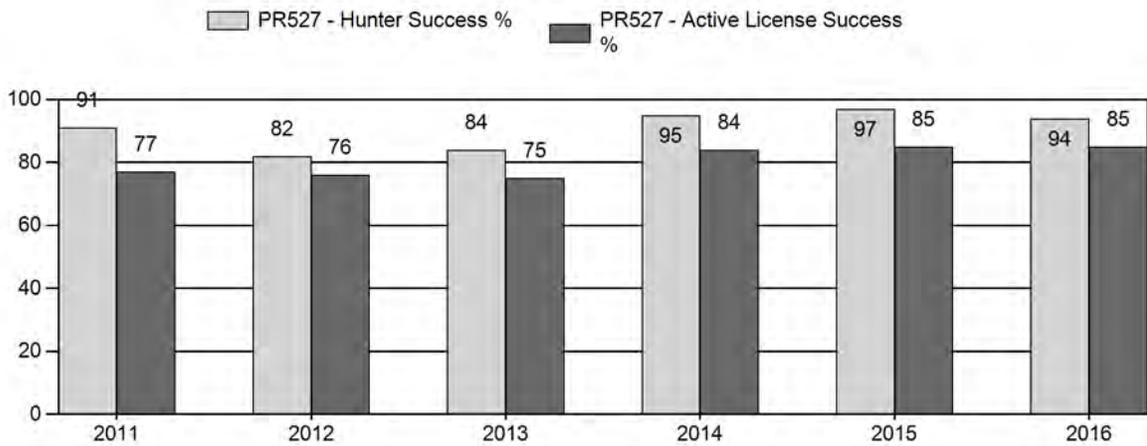
Harvest



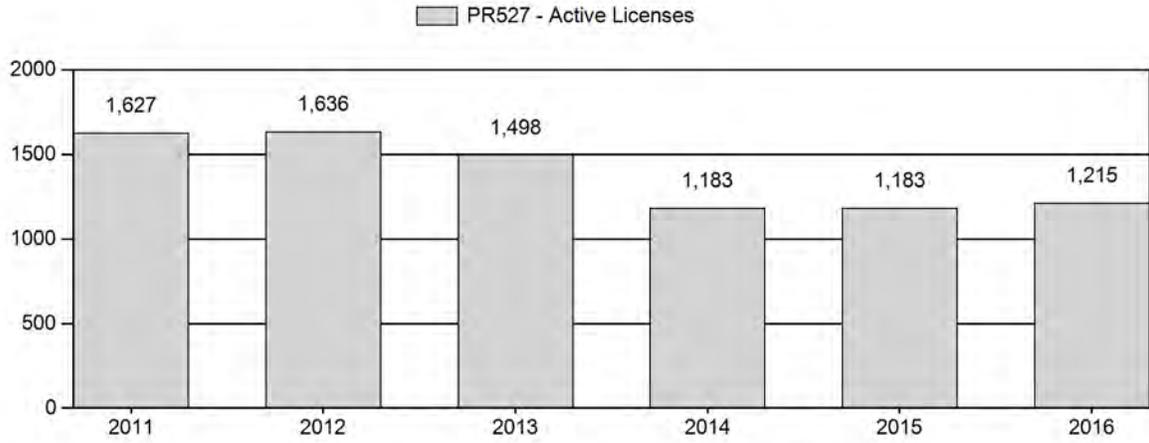
Number of Active Licenses



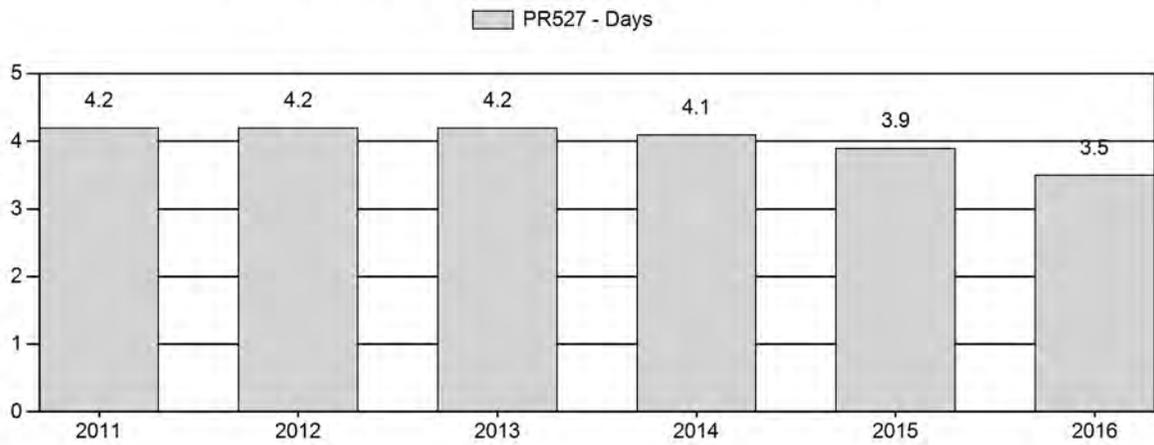
Harvest Success



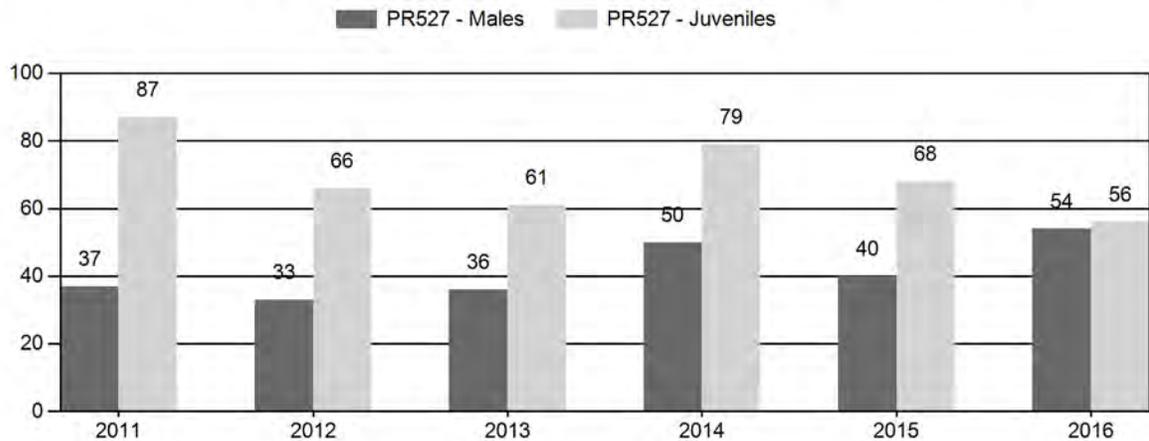
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR527 - CENTENNIAL

Year	Pre Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	14,978	59	214	273	16%	741	45%	641	39%	1,655	2,886	8	29	37	± 4	87	± 7	63
2012	13,611	190	252	442	17%	1,326	50%	878	33%	2,646	2,016	14	19	33	± 3	66	± 4	50
2013	12,536	113	239	352	18%	975	51%	595	31%	1,922	1,832	12	25	36	± 3	61	± 5	45
2014	12,762	249	321	570	22%	1,149	44%	907	35%	2,626	2,149	22	28	50	± 4	79	± 5	53
2015	13,414	199	277	476	19%	1,181	48%	802	33%	2,459	2,207	17	23	40	± 3	68	± 5	48
2016	11,256	182	353	535	25%	1,000	48%	565	27%	2,100	1,724	18	35	54	± 4	56	± 4	37

**2017 HUNTING SEASONS
CENTENNIAL PRONGHORN (PR527)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
37	1	Sep. 20	Oct. 14	225	Limited Quota	Any antelope
	6	Sep. 20	Oct. 14	100	Limited Quota	Doe or fawn
44	1	Sep. 15	Oct. 31	250	Limited Quota	Any antelope
	6	Sep. 15	Oct. 31	150	Limited Quota	Doe or fawn
45	1	Sep. 15	Oct. 31	400	Limited Quota	Any antelope
	6	Sep. 15	Oct. 31	350	Limited Quota	Doe or fawn
37	Archery	Aug. 15	Sept. 19			Refer to Section 2 of this Chapter
44,45	Archery	Aug. 15	Sept. 14			Refer to Section 2 of this Chapter

Hunt Area	License Type	Changes from 2016
37	6	+25
44	1	+100
45	1	+50
TOTAL	1	+150
	6	+25
HERD UNIT TOTAL		+175

Management Evaluation

Current Postseason Population Management Objective: 14,000 (11,200 – 15,800)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~ 11,300

2017 Postseason Population Estimate: ~ 11,000

2016 Hunter Satisfaction: 90% Satisfied, 6% Neutral, 4% Dissatisfied

The Management objective for the Centennial pronghorn herd unit is a post-season population of 14,000. The management strategy is recreational management requiring a buck ratio of 30 to 59:100 does. The objective and management strategy was last revised in 2013.

Herd Unit Issues

The Centennial pronghorn herd unit encompasses hunt areas 37, 44, and 45 which are predominately private land with little public access. The 2016 post-season population estimate was approximately 11,300 with the population trending downward from 18,000 in 2004. The last line transect was conducted in 2013. Harvest strategies are designed to maximize harvest where possible. Most of the harvest is limited to Hunter Management Areas (HMA). This herd is experiencing a steady loss of habitat from an increase in subdivisions being built annually. There is significant interchange with Colorado; most if not all of the pronghorn in hunt area 37 winter in Colorado, while it is thought most of the pronghorn in the Laramie River Valley from Colorado winter in hunt area 44.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Centennial herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Residential development / subdivisions continue to fragment seasonal ranges in this herd unit. New fences that are often associated with subdivisions can have impacts on migratory movements of pronghorn, and may limit their ability to traverse to key wintering areas.

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

Field Data

A total of 2,100 pronghorn were classified, exceeding the estimated classification objective of 1700. Classification routes have been standardized so that some inference can be made from year to year classifications; in 2 of the 3 hunt areas we saw a decline in numbers. Fawn production in 2016 was 56:100 does, 12 fawns: 100 less than in 2015 and 22 fawns: 100 less than 2014. This is perplexing considering hunt area 43 is only separated by an interstate and has fawn ratios over 90:100 does. Buck ratios increased from 40 bucks:100 does in 2015 to 53 bucks: 100 does in 2016.

Harvest Data

Hunter success continues to remain high at 94% in 2016, and hunter effort decreased slightly to 3.5 days to harvest. The hunter satisfaction survey showed 90% of hunters were satisfied or very satisfied with their hunt, 6% of respondents remaining neutral. Overall the current season structure and license issuance is working well and it is reflected in the high hunter success and satisfaction. This herd unit is popular with nonresidents who accounted for 40% of the licenses in 2016, and in past years as high as 60%. Residents interested in this herd has increased, claiming more of their allocation of licenses, but we believe this is an effect of the statewide decrease in license issuance that occurred in 2014, causing more residents to draw their second and third choices.

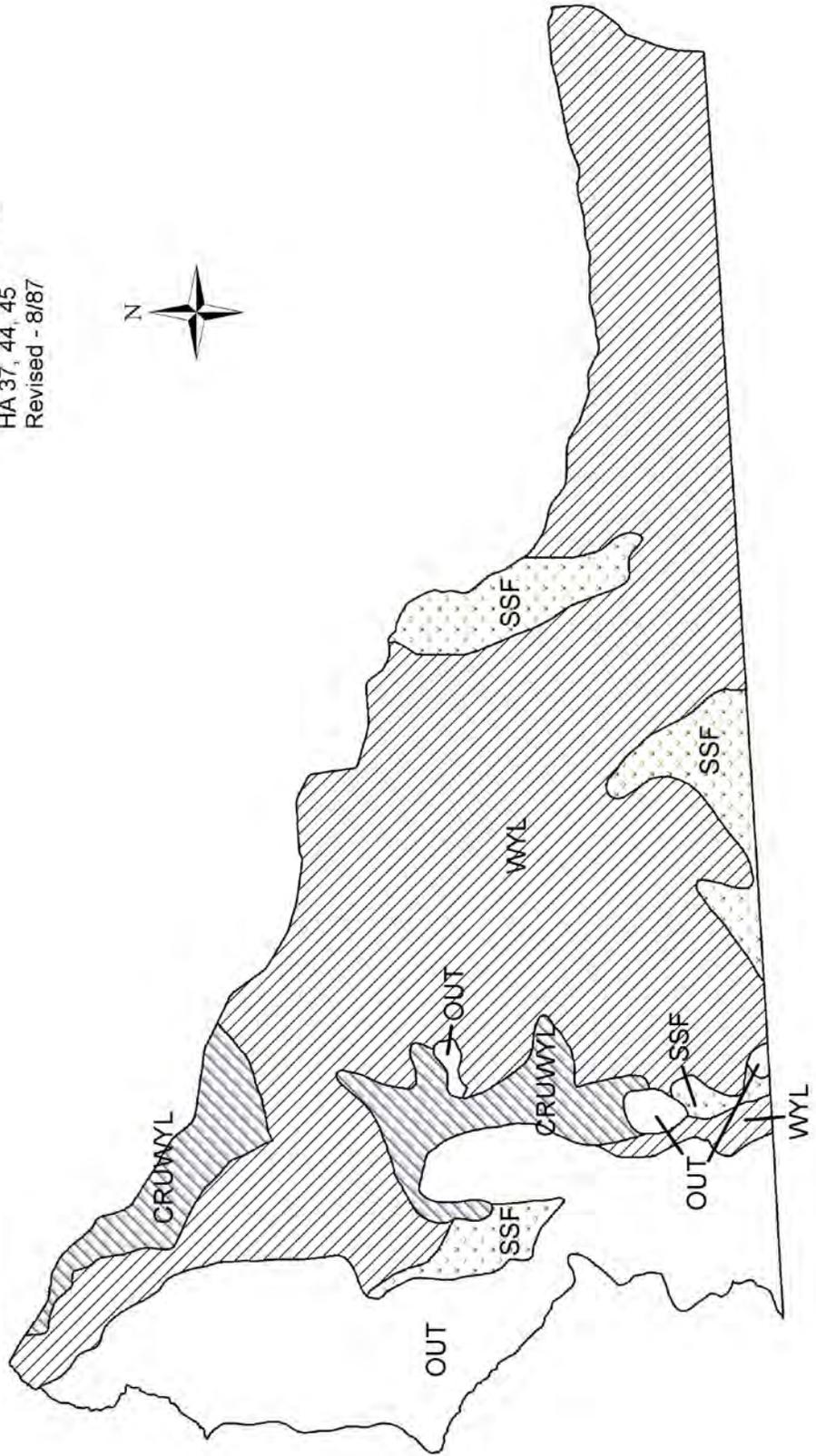
Population

The “Constant Juvenile – Constant Adult Survival Rate (CJCA)” spreadsheet model was chosen to use for the post season population estimate of this herd. This model did not have the lowest relative AIC score but had the most reasonable population estimate, and considering the issue with herd data we wanted to use the simplest model. We truncated the years to 2000 to eliminate low quality data. The model estimates the Centennial pronghorn herd has slowly trended downward since 2004 when the population was estimated at 18,000 and is currently at 11,300 and within 20% of the population objective. This is a poor model due to ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; significant interchange with populations in Colorado; lacks adult and juvenile survival data; results not biologically defensible. We conducted a line transect survey for this herd in the spring of 2014 which estimates 21,009 pronghorn with a standard error of 3,300. The CI is between 15,370 and 28,700 pronghorn. The E band estimates are too high and violates the first assumption of the line transect (LT) survey.

Management Summary

In the past we have not been able to manage this herd through harvest due to high fawn ratios and limited access. Due to extreme weather events and increased hunter access we estimate the population has been reduced by half since 2004 and we are near objective. Extending the season to the end of October in hunt areas 44 and 45 worked well to provide more opportunity by spreading out hunting pressure and was well received by landowners and hunters. With an increased buck population, we propose increasing Type 1 licenses in all 3 hunt areas accordingly. If we attain the projected harvest of 1,200 pronghorn and have fawn ratios near 70 to 75, the population will remain near the objective. We predict a 2017 post-season population of approximately 11,000 pronghorn.

PH527 - Centennial
HA 37, 44, 45
Revised - 8/87



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR528 - ELK MOUNTAIN

HUNT AREAS: 50

PREPARED BY: WILL SCHULTZ

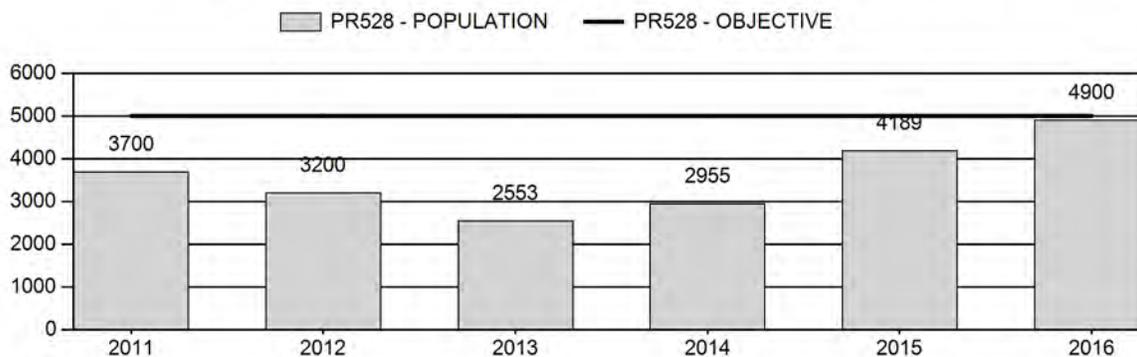
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,319	4,900	4,500
Harvest:	644	282	360
Hunters:	712	309	400
Hunter Success:	90%	91%	90 %
Active Licenses:	757	320	410
Active License Success:	85%	88%	88 %
Recreation Days:	2,432	762	1,100
Days Per Animal:	3.8	2.7	3.1
Males per 100 Females	33	42	
Juveniles per 100 Females	55	48	

Population Objective (\pm 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-2%
Number of years population has been + or - objective in recent trend:	8
Model Date:	02/16/2017

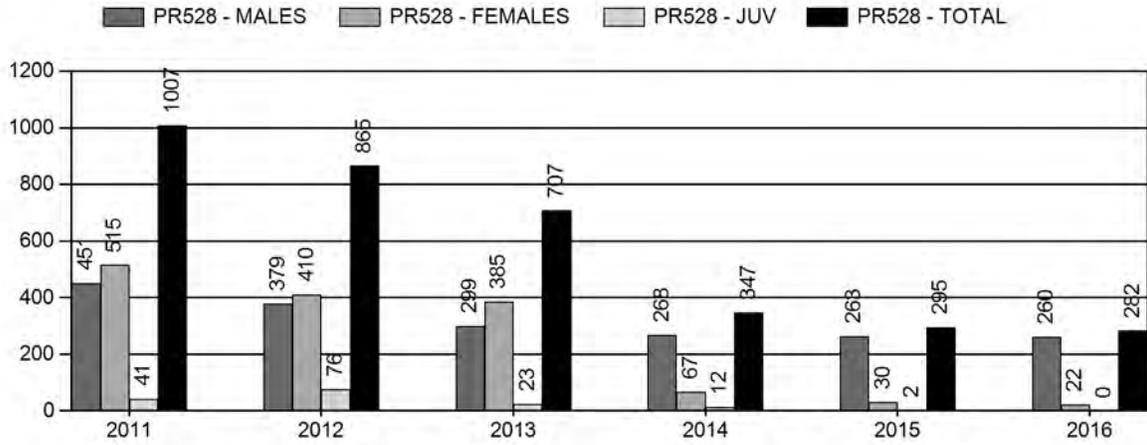
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	0.01%	0.01%
Males \geq 1 year old:	42%	30%
Total:	-6%	-6%
Proposed change in post-season population:	7%	-5%

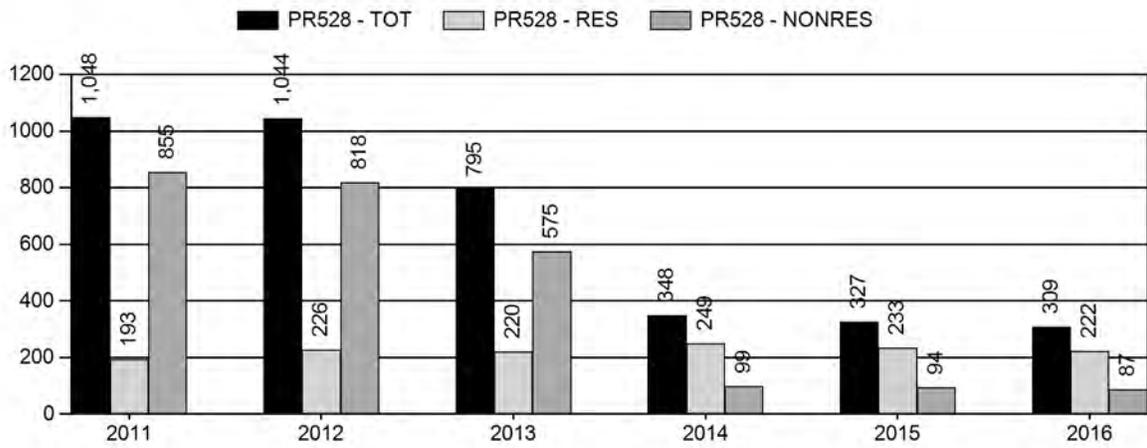
Population Size - Postseason



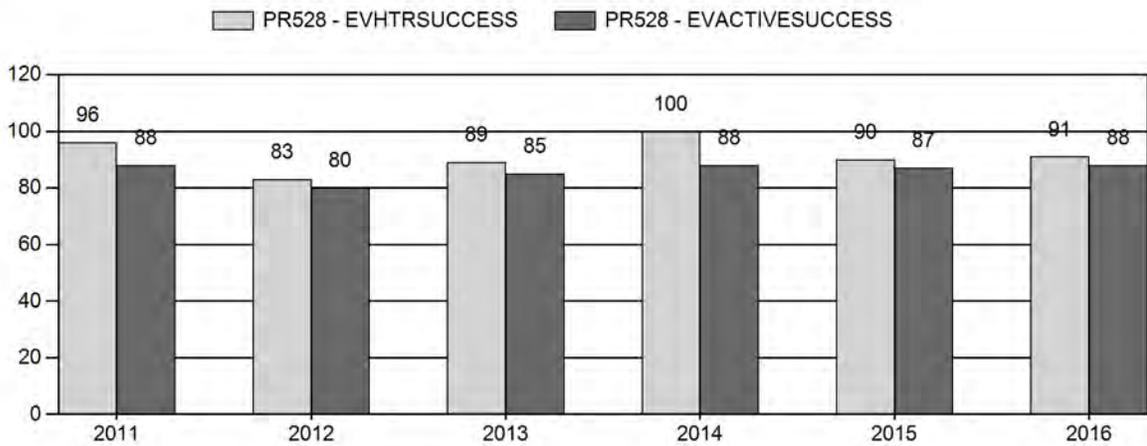
Harvest



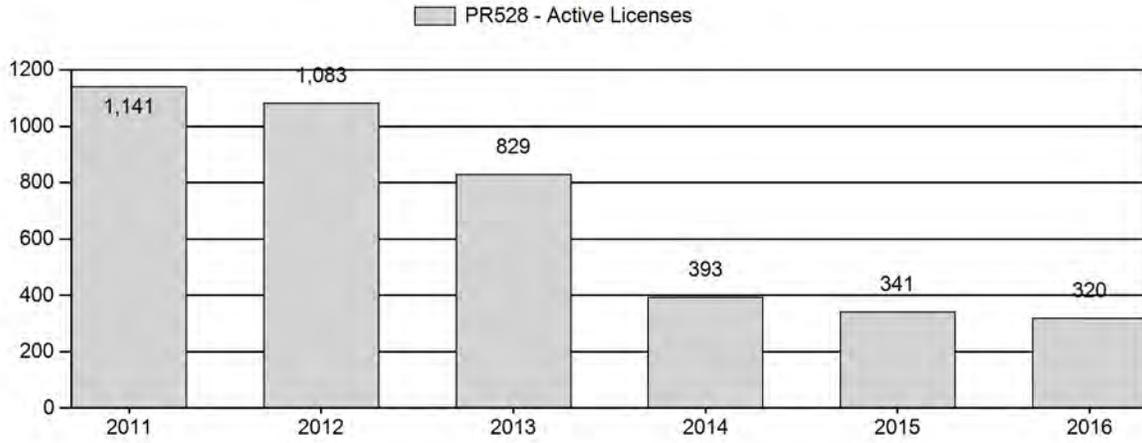
Number of Active Licenses



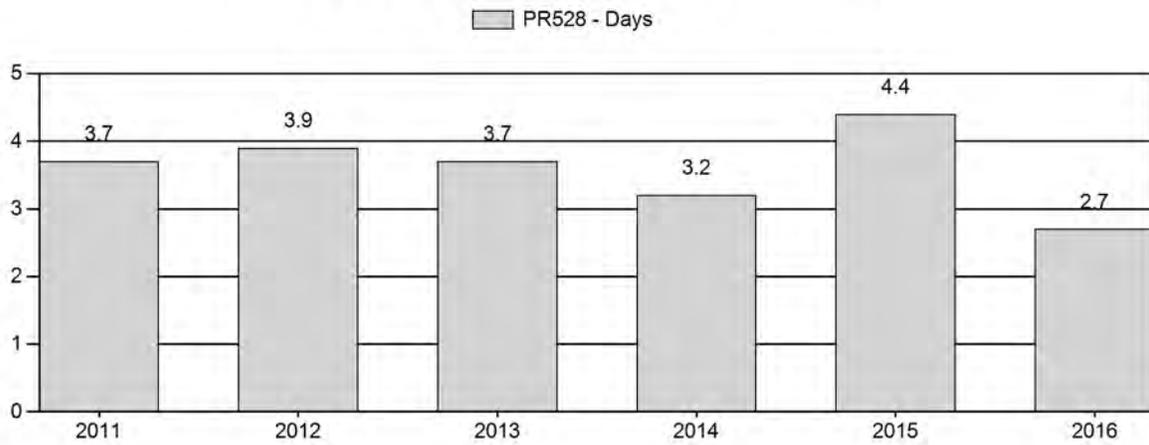
Harvest Success



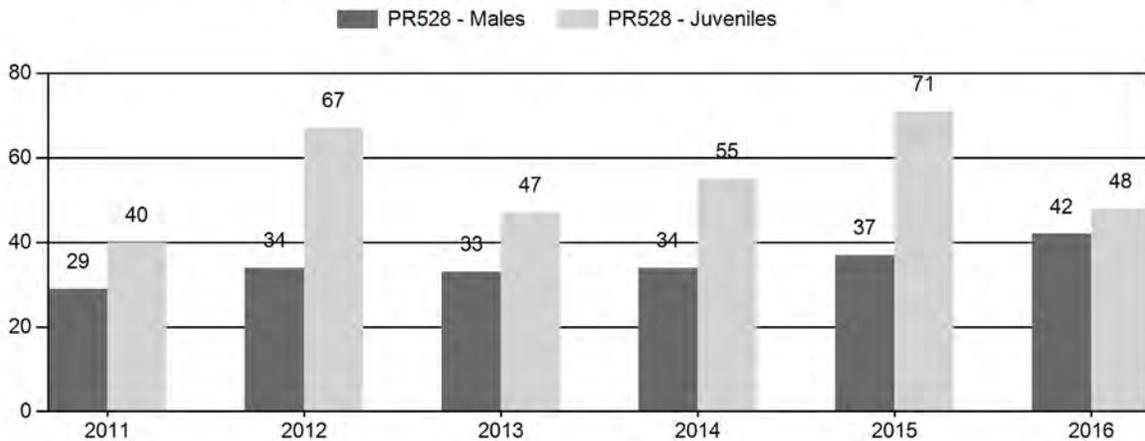
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR528 - ELK 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	4,800	82	140	222	17%	764	59%	303	24%	1,289	1,221	11	18	29	± 3	40	± 4	31
2012	4,200	73	115	188	17%	545	50%	367	33%	1,100	1,098	13	21	34	± 4	67	± 6	50
2013	3,331	75	95	170	18%	510	55%	239	26%	919	1,000	15	19	33	± 4	47	± 5	35
2014	3,337	64	111	175	18%	511	53%	280	29%	966	1,021	13	22	34	± 4	55	± 6	41
2015	4,502	118	108	226	18%	612	48%	437	34%	1,275	1,153	19	18	37	± 4	71	± 6	52
2016	5,200	80	83	163	22%	391	53%	189	25%	743	1,459	20	21	42	± 6	48	± 7	34

**2017 HUNTING SEASON RECOMMENDATIONS
ELK MOUNTAIN PRONGHORN (PR528)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
50	1	Sep. 16	Oct. 31	300	Limited quota	Any antelope
	6	Sep. 16	Oct. 31	150	Limited quota	Doe or fawn
	0	Sep. 1	Sep. 15	50	Limited quota	Any antelope, muzzle-loading firearms only
	Archery	Aug. 15	Aug. 31			Refer to license type and limitations in Section 3 of Chapter 5

Hunt Area	License Type	Quota change from 2016
50	6	+125
Herd Unit Total	6	+125

Management Evaluation

Current Postseason Population Management Objective: 5,000 (4,000 – 6,000)

Management Strategy: Recreational

2016 Postseason Population Estimate: 4,900

2017 Proposed Postseason Population Estimate: 4,500

2016 Hunter Satisfaction: 87% Satisfied, 11% Neutral, 2% Dissatisfied

Pronghorn in the Elk Mountain herd unit are managed toward a postseason population objective of 5,000. The population was estimated using a spreadsheet model developed in 2012 and updated in 2016. The herd is managed for recreational opportunity. The objective was reviewed in 2014 and retained at a postseason estimate of 5,000 pronghorn.

Herd Unit Issues

The Elk Mountain herd unit is comprised predominantly of either private or land-locked public land. Hunter access to these lands is limited, particularly east of Elk Mountain, where most pronghorn in this herd unit are found during the hunting season. Private lands open to hunters receive a large amount of pressure. Much of the herd unit's sagebrush ecosystem remains intact. However, increased agricultural, energy, and residential development does threaten sagebrush habitat in this area.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration's (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

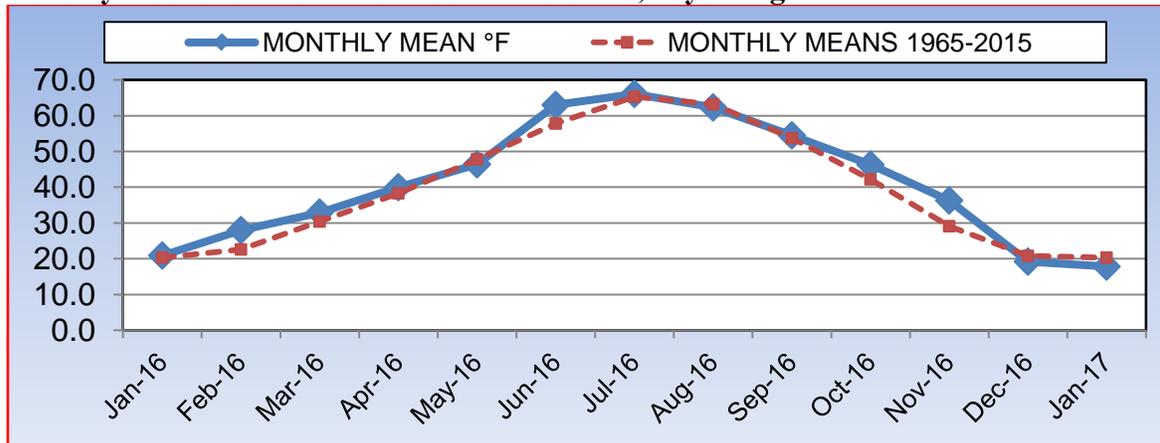
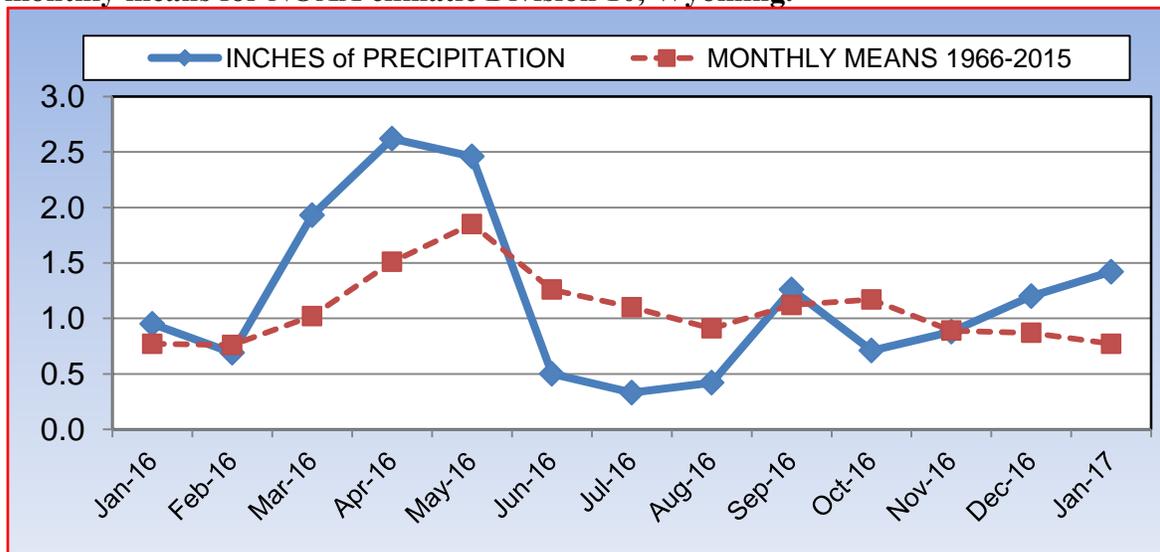


Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were observed in bio-year 2016 due to adequate amounts of late spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most shrub-steppe habitat in this herd unit is decadent and in need of treatments designed to improve the nutritional value of sagebrush and other plants.

Field Data

Preseason ratios for this herd were 42 bucks and 48 fawns/100does in 2016. Buck ratios increased and fawn ratios decreased in comparison the 2015 classification. Beginning in 2011, classification surveys have been conducted from the ground and have lower sample sizes than those previously completed from fixed-wing aircraft. The ground surveys also may contain more sampling biases in comparison with surveys conducted prior to 2011 due to limited data from more remote areas of the herd unit.

Harvest Data

The 2016 harvest survey indicated a total of 282 pronghorn were harvested which was a decrease of 4% from 2015. Overall harvest success increased 1% to 91% for 309 active licensed hunters in 2016. The days/pronghorn decreased from 4.4 in 2015, to 2.7 days/harvest in 2016. The increase in harvest success and decrease in days/harvest was attributed to the relatively cooler weather during the beginning of the season making hunting conditions more favorable.

Population

Spreadsheet model estimates indicated the Elk Mountain herd is currently below the management objective of 5,000 pronghorn. The CJ, CA model was selected again for the Elk Mountain herd unit in 2016. The model's population estimates are plausible and match trends in harvest and preseason classifications. The model's end-of-year estimates are less than the corresponding year Line-Transect survey density estimates conducted in 2007, 2010, and 2012. We intend to conduct a line-transect survey in this herd unit in 2018. A portion of the Elk Mountain herd unit was used a control area for the University of Wyoming's Dunlap Wind Farm research project. We incorporated adult survival rates from this research into the model for bio-year 2010 and 2011.

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

Management Summary

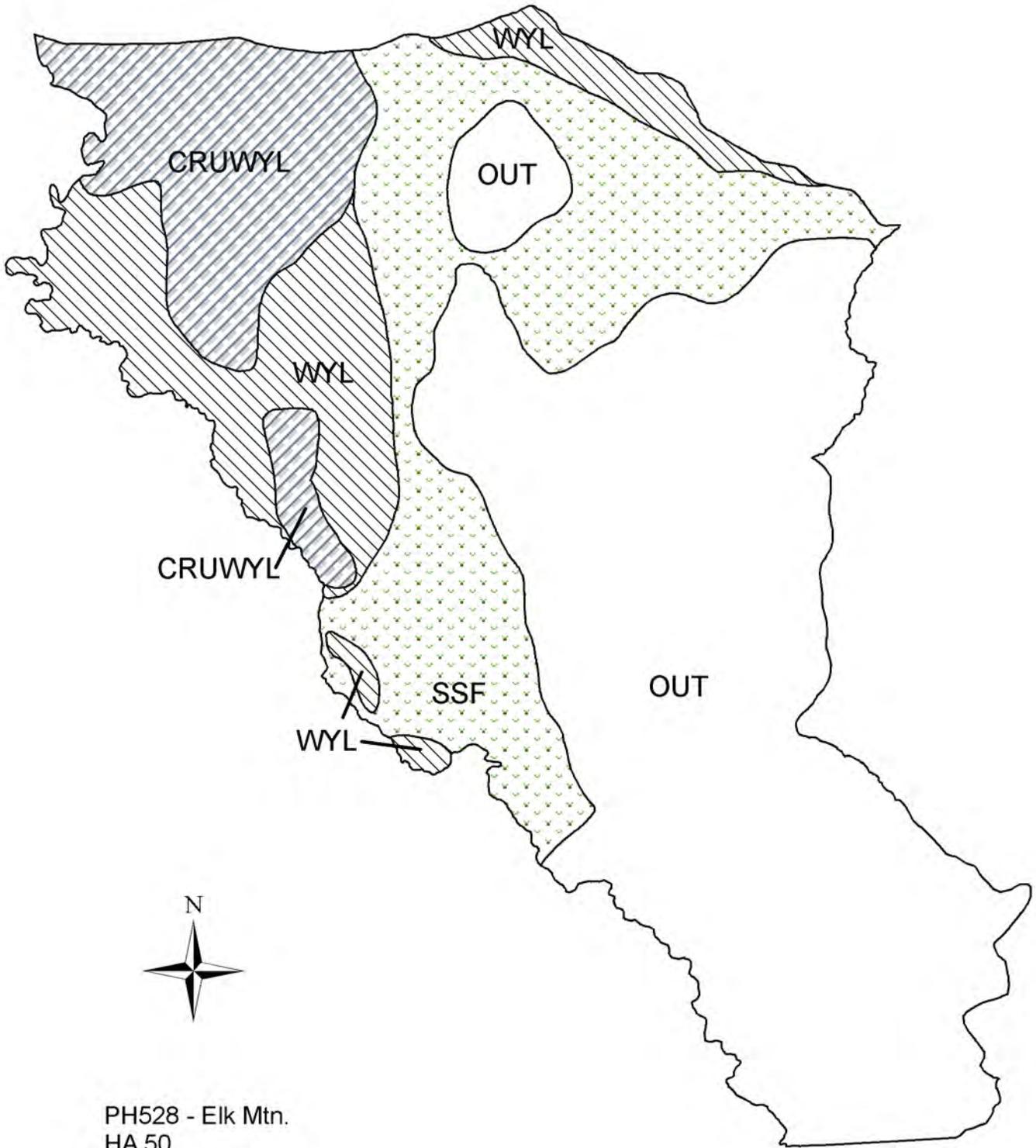
The Type 6 license numbers were increased to begin stabilizing this population as it appeared we have reached the management objective for this herd unit. The popular muzzleloader only season continued to be offered in 2017.

Literature Cited

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

Bibliography of Herd Specific Studies

Taylor, K. L. 2014. Pronghorn (*Antilocapra americana*) Response to Wind Energy Development on Winter Range in South-Central, Wyoming. Master's Thesis. Department of Ecosystem Science and Management. University of Wyoming, Laramie. 141 pp.



PH528 - Elk Mtn.
HA 50
Revised - 8/87

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR529 - BIG CREEK

HUNT AREAS: 51

PREPARED BY: WILL SCHULTZ

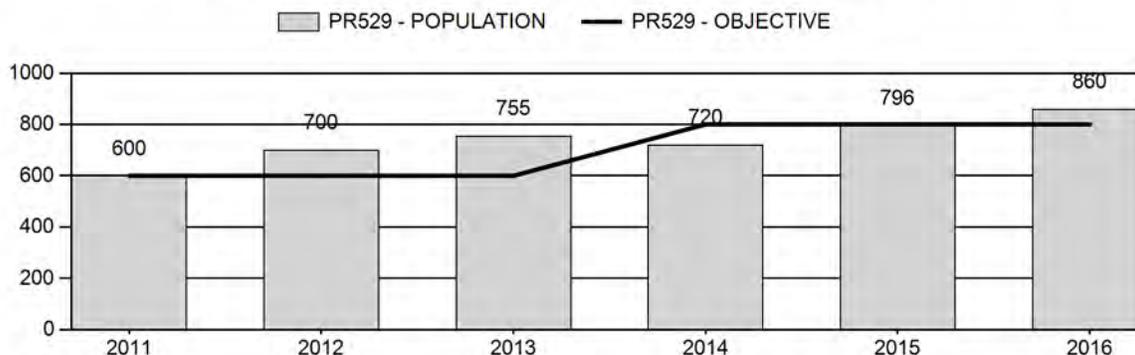
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	714	860	700
Harvest:	56	80	180
Hunters:	54	79	180
Hunter Success:	104%	101%	100%
Active Licenses:	65	94	200
Active License Success:	86%	85%	90 %
Recreation Days:	201	242	600
Days Per Animal:	3.6	3.0	3.3
Males per 100 Females	50	59	
Juveniles per 100 Females	52	56	

Population Objective ($\pm 20\%$) :	800 (640 - 960)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	8%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/16/2017

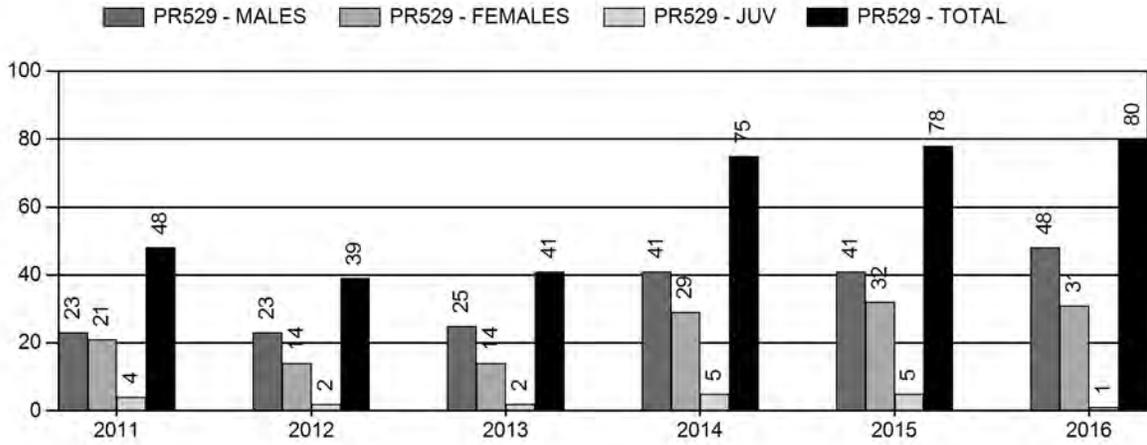
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	8%	8%
Males ≥ 1 year old:	23%	55%
Total:	11%	21%
Proposed change in post-season population:	2%	-21%

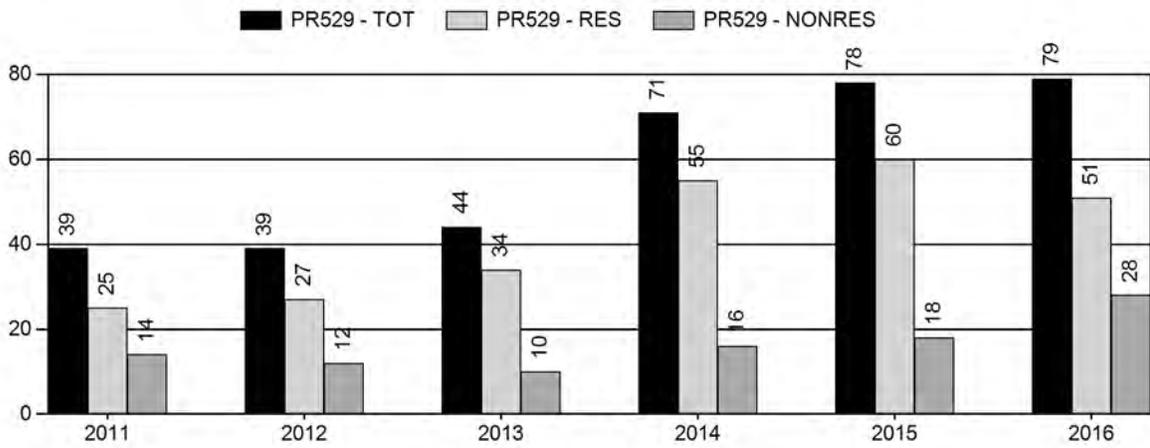
Population Size - Postseason



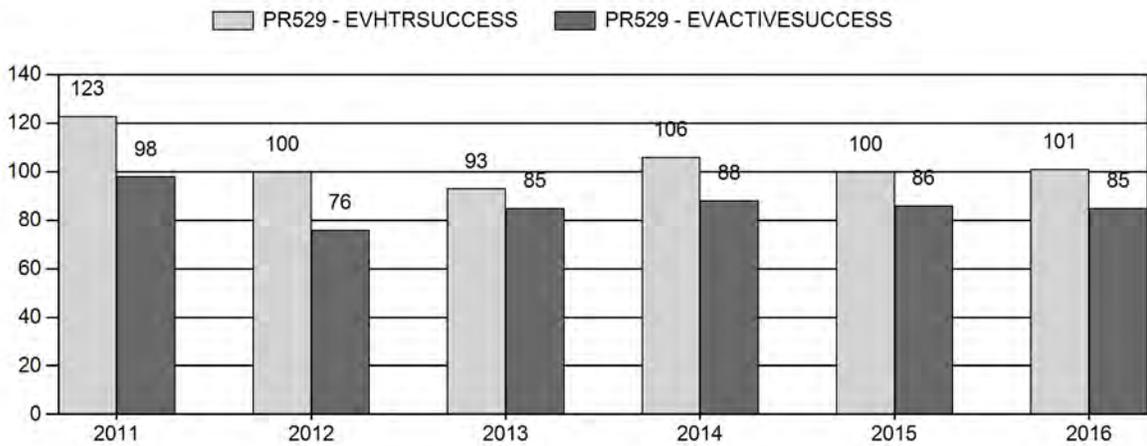
Harvest



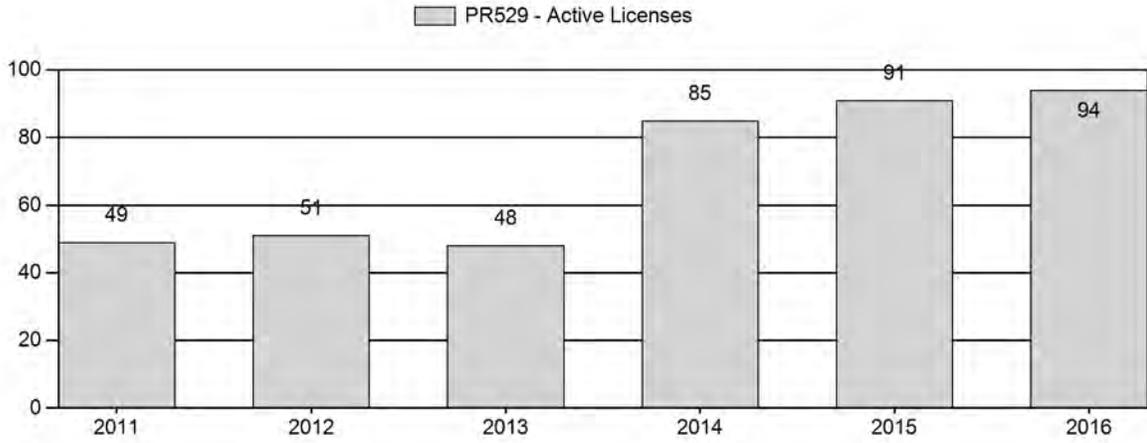
Number of Active Licenses



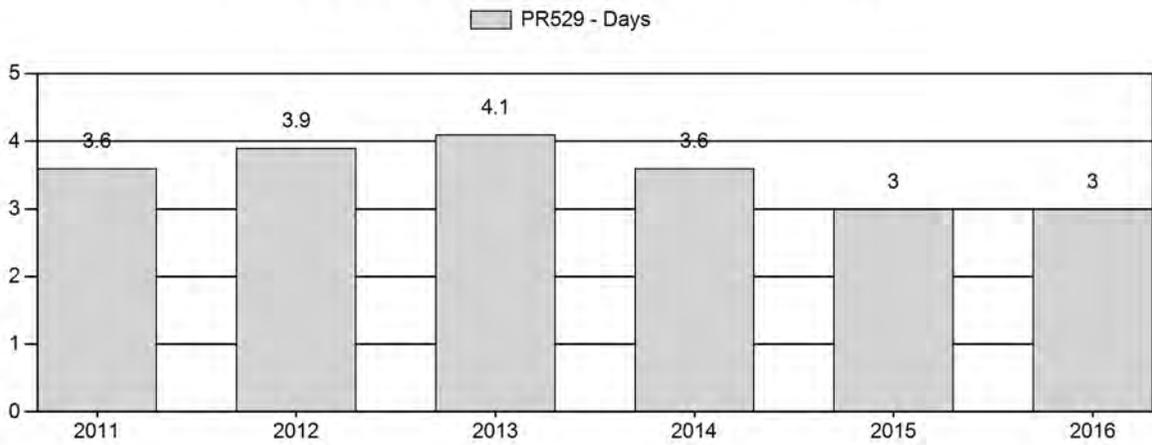
Harvest Success



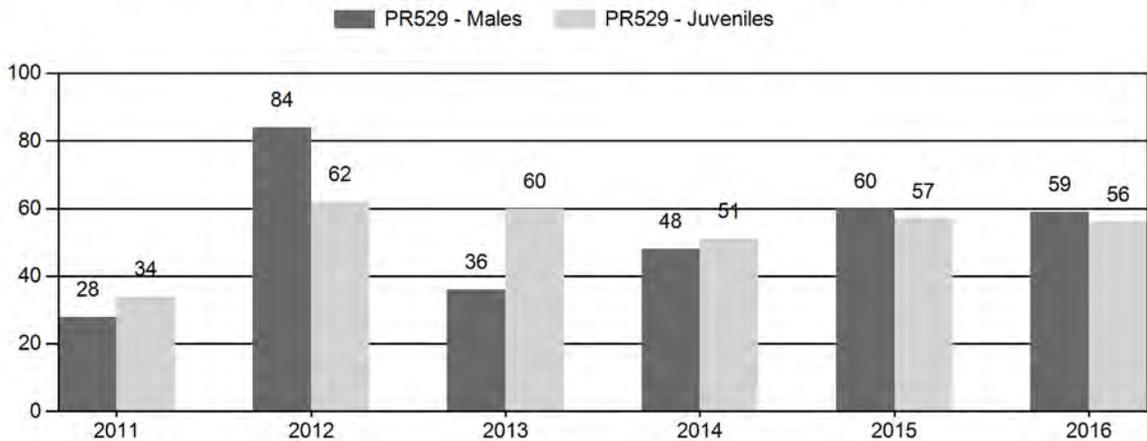
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR529 - BIG CREEK

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	650	15	33	48	17%	170	62%	57	21%	275	446	9	19	28	± 6	34	± 6	26
2012	750	32	60	92	34%	110	41%	68	25%	270	441	29	55	84	± 16	62	± 13	34
2013	800	8	43	51	18%	141	51%	84	30%	276	503	6	30	36	± 8	60	± 11	44
2014	802	42	87	129	24%	271	50%	137	26%	537	501	15	32	48	± 5	51	± 5	34
2015	882	58	91	149	28%	248	46%	141	26%	538	561	23	37	60	± 6	57	± 6	36
2016	950	61	123	184	27%	311	46%	175	26%	670	657	20	40	59	± 5	56	± 5	35

**2017 HUNTING SEASON RECOMMENDATIONS
BIG CREEK PRONGHORN (PR529)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
51	1	Sep. 16	Nov. 14	75	Limited quota	Any antelope
	6	Aug. 15	Sep. 15	150	Limited quota	Doe or fawn valid on private land
	6	Sep. 16	Nov. 14		Limited quota	Doe or fawn valid in the entire area

Hunt Area	License Type	Quota change from 2016
51	1	+25
51	6	+100
Herd Unit Total	1	+25
	6	+100

Management Evaluation

Current Postseason Population Management Objective: 800 (640 – 960)

Management Strategy: Recreational

2016 Postseason Population Estimate: 860

2017 Proposed Postseason Population Estimate: 700

2016 Hunter Satisfaction: 89% Satisfied, 11% Neutral, 0% Dissatisfied

Pronghorn in the Big Creek herd unit are managed toward a numeric objective of 800. The population was estimated using a spreadsheet model developed in 2012 and updated in 2016. The herd unit is managed as a recreational management strategy herd unit. The management objective was reviewed in 2014 and increased to a postseason population estimate of 800 pronghorn.

Herd Unit Issues

Pronghorn damage to alfalfa crops can be an issue when pronghorn numbers are high. Access is difficult except for on those private lands receiving damage. Recent changes in land use have been observed in this herd unit. Several sections of abandoned wheat fields have been converted into cattle pastures which have been grazed intensively. Rural residential development of sagebrush habitat in the Trail Run subdivision continues.

In the past these areas provided pronghorn with seasonal habitat and the observed changes in land use appear to be displacing pronghorn into other areas.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration's (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. A period of increased snowfall and severe temperatures was experienced during January of 2017, followed by above average temperatures and drier conditions in February. This provided relief for pronghorn as much of their winter range melted off. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

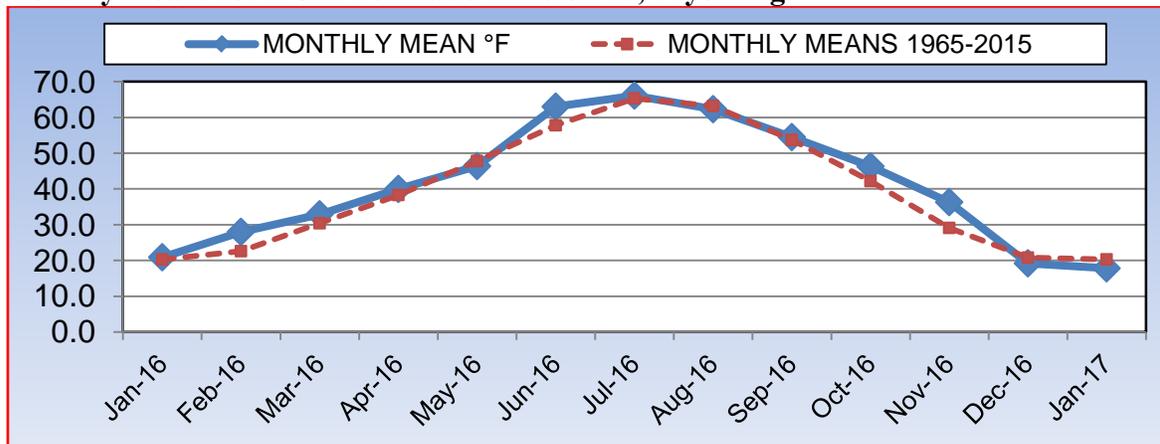
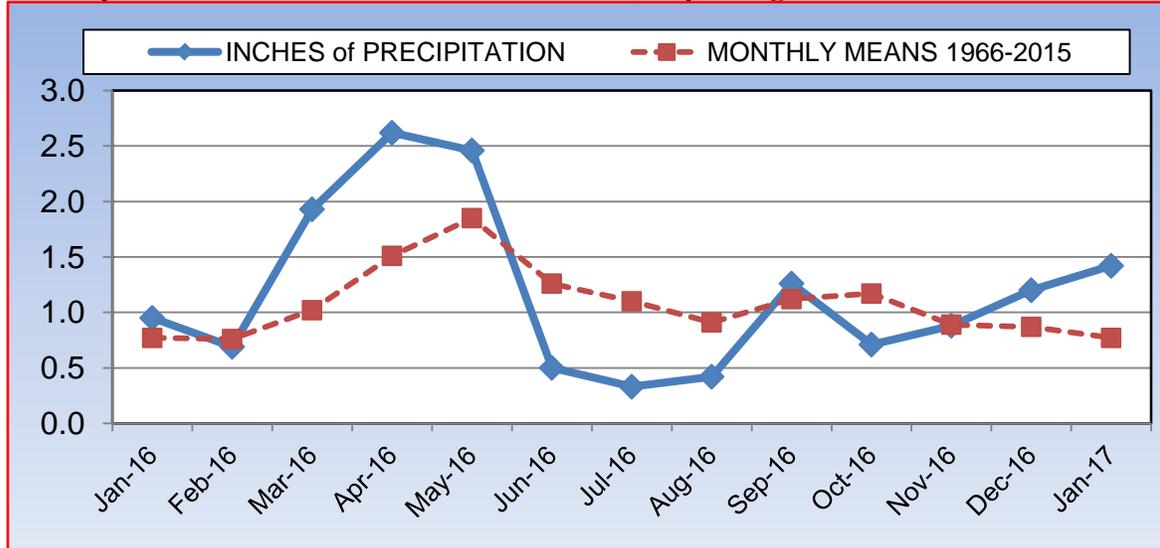


Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were observed in bio-year 2016 due to adequate amounts of late spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most shrub-steppe habitat in this herd unit is decadent and in need of treatments designed to improve the nutritional value of shrubs and other vegetation.

