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ACKNOWLEDGEMENT

The field data contained in these reports is the result of the combined efforts of the Lander Region Wildlife Division personnel including District Wildlife Biologists, District Game Wardens, the Habitat Biologist, the Wildlife Management Coordinator and Region Supervisor, and other Department personnel working at check stations. CWD technician, Rebecca Burton, collected CWD samples throughout the Region. 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: PR615 - RED DESERT

HUNT AREAS: 60-61, 64

PREPARED BY: GREG HIATT

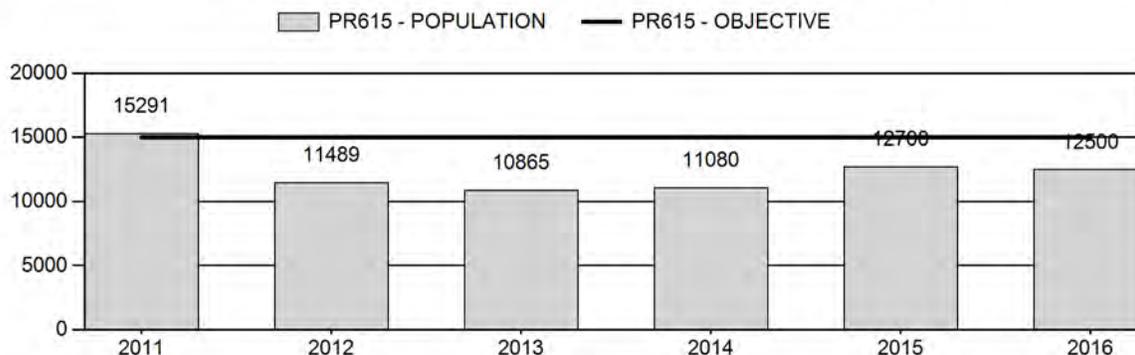
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	12,285	12,500	12,575
Harvest:	658	264	250
Hunters:	684	265	290
Hunter Success:	96%	100%	86 %
Active Licenses:	747	285	290
Active License Success:	88%	93%	86 %
Recreation Days:	2,122	952	920
Days Per Animal:	3.2	3.6	3.7
Males per 100 Females	60	53	
Juveniles per 100 Females	54	57	

Population Objective (± 20%) :	15000 (12000 - 18000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-16.7%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/27/2017

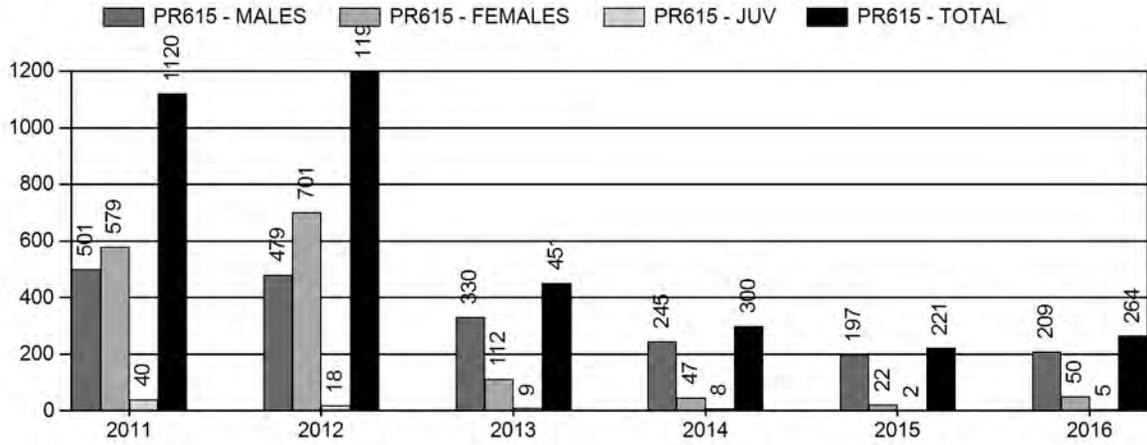
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.5%	0.7%
Males ≥ 1 year old:	6.1%	5.4%
Total:	2.0%	1.9%
Proposed change in post-season population:	-6.0%	0.7%

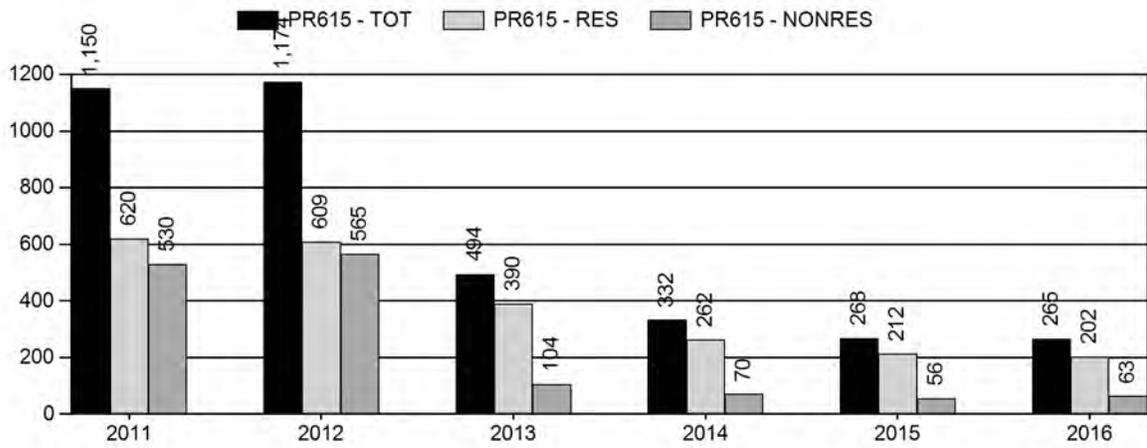
Population Size - Postseason



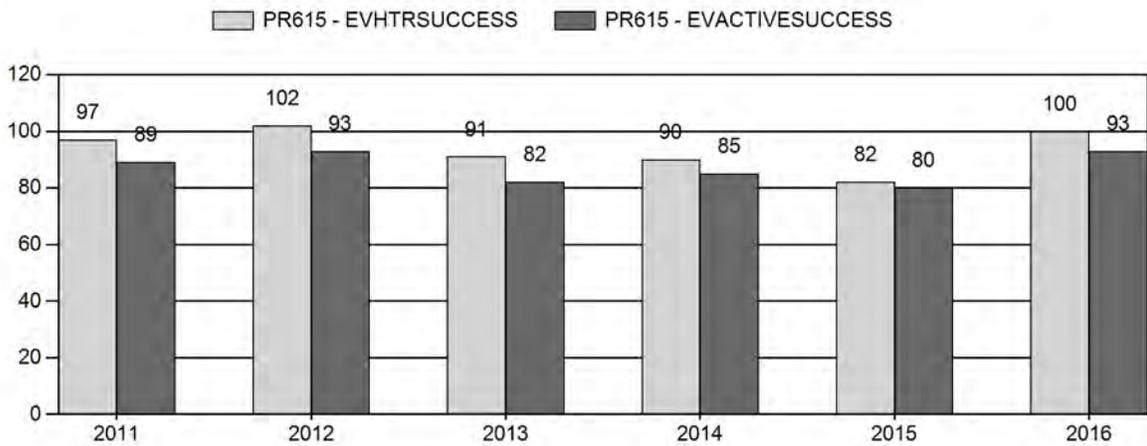
Harvest



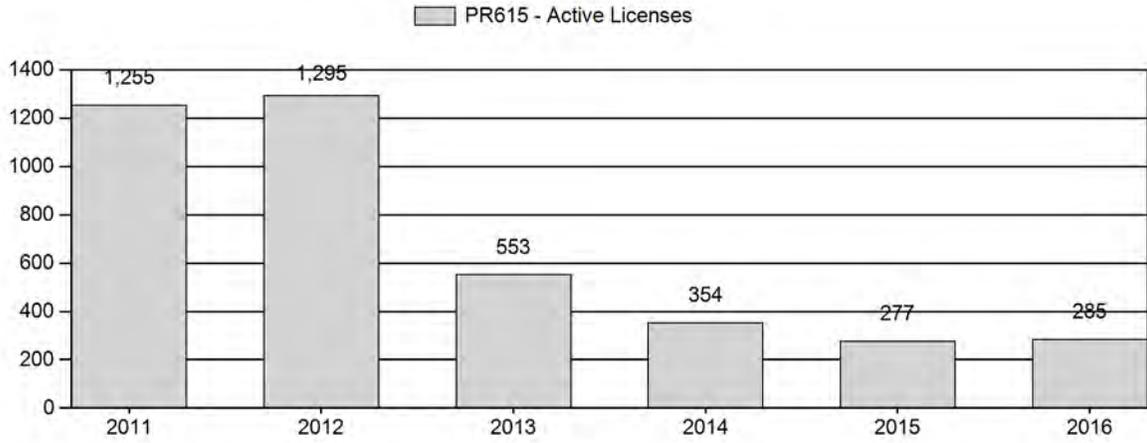
Number of Active Licenses



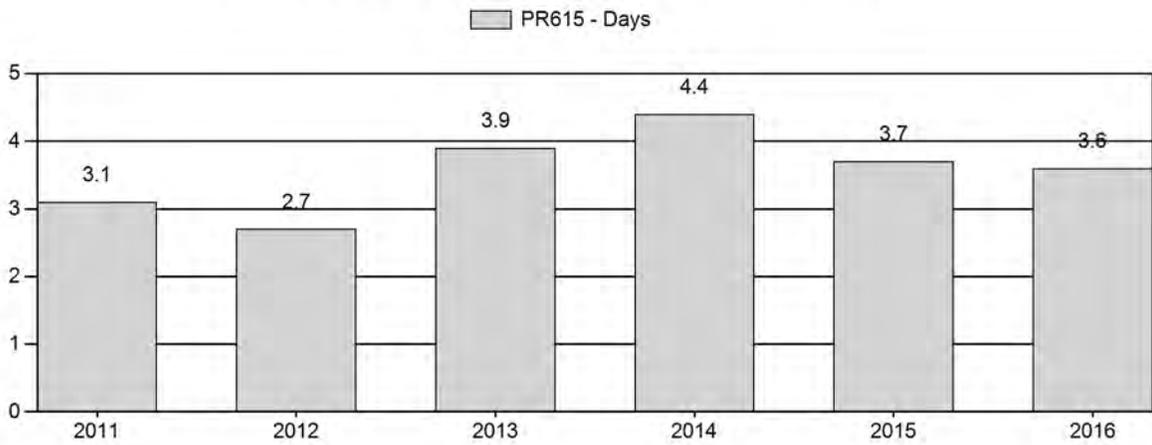
Harvest Success



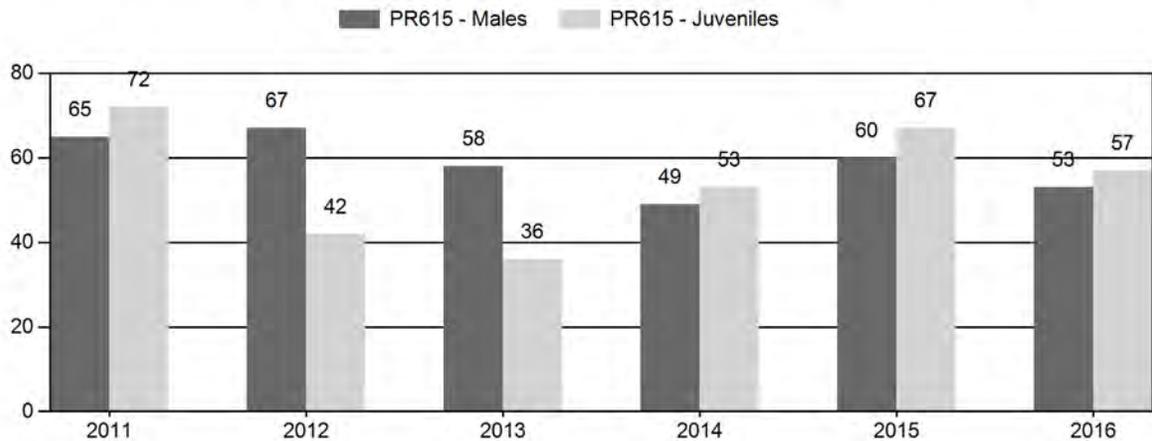
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR615 - RED DESERT

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	16,523	263	736	999	27%	1,540	42%	1,115	31%	3,654	2,650	17	48	65	± 4	72	± 4	44
2012	12,798	177	888	1,065	32%	1,600	48%	667	20%	3,332	2,103	11	56	67	± 4	42	± 3	25
2013	11,361	66	809	875	30%	1,517	52%	539	18%	2,931	1,629	4	53	58	± 3	36	± 3	23
2014	11,410	110	519	629	24%	1,285	49%	686	26%	2,600	1,535	9	40	49	± 3	53	± 4	36
2015	12,940	257	697	954	26%	1,585	44%	1,063	30%	3,602	2,267	16	44	60	± 3	67	± 4	42
2016	12,775	265	728	993	25%	1,873	48%	1,067	27%	3,933	1,756	14	39	53	± 3	57	± 3	37

**2017 HUNTING SEASONS
RED DESERT PRONGHORN HERD (PR615)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
60	1	Sep. 16	Oct. 31	50	Limited quota	Any antelope
	6	Sep. 16	Oct. 31	25	Limited quota	Doe or fawn
61	1	Sep. 9	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 9	Oct. 31	25	Limited quota	Doe or fawn
64	1	Sep. 16	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 16	Oct. 31	25	Limited quota	Doe or fawn
Archery 60, 64		Aug. 15	Sep. 15			Refer to Section 2 of this Chapter
61		Aug. 15	Sep. 8			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2016
60	1	0
	6	0
61	1	0
	6	0
64	1	0
	6	0
Herd Unit Total	1	0
	6	0

Management Evaluation

Current Postseason Population Management Objective: 15,000

Management Strategy: Special

2016 Postseason Population Estimate: 12,500

2017 Proposed Postseason Population Estimate: 12,575

Herd Unit Issues

The Red Desert pronghorn herd is managed toward a post-hunt population of 15,000 pronghorn, an objective last reviewed in 2015. Population size is estimated using a spreadsheet model developed in 2012 and last updated in 2017. The herd is in special management, with harvest quotas designed to maintain pre-hunt buck:doe ratios above 60:100.

Historically, access in this herd unit has been good. Much of the unit is public land, and hunters have been able to acquire access to most private lands in the checkerboard. The seasonal distribution map for the herd has not been updated for many years, and it is likely there are crucial winter habitats, particularly in Area 60, that have not yet been delineated.

Habitat issues in this herd unit include continued gas field development, coalbed natural gas development, expansion of an *in situ* uranium mine with other mines proposed and possible development of shale oil. Many miles of sheep-tight fences exist in the herd unit, impeding pronghorn movements and migrations, and increasing losses during severe winters.

Weather

Record precipitation was received in 2015, producing exceptional vegetation growth and improved fawn survival. This was followed by good precipitation again in spring of 2016, allowing some recovery of winter ranges from the severe drought of 2012 and 2013. Condition of pronghorn going into the 2016-17 winter is expected to have been excellent. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Despite improved condition of both animals and forage, winter losses are expected to be above average, but not excessive.

Habitat

Only one shrub transect has been established in this herd unit, on the Chain Lakes WHMA, but was not read in 2016. Shrub production presumably improved with the increased moisture and many sagebrush plants that had appeared dead from drought in 2013 produced small but viable sprouts of green growth in 2015 and 2016. While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be above average due to the increased precipitation.

Habitat losses to uranium development have increased with opening of the Lost Creek *in situ* uranium mine in Area 61, but are not in or near crucial pronghorn ranges. Habitat losses to gas development have slowed in most fields due to low oil and gas prices.

Field Data

Classification sample size increased again in 2016, the largest sample in six years. Nearly all the increase in sample came from Area 64, which provided almost half the entire classification. The sample from Area 60 dropped to its lowest level in 8 years, partly due to personnel scheduling rather than low pronghorn numbers. Sample from Area 61 increased by less than 4 percent.

Even with continued moisture, fawn production declined to 57:100 in 2016, but was still slightly above the five-year average. Fawn production declined in both Area 60 and Area 64, remaining stable in Area 61. Unusually, production was again highest in Area 60 at 65:100 and lowest in Area 64 at 54:100. Normally fawn production is significantly lower in Area 60 and highest in Area 64. Both Area 61 and Area 64 have significant numbers of does that fawn at higher elevations and, as in 2015, loss to hypothermia due to some of the late spring storms may have

reduced fawn survival in portions of those two areas, while having little effect in the low elevations found in Area 60.

The herd buck:doe ratio failed to meet the special management criterion of 60:100, having failed to meet it in three of the past five years. Both the adult and yearling buck:doe ratios declined. Only Area 60 exceeded this criterion, at 71:100. The supply of bucks in Area 61 improved, to 58:100. Both the adult and yearling buck:doe ratios dropped significantly in Area 64, leaving it well below the special management minimum at 45:100.

Harvest Data

Hunter success returned to normal levels in 2016 after near-record lows in 2015. Hunter effort was essentially stable. After three years with statistically the poorest hunting in this herd since it was delineated in 1976, 2016 harvest data suggest the herd is recovering. Hunter success was highest in Area 61 and poorest in Area 64. The average days of effort required to harvest an animal was lowest in Area 60, and similar between Areas 61 and 64. Hunters with Type 1 licenses in each of the three areas expended more effort than doe/fawn hunters, often double the doe/fawn average in each area. With the difficulty in drawing a Type 1 license in any of these three areas, it appears more hunters are treating the license like a one in a lifetime opportunity and expending extra effort and time to try to find a trophy buck to harvest. Hunter satisfaction has remained high, however, around 85 percent for the past four years.

Population

Modeling this herd has been difficult, due to two low line transect estimates in 2001 and 2007, followed by two high estimates in 2010 and 2013. Both the SCJ,SCA and TSJ,CA models try to align with buck:doe ratios, which match well with the older line transect estimates while sacrificing fit with the more recent line transect estimates. In an effort to align the model with the more recent independent estimates of herd size, a model was developed that doubles the emphasis on line transect estimates and reduces reliance on buck:doe ratios.

The Time-Specific Juvenile & Constant Adult Survival (TSJ,CA) spreadsheet model with emphasized line transect data provided the best fit with observed buck:doe ratios while improving fit with the more recent line transect surveys. The model still aligns well with three older line transect estimates, but deviates less from the two most recent survey estimates. Because of these manipulations, it is considered a “Fair” model of the herd. Annual adult survival was predicted at 91 percent, a reasonable level. Juvenile survival rates fluctuated within the allowed range but did hover at maximum or minimum values for many years. The CJ,CA and SCJ,SCA models each had lower AIC values, but both models predicted herd sizes well below line-transect estimates and generated roughly stable buck:doe estimates that did not track the dips and rises of observed values. Fawn production in 2017 was projected to be near the five-year average and the model was run with median juvenile survival in 2017.

The model predicts the herd has been 15-20 percent below objective for the past five years. Assuming average fawn production and survival, the 2017 pre-hunt population should be similar to that seen in 2016 and herd growth will be minimal. Without major improvement in fawn

production and survival, harvest quotas for 2017 will provide little or no increase in herd size, but should produce some improvement in the buck:doe ratio.

Management Summary

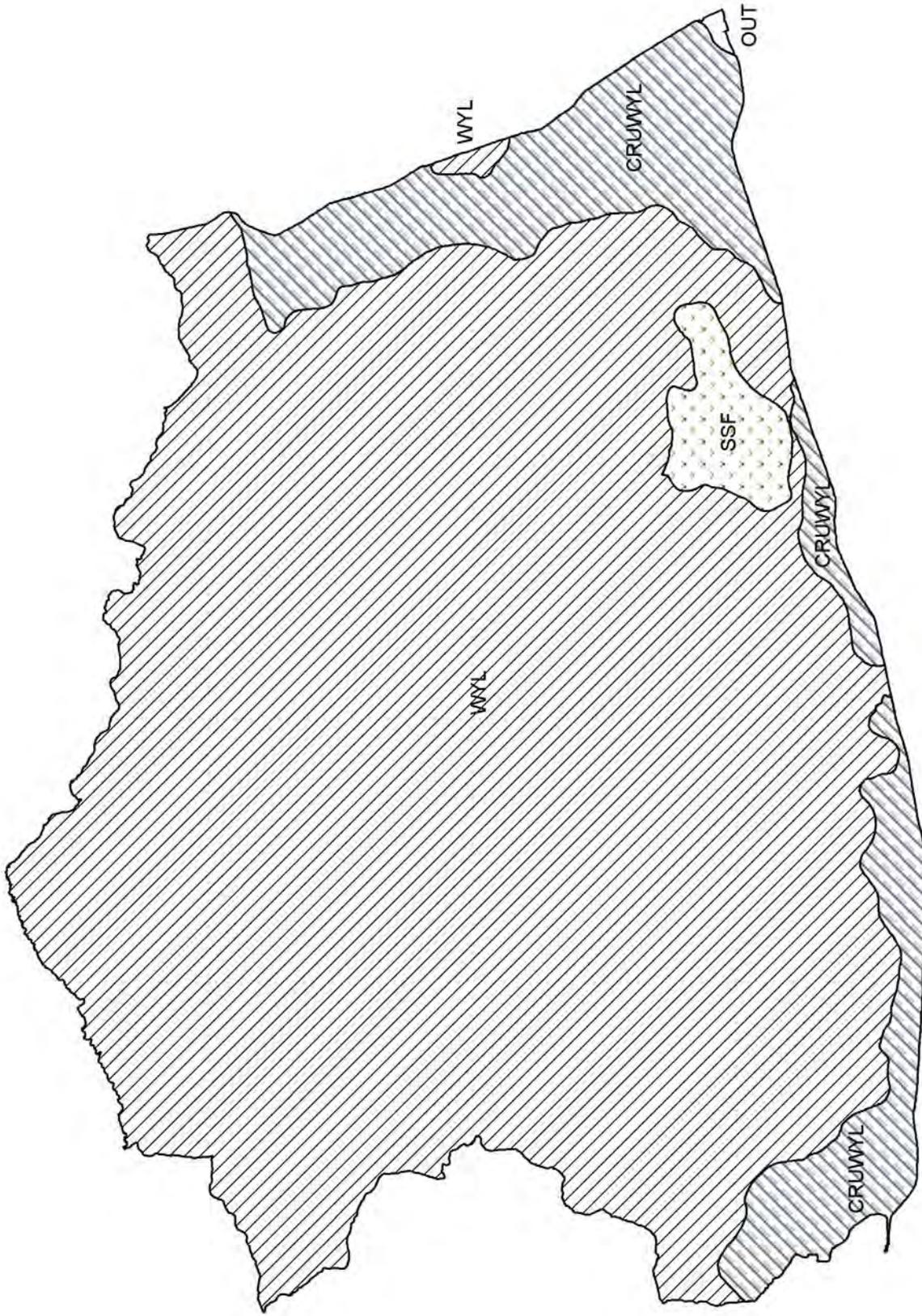
This herd was well below objective size following a record harvest and severe winter losses in 1992. Conservative harvests after that winter combined with improved fawn production and survival beginning in 2007 allowed the herd to reach and be maintained at objective size in 2010 and 2011.