Field Data

The 2016 pre-season ratios were 59 bucks and 56 fawns per 100 does produced from an adequate sample of 670 pronghorn obtained through ground surveys. 2016 fawn ratios had decreased from 57 fawns/100 does in 2015, to 56 fawns/100 does in 2016. This decrease was attributed to the stressful spring weather does experienced during the latter stage of pregnancy.

Harvest Data

The harvest survey data for the 2016 hunting season indicated a total of 80 pronghorn; 48 bucks, 31 does, and 1 fawn were harvested with an overall harvest success rate of 101%. This high success rate was due to many of the successful hunters possessing both Type 1 and Type 6 licenses and is typical for this herd unit.

Population

In 2016, the CJ, CA spreadsheet model was selected again for the Big Creek herd unit because it produced the lowest AICc score. The population estimate from this model was

also considered to be plausible and representative of field observations. The end of year density estimates developed from previous line-transect density surveys appeared to overestimate actual pronghorn abundance in this herd unit. Small sample sizes and interstate movements of pronghorn for this herd unit may produce bias in line-transect survey estimates for this herd unit.

We rated this model as poor, and not biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012). The poor rating was primarily due to inadequate sample sizes for past preseason classification surveys and the likely violation of an assumption that this is a closed population. Interstate movement of pronghorn complicates monitoring and subsequent management activities in this herd unit.

Management Summary

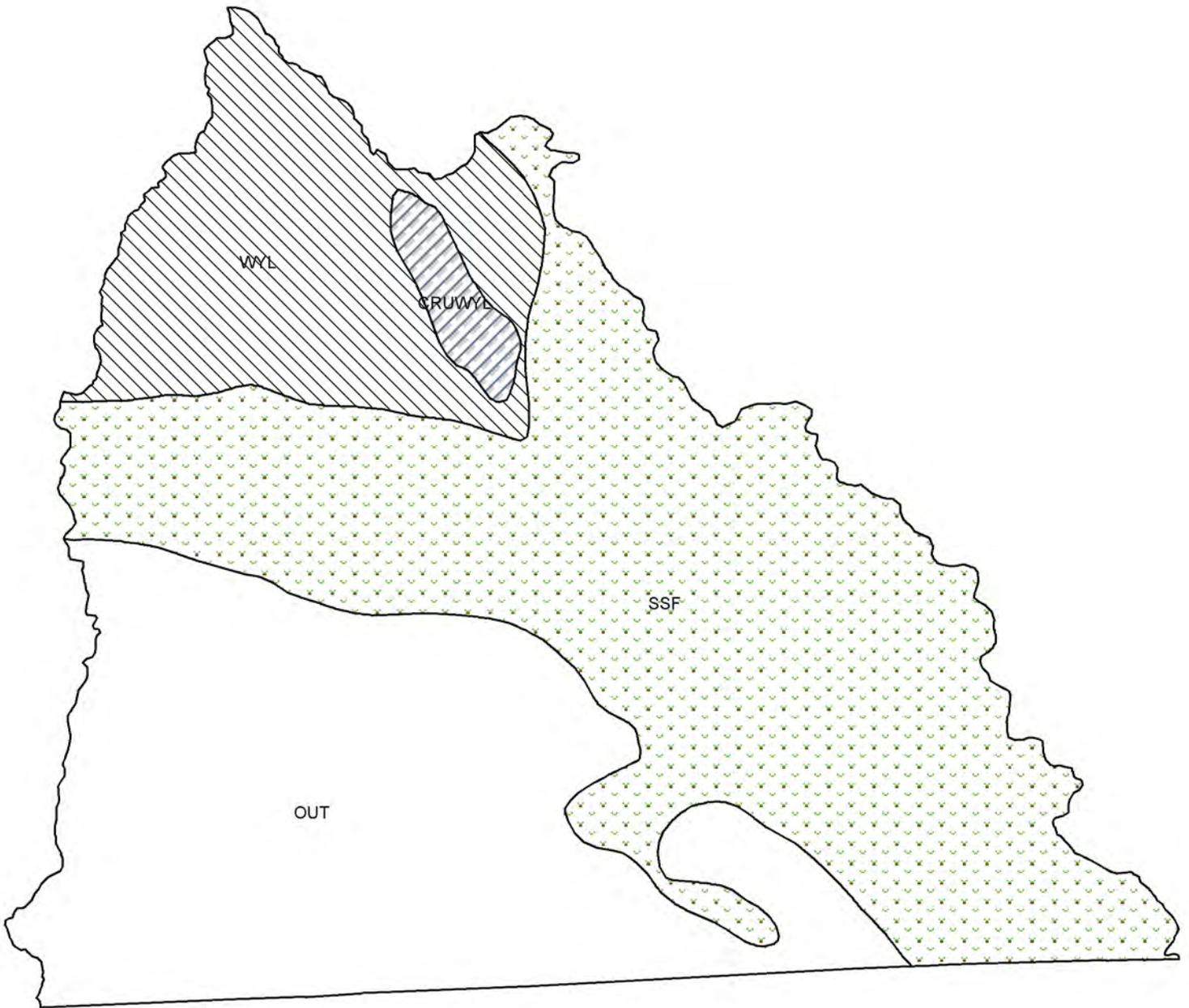
Both Type 1 and Type 6 licenses were increased to 100 each to stabilize this herd at, or slightly below, the population objective in 2017. Landowner comments indicate pronghorn numbers have reached their level of tolerance also.

Literature Cited

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

Bibliography of Herd Specific Studies

None.



PH529 - Big Creek
HA 51
Revised - 7/87



2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS516 - DOUGLAS CREEK

HUNT AREAS: 18

PREPARED BY: LEE KNOX

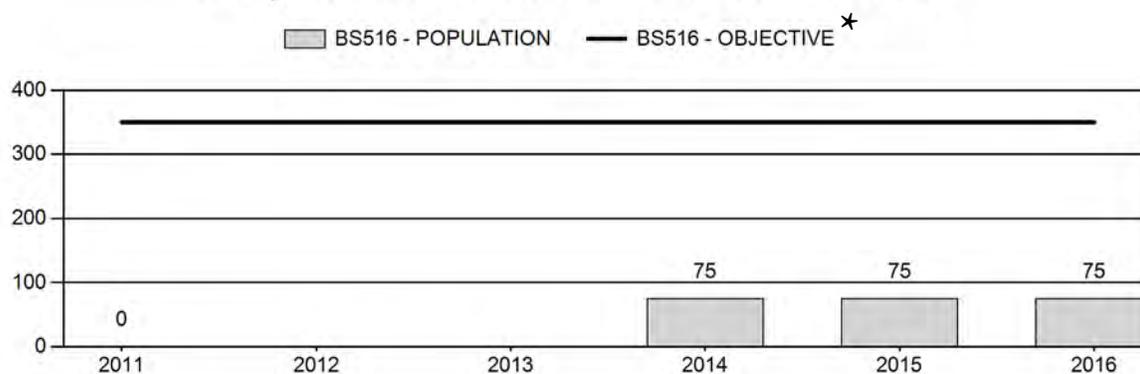
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	30	75	75
Harvest:	1	0	0
Hunters:	1	0	0
Hunter Success:	100%	0%	0%
Active Licenses:	1	0	0
Active License Success:	100%	0%	0%
Recreation Days:	2	0	0
Days Per Animal:	2	0	0
Males per 100 Females	35	64	
Juveniles per 100 Females	58	45	

Population Objective ($\pm 20\%$) :	350 (280 - 420)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-78.6%
Number of years population has been + or - objective in recent trend:	20
Model Date:	0

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

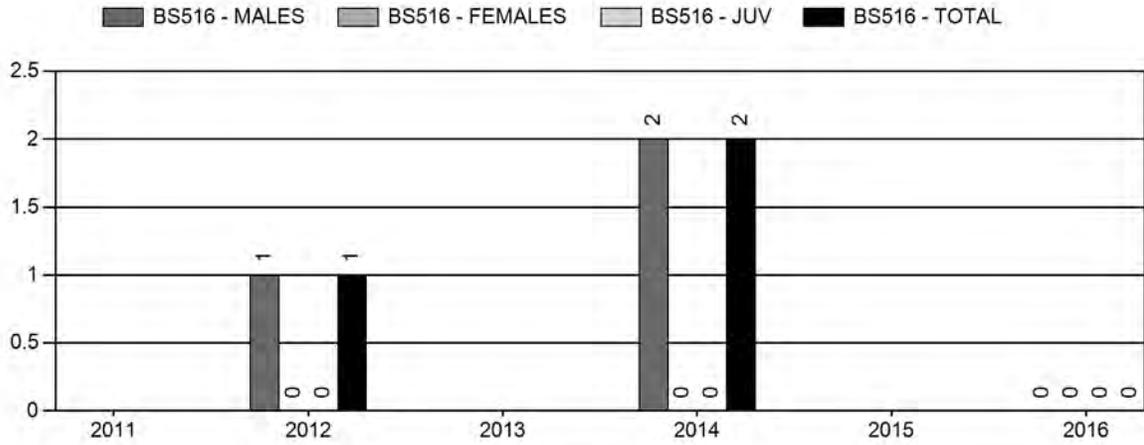
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%

Population Size - Postseason

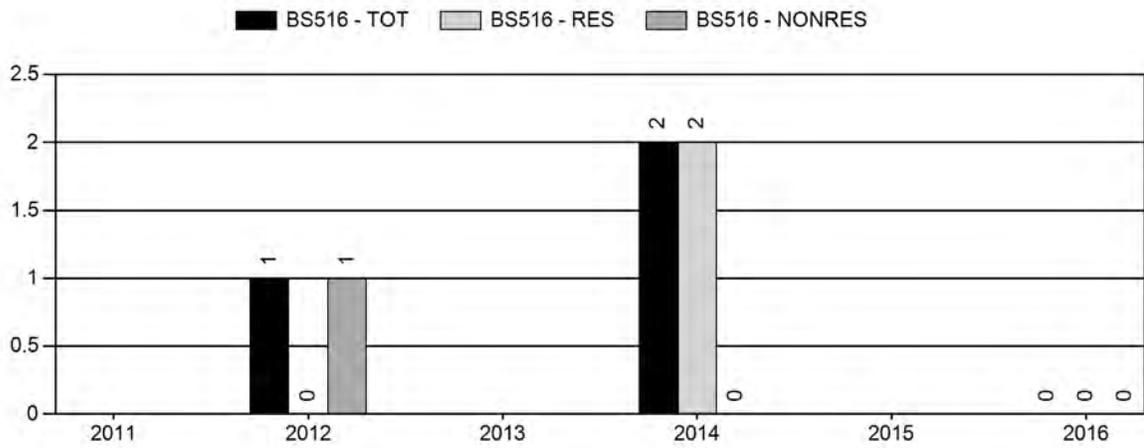


*The management objective was reviewed in 2016 and changed from a postseason population objective to the bighorn sheep limited opportunity objective.

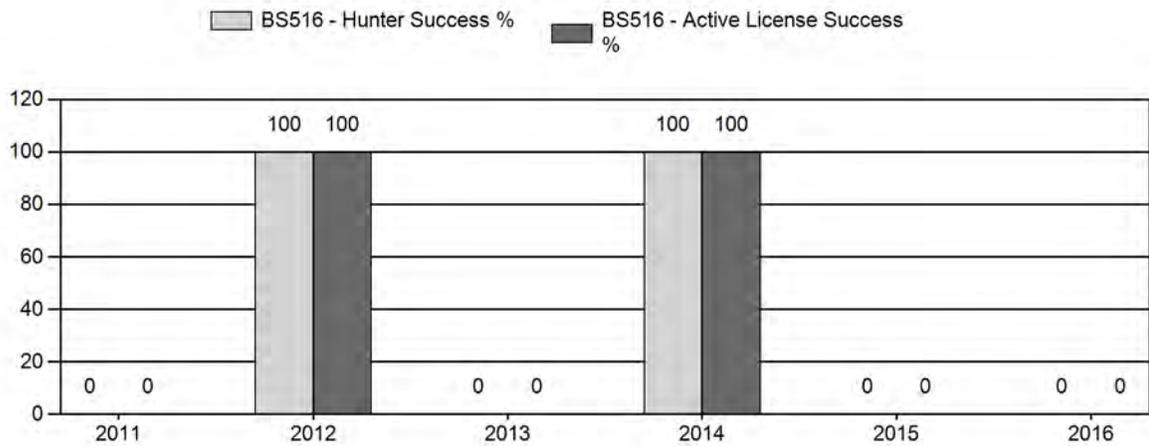
Harvest



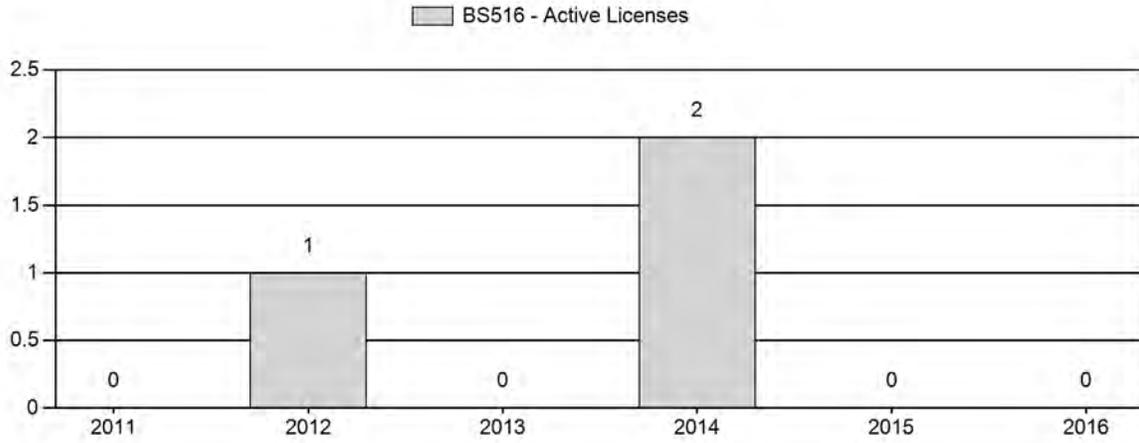
Number of Active Licenses



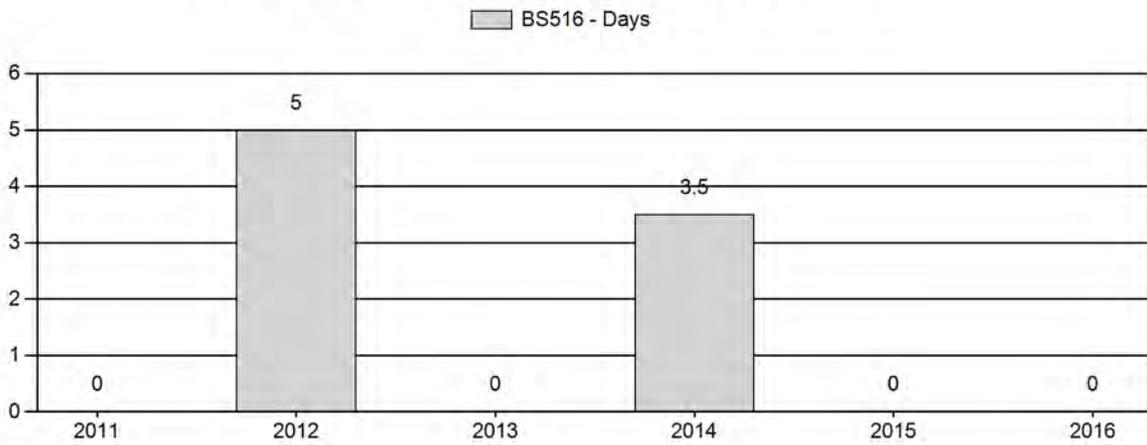
Harvest Success



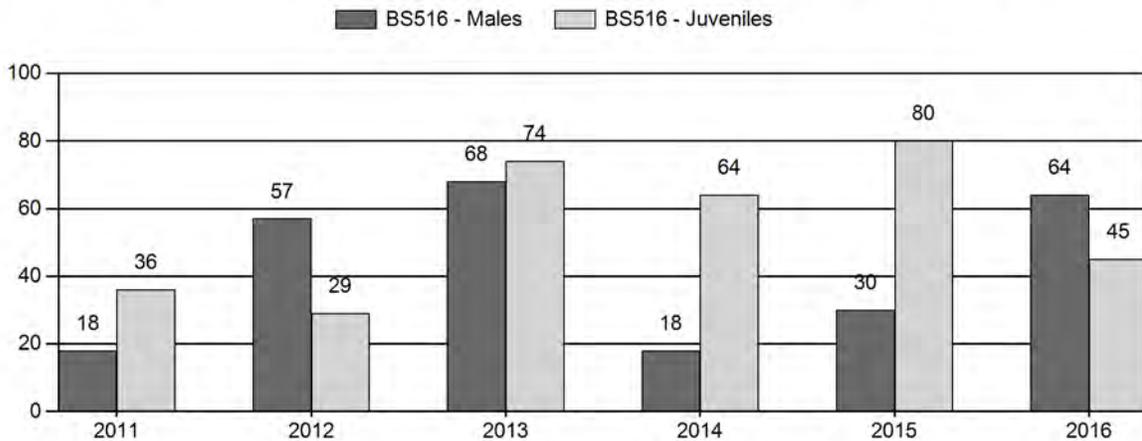
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Bighorn Sheep Herd BS516 - DOUGLAS CREEK

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	0	0	4	4	12%	22	65%	8	24%	34	0	0	18	18	± 0	36	± 0	31
2012	0	1	3	4	31%	7	54%	2	15%	13	0	14	43	57	± 0	29	± 0	18
2013	0	6	7	13	28%	19	41%	14	30%	46	0	32	37	68	± 0	74	± 0	44
2014	75	3	1	4	10%	22	55%	14	35%	40	0	14	5	18	± 9	64	± 19	54
2015	75	0	3	3	14%	10	48%	8	38%	21	0	0	30	30	± 21	80	± 41	62
2016	75	4	3	7	30%	11	48%	5	22%	23	0	36	27	64	± 33	45	± 26	28

2017 HUNTING SEASONS

DOUGLAS CREEK BIGHORN SHEEP (BS516)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
18,21	1	Sept. 1	Oct. 31	0	Limited quota	Closed

Area	Type	Changes from 2016
18,21	1	Closed
Herd Unit Total	1	Closed

Management Evaluation

Current Management Objective:

- 1) **5-year running average of $\geq 75\%$ hunter success- 100%**
 - 2) **5-year running average age of harvested rams between 6 and 8 years of age- 2012-2016 Average Age: 7 years old**
 - 3) **Documented occurrence of adult rams in the population~ > 20 rams observed**
- Management Strategy: Special**

The management objective for the Douglas Creek bighorn sheep herd unit was changed in 2016 from a post season population objective to limited opportunity that manages for the following objectives:

- 1) 5-year running average of $\geq 75\%$ hunter success
- 2) 5-year running average age of harvested rams between 6 and 8 years of age
- 3) Documented occurrence of adult rams in the population

Herd unit Issues

The Douglas Creek herd unit is located primarily in the Savage Run and Platte River wilderness areas in the Snowy Range Mountains on the Medicine Bow National Forest. The herd is under special management guidelines which require a mean age of harvested rams to be between 6-and 8 years old. This direction was taken to provide trophy opportunity to the public and allow this herd to grow. Pine beetles have dramatically changed the landscape in the Medicine Bow National Forest where a large percentage of mature pines have died and starting to fall over. At this time the impacts to this herd from the pine beetle epidemic are unclear. Area 18 was closed from 2004 through 2007 and then again in 2009, 2011, 2013, 2015 because this population has remained below desired levels. Hunt Area 18 will be closed in 2017.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Douglas Creek herd unit the reviewer is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs in low elevations. At upper elevations, May, June, and July precipitation was also above average, and created favorable forage conditions. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Conifer encroachment and windthrow of beetle-killed pine trees is suspected to, or likely will have negative impacts on bighorn sheep movements and migrations. Cheatgrass prevalence at lower elevations is also concerning to habitat managers, particularly on south facing aspects in the Platte Valley.

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

Field Data

We have very little data on this population. The general public provides a few reports during the summer and hunting seasons. Field personnel make an effort to document the status of segments of the herd during other big game surveys and an annual winter ground survey. Past observation data consistently documents low post-weaning lamb survival. Poor habitat quality, lack of habitat, and the lack of well-defined seasonal migrations, and perhaps lingering effects of Pasteurellosis or some other disease may be stagnating this population. In January 23 sheep were classified with a lamb to ewe ratio of 45:100. An additional 15 sheep were also observed by highway 230 at the state line.

Harvest Data

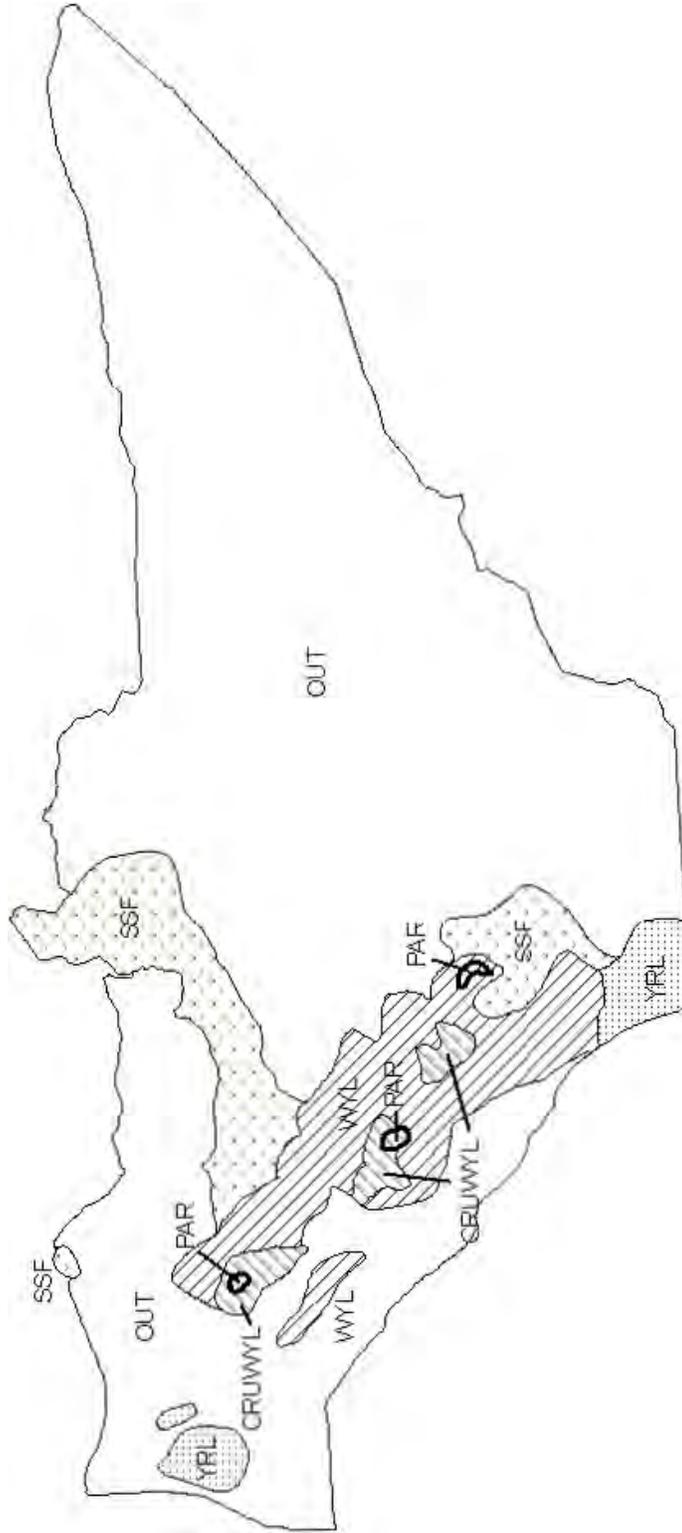
In 2016 two licenses were issued for one nonresident and one resident, valid in hunt areas 18 and 21. Two rams were harvested in 21.

Population

Data is not adequate for developing a reasonable population model. We are unable to collect the data needed to reliably estimate the population size of this sheep herd.

Management Strategy

The season is open for 2 rams every other year to maintain the opportunity to harvest a 6 year or older age class ram, which is specified by the special management guidelines. The season will be closed in 2017.



BHS516- Douglas Creek
 HA'8
 Revised 7/02

2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS517 - LARAMIE PEAK

HUNT AREAS: 19

PREPARED BY: MARTIN HICKS

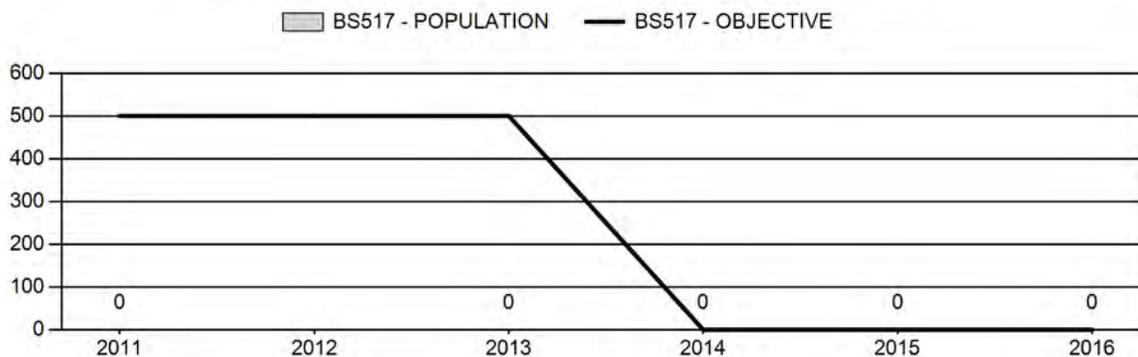
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	7	5	8
Hunters:	8	7	8
Hunter Success:	88%	71%	100 %
Active Licenses:	8	7	8
Active License Success:	88%	71%	100 %
Recreation Days:	87	126	100
Days Per Animal:	12.4	25.2	12.5
Males per 100 Females	54	60	
Juveniles per 100 Females	43	61	

Population Objective (\pm 20%) :	0 (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:	0
Model Date:	None

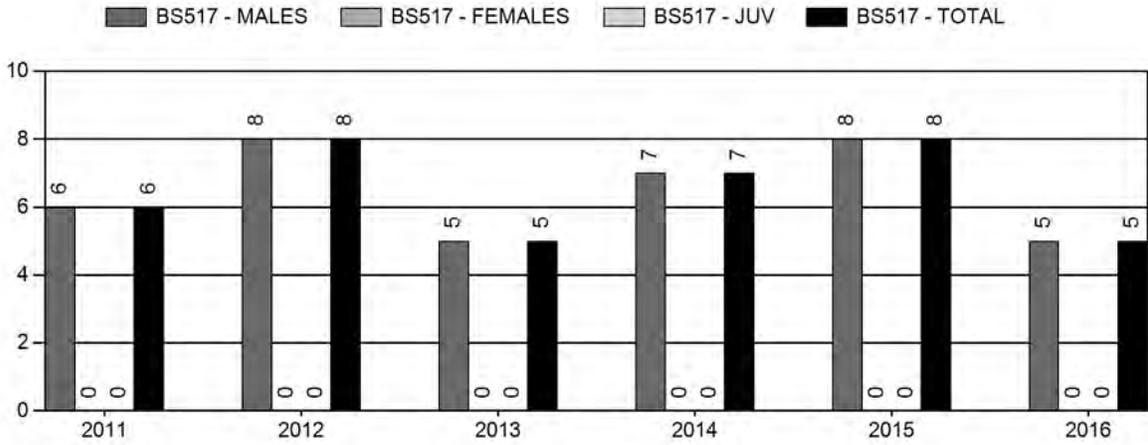
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<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%

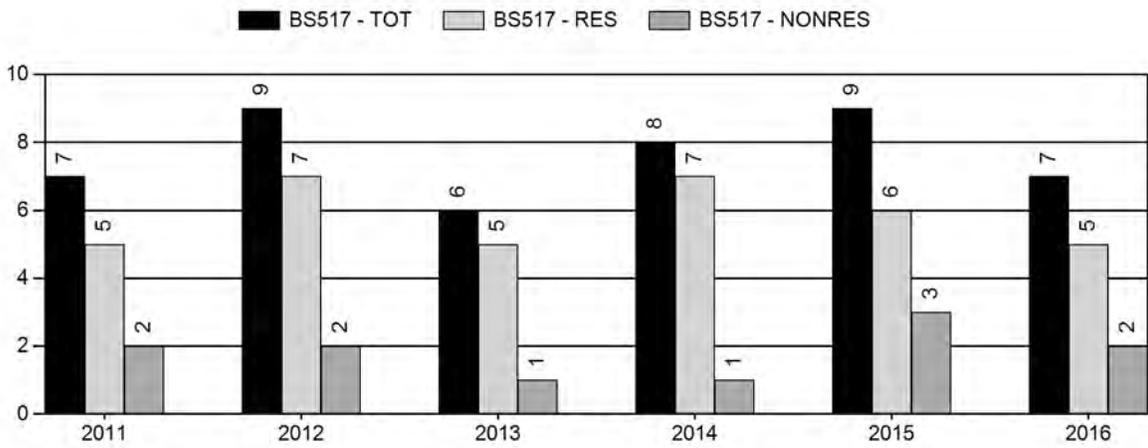
Population Size - Postseason



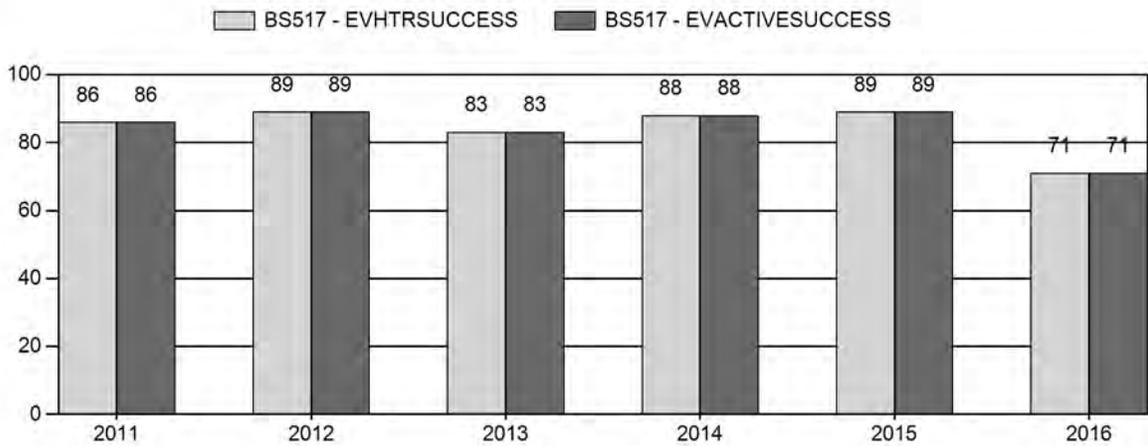
Harvest



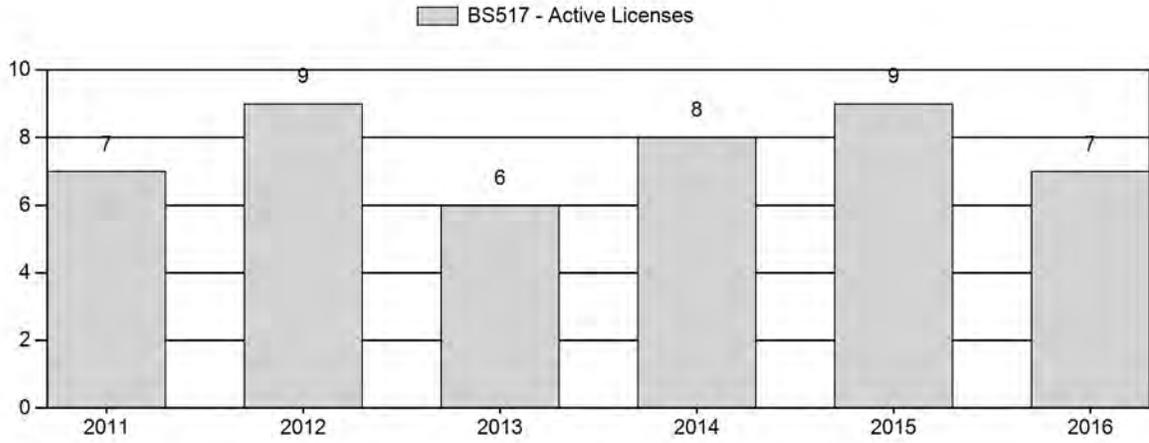
Number of Active Licenses



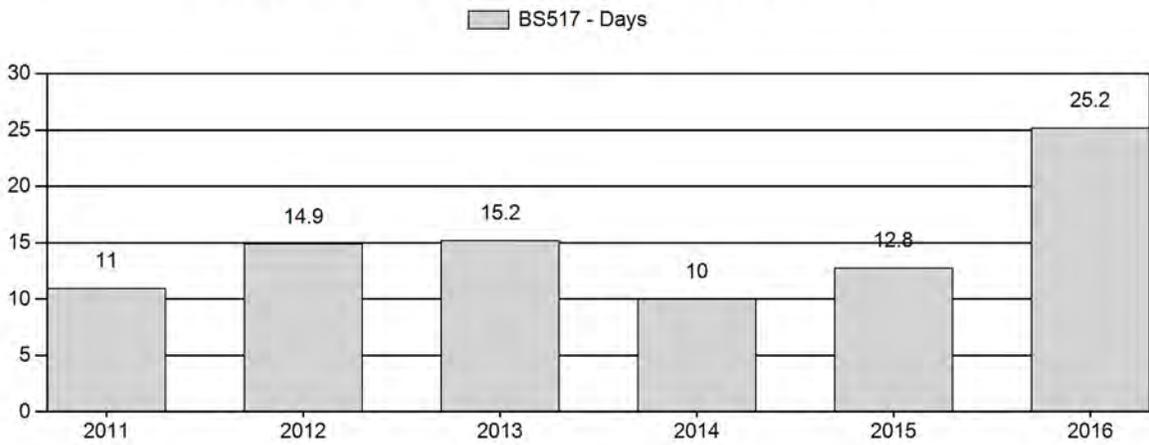
Harvest Success



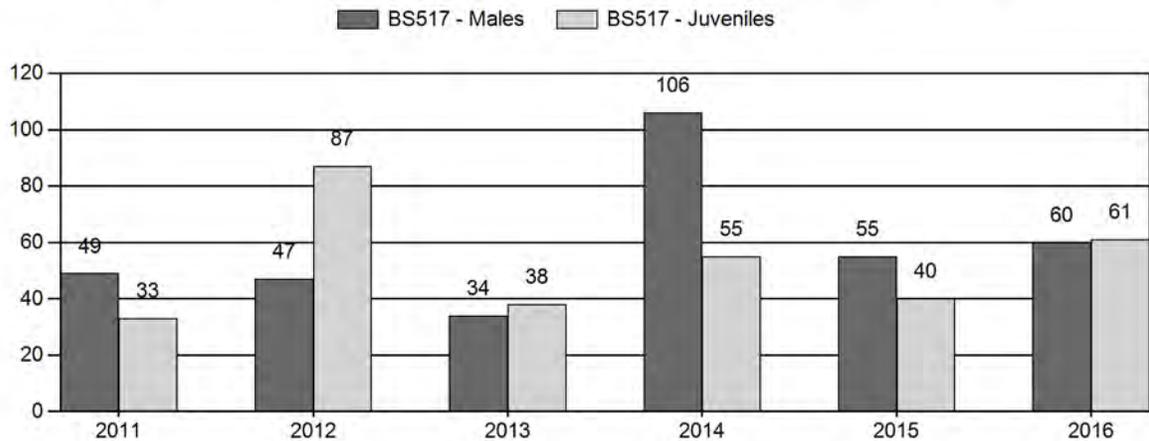
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2017 HUNTING SEASONS
LARAMIE PEAK BIGHORN SHEEP HERD (BHS517)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
19	1	Sept. 1	Oct. 31	8	Limited quota	Any ram

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
19	Aug. 15	Aug. 31	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
19	1	0

Management Evaluation

Current Management Objective:

- 1) **5-year running average of $\geq 75\%$ hunter success- 82%**
- 2) **5-year running average age of harvested rams between 6 and 8 years of age- 2012-2016 Average Age: 6 years old**
- 3) **Documented occurrence of adult rams in the population~40 observed rams**

Management Strategy: Recreational

Herd Unit Issues

The management objective for the Laramie Peak Bighorn Sheep herd was a post-season population objective of 500 wild sheep. The management strategy is recreational management. The objective and strategy were last revised in 1978. The population objective was reviewed during the winter/spring of 2014. Based on department staff, landowner, and public comments the following population management alternative objectives were approved by the WGFD Commission:

- 1) 5-year running average of $\geq 75\%$ hunter success
- 2) 5-year running average age of harvested rams between 6 and 8 years of age
- 3) Documented occurrence of adult rams in the population

The Laramie Peak Herd Unit is comprised of 70% private land. The southern portion (south of WY Hwy 34) is over 90% private land. Hunters can expect to pay a trespass/trophy or outfitter fee to hunt on private land. There are two state sections that hunters can access that hold sheep throughout the season and have produced adult rams in past hunting seasons. A portion of occupied sheep habitat was within the 2012 Arapahoe fire that burned over 98,000 acres. This

affected sheep distribution post-fire, but above average summer/fall precipitation in 2013 and spring precipitation in 2014 resulted in increased vegetation production for pre-winter diets and early spring green up that will benefit parturition areas for pregnant ewes. The fire will have long-term benefits for wild sheep, but initially there has been a flush of noxious weeds (e.g. cheatgrass, Canada thistle) that land managers will need to address. A majority of wild sheep are harvested within the northern portion of the herd unit. The Laramie Peak Wildlife Habitat Management Unit is essential for sheep habitat and harvest where 200 plus sheep inhabit. In 2007 forty-two sheep were released in this area from the Perma-Paradise Herd in Montana. These sheep have thrived and improved the overall genetics and health of the existing herd.

During the winter of 2016/17 the WGFD will aerial capture 6 sheep that will be fitted with GPS radio collars and biological samples will be collected for disease surveillance.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Laramie Peak herd unit the reviewer is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

Cheatgrass prevalence at lower elevations such as Sybille Canyon and areas burned by the Arapaho Fire of 2012 is concerning to habitat managers. While wildfires have reduced conifer canopies in the Laramie Range, deemed to be largely conducive to bighorn sheep movements and migrations, the prevalence of cheatgrass is cause for concern. In Summer 2015, Colorado State University natural resource program scientists worked cooperatively with WGFD and USFS personnel to map cheatgrass infestations via satellite imagery and on-the-ground vegetation sampling efforts. This data showing cheatgrass prevalence will be available for habitat managers to utilize in 2016. Future herbicide applications to control cheatgrass will likely be largely based off of this data. With recent completion of an Environmental Assessment by the USFS, options have expanded greatly to control cheatgrass, including aerial application of herbicides.

A significant die-off of big sagebrush and antelope bitterbrush did occur in portions of the Laramie Range due to a rapid freeze event that occurred in November 2014. The die-off was widespread, from the Front Range of Colorado to the Eastern Plains of Montana. The severity of the die-off is unknown at this time, and whether or not the shrubs will recover. Affected shrubs did not show any significant signs of re-sprouting in Summer 2016.

Field Data

In 2016 there were 5 out of the 8 bighorn sheep harvested in with an average of 6 years old for a 62% success rate. The five-year age average is also 6 years old and the five-year running success average is 82%, which met the two alternative objective criteria.

Since 1964 there have been a total of 228 wild sheep released from two herd sources: Whiskey Mountain in Wyoming and Perma-Paradise in Montana (Table 1). These transplants have helped to supplement the herd and improve overall herd health.

Table 1. Transplant release data for the Laramie Peak Bighorn Sheep Herd.

<u>Year</u>	<u>Number</u>	<u>Release Location</u>	<u>Source Herd</u>
1964	40	North Laramie River Canyon	Whiskey Mountain Herd
1965	36	Labonte Canyon	Whiskey Mountain Herd
1966	21	Labonte Canyon	Whiskey Mountain Herd
1973	42	Duck Creek Canyon	Whiskey Mountain Herd
1982	27	Marshall	Whiskey Mountain Herd
1989	20	Marshall	Whiskey Mountain Herd
2007	42	Hay Canyon	Perma-Paradise- MT
Total	228		

Lamb recruitment continues to improve compared to ratios prior to the 2007 release. There were a total of 148 wild sheep classified in 2016 with lamb ratios (61 lambs:100 ewes) well above the 5-year average of 50 lambs:100 ewes.. Adult ram ratios were 45 rams:100, which was slightly below the 5-year average of 48 rams:100 ewes. Yearling ram ratios were similar to the 5-year average. Based on surveys there is a well represented number for each age class. Several 8+ old rams were observed in the Duck Creek sub-herd. Hunters reported seeing 75-100 bighorn sheep within the Duck Creek sub-herd and 30-45 of those were rams.

Harvest Data

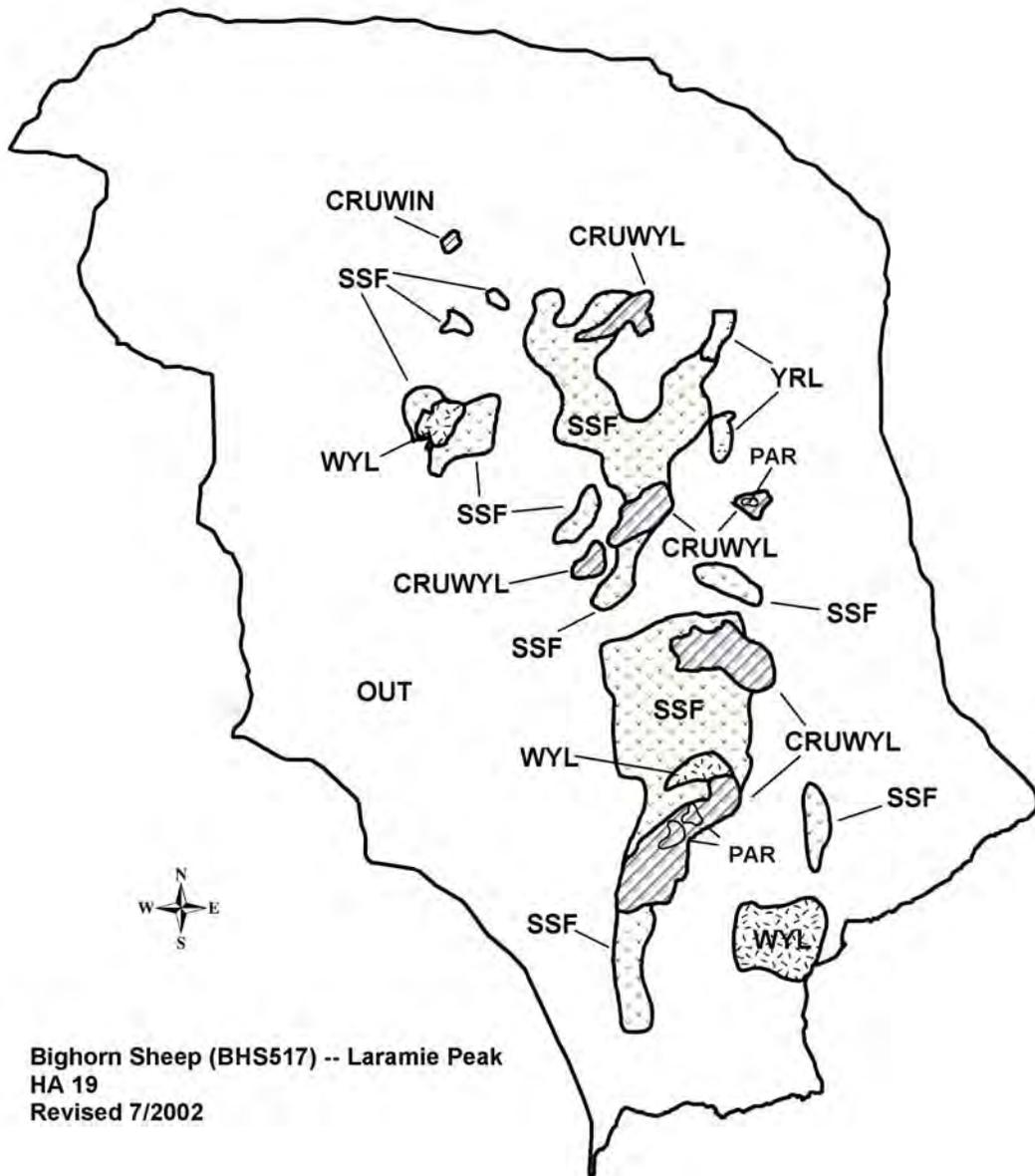
Success of 100% has not been reached since 2010. This last year active license hunters harvested 5 out of 8 rams, with a success rate of 62%. Hunters were not willing to hunt some of the more inaccessible areas which explains the decrease in success. Hunters who pre-scout and/or hire an outfitter typically harvest their ram within 3-5 days. This year the average hunter effort was 25.2 days, which is significantly higher than the five-year average of 12.7 days per harvest. Again, hunters hunted the fringe of occupied habitat therefore spent more days in the field looking for a ram. There is limited public land within occupied wild sheep habitat and overcrowding is an issue that results in pushing bighorn sheep onto private land, where there is no access. To maintain high harvest success no more than 8 licenses are issued. In the past when the quota was increased to 12, success decreased drastically.

The Laramie Peak bighorn sheep season has been September 1-October 31 for the past 26 years. Prior to that, the season ran from September 1- October 14. The increased season length appears to provide adequate opportunity to harvest a ram, given this is typically a once in a lifetime license.

In 2012 there were several fires that burned within bighorn sheep occupied habitat. The Arapahoe, Cow Camp, and Russell's Camp fires burned over 112,000 acres, with the Arapahoe fire being the largest (98,000 acres). Throughout the area there is observed recovery in vegetation. Photo points have been established throughout the fire to document plant succession. Perennial forbs and grasses along with aspen have re-established post-fire.

There is not a reliable working model for this herd unit due to limited population data collected on an annual basis.

For the 2017 season, 8 licenses will be offered for any ram. Given previous harvest statistics hunters should have a high probability of harvesting a mature ram. To improve harvest success hunters will need to put more time into scouting and hunting if they are accessing public lands.



Bighorn Sheep (BHS517) -- Laramie Peak
 HA 19
 Revised 7/2002

2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS519 - ENCAMPMENT RIVER

HUNT AREAS: 21

PREPARED BY: WILL SCHULTZ

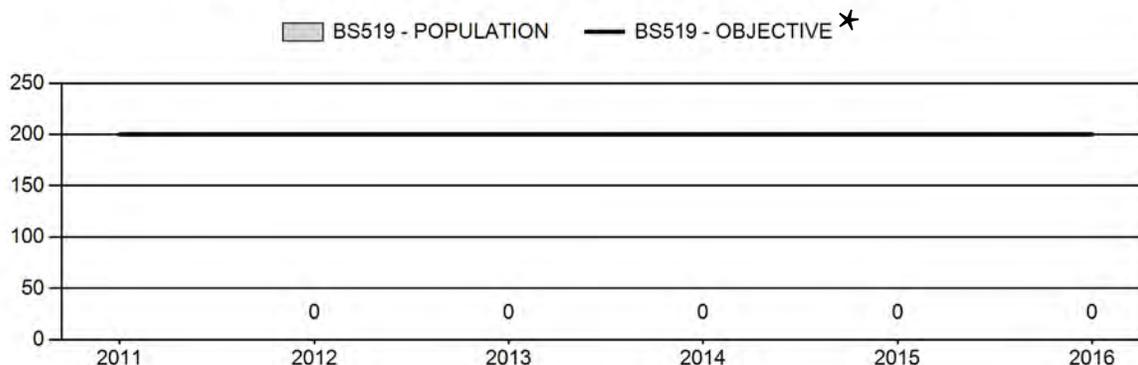
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	0	2	0
Hunters:	0	2	0
Hunter Success:	0%	100%	0 %
Active Licenses:	0	2	0
Active License Success:	0%	100%	0 %
Recreation Days:	0	18	0
Days Per Animal:	0	9	0
Males per 100 Females	57	27	
Juveniles per 100 Females	35	27	

Population Objective ($\pm 20\%$) :	200 (160 - 240)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	38
Model Date:	None

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

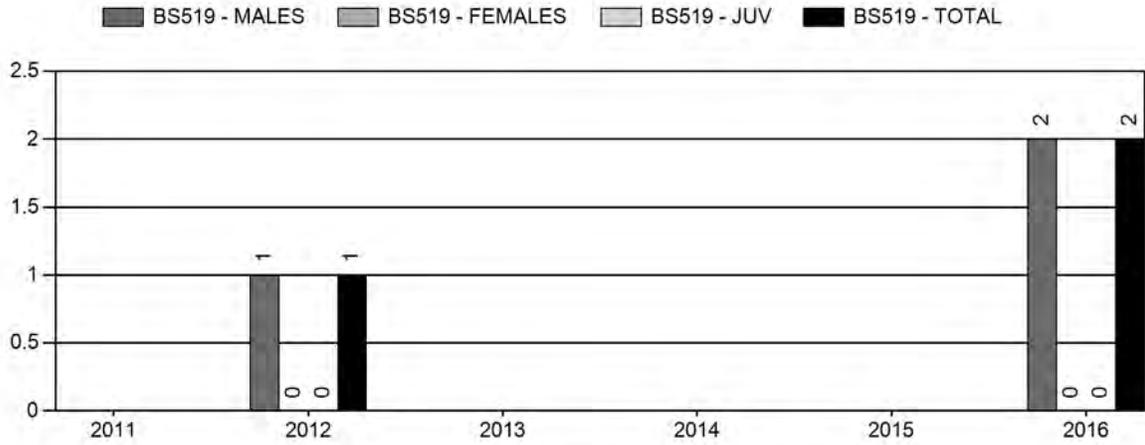
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Total:	NA%	NA%
Proposed change in post-season population:	NA%	NA%

Population Size - Postseason

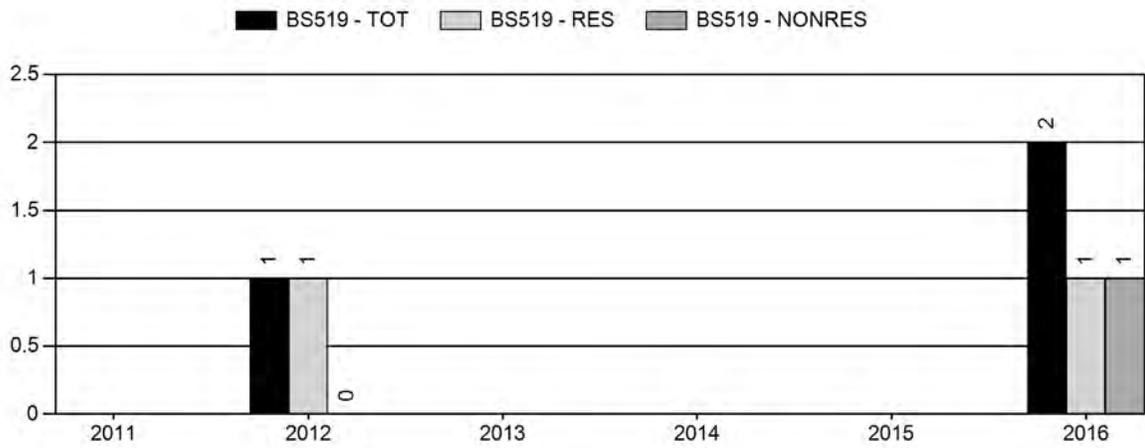


★ The management objective was reviewed in 2016 and changed from a postseason population objective to the bighorn sheep limited opportunity objective.

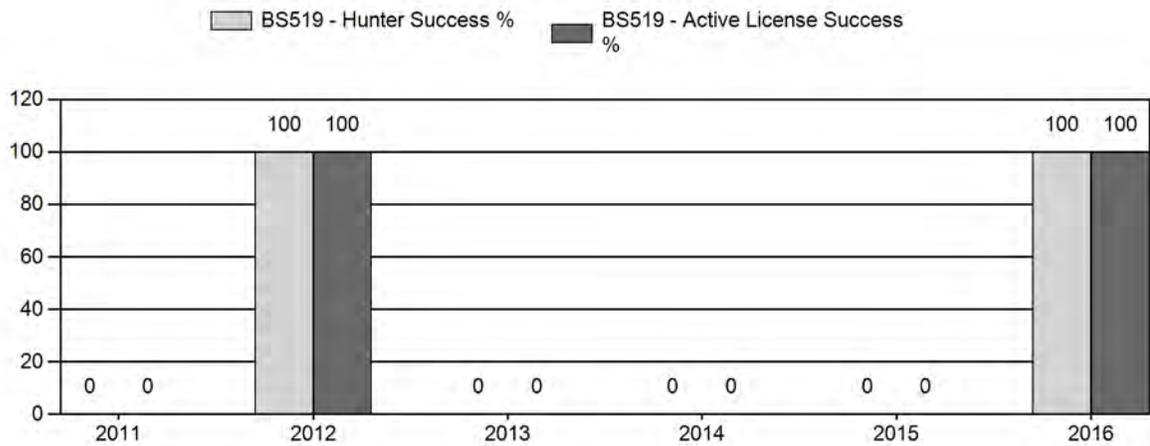
Harvest



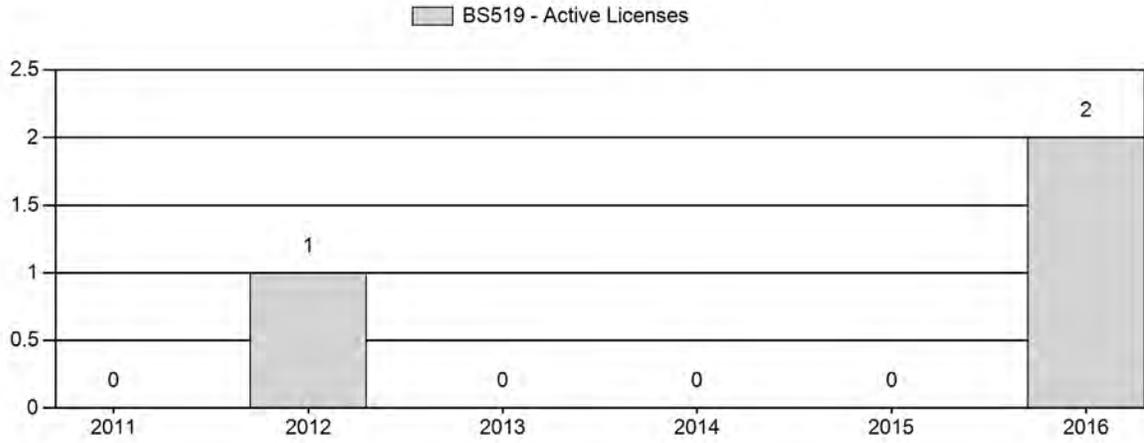
Number of Active Licenses



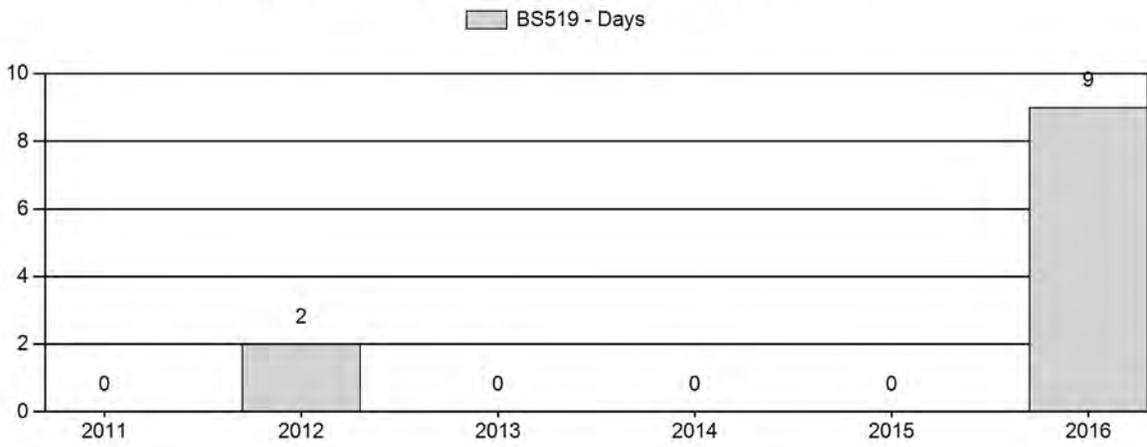
Harvest Success



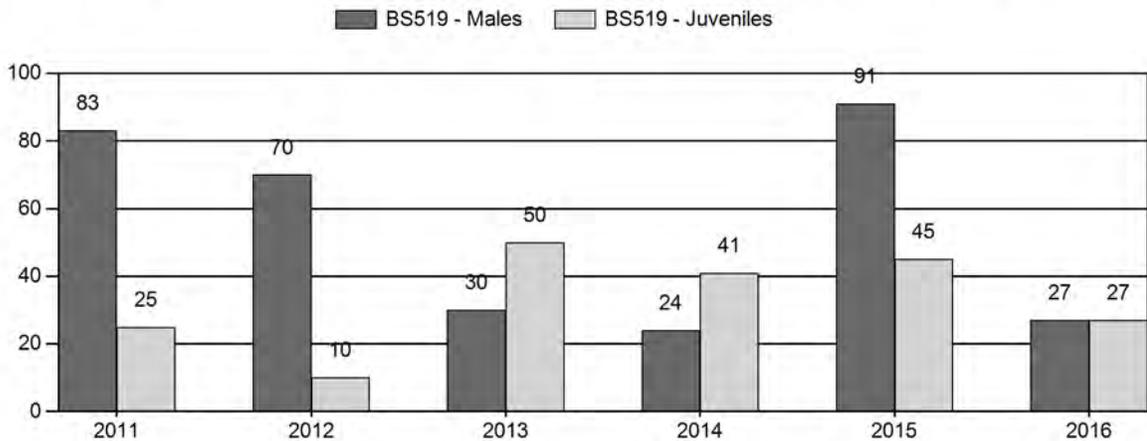
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary
for Bighorn Sheep Herd BS519 - ENCAMPMENT RIVER

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	0	0	10	10	40%	12	48%	3	12%	25	0	0	83	83	± 0	25	± 0	14
2012	0	0	7	7	39%	10	56%	1	6%	18	0	0	70	70	± 0	10	± 0	6
2013	0	0	3	3	17%	10	56%	5	28%	18	0	0	30	30	± 0	50	± 0	38
2014	0	1	3	4	14%	17	61%	7	25%	28	0	6	18	24	± 0	41	± 0	33
2015	0	2	8	10	38%	11	42%	5	19%	26	47	18	73	91	± 0	45	± 0	24
2016	0	1	3	4	17%	15	65%	4	17%	23	0	7	20	27	± 0	27	± 0	21

**2017 HUNTING SEASON RECOMMENDATIONS
Encampment River Bighorn Sheep (BS519)**

Season Dates						
Hunt Area	Type	Opens	Closes	Quota	License	Limitations
18,21	1				Limited quota	CLOSED

Hunt Area	License Type	Quota change from 2016
18, 21	1	-2
Herd Unit Total	1	-2

Management Evaluation

Current Management Objective: Bighorn Sheep Limited Opportunity

Secondary Management Objectives:

- a) 5-year running average of >75% hunter success
- b) 5-year running average age of harvested rams between 6 and 8 years of age
- c) Documented occurrence of adult rams in the population

Management Strategy: Special

Bighorn sheep in the Encampment River herd unit are managed toward a postseason population objective of 200. A population model has not been constructed for the herd unit. The herd is managed under the bighorn sheep special management strategy. The management objective was reviewed in 2016 and changed to the bighorn sheep limited opportunity objective.

Herd Unit Issues

Bighorn sheep numbers in this herd unit appeared to peak in the late 1970s, not long after reintroduction efforts. Bighorn sheep numbers have been in decline since the early 1980s. The lack of a rebound in numbers has been attributed to decadent habitat. Domestic sheep in grazing on the west slope of the Sierra Madres and farm flock in the herd unit also pose a disease concern for managers. The population is now at such a low number it is assumed natural recovery is limited. Harvest opportunities have been offered every other year for the past decade in combination with the Douglas Creek bighorn sheep herd unit.

In 2013, the State of Wyoming, and thus the Wyoming Game and Fish Department, intervened on behalf of the U.S. Forest Service, in the U.S. District Court case, BIODIVERSITY CONSERVATION ALLIANCE vs. BUTCH BLAZER, et al. This case continues to await a ruling, and may affect future management of bighorn sheep in this herd unit.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration's (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

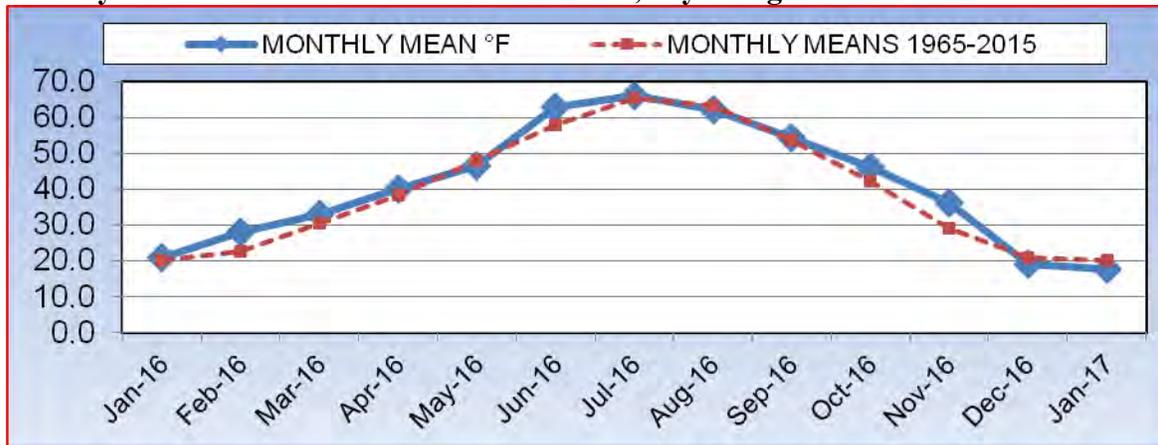
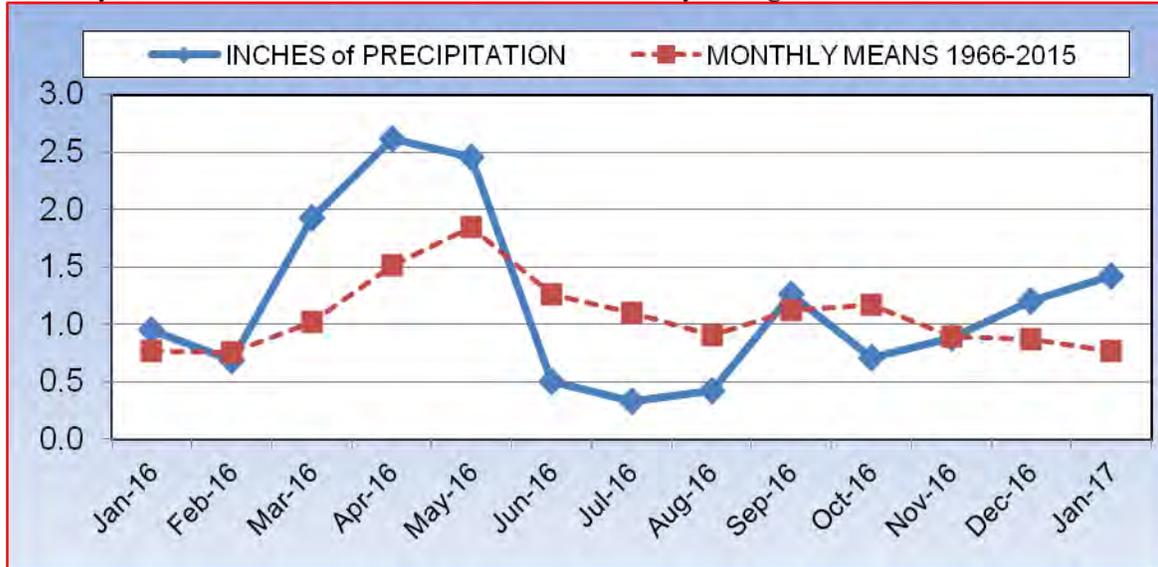


Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were observed in bio-year 2016 due to adequate amounts of late spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most bighorn sheep habitat in this herd unit is decadent. Conifer encroachment and invasive plants and noxious weeds are a serious concern in most of the currently occupied habitat.

Field Data

Adequate classification data for this herd has been difficult to collect. 2016 postseason classification observations were obtained from the ground in November of 2016. The classification results were 3 adult rams, 1 yearling ram, 15 ewes, and 4 lambs. Past postseason classification efforts generally have located a slightly greater sample size of bighorn sheep than what was observed in 2015. We received several reports of a group of approximately 25 ewes and lambs, and approximately 7 rams, in the Miner Creek area during the summer of 2016 but we were unable to locate this amount during classifications later in the fall and winter.

Population

A population model has not been constructed for this herd unit due to limited classification and no annual survival information. Based on the trend of classification data and casual observations, a reasonable estimate of 30-50 bighorn sheep should be considered for this herd unit. In 2016 we reviewed the management objective and changed it to the bighorn sheep limited opportunity objective. Secondary management objectives include: a) 5-year running average of >75% hunter success; b) 5-year running

average age of harvested rams between 6 and 8 years of age; and c) documented occurrence of adult rams in the population.

Harvest Data

In 2016, the hunting season was open in conjunction with the Douglas Creek herd unit. Two (2) licenses were offered for this hunting opportunity; 1 resident and 1 nonresident. Both hunters harvested trophy quality rams in the Encampment River herd unit.

Management Summary

The hunting season will be closed in 2017 for this herd unit. We will consider offering two Type 1 licenses again in 2018 for this herd unit in conjunction with the Douglas Creek herd unit.

Bibliography of Herd Specific Studies

Arnett, E.B. 1990. Bighorn sheep habitat selection patterns and response to fire and timber harvest in Southcentral Wyoming. M.S. Thesis, University of Wyoming, Laramie. USA. 156 pp.

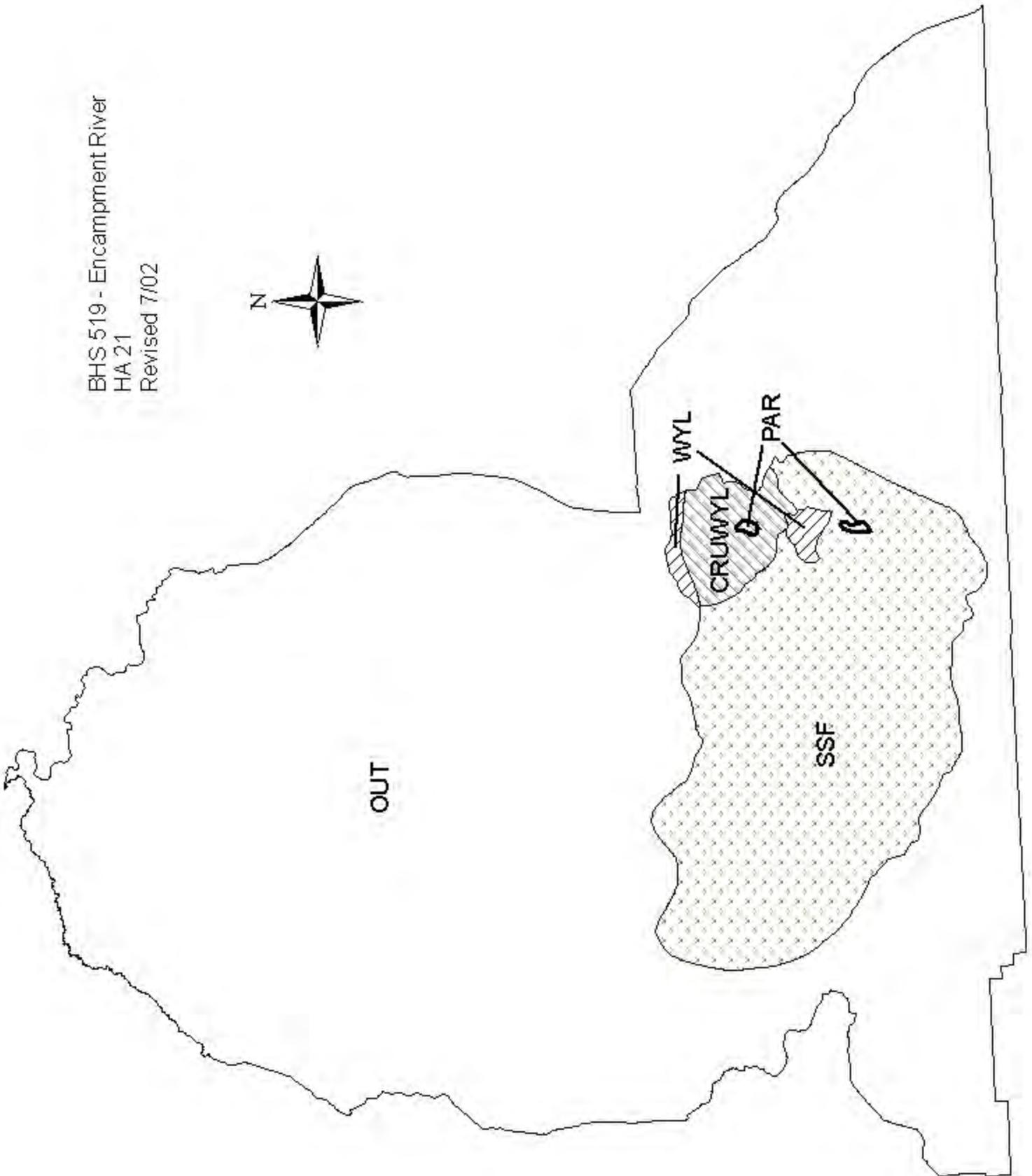
Cook, J.G. 1990. Habitat, nutrition, and population ecology of two transplanted bighorn sheep populations in southcentral Wyoming. Ph.D. Thesis, University of Wyoming, Laramie. Wyoming. USA. 310 pp.

_____ E.B. Arnett, L.L. Irwin, F. Lindzey. 1989. Ecology and Population Dynamics of Two Transplanted Bighorn Sheep Herds in Southcentral Wyoming. University of Wyoming, Laramie. Wyoming. USA. 234 pp.

Haas, W.L. 1979. Ecology of an introduced herd of Rocky Mountain bighorn sheep in southcentral Wyoming. M.S. Thesis, Colorado State University, Fort Collins. Colorado. USA. 343 pp.

_____ and E. Decker. 1980. A study of a recently introduced bighorn sheep herd in Proc. Bien Symp. North Wild Sheep and Goat Coun. 2:143-166.

BHS 519 - Encampment River
HA 21
Revised 7/02



2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL531 - IRON MOUNTAIN

HUNT AREAS: 6

PREPARED BY: LEE KNOX

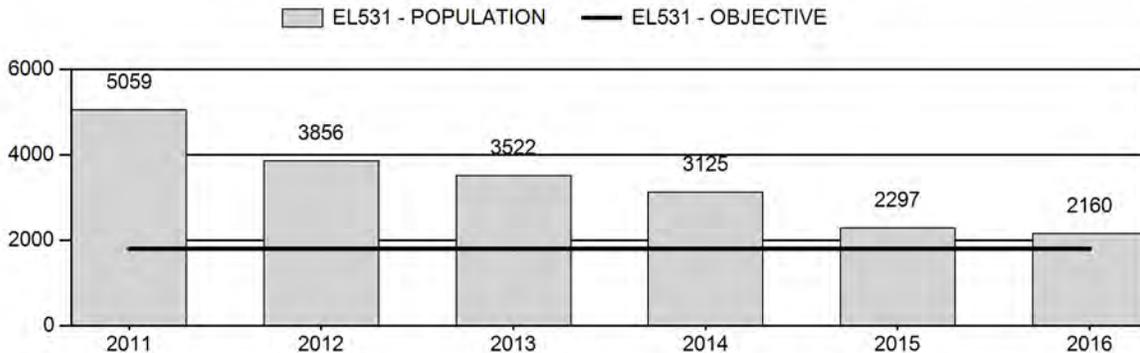
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,032	2,160	1,970
Harvest:	849	523	585
Hunters:	1,754	1,394	1,300
Hunter Success:	48%	38%	45%
Active Licenses:	1,815	1,432	1,500
Active License Success:	47%	37%	39%
Recreation Days:	10,804	9,374	9,100
Days Per Animal:	12.7	17.9	15.6
Males per 100 Females	33	26	
Juveniles per 100 Females	52	54	

Population Objective (\pm 20%) :	1800 (1440 - 2160)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	20%
Number of years population has been + or - objective in recent trend:	1
Model Date:	4/15/2017

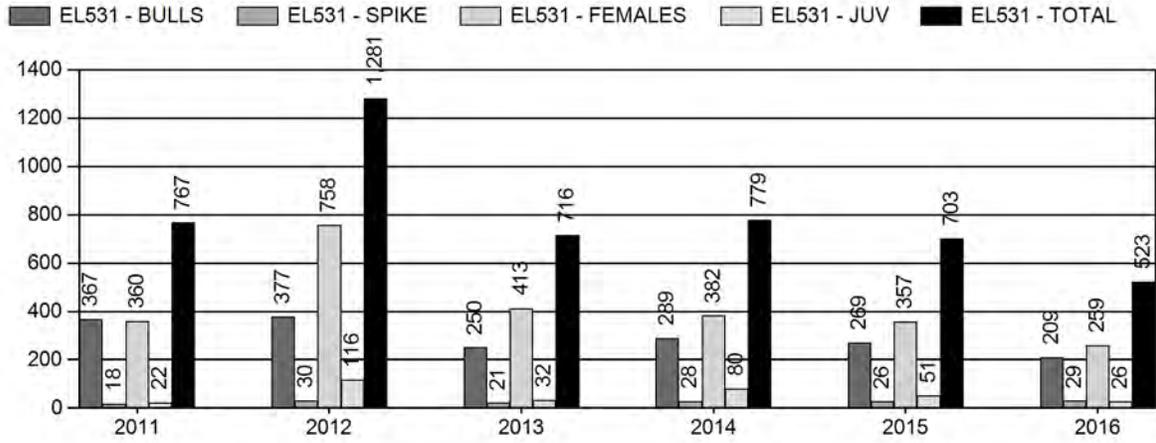
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	15%	12%
Males \geq 1 year old:	30%	26%
Total:	13%	14%
Proposed change in post-season population:	5%	4%

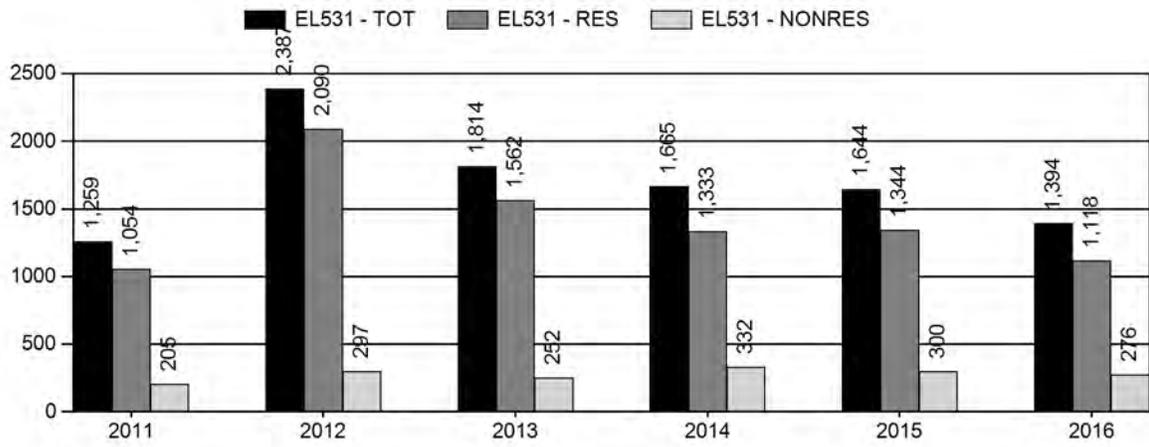
Population Size - Postseason



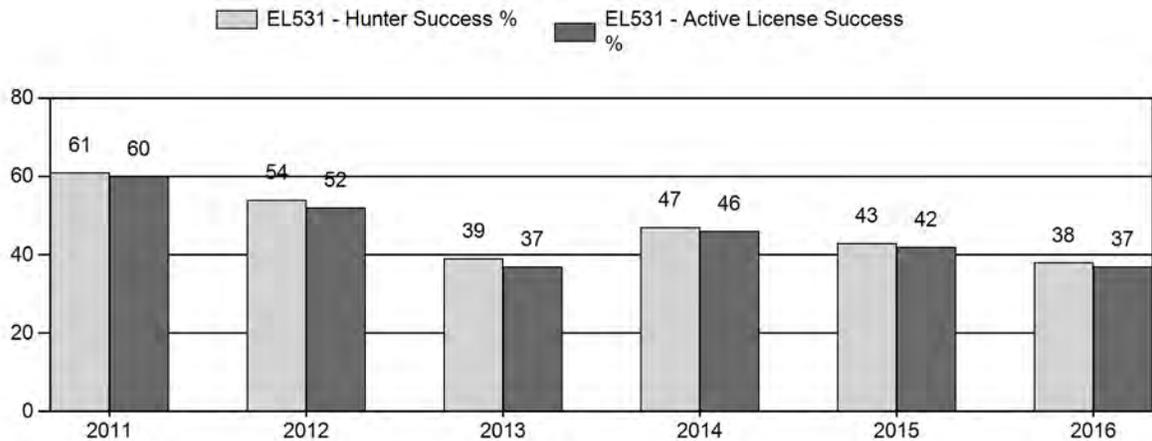
Harvest



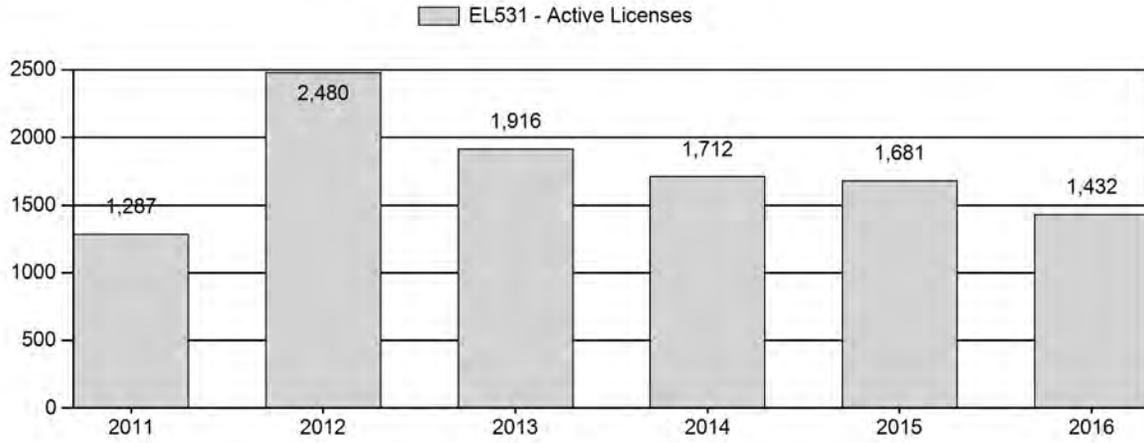
Number of Hunters



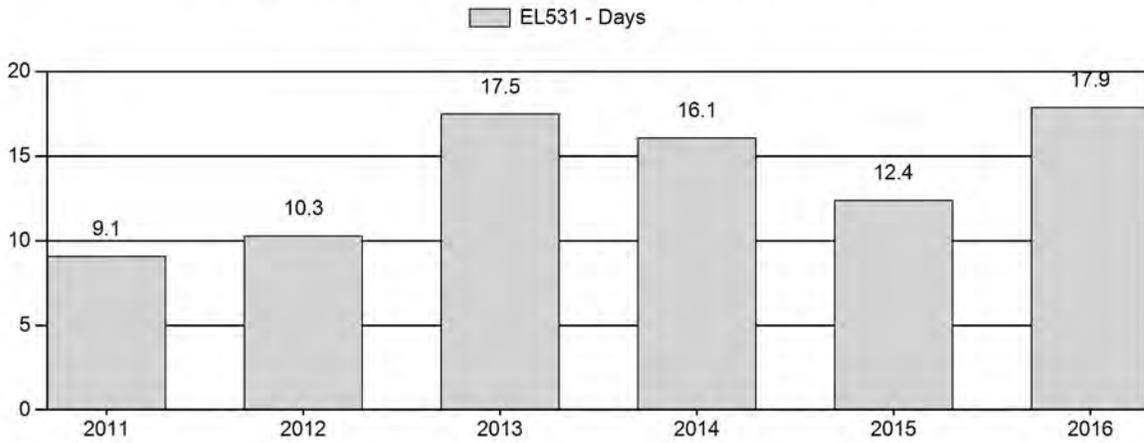
Harvest Success



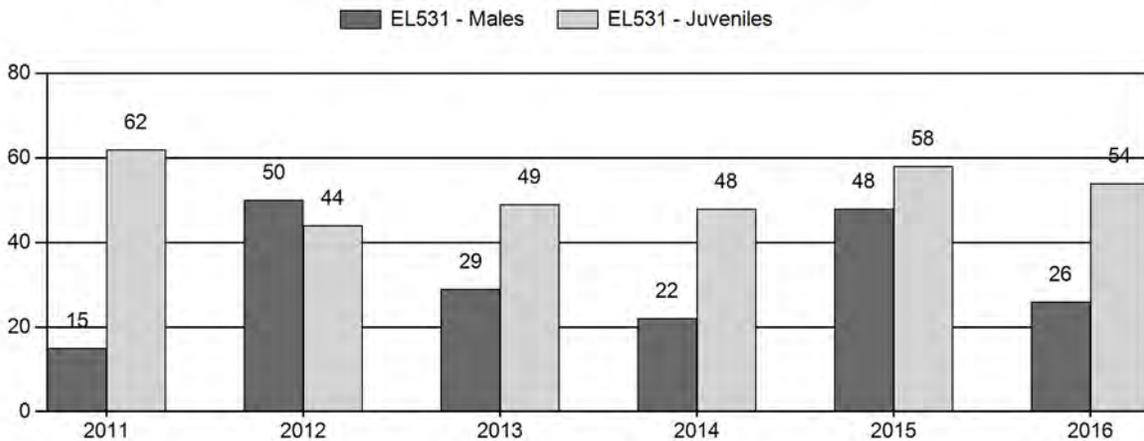
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL531 - IRON MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	5,059	20	16	36	9%	235	56%	145	35%	416	646	9	7	15	± 3	62	± 8	54
2012	3,856	52	46	98	26%	196	51%	87	23%	381	617	27	23	50	± 8	44	± 7	30
2013	3,522	75	86	161	16%	557	56%	273	28%	991	707	13	15	29	± 3	49	± 4	38
2014	3,125	44	67	111	13%	499	59%	238	28%	848	671	9	13	22	± 3	48	± 4	39
2015	3,070	152	142	294	23%	616	49%	355	28%	1,265	743	25	23	48	± 4	58	± 4	39
2016	2,160	123	50	173	15%	657	55%	357	30%	1,187	631	19	8	26	± 2	54	± 4	43

**2017 HUNTING SEASONS
IRON MOUNTAIN ELK (EL531)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
6		Oct. 1	Oct. 31		General	Any elk valid off national forest
		Nov. 1	Nov. 30		General	Antlerless elk valid off national forest
	1	Oct.15	Oct. 31	75	Limited quota	Any elk
		Nov.1	Jan. 31		Limited quota	Unused Area 6 Type 1 licenses valid for antlerless elk
	4	Nov. 1	Jan. 31	50	Limited Quota	Antlerless elk
	6	Aug. 15	Jan. 31	1100	Limited Quota	Cow or calf valid off national forest
	Archery					Refer to Section 3 of Chapter 7

Hunt Area	License Type	Changes from 2016
6	1	0
	4	-50
	6	0
Herd Unit Totals		-50

MANAGEMENT EVALUATION

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

Management Strategy: Recreational

2016 Postseason population Estimate: ~ 2,200

2017 Proposed Postseason Population Estimate: 2,000

2016 Hunter Satisfaction: 62% Satisfied, 22% Neutral, 16% Dissatisfied

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

Herd Unit Issues

The Iron Mountain elk herd unit includes hunt area 6 (combined hunt areas 5 and 6 for 2014 season) which is composed of mostly private lands, except for the Pole Mountain National Forest segment, which is managed under a limited quota license to maintain hunt quality. Urban sprawl and nontraditional landowners are increasing in the herd unit, as well as growing stone quarries in parts of Rogers canyon and between I-80 and Wyoming Highway 287. This herd unit continues to be a concern with landowners due to large wintering herds, sometimes exceeding 800 elk. Many of the landowners in the herd unit outfit bull elk hunts to some degree on their property, and bull quality and quantity are a concern. The 2016 post-season population estimate was 2,200 with the population trending downward from a high of 5,000 in 2011.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming. No significant prolonged periods of extreme heat or cold temperatures were observed, or extreme or prolonged periods of snow loading in lower elevation winter ranges. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Iron Mountain herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>.

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking. A significant die-off of sagebrush and antelope bitterbrush did occur in portions of the Laramie Range due to a rapid freeze event that occurred in November 2014. The die-off was widespread, from the Front Range of Colorado to the Eastern Plains of Montana. The severity of the die-off is unknown at this time, and whether or not the shrubs will recover. Affected shrubs did not show any significant signs of re-sprouting in summer 2015.

One prescribed burn was completed on the Iron Mountain Ranch in late March 2015, impacting 2,500 acres of mixed mountain shrub habitats. Initial herbaceous and woody plant response following treatment was excellent, as expected with the above average precipitation that fell in spring 2015. Previous prescribed burns completed within the Iron Mountain herd unit continue to outperform untreated habitats, particularly in shrub annual leader production.

Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie.

The limited number of habitat transects that have been established throughout the Laramie Region have not provided sufficient data to make reliable assumptions of habitat quantity or

quality and consequently heavily influence population management for any particular big game species.

Field Data

A total of 1,187 elk were classified, exceeding the estimated classification objective of 631. Bull ratios declined to 26:100 in 2016 from 54:100 in 2015. This is more likely an effect of survey effort than an actual decline. This herd has been very productive and continues to be with 54 calves: 100 cows. After changing the license issuance from limited quota to general, hunter numbers have been on a steady decline from a high of 2,480 hunters in 2012 to 1,400 in 2016.

Harvest Data

Elk harvest appears to be stabilizing after changing to a general season strategy in 2012. However, harvest declined to 530 in 2016 from 700 in 2015. With the lack of a HMAP or a Hunt Management Coordinator, cow elk harvest declined by an estimated 100 cows. Both the Type 1 and Type 4 licenses remain very popular with the public. Type 1 license drawing odds are less than 10% for residents and nonresidents' need 5 or more preference points. Hunter success increased on the Type 1 license from 45% in 2015 to 70% in 2016, mostly due to increase in antlerless harvest. The Type 4 licenses have always been a more difficult hunt and success remains low at 19%. Harvest was poor with only 15 elk harvested on the 100 Type 4 licenses in 2016.

Population

This is the third year that we have collected adequate classification data for the model not to crash. The "Constant Juvenile and Adult Survival" model was selected for this herd and had an AIC score of 380 and a best FIT of 266. It did not have the lowest AIC score, but considering the lack of data the more complicated models are not appropriate for this herd unit. This model predicts the population declining from a high of 5,000 in 2011 to the current population estimate of 2,200 in 2016. This model has a tendency to jump around each time an additional year of data is added and although the population trend may be accurate, the population estimate is most likely not. This model is ranked Poor for a variety of reasons including: little data available; ratio data, if available, considered highly biased because of poor sample sizes or an inability to survey the entire area; herd unit closure issues apparent; results not biologically defensible.

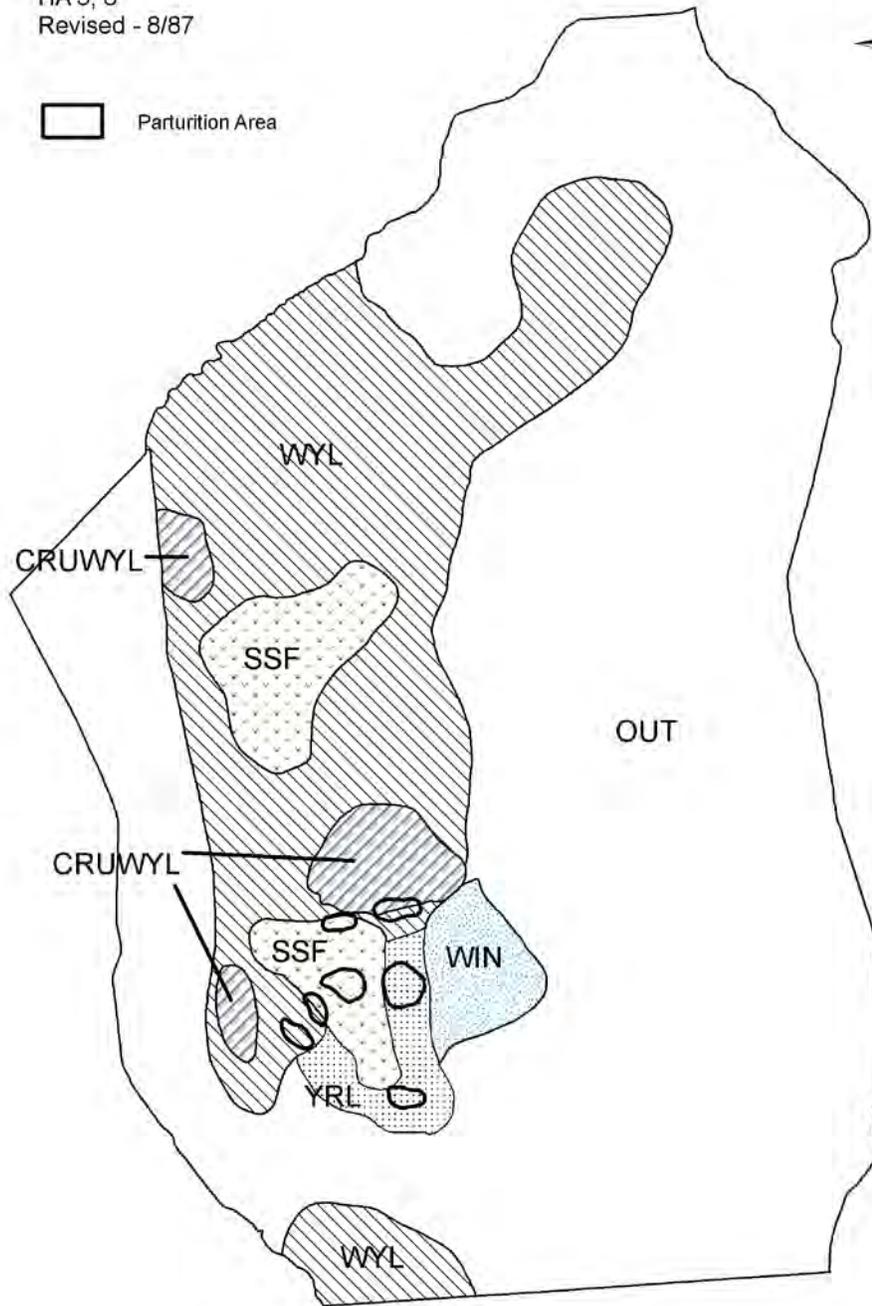
Management Summary

The 2016 general season structure and Type 6 licenses are working well to bring the herd to objective, and will remain status quo. The Type 4 licenses were decreased by 50 licenses to address low hunter success. If we harvest a minimum of 650 elk, the population will continue to decline towards the objective.

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



 Parturition Area



2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL533 - SNOWY RANGE

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

PREPARED BY: WILL SCHULTZ

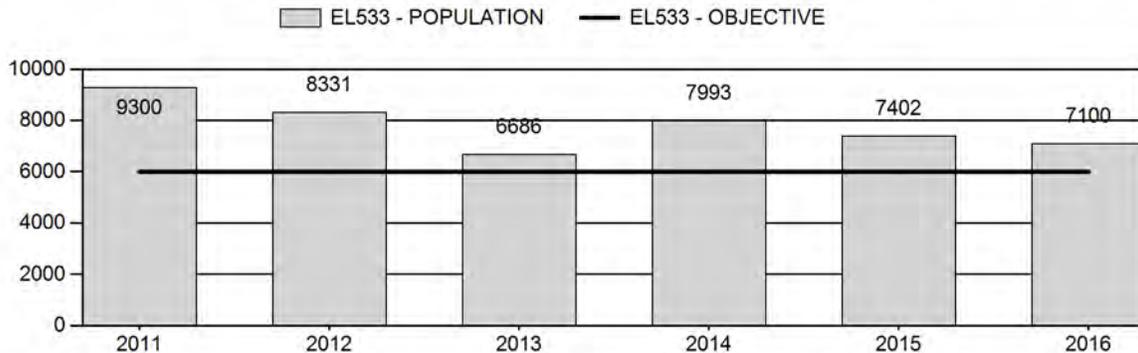
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	7,942	7,100	6,200
Harvest:	1,965	2,041	2,000
Hunters:	5,935	5,937	5,930
Hunter Success:	33%	34%	34 %
Active Licenses:	6,184	6,254	6,200
Active License Success:	32%	33%	32 %
Recreation Days:	46,698	49,189	48,000
Days Per Animal:	23.8	24.1	24
Males per 100 Females	24	42	
Juveniles per 100 Females	45	49	

Population Objective (± 20%) :	6000 (4800 - 7200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	18%
Number of years population has been + or - objective in recent trend:	25
Model Date:	02/16/2017

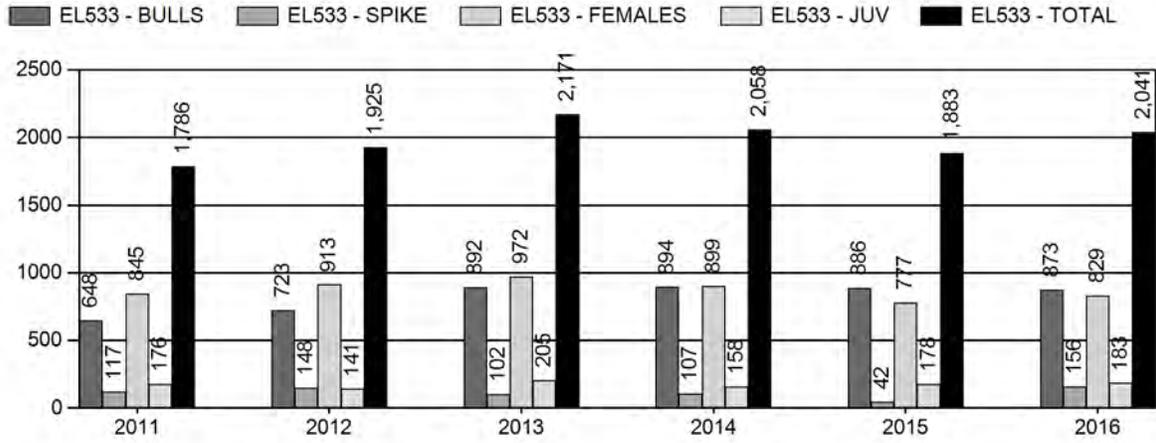
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	17%	18%
Males ≥ 1 year old:	64%	69%
Total:	23%	26%
Proposed change in post-season population:	-9%	-18%

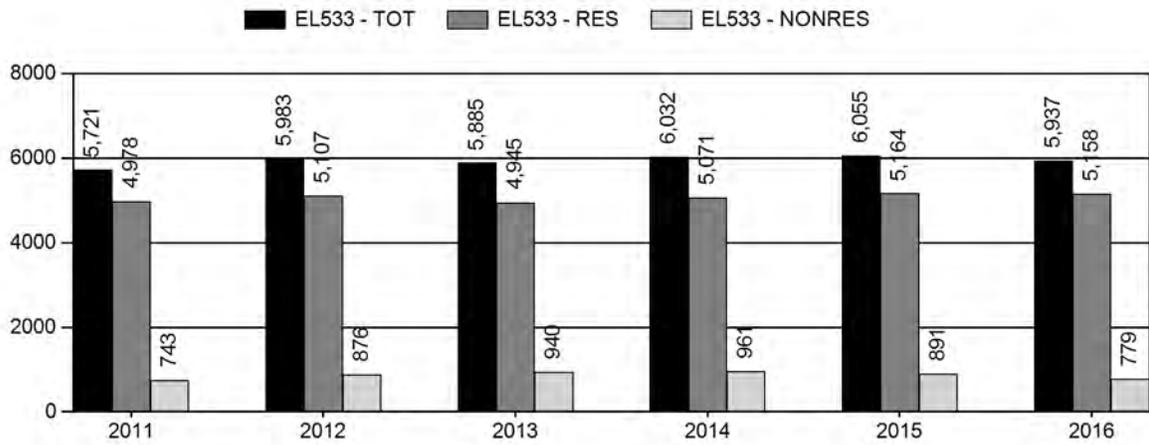
Population Size - Postseason



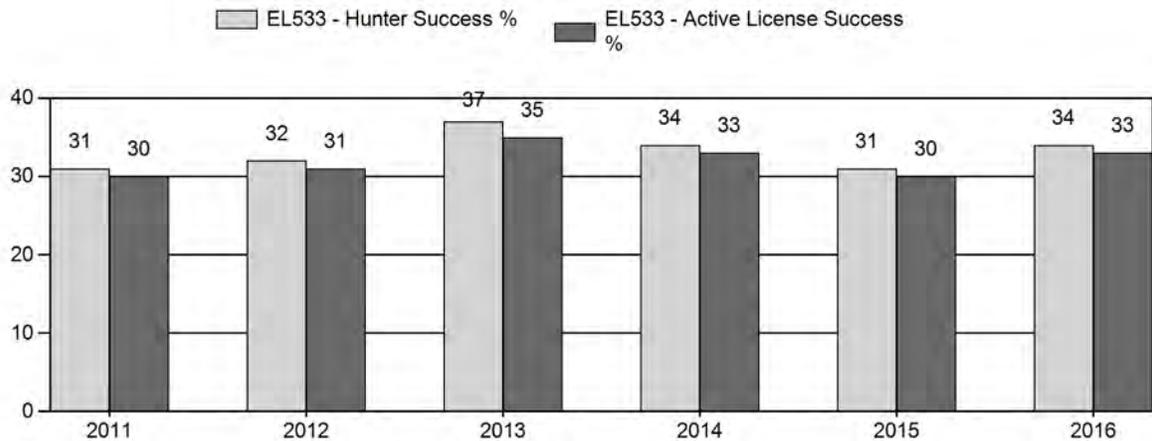
Harvest



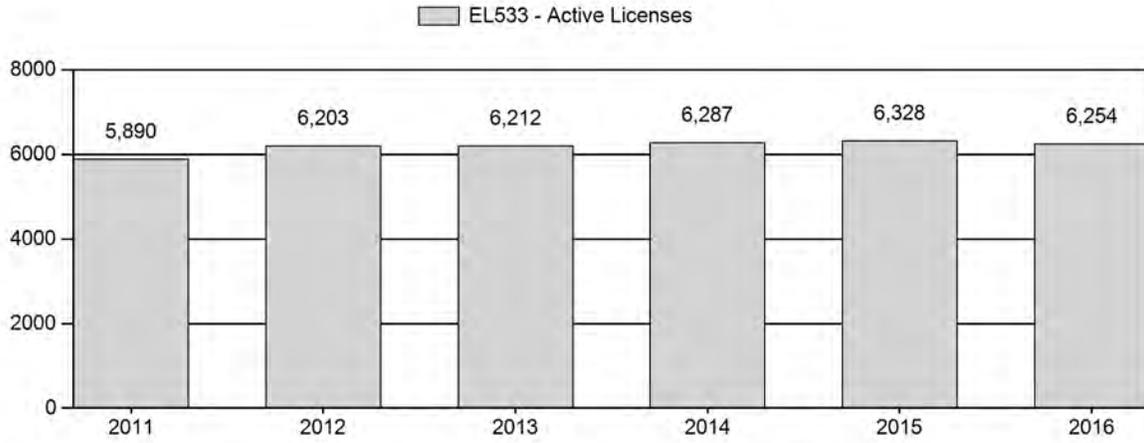
Number of Hunters



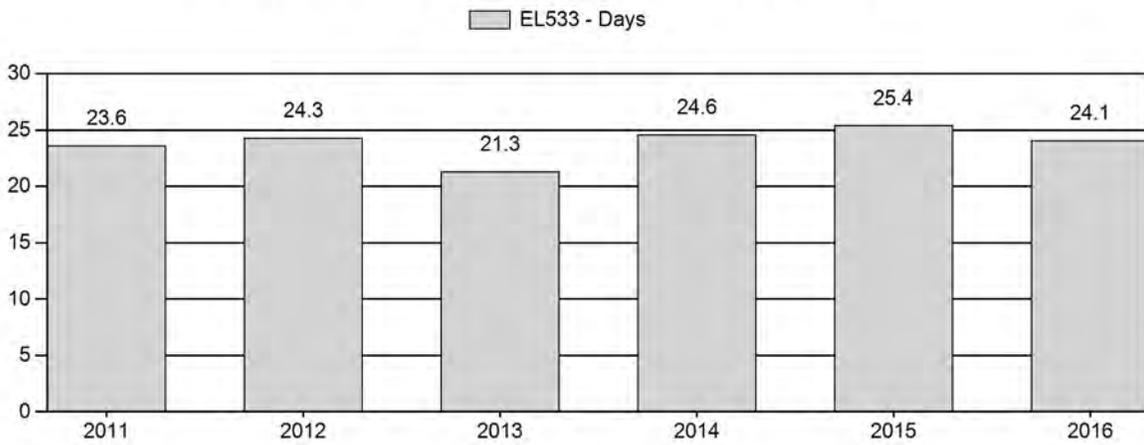
Harvest Success



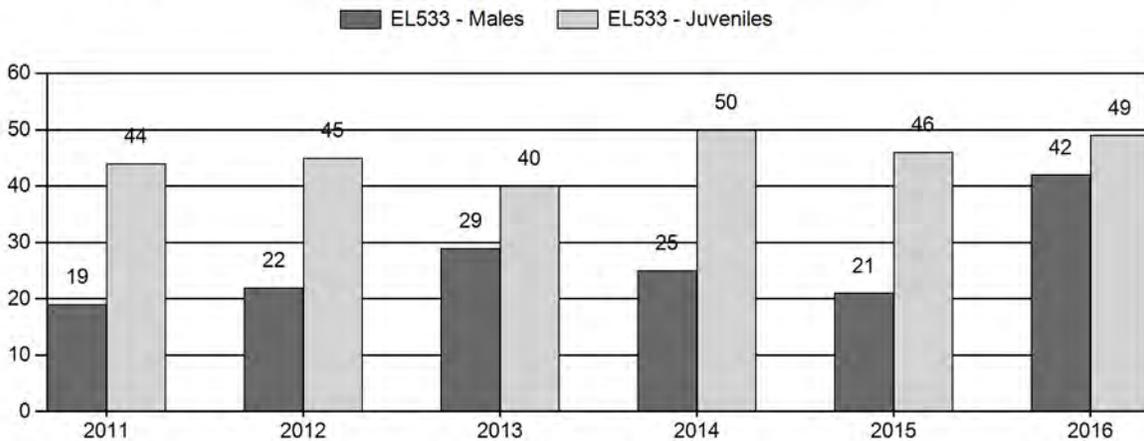
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL533 - SNOWY RANGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	9,300	145	109	254	12%	1,308	61%	576	27%	2,138	639	11	8	19	± 1	44	± 2	37
2012	8,331	252	218	470	13%	2,181	60%	990	27%	3,641	664	12	10	22	± 1	45	± 2	37
2013	6,686	292	456	748	17%	2,539	59%	1,023	24%	4,310	646	12	18	29	± 1	40	± 1	31
2014	7,993	259	148	407	14%	1,609	57%	800	28%	2,816	640	16	9	25	± 1	50	± 2	40
2015	7,402	206	190	396	13%	1,885	60%	876	28%	3,157	693	11	10	21	± 1	46	± 2	38
2016	7,100	242	470	712	22%	1,697	52%	837	26%	3,246	657	14	28	42	± 2	49	± 2	35

**2017 HUNTING SEASON RECOMMENDATIONS
SNOWY RANGE ELK (EL533)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
8	1	Oct. 1	Jan. 31	100	Limited quota	Any elk
	6	Aug. 15	Jan. 31	100	Limited quota	Cow or calf
9		Oct. 15	Oct. 31		General	Any elk
	6	Aug. 15	Sep. 30	150	Limited quota	Cow or calf valid on private land
		Oct. 1	Dec. 31			Cow or calf
		Jan. 1	Jan. 31			Cow or calf valid off national forest
10		Oct. 15	Oct. 31		General	Any elk
	6	Aug. 15	Sep. 30	200	Limited quota	Cow or calf valid on private land
		Oct. 1	Nov. 30			Cow or calf
		Dec. 1	Jan. 31			Cow or calf valid off national forest
11	1	Oct. 1	Oct. 31	150	Limited quota	Any elk
	4	Oct. 1	Nov. 14	300	Limited quota	Antlerless elk
	6	Aug. 15	Jan. 31	50	Limited quota	Cow or calf valid off national forest and off the Wyoming Game and Fish Commission's Wick Wildlife Habitat Management Area
	9	Sep. 1	Sep. 30	50	Limited quota	Any elk, archery only
12		Oct. 15	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	150	Limited quota	Cow or calf
		Nov. 15	Jan. 31			Cow or calf valid west of Wyoming Highway 130
12, 13, 15, 110	7	Aug. 15	Jan. 31	100	Limited quota	Cow or calf valid on private land
110		Oct. 15	Oct. 31		General	Any elk
	6	Oct. 1	Nov. 14	50	Limited quota	Cow or calf
114	1	Oct. 1	Jan. 31	50	Limited quota	Any elk
	6	Aug. 15	Jan. 31	200	Limited quota	Cow or calf
125	1	Oct. 1	Dec. 31	200	Limited quota	Any elk
		Jan. 1	Jan. 31			Valid for antlerless elk
	6	Oct. 1	Jan. 31	200	Limited quota	Cow or calf
					Archery	Refer to Section 3 of Chapter. 7

Hunt Area	License Type	Quota change from 2016
8	1	-50
10	6	-200
12, 13, 15, 110	7	+25
114	6	+75
Herd Unit Total	1	-50
	6	-125
	7	+25

Management Evaluation

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

Management Strategy: Recreational

2016 Postseason Population Estimate: 7,100

2017 Proposed Postseason Population Estimate: 6,200

2016 Hunter Satisfaction: 60% Satisfied, 23% Neutral, 17% Dissatisfied

Elk in The Snowy Range herd unit are managed toward a postseason population objective of 6,000. The population was estimated using a spreadsheet model developed in 2012 and updated in 2016. The herd is managed for recreation opportunity. The objective was last reviewed in 2013.