According to the spreadsheet model, the combination of heavy harvests, losses to EHD and extremely poor fawn production in 2012 and 2013 significantly reduced herd size, estimated around 12,000. Improved fawn production in 2015 provided the first increase in herd size in three years. Increased severity of the 2016-17 winter may have removed much of those gains.

With the population estimated to be 15-20 percent below objective, harvests need to remain conservative. Quotas for Type 1 and Type 6 licenses are unchanged in all three areas. A line transect survey scheduled for Spring 2017 will provide a sixth independent estimate of herd size and may help align the herd model.

With the projected harvest of roughly 200 bucks and 50 does and fawns, predicted herd size will remain stable around 12,600 pronghorn. The herd is unlikely to reach objective in two or three years unless precipitation continues to remain high, raising both fawn production and survival.

Opening dates are shifted by one day to stay on Saturday openers, with Area 61 opening with Area 62 and Areas 60 and 64 opening with most of the rest of the Lander Region. Closing dates are the same as in 2016.



PH615 - Red Desert
HA 60, 61, 64
Revised - 3/94

2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR630 - IRON SPRINGS

HUNT AREAS: 52, 56, 108

PREPARED BY: GREG HIATT

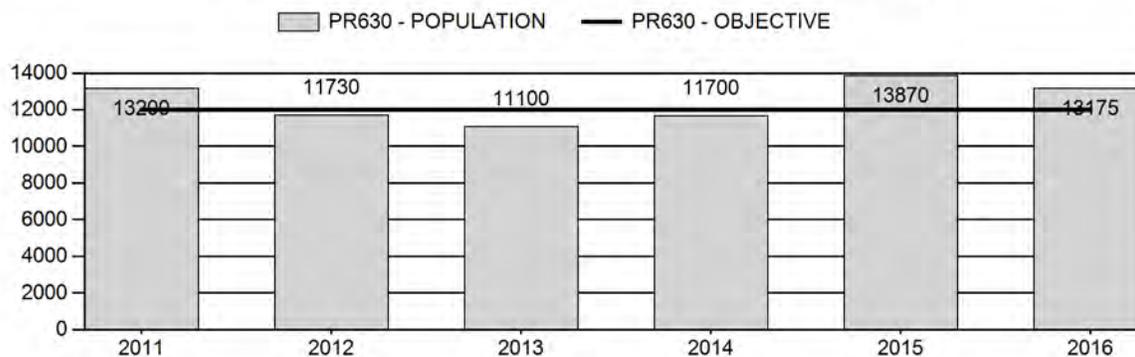
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	12,320	13,175	13,680
Harvest:	685	766	725
Hunters:	684	727	825
Hunter Success:	100%	105%	88 %
Active Licenses:	795	868	825
Active License Success:	86%	88%	88 %
Recreation Days:	2,415	2,446	2,450
Days Per Animal:	3.5	3.2	3.4
Males per 100 Females	46	50	
Juveniles per 100 Females	55	47	

Population Objective (± 20%) :	12000 (9600 - 14400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	10%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/27/2017

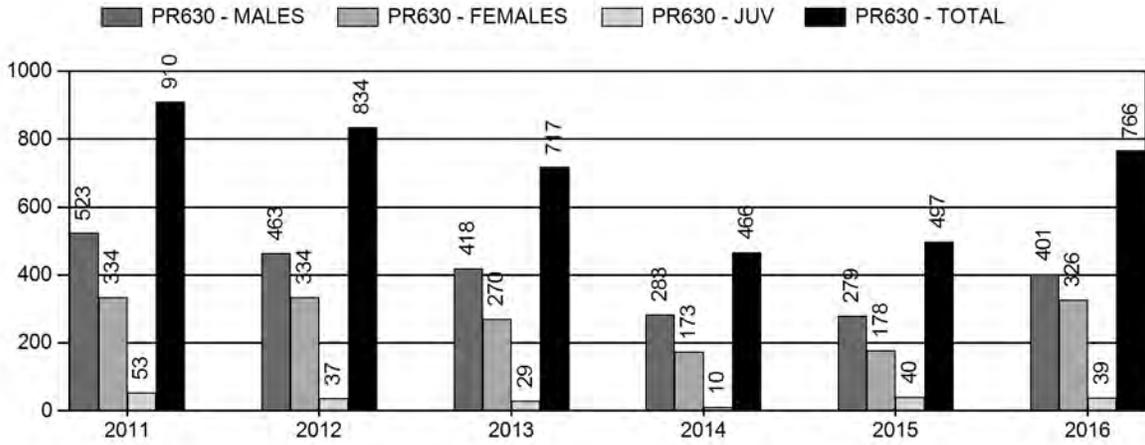
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	4.7%	4.7%
Males ≥ 1 year old:	9.9%	9.5%
Total:	5.3%	5.0%
Proposed change in post-season population:	+0.9%	3.8%

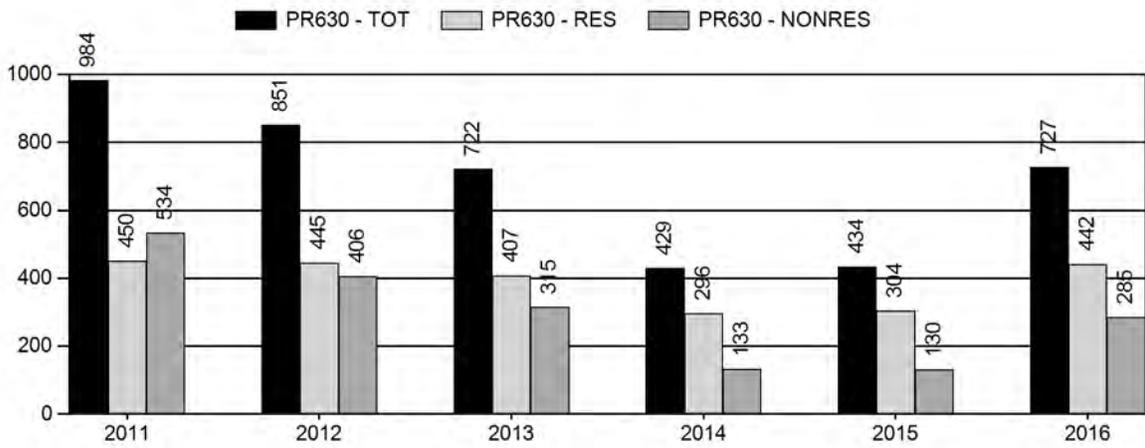
Population Size - Postseason



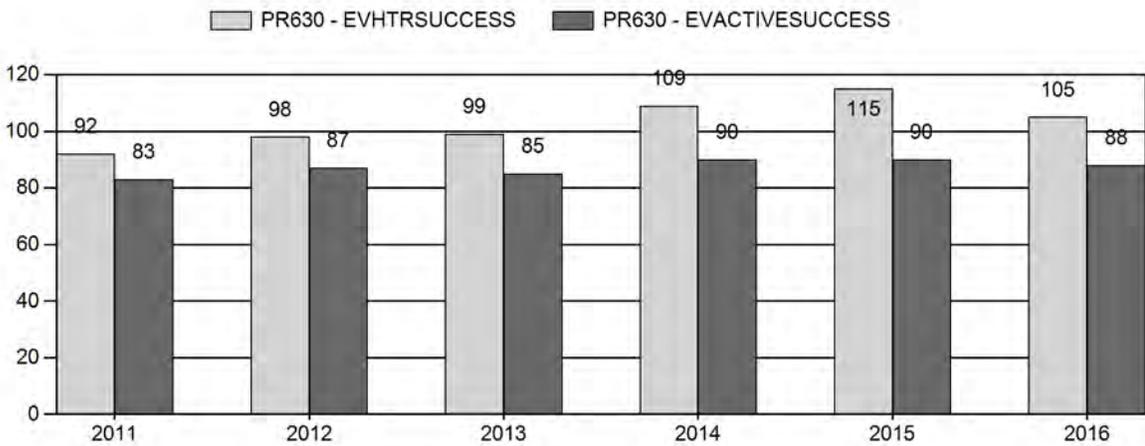
Harvest



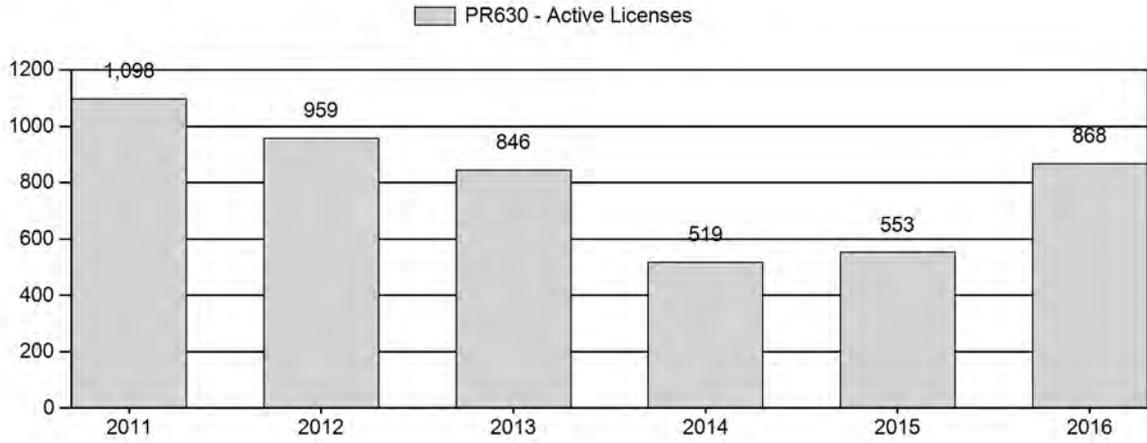
Number of Active Licenses



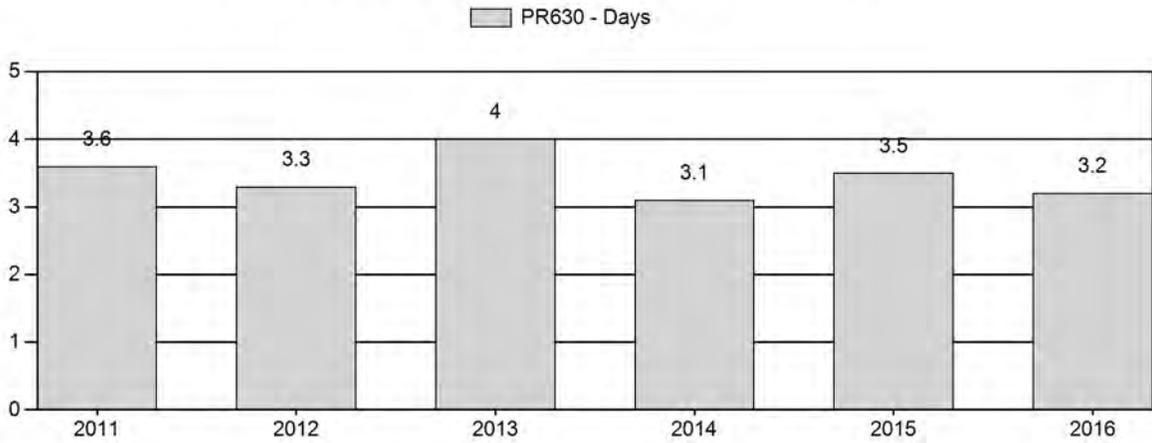
Harvest Success



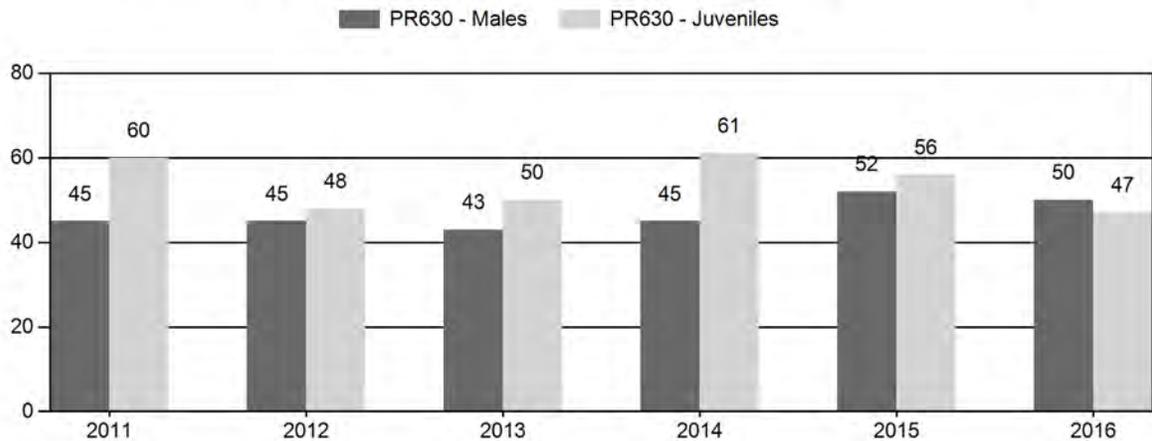
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR630 - IRON SPRINGS

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	14,200	150	576	726	22%	1,627	49%	984	29%	3,337	1,791	9	35	45	± 3	60	± 4	42
2012	12,640	212	604	816	23%	1,801	52%	863	25%	3,480	1,295	12	34	45	± 3	48	± 3	33
2013	11,900	131	514	645	22%	1,488	52%	746	26%	2,879	1,336	9	35	43	± 3	50	± 3	35
2014	12,200	209	472	681	22%	1,518	49%	928	30%	3,127	1,823	14	31	45	± 3	61	± 4	42
2015	14,400	194	525	719	25%	1,375	48%	775	27%	2,869	1,731	14	38	52	± 4	56	± 4	37
2016	14,015	224	638	862	25%	1,730	51%	816	24%	3,408	1,436	13	37	50	± 3	47	± 3	31

**2017 HUNTING SEASONS
IRON SPRINGS PRONGHORN HERD (PR630)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
52	1	Sep. 16	Oct. 31	150	Limited quota	Any antelope
	2	Sep. 16	Nov. 14	150	Limited quota	Any antelope valid south of North Spring Creek
	6	Sep. 16	Oct. 31	150	Limited quota	Doe or fawn
	7	Sep. 16	Nov. 14	150	Limited quota	Doe or fawn valid south of North Spring Creek
56	1	Sep. 20	Oct. 31	50	Limited quota	Any antelope
108	1	Sep. 20	Oct. 31	100	Limited quota	Any antelope
	6	Sep. 20	Oct. 31	100	Limited quota	Doe or fawn
	7	Sep. 20	Nov. 30	100	Limited quota	Doe or fawn valid south of the Bridger Pass Road (B.L.M. Road 3301), east of the Continental Divide and north of the Miller Hill Road (Carbon County Road 505W)
Archery						
52		Aug. 15	Sep. 15			Refer to Section 2 of this Chapter
56, 108		Aug. 15	Sep. 19			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2016
52	1	0
	2	0
	6	0
	7	0
56	1	0
108	1	-50
	6	0
	7	0
Herd Unit Total	1	-50
	2	0
	6	0
	7	0

Management Evaluation

Current Postseason Population Management Objective: 12,000

Management Strategy: Recreation

2016 Postseason Population Estimate: 13,170

2017 Proposed Postseason Population Estimate: 13,680

Herd Unit Issues

The Iron Springs pronghorn herd is managed toward a post-hunt population size of 12,000 pronghorn, an objective last publicly reviewed in 2015. Population size is estimated using a spreadsheet model developed in 2012 and updated in 2017. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

Construction of the proposed Chokecherry and Sierra Madre wind farms, consisting of roughly 1,000 turbines and the associated road networks, could have significant impacts on important habitats in large portions of Areas 56 and 108, as well as the north portion of Area 52. Construction of several large, trans-continental powerlines would cross important winter habitats at the north edge of Area 56.

Access remains an issue in this herd unit, particularly in the checkerboard in association with the proposed Chokecherry and Sierra Madre wind farms. Private landowners have denied recreational access to the vast majority of Area 56 and a significant portion of Area 108 in preparation of the wind farms. The Walk-In program has opened access to large blocks of private land in Area 52 during some years, which helped address concerns over large numbers of pronghorn residing on irrigated croplands during summer and fall, but enrollment has declined as pronghorn numbers were reduced and native range response to increased precipitation reduced damage concerns.

The seasonal distribution map was last revised in March 1994 and no changes have been made since that review. Observations during winters since 1994 indicate consideration should be given

to delineating crucial winter ranges south of Saratoga, southeast of Chokecherry Knob and near Fort Steele. Fences continue to pose barriers to pronghorn movements throughout much of the herd unit, increasing mortality during tough winters. Sheep-tight fences may also contribute to low fawn survival in pastures with limited water sources during dry summers. Several miles of sheep-tight fence had been replaced with wildlife-friendly fencing during recent years.

Small acreages of crucial winter range have been lost to subdivision of deeded lands, primarily in the southern portion of the herd, and along Interstate Highway 80 in Area 56. Increased subdivision of these habitats, especially if these tracts are fenced, could seriously degrade the quality and utility of some winter ranges and migration routes. Development, partitioning, and fencing of these lands could have more deleterious effects on pronghorn migrations and habitat than some energy developments. Segregating land ownership among dozens of owners also deters recreational use of those divided lands and inter-mixed public lands.

Losses to EHD were confirmed in the South Ferris herd immediately north of Area 56 in late summer 2013 and the disease probably struck pronghorn in this herd as well. A mule deer fawn died of EHD at the southern tip of Antelope Area 108 so it is likely the disease spanned at least through the northern half of the Iron Springs herd unit. This disease may recur if drought conditions return.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, and improved fawn survival in many herds in the southern part of the state, and was followed by another wet spring in 2016. But that increase in fawns was not seen in this herd, in either 2015 or 2016. Many of the does in this herd give birth in high elevation, mesic habitats near the interface with forested habitats. Both 2015 and 2016 had cold, wet, late spring storms that may have increased fawn losses due to hyperthermia.

Condition of pronghorn going into the 2016-17 winter is expected to have been good because of high forage production. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Snow cover and snow depth were particularly extreme in the Platte Valley, including Area 52, and winter losses may be above average.

Habitat

This herd unit overlaps most of the western half of the Platte Valley Mule Deer herd, and habitats for pronghorn suffer the same low productivity due to overuse, decadent shrubs and drought. Treatments designed to improve habitat for mule deer through the Platte Valley Habitat Partnership are likely to improve habitats for pronghorn as well. Recent tebuthiuron treatments on top of Miller Hill in Area 108 and prescribed burns in Area 52 should improve summer ranges for pronghorn, at least in the short term.

Oil and gas drilling activity has tapered off because of low energy prices, but a successful shale oil well a few miles to the east in Area 50 may lead to increased interest within the herd unit. Proposed strip mining of coal in Kindt Basin in Area 56 could damage winter habitats, but is unlikely to occur in the near future because of more competitive coal reserves elsewhere in the

state and conflict with the Chokecherry wind farm. Increased interest in developing coalbed methane resources in southern Wyoming may lead to proposals to develop well fields to extract the methane from these coal seams.

Ground breaking for construction of the 1,000 turbine Chokecherry and Sierra Madre wind farms occurred this year, with extensive activity predicted to begin in 2017. Planned revegetation of the massive road network necessary for this project is likely to improve summer forage for pronghorn, but will permanently remove browse in winter ranges and provide avenues for expansion of noxious weeds, as seen in gas fields to the west. Disturbance during construction will reduce pronghorn use of many habitats. Wind turbines have been shown to reduce soil moisture in their wind shadow and the large number of turbines in already arid habitats may remove the benefits gained from revegetation of roads and pads.

Field Data

Classification sample size increased in 2016 and was the largest sample in four years. With low fawn:doe and buck:doe ratios, the sample was more than twice the statistically desired sample. Classification sample size increased in all three areas, but was within recent normal levels for each.

Despite record precipitation in 2015, fawn production declined slightly to 56 fawns:100 does, and this was repeated again, yielding a fawn:doe ratio of only 47:100 in 2016. This was the lowest fawn crop recorded in this herd since 1997. As in 2015, fawn production was surprisingly lowest in Area 108 at only 27:100. Production was again unusually high for Area 56 at 39:100. Fawn production in Area 52 declined again to 60:100, below average for that area. Many of the does in Area 108 fawn at higher elevations, as do some in Area 52, and late spring storms may have increased fawn losses to hypothermia in these habitats while benefiting those in drier habitats like Area 56.

The buck:doe ratio declined slightly in 2016 to 50:100, but was still the second highest in ten years. The supply of bucks was well within recreational management, but should be high enough to help address outfitter concerns over low numbers of quality bucks. The decline resulted from slight decreases in both adult and yearling buck:doe ratios. The buck:doe ratio was highest in Area 56 at 94:100, which is largely un hunted, and again lowest in Area 108, at only 28:100. Buck:doe ratio for Area 52 was 55, within the normal range for this area.

The yearling buck:doe ratio was only 13:100 for this herd, within the normal range, but surprisingly low considering the good physical condition of animals as they entered the mild 2015-16 winter. Yearling recruitment improved in Area 56, but dropped in Area 108. Adult buck:doe ratios were again exceptionally high in Area 56, within the normal range in Area 52, and low in Area 108. If access continues to be denied after the wind project is constructed, buck:doe ratios will be expected to remain artificially high in Area 56 and may cause the herd ratio to exceed the maximum for recreational management without providing any extra bucks for hunters to harvest. Overall, buck:doe ratios for this herd over the past ten years have been less than would be desired in areas with large blocks of public land.

Harvest Data

Overall hunter success declined slightly to 88 percent, but was still above the previous five-year average. The average number of days hunted for each pronghorn harvested also declined, and was below the five-year average. Hunter success in Area 56, where access was most difficult, was similar to that in Area 52, but no doe/fawn licenses were issued in Area 56, which tend to have lower success. Surprisingly, success was highest for the Type 1 hunters in Area 108, where the buck:doe ratio was poorest. Within Area 52, hunters limited to the southern portion of the area where most of the private land is found (Type 2 and Type 7) enjoyed higher success than the Type 1 and Type 6 hunters, who had large blocks of public land available. Hunters with Type 7 licenses for a limited portion of Area 108 had the poorest success, at 75 percent.

The average number of days of effort necessary to harvest an animal was lowest in Area 56 for the fifth straight year. Being restricted to a few scattered sections of accessible public land apparently reduces hunter opportunity. This average was highest for Type 1 and Type 6 hunters in Area 52, suggesting pronghorn were less available in this portion of the herd unit, despite the large blocks of public land available.