Herd Unit Issues

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

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration's (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

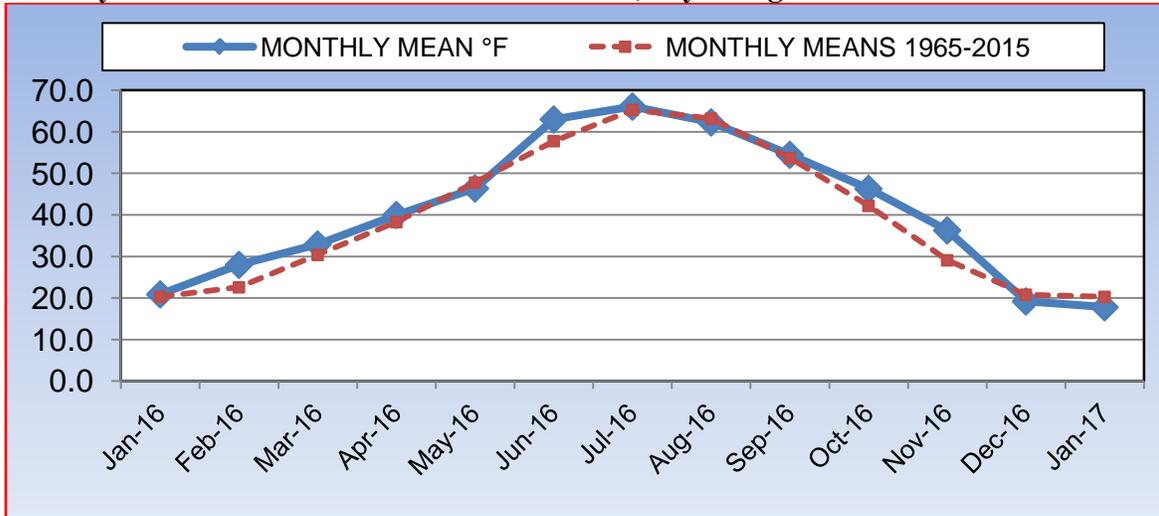
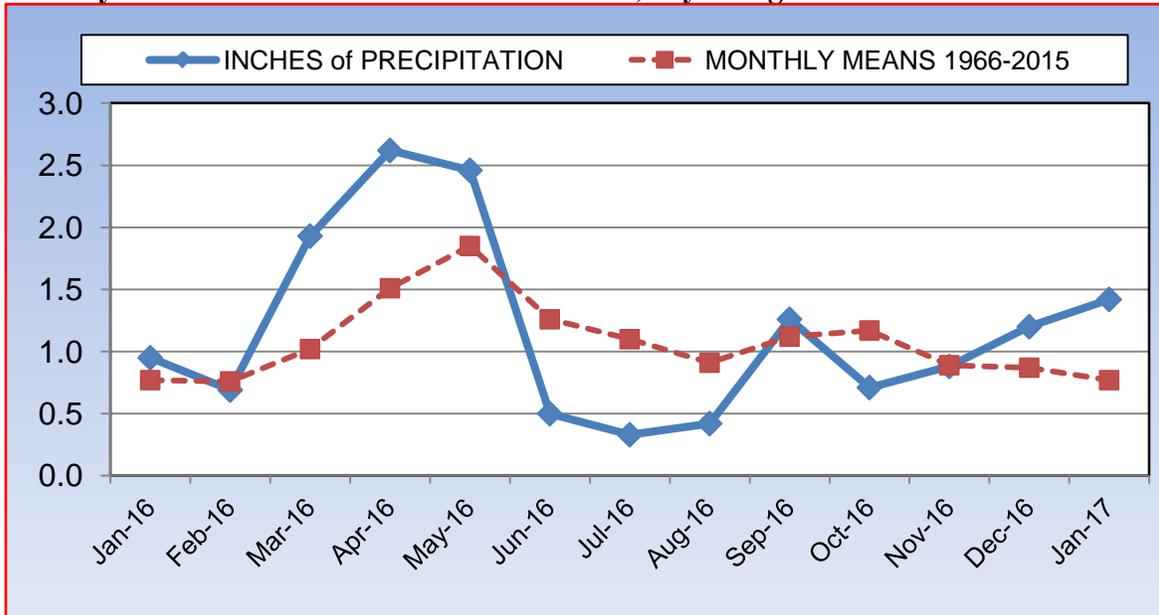


Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



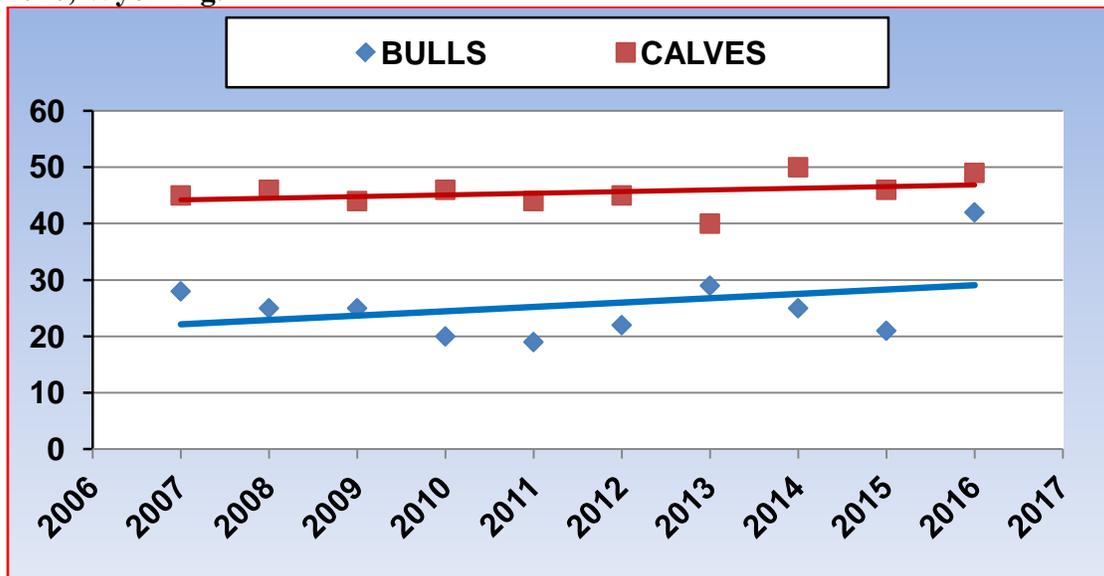
Habitat

Habitat conditions continued to improve in 2016 with increased amounts of timely precipitation being received at higher elevations in the herd unit. Precipitation received in April and May resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Cheatgrass continued to impact native rangelands, particularly on south facing aspects and in areas of high fire severity associated with the 11,000 acre Squirrel Creek Wildfire of 2012. During habitat assessments conducted during the summer 2016, aspen regeneration in areas burned by wildfire was excellent, and showed little sign of browsing by wildlife or livestock. This may be due to the fact that the areas which recently burned have a high road density and are heavily utilized by motorized recreationists; resulting in displacement of elk from these preferred habitats. The limited number of habitat transects established throughout the Laramie Region have not provided sufficient data to make reliable inferences about habitat quantity or quality.

Field Data

In 2016, we classified elk from a helicopter in conjunction with local mule deer classifications. A postseason classification sample of 3,246 elk produced ratios of 42 bulls and 49 calves per 100 cows in this herd unit. The significantly higher annual bull ratio was attributed to both deep snow conditions pushing bulls out of hiding cover, and less cow/calf groups being observed. However, the past 10 years of bull and calf ratio data indicated both ratios have been increasing in trend (Figure 3). High calf ratios continued to provide for an excellent recruitment rate in this herd unit.

Figure 3. Bull and calf ratios per 100 cows in the Snowy Range elk herd unit, 2007-2016, Wyoming.



Harvest Data

The 2016 harvest survey data indicated 5,937 active licensed hunters harvested 2,041 elk, which was an 8% increase in harvest from 2015. The total harvest success rate of 34% was a 3% increase from 2015. Branch antlered bulls accounted for 85% of the male harvest in 2016 and 43% of the overall harvest. The proportion of spikes in the male harvest for the entire herd unit increased from 5% in 2015 to 15% in 2016 as a result of removing the spikes excluded limitation in the general season hunt areas. Antlerless elk accounted for 50% of the total 2016 elk harvest. Harvest rates, days per harvest, and harvest success rates under the current liberal hunting season structure continued to be considered acceptable. In 2016, 21% of the branch bull harvest was attributed to archery; while in 2015, 22% of the branch bull harvest was attributed to archery.

Population

In 2016, we continued to use the CJ,CA spreadsheet model to simulate Snowy Range herd unit population dynamics. The other 2016 models in the spreadsheet model suite had either higher AICc scores or were not biologically realistic (i.e. 50,000 elk in 1993). Without other information such as an independent abundance estimate or historical survival data to incorporate into the model, accuracy of estimates will continue to be unknown. We rated this model as poor, and biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

The 2016 postseason population estimate for the Snowy Range herd unit was 7,100 elk. A decreasing trend in the annual estimate continued with CJ,CA model and was considered to be consistent with the observations by field managers. We considered the 2016 postseason population estimate produced by the CJ,CA spreadsheet model to be somewhat plausible.

Management Summary

The hunting seasons in the Snowy Range herd unit continued to provide opportunities to reduce the overall elk population in 2017. Elk numbers appear to be declining towards the management objective.

Literature Cited

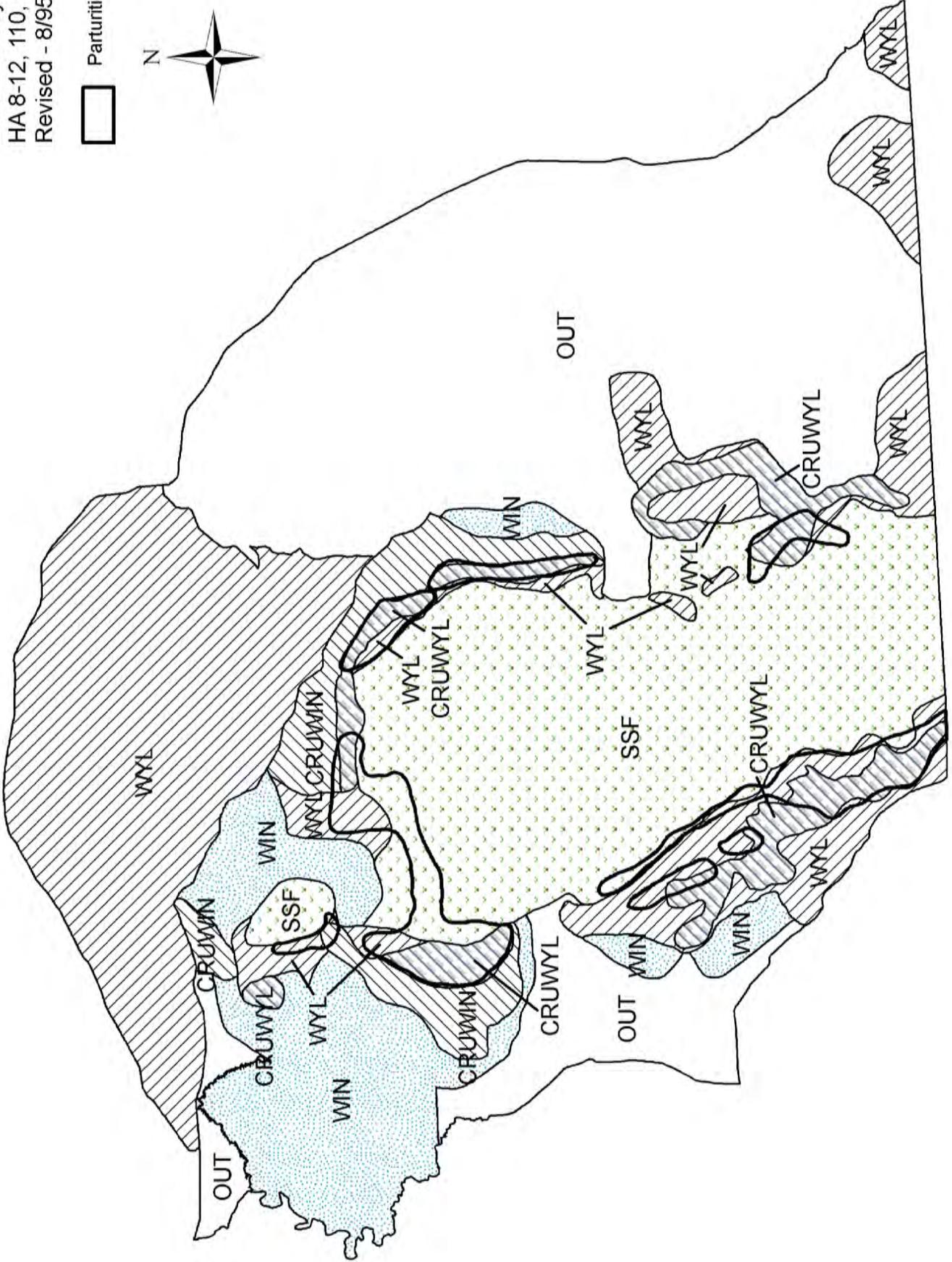
Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data
Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming,
Laramie. USA. 41 pp.

Bibliography of Herd Specific Studies

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

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

Parturition Area



2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL534 - SHIRLEY MOUNTAIN

HUNT AREAS: 16

PREPARED BY: WILL SCHULTZ

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	352	2,301	2,000
Harvest:	364	293	400
Hunters:	599	623	800
Hunter Success:	61%	47%	50 %
Active Licenses:	627	639	800
Active License Success	58%	46%	50 %
Recreation Days:	4,741	5,136	6,000
Days Per Animal:	13.0	17.5	15
Males per 100 Females:	40	49	
Juveniles per 100 Females	43	44	

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

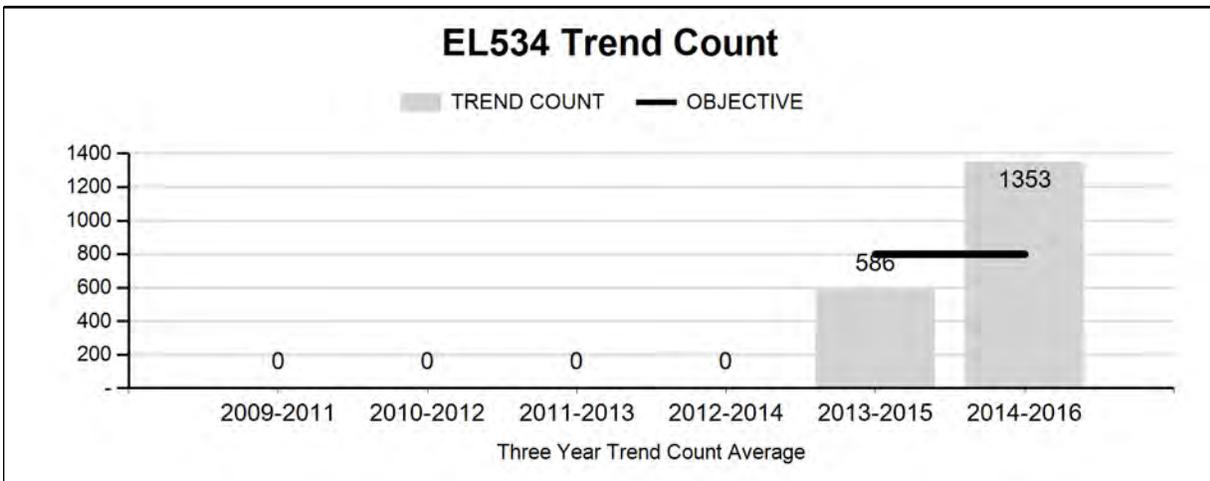
Management Strategy: Special

Percent population is above (+) or (-) objective: 188%

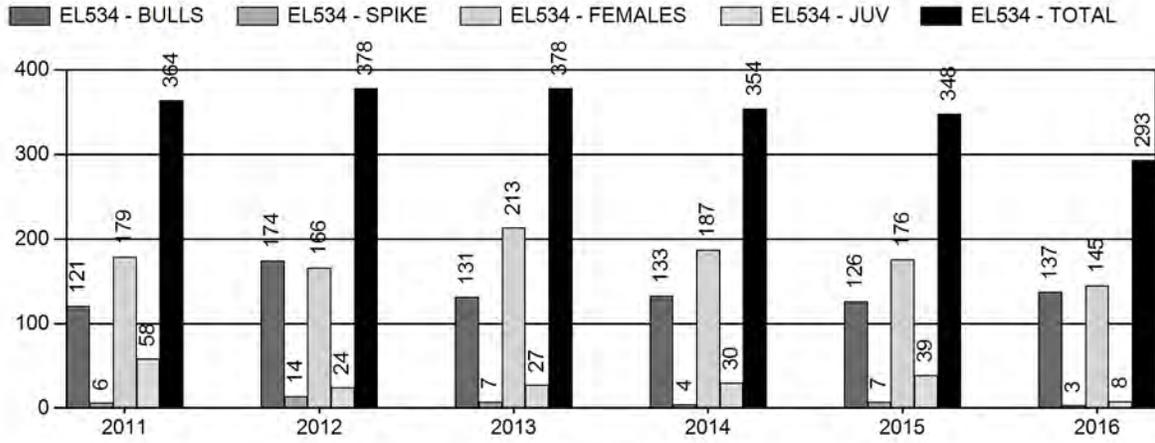
Number of years population has been + or - objective in recent trend: 25

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

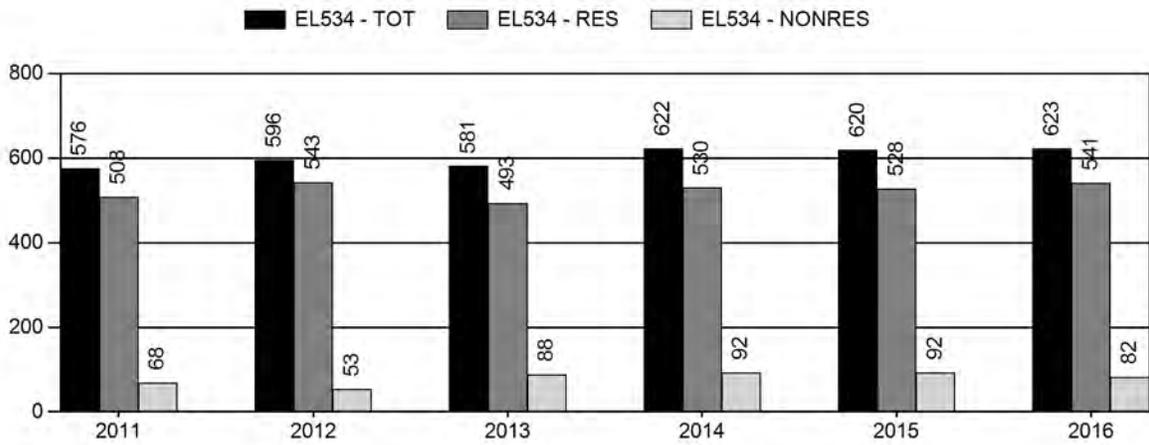
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%



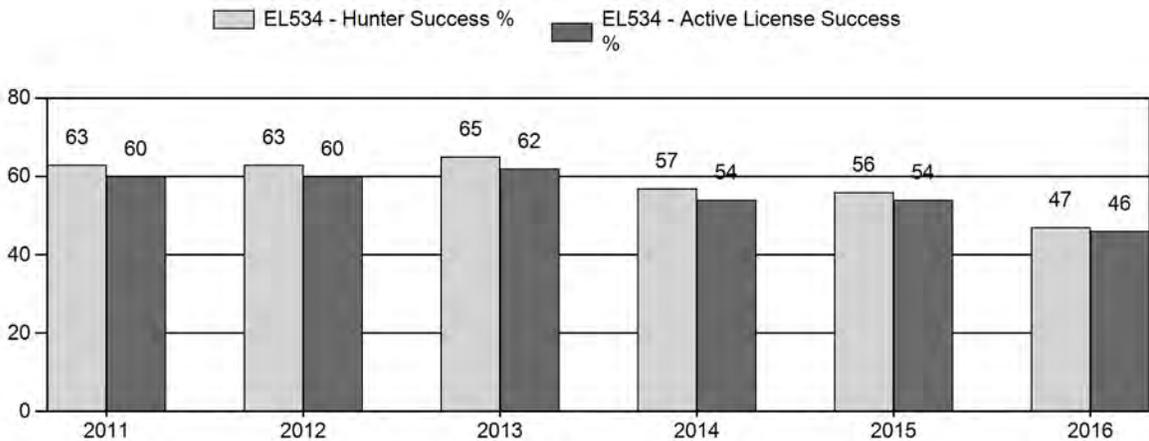
Harvest



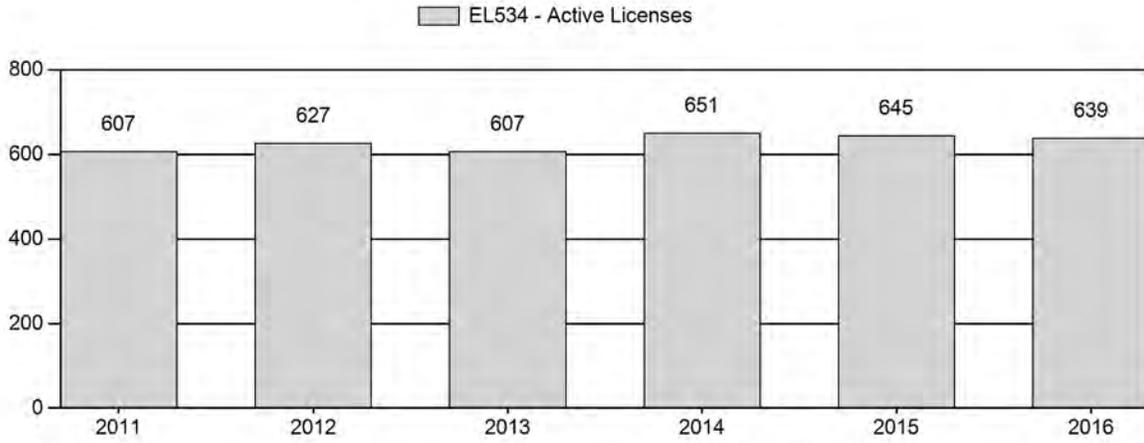
Number of Hunters



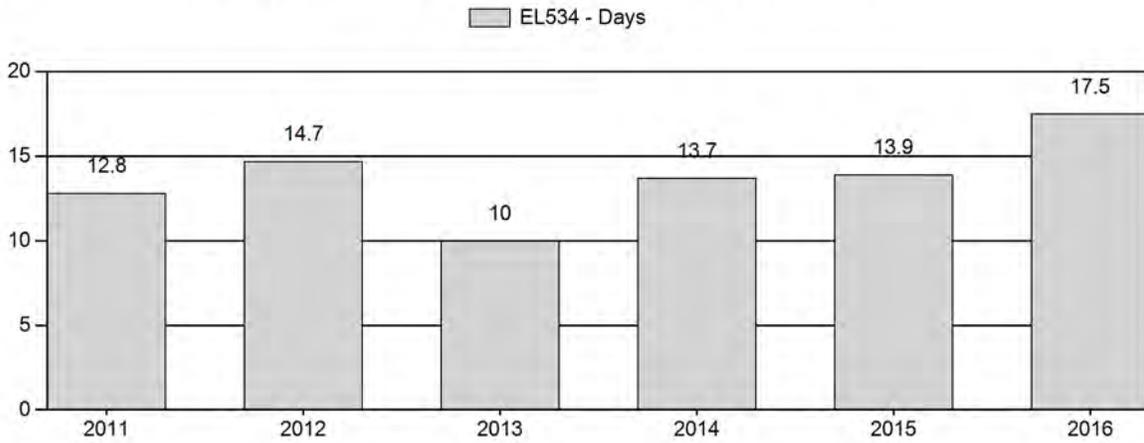
Harvest Success



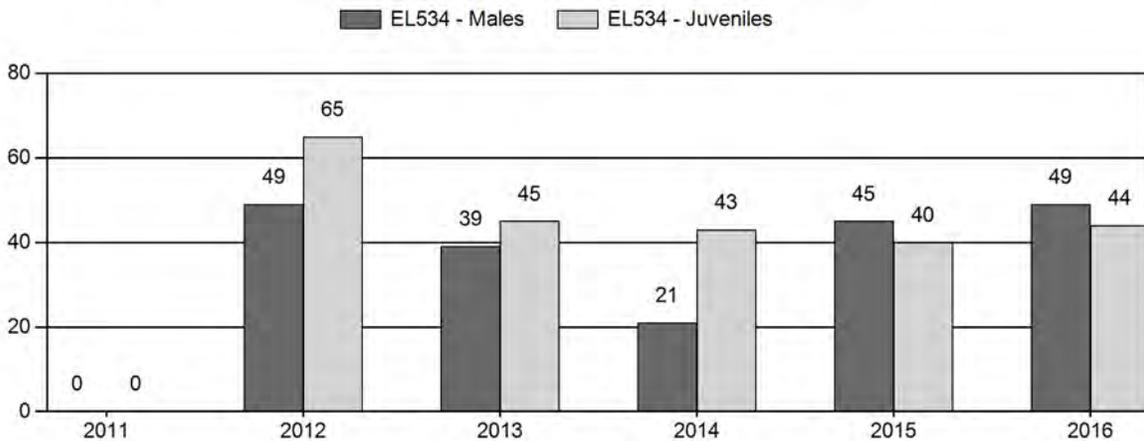
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL534 - SHIRLEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	1,200	0	0	0	0%	0	0%	0	0%	0	500	0	0	0	± 0	0	± 0	0
2012	880	8	32	40	23%	81	47%	53	30%	174	420	10	40	49	± 11	65	± 13	44
2013	1,462	52	90	142	21%	365	54%	165	25%	672	568	14	25	39	± 4	45	± 4	33
2014	767	14	47	61	13%	294	61%	127	26%	482	395	5	16	21	± 2	43	± 4	36
2015	0	86	342	428	24%	948	54%	383	22%	1,759	596	9	36	45	± 0	40	± 0	28
2016	0	160	422	582	25%	1,196	52%	523	23%	2,301	634	13	35	49	± 0	44	± 0	29

**2017 HUNTING SEASON RECOMMENDATIONS
SHIRLEY MOUNTAIN ELK (EL534)**

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

Hunt Area	License Type	Quota change from 2016
16	6	+100
Herd Unit Total	6	+100

Management Evaluation

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

Management Strategy: Special

2016 Trend Count: 2,301

Most Recent 3-year Running Average Trend Count: 1,353

2016 Hunter Satisfaction: 73% Satisfied, 20% Neutral, 17% Dissatisfied

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

Herd Unit Issues

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

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration's (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Habitat

Positive trends in habitat conditions were observed in bio-year 2016 due to adequate amounts of late spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most shrub-steppe habitat in this herd unit is decadent and in need of treatments designed to improve the nutritional value.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

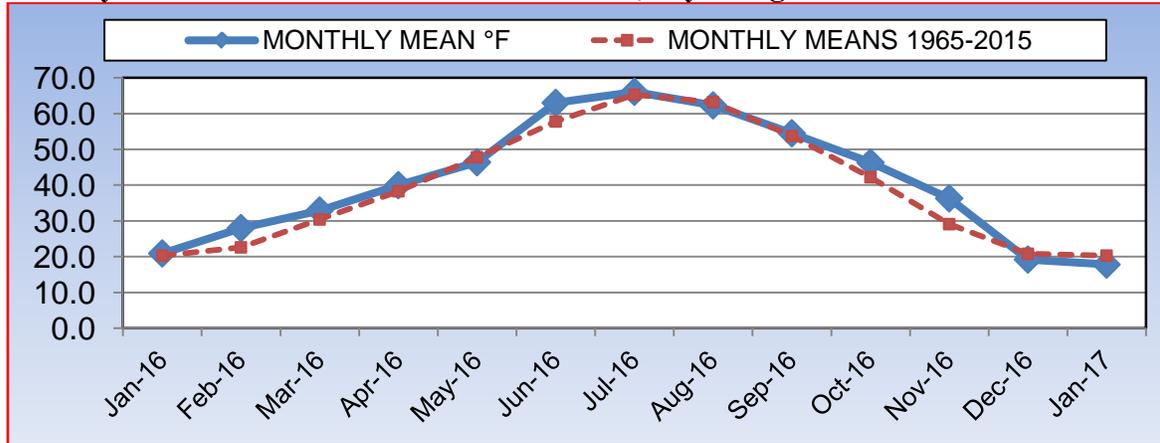
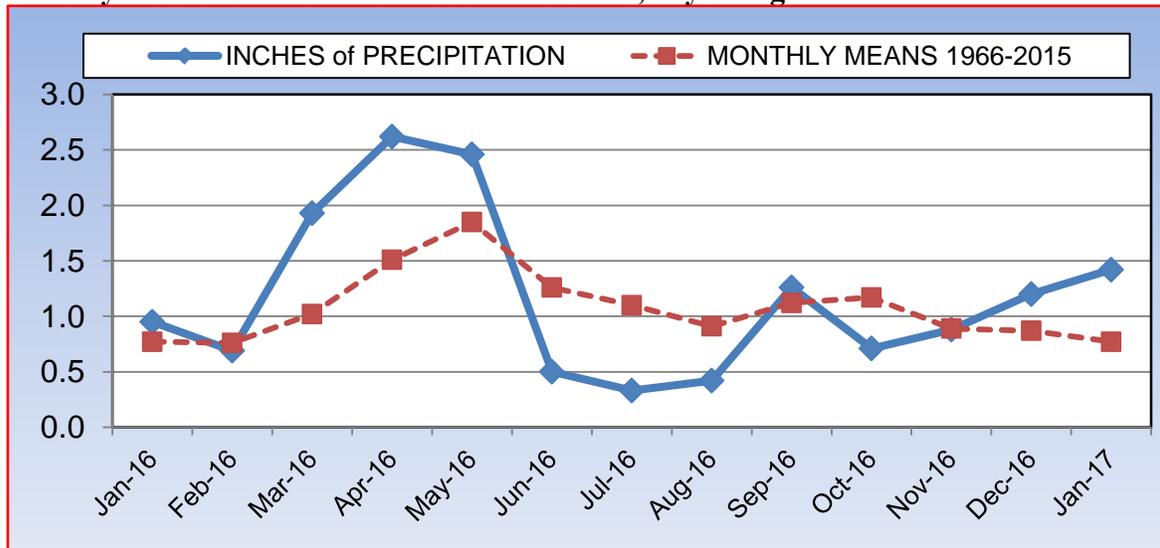


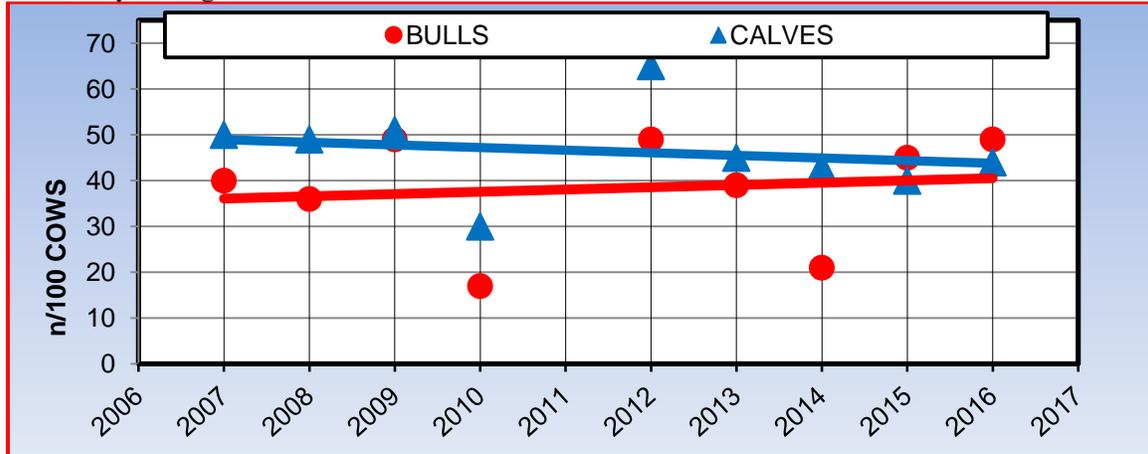
Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Field Data

Postseason sex and age classifications were conducted in conjunction with a mid-winter trend survey in January of 2017. The results were a total of 49 bull and 44 calves per 100 cows, from a sample of 2,301 elk. Figure 3 illustrates how the 2016 postseason ratios compared to previous classification results during the past 10-years.

Figure 3. Shirley Mountain elk herd unit bull and calf ratios per 100 cows, 2007-2016, Wyoming.



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

Harvest Data

Preliminary elk harvest survey data indicated 623 active licensed hunters' harvested 293 elk in 2016, with an overall success rate of 47%. The 2016 harvest success decreased 9% from 2015 when the same number of licenses were issued. The 2016 branch bull harvest (n=137) was a 7% increase from 2015. Antlerless harvest (n=217) decreased 29% in 2016. Overall, harvest in 2016 was relatively less successful with less elk being harvested and more days being expended for each elk harvested.

Population

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

A mid-winter trend count survey was completed in January of 2017 (Figure 4). A total of 2,301 elk were observed in the herd unit. This sample size was relatively similar to the sample (n=1,759) observed last year. Both of these latest surveys' sample sizes are substantially greater when compared to previous helicopter surveys, covering relatively the same area in the herd unit. In 2010 we observed 691 elk and in 2013 we observed 672 elk during helicopter classification surveys. It would appear we have significantly under estimated the number of elk wintering in this herd unit.

Management Summary

The 2017 hunting season recommendations were prescribed with the continued objectives of maintaining bull ratios within the special management parameters and reducing elk numbers toward the trend count objective of 800 elk. Access in the Beer Mug HMA was similar to the 2016 season. Access in the Hanna Draw HMA increased with a September period for Type 4 and Type 6 licensed hunters. We retained the same number of Type 1, 2, and 4 licenses for the 2017 hunting season but increased the number of type 6 licenses in an attempt to improve the overall antlerless elk harvest rate.

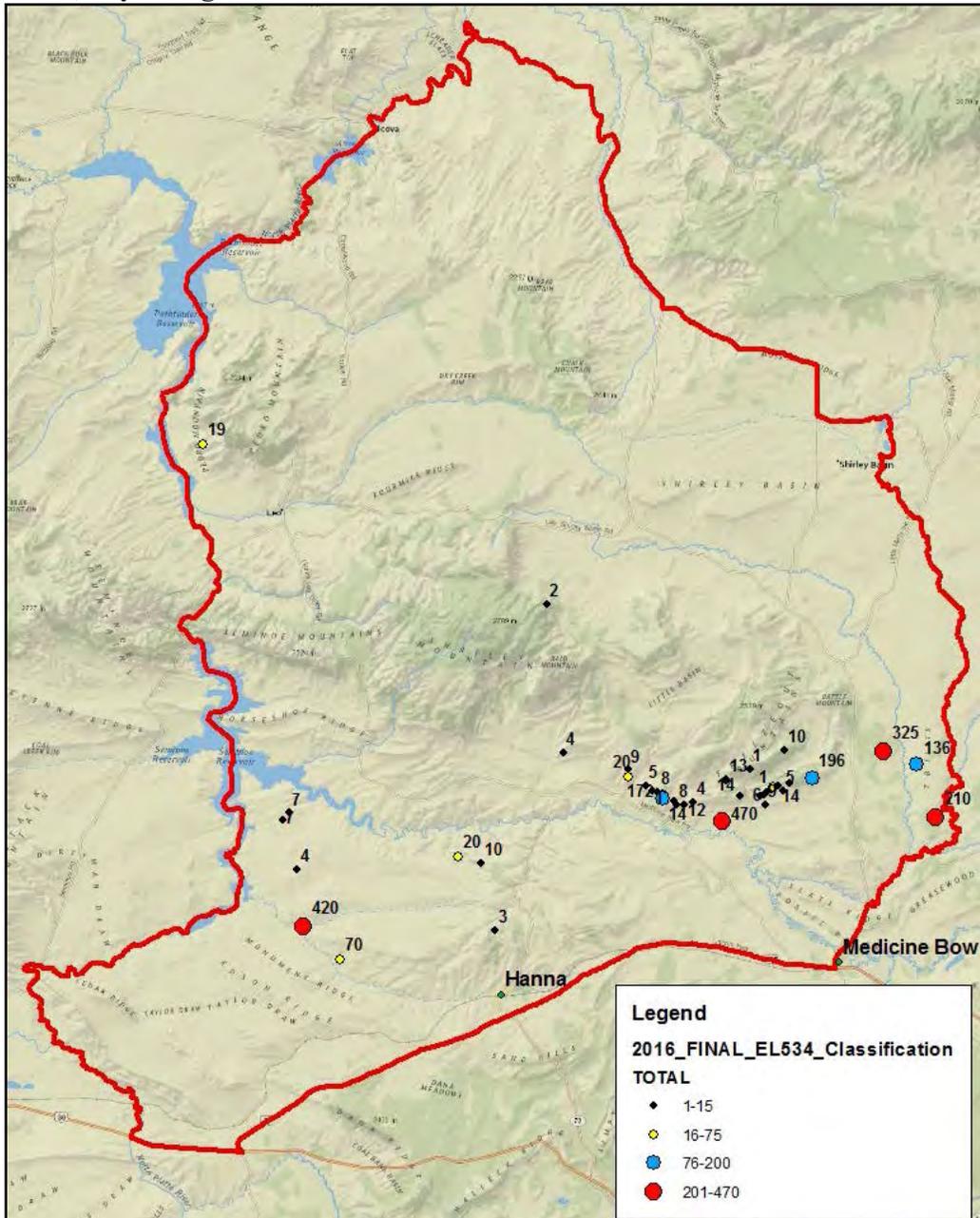
Literature Cited

None

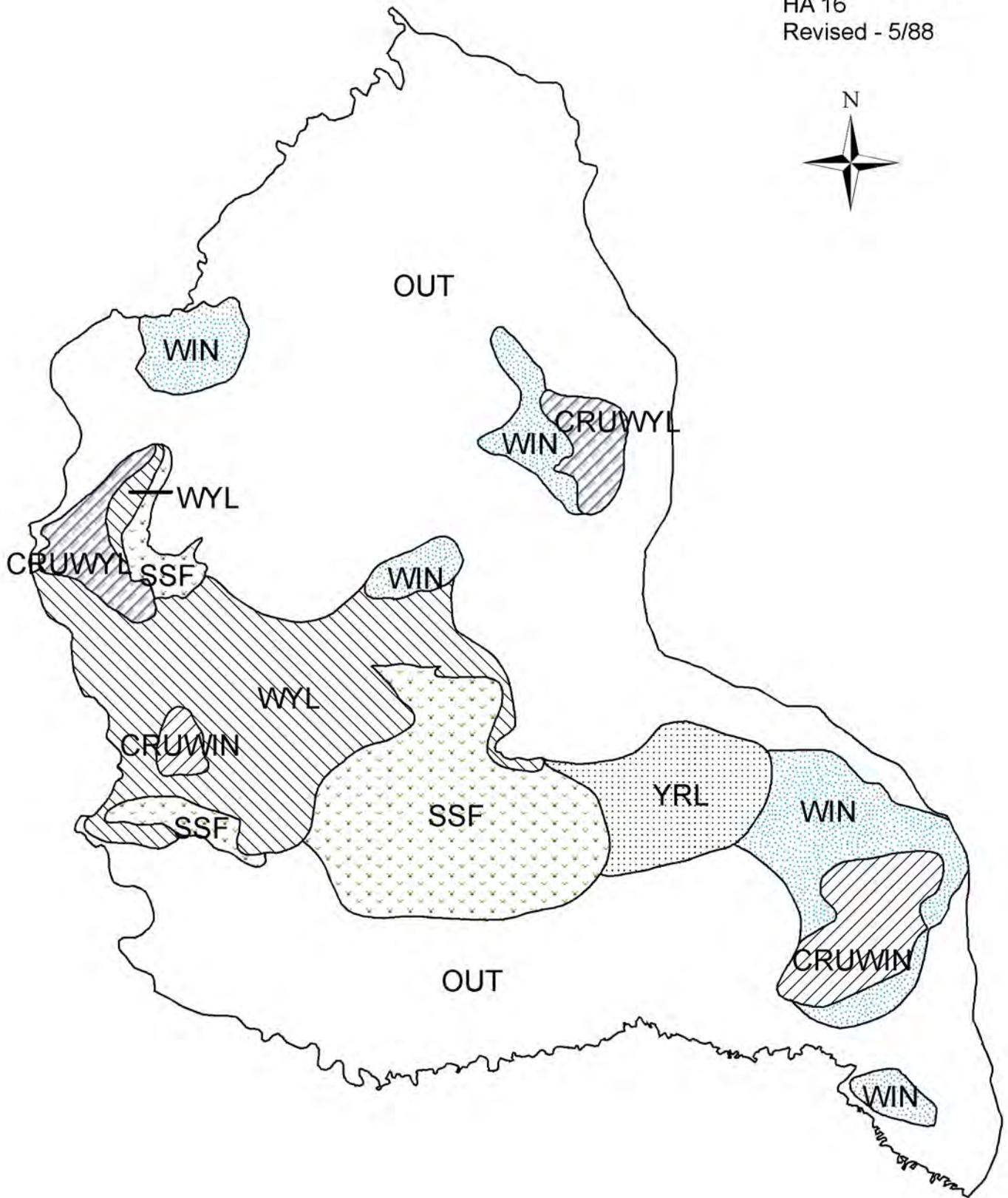
Bibliography of Herd Specific Studies

None

Figure 4. 2016 Mid-winter trend count observations in the Shirley Mountain elk herd unit, Wyoming.



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



2016 - JCR Evaluation Form

SPECIES: Elk

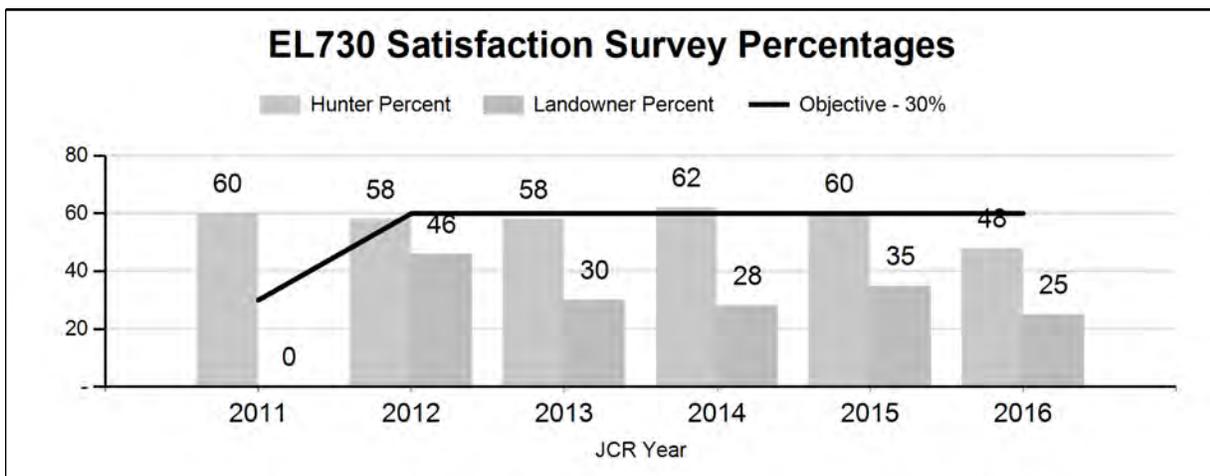
PERIOD: 6/1/2016 - 5/31/2017

HERD: EL730 - RAWHIDE

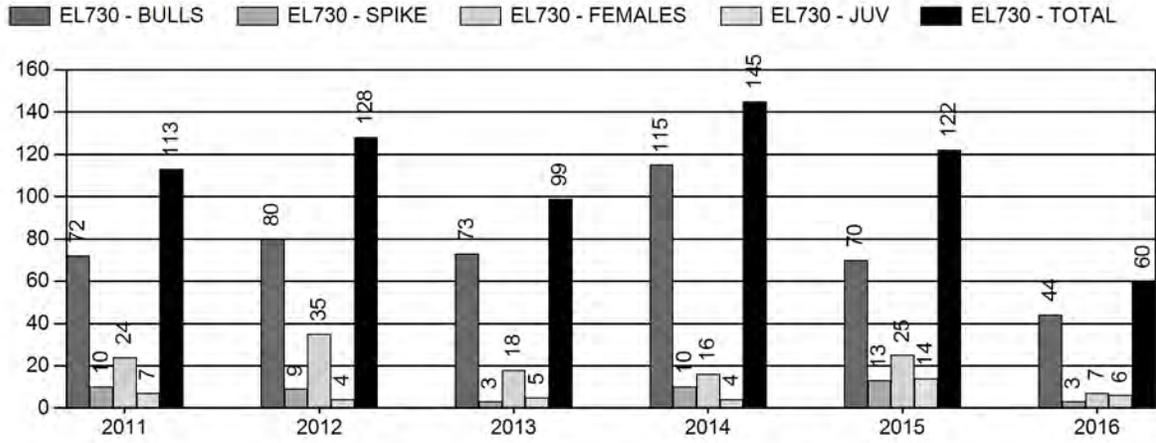
HUNT AREAS: 3

PREPARED BY: MARTIN HICKS

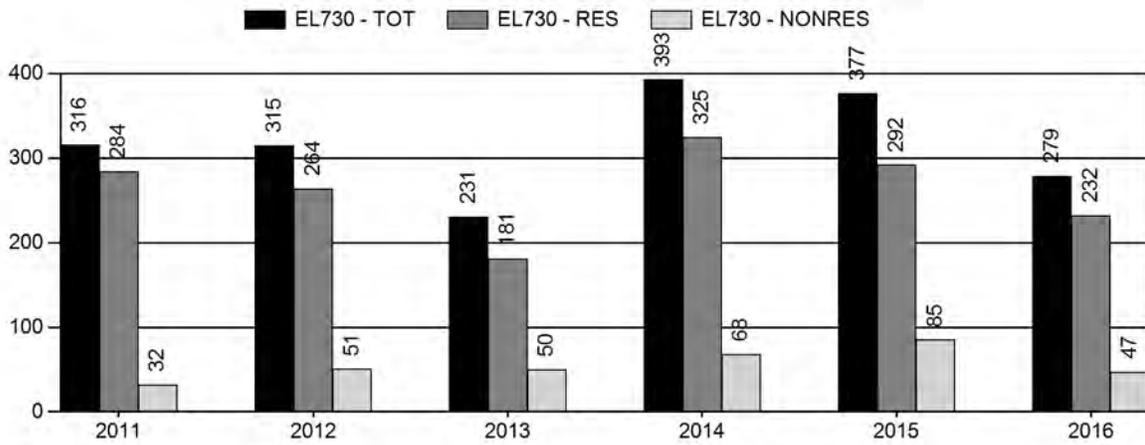
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	59%	48%	60%
Landowner Satisfaction Percent	37%	25%	30%
Harvest:	121	60	75
Hunters:	326	279	295
Hunter Success:	37%	22%	25%
Active Licenses:	345	292	305
Active License Success:	35%	21%	25%
Recreation Days:	2,430	1,892	1,900
Days Per Animal:	20.1	31.5	25.3
Males per 100 Females:	52	0	
Juveniles per 100 Females	61	0	
Satisfaction Based Objective			60%
Management Strategy:			Special
Percent population is above (+) or (-) objective:			-24%
Number of years population has been + or - objective in recent trend:			5



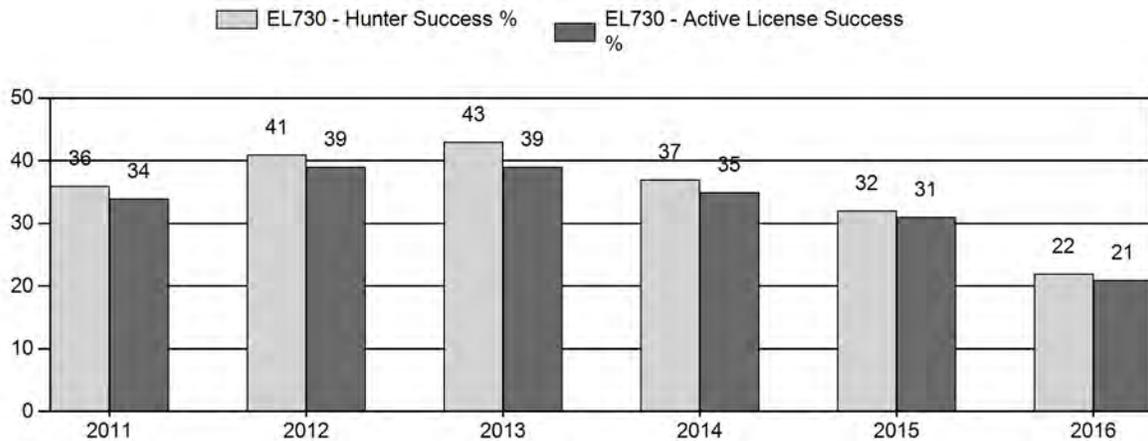
Harvest



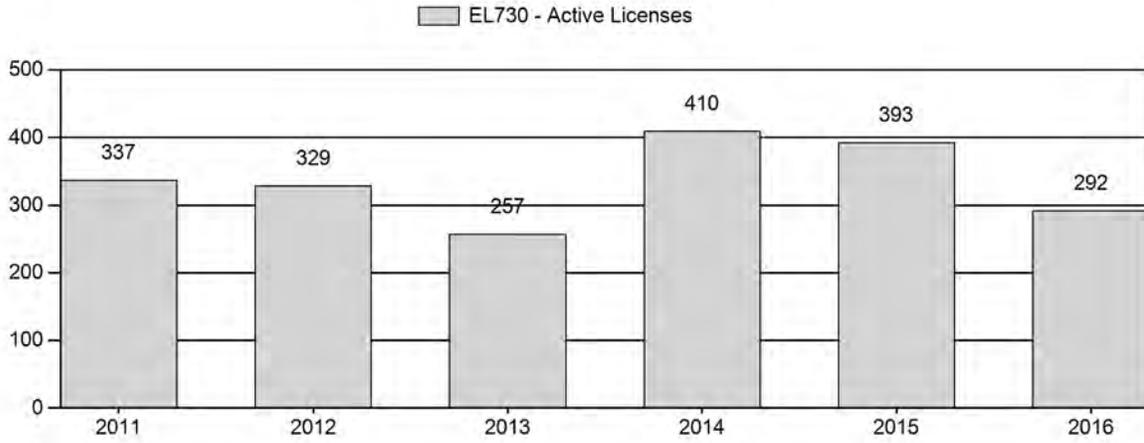
Number of Hunters



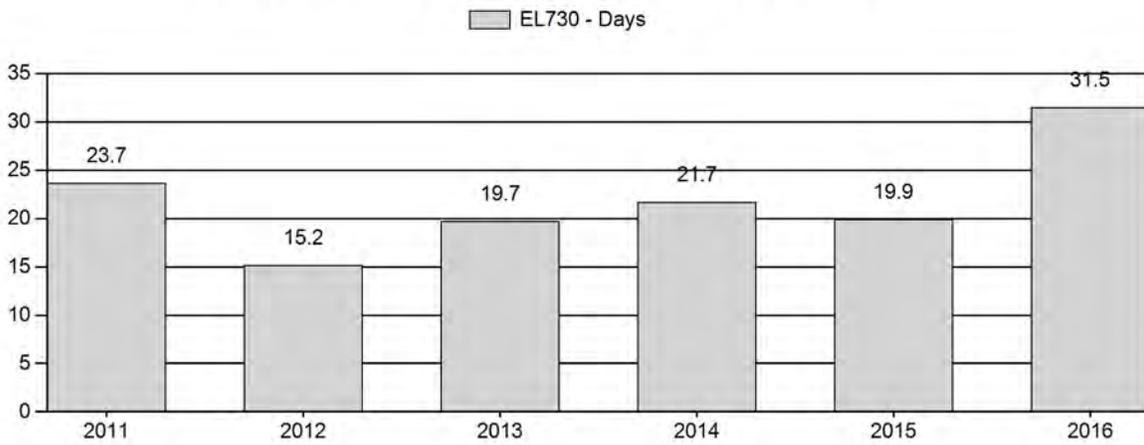
Harvest Success



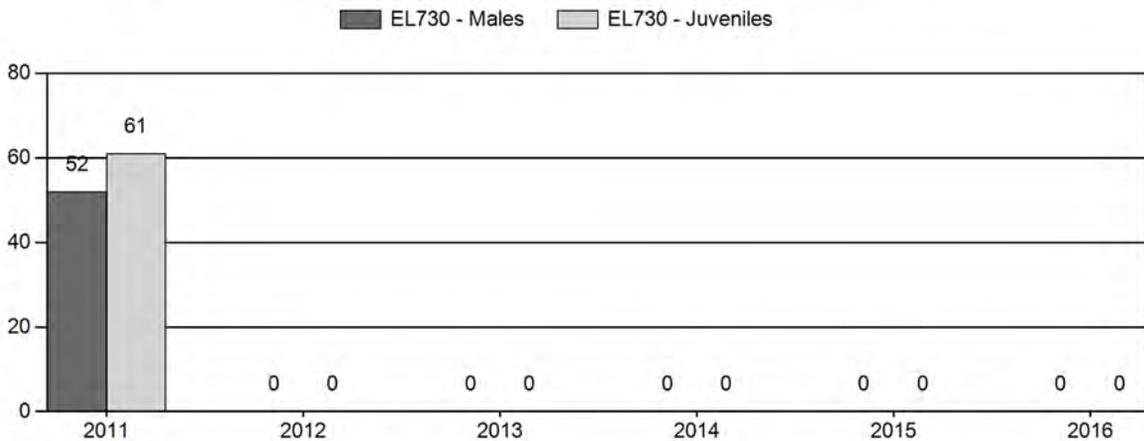
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**RAWHIDE ELK HERD (730)
2017 HUNTING SEASONS**

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

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

Hunt Area	Type	Quota change from 2016
3	6	0

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: 60% landowner/hunter satisfaction: bull quality; Target goal: \geq 61% branch antlered bulls in harvest survey

Management Strategy: Special

2016 Hunter Satisfaction Estimate: 47%

2016 Landowner Satisfaction Estimate: 25%

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

Most Recent 3-year Running Average Landowner Satisfaction Estimate: 29%

2016 Bull Quality: 93% branch antlered bulls in harvest survey

Most Recent 3-year Running Average Bull Quality: 90% branch antlered bulls in harvest survey

Management Issues

The management objective for this herd was changed in 2012 from a post-season population objective of 40 elk to a nonnumeric population objective based on landowner and hunter satisfaction and the percentage of branch antlered bulls in the harvest. The management strategy was changed from recreational to special. We will follow trends over time to make management decisions based on constituent satisfaction and bull harvest parameters. There is not a working model for this herd unit due to our inability to collect adequate population data. The herd objective will be reviewed during the 2017 season setting process.

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

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

During the 2017/18 winter 20 elk within or adjacent to the Wyoming Guard Camp will be captured and fitted with GPS radio collars that will be deployed for three years to look at habitat selection. The goal is to further identify seasonal ranges, document calving areas and map movement patterns. This is a cooperative research project with the National Guard Camp.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Rawhide herd unit the reader is referred to the following link: <http://www.ncdc.noaa.gov/cag/>

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant species. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

Areas burned by wildfires within the last 10 years have responded mostly favorably due to reduction in conifers and enhancement of herbaceous plant communities. Cheatgrass continues to be a major threat to native rangelands and big game ranges in this herd unit. Some portions of burned areas are predominantly cheatgrass, and will likely remain in that state unless treated with herbicides.

Field/Harvest Data

Harvest success and effort has fluctuated around 35% and 21 days per harvest for the past five years. Harvest is driven by access and if hunters are limited to public land, success decreases and effort increases. Finding elk in this herd unit can be difficult due to landownership patterns. Access is restricted to the Broom Creek HMA north of US Hwy 26 and is dependent on crop damage south of US Hwy 26. A majority of landowners do not want elk south of the highway and are willing to allow access. In 2011 elk were plentiful and hunters were successful. In 2012 the severe drought displaced elk and they were not found in traditional places (i.e. alfalfa fields).

In 2014, 2015 and 2016 above average spring and summer precipitation re-distributed elk which increased forage production and as a result elk were not dependent upon irrigated crops. Elk that were traditionally found within Whalen Canyon appear to have re-distributed to other areas of the herd unit. The percent of branched antlered bulls in the harvest survey was 93%, an increase from 2015. Hunters and landowners have made the observations that there are fewer trophy quality bulls within the Rawhide Hills, Haystack Range, and Wildcat Hills. Our ability to manage this segment of the population is limited due to access and adult bulls within the harvest will likely remain high. The high percentage of branch antlered elk is indicative of the quality of bulls and the amount of private land that provides sanctuaries to allow bulls to reach maturity.

Active license numbers have fluctuated around 400 for the past five years. Starting in 2011 that portion of Hunt Area 3 south of U.S. Highway 26 became a general season. After several public meetings over the past three years coupled with a landowner survey it was decided to convert that portion of Area 3 north of US Hwy 26 from a limited quota area to a general hunt area. However, in 2015 and 2016 landowners north of U.S. Hwy 26 voiced their concern that elk were no longer in their traditional areas and therefore damage issues have decreased.

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

Landowner/Hunter Satisfaction Survey Results

The landowner satisfaction survey results (Appendix A) showed that 25% of the landowners were satisfied elk were at or about at desired levels, 12% indicated elk were above desired levels and 63% indicated the elk population was below desired levels. There were 25 surveys returned for a 39% return rate, slightly higher than 2016, which had a return rate of 35%. A follow up reminder letter was mailed a week prior to the due date, which helped to increase the sample size. In 2018 an electronic survey will be sent out via email in hopes to further increase the sample size. The return rate exceeded the 25% threshold required for the satisfaction survey. Based on the past three years of surveys landowners are still not pleased with the number of elk. Based on input from the field, meeting and survey comments, the majority of landowners south of US Hwy 26 want to reduce elk and the majority north of the highway wants to see more elk and manage for trophy bulls. Bringing their satisfaction up to 60% continues to be a challenge. The hunter satisfaction survey indicated that 47% were satisfied with their hunt which was a decrease from 2015. This is not a surprise given the lack of access and conversations with hunters in the field that are frustrated with the lack of access and elk.

Management Summary

In summary, the 2017 season is designed to reduce elk numbers particularly in the southern portion of the herd unit. We hope to attain a harvest of 75 elk.

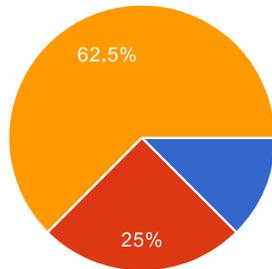
25 responses

[View all responses](#)

[Publish analytics](#)

Summary

Please indicate your satisfaction level with the current elk population.