Population

Prior to 2015, the spreadsheet model and a line-transect survey flown in spring of 2012 indicated this herd was roughly 17 percent below the 12,000 objective. A line-transect survey flown in June 2015, however, estimated there were approximately 16,850 pronghorn in the herd. Incorporating that estimate, along with the 2015 and 2016 classification and harvest data, the current model now predicts this herd was about 10 percent above objective in 2016.

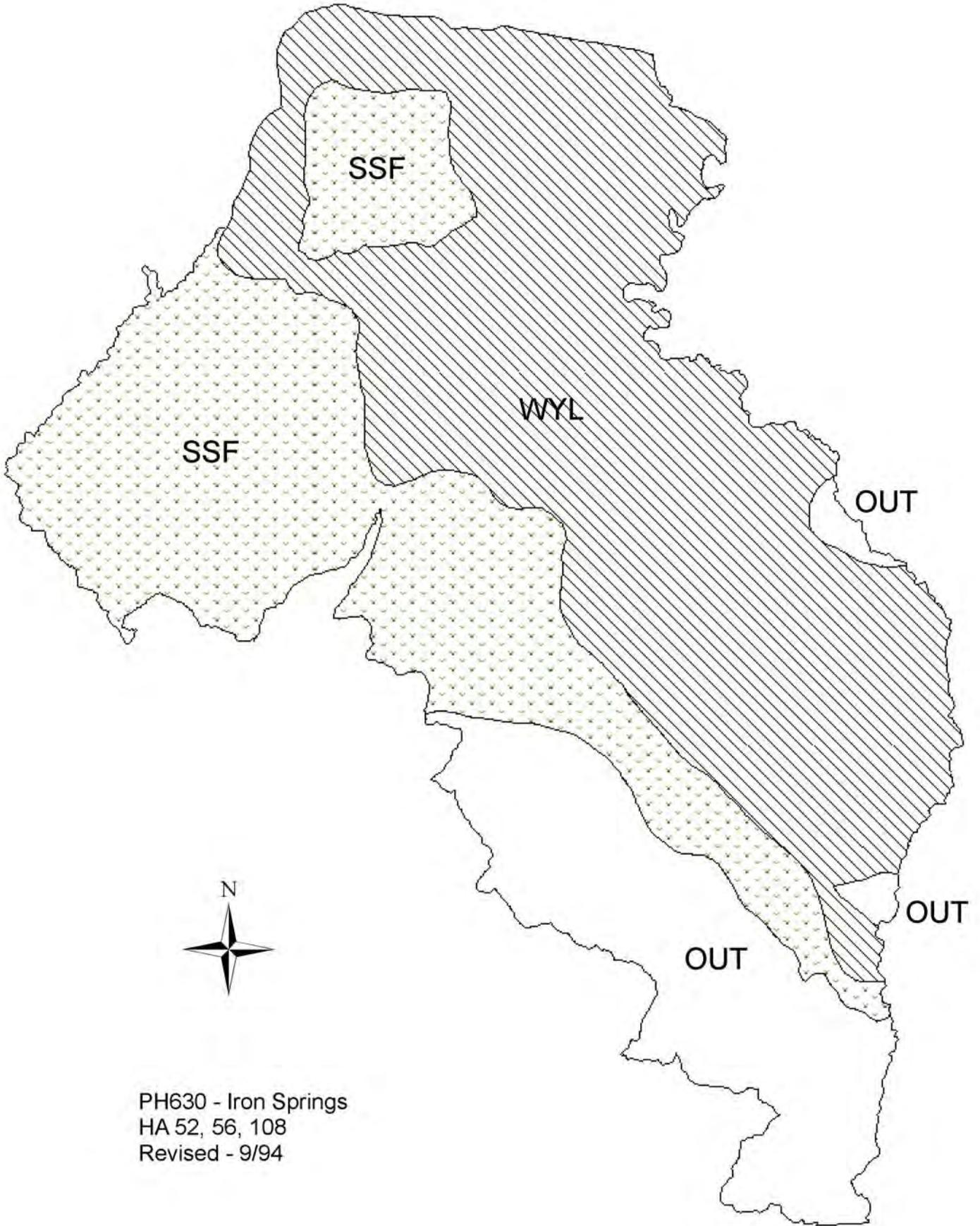
After adding the 2016 data, the SCJ,SCA spreadsheet model provided the best fit with observed buck:doe ratios for this herd and all four line-transect estimates. The model was modified to allow lower survival rates in the 2003-04 and 2007-08 winters. It behaved predictably when 2016 classification and harvest data were added and is considered a "Fair" model of the herd. Annual adult survival is predicted at 95 percent, a reasonable value. Juvenile survival rates were low but acceptable, at 41 percent. The CJ,CA and TSJ,CA models each had higher AICc values, but the TSJ,CA model had better fit with observed buck:doe ratios. Both models predicted herd size below objective, despite the 2015 line-transect estimate. Fawn production in 2017 was projected near the 5-year average. The model was run using a median juvenile survival in 2017.

Management Evaluation

With the population estimated to be only 10 percent above objective and the slow rate of growth seen in the past five years, no drastic changes in harvest quotas are necessary. Increased severity of the winter, particularly in Area 52, also promotes caution in adjusting harvest rates. Quotas for 2017 are unchanged in Area 52 and Area 56. Quotas for Type 6 and Type 7 licenses in Area 108 are also unchanged. The quota for Type 1 licenses in Area 108 is reduced by 50 in response to the drastically low buck:doe ratio of 28:100 recorded there prior to the 2016 hunt.

If fawn production and survival are near predicted levels, the expected harvest of roughly 360 bucks and 365 does and fawns from the 2017 license quotas should provide a slight increase in herd size. If either fawn production or survival is lower than average, or if winter losses are above average in 2016-17, the herd should remain near objective or slightly below.

Opening dates for licenses in Area 52 are the same as in the past four years and coincide with seasons in neighboring Areas 50 and 51. As in the previous four years, the Type 2 and 7 licenses in the southern portion of this area are valid for an additional two weeks into November. The season in area 52 entirely overlaps local deer and elk general license seasons. Opening dates for areas 56 and 108 are the same as in the previous 18 years and coincide with neighboring areas 53 and 55 of the Baggs herd. Closing dates for Areas 56 and 108 are again extended to the end of October, except for the Type 7 licenses in Area 108, which extend to the end of November. Archery seasons use standardized opening dates and close the day before the regular season opens for each area.



PH630 - Iron Springs
HA 52, 56, 108
Revised - 9/94

2016 - JCR Evaluation Form

SPECIES: Pronghorn

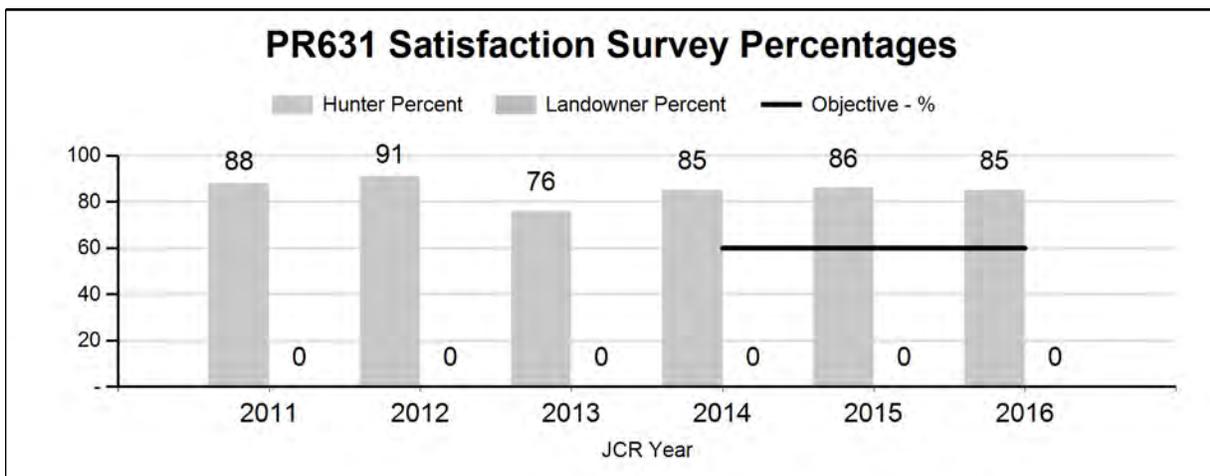
PERIOD: 6/1/2016 - 5/31/2017

HERD: PR631 - WIND RIVER

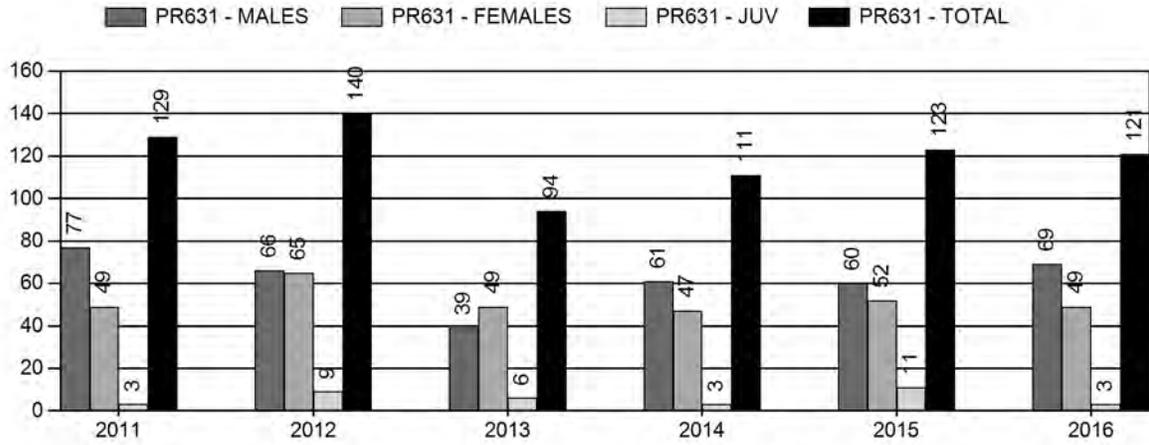
HUNT AREAS: 84

PREPARED BY: GREG ANDERSON

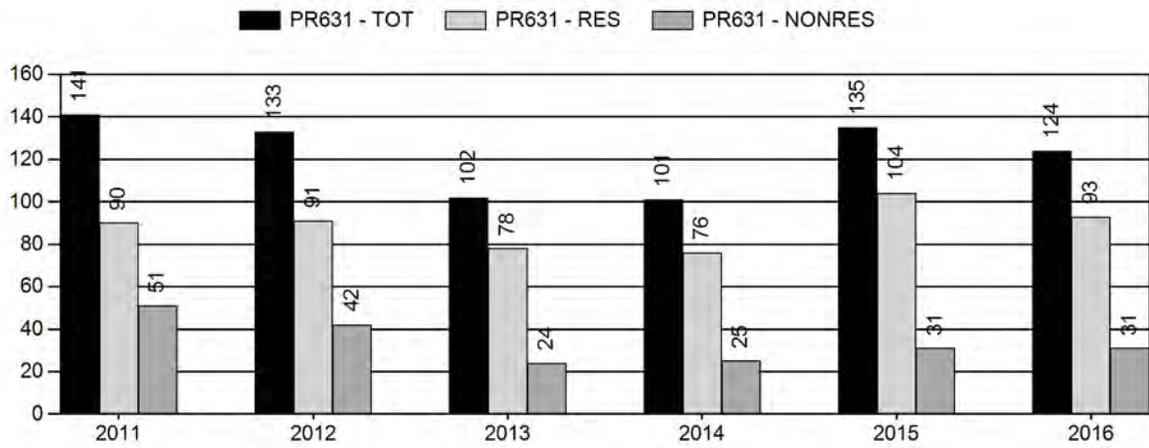
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	85%	85%	85%
Landowner Satisfaction Percent	0%	0%	0%
Harvest:	119	121	120
Hunters:	122	124	125
Hunter Success:	98%	98%	96 %
Active Licenses:	152	165	160
Active License Success:	78%	73%	75 %
Recreation Days:	684	591	600
Days Per Animal:	5.7	4.9	5
Males per 100 Females:	25	44	
Juveniles per 100 Females	36	40	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			N/A%
Number of years population has been + or - objective in recent trend:			3



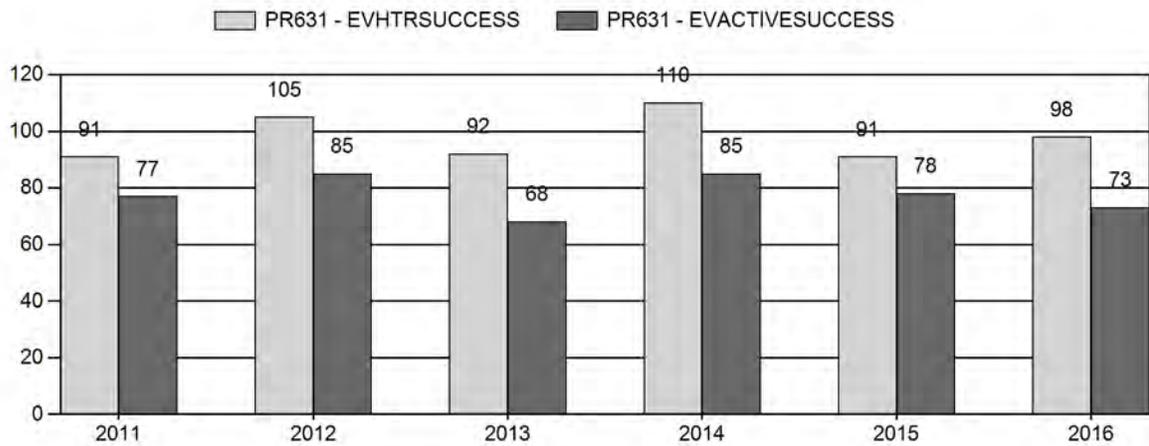
Harvest



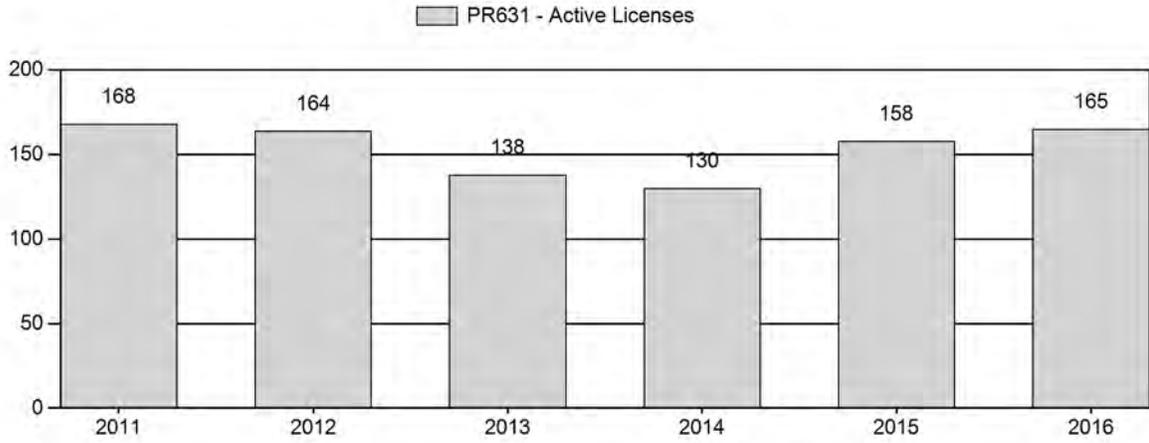
Number of Active Licenses



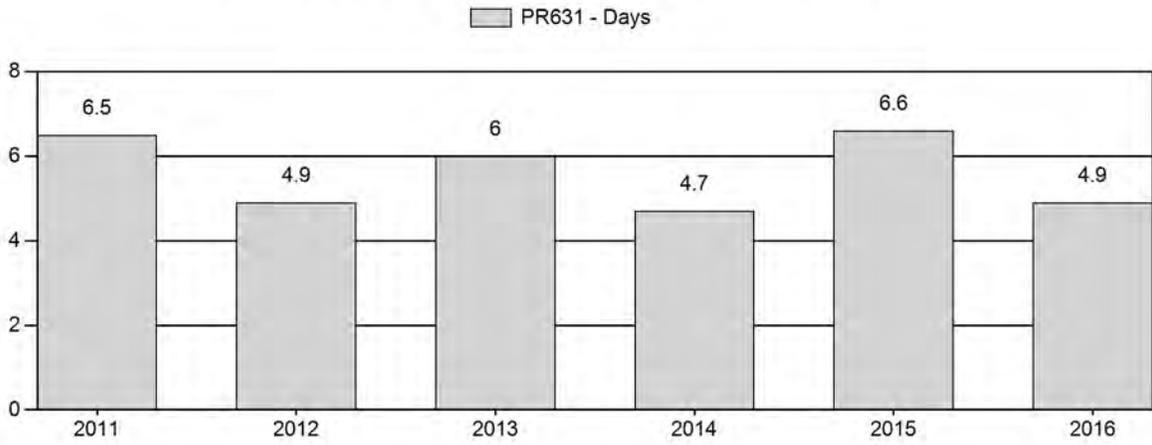
Harvest Success



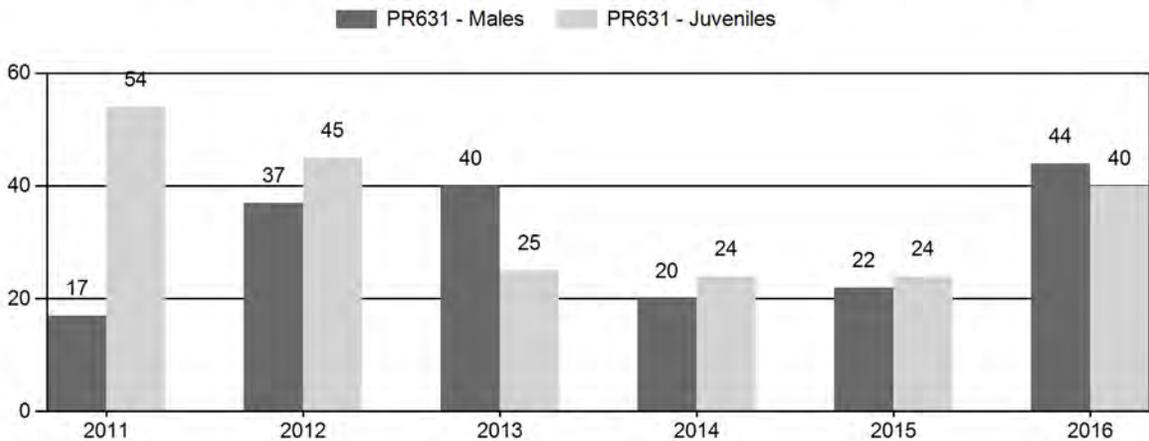
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR631 - WIND RIVER

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	0	4	17	21	10%	124	58%	67	32%	212	0	3	14	17	± 0	54	± 0	46
2012	0	7	29	36	20%	97	55%	44	25%	177	0	7	30	37	± 0	45	± 0	33
2013	0	7	14	21	24%	52	60%	13	15%	86	0	13	27	40	± 0	25	± 0	18
2014	0	7	15	22	14%	110	70%	26	16%	158	0	6	14	20	± 0	24	± 0	20
2015	0	6	21	27	15%	120	68%	29	16%	176	0	5	18	22	± 0	24	± 0	20
2016	0	16	39	55	24%	124	54%	49	21%	228	0	13	31	44	± 0	40	± 0	27

**2017 HUNTING SEASONS
WIND RIVER PRONGHORN (PR 631)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
84	1	Sep. 16	Oct. 22	100	Limited quota	Any antelope
84	6	Sep. 16	Oct. 22	75	Limited quota	Doe or fawn
Archery 84		Aug. 15	Sep. 15			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2016
Total		

Management Evaluation

Current Hunter Satisfaction Management Objective: Hunter Satisfaction 60%

Management Strategy: Recreational

2016 Hunter Satisfaction Estimate: 85%

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 85%

Management Issues

The Wind River pronghorn management objective was reviewed and updated in 2014. The previous objective of 400 antelope had been in place since 1994. Due to a number of factors it was never possible to accurately estimate the antelope population in this herd. In response, the Department adopted an objective of maintaining 60% hunter satisfaction. Unlike other herd units with a satisfaction objective, the objective for this herd does not include a landowner satisfaction component for reasons outlined in the objective proposal. In conjunction with hunter satisfaction, this herd is managed for recreational opportunity.

Habitat/Weather

This pronghorn population occupies the upper Wind River basin west of the WRR. Much of the habitat throughout the herd unit is marginal or unsuitable. Pronghorn densities are highest on the east end of the herd unit where they occupy deer and elk winter range throughout the summer months. Some pronghorn winter on bare slopes in the mountain foothills, but many migrate east down the Wind River onto the WRR. Available habitat and climatic conditions seem to be the biggest factors limiting this population.

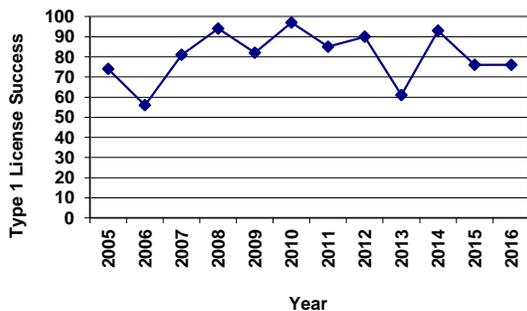
The past year was characterized by mild conditions and good vegetation growth throughout the herd unit. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was well above the 20-year average for the area. No shrub data is collected in the herd unit, but the good growing conditions undoubtedly resulted in higher browse production than previous drought years. Given the good feed resource in 2016, antelope in the herd unit undoubtedly entered winter in good shape. Fall weather was mild followed by harsh winter conditions in December and January. Snow cover and depth were greater than normal on the low elevation winter range occupied by antelope along the Wind River. It is possible winter survival could be well below average if harsh winter conditions continue through spring.

Field/Harvest Data/Population

Classification samples have been collected from the ground and have been low over the past 5 years. Prior to that, classification data was collected aerially and sample sizes were much higher. In 2016 the classification sample was 228 antelope. Low classification samples are likely to remain the rule as long as ground classifications are conducted. Terrain, topography, and access to antelope summer range in the herd unit create difficulties. That said, the classification sample in 2016 yielded a fawn/doe ratio of 40/100. This level of recruitment is extremely low compared to many antelope herds, but not atypical for this population. The buck/doe ratio was higher than the previous two years at 44/100. Again, this would be low in many antelope herds but not atypical for the Wind River herd. Generally, classification ratios for this herd should be viewed skeptically given the low sample sizes.