Above Desired Levels	3	12.5%
At or About at Desired Levels	6	25%
Below Desired Levels	15	62.5%

Additional Comments:

Elk herd was on farming pivot. They ruined several drip hoses on irrigation equipment. Game & Fish was called, but didn't remove them. Overall, herd too large for area.

No elk have been seen. Did not hunt elk last year.

We were starting to get a couple little herds on the ranch-now, I haven't seen any the last 2 years.

Well, here at my place we haven't seen any elk around for 7 or 8 years. The neighbor, just 2 1/2 miles to the north of us which is Glen Southwire, he doesn't let any of the neighbors hunt. Not mentioning he trespassing on every gate and he can come onto you whenever he wants. He wants hunters that will pay him to let them hunt for 5 or 10 thousand dollars or maybe even more. Not much of a neighbor.

We do not have any elk and this is alright.

What Fucking elk!! You wanted them gone and you got your wish! Thanks Dave Stenson 534-5731

Lee Lamb Landowner

The general draw would have been nice, if non-residents could have gotten it. All I've gotten is a bunch of resident TRESPASSERS who leave gates open (sneaking in) and littering beer cans. I had 2 bulls shot off of me illegal. Not good management or profit for me. Very disappointing. As

you know, our place , is in the Rawhide Buttes and is elk capitol of this area. I'm sure you'll keep it the same. Glenn Southwick.

Working for me like it is

I don't think there is more than 40 head in the whole north part of Area 3. I am real unhappy the way you manuvered us into a general area. Then switched so that our out of state hunters have to draw just as before. You've proven once again that any trust placed in the department is unwarranted. Lee Denny

Martin, I haven't been hunting in a number of years but I do like seeing them around but they have been scarce in recent years. Also I let a volunteer fireman in every year and I'd like to see them get something. Thanks for asking H Stroh

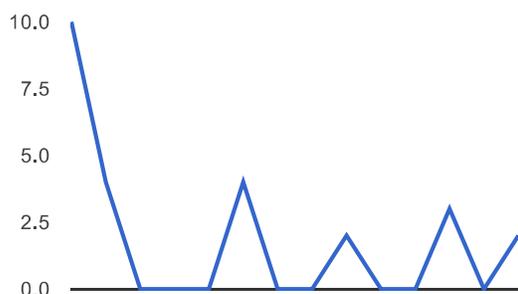
Not seeing any above Hartville

Generally it is fairly easy to find elk in area 3. However, the past 2 years finding a mature bill (or any bull) has been difficult.

We prefer to see and hunt local elk-but realize too many will cause fence problems.

would rather not have ANY elk here. Have enough trouble in Area 7. Amy

Number of daily responses



E730 Rawhide Elk Herd Unit Seasonal Range Map



2016 - JCR Evaluation Form

SPECIES: Moose

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

HERD: MO545 - SNOWY RANGE

HUNT AREAS: 38, 41

PREPARED BY: WILL SCHULTZ

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	0	201	200
Harvest:	47	41	42
Hunters:	54	44	45
Hunter Success:	87%	93%	93 %
Active Licenses:	54	44	45
Active License Success	87%	93%	93 %
Recreation Days:	416	435	450
Days Per Animal:	8.9	10.6	10.7
Males per 100 Females:	114	113	
Juveniles per 100 Females	52	43	

Trend Based Objective (± 20%) 75 (60 - 90)

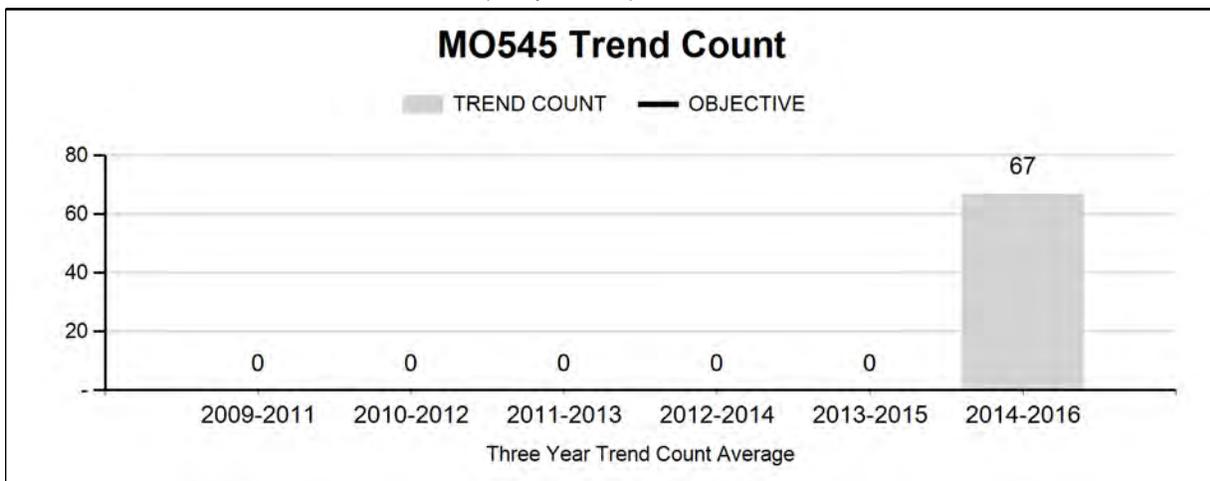
Management Strategy: Special

Percent population is above (+) or (-) objective: 168%

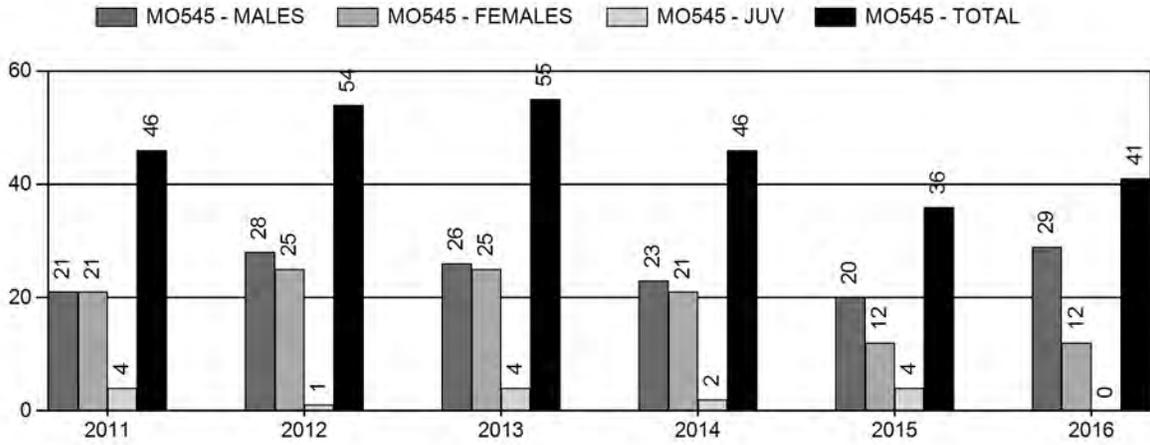
Number of years population has been + or - objective in recent trend: 25

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

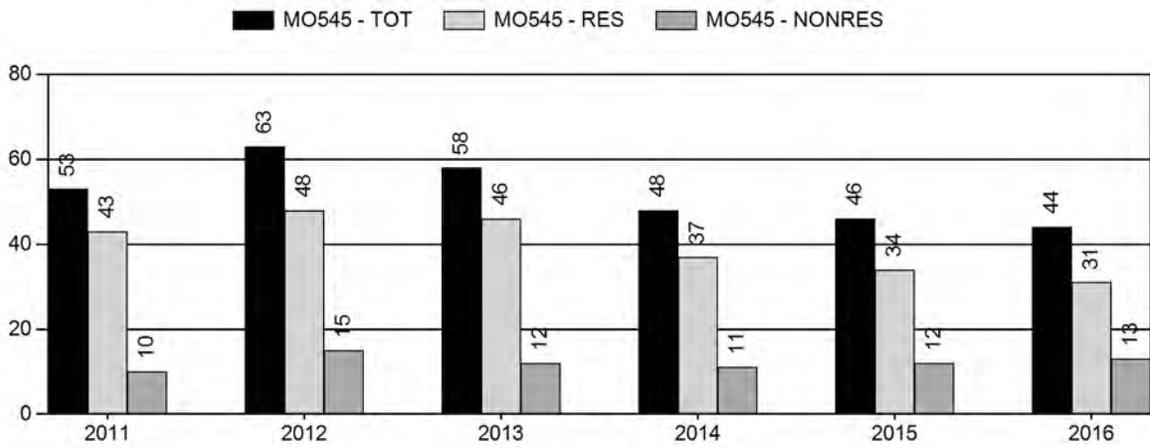
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%



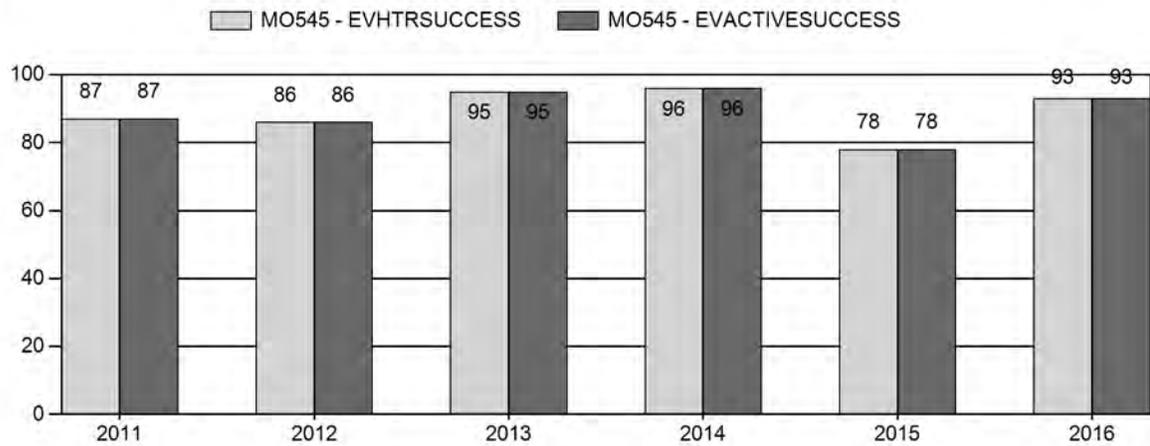
Harvest



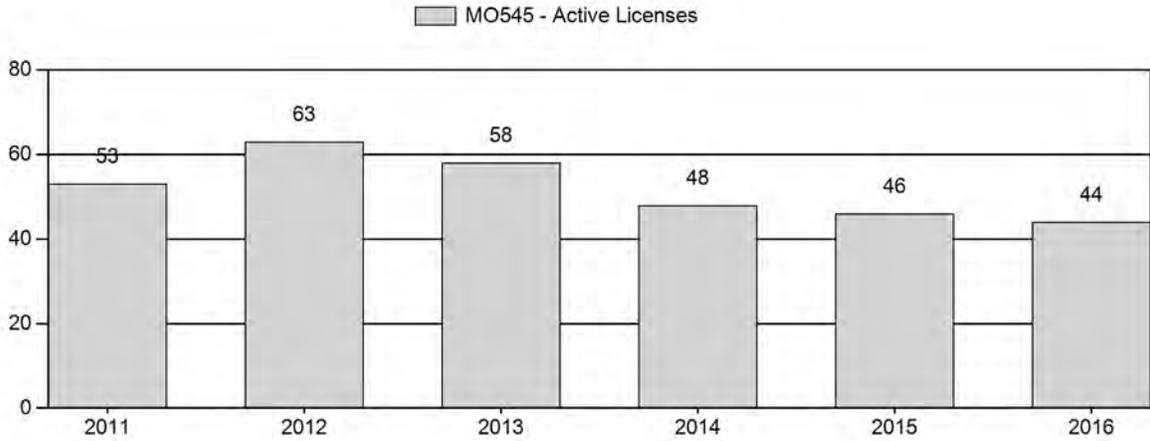
Number of Active Licenses



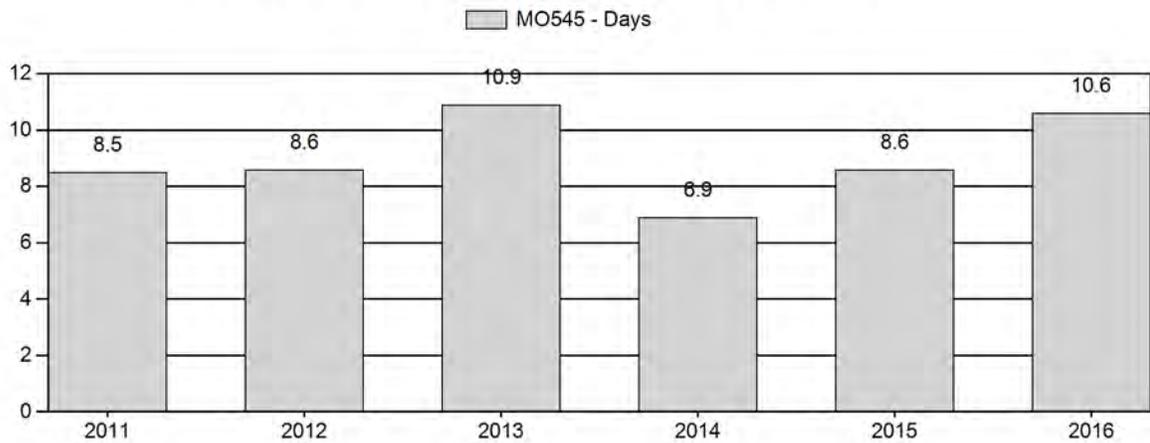
Harvest Success



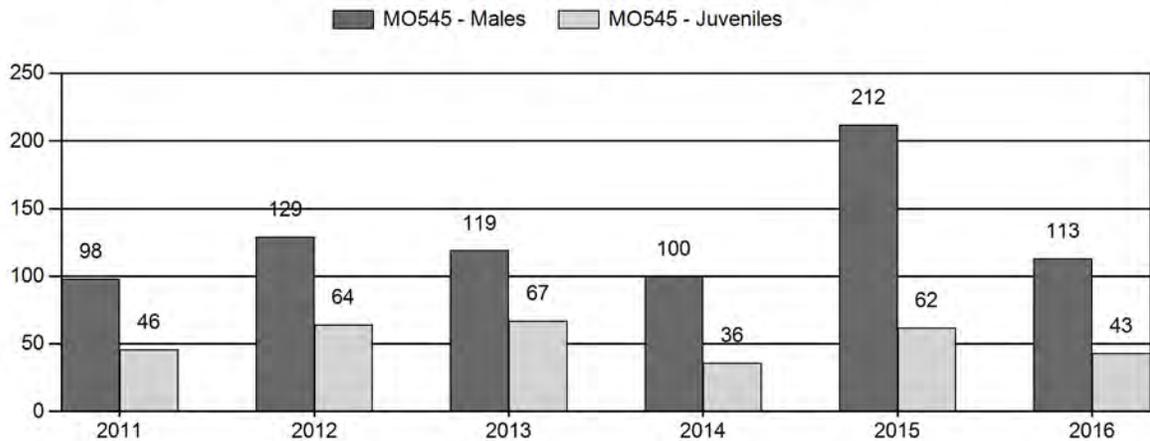
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Moose Herd MO545 - SNOWY RANGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	0	3	46	49	40%	50	41%	23	19%	122	0	6	92	98	± 0	46	± 0	23
2012	0	4	14	18	44%	14	34%	9	22%	41	0	29	100	129	± 0	64	± 0	28
2013	0	5	27	32	42%	27	35%	18	23%	77	0	19	100	119	± 0	67	± 0	31
2014	266	2	20	22	42%	22	42%	8	15%	52	254	9	91	100	± 35	36	± 17	18
2015	0	0	17	17	57%	8	27%	5	17%	30	246	0	212	212	± 0	62	± 0	20
2016	0	9	77	86	44%	76	39%	33	17%	195	0	12	101	113	± 0	43	± 0	20

**2017 HUNTING SEASON RECOMMENDATIONS
SNOWY RANGE MOOSE (MO545)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
38, 41	1	Oct. 1	Nov. 14	20	Limited quota	Any moose, except cow moose with calf at side
	4	Oct. 1	Nov. 14	20	Limited quota	Antlerless moose, except cow moose with calf at side
	Archery	Sep. 1	Sep. 30			Refer to license type and limitations in Section 3 of Chapter 8

Hunt Area	License Type	Quota change from 2016
Herd Unit Total		None

Management Evaluation

Current Management Objective: Mid-Winter Trend Count of 75 Moose

Secondary Management Objectives:

- a) 3-yr. average of ≥ 4 years of age median for harvested bulls.
- b) 3-yr. average of $\geq 40\%$ of bulls in harvest = ≥ 5 years of age.
- c) Maintain sustainable communities of willow species preferred by moose

Management Strategy: Special

2016 Mid-Winter Trend Count: 201 Moose

Moose in the Snowy Range herd unit are managed toward a mid-winter trend count of 75 moose. A moose population model has not been developed for this herd unit. The herd is managed under a special management strategy. The management objective was last reviewed in 2016 and changed from a postseason population objective of 100 moose to the mid-winter trend count of 75 moose.

Herd Unit Issues

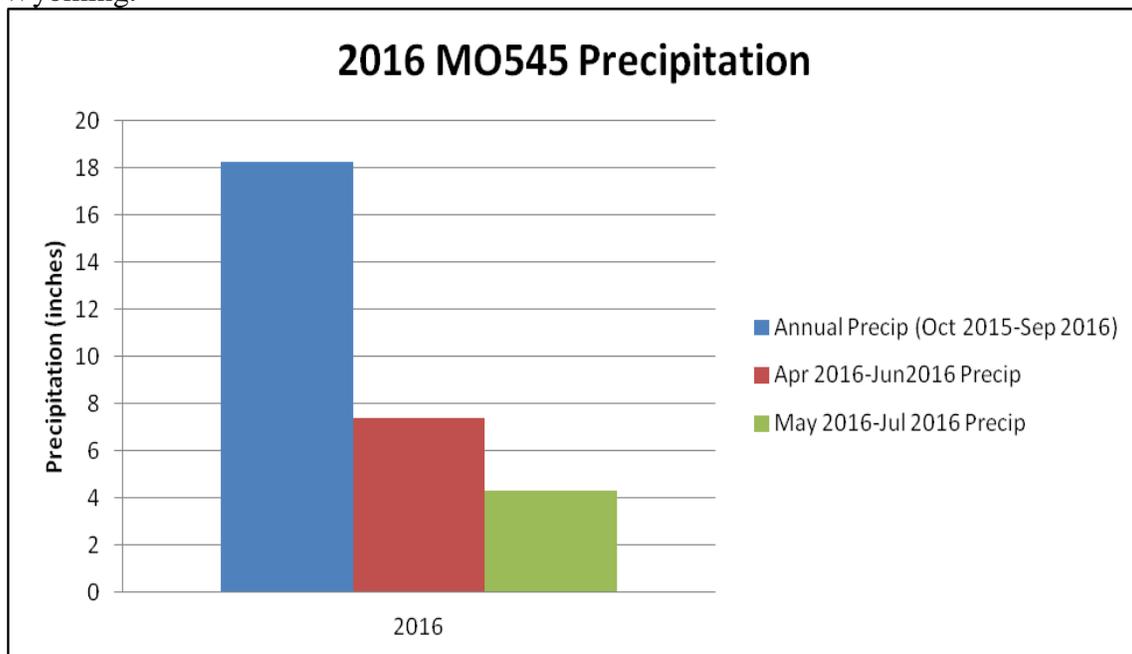
The Snowy Range herd unit stretches across southern Wyoming, along the Colorado border, from Baggs to Cheyenne. Moose are found year-round in areas on Pole Mountain, Sierra Madre Mountains, and most notably, the Snowy Range Mountains. These moose descended from moose transplanted in Colorado and historically were not native to this area. Challenges for managing moose in this herd unit include a rapidly

changing forest ecosystem, high infestation rates for parasites, and human conflict/safety. Limited population monitoring for moose has been an issue in this herd unit in the past.

Weather

- Compiled by WGFD Terrestrial Habitat Biologist, Katie Cheesbrough

Figure 1. 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), Snowy Range moose herd unit, Wyoming.



Annual bio-year precipitation from October 2015 through September 2016 (Figure 1) when compared with growing season precipitation shows that much of the precipitation in the herd unit was accumulated outside of the primary growing season either through late fall precipitation or winter snowpack. This figure also illustrates that much of the growing season precipitation occurred in the spring and a drying trend began in June that persisted through October over much of the herd unit area.

In 2016 the Snowy Range Moose herd unit experienced a relatively warm fall which extended well into December. These warmer temperatures and late fall moisture resulted in a late fall green-up, which could potentially provide a nutritional boost for moose prior to winter. January brought several big snowfall events, especially west of the continental divide, followed by sustained low temperatures. However, wind events and a warming trend in February cleared the snow from lower elevation areas. Late February snowpack (snow water equivalent) at mid-elevation, as reported by the South Brush Creek Snotel Site (Figure 2), is 101% of normal. Higher elevations are seeing much higher winter snowpack with the Brooklyn Lake Snotel Site (Figure 3) reporting a snowpack that is 139% of normal.

Figure 2. October-February bio-year 2016 South Brush Creek Snotel Site precipitation data, Wyoming.

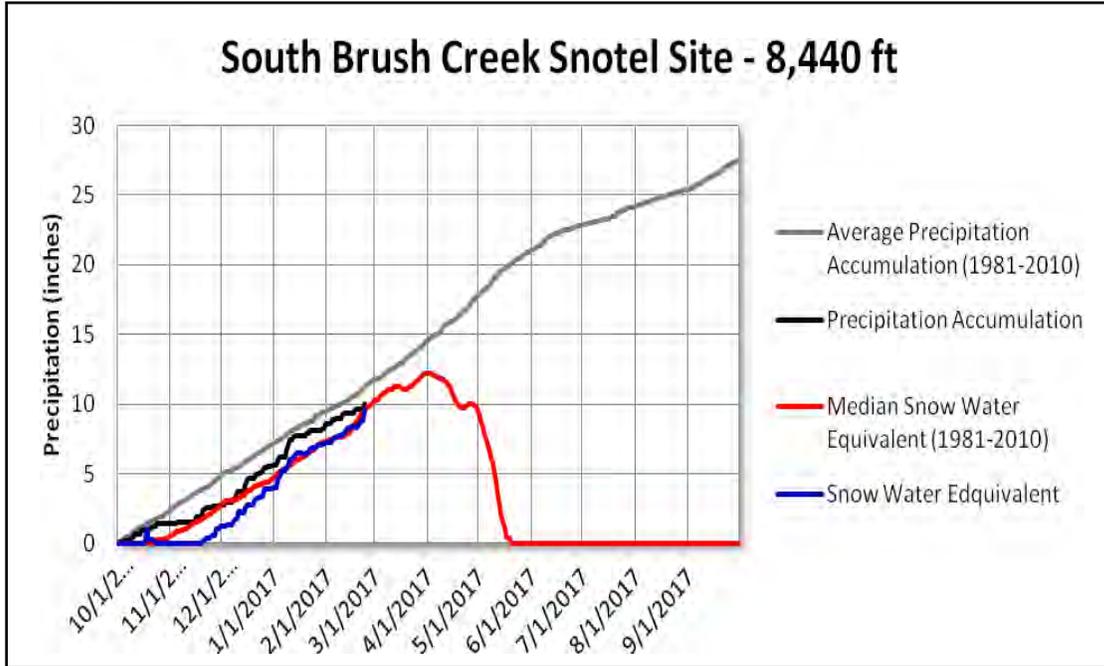
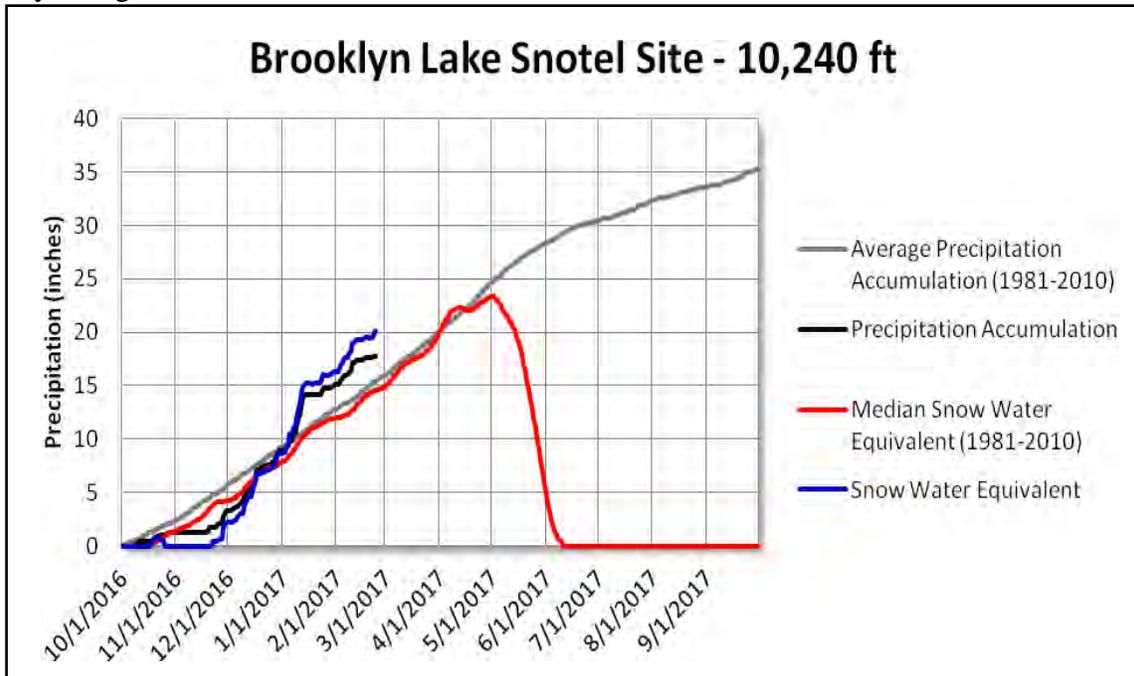


Figure 3. October-February bio-year 2016 Brooklyn Lake Snotel Site precipitation data, Wyoming.



Habitat

- Compiled by WGFD Terrestrial Habitat Biologist, Katie Cheesbrough

The precipitation data in Figure 1 reflect abundant early spring precipitation with a drying trend as summer progressed. These precipitation patterns made for high vegetative production in the spring providing excellent forage during early parturition. As precipitation slowed in mid June, vegetation began to cure out early. The early drying of vegetation, accompanied by strong winds, the increase of fine fuels from the two previous years of high grass production, and the abundance of dead beetle killed lodgepole created an environment conducive to large wildfires in the Sierra Madres. These wildfires could potentially serve to improve moose habitat by increasing aspen production, diversifying willow species age class, and increasing herbaceous production throughout moose ranges in the areas impacted by fire.

In association with the Snowy Range Moose Study being conducted by UW graduate student Alex May, two years worth of habitat data have been collected in the Snowy Range. Between 2015 and 2016, willow browse monitoring using the Kiegley Live Dead Index was conducted on 57 transects. Although these data haven't been completely analyzed at this point there has been a slight but positive trend in browse pressure when compared to data collected in previous studies. However, body condition data also being collected in this study suggests that moose seem to be nutritionally deficient. As this study is still in progress and data analysis is not complete, it's difficult to speculate exactly what role habitat is playing in the body condition of these moose. We look forward to the results of this study in the coming year.

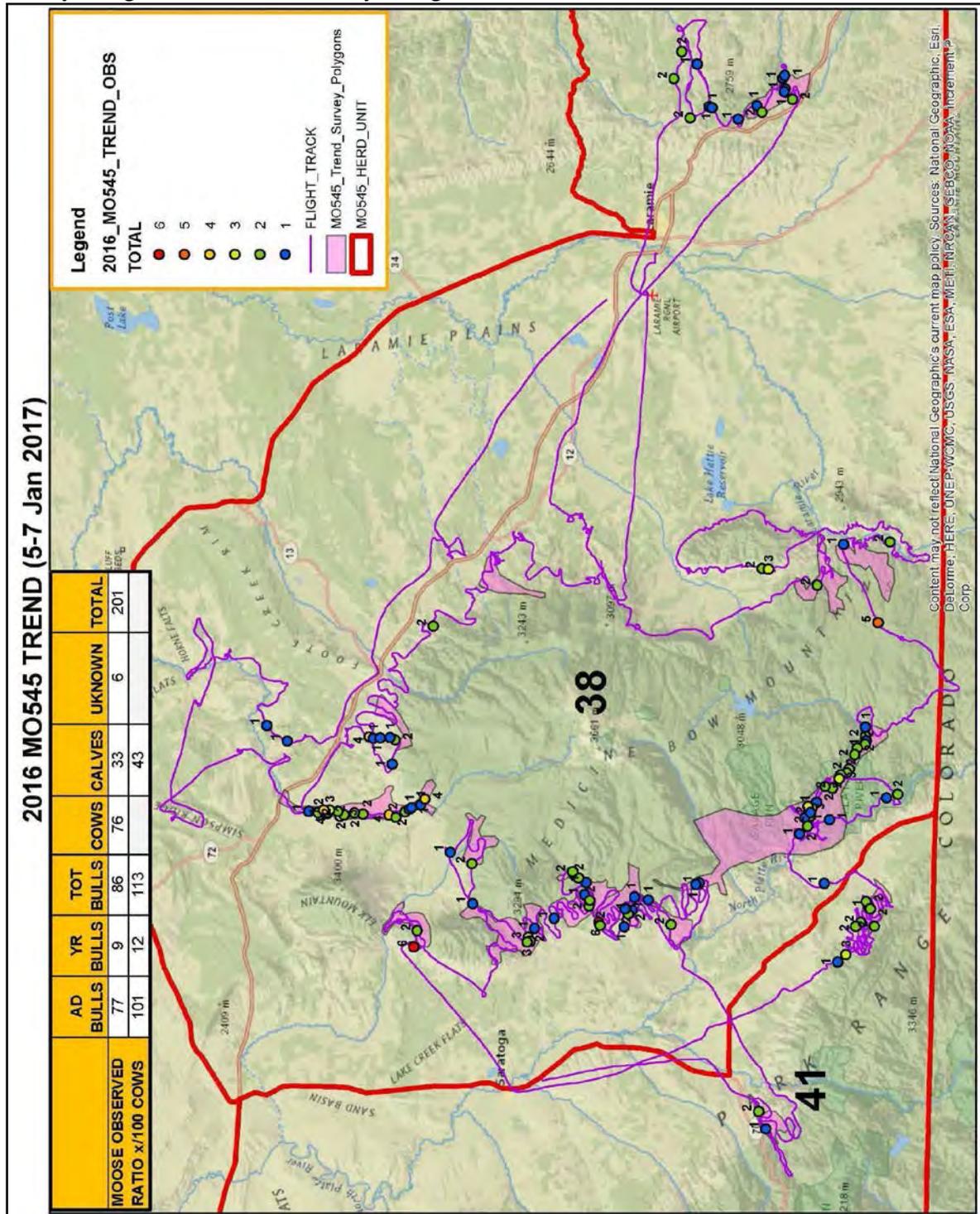
Field Data

We conducted our first mid-winter trend count for this herd unit in January of 2017. We preselected several areas to systematically search for moose and spent approximately 9 hours of helicopter light time conducting the survey (Figure 4). We observed 201 moose and were able to classify 195 of these moose by sex and age. Several of the moose were actually observed between the preselected search areas but we included them in our trend count sample as future survey are likely to produce similar observations. The results from the classifications produced ratios were 113 bulls/100 cows and 43 calves/100 cows.

Harvest Data

A total of 26 bulls were harvested by 26 Type 1 licensed hunters in 2016, for a harvest success rate of 100%. In addition to the hunters who drew licenses in the regular drawing; there was 1 medical carry-over hunter from 2015, 4 nonresidents with Wyoming Governor's licenses, and the 2016 Wyoming Super Trifecta Tag winner who all harvested in the Snowy Range herd unit. Overall Type 4 license holders harvested 12 cows and 2 illegally yearling bulls for a success rate of 70%. At least 1 bull moose was illegally killed in addition to the 2 bulls illegally harvested by Type 4 licensed hunters.

Figure 4. Moose observations and flight track from the mid-winter trend count in the Snowy Range moose herd unit, Wyoming.



The Snowy Range herd unit has a reputation for producing trophy quality bulls, and this continued again in 2016. Median age for tooth samples (n=17) from harvested bulls remained at 5-years of age in 2016 (Figure 5). The 3-year running average for median age of harvested bulls increased slightly to 5.0 years of age (Figure 6). The proportion of bulls in the harvest which were 5-years or older decreased to 53% (Figure 7). Overall, the bull harvest continued to be within the Department’s parameters for “prime-age bulls” (Thomas 2008).

The age of antlerless moose in 2016 harvest was similar to the 2015 results (Figure 8). The proportion of antlerless harvest ≤ 2 years in age (78%) was considered acceptable.

Figure 5. Median age of bulls harvested for the Snowy Range moose herd unit, from lab aged teeth (n=17) in 2016, Wyoming.

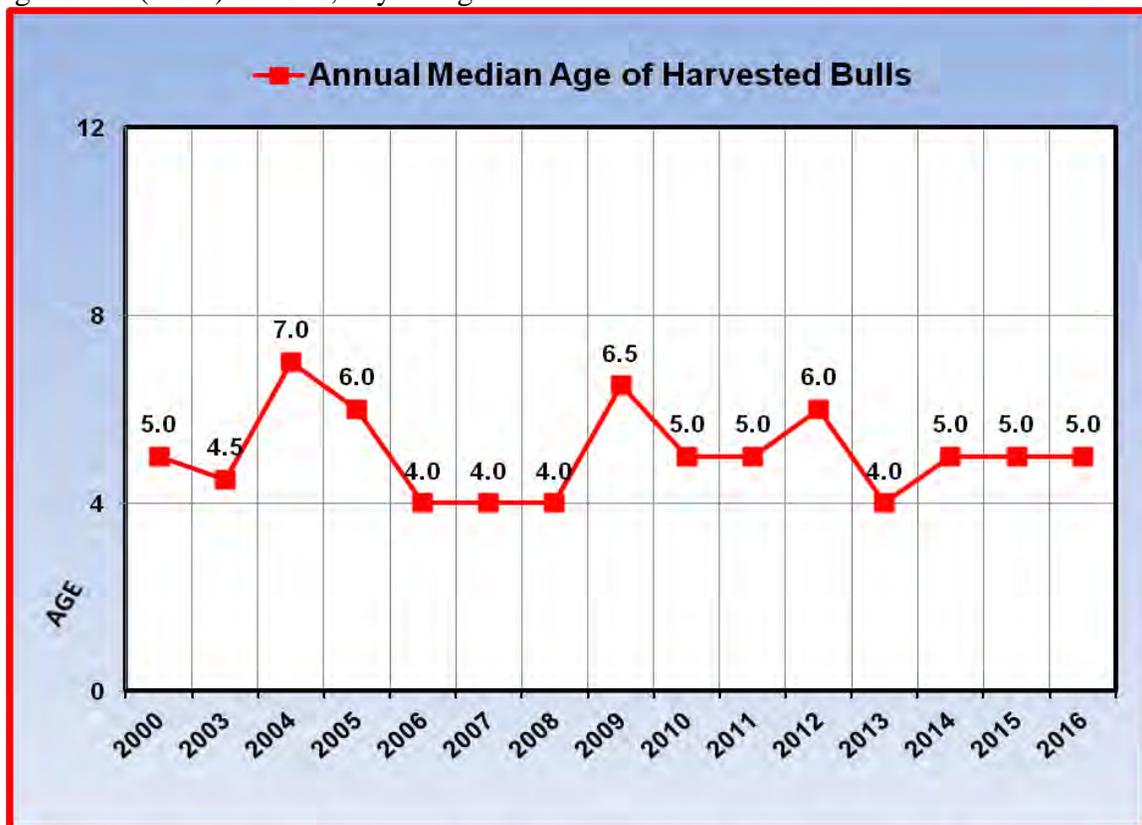


Figure 6. Average (3-year running) median age of bulls harvested for the Snowy Range moose herd unit, from lab aged teeth (n=17) in 2016, Wyoming.

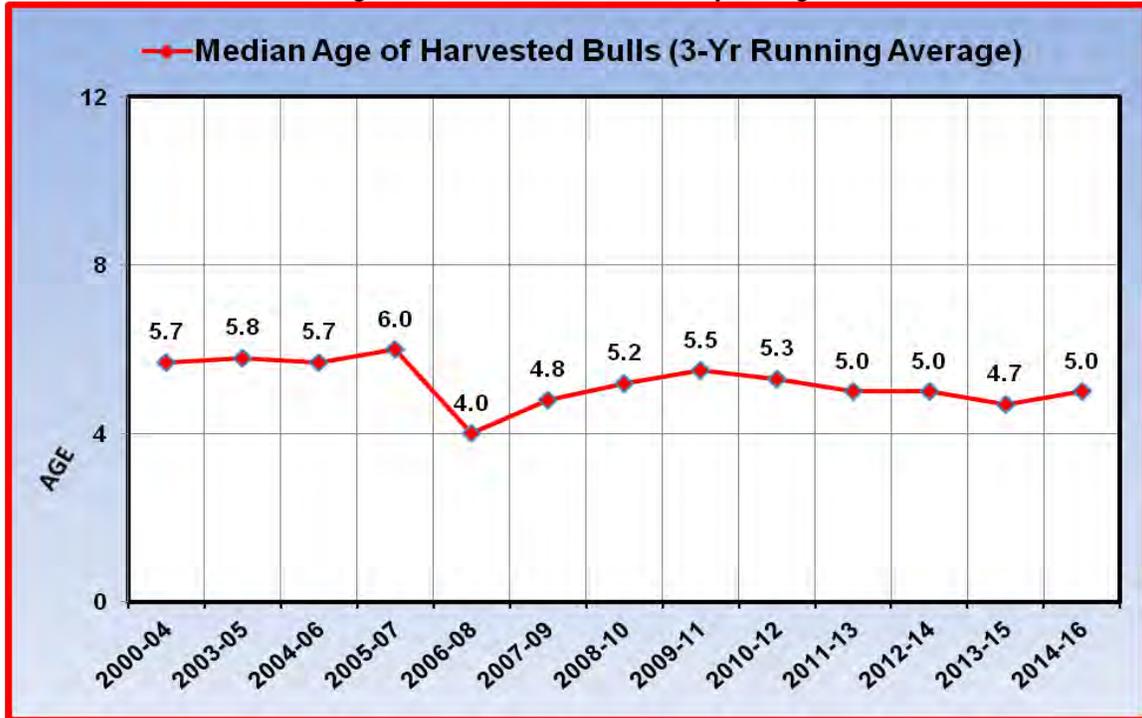


Figure 7. Annual Percentages of the bull harvest \geq 5-years in age from Snowy Range Moose Herd Unit, from lab aged teeth (n=17) in 2016, Wyoming.

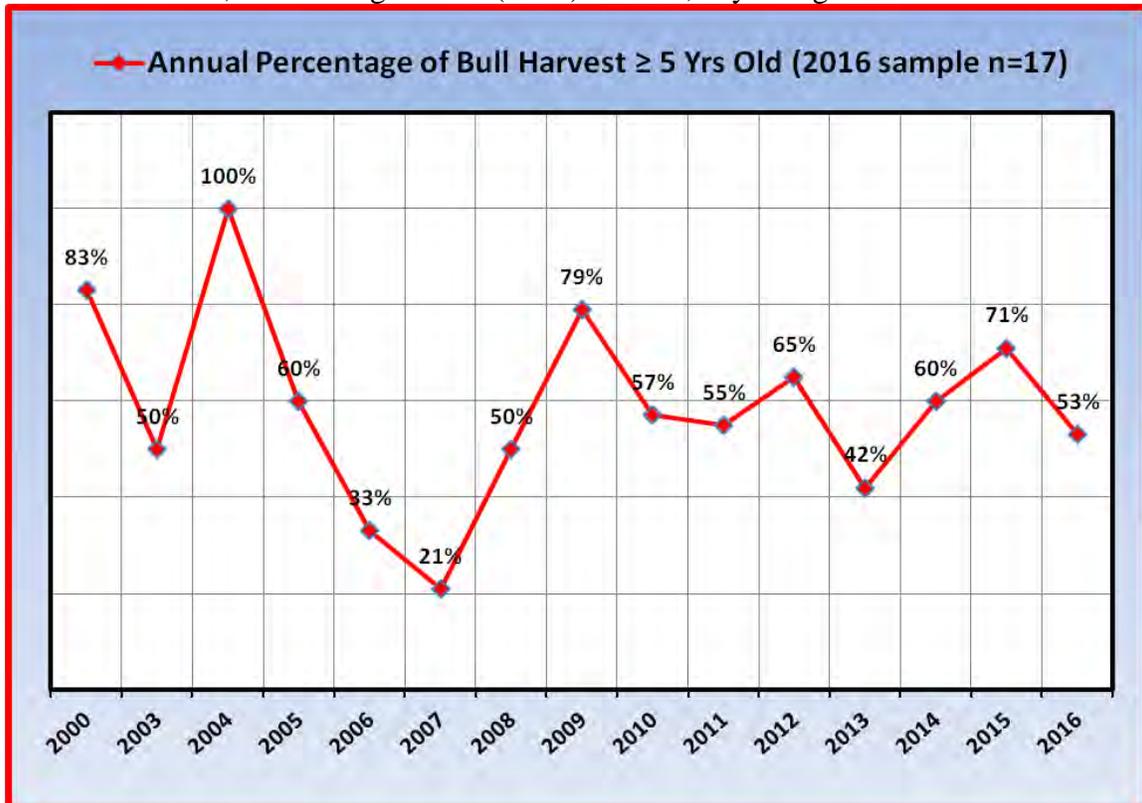
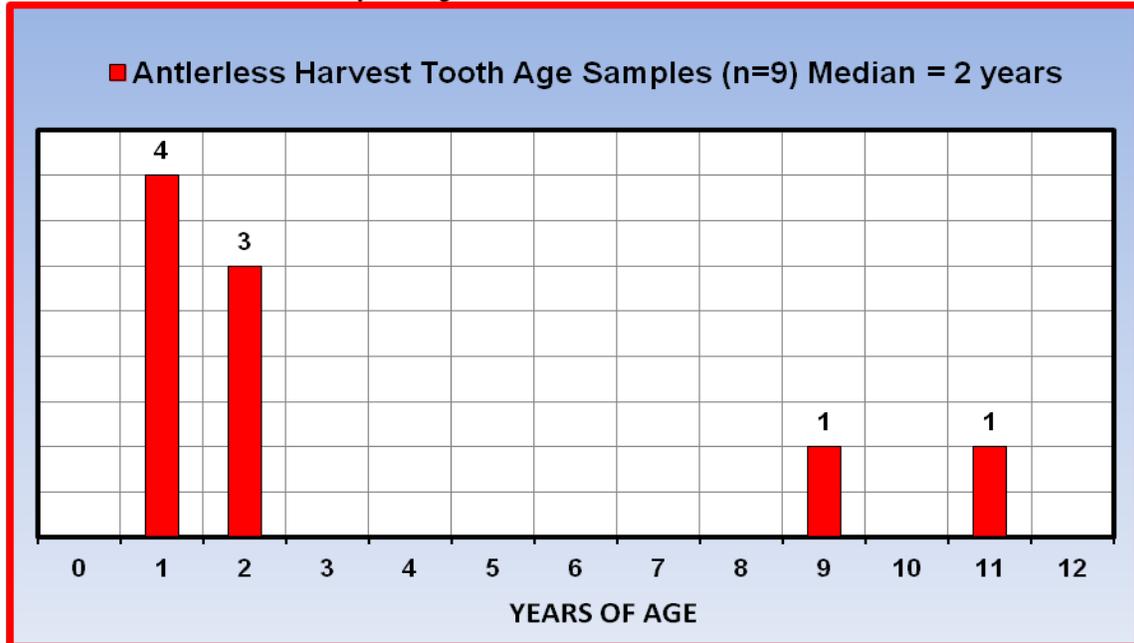


Figure 8. Age class distribution for antlerless moose harvested from Snowy Range moose herd unit in 2016, Wyoming.



Population

A population model has not been developed for this herd unit. A moose abundance survey was completed in the Snowy Range herd unit in March 2015, resulting in an abundance estimate of 266 ± 56 (90% *CI*) moose. These results provided managers with the first plausible abundance estimate for moose wintering in the Snowy Range herd unit.

In 2016 the Wyoming Game and Fish Commission approved updating the postseason population objective of 100 moose with a new mid-winter trend count survey objective of 75 moose. In addition to the primary objective of observing at least 75 moose, the new objective includes several secondary objectives: a) 3-yr. average of ≥ 4 years of age median for harvested bulls; b) 3-yr. average of $\geq 40\%$ of bulls in harvest = ≥ 5 years of age; and c) Maintain sustainable communities of willow species preferred by moose.

We conducted our first mid-winter trend count for this herd unit in January of 2017. We preselected several areas to systematically search for moose and spent approximately 9 hours of helicopter light time conducting the survey (Figure 4). We observed a total of 201 moose. Several of the moose were actually observed between the preselected search areas but we included them in our trend count sample as future survey are likely to produce similar observations.

Management Summary

In 2017, hunting season lengths remained the same as in 2016. Both Type 1 and Type 4 license numbers remained at 20 licenses.

Current Herd Specific Studies

A current study initiated in fall 2014 by the Wyoming Cooperative Fish and Wildlife Research Unit and the Wyoming Game and Fish Department presents an excellent opportunity to examine the relationship between moose habitat use and seral changes brought about by bark beetles. By making use of an existing GPS dataset collected prior to extensive beetle damage (Baigas 2008), comparing it to new GPS data, and examining current individual movement strategies through the lens of body condition, this project will provide new information on the status of moose in the Snowy Range and their response to its beetle-killed forests.

The project began its field component in March 2015. Thirty (30) female moose (29 adults and one yearling) were captured via helicopter darting on winter habitats within and surrounding the Medicine Bow National Forest. Moose were fitted with GPS store-on-board collars set to collect 90-minute fixes. The fix-rate was identical to that used in the previous study, which will allow us to compare movement strategies and space use of moose prior to and following the extensive bark beetle damage. Collars remained deployed until the spring of 2017. Study animals were recaptured twice per year to gather longitudinal data on demography and body condition (measured via ultrasonography). Monitoring body condition in the context of pregnancy (during winter) and lactation costs (in summer) will allow the project to critically examine the habitat quality of the Snowy Range, with the goal of understanding where the herd sits relative to nutritional carrying capacity.

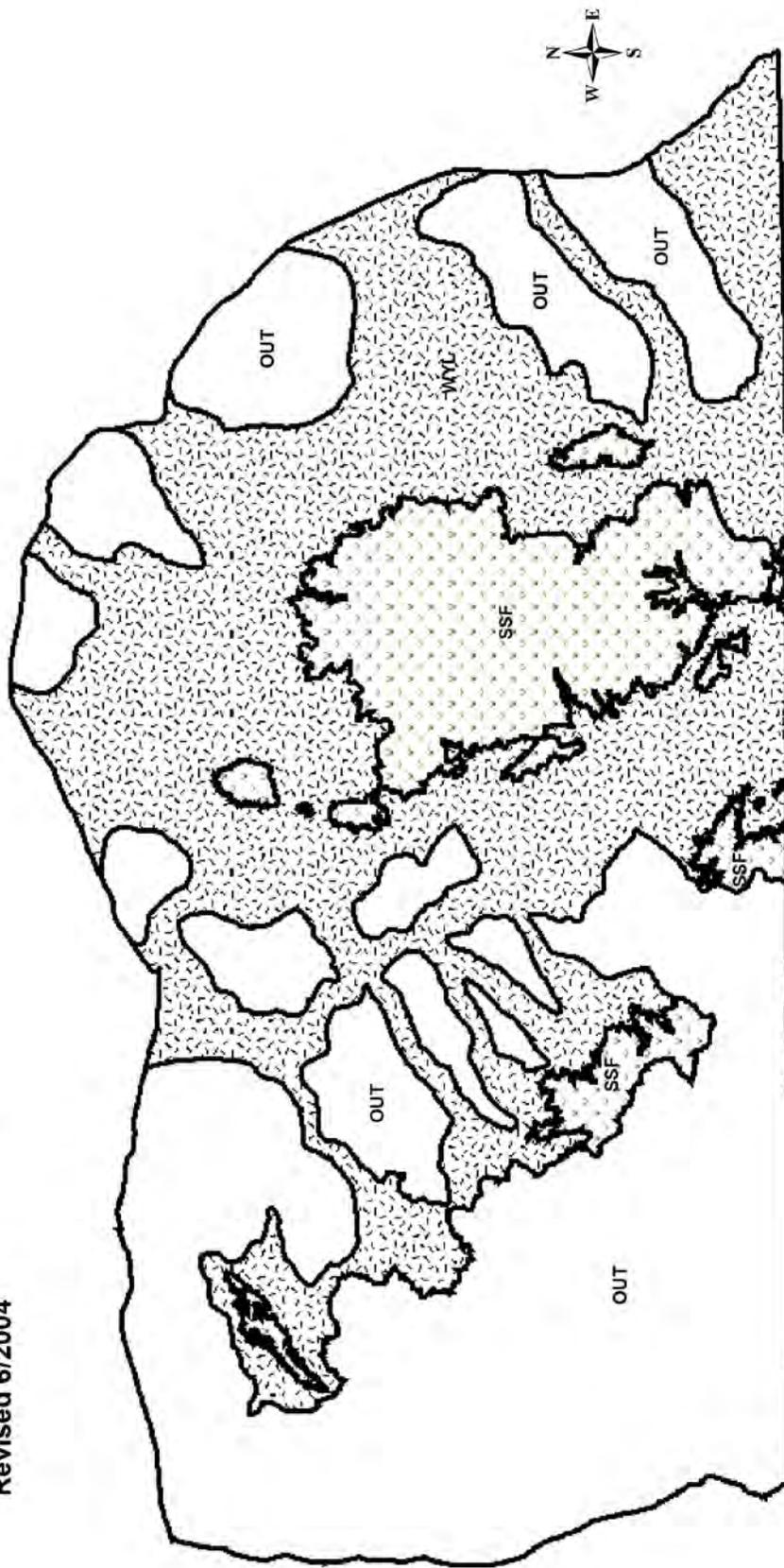
Literature Cited

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- Thomas, T. P. 2008. Moose Population Management Recommendations. Wyoming Game and Fish Department, Cheyenne. 17 pp.

Bibliography of Herd Specific Studies

- Baigas, P. E. 2008. Winter Habitat selection, winter diet, and seasonal distribution mapping of Shiras moose (*Alces alces shirasi*) in southeastern Wyoming. M.S. Thesis, Univ. Wyoming, Laramie, Wyoming. USA. 220 pp.
- Wyoming Game and Fish Department [WGFD]. 2000. Snowy Range – Sierra Madre Moose Herd Management Plan. Wyoming Game and Fish Department, Laramie. USA. 15 pp.