Type 1 license success was 76% in 2016. This success rate was the same as in 2015 and was lower than average over the past 10 years (Fig. 1). The days/animal decreased from 7.8 in 2015 to 5.1 for Type 1 licenses in 2016. These statistics indicate the hunt experience was similar to 2015. Despite harvest statistics indicating lower success in 2015 and 2016, hunter satisfaction was 85% in 2016. This was the same as the 5-year average.

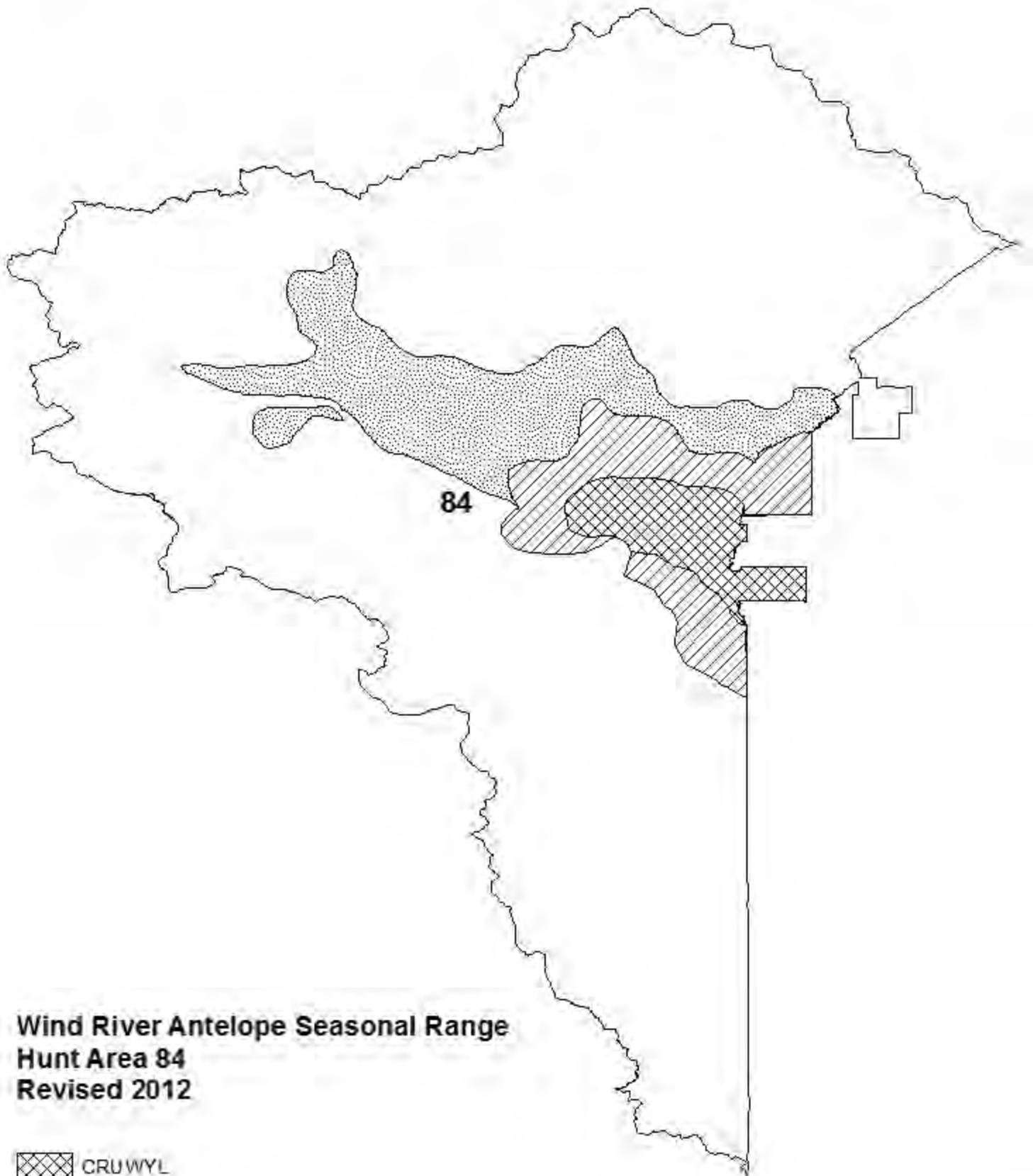
Figure 1. Type 1 license success in the Wind River Antelope Herd



Management Summary

Given scarce demographic data it is difficult to determine trends in this herd unit. Anecdotally, based on public and personnel observations, it appears this population grew substantially from the middle to end of the past decade. Following a harsh winter in 2010 and extreme drought in 2012 and 2013 it seems the population declined somewhat, then increased again in 2014. In

concert, harvest statistics and hunter satisfaction data indicate the population was likely stable between 2014 and 2016. As such, no changes are proposed for the 2017 hunting season.



84

**Wind River Antelope Seasonal Range
Hunt Area 84
Revised 2012**

-  CRUWYL
-  OUT
-  SSF
-  WYL
-  YRL



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR632 - BEAVER RIM

HUNT AREAS: 65-69, 74, 106

PREPARED BY: STAN HARTER

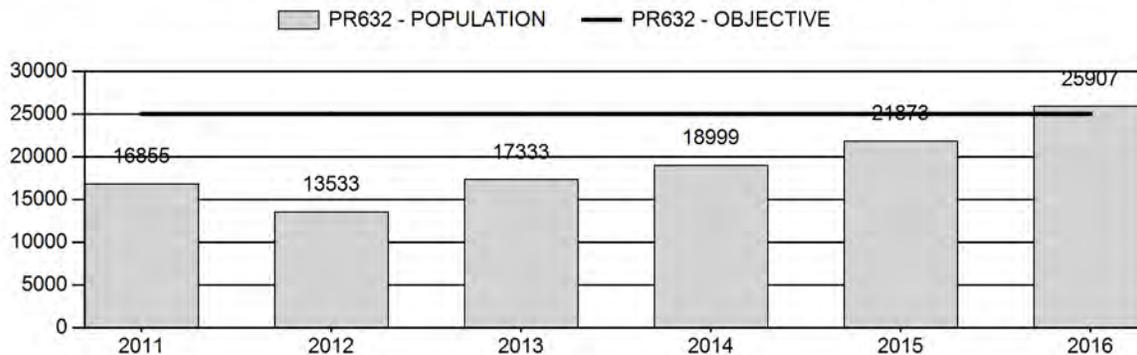
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	17,719	25,907	25,573
Harvest:	1,859	1,189	1,645
Hunters:	1,911	1,308	1,750
Hunter Success:	97%	91%	94%
Active Licenses:	2,138	1,422	1,850
Active License Success:	87%	84%	89%
Recreation Days:	6,256	4,601	5,500
Days Per Animal:	3.4	3.9	3.3
Males per 100 Females	53	62	
Juveniles per 100 Females	60	67	

Population Objective ($\pm 20\%$) :	25000 (20000 - 30000)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	4%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/22/2017

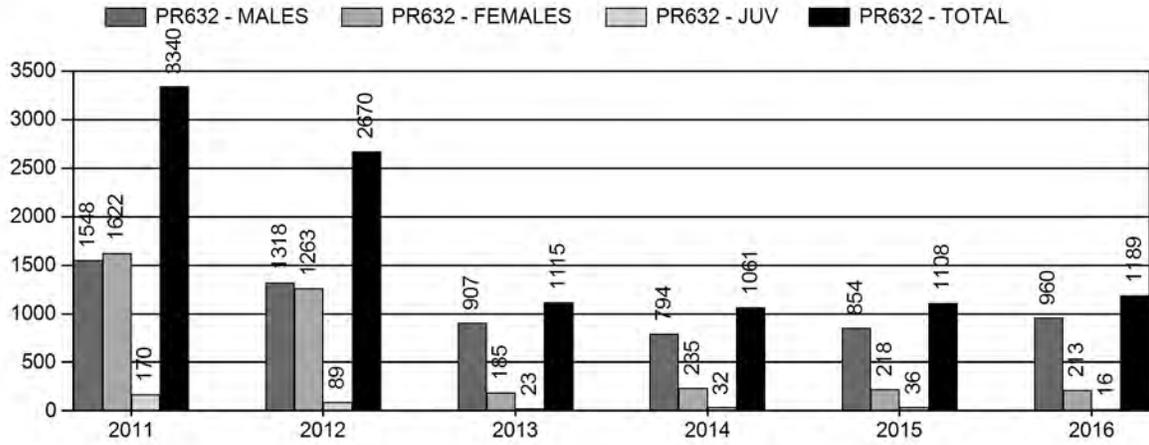
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.9%	3.7%
Males ≥ 1 year old:	15.8%	19.4%
Total:	4.4%	6.0%
Proposed change in post-season population:	+4.0%	-1.3%

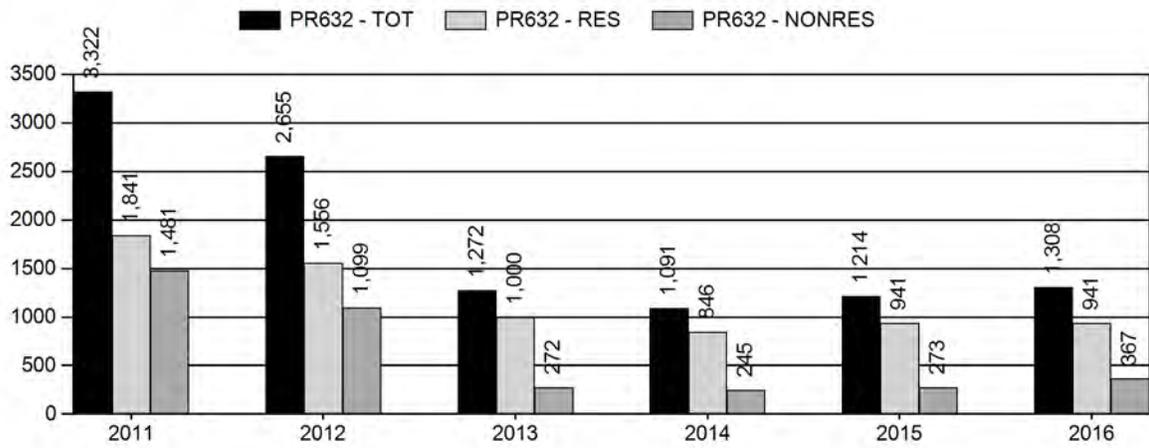
Population Size - Postseason



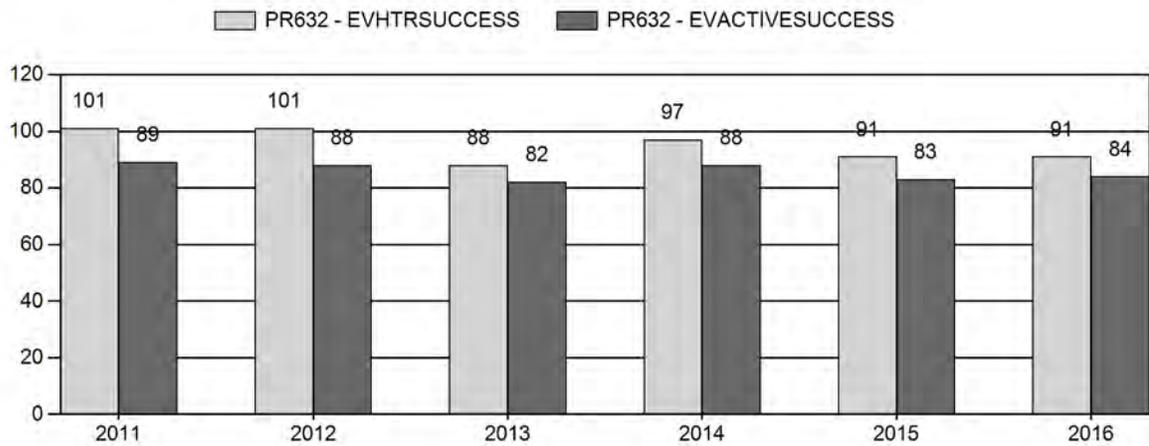
Harvest



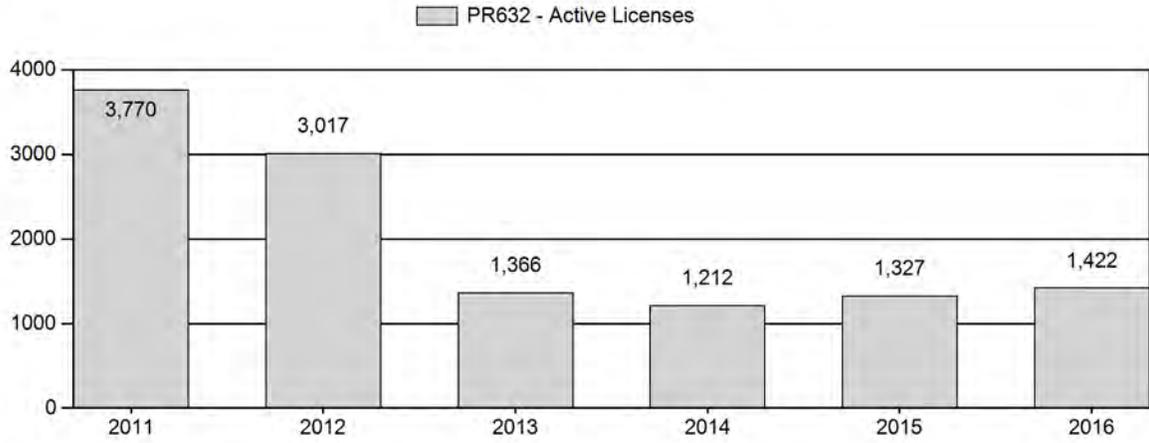
Number of Active Licenses



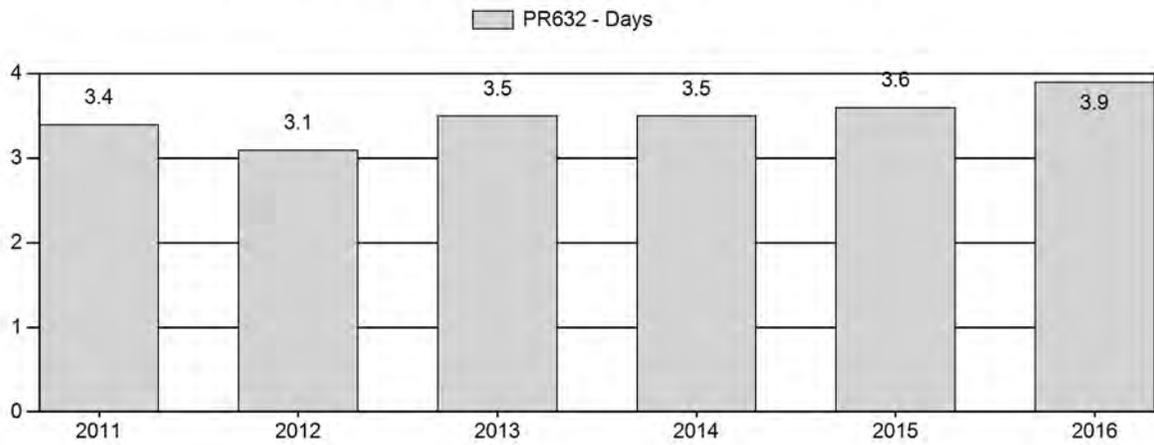
Harvest Success



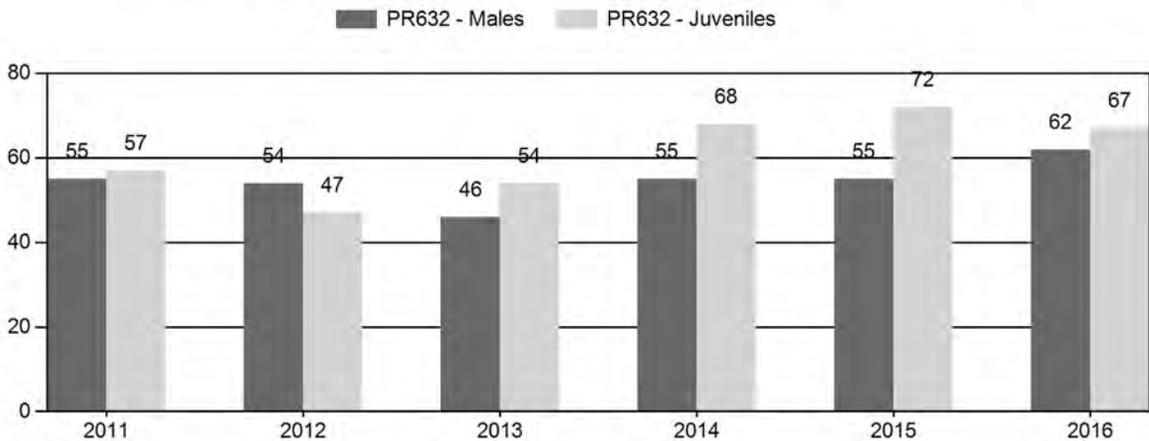
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR632 - BEAVER RIM

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	20,529	521	1,413	1,934	26%	3,544	47%	2,011	27%	7,489	1,893	15	40	55	± 2	57	± 2	37
2012	16,470	317	1,234	1,551	27%	2,867	50%	1,350	23%	5,768	1,766	11	43	54	± 2	47	± 2	31
2013	18,560	149	1,314	1,463	23%	3,199	50%	1,725	27%	6,387	1,608	5	41	46	± 2	54	± 2	37
2014	20,166	419	1,240	1,659	25%	3,003	45%	2,035	30%	6,697	2,408	14	41	55	± 2	68	± 3	44
2015	23,092	572	1,140	1,712	24%	3,087	44%	2,222	32%	7,021	2,279	19	37	55	± 2	72	± 3	46
2016	27,215	937	1,551	2,488	27%	4,001	44%	2,667	29%	9,156	2,516	23	39	62	± 2	67	± 2	41

2017 HUNTING SEASONS
Beaver Rim Pronghorn Herd Unit (PR 632)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
65	1	Sept. 16	Oct. 22	150	Limited quota	Any antelope
65	6	Sept. 16	Oct. 22	75	Limited quota	Doe or fawn
65	7	Sept. 1	Nov. 7	100	Limited quota	Doe or fawn valid north of the Little Popo Agie River
66	1	Sept. 16	Oct. 22	150	Limited quota	Any antelope
66	6	Sept. 16	Oct. 22	100	Limited quota	Doe or fawn
67	1	Sept. 16	Oct. 22	275	Limited quota	Any antelope
67	6	Sept. 16	Oct. 22	25	Limited quota	Doe or fawn
68	1	Sept. 16	Oct. 22	300	Limited quota	Any antelope
68	6	Sept. 16	Oct. 22	25	Limited quota	Doe or fawn
69	1	Sept. 15	Oct. 31	150	Limited quota	Any antelope
69	6	Sept. 15	Oct. 31	100	Limited quota	Doe or fawn
74	1	Sept. 16	Oct. 22	250	Limited quota	Any antelope
74	6	Sept. 16	Oct. 22	25	Limited quota	Doe or fawn
106	1	Sept. 16	Oct. 22	100	Limited quota	Any antelope
106	6	Sept. 16	Oct. 22	25	Limited quota	Doe or fawn

Archery

65 - 68,
74, 106 Aug. 15 Sept. 15 Refer to Section 2 of this Chapter

69 Aug. 15 Sept. 14 Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota Change from 2016
65	1	+75
65	6	+50
65	7	+25
66	1	+50
66	6	+25
69	1	+50
69	6	+75
106	1	+25
Herd Unit Total	1	+200
	6	+150
	7	+25

MANAGEMENT EVALUATION

Current Post-season Population Management Objective: 25,000

Management Strategy: Special (60-70 bucks/100 does)

2016 Post-season Population Estimate: ~25,900

2017 Post-season Population Estimate: ~25,600

Herd Unit Issues

Habitats are relatively intact with localized energy development and agricultural developments scattered throughout the herd unit, and urban/rural residential development occurring primarily near Lander. This population fluctuated below objective in the 1990s, reached objective in the mid-2000s before declining to a recent low in 2012 due to drought. The population has since increased with improved precipitation and resultant increased fawn survival. The management objective was reviewed in 2015, and the long-term post-season objective of 25,000 pronghorn was retained. The population reached about 25,900 pronghorn post-season 201, 4% above objective.

Weather

Precipitation from October 2015 through September 2016 was markedly higher than the 30-year average. The growing season precipitation (April-June 2016) was also notably higher than the 30-year average, while the high elevation spring- summer -fall range growing season precipitation was equal to the 30-year average. A large storm in May 2016, over Mothers' Day weekend delivered much of that month's precipitation in a single weekend causing heavy runoff and flooding events. The majority of the annual precipitation for 2016 came in April and May, with no measurable precipitation falling in July. Temperatures through the summer were above average.

Following a mild fall, winter 2016-17 was colder than average in December and January, with near average snowfall overall. However, snow accumulations were periodically above average, particularly east of Riverton and raised concerns about winter mortality. But, warm, windy periods often occurred between storms, reducing snow cover to zero in many of the winter ranges, providing much needed relief. Precipitation was above average for the first four months of 2017 (+102% in Lander, +75% in Jeffrey City, and +176% in Riverton), which should lead to excellent summer forage conditions.

Habitat

Habitat conditions have greatly improved as a result of increased precipitation, and thus have led to above average pre-season fawn/doe ratios and should also assist pronghorn survival over winter 2016-17, despite increased snow cover and colder temperatures. Recently developed "Rapid Habitat Assessments" will be implemented for the South Wind River and Sweetwater mule deer herd units to develop a baseline from which to gauge overall habitat condition across the landscapes. These assessments should also be useful for evaluating overall habitat condition of the Beaver Rim pronghorn herd unit.

Field Data

Pre-season fawn/doe ratios have been favorable for population growth the past few years, with the 2016 ratio of 67J/100F being 12% above the previous 5-year average. The overall buck/doe ratio increased to 62M/100F in 2016, only the second time since 1994 the overall buck/doe ratio has reached the special management strategy range. This was largely due to an increase in recruitment of yearling bucks to a pre-season ratio of 23YM/100F the highest level since 1994. However, the pre-season adult buck ratio 39AM/100F remains below average, indicating harvest of adult bucks may still be outpacing replacement due to previous low yearling buck recruitment. Fawn/doe ratios varied by hunt area from

55J/100 to 81J/100F, while buck/doe ratios had higher variability between hunt areas, ranging from 35M/100F to 94M/100F. Conservative increases in buck harvest is again recommended for 2017 to continue to allow for replacement of adult bucks following low yearling buck/doe ratios in 2012 and 2013, and to maintain this herd within the special management strategy range of 60-70 bucks/100 does.

Harvest Data

License quotas were increased slightly in 2016, compared to 2015 and led to nominal increase in total harvest. Yet, harvest statistics indicated hunters in some hunt areas still had difficulty finding antelope. Hunter success in 2016 remained below average at 91% overall, along with 84% active license success. Type 1 (any antelope) hunter success ranged from 71% in Hunt Area 68 to 97% in Hunt Area 74. Doe/fawn hunters had success rates ranging from of 69% in Hunt Area 68 to 91% in Hunt Area 69. As a whole, it took 3.9 days of hunting for each animal harvested, an increase of only 0.3 day, but the highest since 1994. A few hunters expressed concerns about low pronghorn numbers, especially “quality” adult bucks, but less so than in recent years. Adjustments to the 2016 seasons were made considering these variables, combined with variations in classification data to best fit harvest to individual hunt areas, allowing the herd unit to reach both the population objective and special management strategy range of 60-70 bucks per 100 does.

Population

A spreadsheet model was developed for this population in 2012. It has been updated utilizing 2016 pre-season classification and harvest data. The spreadsheet model (CJ/CA) works very well for Beaver Rim Pronghorn and tracks quite well with 7 line-transect (LT) estimates over the past 23 years. As such, we consider the model to be “Good”. The end-of-year estimates produced by the model run almost exactly through or very close to the LT estimates in 5 of 7 years, and through or nearly through the confidence interval for the other 2 years (projected end-of-year population is barely above the LT estimate’s confidence interval in 2007). The next LT survey is scheduled for the end of this bio-year. The model also produces post-season population estimates which closely follow trends observed by field personnel and the public. The population was at or slightly below objective for 7 years (2004 – 10), but declined sharply in 2011 and 2012, due to poor fawn recruitment as a result of intense drought. However, much improved fawn/doe ratios from 2014 through 2016 indicate the population has recovered to the current objective, with 25,900 pronghorn post-season 2016.

Management Summary

For 2017, doe/fawn license numbers are being increased in a few hunt areas, mostly to control localized private land damage situations. Increases in Type 1 licenses are implemented in 4 hunt areas, to provide additional hunting opportunity where buck/doe ratios are within the special management range, and with increased yearling buck recruitment, the overall buck/doe ratio should remain within the Department’s Special Management criteria. Current license quotas may be lower than some public expectations of increases in license allocation, as they are seeing more pronghorn, and what we might normally consider with a population slightly above objective. Yet, due to concerns about winter mortality and lower than average adult buck/doe ratios, we are maintaining conservative seasons to maintain current levels.

The seasons outlined should keep the population stable near 25,500 pronghorn, if the growing season weather patterns and fawn production/survival observed since fall 2013 continue and winter losses are minimal. A total of 1,375 any antelope and 475 doe/fawn licenses will be available for hunters in 2017, and should result in a harvest of about 1,645 animals.

Beaver Rim Pronghorn (PR632)
HA 65, 66, 67, 68, 69, 74, 106
Revised 2016

 Antelope Hunt Areas

RANGE

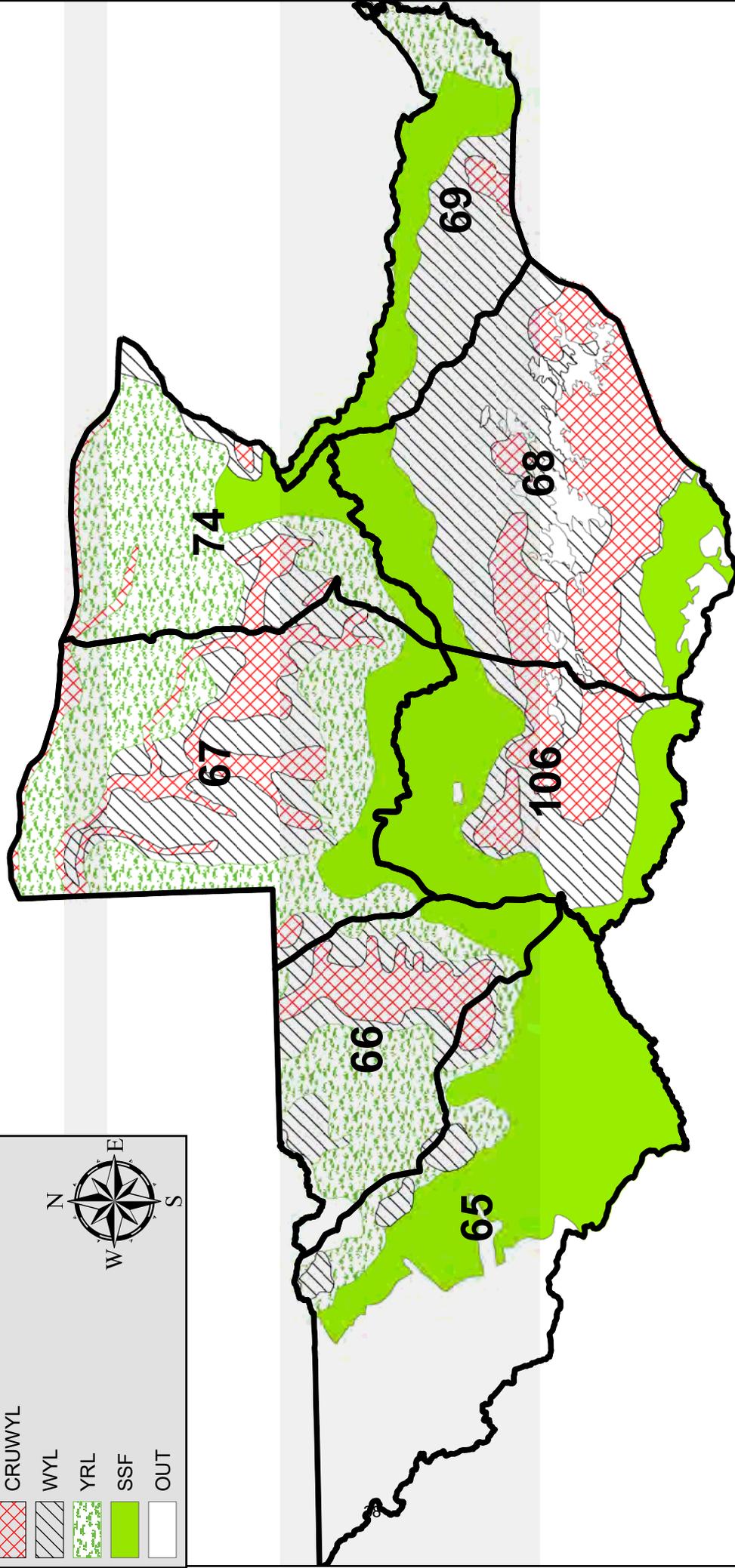
 CRUWYL

 WYL

 YRL

 SSF

 OUT



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR634 - BADWATER

HUNT AREAS: 75

PREPARED BY: GREG
ANDERSON

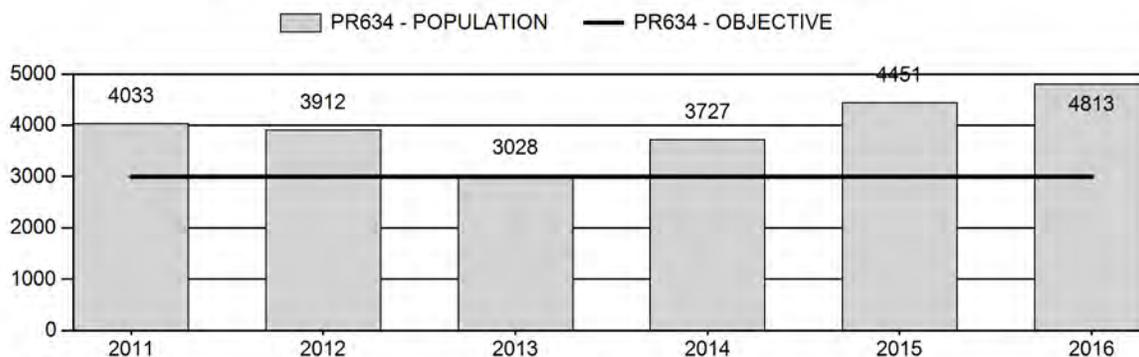
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,830	4,813	3,981
Harvest:	527	584	680
Hunters:	545	587	660
Hunter Success:	97%	99%	103 %
Active Licenses:	597	671	800
Active License Success:	88%	87%	85 %
Recreation Days:	1,753	2,016	2,200
Days Per Animal:	3.3	3.5	3.2
Males per 100 Females	61	73	
Juveniles per 100 Females	57	74	

Population Objective (± 20%) :	3000 (2400 - 3600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	60%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/6/2017

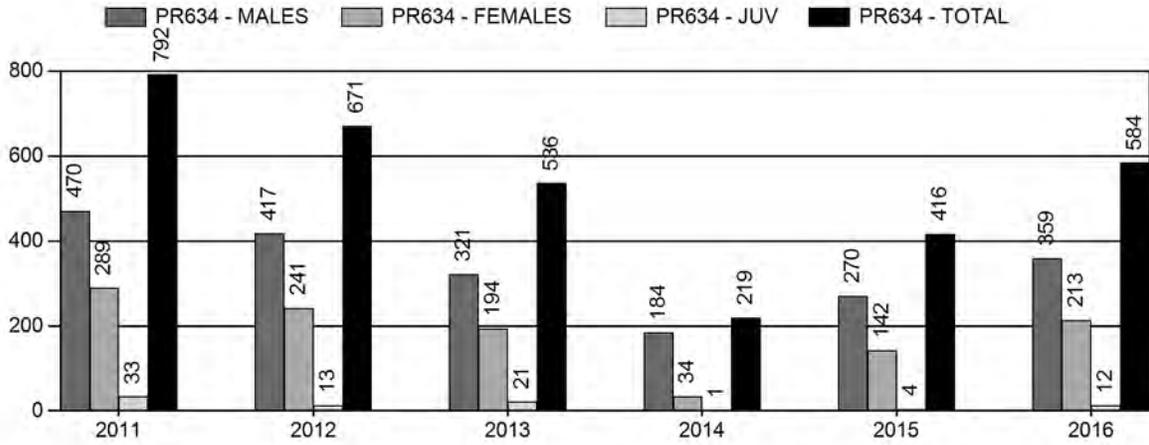
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	10%	11%
Males ≥ 1 year old:	29%	44%
Total:	11%	13%
Proposed change in post-season population:	+4%	-17%

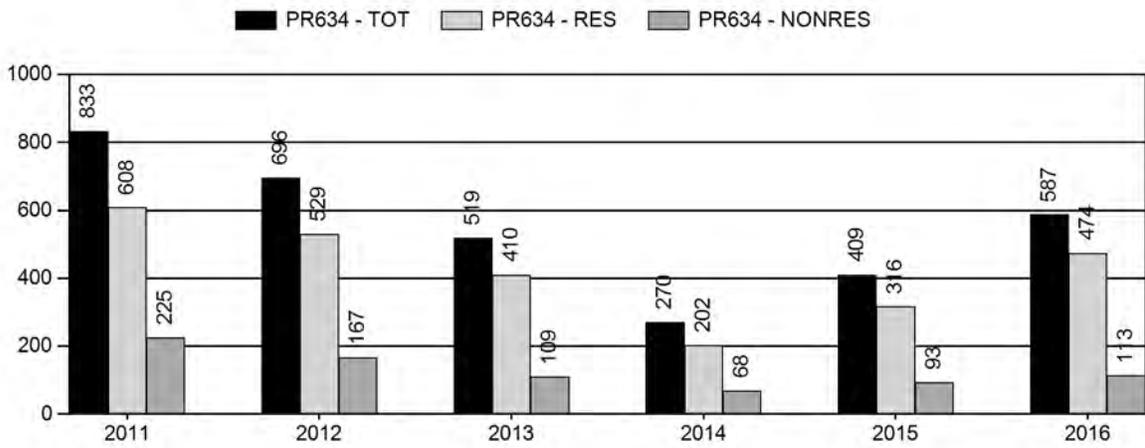
Population Size - Postseason



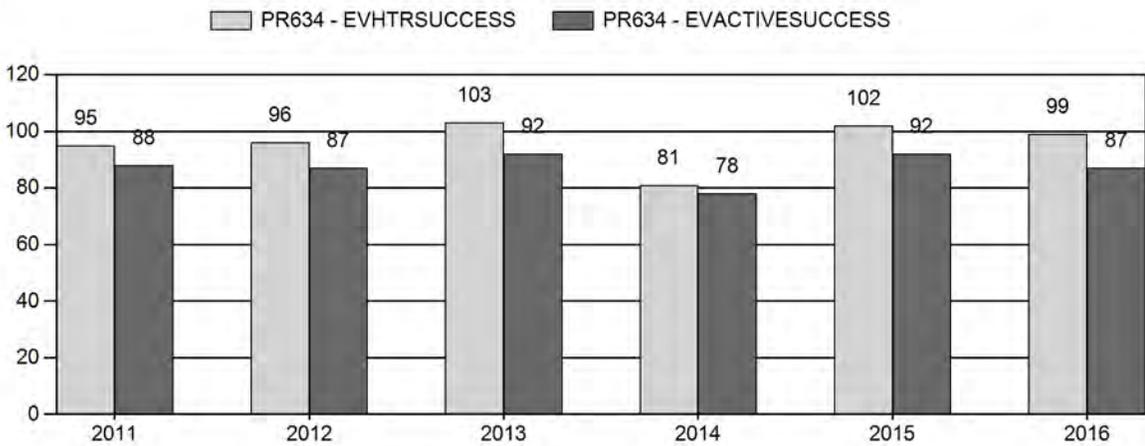
Harvest



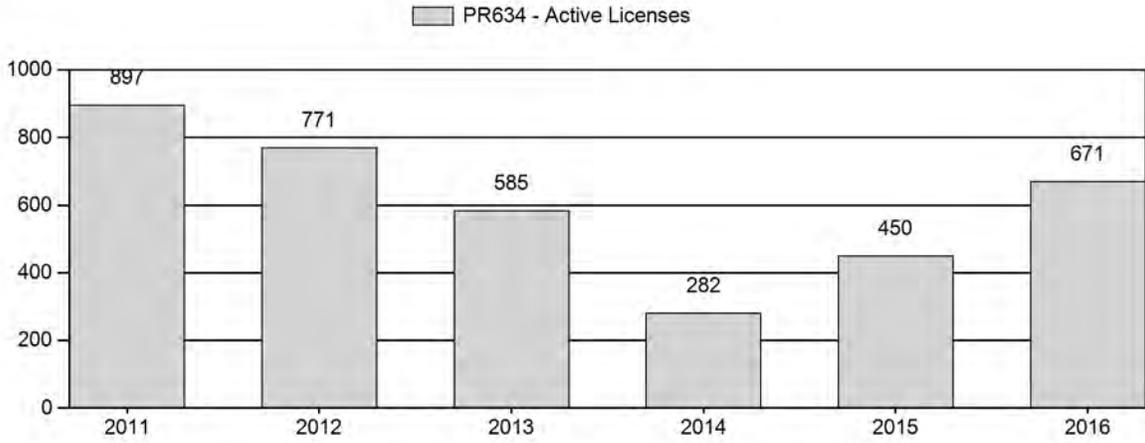
Number of Active Licenses



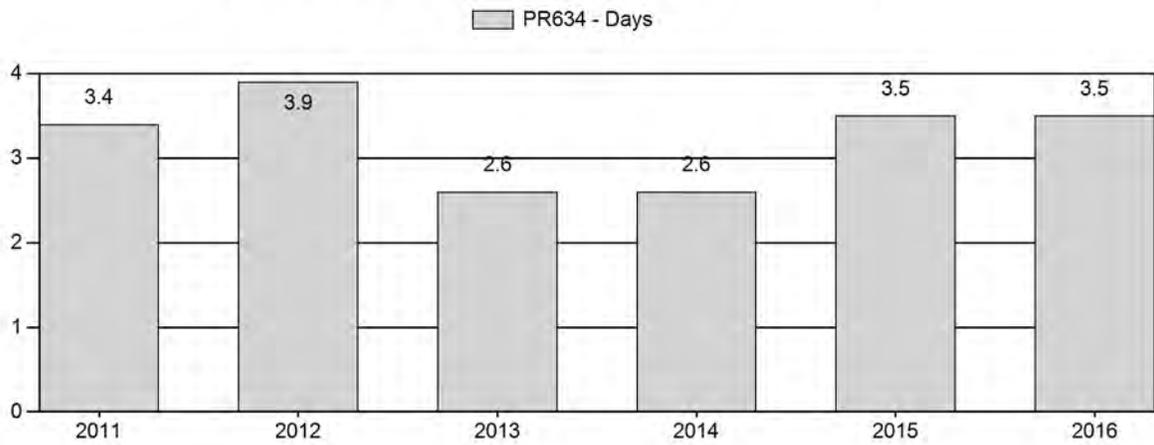
Harvest Success



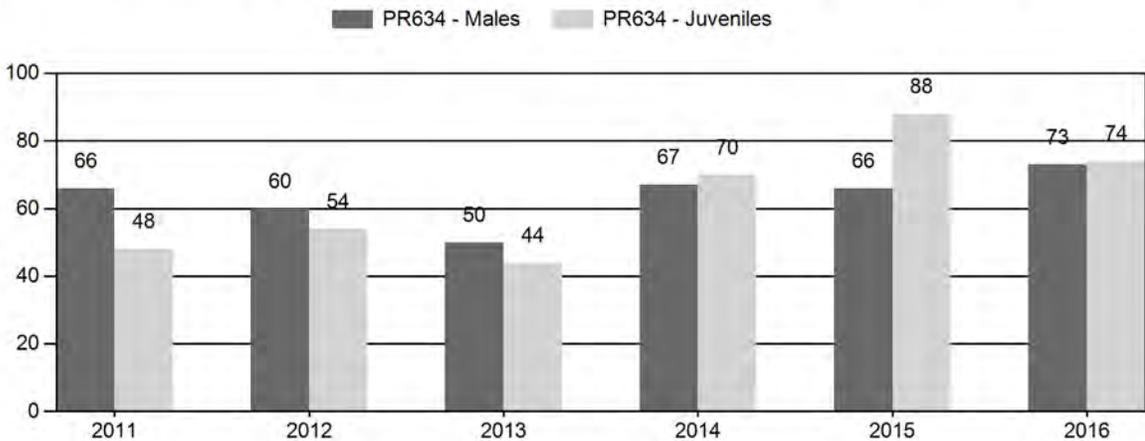
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR634 - BADWATER

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	4,904	113	468	581	31%	875	47%	421	22%	1,877	1,689	13	53	66	± 5	48	± 4	29
2012	4,650	83	296	379	28%	631	47%	339	25%	1,349	1,522	13	47	60	± 5	54	± 5	34
2013	3,617	58	268	326	26%	646	51%	285	23%	1,257	1,098	9	41	50	± 5	44	± 4	29
2014	3,968	87	142	229	28%	340	42%	237	29%	806	1,678	26	42	67	± 8	70	± 9	42
2015	4,909	149	115	264	26%	403	39%	354	35%	1,021	2,362	37	29	66	± 8	88	± 9	53
2016	5,454	148	139	287	29%	394	40%	292	30%	973	2,109	38	35	73	± 8	74	± 9	43

**2017 HUNTING SEASONS
BADWATER PRONGHORN (PR 634)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
75	1	Sep. 16	Oct. 22	550	Limited quota	Any antelope
75	6	Sep. 16	Oct. 22	275	Limited quota	Doe or fawn
Archery						
75		Aug. 15	Sep. 15			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2016
75	1	+100
Total	1	+100

Management Evaluation

Current Postseason Population Management Objective: 3,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~4,800

2017 Proposed Postseason Population Estimate: ~4,000

Management Issues

The Badwater pronghorn herd is managed toward a post-season population size objective of 3,000. The population is estimated using a spreadsheet model developed in 2012 and updated in 2016. The herd is managed for recreational opportunity. The objective was last reviewed in 2014. During the 2014 review, it was noted the new spreadsheet model appeared to track the same population trend as the previous POP-II model. However, annual population estimates tended to be about 1,000 animals higher in the new spreadsheet model. Initial attempts to increase the objective to 4,000 to compensate for the apparent higher estimates produced by the spreadsheet model were met with resistance from landowners and the BLM. When noted that leaving the objective at 3,000 would in effect mean managing for fewer antelope than in the past, a number of landowners and representatives from the BLM felt that was appropriate given long-term drought and poor habitat conditions in the area.

This pronghorn population inhabits a heavily industrialized area in central Wyoming. Much of the herd unit has been designated as a special management area emphasizing oil and gas production in both the Casper and Lander BLM RMPs. The Lander BLM is currently analyzing a proposal to develop approximately 4,500 oil/gas wells in the central part of the herd unit.

Given the commodities production emphasis in the area, it is likely a significant amount of pronghorn habitat will be lost or degraded over the next 20 years.

Habitat/Weather

This area has been impacted by extreme drought for much of the last decade. Virtually no vegetation grew throughout the herd unit in 2012 and 2013. In 2016 weather conditions resulted in fair herbaceous production throughout central Wyoming. Although no vegetation transects are monitored annually in this herd unit, observations suggested vegetation growth was good in 2016. Both deer and antelope in the area appeared to enter winter in excellent body condition. Following a mild fall, the area was impacted by harsh winter conditions in December and January. Most of the area had 100% snow cover from mid-December through mid-February. Typically this area has at most, patchy snow cover in the winter. Weather conditions moderated in mid-February. It is likely the harsh conditions in early winter resulted in some mortality but if late winter continues to moderate, winter mortality should not be unusually high.

Field Data

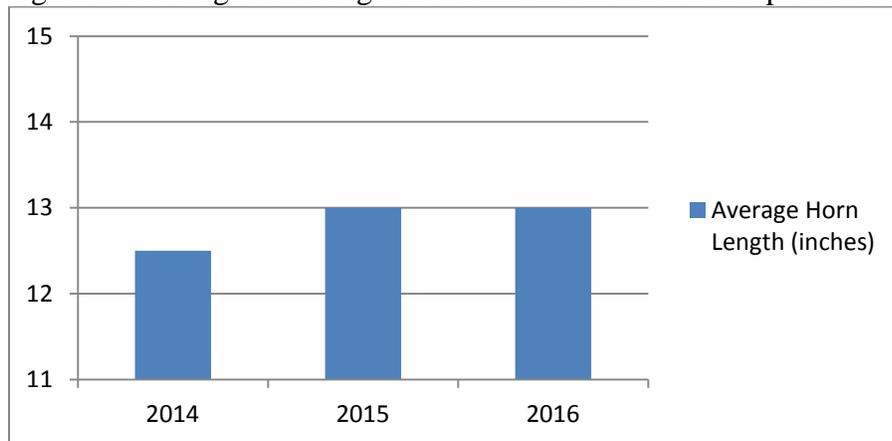
Numbers of antelope observed along specified ground classification routes had been declining steadily since 2010. This coincides with a modeled population decline. In contrast, the antelope classification sample size increased from 806 in 2014 to 1,021 in 2015 and was 973 in 2016. The large jump in sample size from 2014 to 2015 coincided with a modeled population increase. The increased classification sample size over the past two years is indicative of population growth and likely the result of high fawn/doe ratios of 88/100 and 74/100 in 2015 and 2016, respectively. Along with relatively high fawn/doe ratios over the past several years, the buck/doe ratio has been quite high at 66/100 in 2015 and 73/100 in 2016. The high buck/doe ratios are a result of abnormally high yearling buck numbers in the population associated with good recruitment. All of the classification data from the past 2 years indicate this population increased.