Moose (M545) -- Snowy Range/Sierra Madre
HA 38, 41
Revised 6/2004



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD534 - GOSHEN RIM

HUNT AREAS: 15

PREPARED BY: MARTIN HICKS

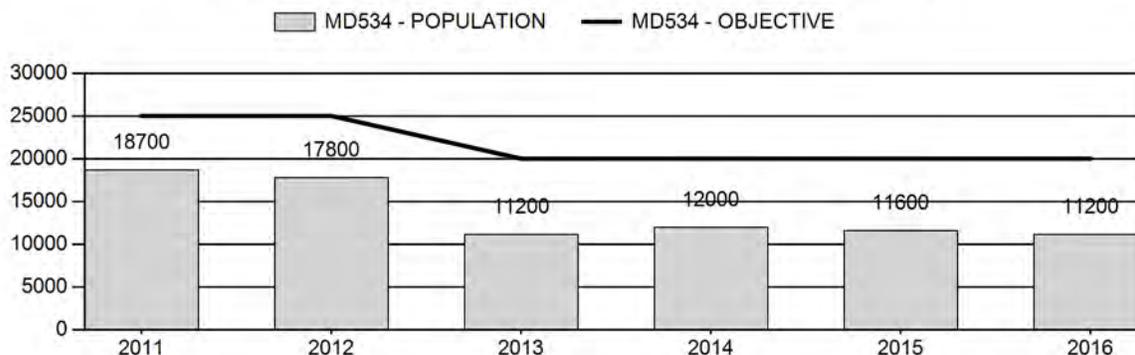
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	14,260	11,200	10,700
Harvest:	823	974	960
Hunters:	1,665	1,803	1,800
Hunter Success:	49%	54%	53 %
Active Licenses:	1,741	1,894	1,890
Active License Success:	47%	51%	51 %
Recreation Days:	6,522	7,836	7,800
Days Per Animal:	7.9	8.0	8.1
Males per 100 Females	32	48	
Juveniles per 100 Females	63	56	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-44%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/22/2017

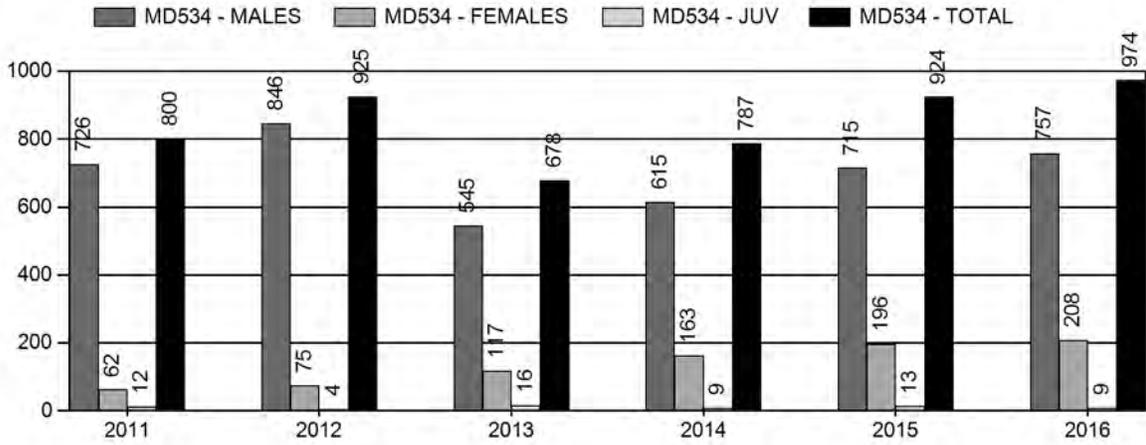
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	4%	4%
Males ≥ 1 year old:	30%	36%
Total:	8%	8%
Proposed change in post-season population:	-3%	-5%

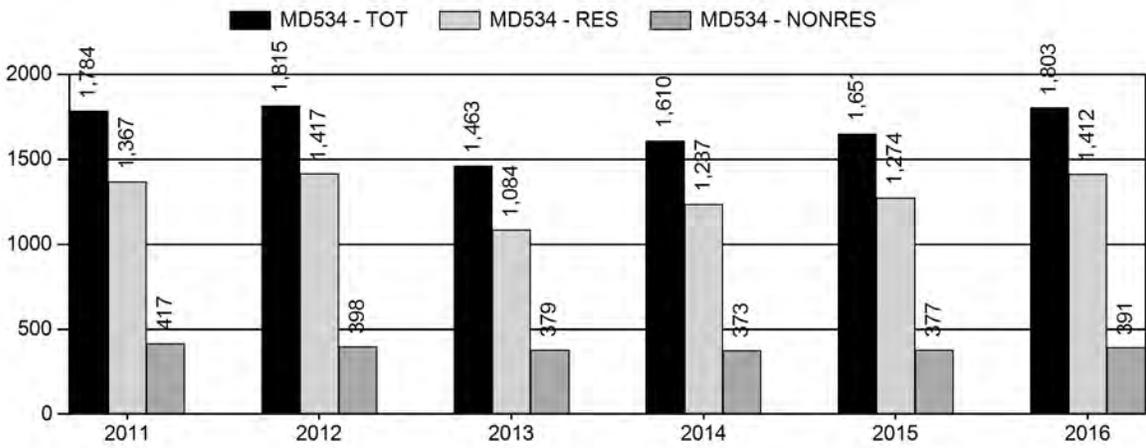
Population Size - Postseason



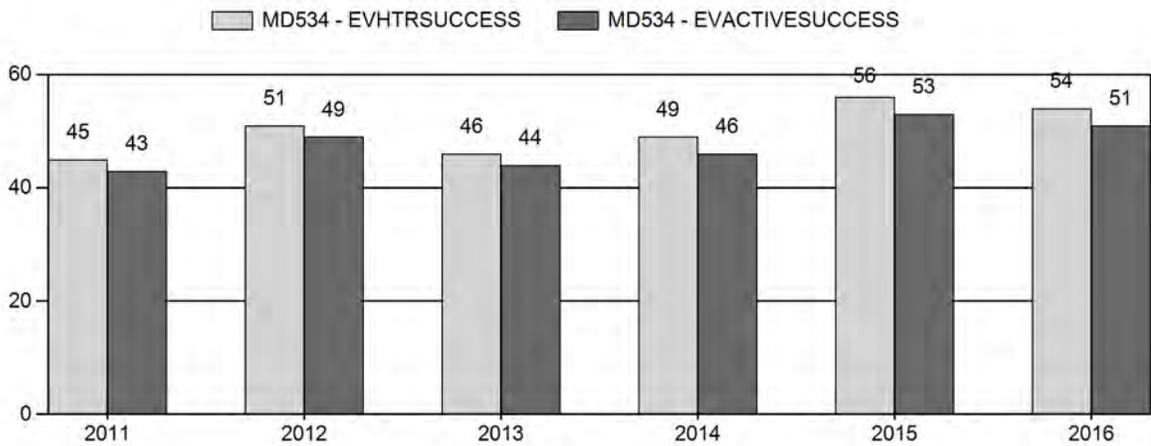
Harvest



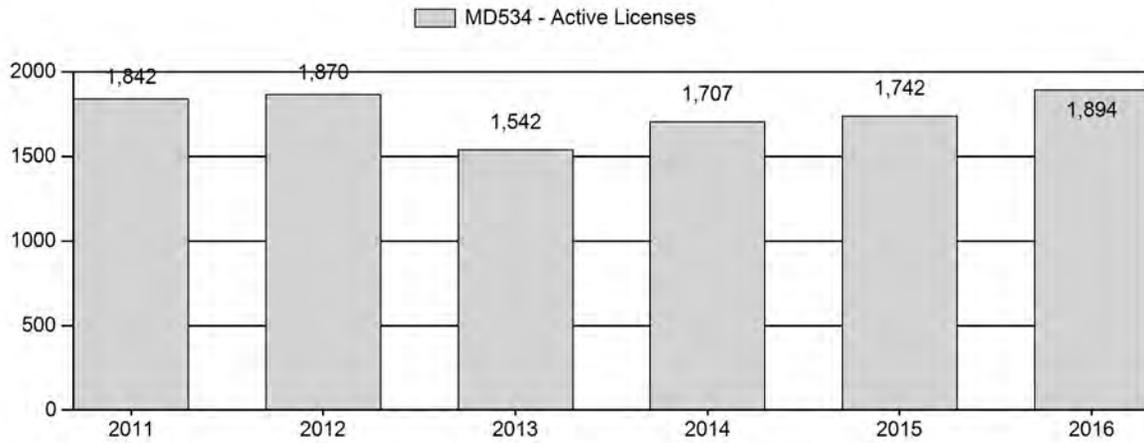
Number of Active Licenses



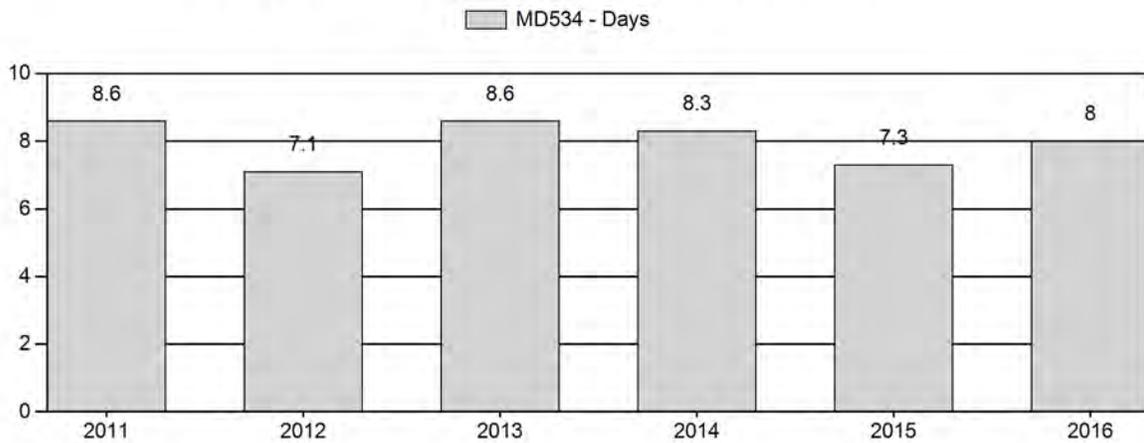
Harvest Success



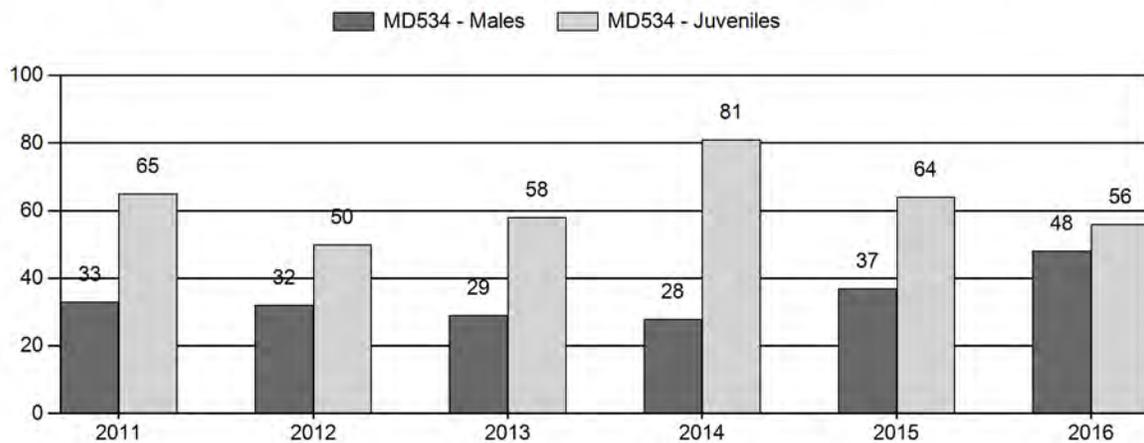
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD534 - GOSHEN RIM

Year	Post Pop	MALES							FEMALES		JUVENILES		Males to 100 Females				Young to				
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total %	Total %	Total %	Tot Cls Cls Obj	Conf Ylng Adult Total Int	100 Fem	Conf Int	100 Adult							
2011	18,700	116	0	0	0	226	342	17%	1,031	51%	665	33%	2,038	1,364	11	22	33	± 3	65	± 4	48
2012	17,800	121	0	0	0	192	313	18%	977	55%	487	27%	1,777	1,076	12	20	32	± 3	50	± 3	38
2013	11,200	39	128	172	21	88	224	15%	776	53%	451	31%	1,451	1,235	5	24	29	± 3	58	± 4	45
2014	12,000	93	53	67	23	7	243	13%	876	48%	706	39%	1,825	1,130	11	17	28	± 2	81	± 5	63
2015	11,600	181	144	64	19	13	421	18%	1,137	50%	726	32%	2,284	1,234	16	21	37	± 2	64	± 3	47
2016	11,200	222	183	91	17	0	513	24%	1,067	49%	594	27%	2,174	1,266	21	27	48	± 3	56	± 3	38

**2017 HUNTING SEASONS
GOSHEN RIM MULE DEER HERD UNIT (MD534)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
15	Gen	Oct. 1	Oct. 14		General	Antlered mule deer or any white-tailed deer
15	6	Oct. 1	Dec. 31	350	Limited quota	Doe or fawn
Region T				400		

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
15	Sept. 1	Sept. 30	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
15	6	0

Management Evaluation

Current Management Objective: 20,000 (16,000-24,000)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~11,200

2017 Proposed Postseason Population Estimate: ~10,700

2016 Hunter Satisfaction: 72% Satisfied, 18% Neutral, 10% Dissatisfied

Herd Unit Issues

The management objective for the Goshen Rim Mule Deer Herd Unit was changed from 25,000 to 20,000 and Hunt Areas 15,16,55,57 were combined into Hunt Area 15 as a result of internal recommendations and public input during the 2013 herd objective review process. The management strategy is recreational management with a post-season buck ratio range of 20-29 bucks:100 does.

The 2016 post-season population estimate was approximately 11,200 mule deer with a stable population. Restricted access makes it difficult to manage this herd. Access is driven by isolated private land experiencing damage and small parcels of state, BLM lands, and private lands enrolled into the Department's PLPW program.

Without paying a trespass/trophy fee or hiring an outfitter, hunters have a difficult time harvesting a mature mule deer buck. Landowners and hunters would like to see an increase in mule deer, but without major habitat revitalization (for part of the year mule deer are dependent on irrigated and dryland agriculture fields) this herd unit will most likely remain around 12,000

mule deer. Buck ratios are anticipated to remain on the higher end of the recreational management strategy due to private land (92% of the occupied habitat). Public land hunters will continue to have a difficult time finding a mature buck due to the majority of land being held in private ownership.

Major landscape changes have been occurring in the southern portion of the herd unit. Urban sprawl continues to increase north and east of Cheyenne as well as industrial (methane production) development in Laramie County. The USDA's Conservation Reserve Program (CRP) has experienced a decline in productivity and quality of perennial forage throughout the herd unit. The conversion of dryland (wheat fields) cropland to CRP in the past provided favorable fawning and winter cover for mule deer. These stands are now monotypic stands of unfavorable perennial grass (i.e. smooth brome and crested wheatgrass) and no legume component, providing little if any habitat benefits.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Goshen Rim herd unit the reviewer is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

Field Data

This herd experienced a sharp decline in 2012 following the worst drought recorded since the 1930's and since then has been fluctuating around 12,000 mule deer. General licenses have focused harvest on the male segment of the population with little effort to remove females. There were 350 Type 6 licenses available for the 2016 season for some doe harvest opportunity and address damage situations. On average less than 1 percent of the female population is harvested. Chronic wasting disease is not as prevalent in this herd when compared to the Laramie Mountains Mule Deer and the South Converse Mule Deer Herd Units, but the long-term prevalence rate average of 12% is most likely impacting population performance to an unknown extent.

Fawn ratios in 2016 (56 fawns:100 does) continued to experience a decrease since 2014 (81

fawns:100 bucks), which was one of the highest ratios observed in the past 16 years. This ratio is well below 66 fawns:100 bucks which is the level needed to increase a population (Unsworth et al. 1999). Above average fawn ratios in 2014 helped to bolster buck ratios in 2015 (37 bucks:100 does) and 2016 (48 bucks:100 does). Yearling buck ratios (21 yearling bucks:100 does) were well above the five-year average of 11 yearling bucks:100 does. Hunters in 2017 should have a better than average chance of finding a 3+ buck on public land.

In 2016, 26% of the field harvest data was comprised of yearling bucks, which was a decrease compared to 2015 (32%), but still well above the five-year average of 17%. The majority of yearling mule deer that are aged in the field typically come from public land where hunters are usually less selective, so the 26% is not surprising. The decrease in yearling buck harvest in 2016 correlated well with decrease of post-season fawn ratios from 2015 (64 fawns:100 does) compared to the all time high in 2014(81 fawns:100 does). On public land the majority of mature male deer are typically 2-3 years old, however on private land where access is controlled, the average age is usually 4-6 years old. Based on field observations and field harvest data, public land hunters typically harvest younger deer, lending credibility to a lower buck:doe ratio on the limited amount of public lands.

Since 2012 antler class data has been collected from harvested mule deer, then in 2013 data was collected from classified mule deer to gauge buck quality. Antler class data is broken down into three classes: 1) Class I- ≤ 19 ", 2) Class II- 20-25", Class III- ≥ 26 ". Typically harvest class data is similar to classification class data (see tables from JCR). The field harvest data sample size increased in 2016, lending credibility to the correlation. The sample size for post-season classifications was met in 2016 lending credibility to that data set as well. The percent of Class I bucks observed during post-season classifications was the majority of bucks (62%) observed in 2016, but there was a shift to Class II bucks as a result of above average fawn production in 2015. Class III bucks made up a very small percentage of both field harvest (6%) and post-season classification data (5%). There will again be plenty of opportunity to harvest a 3 year old buck in 2017. However, growing older deer in this herd unit continues to be difficult. According to Miller (2005) chronic wasting disease (CWD) has a higher prevalence in male mule deer than females and it is also more prevalent in prime age male deer.

Harvest Data

Hunter success (54%) was higher than the five-year average of 49%, and hunter effort (8.0 days/harvest) was similar to the five-year average of 7.9 days per harvest. Access continues to be an issue in this herd unit with 92% of the occupied habitat consisting of private land. The only major access is the Access Yes Hunter Management Access Program on the Guernsey Guard Camp, walk-in areas, and the various Wildlife Habitat Management Areas. Access for the most part is driven by damage, which is the reason for the Type 6 licenses. Access for buck harvest is extremely difficult unless a hunter is willing to pay a trespass fee or hire an outfitter. Private land ratios inflate overall buck ratios to the higher end of the recreational management strategy. The number of hunters that went to the field was higher than last year and the five-year average. There were more bucks available for harvest, which most likely contributed to the increase in hunters going to the field. Weather conditions were similar to the 2015 season; warm to hot days with no snow cover, which might also explain the increase in hunter participation but without the surplus number of bucks most likely success would have decreased.

Population

The “Time-Specific Juvenile and Constant Adult Survival” (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd and will most likely be used in the future. The model has a slightly higher AIC value but did have the best fit compared to the other two models. Given the better fit of data and perceived population trend by personnel, landowners and hunters this seemed like the most plausible model. Juvenile survival ranges varied from a high of 90% to a low of 40% with an average of 60%. Hunters and landowners would like to see a continued increase in the population, however, given poor fawn production CWD, and poor shrub conditions an increase is not likely in the near future. This models ranks poor, the only data available is classification and harvest data.

Management Summary

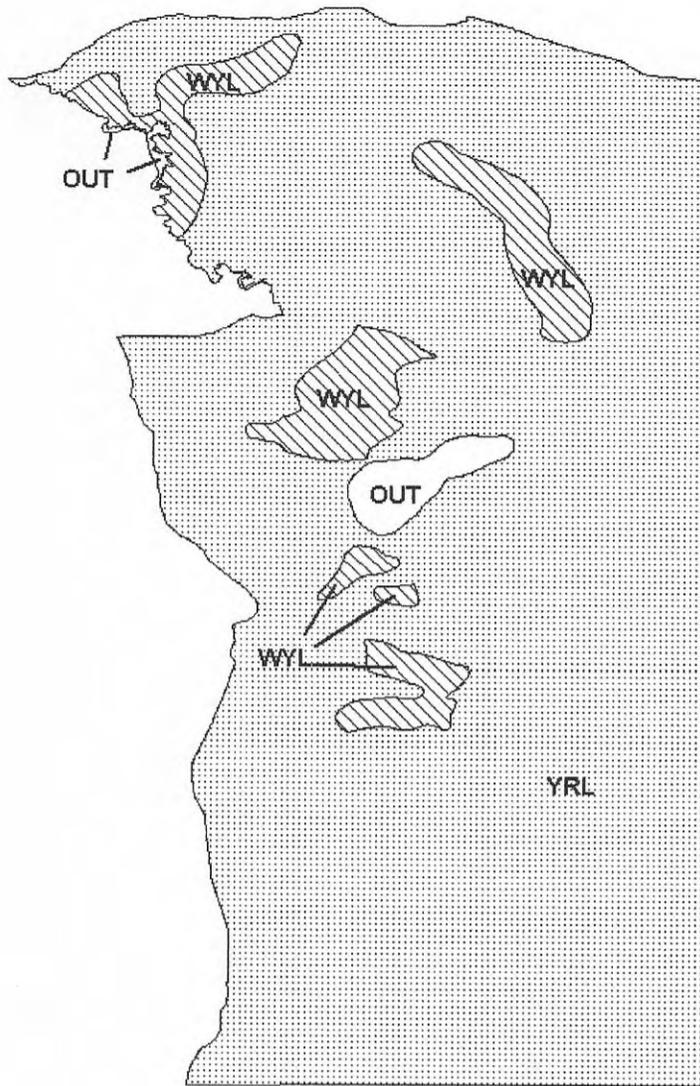
Hunting seasons in this herd unit have traditionally started on October 1 and run for 14 days for the general season with limited doe/fawn harvest opportunity running later. The season structure of 2016 will be the same for the 2017 season; general season October 1-14 and 350 Type 6 licenses. Department personnel will work with landowners and hunters to distribute harvest as damage issues arise. The Region T licenses will remain at 400. Based on license sales and available access opportunities the current number of Region T licenses seems adequate.

If we attain the projected harvest of 960 mule deer and observe normal fawn production the predicated mule deer population of 10,700 will continue to remain well below the objective of 20,000.

Literature cited:

Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. *J. Wildl. Manage.* 63(1):315-326, 1999

Miller, MW and Conner MM: Epidemiology of chronic wasting disease in free-ranging mule deer; spatial,temporal and demographic influences on observed prevalence patterns. *Journal of Wildlife Diseases* 41.2 (2005): 275-290



Mule Deer (MD534) - Goshen Rim
HA 15
Revised - 97



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD537 - LARAMIE MOUNTAINS

HUNT AREAS: 59-60, 64

PREPARED BY: MARTIN HICKS

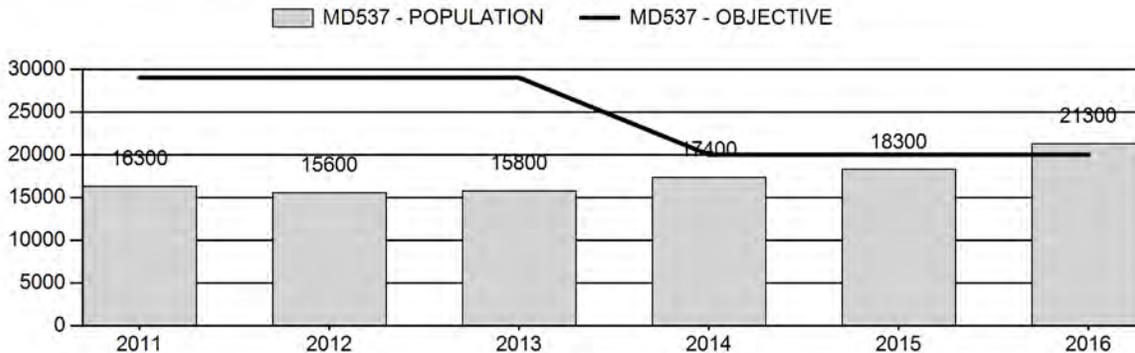
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	16,680	21,300	21,100
Harvest:	1,046	1,212	1,375
Hunters:	1,958	2,010	2,300
Hunter Success:	53%	60%	60 %
Active Licenses:	2,022	2,067	2,350
Active License Success:	52%	59%	59 %
Recreation Days:	8,828	9,368	9,500
Days Per Animal:	8.4	7.7	6.9
Males per 100 Females	41	49	
Juveniles per 100 Females	67	69	

Population Objective (± 20%) :	20000 (16000 - 24000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	6%
Number of years population has been + or - objective in recent trend:	2
Model Date:	02/22/2017

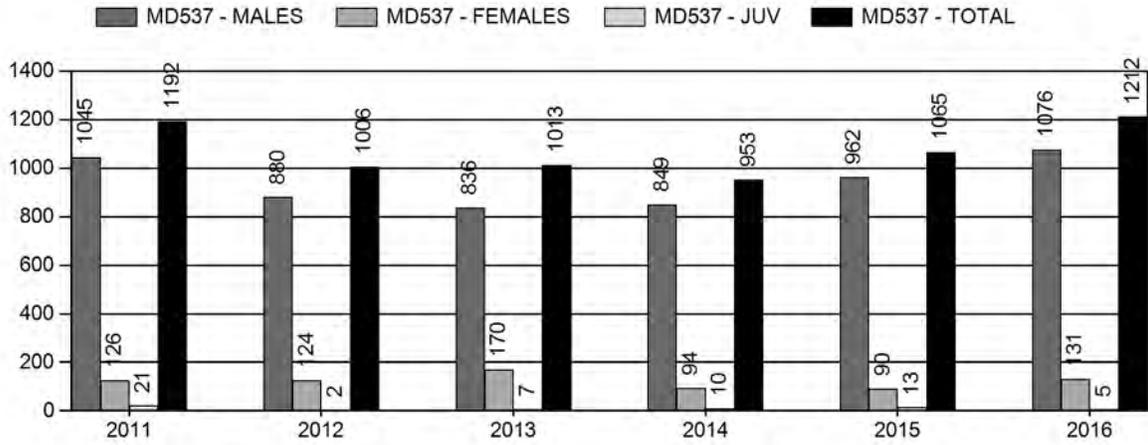
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.5%	1.5%
Males ≥ 1 year old:	18%	24%
Total:	5%	7%
Proposed change in post-season population:	+13%	-1%

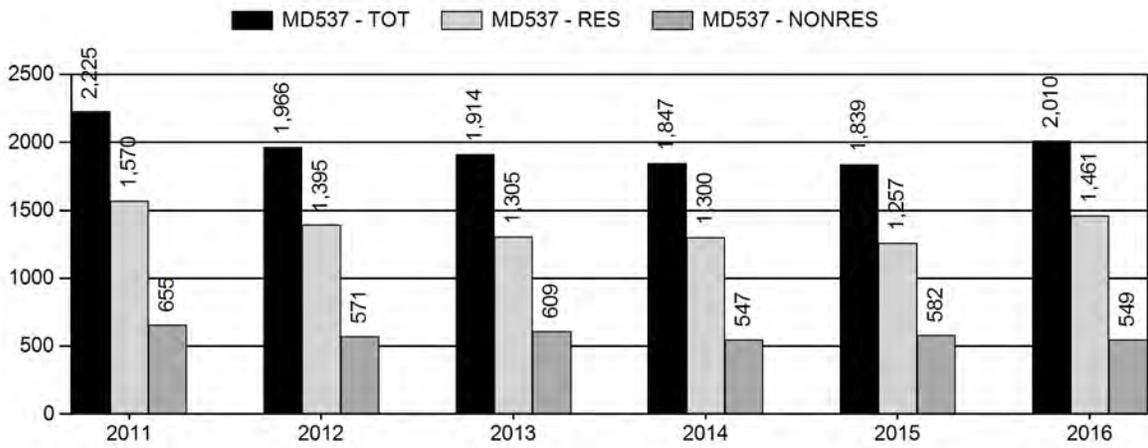
Population Size - Postseason



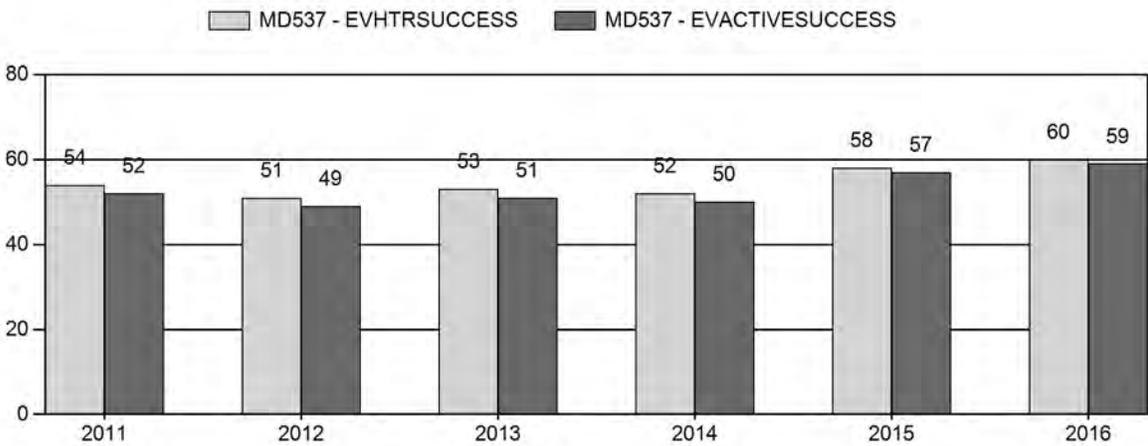
Harvest



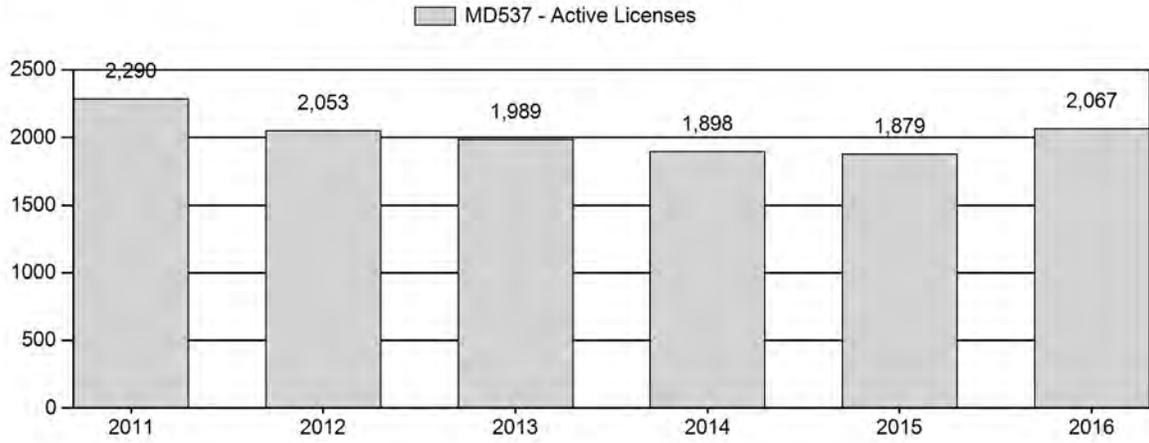
Number of Active Licenses



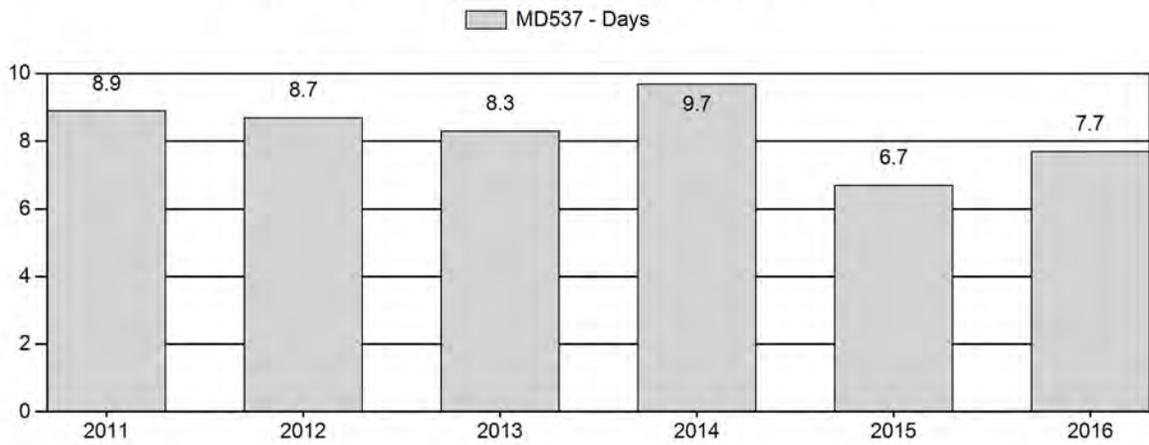
Harvest Success



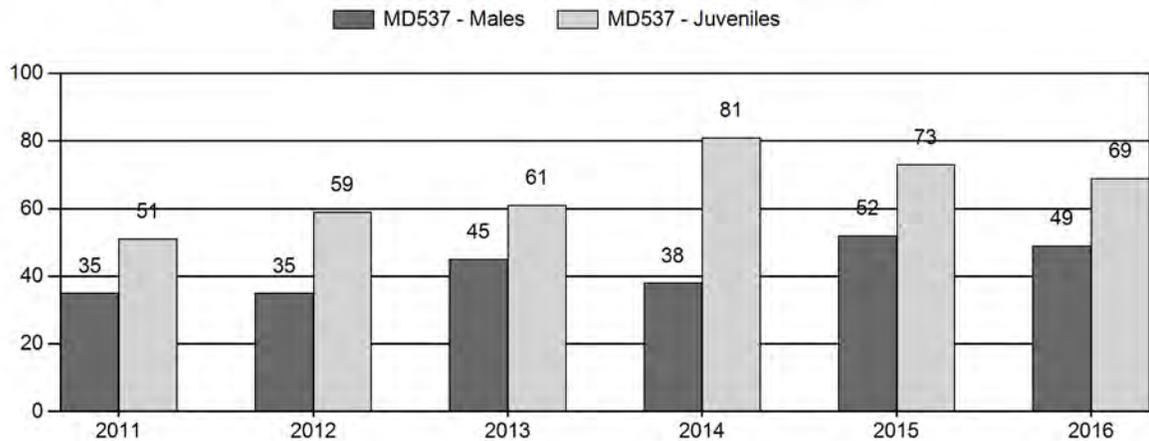
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD537 - LARAMIE MOUNTAINS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to			
		Ylg	2+		2+		UnCls	Total	%	Total	%	Total			%	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
			Cls 1	Cls 2	Cls 3	Cls 3																
2011	16,300	102	0	0	0	296	398	19%	1,122	54%	570	27%	2,090	1,263	9	26	35	± 2	51	± 3	38	
2012	15,600	83	0	0	0	162	245	18%	699	51%	415	31%	1,359	1,218	12	23	35	± 3	59	± 5	44	
2013	15,800	23	101	104	9	2	239	22%	528	48%	324	30%	1,091	1,161	4	41	45	± 4	61	± 5	42	
2014	17,400	147	177	161	36	0	521	17%	1,384	46%	1,115	37%	3,020	1,135	11	27	38	± 2	81	± 4	59	
2015	18,300	290	203	97	16	0	606	23%	1,164	44%	850	32%	2,620	1,304	25	27	52	± 3	73	± 4	48	
2016	21,300	168	168	94	13	0	443	23%	900	46%	625	32%	1,968	1,308	19	31	49	± 3	69	± 4	47	

**2017 HUNTING SEASONS
LARAMIE MOUNTAINS MULE DEER HERD (MD537)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
59	Gen	Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille shall be closed
59,64	6	Oct. 15	Oct. 31	100	Limited quota	Doe or fawn, valid on private land
59,64	6	Nov. 1	Dec. 31			Doe or fawn white-tailed deer
60	1	Oct. 20	Nov. 5	100	Limited quota	Antlered deer on national forest, any deer valid off national forest; All lands within Curt Gowdy State Park, archery only
60	1	Nov. 6	Nov. 30			Doe or fawn white-tailed deer valid off national forest; all lands within Curt Gowdy State Park, archery only
60	2	Oct. 20	Nov. 5	200	Limited quota	Any deer valid off national forest; all lands within Curt Gowdy State Park, archery only
60		Nov. 6	Nov. 30			Doe or fawn white-tailed deer valid off national forest; all lands within Curt Gowdy State Park, archery only
60	6	Oct. 20	Nov. 30	50	Limited quota	Doe or fawn; all lands within Curt Gowdy State Park, archery only
64	Gen	Oct. 15	Oct. 31		General	Antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Rd 727), shall be closed
64	2	Oct. 15	Oct. 31	100	Limited quota	Antlered mule deer or any white-tailed deer
59,60,61,64, 65	J			900		

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
59,60,64	Sept. 1	Sept. 30	Refer to Section 2 of this Chapter

Summary of Change

Hunt Area	License Type	Quota Change from 2016
62,63,64	T6	0
60	T1	0
60	T2	0
60	T6	0
64	T2	0
59,60,61,64,65	Region J	0

Management Evaluation

Current Post-season Population Objective: 20,000 (16,000-24,000)

Management Strategy: Recreational

2016 Postseason Population Estimate: ~21,300

2017 Proposed Postseason Population Estimate: ~21,100

2016 Hunter Satisfaction: 67% Satisfied, 18% Neutral, 15% Dissatisfied

Herd Unit Issues

The management objective for the Laramie Mountains Mule Deer Herd Unit was reviewed in 2014 and as a result of internal and public involvement the objective was decreased to 20,000 mule deer and Hunt Areas 59,62,63 were combined into Hunt Area 59, and Hunt Areas 64,73 were combined into Hunt Area 64. The recreational management strategy will remain in place with a post-season buck ratio range of 20-29 bucks:100 does.

The 2016 post-season population estimate was approximately 21,300, with the population fluctuating around 17,000. Chronic wasting disease (CWD) has been detected in this herd for well over two decades. The average prevalence rate since 1979 is 22%, contributing towards the suppression of this herd. Management strategy has been very conservative with little doe harvest to try and increase the herd. Approximately 50% of the herd unit is private lands which affects our ability to provide opportunity.

The Arapahoe wild fire in 2012 will have habitat effects for years to come. In some areas perennial vegetation is responding. In other places the ground appears sterile with little to no vegetation growth. Mule deer have been harvested in the burned areas since. Mule deer occupation in burned areas was also documented during the winter of 2013. In the long run this major fire will be a positive event for ungulate habitat. It will take time to see the major re-vegetation events. A major snowstorm event that dropped 2-3' of snow in higher elevations and 12-16" in lower elevations followed by 50+mph winds in February, 2017 could possibly have had a negative impact on mule deer survival. Managers will know more this spring if there was a high mortality loss. Based on similar winter conditions in 2015 there was a decrease in fawn production in 2016 compared to 2014 and 2015.

Landowners and sportsmen would like to see more mule deer. To address this desire the Type 6 license are proposed to stay at a conservative number.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had a positive influence on all big game species. For specific meteorological information for the Laramie Mountains herd unit the reader is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Based on body condition data mule deer went into the winter in excellent condition. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant species. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands. In 2016, 600 acres were burned within the Laramie Range, specifically at Iron Mountain. This was the final stage of a multi-year prescribed burn project designed to improve shrub health and vigor.

Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if the predominant species. In Summer 2015, Colorado State University natural resource program scientists worked cooperatively with WGFD and USFS personnel to map cheatgrass infestations via satellite imagery and on-the-ground vegetation sampling efforts. This data showing cheatgrass prevalence will be available for habitat managers to utilize in 2016. Future herbicide applications to control cheatgrass will likely be largely based off of this data. With recent completion of an Environmental Assessment by the USFS, options have expanded greatly to control cheatgrass, including aerial application of herbicides. Funding for an aerial herbicide application to control cheatgrass was submitted winter of 2016/17, approval pending spring 2017.

Areas burned by the Arapaho Wildfire of 2012 continue to rebound. Aspen regeneration has been excellent, and appears that in areas assessed that browsing is within acceptable limits that will allow for full recovery of aspen habitats in many places. Significant erosion occurred throughout burned areas in Spring 2015, associated with moisture events. Canada thistle, leafy spurge, and knapweed spp. are present throughout the burn in varying degrees and efforts need to be undertaken to map infestations and implement biological and chemical methods of control. A significant die-off of sagebrush and antelope bitterbrush did occur in portions of the Laramie Range due to a rapid freeze event that occurred in November 2014. The die-off was widespread, from the Front Range of Colorado to the Eastern Plains of Montana. The severity of the die-off is unknown at this time, and whether or not the shrubs will recover.

Field Data

Fawn ratios of 69 fawns:100 does in 2016 were lower than 2015, but were still above the 5-year average (65 fawn:100 does) allowing for population growth. According to Unsworth et al. (1999) populations increase when fawn ratios are above 66 fawn: 100 does. Buck ratios of 49 bucks:100 does were the second highest observed in 34 years (2015 had the highest observed 52 bucks:100 does), well above the recreational management strategy. Based on field check data the majority of the bucks are 2-3 year olds.

Since 2012 antler class data has been collected from harvested mule deer and then starting in 2013 from classified mule deer to gauge buck quality. Antler class data is broken down into three classes: 1) Class I- ≤ 19 ", 2) Class II- 20-25", Class III- ≥ 26 ".

The majority of mule deer bucks harvested in 2016 were Class I bucks (54%), which is similar to 2015, but Class II bucks did increase slightly compared to 2015. There are very few class III bucks in the harvest and classification data. Lack of access, CWD and lower survival rates most likely contributed to fewer older age class bucks in the field. Based on harvest and classification data there will be a surplus number of bucks available for harvest opportunities in 2017.

Deer were in good condition going into the winter given good habitat conditions in 2016. The average body score taken from 52 mule deer was 18 out of 20, similar to 2015. According to the 2016 satisfaction survey, 67% of the hunters were satisfied with their quality of hunt, which was only slightly lower than 2015 (71%).

Harvest Data

Hunter success in 2016 (60%) was higher than the five-year average of 53% and hunter effort of 7.7 days per harvest was slightly lower than the five-year average of 8.4 days per harvest. These data support a stable to increasing trend in population, which also supports model simulations, personnel, landowner, and sportsmen observations, which is a shift in population trends that is welcomed by the hunting community.

Population

The "Time-Specific Juvenile and Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. The AIC value was slightly higher but did have a better fit than the other two models. This model was chosen for the following reasons: 1) The model tracks juvenile variability in survival, which is more consistent with this herd unit based on the fluctuations in juvenile composition data, 2) There is a large number of years with classification and harvest data, indicative of the TSJ, CA model, 3) simulated population trends mimic perceived trends observed by local personnel, landowners and hunters. Adult survival was changed in years 2010-2013. Adult survival data from the South Converse Mule Deer Herd Unit CWD study was incorporated from those years since both herd units have high prevalence rates and the Laramie Mountains Herd Unit is adjacent to South Converse. This model is rated as fair to poor, there is not a abundance estimate but there is some survival data. There is not an annual population estimate with a standard error available to anchor the model to, but enough data to give the model a fair fit and results are biologically defensible. Adult survival was adjusted to .7-.8 instead of the recommended range of .7-.95 to account for chronic wasting disease prevalence rates in years that did not have adult survival data. Hunters and landowners would like to see an increase in mule deer, given above average recruitment this has taken place, however, with CWD prevalence rates, and poor habitat conditions an increase in the population does not seem like a long term trend.

Management Summary

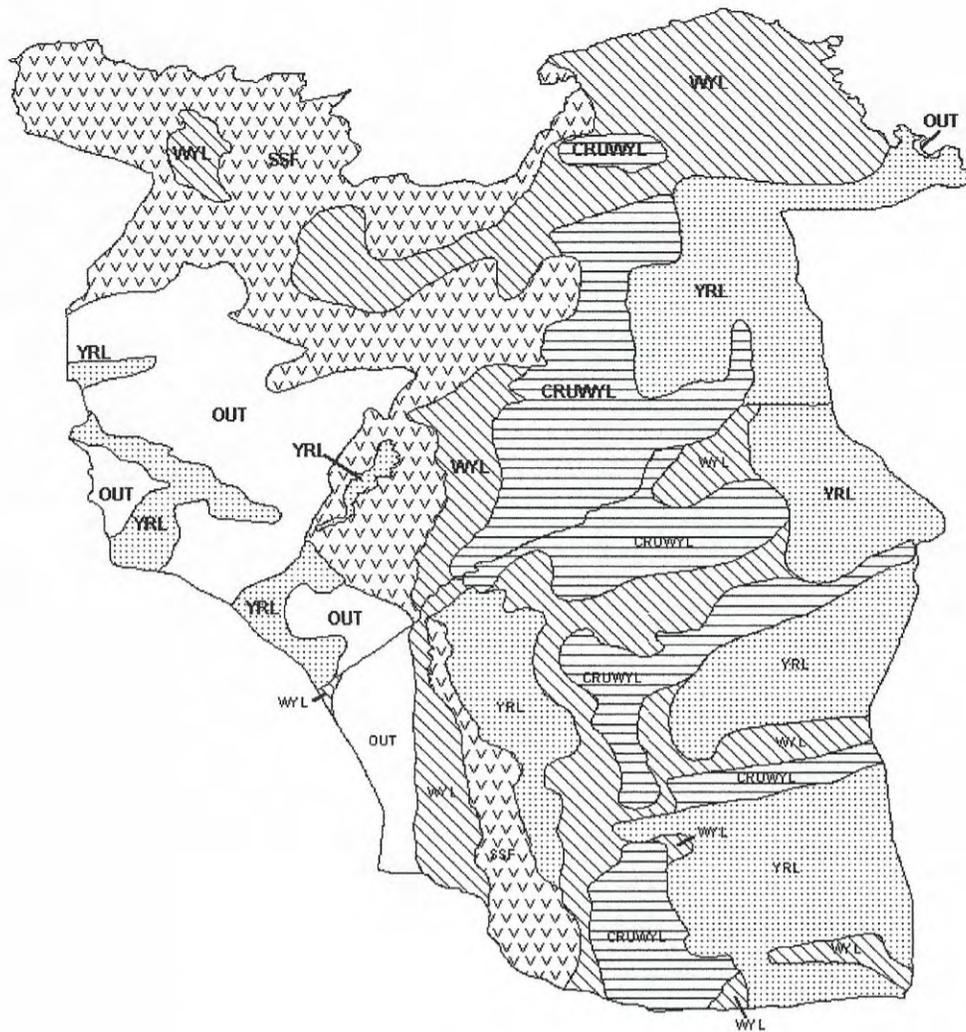
Hunting seasons in this herd unit have started on the 15th of October and closed on October 25 for the past 5 years. Late doe/fawn seasons have been used to address damage situations in lower elevations on private land, but the public has overwhelmingly indicated they would like to see more mule deer, so Type 6 licenses have remained conservatively prescribed. The season structure for the general seasons in Hunt Areas 59 and 64 will increase in season length by 6 days and run from Oct 15-31. Two years of above average buck ratios, well above the upper level of recreation management should provide enough opportunity that the buck ratios will not be compromised. According to Miller (2010) male mule deer have a higher prevalence rate of CWD than female mule deer, and CWD prevalence is higher in prime age males than younger males. Based on this data, running a longer season that would provide opportunity for a hunter to harvest a male mule deer prior to having it succumb to CWD and perhaps reduce transmission rates appears prudent at this time. The Type 6 licenses will remain the same as 2016. Hunt Area 60 remains a sought after license for hunters since it gives hunters a chance to hunt into November when bucks are more susceptible to harvest. Region J licenses will remain the same at 900, lack of public access does not warrant an increase at this time. The 900 Region J quota will be consistent with recent license sales (2012=949, 2013=779, 2014=822, 2015=819, 2016=819) and hopefully improve harvest statistics and reduce hunting pressure.

If we attain the projected harvest of 1,375 mule deer, maintain average fawn recruitment, and take into account CWD prevalence rates the mule deer population will decrease slightly to 21,100 mule deer and fall within the post-season objective range of 16,000-24,000 mule deer.

Literature Cited:

Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. *J. Wildl. Manage.* 63(1):315-326, 1999

Miller, MW and Conner MM: Epidemiology of chronic wasting disease in free-ranging mule deer; spatial, temporal and demographic influences on observed prevalence patterns. *Journal of Wildlife Diseases* 41.2 (2005): 275-290



Mule Deer (MD537) - Laramie Mountains
 Hunt Areas 59, 60, 64
 Revised - 3/04



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD539 - SHEEP MOUNTAIN

HUNT AREAS: 61, 74-77

PREPARED BY: LEE KNOX

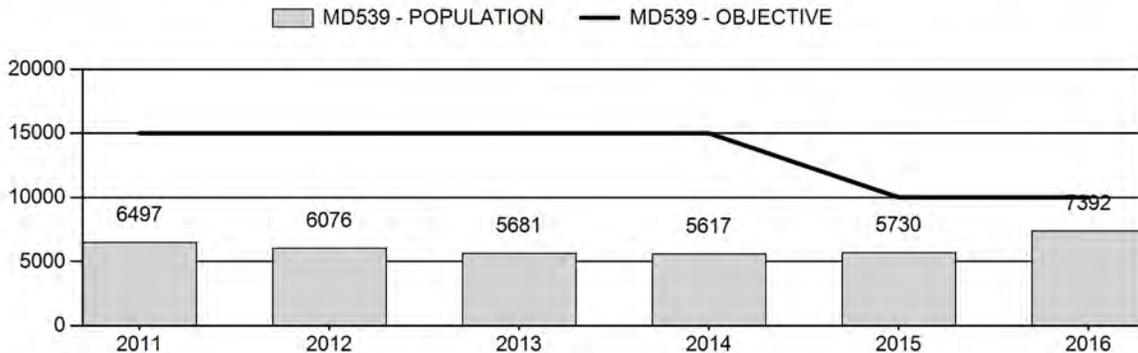
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	5,920	7,392	7,531
Harvest:	320	329	400
Hunters:	1,426	1,262	1,300
Hunter Success:	22%	26%	31 %
Active Licenses:	1,426	1,262	1,300
Active License Success:	22%	26%	31 %
Recreation Days:	7,332	6,239	6,500
Days Per Animal:	22.9	19.0	16.2
Males per 100 Females	29	52	
Juveniles per 100 Females	60	59	

Population Objective (± 20%) :	10000 (8000 - 12000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-26.1%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/23/2017

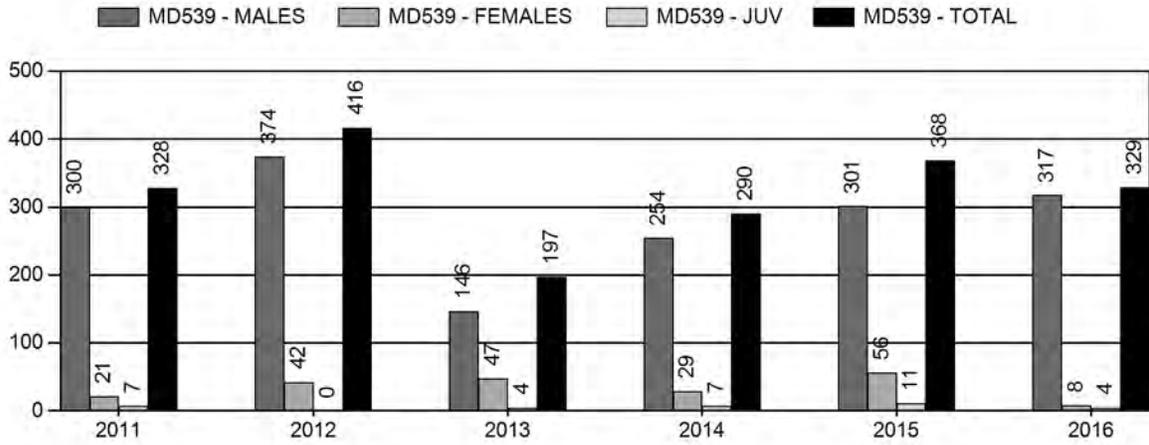
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	.2%	.8%
Males ≥ 1 year old:	17%	21%
Total:	4.4%	5%
Proposed change in post-season population:	11%	2%

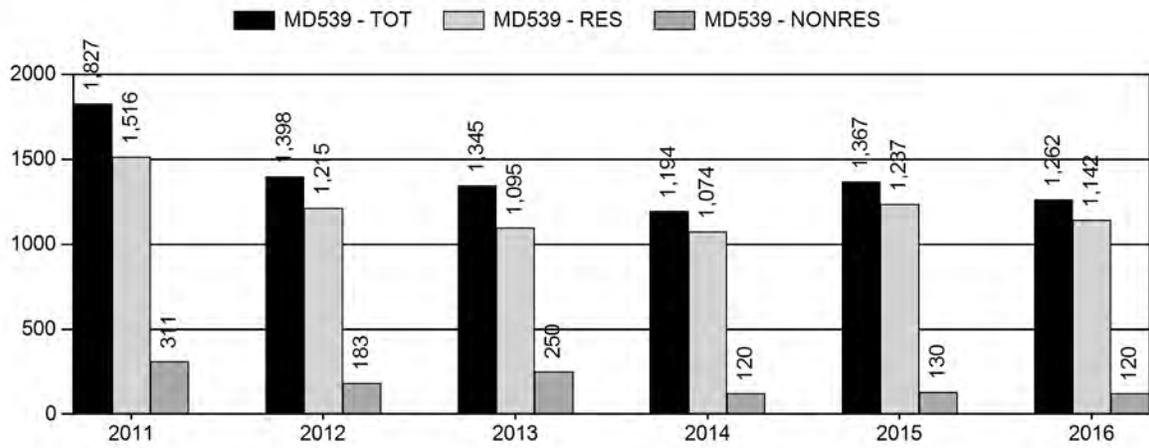
Population Size - Postseason



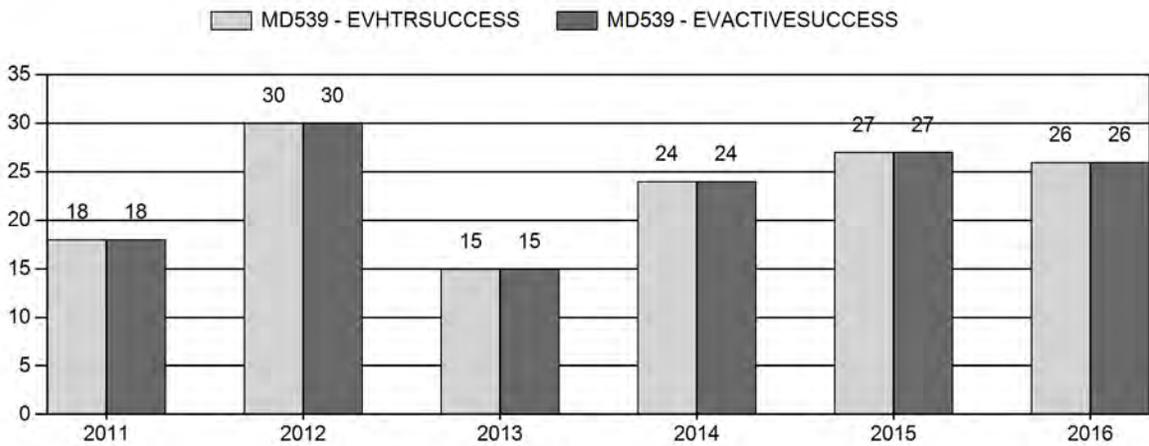
Harvest



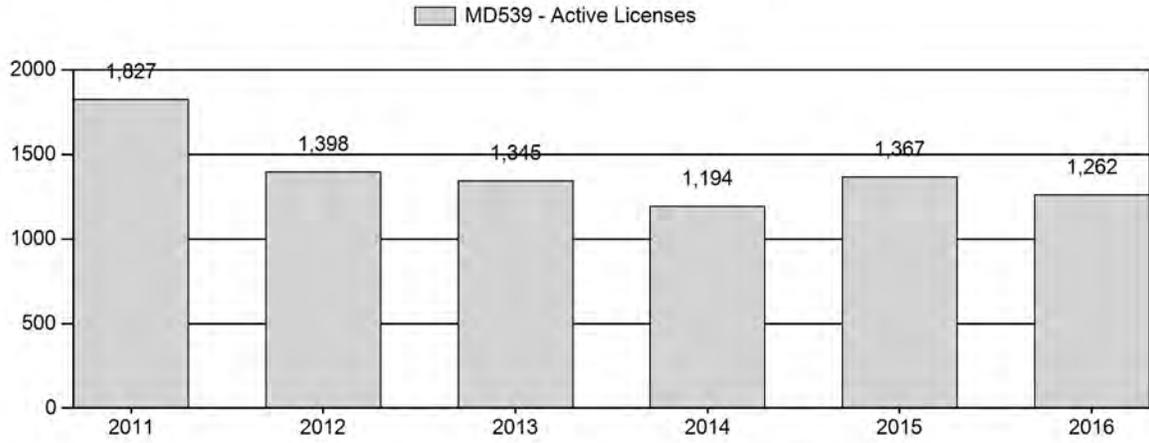
Number of Active Licenses



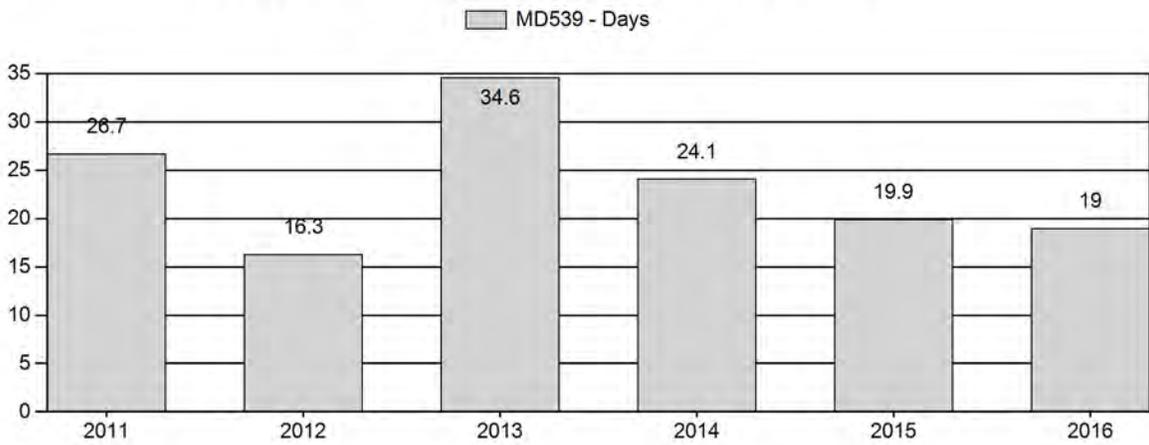
Harvest Success



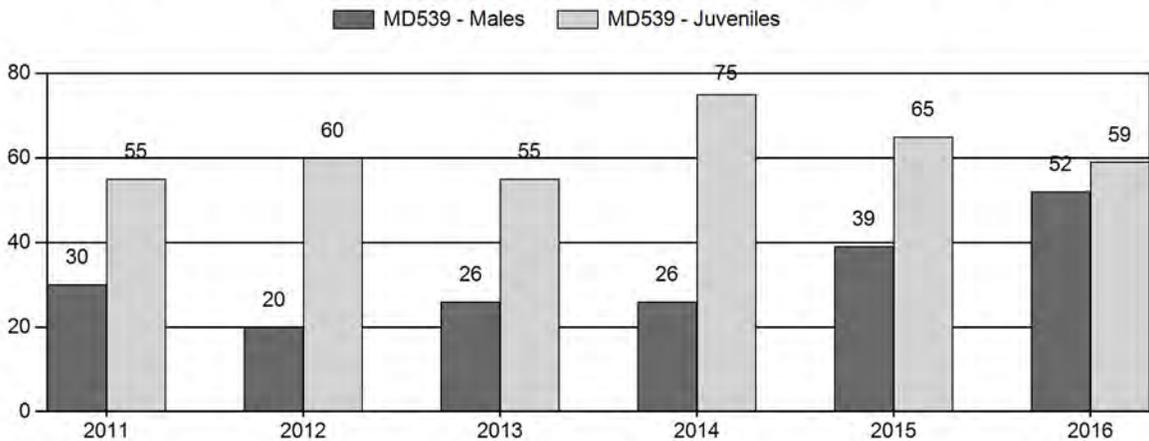
Active Licenses



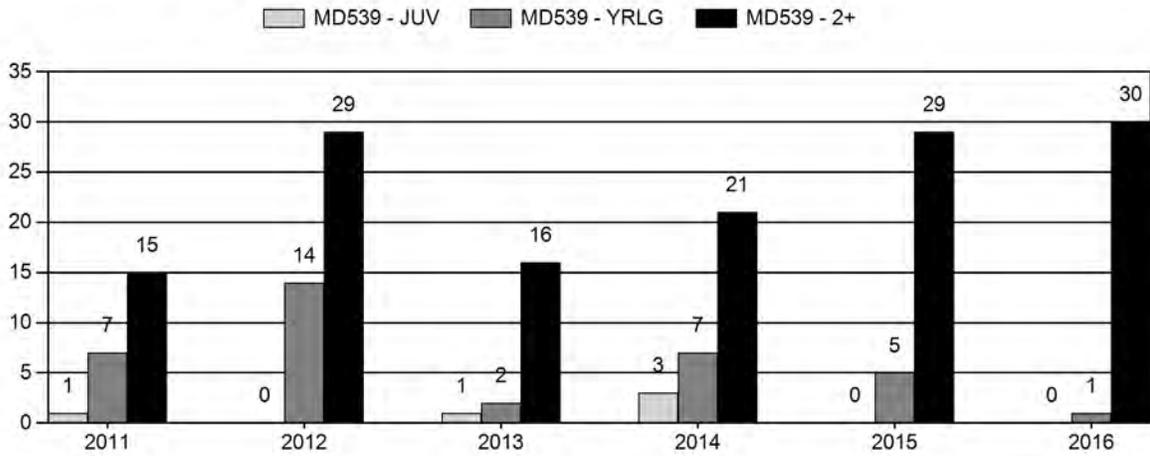
Days per Animal Harvested



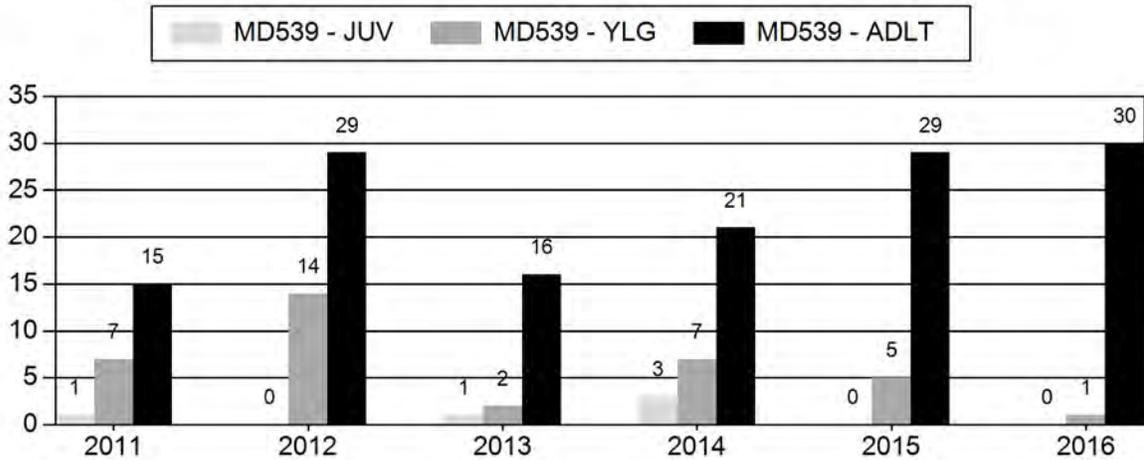
Postseason Animals per 100 Females



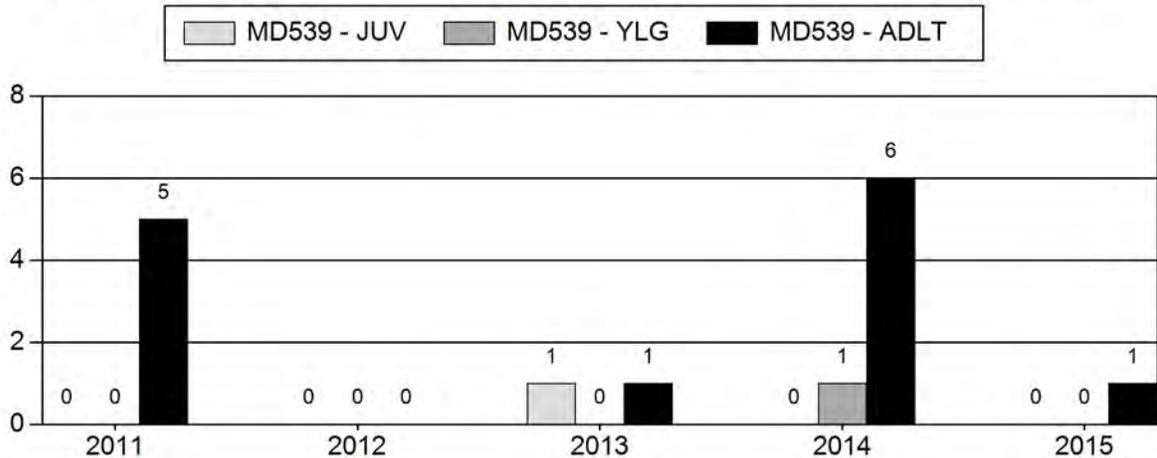
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD539 - SHEEP MOUNTAIN

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot Cls Obj	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,497	48	0	0	0	98	146	16%	480	54%	263	30%	889	1,087	10	20	30	± 3	55	± 5	42
2012	6,076	33	0	0	0	52	85	11%	416	55%	249	33%	750	1,047	8	12	20	± 3	60	± 6	50
2013	5,681	82	47	42	16	1	188	14%	721	55%	395	30%	1,304	984	11	15	26	± 2	55	± 4	43
2014	5,617	31	23	14	8	0	76	13%	290	50%	218	37%	584	1,109	11	16	26	± 4	75	± 8	60
2015	5,730	83	56	47	21	0	207	19%	531	49%	347	32%	1,085	1,099	16	23	39	± 4	65	± 5	47
2016	7,392	99	123	83	23	0	328	25%	633	47%	373	28%	1,334	1,124	16	36	52	± 4	59	± 4	39

**2017 HUNTING SEASONS
Sheep Mountain Mule Deer (MD539)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
61		Oct. 1	Oct. 10		General	Antlered mule deer or any white-tailed deer
74		Oct. 1	Oct. 10		General	Antlered mule deer or any white-tailed deer
75		Oct. 1	Oct. 10		General	Antlered mule deer or any white-tailed deer
76		Oct. 1	Oct. 10		General	Antlered mule deer or any white-tailed deer
77		Oct. 1	Oct. 10		General	Antlered mule deer or any white-tailed deer
Archery		Sept. 1	Sept. 30			Refer to license type and limitations in Section 2

Region D Nonresident Quota: 400

Area	Type	Change from 2016
61	GENERAL	0
74	GENERAL	0
75	GENERAL	0
76	GENERAL	0
77	GENERAL	0
REGION D	LIMITED QUOTA	0
Herd Totals		0

Management Evaluation

Current Postseason Population Management Objective: 10,000 (8,000-12,000)

Management Strategy: Recreational

2016 Postseason population Estimate: ~ 7,400

2017 Proposed Postseason Population Estimate: ~ 7,500

2016 Hunter Satisfaction: 54% Satisfied, 25% Neutral, 21% Dissatisfied

The management objective for the Sheep Mountain mule deer herd unit is a post-season population objective of 10,000 mule deer. The management strategy is recreational management with guidelines to maintain a post hunt buck ratio of 20 to 29:100 does. The objective and management strategy was reviewed in the spring of 2015.

Herd Unit Issues

The Sheep Mountain herd unit encompasses hunt areas 61, 74, 75, 76 and 77. Landownership varies from mostly private lands with limited public access, to large portions of public lands. The 2017 post-season population estimate is approximately 7,400 with the population trending up after a decline from 7,500 in 2009. The Sheep Mountain herd unit historically has one of the lowest hunter success rates in the state. Most of the herd's summer range is in dense lodge pole or spruce forests that were once heavily logged in the 1960s and 1970s. There is a large scale forest die off from pine and spruce beetles and the long term effects are unknown. Winter and transition range is limited. In 2012 there was a large scale wildfire that is thought to be beneficial in the long run. Black bear and lion mortality limits were liberalized, and season lengths were increased. A three year predator removal project was finalized in 2015 with the Albany County Predator Board focusing on key mule deer parturition areas in the Sheep Mountain herd unit to evaluate the effect of coyotes on fawn recruitment. We are in the second year of the Sheep Mountain Mule deer Initiative (SMMDI). It has helped spark more discussions with the WGFD, federal agencies and non-government organizations that should turn into some good on the ground improvements. This spring 60 mule deer does were fitted with Global Positioning System (GPS) collars which collect the location of the deer every two hours. Collars will be deployed for two years to learn habitat use and establish migration routes (Appendix A).

Precipitation

Precipitation from October 2015 – September 2016 in the herd unit was slightly greater than the 30 year average, at 17.7". Precipitation during the growing season (April thru June 2016) across all seasonal ranges was higher than the 30 year average for the second consecutive year. Growing season precipitation in higher elevation spring/summer/fall seasonal ranges (May 2016 – July 2016) was below the 30 year average for the first time since 2013. As is consistent with most prominent mountain ranges in Wyoming, the majority of precipitation fell during the period outside of the primary growing season, likely in the form of snow, particularly at higher elevations. Early spring temperatures were cool and numerous rain events were recorded in May. From August – October, conditions were very dry, with temperatures unseasonably warm during the September archery and October rifle seasons. Measurable and persistent snows did not fall on the area until December.

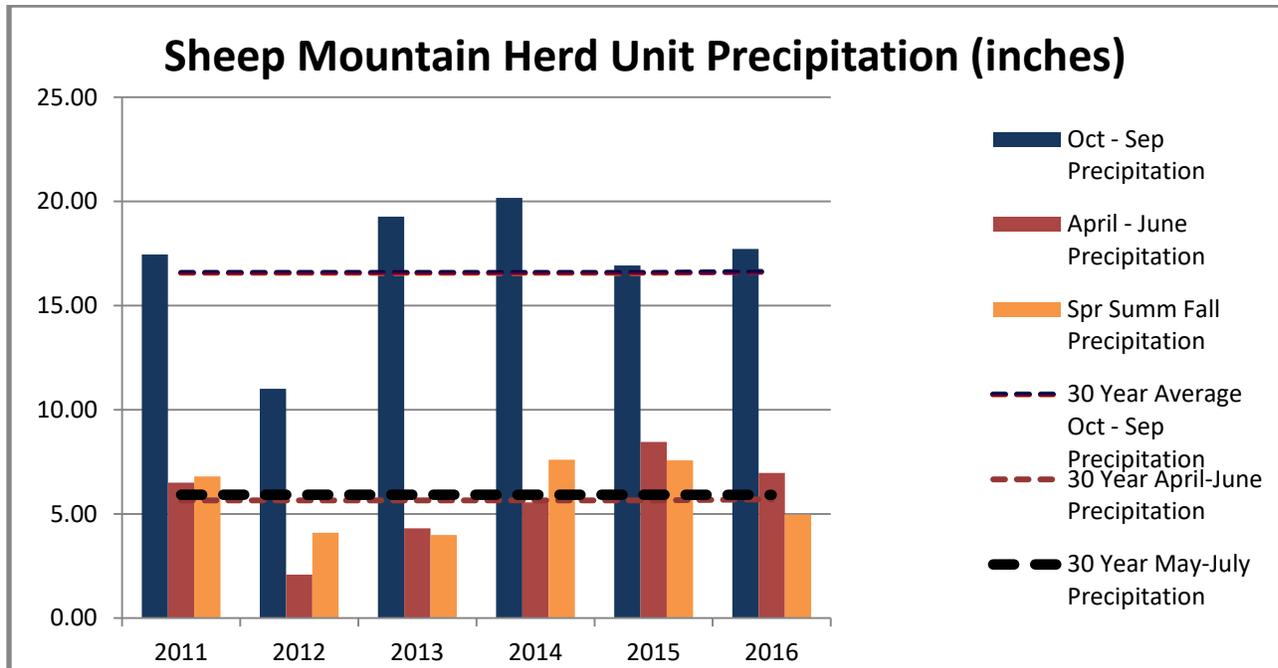


Figure 1. Parameter-Elevation Relationships on Independent Slopes Model (PRISM) utilized to estimate precipitation by calculating a climate-elevation regression for each Digital Elevation Model grid cell (*4 km resolution*).

Winter Severity

Upper elevations in the Snowy Range are at 115% of normal for snowpack as of mid February. Lower elevations were relatively free of snow until December. Extreme cold, high winds, and above average snow depths persisted at lower elevations from mid December to mid January causing stress to wild ungulates. Mule deer were found attempting to find browse species above deep snow levels. Around February 6, 2016, a major snow thawing event started across winter ranges and more normal winter temperatures returned, providing some relief for wintering mule deer herds.

Habitat

Growing season precipitation was above normal across the herd unit in 2016, resulting in excellent growth of cool season grasses, forbs, and shrubs, particularly in lower elevation seasonal ranges. In spite of precipitation received, many important shrub habitats continue to underperform due to maturity and decadence, caused by a general lack of disturbance. Deer fecal pellets were collected across several locations in Winter 2015 to determine winter dietary preferences within the herd unit. In summary, fecal collections from unburned habitats were comprised of 90% - 95% shrubs, with big sagebrush leaf material being the major dietary component. In areas burned by wildfire, diets were diverse and included 15% forbs, 13% grasses, and 72% shrubs.

No permanent vegetative transects were read this year within this herd unit, but considerable effort was spent assessing habitats with new “Rapid Habitat Assessment” methodologies developed by the Department. Habitat types assessed included aspen in known parturition habitats, mixed mountain shrubs in transitional and winter ranges, and riparian habitats / willow

complexes in high elevations. The local game wardens, biologist, and statewide habitat biologist assisted with assessments. Landscape scale assessments were completed at Red Mountain (aspen and mixed shrub), Forbes WHMA (aspen), Centennial Ridge (aspen and mixed shrub), Foote Creek (mixed shrub and aspen), Wagonhound Creek (mixed shrub), Sheep Mountain (NE and NW portion) (mixed shrub and aspen), Fallen Pines (aspen), Lost Lake (aspen), Squirrel Creek (riparian and mixed shrub), Squaw Creek (riparian and mixed shrub), Shellrock (mixed shrub) and Boswell Creek (mixed shrub), Tie Siding (mixed shrub), Woods Landing (mixed shrub), Squirrel Creek wildfire affected areas (aspen and mixed shrub), and in high elevations in the Middle Fork of the Little Laramie River (riparian), and Libby Flats (riparian) in the Snowy Range. Forage production of cool season grasses and forbs was excellent, and signs of herbivory (wild or domestic) were minimal in sites assessed in July. Aspen regeneration within the Squirrel Creek wildfire area is excellent, with many stands of aspens already 4' – 6' in height four years post-fire, and exhibiting very little sign of excessive herbivory by wildlife or livestock. Cheatgrass on south-facing aspects and areas of higher fire severity is concerning, especially on the southern-most portions of the burn area, above Woods Landing. Aerial herbicide applications were completed on over 3,000 acres in August 2016 to control cheatgrass in areas identified through earlier mapping efforts completed with use of satellite imagery (Figure 2). While too early to gauge success, herbicide application timing was perfect, as it was applied prior to any fall germination of the winter annual. Extensive monitoring will be completed in summer 2017 to measure success. Habitat assessment data will continue to be collected for a period of five years and reported in the objective review for this herd.

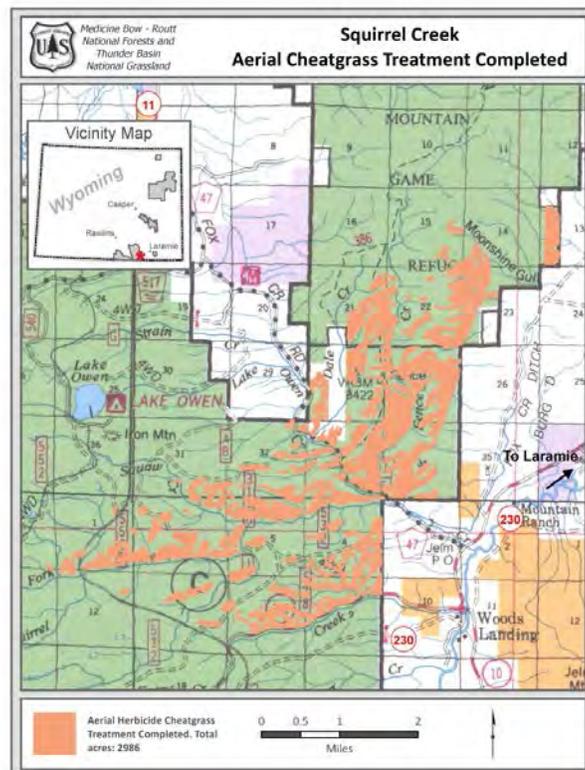


Figure 2. Aerial herbicide applications to control cheatgrass on Sheep Mountain

Field Data

Within the herd unit 1,300 deer were classified, meeting the classification objective of 1,100 deer. Fawn ratios declined for the second year from 75:100 does in 2014 to 65:100 does in 2015 and 59:100 does in 2016. We expected the decline in 2015 was due to a high fawn crop and fawn survival in 2014 leading to a large yearling age class in 2015 diluting the fawn ratio. It does not explain the decline in 2016 which is more likely due to heavy spring snows and dry summer conditions. An antler point restriction of a minimum of 3 or more points on one antler has been implemented for four years. We have seen a large jump in the buck: doe ratio of over the last four years; from 26:100 in 2014 to 39:100 in 2015 and 52 bucks:100 does in 2016. Yearling buck ratios remained at 16:100 does which seems low under an APR. Adult buck ratios increased again for the fourth year to 36:100 does in 2016. It is more likely that the shortened seasons has increased the buck ratio through decreased harvest than the APR. We implemented a new ranking system in our classification in 2013 that places bucks into 3 classes based on antler spread: class I is 19 inches or less, class II is 20-25 inches, and class III is 26 inches or greater. Of the total number of bucks classified, class I made up 67%, class II was 25%, and class III was 7%, which is comparable to 2014 and 2015. We are not seeing the recruitment through the classes which makes since under an APR putting more harvest pressure on class II and class III's. We saw an increase from 1,200 in 2014 to 1,400 in 2015, but hunter numbers declined to 1,300 in 2016. Over the last decade we have lost 1,100 hunters. Hunter effort decreased for the second year to 20 days, and hunter success was 26%, similar to previous years. With a post season classification of 52 bucks:100 does we had expected harvest success to be higher. Success is far below the state wide average of 46.6% and is the third lowest herd unit success rates in the state.

Harvest Data

This season was the fifth year of a seven day season, and the fourth year of an antler point restriction. Harvest had been on a steady decline from a high of 980 deer in 2004 to 190 deer in 2013. However we saw an increase in harvest from 2013 through 2015 to 370 deer and a slight decline slightly to 330 in 2016. Previously doe harvest was limited to archery and youth and was less than 1% of the population. However, in an effort to save a few more does, archery hunters were limited to follow the same regulations as rifle hunters in 2016, limiting total harvest to 12 does. The 2016 season structure was well received; hunters and landowners perceived it as the Department is addressing their concerns with this herd unit. Overall public comments are that the herd is increasing.

Population

Time-Specific Juvenile & Constant Adult Survival (TSJ, CA) spreadsheet model was chosen for this Herd Unit. This model has the lowest AIC score of 171 and a fit of 74, and estimates the population at 7,400. This model is ranked as fair; there is 15-20 years of data; ratio data available for all years in model; juvenile and adult survival estimate with standard errors obtained from adjacent or other similar herds; model aligns fairly well. We were able to get several years of fawn and adult survival rates from radio collared studies in Colorado that took place near the Wyoming border. This information provides a more believable estimate considering the classification samples and fawn ratios. Field staff, landowners, and hunters all agree the population is down but growing and the herd should be managed conservatively.

Management summary

If we attain the projected harvest of 400 deer, and have a fawn ratio of 66:100 does or higher, the herd should continue to grow. Using 66:100 (Unsworth 1999) does as our predicted fawn ratio; we estimate a 2017 post-season population of about 7,400. This is the second year of buck ratios over the recreational maximum with the current estimate at 52 bucks: 100 does. We will be removing the APR to take harvest pressure off of the older age classes as well as lengthen the season by 3 days to a 10 day season. The nonresident quota for region D will remain at 400 licenses to address low deer populations in the region D herd units, and the change of hunt areas from general to limited quota in the Platte Valley. This will maintain hunter opportunity that is in line with the current mule deer resource.

Bibliography

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Appendix A



Sheep Mountain Mule Deer Study



Project Description

The Sheep Mountain Mule Deer Herd Unit (SMMDHU) occupies an estimated 2,500 square miles in southeastern Wyoming, encompassing hunt areas 61, 74, 75, 76 and 77. This herd unit provides opportunity to sportsmen throughout Wyoming, as well as many non-resident hunters who travel from across the United States to hunt southeast Wyoming. The SMMDHU was chosen by the Wyoming Game and Fish Department for the Laramie Region Mule Deer Initiative (MDI) process because of its importance to sportsman in southeastern Wyoming.

Currently, biological data available for this herd unit has been limited to classification data collected on annual survey flights. The last known research study conducted on the SMMDHU was a small project in 1967-68 which provided limited insight into deer movements in the southern portion of the herd unit. The collaborative MDI process identified the following research objectives in order to improve management of this herd unit:

- Determine the seasonal habitat use and movements of deer classified on winter ranges within the SMMDHU Identify migration corridors, stopover areas and potential barriers to migration
- Develop more accurate seasonal range maps
- Prioritize areas for future predator management efforts
- Prioritize areas for future habitat improvement projects
- Collect survival data to improve the precision of the population model.

To achieve these objectives, 60 mule deer does were fitted with Global Positioning System (GPS) collars which collected the location of the deer every two hours. Collars will be deployed for two years. If a collar does not detect movement for nine hours, a mortality signal will be transmitted through an



email message. Mortalities will be investigated as soon as possible in order to collect relevant data, such as cause specific mortality and disease sampling. Fawn survival from known pregnant does will be checked in late spring and early summer to estimate the start and end of biological year survival. After two years, the Wyoming Game and Fish Department will contract with a third party to have the spatial data analyzed in order to delineate migration routes and stopover areas.

Pregnancy

Serum from 46 does was sent to a laboratory to determine pregnancy. Of the 46 does tested, 44 were pregnant (95%). Dr. Kevin Monteith was generous enough to assist during a day of capture and used an ultrasound to determine the number of fetuses per doe. Of the 14 does sampled, two were not pregnant (14%), three does had single pregnancies (21%), and nine were pregnant with twins (65%). The total pregnancy rate for the 60 does collared was 93%.

Mortalities



Any mortality that occurred within 14 days of capture was considered capture related. There were two mortalities during the capture; One tested positive for CWD and the second tested negative and was subsequently donated to a family in need. One doe, who was in poor body condition, tested positive for CWD and died within 4 days of her capture. To date, three additional mortalities of collared deer have occurred, however, due to the timeframe, these mortalities are not considered to be capture related. Two appear to have been predated, although the specific predator species could not be determined because the lack of remains precluded necropsy.

One of the predated does was in the final stages of CWD and would have provided an easy food source. The most recent mortality was too far scavenged to glean any information or collect samples from. Managers are concerned that of the five CWD samples taken from mortalities three tested positive, however, the sample size is too small to make any inferences at this time.

Movement

We are already starting to see some movement in the collared deer. Three does have slowly traveled south into Colorado, and it appears that more will follow. While a few does have started moving up in elevation to transition ranges, most of the collared deer remain on winter range at this time.

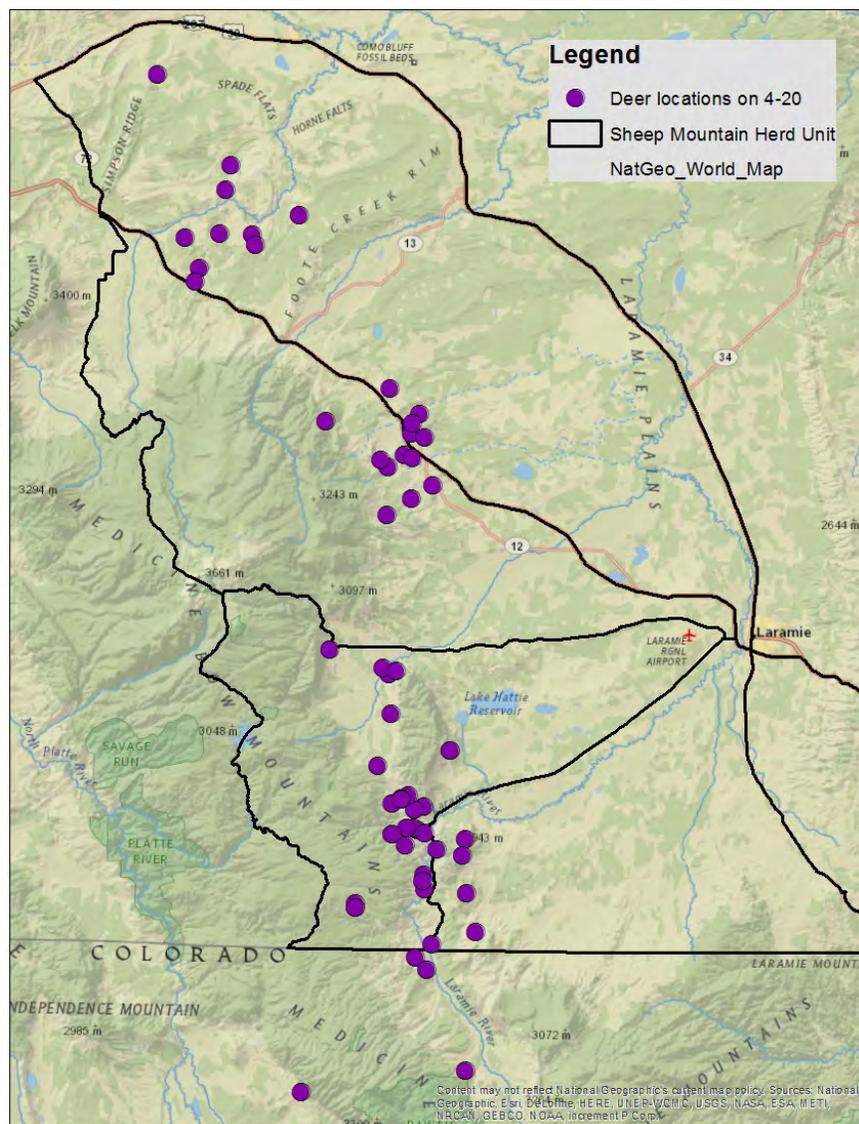
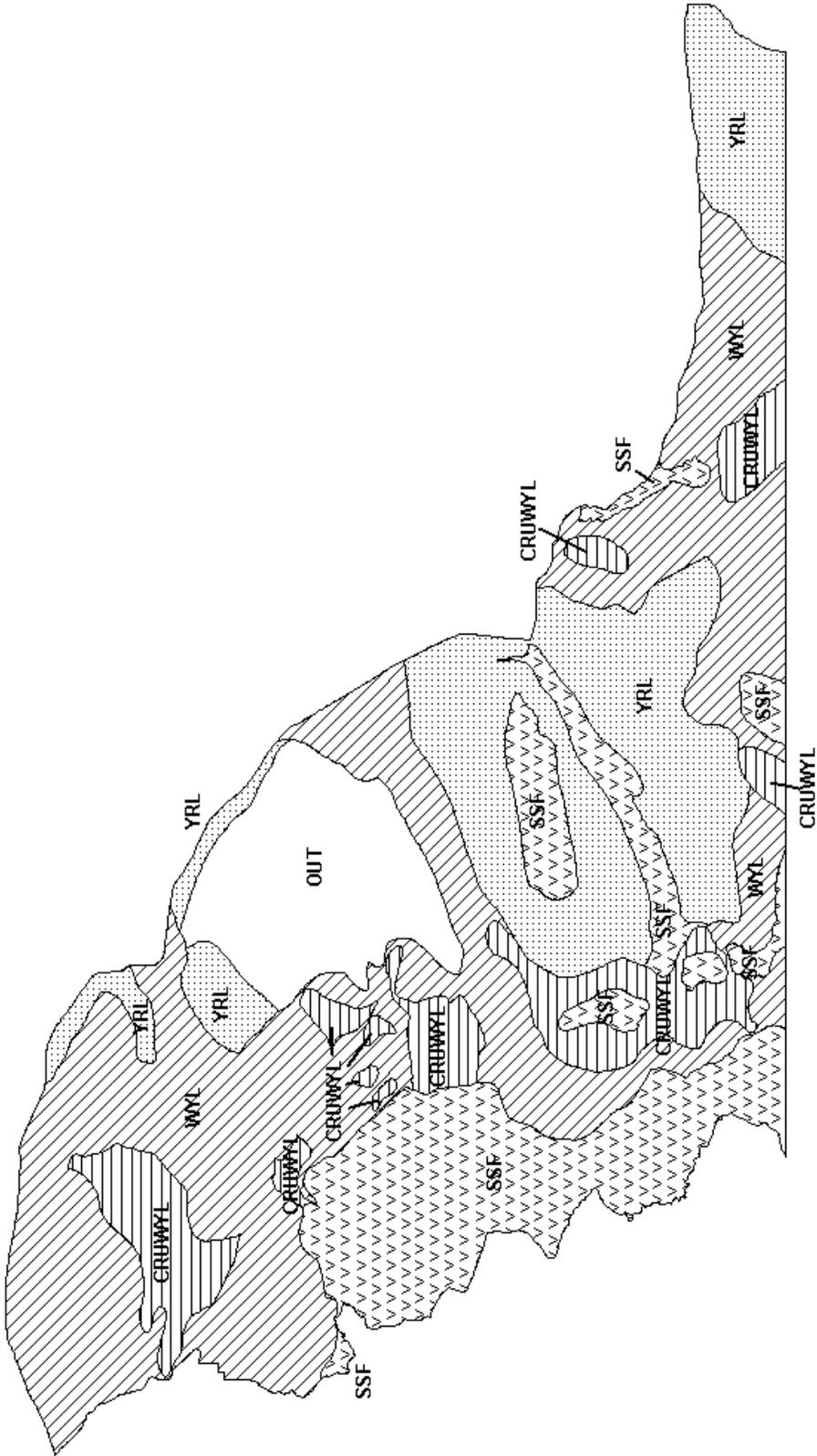


Figure 1. Location of collared deer as of 4/20/2017 in the Sheep Mountain Mule Deer Herd Unit

Acknowledgments

This project is possible due to funds from the Wyoming Game and Fish Commission, Wyoming Big Game License Coalition, South East Chapter of the Muley Fanatic Foundation, and Bow Hunters of Wyoming. In addition several members from these organizations assisted in the capture along with students from the University of Wyoming Student Chapter of the Wildlife Society. A big thank you to all the landowners that allowed us access to their property and to those that assisted in the captures. Lastly thank you the Bureau of Land Management and the United States Forest Service for their assistance as well as use of the public lands they administer.





Mule Deer (MD539) - Sheep Mountain
 HA 61, 74-77
 Revised - 8/88

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD540 - SHIRLEY MOUNTAIN

HUNT AREAS: 70

PREPARED BY: WILL SCHULTZ

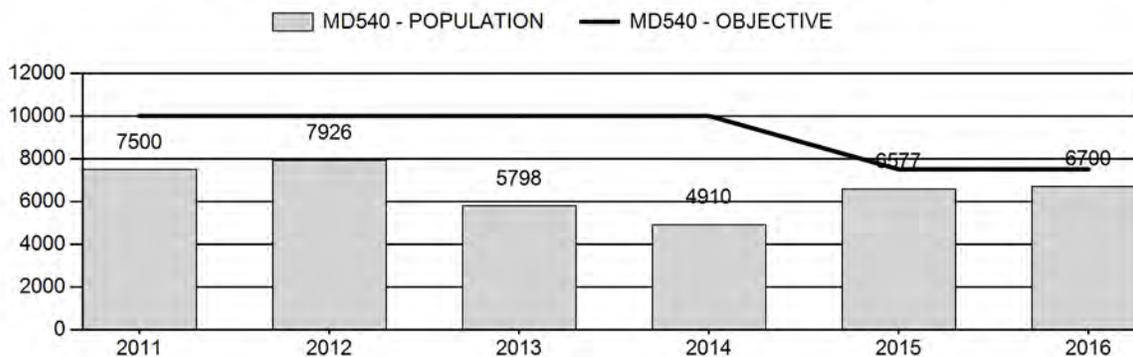
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	6,542	6,700	6,900
Harvest:	250	227	300
Hunters:	632	548	750
Hunter Success:	40%	41%	40 %
Active Licenses:	639	556	750
Active License Success:	39%	41%	40 %
Recreation Days:	2,688	2,340	3,100
Days Per Animal:	10.8	10.3	10.3
Males per 100 Females	33	49	
Juveniles per 100 Females	52	56	

Population Objective (± 20%) :	7500 (6000 - 9000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-10.7%
Number of years population has been + or - objective in recent trend:	25
Model Date:	02/16/2017

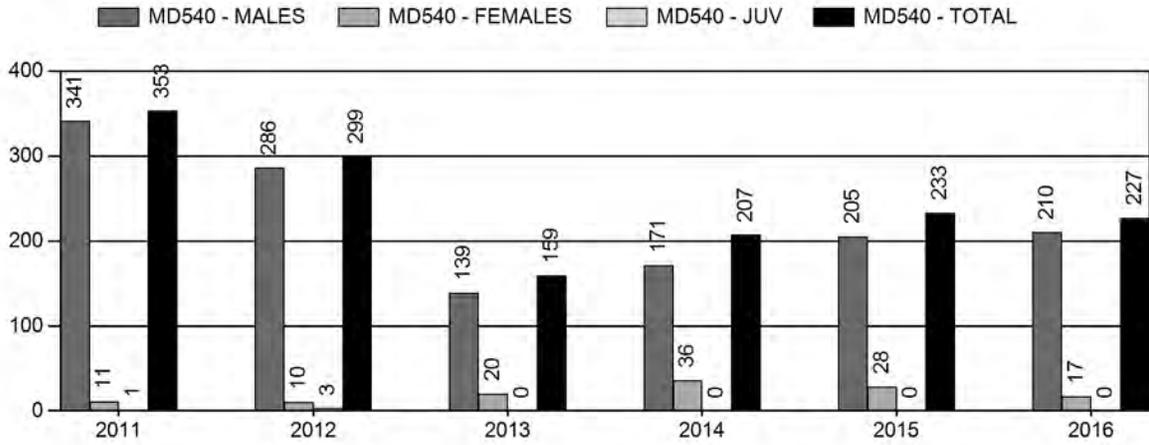
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.1%	0.3%
Males ≥ 1 year old:	13%	14%
Total:	3.0%	4%
Proposed change in post-season population:	8.0%	3%

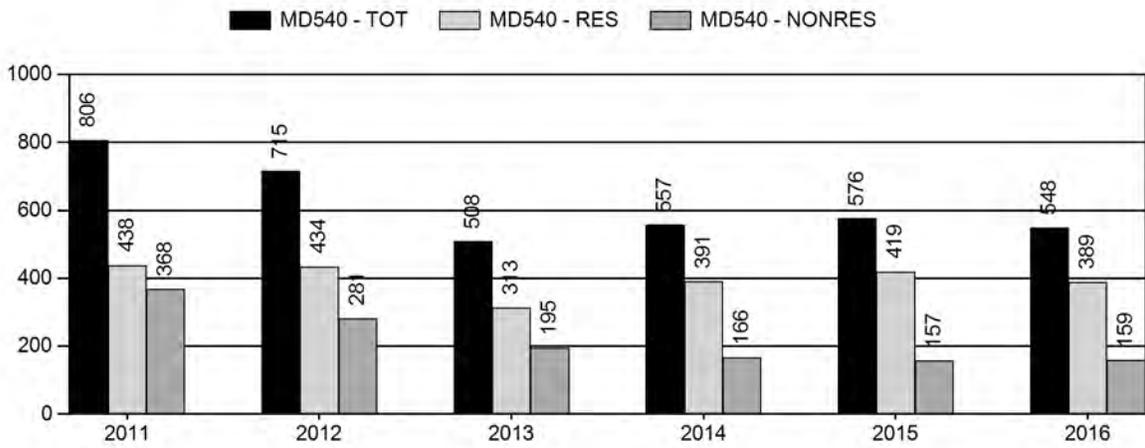
Population Size - Postseason



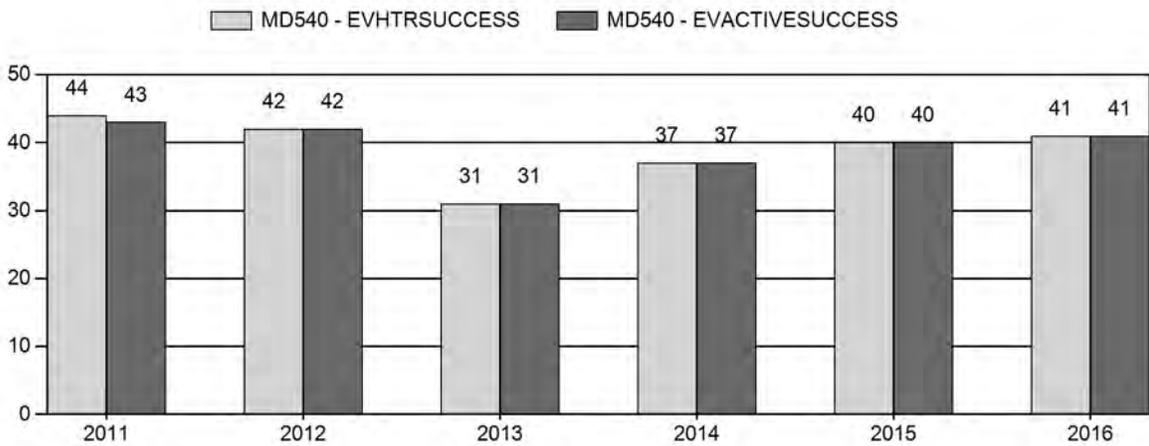
Harvest



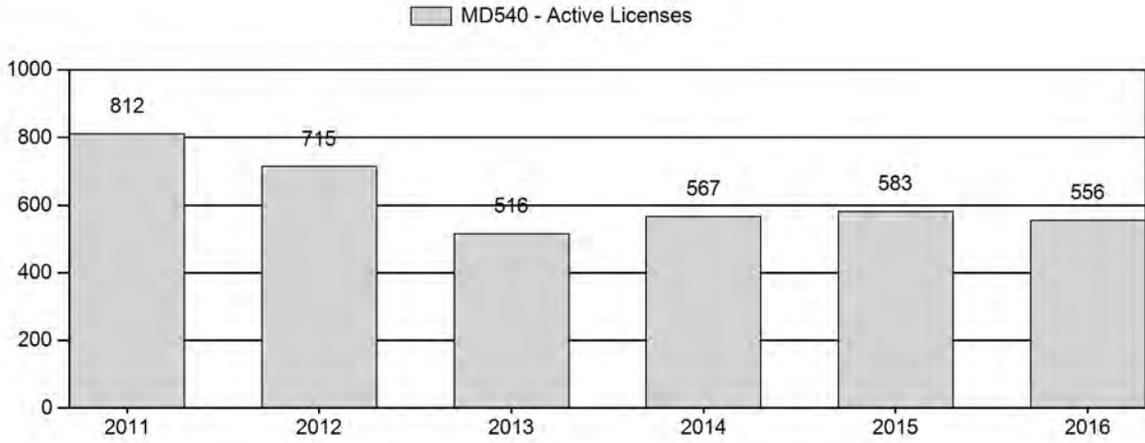
Number of Active Licenses



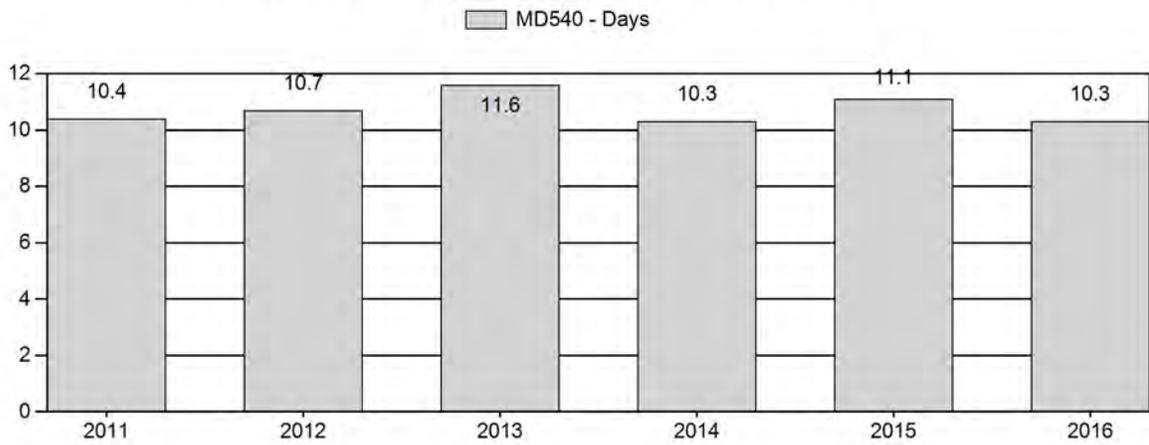
Harvest Success



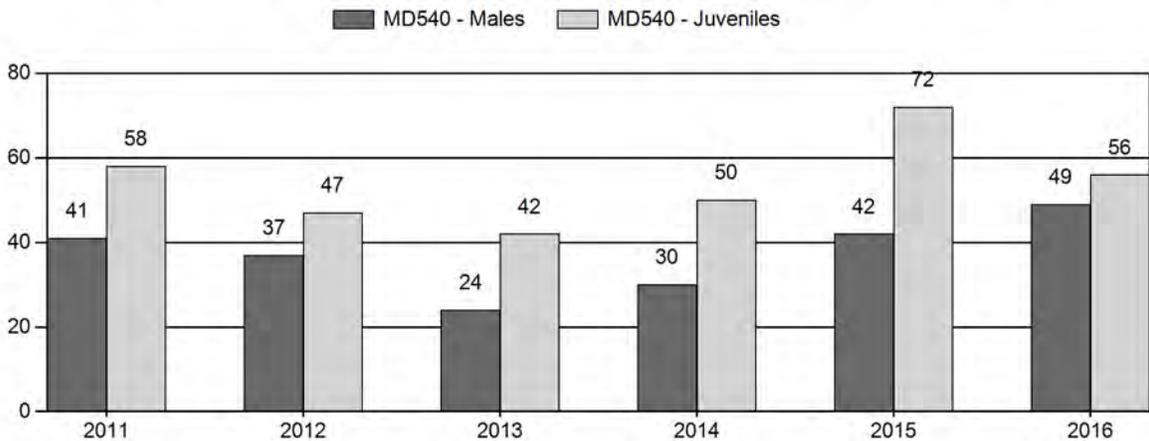
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD540 - SHIRLEY MOUNTAIN

Year	Post Pop	MALES								FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Yng			Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult	
2011	7,500	29	0	0	0	37	66	20%	162	50%	94	29%	322	1,079	18	23	41	± 7	58	± 9	41	
2012	7,926	16	0	0	0	39	55	20%	149	54%	70	26%	274	1,033	11	26	37	± 7	47	± 9	34	
2013	5,798	26	0	0	0	32	58	14%	246	60%	103	25%	407	997	11	13	24	± 4	42	± 6	34	
2014	4,910	20	21	9	1	0	51	17%	170	56%	85	28%	306	915	12	18	30	± 6	50	± 8	38	
2015	6,577	27	18	12	1	0	58	20%	137	47%	99	34%	294	831	20	23	42	± 8	72	± 12	51	
2016	6,700	19	26	22	2	0	69	24%	142	49%	80	27%	291	863	13	35	49	± 9	56	± 10	38	

**2017 HUNTING SEASONS
SHIRLEY MOUNTAIN MULE DEER (MD540)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
70		Oct. 15	Oct. 22		General	Antlered mule deer or any white-tailed deer
	6	Oct. 15	Nov. 30	25	Limited quota	Doe or fawn valid on private land
	Archery	Sep. 1	Sep. 30			Refer to license type and limitations in Section 3 of Chapter 6

2017 Region D Nonresident Quota: 400

Hunt Area	License Type	Quota change from 2016
Herd Unit Total	None	None

Management Evaluation

Current Postseason Population Management Objective: 7,500 (6,000-9,000)

Management Strategy: Recreational

2016 Postseason Population Estimate: 6,700

2017 Proposed Postseason Population Estimate: 6,900

2016 Hunter Satisfaction: 58% Satisfied, 21% Neutral, 21% Dissatisfied

Mule deer in the Shirley Mountain herd unit are managed toward a population objective of 7,500. The population was estimated using a spreadsheet model developed in 2012 and updated in 2016. The herd unit is managed for recreational opportunity. The management objective was last reviewed in 2015 and reduced from 10,000 to 7,500 mule deer.

Herd Unit Issues

The Shirley Mountain herd unit is comprised of a mixture of habitat and landownership types. Hunter access to public lands containing mule deer habitat is considered good. Small groups of mule deer are considered nuisances and create damage in a localized area on the west side of Shirley Mountain, in the Lost Creek and Sage Creek drainages. Trends in mule deer numbers were in decline until this year; while interest from both

resident and nonresident hunters in this herd unit has remained high. Expansion of wind farms in the eastern and southern portions of this herd unit is eminent.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration’s (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2016 (Figures 1 and 2). These figures also include data from January - May of bio-year 2015 to describe the weather conditions immediately preceding bio-year 2016. Monthly mean temperatures in bio-year 2016 were slightly warmer than the 50-year monthly means during some months but otherwise similar to the 50-year monthly means. Precipitation in April of 2016, primarily received in the form of very moist snow was 174% of the 50-year monthly mean. Following the wetter than average spring of bio-year of 2015, the summer of bio-year 2016 was drier than average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2016.

Figure 1. January 2016 - January 2017 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

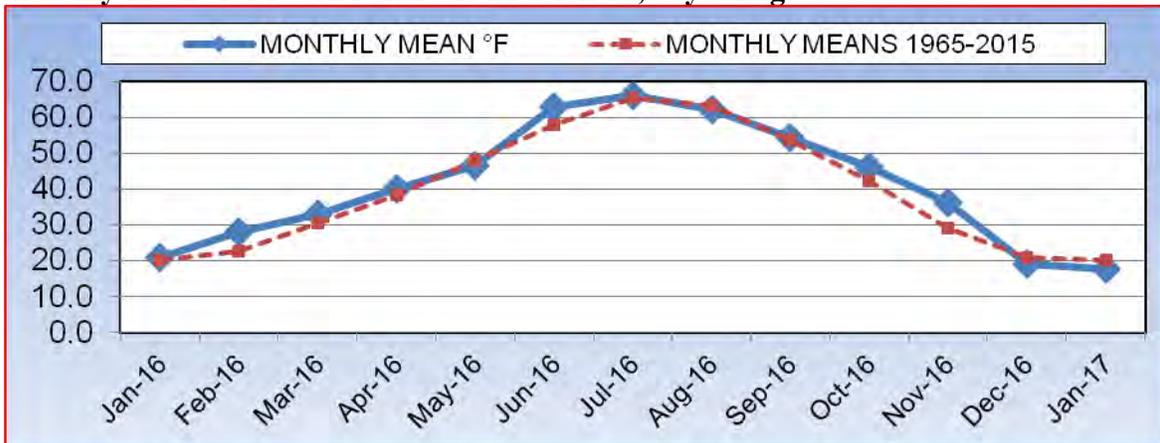
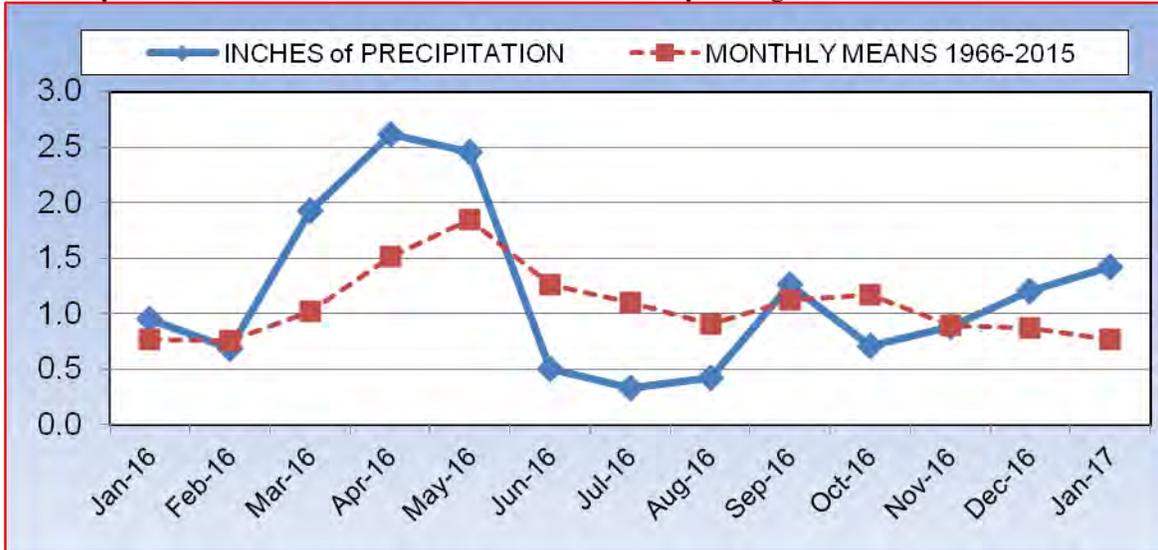


Figure 2. January 2016 - January 2017 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were observed in bio-year 2016 due to adequate amounts of late spring precipitation being received in this herd unit. The limited number of habitat transects that have been established within this herd unit do not provide sufficient data to make reliable inferences about habitat quantity or quality. Most shrub-steppe habitat in this herd unit is decadent and in need of treatments designed to improve the nutritional value.

Field Data

Postseason classifications were conducted from the ground in late November of 2016. A less than adequate sample size of 291 mule deer was similar to the 2015 sample size. Yearling buck ratios decreased in 2016 by 35% to 13/100 does. This decrease was difficult to explain because yearlings bucks should have been protected from harvest with the 3-points or more on either antler hunting season limitation and the excellent fawn ratio in 2015 (72/100 does). The adult buck ratio increased in 2016 to 35/100 does, for a 33% increase from 2015. The overall buck ratios increased from 42/100 does in 2015 to 49/100 does in 2016. This increase was also attributed to previous winter's mild conditions and improved range conditions. Fawn ratios decreased 22% from 72/100 does in 2015, to 56/100 does in 2016. Although this was unexpected as winter and spring conditions were similar to the previous year when the fawn ratio was excellent, similar decreases were observed in adjacent herd units.

Harvest Data

Overall, harvest decreased and the satisfaction rate increased in 2016. This marked the fourth year of the 3-points or more on either antler limitation in this herd unit. The antler

point restriction was implemented as an additional protection specifically for yearling bucks. General season lengths had already been incrementally reduced to the current 7-day season during previous years to protect bucks from over exploitation. The final 2016 WGFD deer harvest survey report indicated 548 active general licensed hunters' harvested 210 mule deer for an overall success rate of 39%. General season buck harvest decreased 10% and hunter numbers decreased 5%, as compared with the 2015 hunting season statistics. The percentage of hunters with harvest survey satisfaction ratings of satisfied, or very satisfied, increased 2% to 58% in 2016.

Population

In 2016, we continued to use the CJ,CA model. This model produced the highest Fit score and the lowest AICc score. The TSJ,CA model's use was discontinued in 2015 because it tended to simulate mule deer population dynamics with fawn survival rates alternating annually between the low and high parameters and it this did not correlate to what managers observed annually for survival rates in fawns ratios and weather severity. We rated this model as poor, and not biologically defensible. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model, and primarily due to less than adequate sample sizes for postseason classification counts (Morrison 2012).

We also incorporated 3 abundance estimates into the beginning of is model (Strickland, et. al 1994) which assisted in reducing the model's overall propensity to overestimate this population. This herd unit is considered to contain significantly less mule deer than the spreadsheet model estimates. Given the openness of the landscape, well defined herd unit boundaries, and ground survey effort, we should be able obtain a larger sample classification sample size if this population was actually as high as what the model estimate indicated. The trajectory in the trend depicted in the spreadsheet model's annual population estimates has appeared to be fairly representative of actual mule deer abundance in this herd unit. Without other information such as a recent independent abundance estimates or long-term survival data to incorporate into the model, accuracy of estimates will continue to be unknown.

In 2015, the management objective was decreased from a population objective of 10,000 mule deer postseason to 7,500 mule deer postseason. This reduction was completed to better align the population objective with the population estimates generated by the spreadsheet model, and to provide managers with a more sustainable management goal.

Management Summary

An 8-day General season for antlered mule deer or any white-tailed deer will be offered in 2017. We removed the antler point limitation because of the increasingly high buck ratios observed under this limitation. We also added one day to the season to allow for a full weekend of hunting opportunity on the end of the season. Type 6 private land doe or fawn licenses continued to be prescribed to reduce damage and nuisance deer issues in the Lost Creek and Sage Creek drainages.

The Region D nonresident quota was retained at 400 licenses because we are providing more harvest opportunity in this herd unit through the removal of the antler point limitation and the addition of one day at the end of the season for a whole weekend of hunting opportunity.

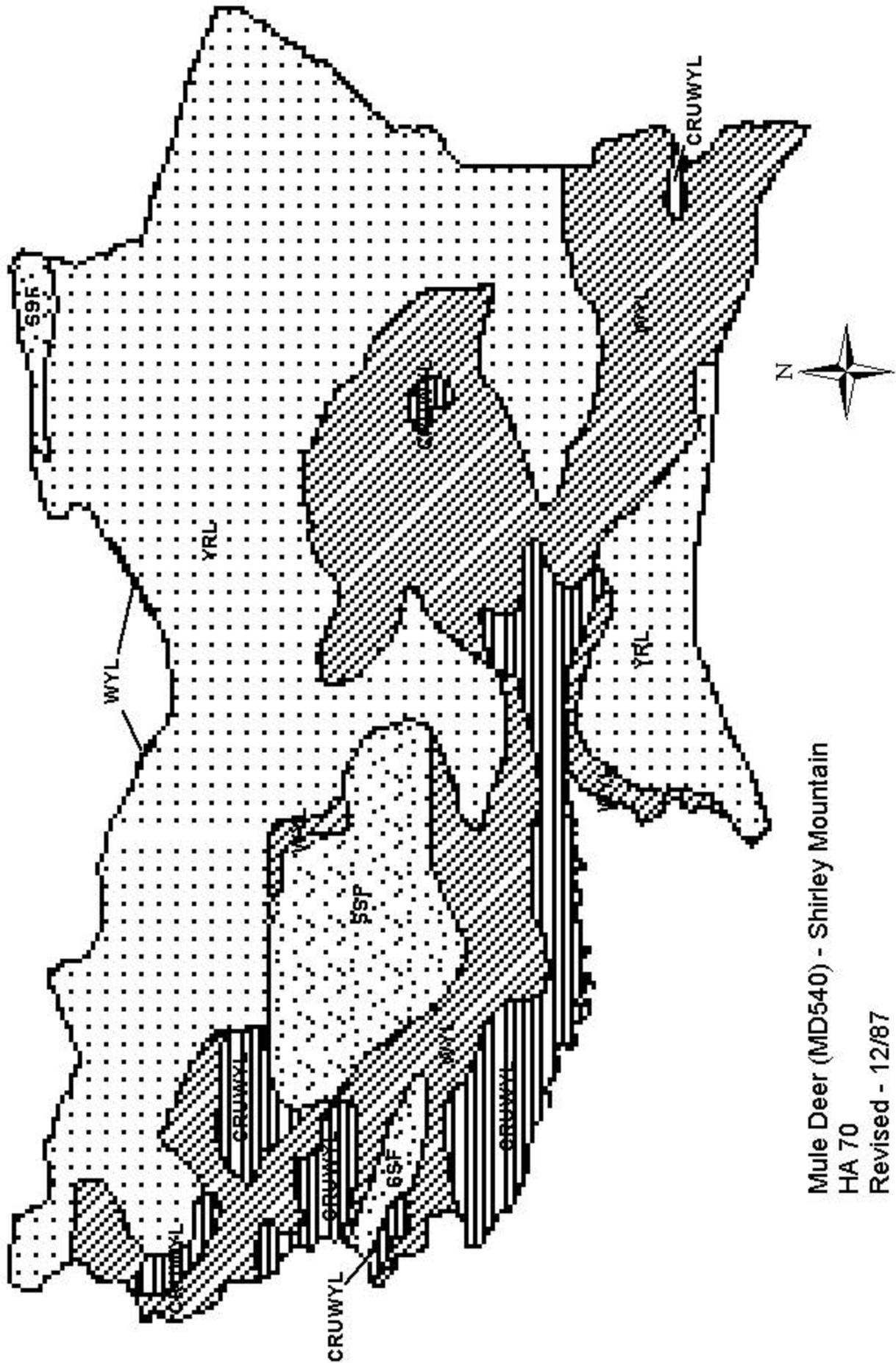
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Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population data. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 41 pp.