Harvest Data

As expected, with a high buck/doe ratio and an increasing population, Type 1 license success was good at 86%. This was lower than the 2015 success rate of 91% but close to the 5-year average of 89%. Type 6 license success was also good at 89%. The days/animal statistic for Type 1 license holders was unremarkable in 2016 at 3.7. This was almost the same as the 5-year average of 3.3. Overall, harvest statistics indicate recreational hunting in 2016 was good.

In 2016 personnel collected horn length measurements on 37 male antelope. The average and median lengths were both 13 inches. The longest horn measurement of the year was 15 inches (Fig. 1). This was quite similar to 2015 when personnel collected 16 horn measurements and found an average length of 13 inches, a median length of 13 inches, and a maximum length of 14 inches.

Figure 1. Average horn length of field checked male antelope in Hunt Area 75.



Population

In 2012, a spreadsheet model was developed for this population. The model behaved predictably with the addition of 2013 and 2014 data but the addition of 2015 data changed model estimates dramatically. The model appears to track population trends reliably but the actual population estimate appears questionable. The model tracks significantly higher than 6 of 7 line-transect (LT) estimates. Recalibrating juvenile and adult survival rates in various versions of the model does nothing to bring the end-of-year estimate closer to these estimates. LT estimates for this population tend to have very high coefficients of variation attributable to low small samples sizes and variable densities across the herd unit. Due to the high standard errors associated with the line-transect estimates the population model deviance errors are very small. These numbers are calculated by dividing the difference of the model estimate and the LT estimate by the standard error of the LT estimate. A large standard error in the denominator of this calculation results in a small population deviance value even if the difference between the model estimate and LT estimate is quite large. Since the Solver function of these models is designed to minimize the population deviance, there is little need to account for already small deviances. The bottom line is Solver has little incentive to consider even large differences between model population estimates and LT estimates and therefore, the model essentially ignores the LT estimates. Concurrently, differences in annual observed versus modeled buck/doe ratios are given undo consideration by Solver. This is not desirable in this case since recent classification sample sizes have been well below adequate. To deal with this problem, population deviances (the difference between model and LT estimates) are multiplied by a factor of 10 in the current model. This forces the model closer to the most recent LT estimate. A correction factor of 10 was chosen because it forces the end-of-year population to model close to the most recent LT estimate. Without the correction factor, the model population is well above the confidence interval for all but one unusually high LT estimate. It should be noted, the overall population trend remains the same with or without the use of a correction factor.

For 2016, the TSJ/CA model was selected to simulate the population. This was a different model than selected in 2014 and 2015 and produces a higher population estimate than models from

previous years although trends remain the same as in previous models. In 2016, the TSJ/CA model provided a substantially better fit to observed data than the SCJ/SCA model and had a lower AIC value.

This model version produces a population trend mirroring field personnel impressions. The model indicates the population declined significantly from 2007 through 2013. This is supported by the decreased classification samples collected along standard routes since 2010 as well as declining buck/doe ratios from 2010 through 2013. The population was predicted to be at objective in 2013 and then increased significantly in 2014. The population continued to increase through 2016 and is predicted to decline 17% in 2017. As mentioned previously, harvest statistics and classification data also indicate this population increased. Due to the lack of survival estimates, the model is considered a fair simulation.

A line transect survey was flown in the herd unit on May 26 and 27, 2016. The most recent line transect survey prior to 2016 was flown on May 21, 2013. Results from the 2016 survey are presented in Appendix I. The estimation function selected for the 2016 analysis was the half-normal with polynomial adjustment terms. This model appeared to fit the data histogram as well as any of the models analyzed. All models analyzed had CV values near 20% indicating none were very precise. All past LT surveys in this herd have had high CV values as well, typically 20% or above. Low precision estimates for the herd are primarily due to low group encounter rates and uneven distribution of antelope throughout the area. It is unlikely estimates will ever improve substantially for the herd given low encounter rates (some years as few as 75 groups of antelope were observed).

Management Summary

Given the modeled population increase over the past year as well as the high buck/doe ratio, hunting opportunity in area 75 can be increased in 2016. Type 1 licenses will be increased by 100 to 550 to allow more recreational opportunity. Type 6 licenses will remain unchanged since the population model predicts a 17% population decline with the current level of doe/fawn harvest. Given average recruitment, the population is predicted to decline by approximately 17% to 4,000 and be within 33% of objective.

Appendix I. Line Transect Summary

Survey Date: May 26, 27 2016
Single Observer: Greg Anderson
Aircraft Contractor: Sky Aviation
Aircraft: Scout
Flight Hours: 10

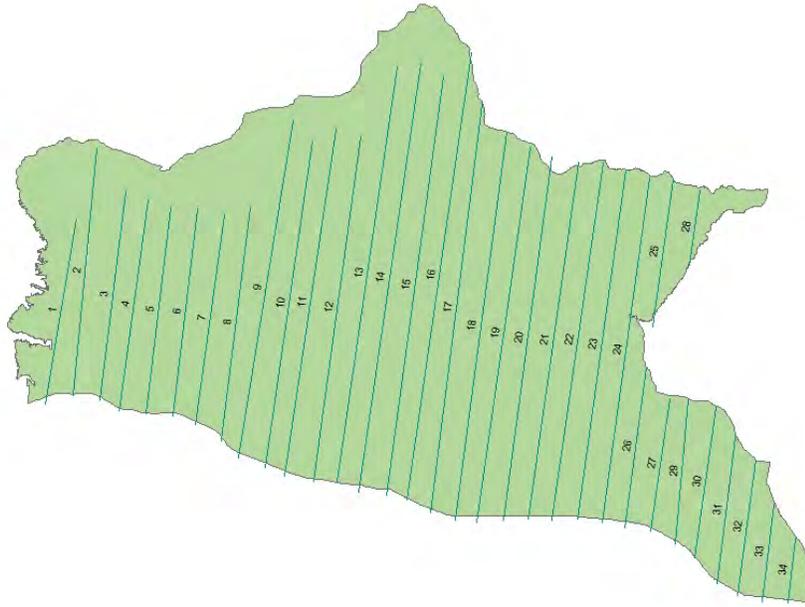
Start Time: 0700

Transects (UTM Zone 13)

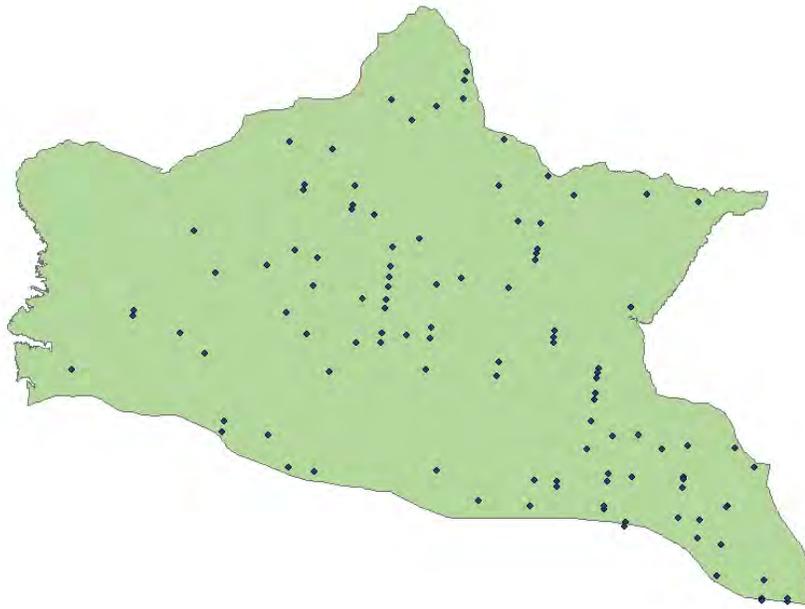
Transect		Easting	Northing	Miles
1	Start	245350	4790657	11.5
	End	248433	4808815	
2	Start	250498	4815884	15.3
	End	248069	4791543	
3	Start	250737	4791079	12.9
	End	253258	4811597	
4	Start	255477	4810733	13.1
	End	252685	4790020	
5	Start	255273	4789745	12.8
	End	257764	4810069	
6	Start	260367	4809893	12.8
	End	257916	4789495	
7	Start	260139	4788697	13.0
	End	263006	4809288	
8	Start	265623	4809995	14.4
	End	262738	4787108	
9	Start	264429	4785418	21.0
	End	269845	4818632	
10	Start	271741	4816539	20.3
	End	267020	4784426	
11	Start	268950	4783548	21.6
	End	274032	4817739	
12	Start	276519	4817050	21.5
	End	271774	4783016	
13	Start	274106	4783092	25.8
	End	280131	4823924	
14	Start	276239	4781987	26.6
	End	282391	4824166	
15	Start	284612	4822886	26.0
	End	279003	4781652	
16	Start	280996	4781283	27.8
	End	287407	4825271	

17	Start	288489	4820151	25.3
	End	283392	4779954	
18	Start	285742	4779247	24.1
	End	290830	4817401	
19	Start	293159	4815975	23.3
	End	287936	4779060	
20	Start	290601	4779203	22.6
	End	295299	4815042	
21	Start	297961	4814515	22.2
	End	292994	4779295	
22	Start	295368	4779228	22.2
	End	300352	4814470	
23	Start	302635	4813749	21.7
	End	297832	4779291	
24	Start	300278	4779039	21.4
	End	304956	4812907	
25	Start	307303	4812796	9.1
	End	305220	4798317	
26	Start	304685	4794264	10.0
	End	302507	4778476	
27	Start	305068	4778175	8.2
	End	306920	4791197	
28	Start	308851	4804328	4.7
	End	309953	4811705	
29	Start	308752	4791117	8.9
	End	307457	4776932	
30	Start	309432	4775548	9.3
	End	311518	4790302	
31	Start	313455	4787445	9.1
	End	311573	4772996	
32	Start	313622	4771819	8.4
	End	315464	4785128	
33	Start	317259	4780866	6.1
	End	316045	4771158	
34	Start	318563	4771053	4.0
	End	319395	4777475	
Total Length				557

Transects



Antelope sightings



Survey Results

Lines: 34

Miles: 557

Occupied Habitat: 866 mi²

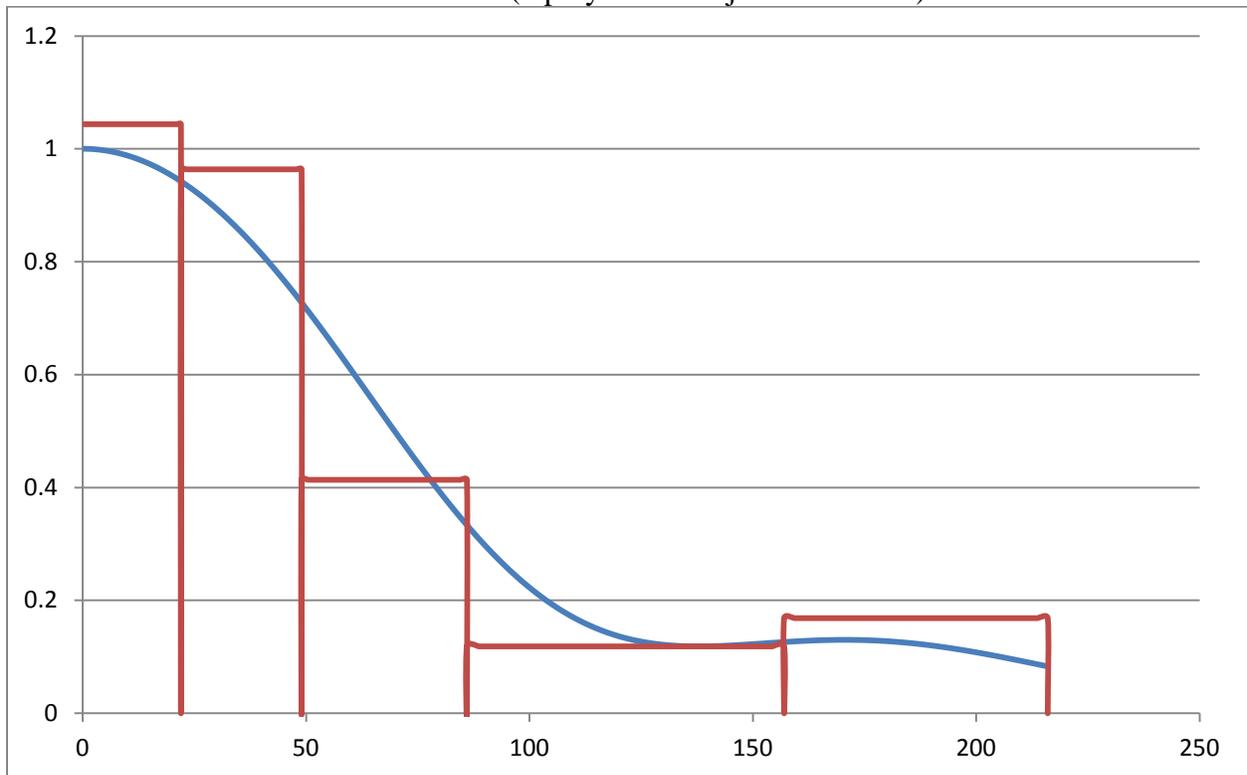
Antelope Groups:

Band	Groups
A	31
B	33
C	18
D	14
E	14

Total 110

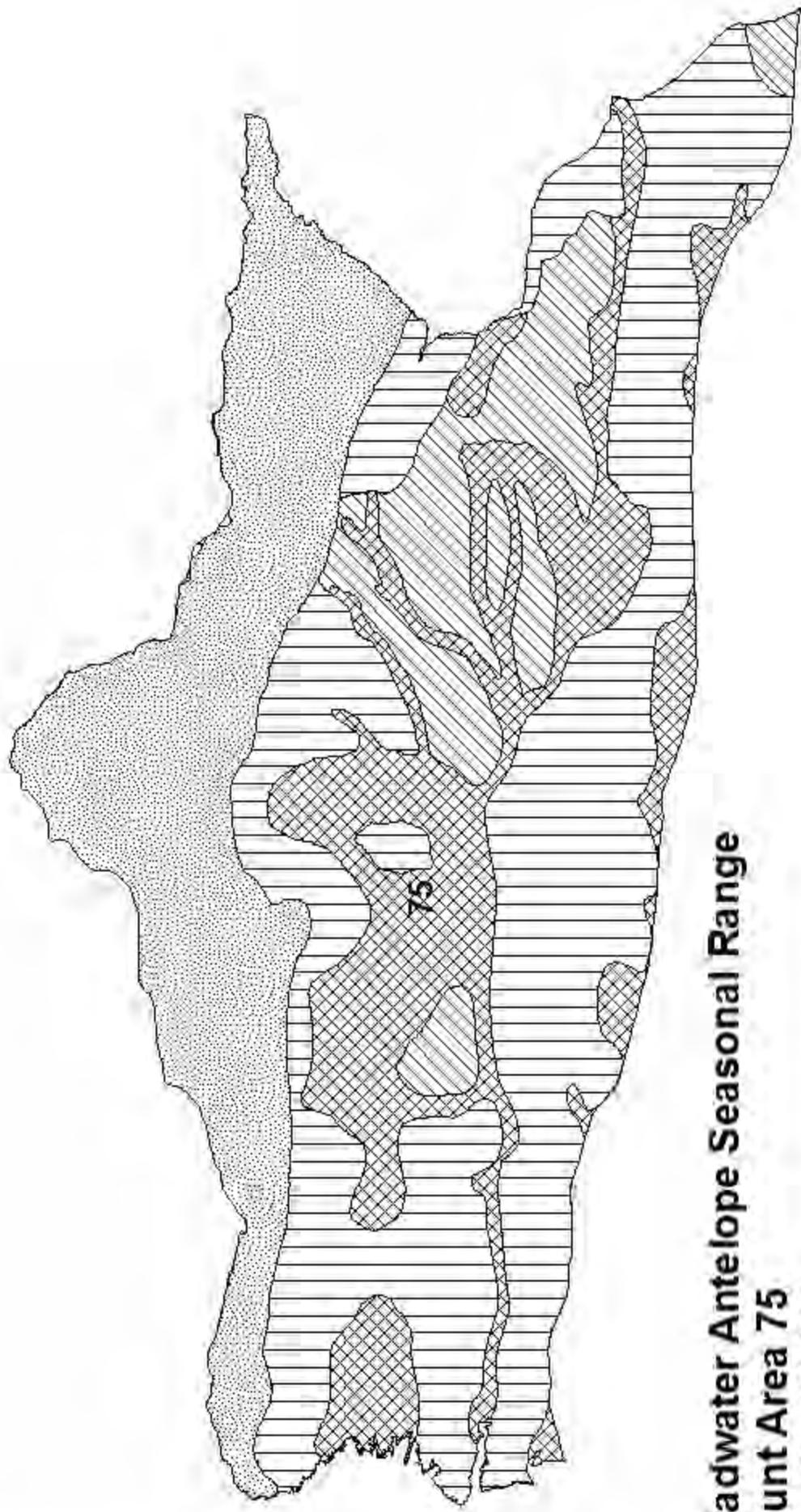
Average Group Size: 2.4

Detection Function: half-normal curve (2 polynomial adjustment terms)



Model: Half-normal, 2 polynomial adjustment terms

Parameter	Estimate	Standard Error	Coefficient of Variation	95% CI	
				Lower	Upper
Density	3.9	0.71	18.21	2.7	5.5
Population	3360	612	18.21	2352	4800



**Badwater Antelope Seasonal Range
Hunt Area 75
Revised 2012**

-  CRUWYL
-  OUT
-  SSF
-  WYL
-  YRL

2016 - JCR Evaluation Form

SPECIES: Pronghorn

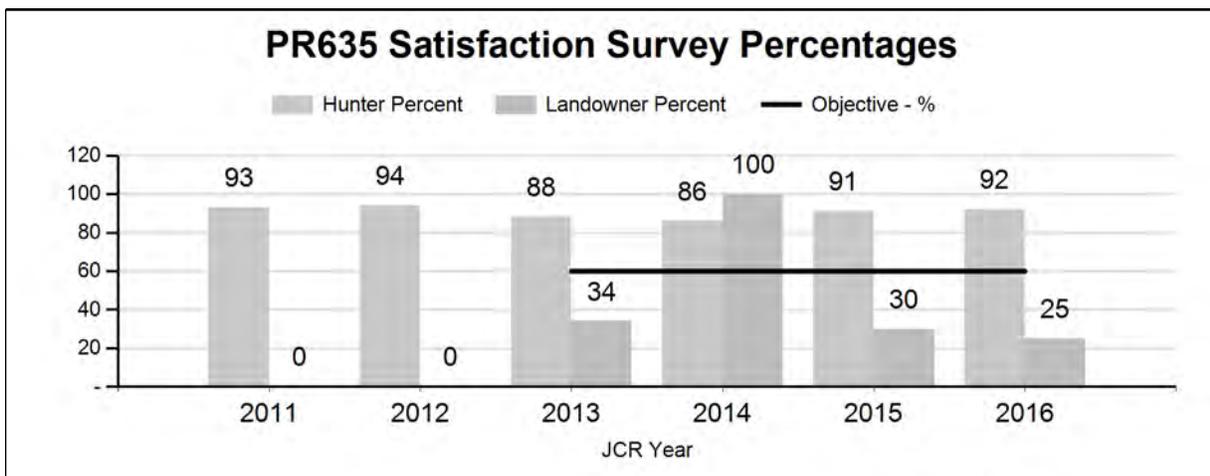
PERIOD: 6/1/2016 - 5/31/2017

HERD: PR635 - PROJECT

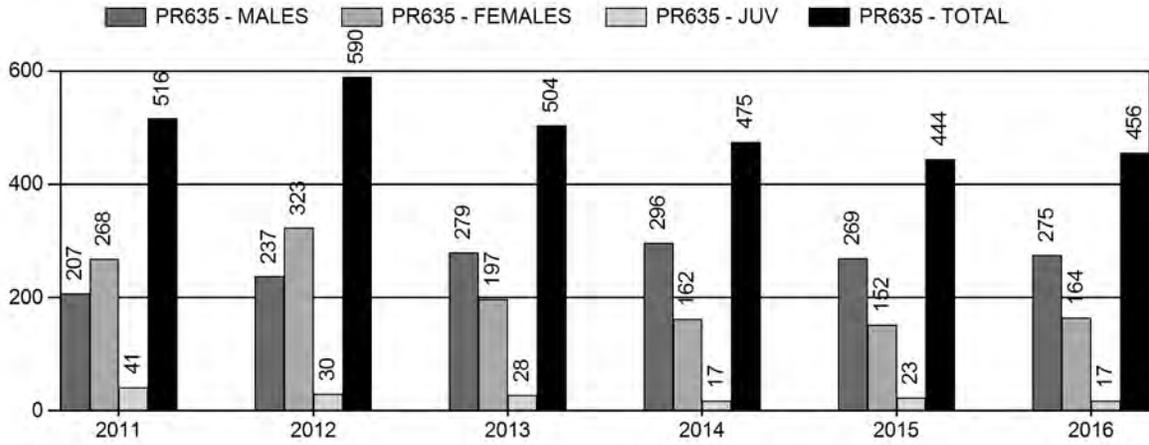
HUNT AREAS: 97, 117

PREPARED BY: GREG ANDERSON

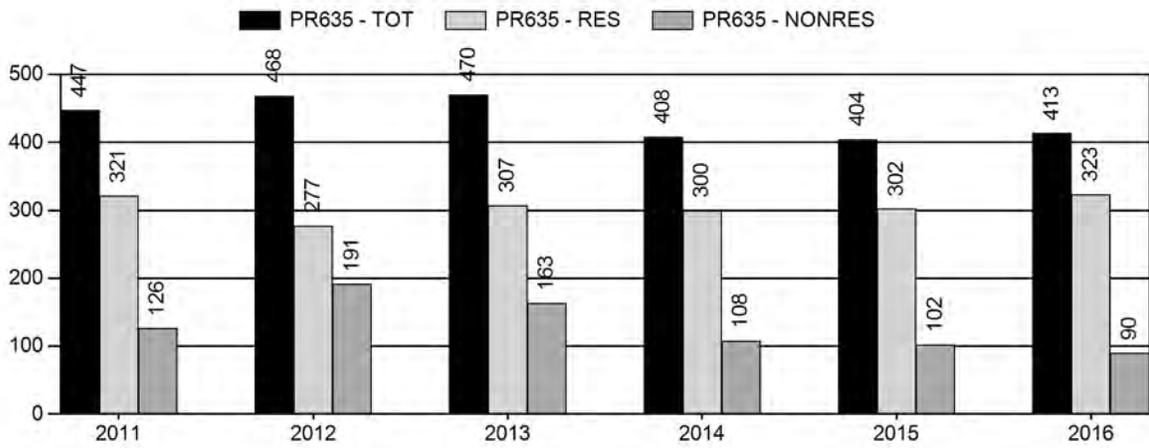
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	91%	92%	90%
Landowner Satisfaction Percent	38%	25%	60%
Harvest:	506	456	500
Hunters:	439	413	440
Hunter Success:	115%	110%	114%
Active Licenses:	559	489	530
Active License Success:	91%	93%	94%
Recreation Days:	1,651	1,721	1,900
Days Per Animal:	3.3	3.8	3.8
Males per 100 Females:	69	36	
Juveniles per 100 Females	59	50	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			-2%
Number of years population has been + or - objective in recent trend:			3