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Strickland, D., L.L. McDonald, G. Johnson, W. Erickson, D. Young Jr., and J. Kern. 1994. An Evaluation of Mule Deer Classifications From Helicopter and Ground Surveys. Western Ecosystems Technology, Inc. Cheyenne. 61pp.



Mule Deer (MD540) - Shirley Mountain
 HA 70
 Revised - 12/87

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD541 - PLATTE VALLEY

HUNT AREAS: 78-81, 83, 161

PREPARED BY: WILL SCHULTZ

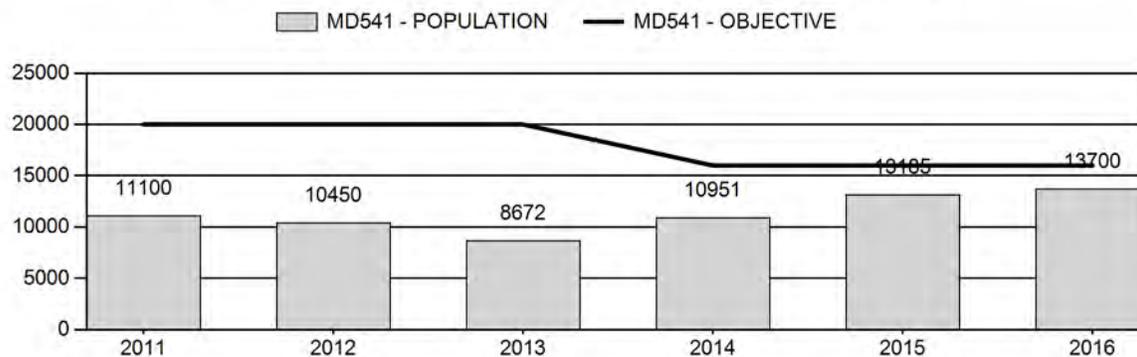
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	10,872	13,700	13,300
Harvest:	483	526	700
Hunters:	1,413	869	1,250
Hunter Success:	34%	61%	56 %
Active Licenses:	1,417	869	1,250
Active License Success:	34%	61%	56 %
Recreation Days:	7,613	5,404	8,000
Days Per Animal:	15.8	10.3	11.4
Males per 100 Females	32	47	
Juveniles per 100 Females	57	62	

Population Objective (± 20%) :	16000 (12800 - 19200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-14.4%
Number of years population has been + or - objective in recent trend:	23
Model Date:	02/16/2017

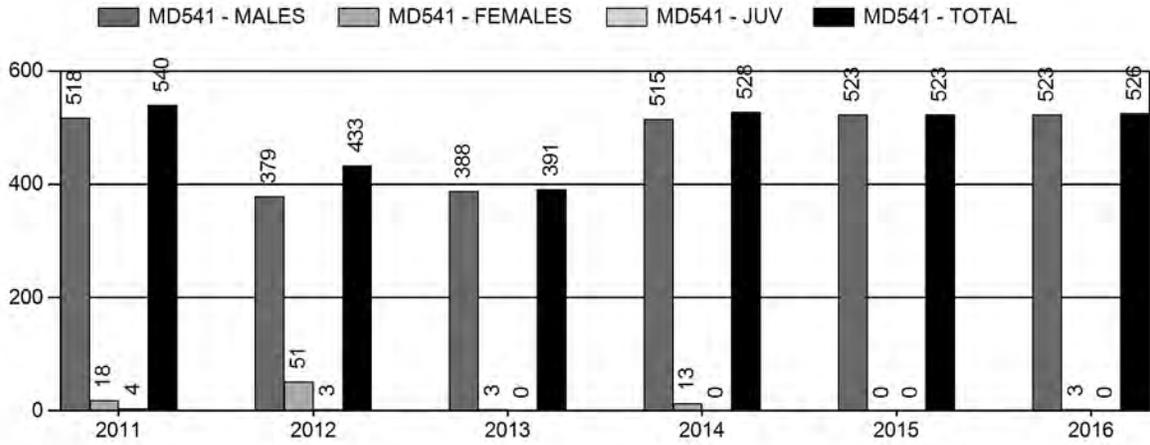
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.2%	0.2%
Males ≥ 1 year old:	18%	24%
Total:	7.0%	6%
Proposed change in post-season population:	3.0%	-2.5%

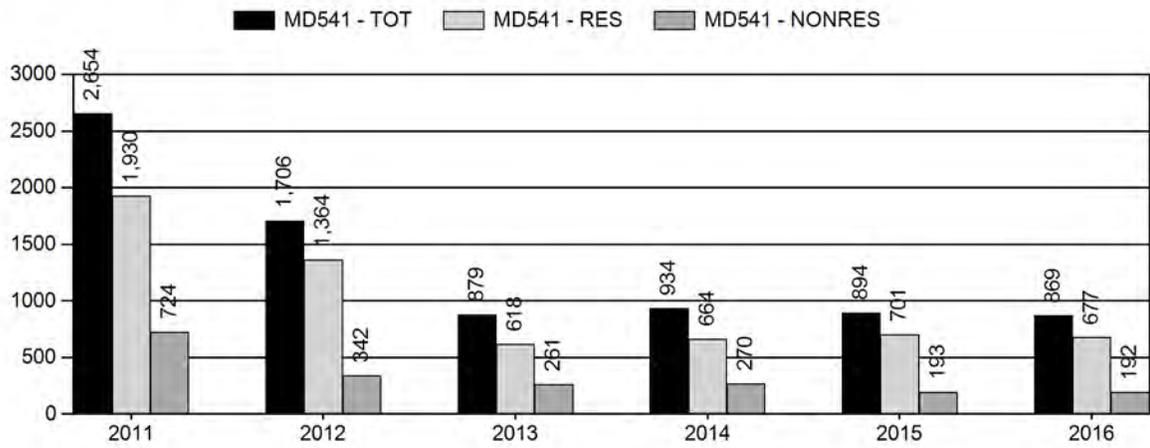
Population Size - Postseason



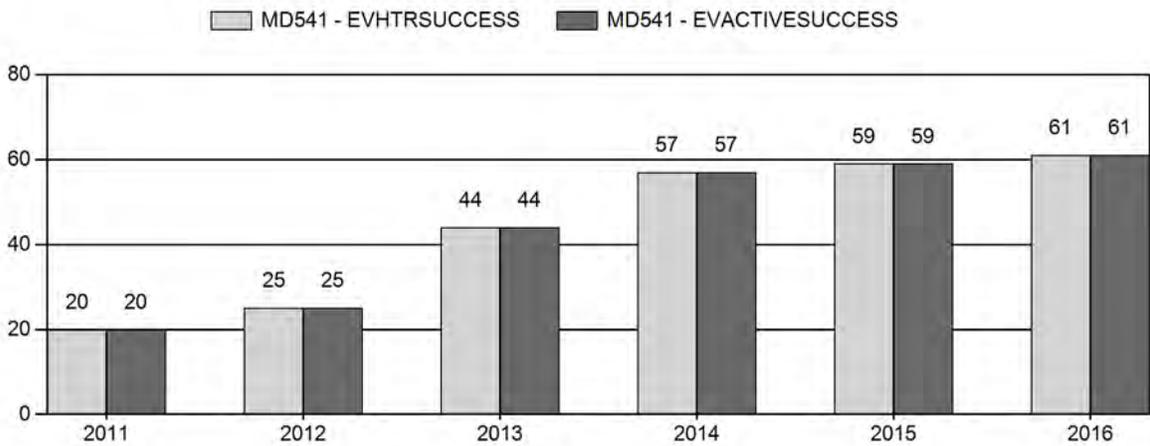
Harvest



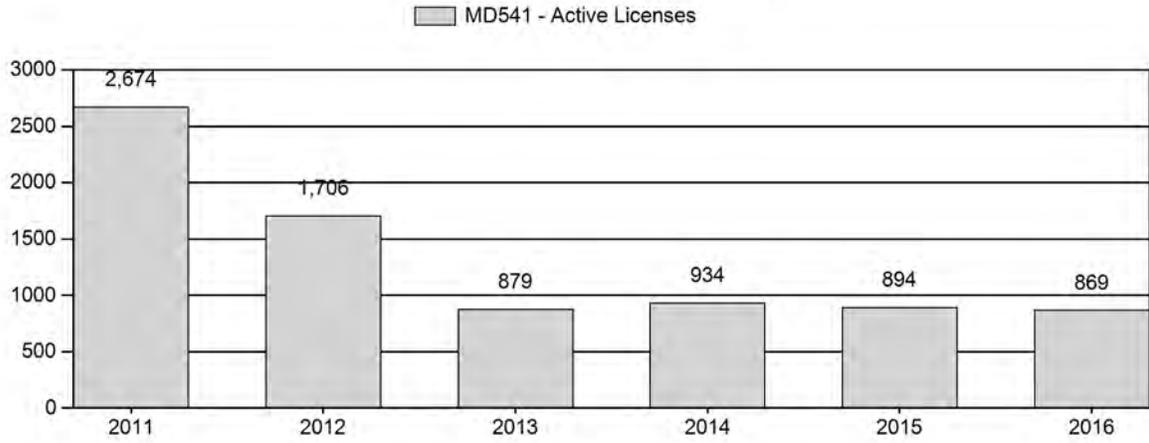
Number of Active Licenses



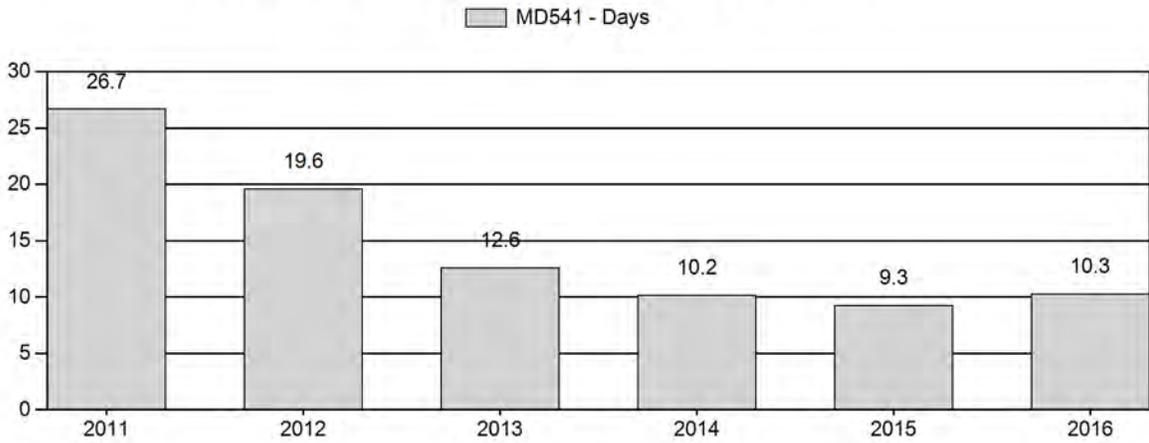
Harvest Success



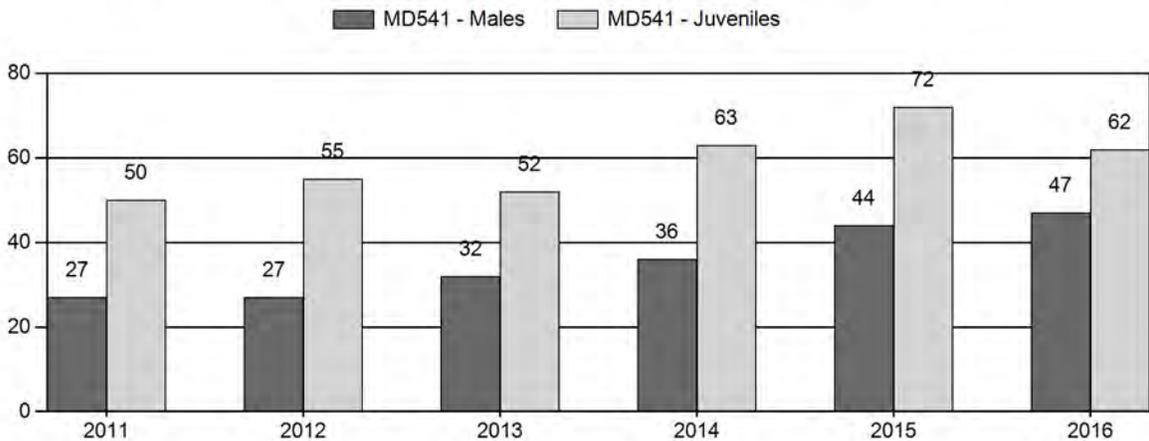
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD541 - PLATTE VALLEY

Year	Post Pop	MALES								FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Yng			Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult	
2011	11,100	125	0	0	0	392	517	15%	1,895	56%	947	28%	3,359	999	7	21	27	± 1	50	± 2	39	
2012	10,450	70	0	0	0	143	213	15%	794	55%	438	30%	1,445	980	9	18	27	± 2	55	± 4	43	
2013	8,672	136	0	0	0	209	345	17%	1,092	55%	565	28%	2,002	937	12	19	32	± 2	52	± 3	39	
2014	10,951	85	118	86	30	0	319	18%	888	50%	560	32%	1,767	964	10	26	36	± 3	63	± 4	46	
2015	13,185	143	82	130	19	0	374	21%	842	46%	604	33%	1,820	962	17	27	44	± 3	72	± 5	50	
2016	13,700	96	206	250	7	0	559	23%	1,188	48%	731	29%	2,478	1,159	8	39	47	± 3	62	± 3	42	

**2017 HUNTING SEASON RECOMMENDATIONS
PLATTE VALLEY MULE DEER (MD541)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
78	1	Oct. 1	Oct. 14	375	Limited quota	Antlered mule deer or any white-tailed deer
79, 161	1	Oct. 1	Oct. 14	400	Limited quota	Antlered mule deer or any white-tailed deer
80, 83	1	Oct. 1	Oct. 14	250	Limited quota	Antlered mule deer or any white-tailed deer
81	1	Oct. 1	Oct. 14	150	Limited quota	Antlered mule deer or any white-tailed deer
	Archery	Sep. 1	Sep. 30			Refer to license type and limitations in Section 3 of Chapter 6

Hunt Area	License Type	Quota change from 2016
78	1	+75
79, 161	1	+100
80, 83	1	+50
81	1	+50
161	1	-25
Herd Unit Total	1	+250

Management Evaluation

Current Postseason Population Management Objective: 16,000 (12,800 – 19,200)

Management Strategy: Recreational

2016 Postseason Population Estimate: 13,200

2017 Proposed Postseason Population Estimate: 13,600

2016 Hunter Satisfaction: 74% Satisfied, 15% Neutral, 11% Dissatisfied

Mule deer in the Platte Valley herd unit are managed toward a numeric objective of 16,000. The population was estimated using a spreadsheet model developed in 2012 and is updated annually. The herd is managed for recreation opportunity. The objective was

reviewed in 2014 and reduced from a postseason population management objective of 20,000 mule deer to 16,000 mule deer.

In the spring of 2016, WGFD conducted an online survey to investigate the opinions and behaviors of mule deer hunters related to the 2013 conversion of general hunting seasons to limited quota hunting seasons the Platte Valley herd unit. The results of this survey are available at the following webpage: wgfd.wyo.gov/plattevalleymuledeer

In July of 2016, WGFD held a series of public meetings in Cheyenne, Laramie, Rawlins, and Saratoga to review the Department's progress on the action items from the Platte Valley Mule Deer Plan (WGFD 2012). A total of 32 individuals attended these meetings. Overall, hunters and other stakeholders appear to be very satisfied with the improvements we have made in mule deer management in this herd unit.

Herd Unit Issues

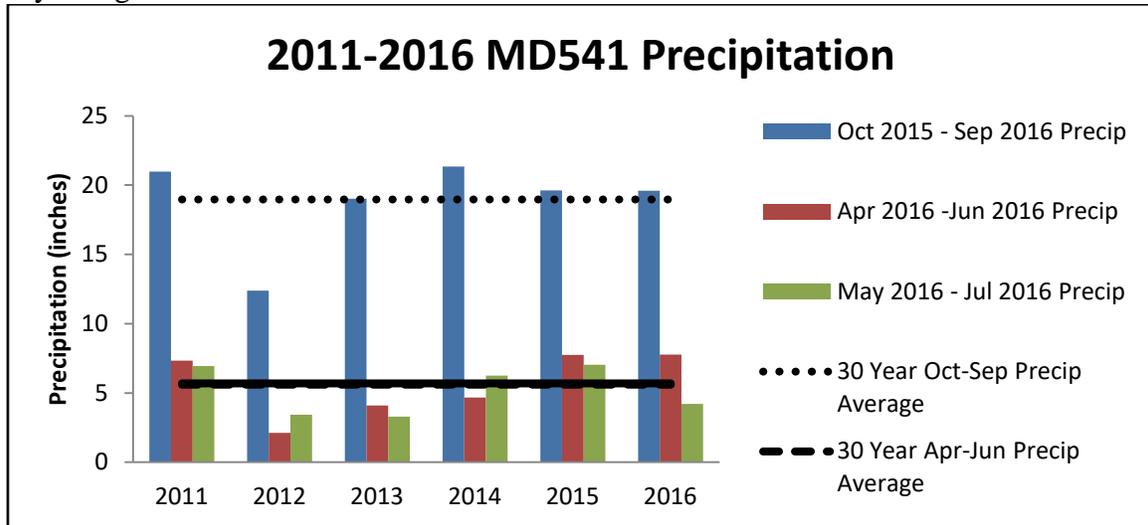
Fieldwork for several Platte Valley Habitat Partnership projects has been initiated during this past 2 years but progress on large scale projects has been delayed by the NEPA constraints associated with working on federally managed lands. A large proportion of the mule deer that reside in this herd unit during winter spend the summer and early fall in Colorado which complicates management. The Platte Valley Mule Deer Initiative and Platte Valley Habitat Partnership continue to work on improving mule deer management and habitat.

Weather

- Compiled by WGFD Terrestrial Habitat Biologist, Katie Cheesbrough

Annual bio-year precipitation from October 2015 through September 2016 was slightly higher than the 30 year average. Although, growing season precipitation (April-June 2016) across the herd unit was significantly higher than the 30 year average, the later growing season precipitation for high elevation spring/summer/fall ranges (May-July 2016) was much lower than average and last year. As illustrated by Figure 1, most of the precipitation occurred outside of the primary growing season, likely in the form of snow. There was significant spring moisture in 2016 from both early spring snows and significant late spring rain events. However, June through September of 2016 was extremely dry. The lack of rain throughout the summer and into the fall may have helped to trigger and perpetuate the large fires that occurred throughout the Sierra Madre Range in 2016.

Figure 1. 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), Platte Valley mule deer herd unit, Wyoming.



In 2016 the Platte Valley mule deer herd unit experienced a relatively warm fall which extended well into December. These warmer temperatures and late fall moisture resulted in a late fall green-up, which may have provided deer with an extra nutritional boost before colder temperatures and snow settled into the area. January brought several big snowfall events (especially near the Wyoming/Colorado state-line) followed by sustained low temperatures that may have challenged mule deer within the unit for a couple of weeks. However, wind events and a warming trend in February cleared the snow from much the winter range. Late February reports snowpack at mid-elevations (snow water equivalent), as reported by the South Brush Creek Snotel Site (Figure 2), at 101% of normal. Higher elevations are seeing similar winter snowpack with the North French Creek Snotel Site (Figure 3) reporting a snowpack that is 105% of normal.

Figure 2. October-February bio-year 2016 South Brush Creek Snotel Site precipitation data, Wyoming.

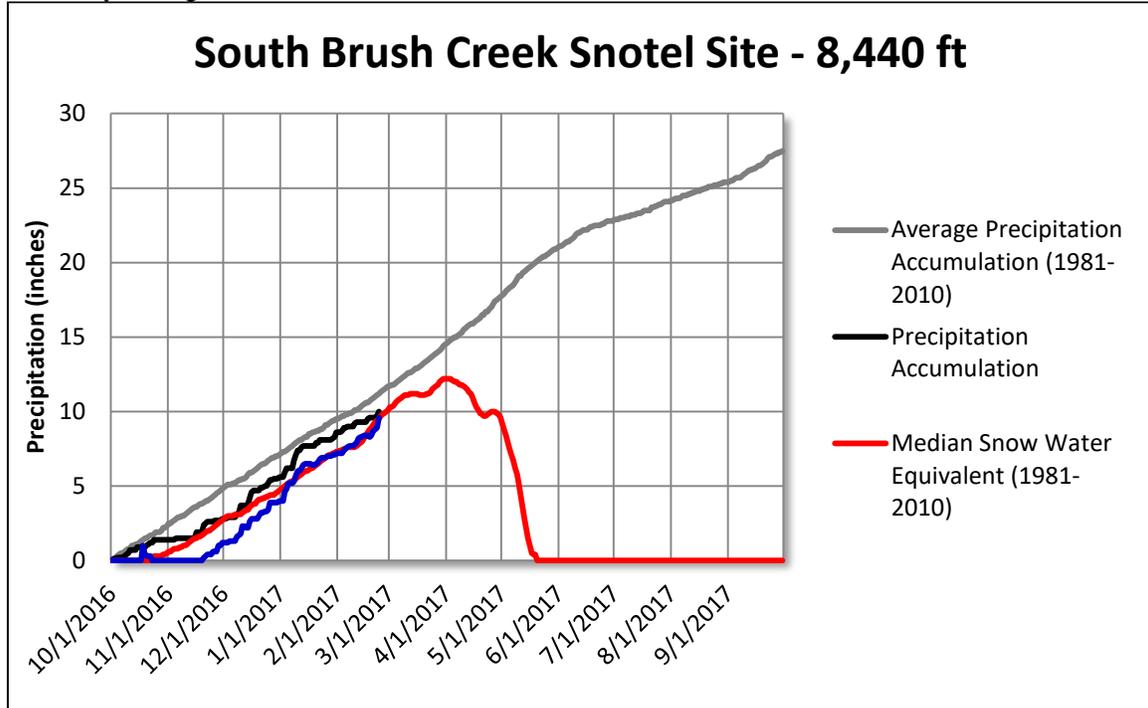
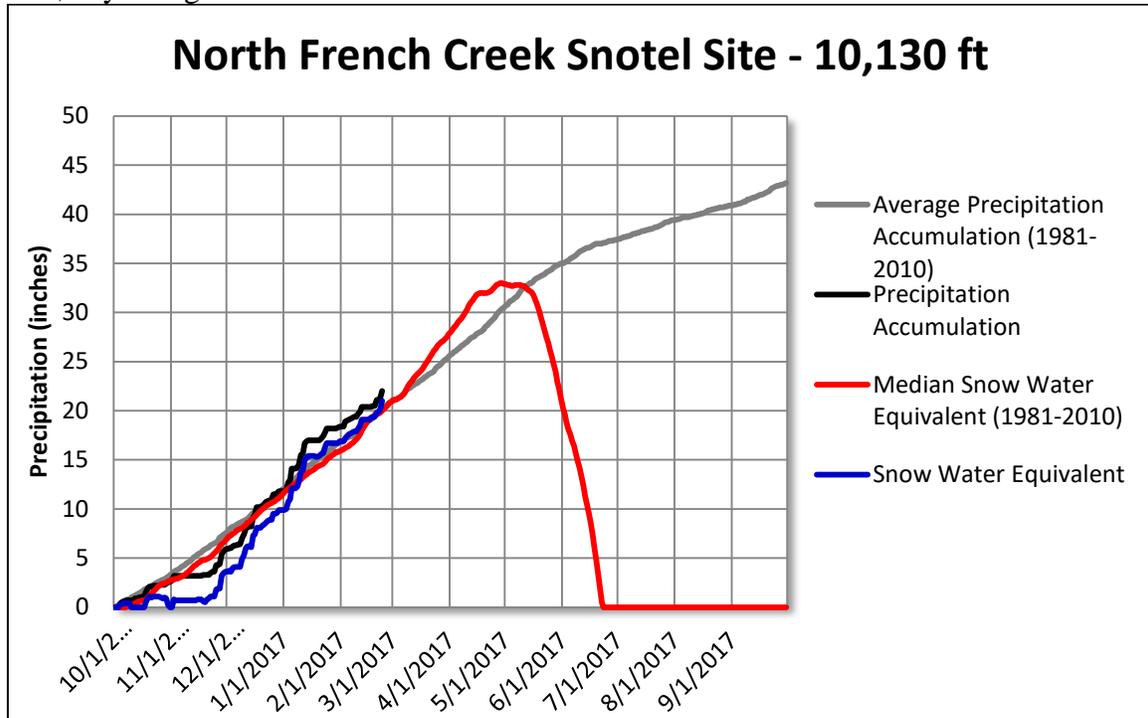


Figure 3. October-February bio-year 2016 North French Creek Snotel Site precipitation data, Wyoming.



Habitat

- Compiled by WGFD Terrestrial Habitat Biologist, Katie Cheesbrough

The 2016 April – June precipitation was higher than the 30 year average, reflecting abundant early spring precipitation. However, the May – July precipitation data was relatively low compared to the 30 year average, which illustrates that precipitation really slowed as the summer progressed. As such we saw high vegetative production in the spring providing excellent forage during early parturition. As precipitation slowed in mid June, vegetation began to cure out early. As mentioned above, the early drying of vegetation, accompanied by strong winds, the increase of fine fuels from the two previous years of high grass production, and the abundance of dead beetle killed lodgepole created an environment conducive to large wildfires in the Sierra Madres. These wildfires could potentially serve to increase aspen production and diversify forest species age class and herbaceous production throughout transition, parturition, and summer ranges in the areas affected.

Rapid Habitat Assessments conducted throughout the herd unit in 2015 and 2016 suggest that many important shrub habitats continue to underperform due to maturity and decadence caused by a lack of disturbance. Although early season precipitation in 2014 and 2015 created a flush of cheatgrass across the Platte Valley, we saw a change in cheatgrass abundance while monitoring cheatgrass trials on the Pennock WHMA. There was a significant decrease in cheatgrass in untreated areas suggesting some sort of environmental factor may have slowed/stunted the growth of cheatgrass in that particular area. However, cheatgrass is still a significant issue across the herd unit and it continues to degrade mule deer habitat by outcompeting native grasses and forbs and can create conditions that are favorable to catastrophic wildfires.

Field Data

The 2016 Platte Valley Herd Unit postseason classification ratios were 47 bucks and 62 fawns per 100 does; based on an adequate sample of 2,478 mule deer. The buck ratio increased 7% in 2016. This increase was attributed to the combination of both a conservative limited quota hunting season and greater over winter survival than in recent years. The observed fawn ratio at 62 fawns/100 does was 14% less than the previous year and 7% greater than the previous 5-year average. A mild winter and timely precipitation contributed to providing improved habitat conditions and increased nutrition for mule deer. Rodent and rabbit populations appeared to be decreasing from recent highs and may have contributed the lower fawn survival rate observed in 2016 as there were less alternative food sources available for mule deer predators.

Harvest Data

2016 marked the fourth year for limited quota hunting in the Platte Valley herd unit. Each hunt area was prescribed a license quota specific to the hunt area. The same quotas from the 2013 season were retained through the 2016 season and permitted managers the opportunity to evaluate the effect of limited quota hunting on harvest and population

dynamics in this herd unit. A total of 869 active licensed hunters harvested 523 bucks and 3 does. Overall harvest success increased from 59% in 2015 to 61% in 2016.

The Beaver Creek wild fire occurred in Hunt Area 81 during the summer and early fall of 2016. Most of the US Forest Service lands in Hunt Area 81 were closed because of the fire into the early autumn. WGFD offered all deer Hunt Area 81 licensed hunters an opportunity to not hunt and reserve their license for the 2017 season. There were 87 hunters who took advantage of this opportunity. US Forest Service lands were reopened in time for the rifle season in October, and 112 hunters who did not turn their licenses in enjoyed a 77% harvest success rate.

The 2016 harvest rate was attributed to the recent increase in fawn survival rates, a season length of 14-days, increased buck ratios, and limited quota seasons. Hunter satisfaction remained at 74% for hunters who indicated they were very satisfied or satisfied in 2016.

Harvest rates of yearling bucks increased in 2016. Yearling bucks made up 16% (n = 13) of the field checked sample for buck harvest. This was an increase of 3% from 2015. Field checked harvest data from years previous to the implementation of limited quota hunting seasons indicated on average, greater than 25% of the buck harvest consisted of yearling bucks.

Population

We continued the use of the TSJ,CA spreadsheet model in 2016. This model provided the balance of allowing juvenile survival rates to be optimized for alignment with observed population dynamics, while maintaining a constant survival rate for adult mule deer in model simulations. The TSJ,CA model produced a 2016 postseason population estimate of 13,700 mule deer for the Platte Valley herd unit. This was a 4% increase in the population estimate from 2015. TSJ,CA model aligned very well with abundance estimates for this herd unit and corroborated with the observations from field managers and the public. The TSJ,CA model also offered the best AICc score of the suite of spreadsheet models. We rated this model as fair, and biologically defensible in our evaluation. This rating was based on criteria identified in the user's guide for the WGFD spreadsheet model (Morrison 2012).

We continued to evaluate migration data from the Platte Valley mule deer radio-collar movement project (Kauffman, et.al. 2015) to identify migration corridors, migration bottlenecks and stopover habitats. WGFD will eventually use this data to assess current and potential threats to maintaining connectivity for important mule deer habitat within this herd unit.

Management Summary

In 2017, the limited quota license quotas were increased by approximately 25%. This increase was in response to the increasingly high observed postseason buck ratios, and to

offer optimal recreational hunting opportunities in the Platte Valley herd unit. Hunt Area 161 was combined with Hunt Area 79 in the license quota as there were very little public hunting opportunities in Hunt Area 161, similar to Hunt Area 83.

Literature Cited

Kauffman, M., H. Sawyer, W. Schultz, and M. Hayes. 2015. Seasonal Ranges, Migration, and Habitat Use of the Platte Valley Mule Deer Herd. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie. USA. 21 pp.

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

Wyoming Game and Fish Dept. 2012. 2012 v.110512 Platte Valley Mule Deer Plan. Wyoming Game and Fish Department, Cheyenne. 90 pp.

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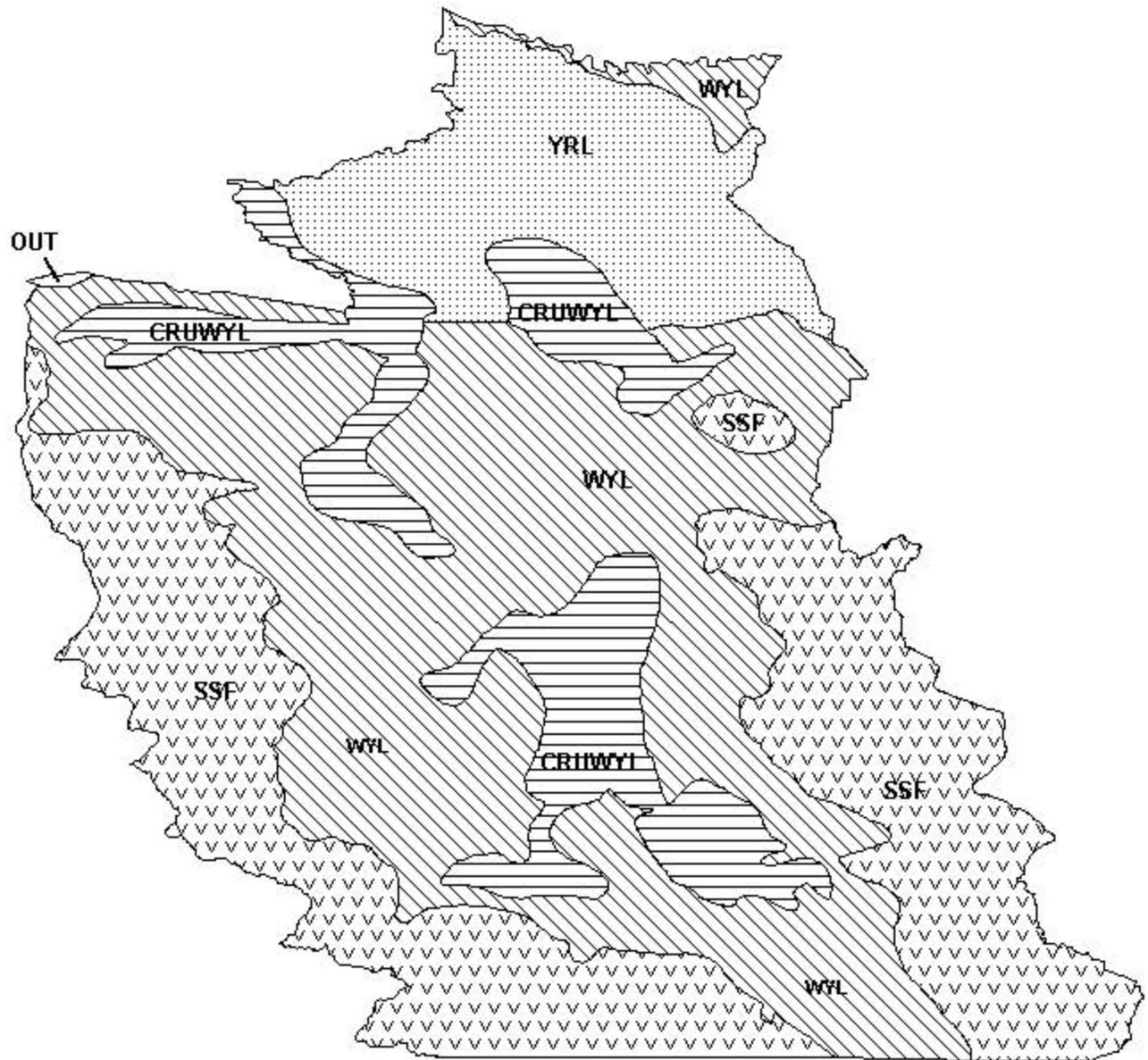
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Yost, J. 2009. North Park Deer Movement and Distribution Study Update - March, 2009. Colorado Division of Wildlife, Steamboat Springs. 4 pp.

Wyoming Game and Fish Dept. 2012. 2012 v.110512 Platte Valley Mule Deer Plan. Wyoming Game and Fish Department, Cheyenne. 90 pp.



Mule Deer (MD541) - Platte Valley
 HA 78-81, 83, 161
 Revised - 12/87



2016 - JCR Evaluation Form

SPECIES: White tailed Deer

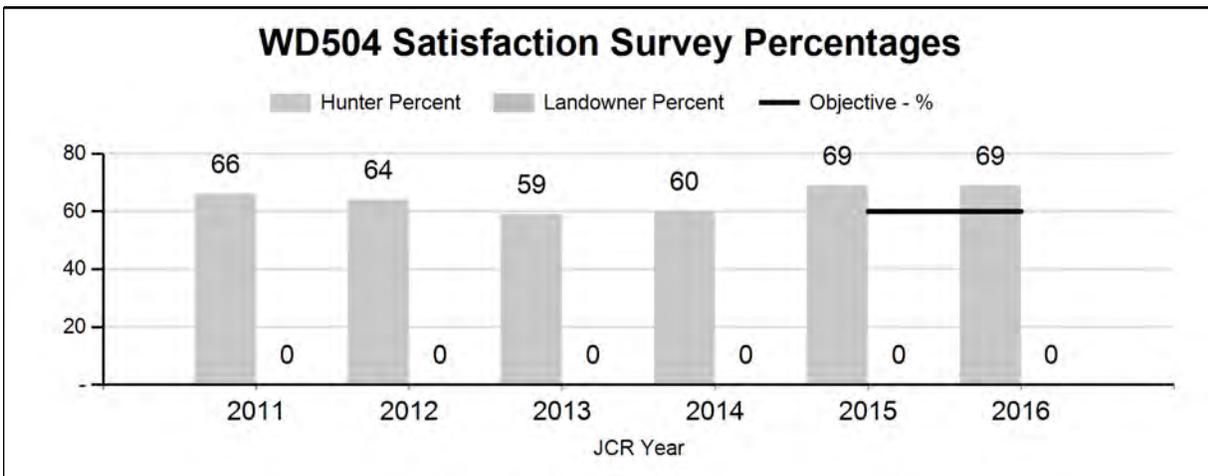
PERIOD: 6/1/2016 - 5/31/2017

HERD: WD504 - SOUTHEAST WYOMING

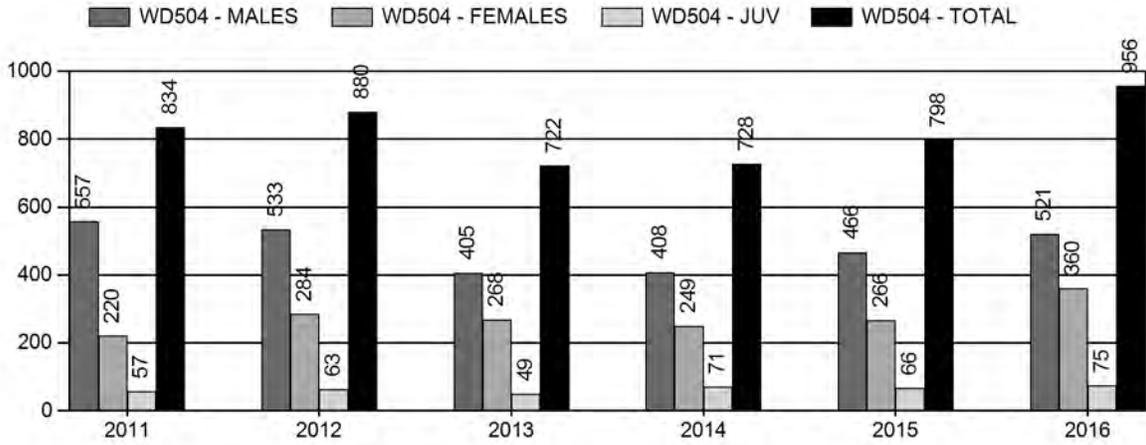
HUNT AREAS: 15, 59-64, 70, 73-81, 83, 161

PREPARED BY: MARTIN HICKS

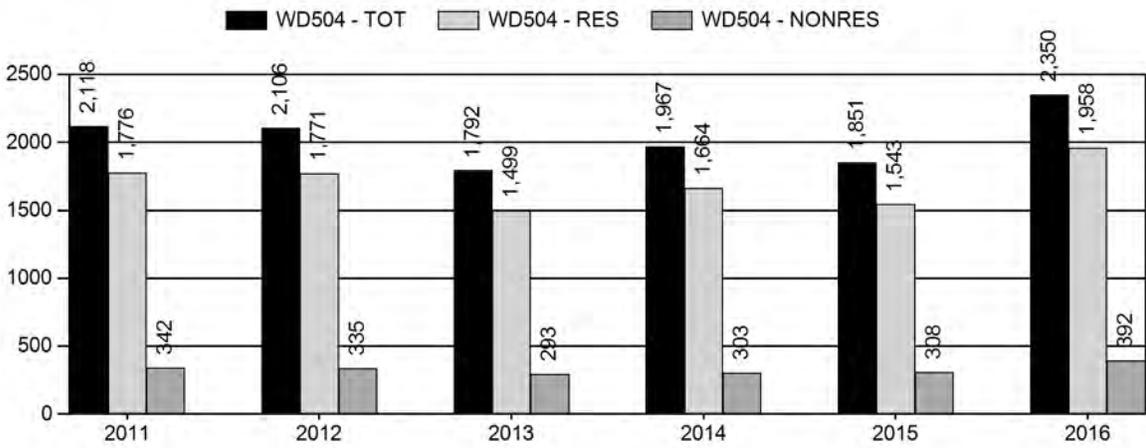
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	64%	64%	70%
Landowner Satisfaction Percent	0%	0%	0%
Harvest:	792	956	1,000
Hunters:	1,967	2,350	2,450
Hunter Success:	40%	41%	41 %
Active Licenses:	2,196	2,670	2,725
Active License Success:	36%	36%	37 %
Recreation Days:	8,553	10,533	10,500
Days Per Animal:	10.8	11.0	10.5
Males per 100 Females:	38	0	
Juveniles per 100 Females	68	0	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			N/A%
Number of years population has been + or - objective in recent trend:			2



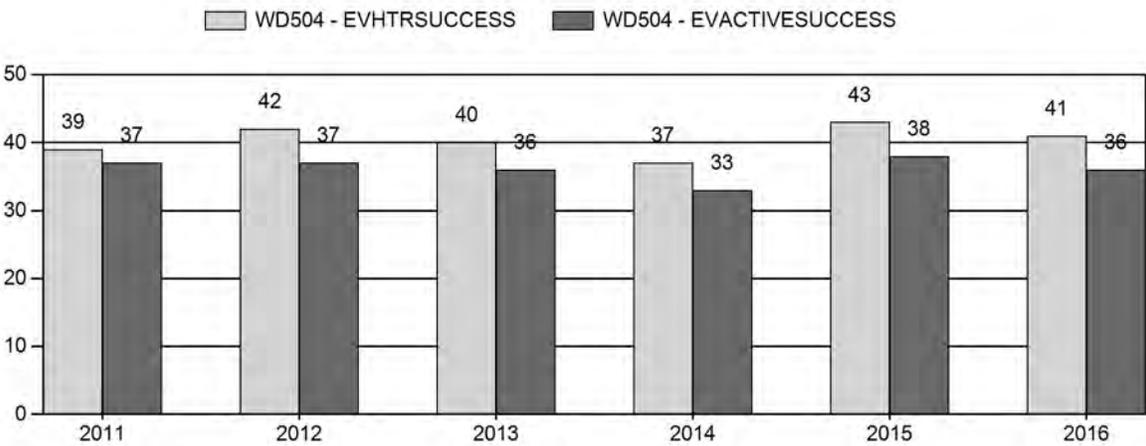
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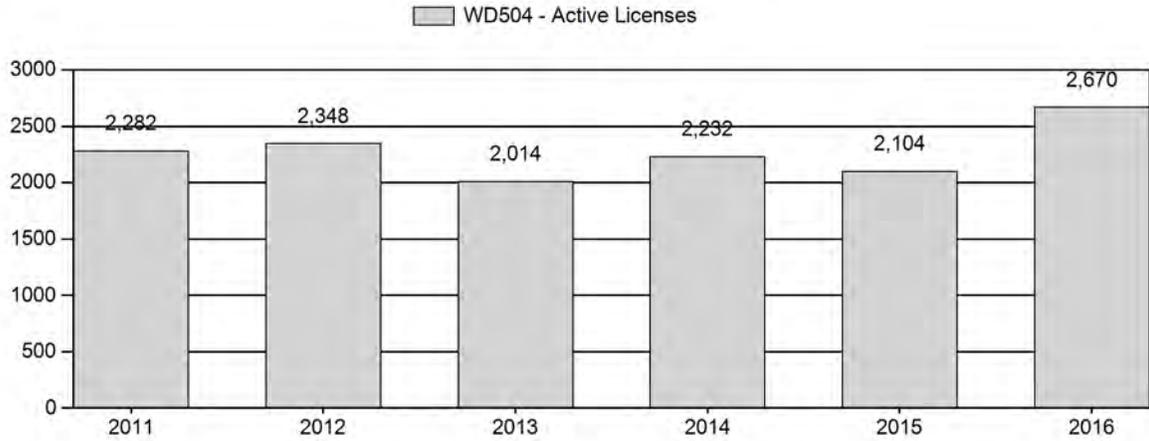
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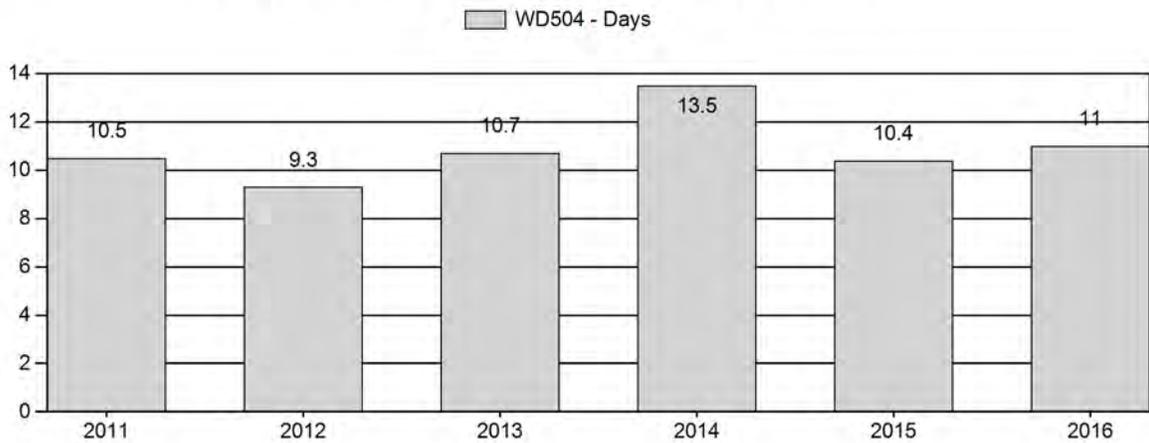
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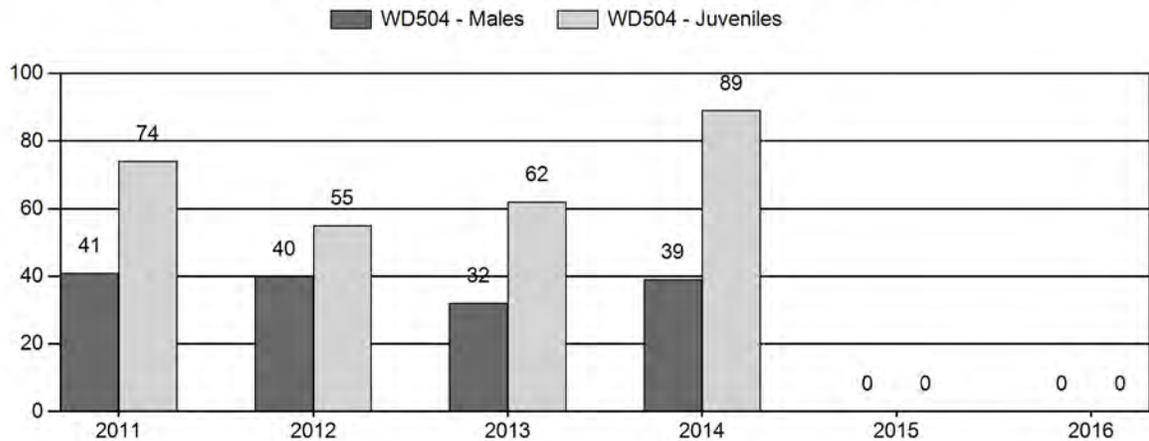
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2017 HUNTING SEASONS
SOUTHEAST WYOMING WHITE-TAILED DEER HERD (WTD504)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
15	3	Oct. 1	Nov. 30	400	Limited quota	Any white-tailed deer
	3	Dec. 1	Dec. 31			Doe or fawn white-tailed deer
15	8	Oct. 1	Dec. 31	300	Limited quota	Doe or fawn white-tailed deer
59,60,64	3	Nov. 1	Nov. 30	150	Limited quota	Any white-tailed deer, all lands within Curt Gowdy State Park, archery only; the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille (Sybille Wildlife Research Unit) south of Wyoming Highway 34 shall be closed
59,60,64	3	Dec. 1	Dec. 31			Doe or fawn white-tailed deer valid in Area 59 and Area 64
59,60,64	8	Nov. 1	Dec. 31	125	Limited quota	Doe or fawn white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille (Sybille Wildlife Research Unit) south of Wyoming Highway 34 shall be closed; all lands within Curt Gowdy State Park, archery only
70,74	3	Oct. 1	Dec. 31	50	Limited quota	Any white-tailed deer
70,74	8	Oct. 1	Dec. 31	50	Limited quota	Doe or fawn white-tailed deer
75,76,77	3	Oct. 1	Dec. 31	75	Limited quota	Any white-tailed deer
75,76,77	8	Oct. 1	Dec. 31	100	Limited quota	Doe or fawn white-tailed deer
78,79,80,81,161	3	Oct. 1	Dec. 31	25	Limited quota	Any white-tailed deer
78,79,80,81,161	8	Sept. 1	Dec. 31	25	Limited quota	Doe or fawn white-tailed deer

Special Archery Season Hunt Areas	Opening Date	Closing Date	Limitations
15,59,60,64,70,74,75,76,77,78,79,80, 81,161	Sept. 1	Sept. 30	Refer to Section 2 of this Chapter

Hunt Area	Type	Quota change from 2016
70,74	3	+25
70, 74	8	+25
75,76,77	3	+25
75,76,77	8	+75
Total	3	+50
	8	+100
Total		+150

Management Evaluation

Current Hunter Satisfaction Management Objective: Hunter satisfaction; Target goal: $\geq 60\%$

Management Strategy: Private Land

2016 Hunter Satisfaction Estimate: 70%

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 67%

The management objective for the Southeast Wyoming Herd Unit was reviewed in 2015 through the public objective review process. It was determined to abandon the numeric objective of 4,000 white-tailed deer and go with a sportsmen satisfaction survey with a satisfaction goal of $\geq 60\%$ and a private land management strategy. A landowner satisfaction survey will not be used in conjunction with the sportsmen survey. The sample size would be very low and the majority of occupied white-tailed deer habitat is on private land, which complicates management since there is little access opportunities.

There is not a reliable post-season population estimate. This is an open herd with Colorado and Nebraska so trying to model this herd would violate the assumption that it is closed. Seasons are designed to provide opportunity during the mating period when male deer are more vulnerable to harvest. Management is driven primarily by local Department personnel perception of population trend and landowner tolerance for this species.

Weather

Weather in this herd unit was relatively normal during the past bio-year. Precipitation amounts were above average at all elevations throughout southeast Wyoming during spring months then became dry and hot from July through November. Timing of precipitation and amounts received during key growth periods for cool season grasses and preferred transitional range and winter range shrub species was excellent. While early season growing conditions were optimal, late summer and fall precipitation were lacking. Generally speaking weather patterns most likely had

a positive influence on all big game species. For specific meteorological information for the Southeast Wyoming herd unit the reader is referred to the following link:

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

Habitat

Forage availability continued to improve in 2016 with an increase in amounts of precipitation received and the timeliness of when it was received. Precipitation received in April, May, and early June resulted in excellent growth of cool season grasses and forbs, and above average leader growth on preferred key shrubs. Cheatgrass continues to be a major threat to native rangelands and big game ranges, particularly at all elevations below 6,500'. Its presence ties the hands of habitat managers limiting habitat enhancement options, and may result in reduced carrying capacities of rangelands if it is the predominant specie. This herd unit is comprised of a mix of native rangelands, CRP, dryland and irrigated croplands.

Many riparian areas within the herd unit experienced some level of springtime flooding in 2016. With favorable land management post-flooding, the potential does exist for cottonwood and willow regeneration in many stream systems. Establishment of these species may aid in reversing negative trends in woody species composition and age classes of important understory browse species and woody species that provide thermal and hiding cover values. White-tailed deer inhabit areas that are supported by agriculture, including dryland and irrigated croplands.

Field/Harvest Data

This herd will grow rapidly until densities become too high, then seasons are adjusted to try and bring the population down or an EHD outbreak occurs that reduces densities. Hunter success is typically around 35% with hunter effort running about 11 days per harvest. Hunting opportunity is limited to private land. Low success and high effort rates were contributed to hunters trying to find a white-tailed deer on public land or trying to harvest a deer during the general season when they are less vulnerable to harvest. Chronic wasting disease is found throughout the herd unit, but the diseases impact on the population is unknown. The long-term prevalence rate average is around 20%, but with a small sample size. There are a limited number of tooth samples so a reliable inference into population performance is not available.

The hunter satisfaction level was 70% for the 2016 season, which was higher than the five-year average of 64%. White-tailed deer appear to be rebounding from the 2012 EHD outbreak which could explain a slightly higher satisfaction level.

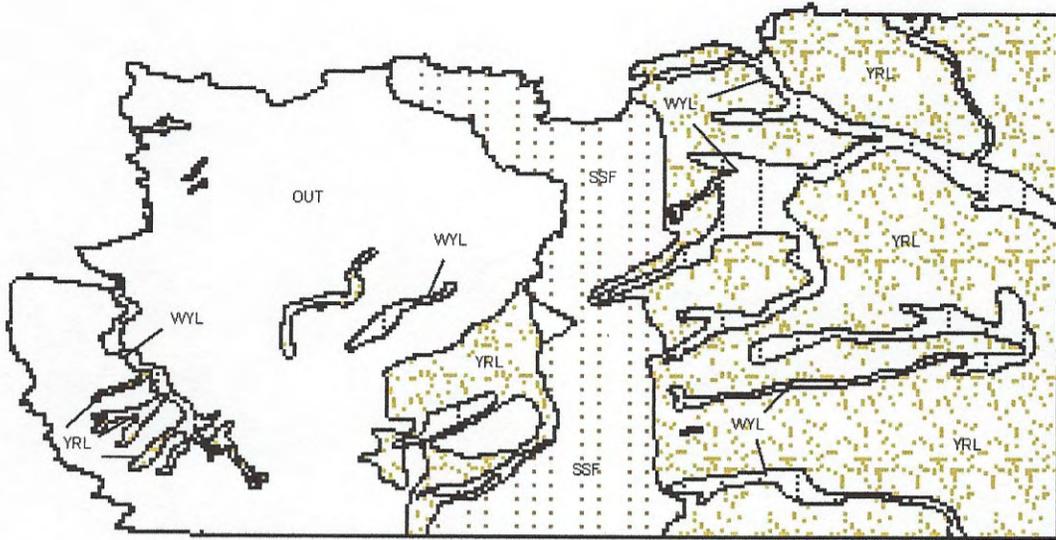
Population

There is not a reliable post-season population estimate. This is an open herd with Colorado and Nebraska so trying to model this herd would violate the assumption that it is closed. Seasons are designed to provide opportunity during the mating period when male deer are more vulnerable to harvest. Management is driven primarily by local Department personnel, perception of population trend and landowner tolerance for this species. There is not enough tooth samples collected in the field to infer any population dynamics.

Management Summary

Population trend varies on weather conditions and disease outbreaks. As densities become too high, the population will typically crash from an EHD outbreak. Severe winter conditions will also reduce white-tailed deer numbers if they go into the winter in poor condition. There have been no reports of winter mortalities. There was an EHD outbreak in 2012 that prompted a decrease in Type 8 licenses for hunt areas in southeast Wyoming. It does appear white-tailed deer are recovering from the 2012 outbreak and harvest levels in the extreme southeast portion of the herd unit are at stable harvest levels. The population in the western portion of the herd unit has reached densities that are favorable for an increase in Type 3 and Type 8 licenses along with an extended season. For simplicity the reader is referred to the hunt table for 2017 changes.

For the 2017 season we will try to attain a harvest of around 1,000 white-tailed deer. Our objective is to provide opportunity and minimize damage and maintain a hunter satisfaction level greater than 60%.



White-tailed Deer (WWT504) - Southeast Wyoming
Hunt Areas 15, 59, 64, 70, 74-81, 161