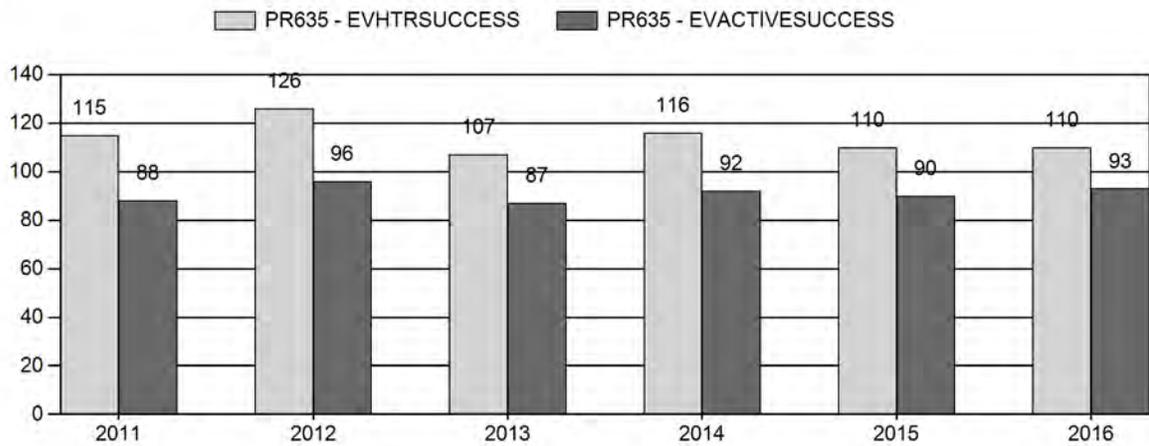
Harvest



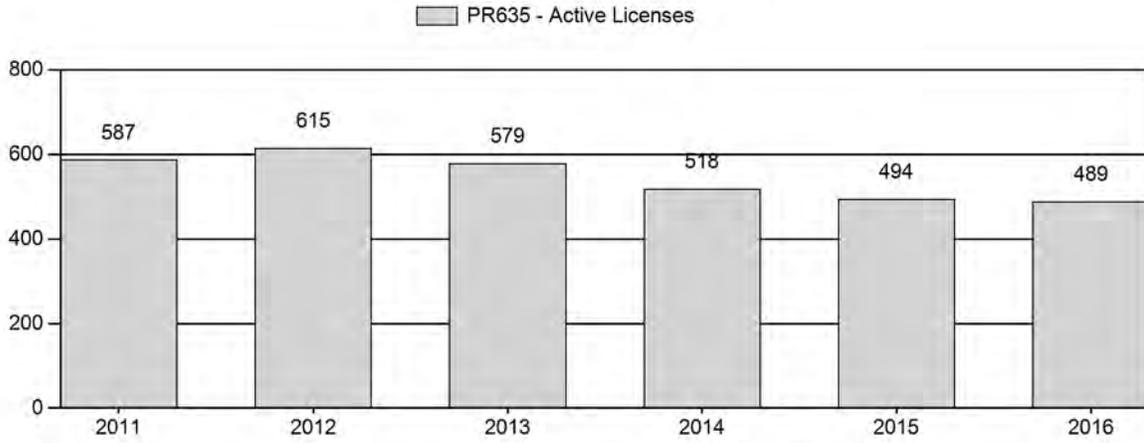
Number of Active Licenses



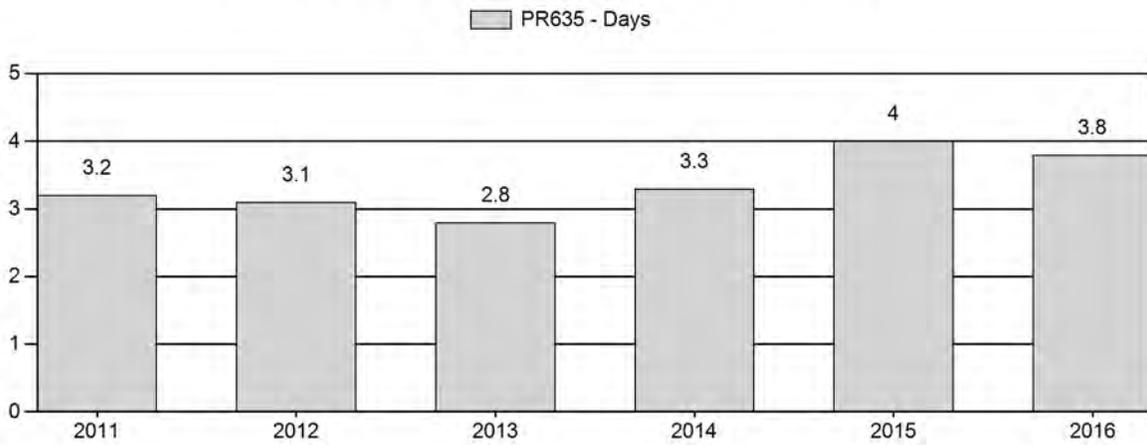
Harvest Success



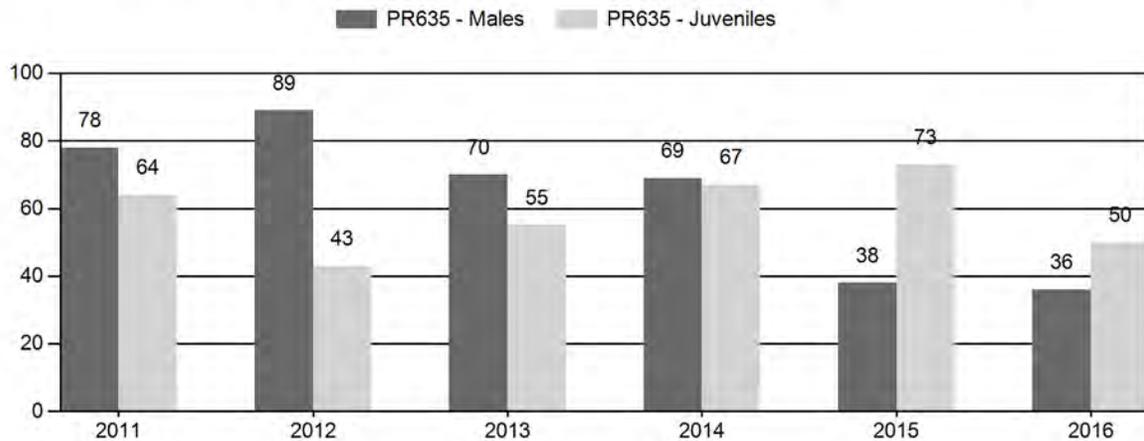
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR635 - PROJECT

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	0	45	89	134	32%	171	41%	109	26%	414	0	26	52	78	± 0	64	± 0	36
2012	0	67	112	179	38%	202	43%	86	18%	467	0	33	55	89	± 0	43	± 0	23
2013	0	28	125	153	31%	219	45%	120	24%	492	0	13	57	70	± 0	55	± 0	32
2014	0	21	62	83	29%	120	42%	80	28%	283	0	18	52	69	± 0	67	± 0	39
2015	0	26	45	71	18%	188	47%	137	35%	396	0	14	24	38	± 0	73	± 0	53
2016	0	42	33	75	19%	209	54%	104	27%	388	0	20	16	36	± 0	50	± 0	37

**2017 SEASONS
PROJECT PRONGHORN (PR 635)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
97, 117	1	Sep. 16	Oct. 22	300	Limited quota	Any antelope
97, 117	2	Aug. 15	Oct. 22	25	Limited quota	Any antelope valid in Area 97 south of U.S. Highway 26 and in all of Area 117
97, 117	6	Sep. 16	Oct. 22	200	Limited quota	Doe or fawn
97, 117	7	Aug. 15	Oct. 22	25	Limited quota	Doe or fawn valid in Area 97 south of U.S. Highway 26 and in all of Area 117
Archery 97, 117		Aug. 15	Sep. 15			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2016
97, 117	6	+50
	7	-25
Total		+25

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: Hunter/Landowner Satisfaction 60%

Management Strategy: Recreational

2016 Hunter Satisfaction Estimate: 92%

2016 Landowner Satisfaction Estimate: 25% (12 contacts)

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 90%

Most Recent 3-year Running Average Landowner Satisfaction Estimate: unknown

Management Issues

In 2013 the Department conducted an objective review for the Project pronghorn herd unit. Previously the herd had a population objective of 400 pronghorn. The population objective was impractical because personnel were unable to collect adequate demographic data due to extensive interchange with the neighboring Wind River Reservation (WRR). Following an internal review, a public meeting and contact with numerous landowners the objective was changed in 2013 to manage for 60% hunter and 60% landowner satisfaction. Hunter satisfaction is taken directly from the harvest survey while landowner satisfaction in 2013 was determined by mailing a survey to 98 landowners in the herd unit. From the 98 surveys, the Department received 46 responses. Of those, 21 landowners provided e-mail addresses and indicated they wished to receive the survey in future years. In 2014, 21 surveys were e-mailed to landowners and the Department received 4 responses. One of the respondents requested to no longer receive the survey. In 2015 and 2016 personnel contacted landowners in person or by phone to determine satisfaction with the antelope season. Over the past 2 years, an increasing number of landowners have commented there are too many antelope.

Habitat/Weather

This herd occupies a predominantly agricultural area in central Wyoming as well as lands interspersed with the WRR. Land ownership patterns and extensive border with the WRR make it cost prohibitive to collect adequate demographic data in the herd unit. The highest densities of pronghorn are found along the northern portion of hunt area 97 and commonly move between the herd unit and the WRR. During periods of drought, this herd has typically been impacted less than surrounding populations due to the abundance of feed associated with agricultural operations. In 2016, weather conditions were conducive to good vegetative production throughout the herd unit including upland, native range. As such, antelope were well dispersed throughout the area. Fall observations and field checks indicate antelope in the herd unit entered winter in excellent body condition.

Field/Harvest Data/Population

The fawn/doe ratio in hunt area 97 was 50/100 in 2016. This was below the 5-year average of 59/100 and also lower than recruitment levels over the past 2 years. The buck/doe ratio declined from 38/100 in 2015 to 36/100 in 2016. This was the fourth consecutive year the buck/doe ratio declined. The 2016 ratio was well below the 5-year average of 69/100. The number of Type 1 licenses over the past several years does appear to be impacting the buck/doe ratio which was well above the recreational threshold prior to 2015. Despite the lower buck/doe ratio, Type 1 license success was very high at 96% in 2016. In conjunction, hunter satisfaction was 92% in 2016 and averaged 90% over the past 3 years. As such, there is no need to reduce Type 1 licenses in 2017. The dramatic decline in the buck/doe ratio over the past 2 years bears note, but harvest statistics and hunter satisfaction indicate recreational hunting remains good in the herd unit.

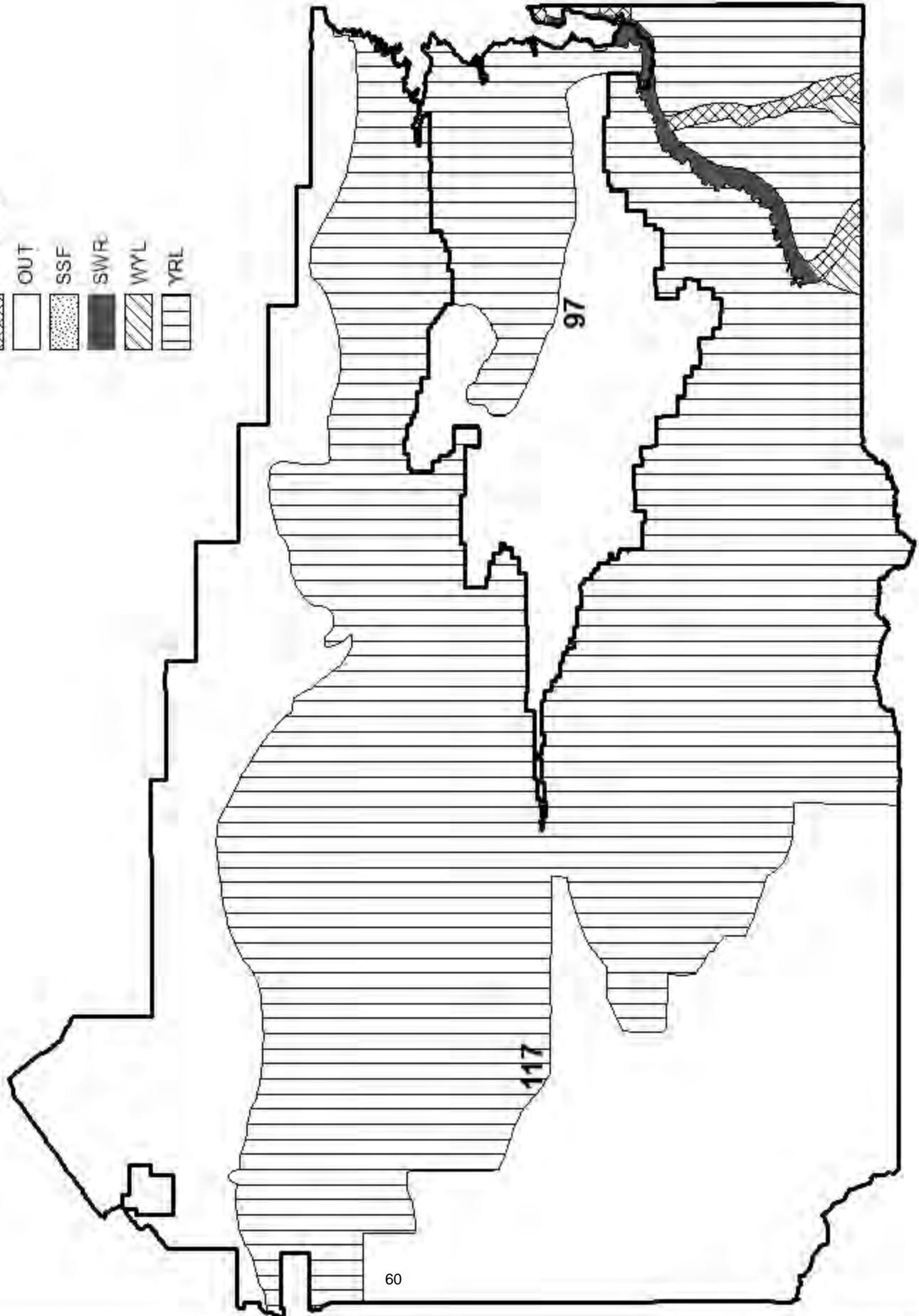
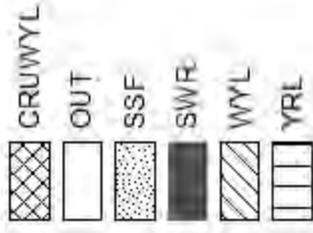
The population is considered to be above objective in 2016. Hunter satisfaction (satisfied or very satisfied) has been quite high over the past 4 years but landowner satisfaction has been well below 60% with the majority of landowner commenting there are too many antelope. Note

landowner satisfaction in 2014 was based on only 4 responses to an e-mail survey and is not considered accurate. Due to the lack of data in 2014 it is not possible to calculate a 3-year average for landowner satisfaction. However, each of the past 2 years indicate landowner would generally prefer fewer antelope.

Management Summary

Although hunter satisfaction has been quite high over the past several years, landowner satisfaction has declined with the majority of landowners commenting there are too many antelope in the area. To address the decreasing level of landowner satisfaction, Type 6 licenses will be increased by 50 in 2017. Type 1 licenses will not increase since the buck/doe ratio in the area has been quite low for the past 2 years. Type 7 licenses will be reduced by 25 since damage complaints in the areas targeted by these tags have decreased. With average survival for the year but increased harvest, the population is expected to decline in 2017.

**Project Antelope Seasonal Range
Hunt Areas 97, 117
Revised 2012**



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR636 - NORTH FERRIS

HUNT AREAS: 63

PREPARED BY: GREG HIATT

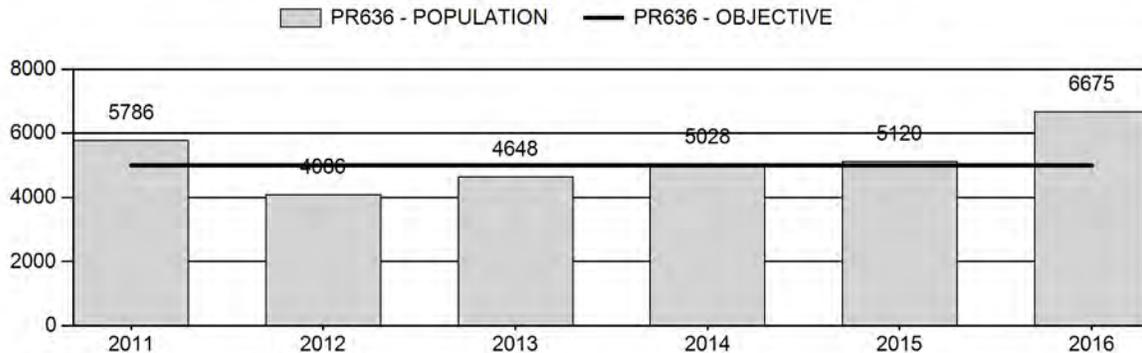
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	4,934	6,675	5,440
Harvest:	453	267	635
Hunters:	502	300	775
Hunter Success:	90%	89%	82 %
Active Licenses:	542	322	775
Active License Success:	84%	83%	82 %
Recreation Days:	1,555	735	2,200
Days Per Animal:	3.4	2.8	3.5
Males per 100 Females	60	63	
Juveniles per 100 Females	57	77	

Population Objective (± 20%) :	5000 (4000 - 6000)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	34%
Number of years population has been + or - objective in recent trend:	1
Model Date:	2/27/2017

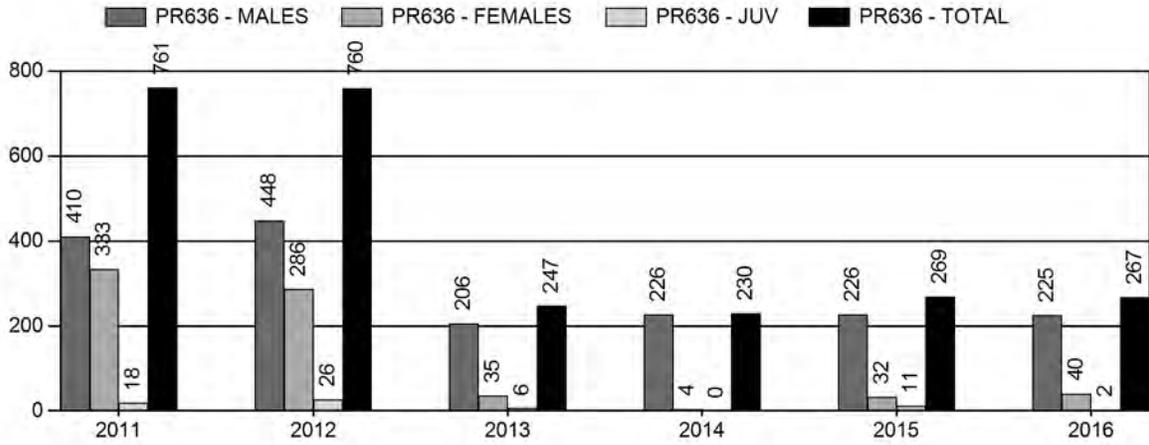
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.4%	9.3%
Males ≥ 1 year old:	16.6%	20.4%
Total:	5.1%	10.4%
Proposed change in post-season population:	-6.3%	-18.6%

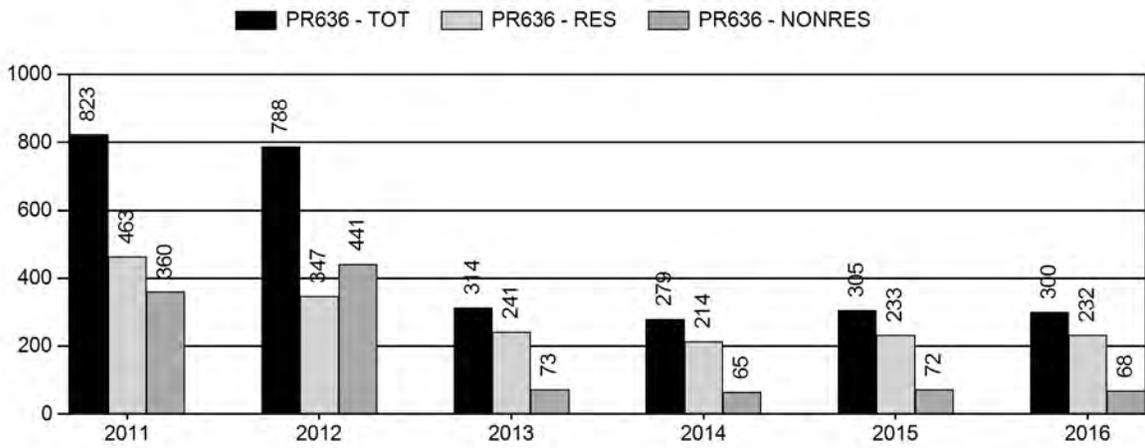
Population Size - Postseason



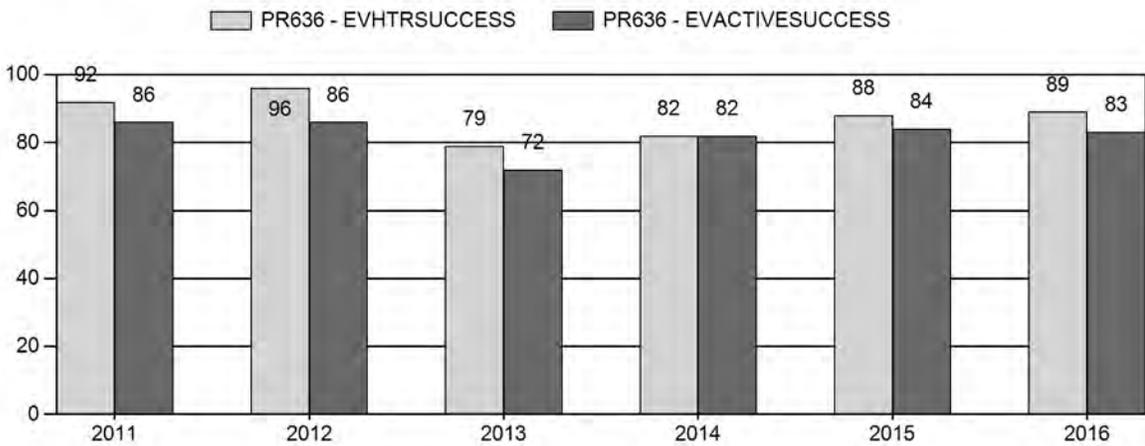
Harvest



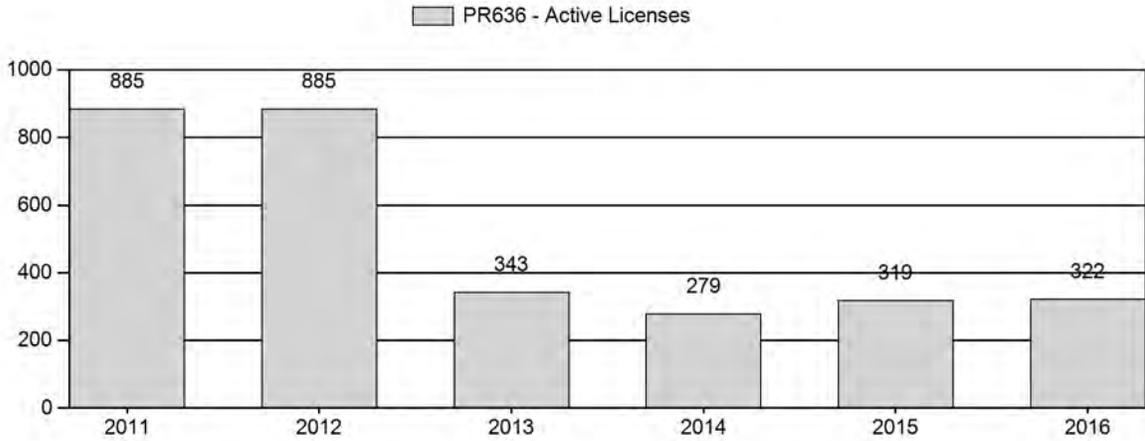
Number of Active Licenses



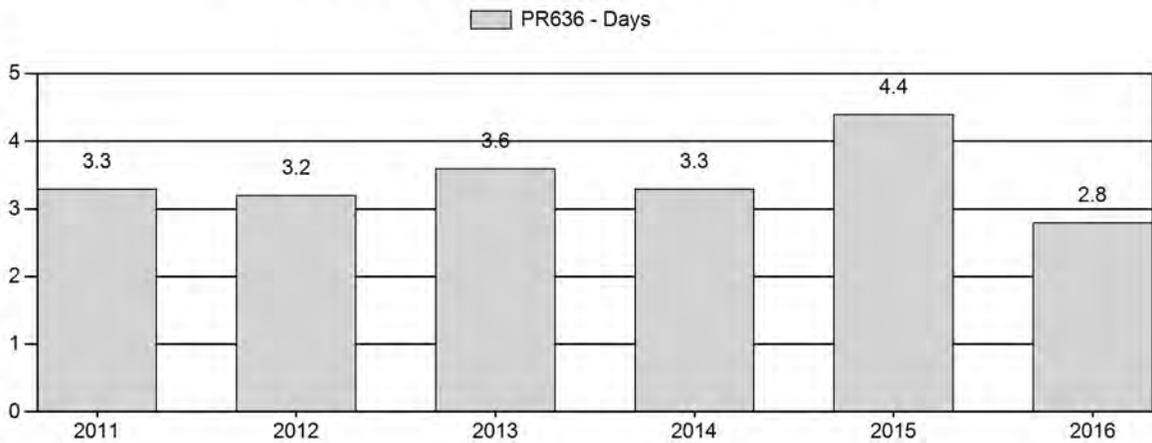
Harvest Success



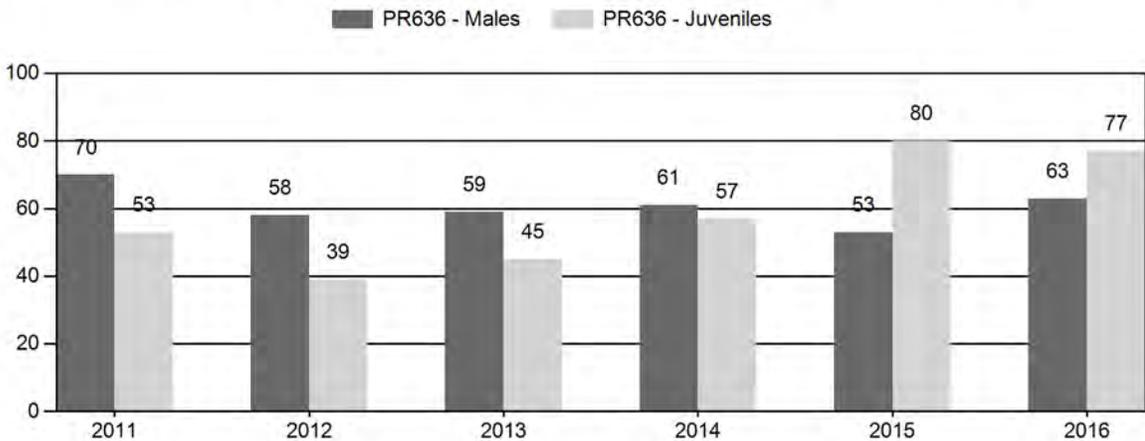
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR636 - NORTH FERRIS

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	6,623	72	288	360	31%	516	45%	275	24%	1,151	1,914	14	56	70	± 7	53	± 6	31
2012	4,914	55	253	308	29%	534	51%	208	20%	1,050	1,330	10	47	58	± 6	39	± 5	25
2013	4,920	57	216	273	29%	459	49%	205	22%	937	1,460	12	47	59	± 7	45	± 6	28
2014	5,281	72	143	215	28%	350	46%	201	26%	766	1,611	21	41	61	± 8	57	± 8	36
2015	5,420	118	273	391	23%	736	43%	587	34%	1,714	2,173	16	37	53	± 5	80	± 6	52
2016	6,970	158	338	496	26%	782	42%	606	32%	1,884	2,347	20	43	63	± 5	77	± 6	47

**2017 HUNTING SEASONS
NORTH FERRIS PRONGHORN HERD (PR636)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations	
		Opens	Closes				
63	1	Sep. 16	Oct. 31	200	Limited quota	Any antelope	
	2	Sep. 16	Oct. 31	250	Limited quota	Any antelope valid east of the Buzzard Road (Natrona County Road 410 – Carbon County Road 497)	
	6	Sep. 16	Oct. 31	150	Limited quota	Doe or fawn	
	7	Sep. 16	Oct. 31	250	Limited quota	Doe or fawn valid east of the Buzzard Road (Natrona County Road 410 – Carbon County Road 497)	
	Archery						
	63		Aug. 15	Sep. 15			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2016
63	1	+100
	2	+50
	6	+125
	7	+225
Herd Unit Total	1	+100
	2	+50
	6	+125
	7	+225

Management Evaluation

Current Postseason Population Management Objective: 5,000

Management Strategy: Recreation

2016 Postseason Population Estimate: 6,675

2017 Proposed Postseason Population Estimate: 5,440

Herd Unit Issues

The North Ferris pronghorn herd is managed toward a post-hunt population of 5,000, an objective last reviewed in 2014. Population size is estimated using a spreadsheet model

developed in 2012 and updated in 2017. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

Historically, access has not been an issue in this herd unit which is mostly public lands, but access to some large blocks of private land has become more difficult in recent years and may affect management ability to attain adequate harvests in the future. Potential for economic wind power exists within the herd unit, but appears unlikely when other resource issues such as T&E species and sage-grouse Core Area are considered. Many miles of sheep-tight fences still stand in the herd unit, impeding pronghorn movements.

Losses to EHD were documented in pronghorn herds south and west of North Ferris in 2013, and reports of carcasses in Area 63 suggests the disease was present here as well. This disease may recur when suitable conditions arise.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving fawn survival, and was followed by another wet spring in 2016. High fawn production was seen again in 2016 as a result. Condition of pronghorn going into the 2016-17 winter is expected to have been good because of high forage production. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Winter losses may have been above average, but are not expected to be excessive.

Habitat

While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional in 2015, due to record precipitation, and was again above normal in 2016. Two shrub transects have been established within this herd unit, primarily to monitor mule deer winter forage. One of these, on the Morgan Creek WHMA, was burned in the 2012 fires and the second was not read in 2016. New owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in improving habitat conditions for wildlife, possibly as mitigation for wind power projects in other parts of the state. Shrub treatment on winter ranges, adjustments of grazing use, and modification of sheep-tight fences would benefit pronghorn in this herd unit.

Field Data

Classification sample size increased again in 2016, more than double the 2013 and 2014 samples, and was the largest sample since 2009. Sample size was still less than statistically desired. These data are collected from the ground along routes that have had only minor changes over the past two decades. Higher densities of pronghorn were again found in the eastern half of the area near Pathfinder Reservoir and along irrigated hayfields on the Buzzard and Sand Creek Ranches. Fawn production declined slightly to 77:100, but was still the second highest in 32 years, and was well above the long-term average for this herd.

Following exceptionally high recruitment of yearlings in 2005, buck:doe ratios exceeded the 60:100 maximum criterion for recreational management in this herd. Buck harvests were

increased, often double or triple historic levels, and surplus bucks were successfully harvested with the buck:doe ratio returning to acceptable levels by 2012. Much of the decline was in the supply of adult bucks, with that ratio dropping to its lowest level in ten years in 2015. As expected, hunter complaints about poor quality of bucks increased and hunter satisfaction declined as the adult buck:doe ratio declined. Following near-record fawn production in 2015, yearling recruitment was high again in 2016, and again increased the buck:doe ratio above the recreational maximum, to 63:100.

Harvest Data

Overall hunter success declined slightly, from 84 percent to 83 percent, but the average effort required to harvest a pronghorn dropped from 4.4 days to 2.8 days, the lowest average in seven years. In a reversal of what was seen in 2015, hunters with the Type 2 and Type 7 licenses, restricted to the eastern portion of the herd unit, had poorer success than those with Type 1 or Type 6 licenses, who had the entire hunt area available and were free to hunt the eastern portion if they chose to do so. This suggests pronghorn were more evenly distributed across the herd unit in 2016, rather than being concentrated near riparian habitats in the eastern half as was seen in previous years. Hunters with the Type 7 doe/fawn licenses valid for the eastern portion of the area had the poorest success and highest average effort.

Population

This herd was below objective size for most of the decade following the 1992-93 winter, a consequence of low fawn production and poor recruitment. High fawn production followed by an unusually mild winter in 2004 provided the first significant growth in herd size.

Population estimates suggested this herd was well above objective size by 2006 due to record high fawn survival and harvests were increased accordingly. The current spreadsheet model predicts the increased harvests successfully reduced the herd to objective size by 2012. Harvests were reduced and the herd remained at objective for three years. Following near-record high fawn production in 2015, the herd grew above objective level again. This model aligns well with three line-transect survey estimates, but greatly underestimates the most recent line-transect estimate. This survey was flown with a single, inexperienced observer, which may have affected survey estimates. Hunter comments, satisfaction and harvest statistics do not support the exceptionally high numbers predicted by the most recent line-transect estimate.

The SCJ,SCA spreadsheet model provided adequate fit with observed buck:doe ratios and the lowest AIC value for this herd. This base model was modified to allow fawn survival to fluctuate upwards in four years preceding the exceptionally high observed yearling buck:doe ratios. Annual adult survival was predicted at 85 percent, a level slightly lower than models for some nearby pronghorn herds. Juvenile survival rate averaged 50 percent, except in the years when higher fawn survival was allowed. These annual fawn survival rates exceeded adult survival rates and as a result the model is only considered to be a “Fair” representation of the herd. The CJ,CA model had a higher AIC value and poorer fit with observed data. The TSJ,CA model also had a higher AIC value, but better fit with buck:doe ratios. Population estimates from this simpler model were much lower, further under-estimating the most recent line-transect estimate.

Fawn production in 2017 was projected at the 5-year average. Due to the severity of the 2016-17 winter, this average may be overly optimistic. The model was run using a median juvenile survival in 2017.

Management Summary

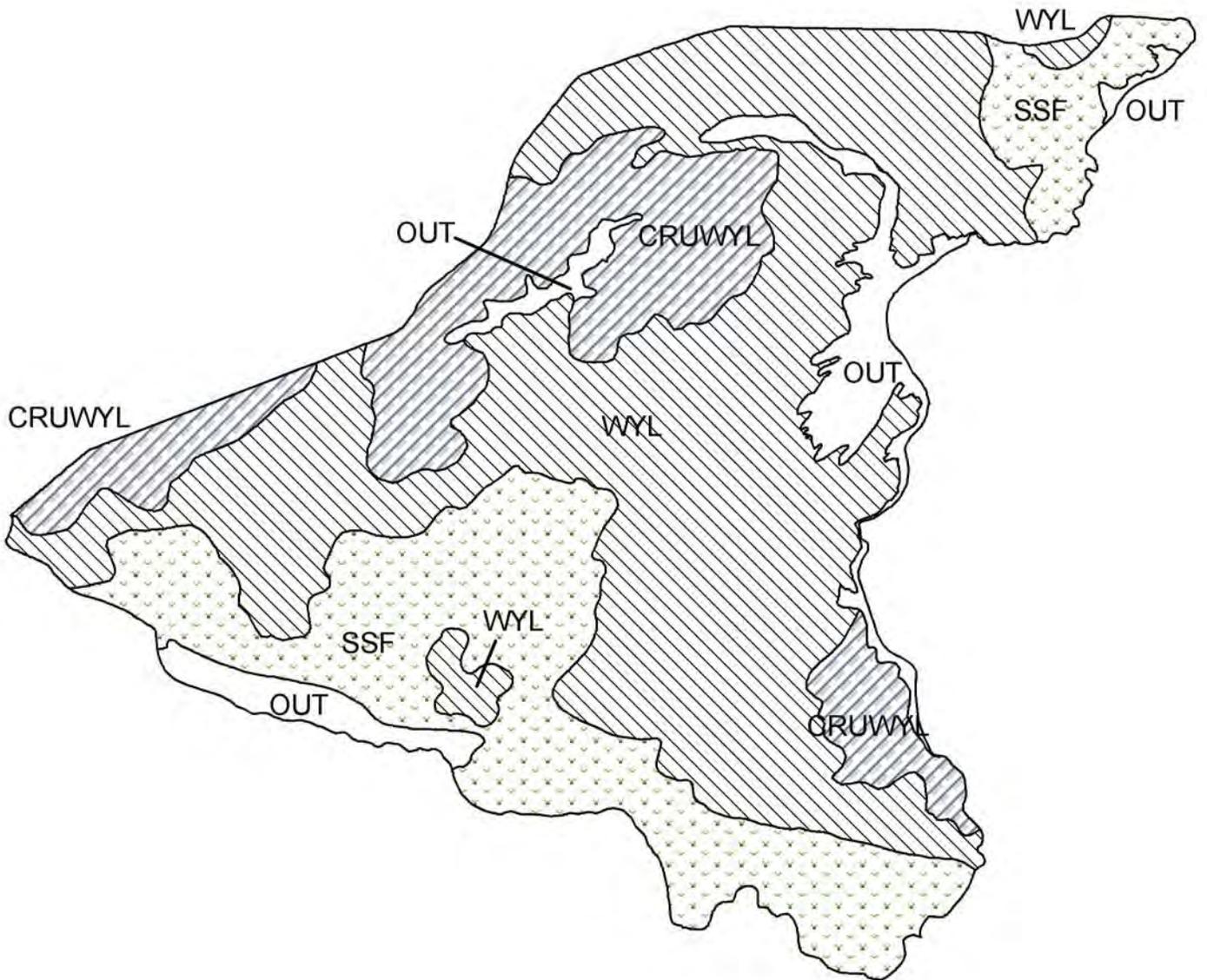
With improvement in fawn production and the herd estimated to be above objective size, doe harvest was increased to return the herd to objective size. As in previous years, Type 2 and Type 7 licenses are issued to direct hunting pressure to the eastern portion of the herd unit where pronghorn densities are higher and most private lands are found. With average fawn production in 2017, the model predicts this increased harvest will reduce the herd within acceptable range of the 5,000 pronghorn herd objective.

The expected harvest of roughly 335 bucks and 300 does and fawns from the 2017 license quotas should provide a significant decrease (15-20 percent) in herd size, projected to be ~5,440 at post-hunt 2017. With the herd so close to objective, either low winter survival or poor fawn production in 2017 could require harvest reductions in future years.

Opening date is shifted one day to remain on the third Saturday of September, synchronizing with Area 68 to the north and other areas in the Lander Region. Closing date is the same as in the previous five years and extends to the closing of the local deer season. Archery season uses a standardized opening date and closes the day before the opening of the regular season.



PH636 - North Ferris
HA 63
Revised - 8/95



2016 - JCR Evaluation Form

SPECIES: Pronghorn

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

HERD: PR637 - SOUTH FERRIS

HUNT AREAS: 62

PREPARED BY: GREG HIATT

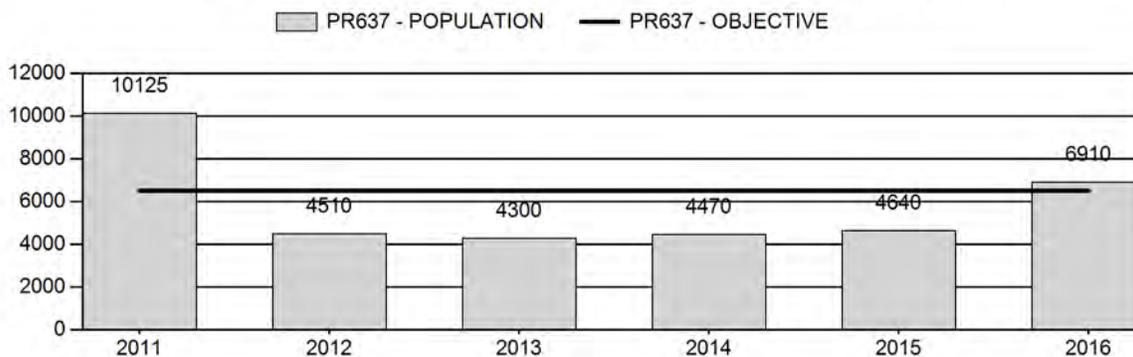
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	5,609	6,910	7,120
Harvest:	170	132	225
Hunters:	191	149	255
Hunter Success:	89%	89%	88 %
Active Licenses:	208	157	255
Active License Success:	82%	84%	88 %
Recreation Days:	637	462	780
Days Per Animal:	3.7	3.5	3.5
Males per 100 Females	58	65	
Juveniles per 100 Females	47	54	

Population Objective (± 20%) :	6500 (5200 - 7800)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	6%
Number of years population has been + or - objective in recent trend:	0
Model Date:	2/27/2017

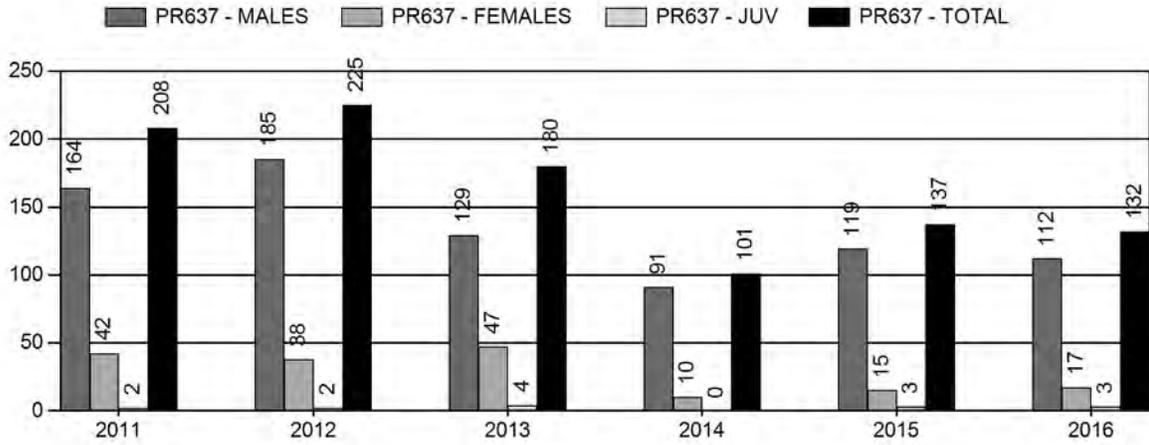
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.7%	2.3%
Males ≥ 1 year old:	8.0%	6.2%
Total:	2.6%	3.1%
Proposed change in post-season population:	-0.2%	3.1%

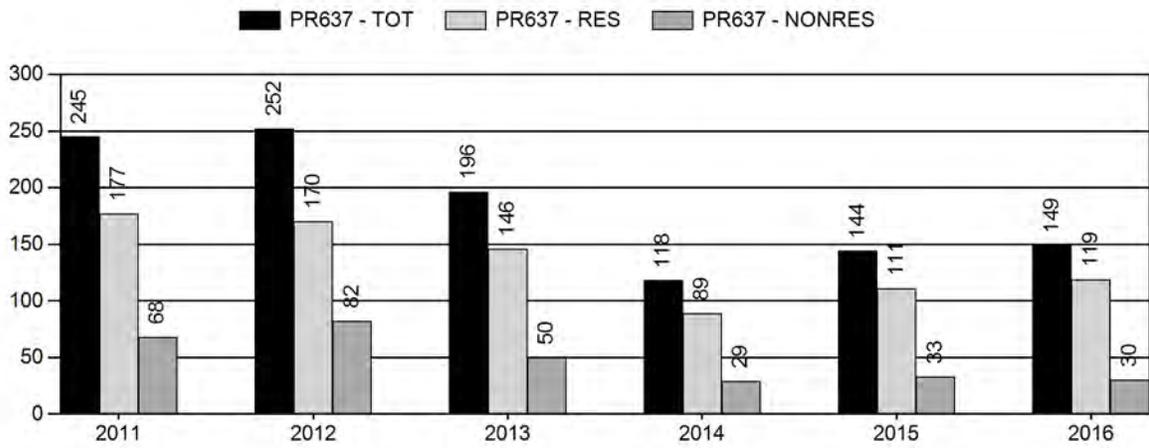
Population Size - Postseason



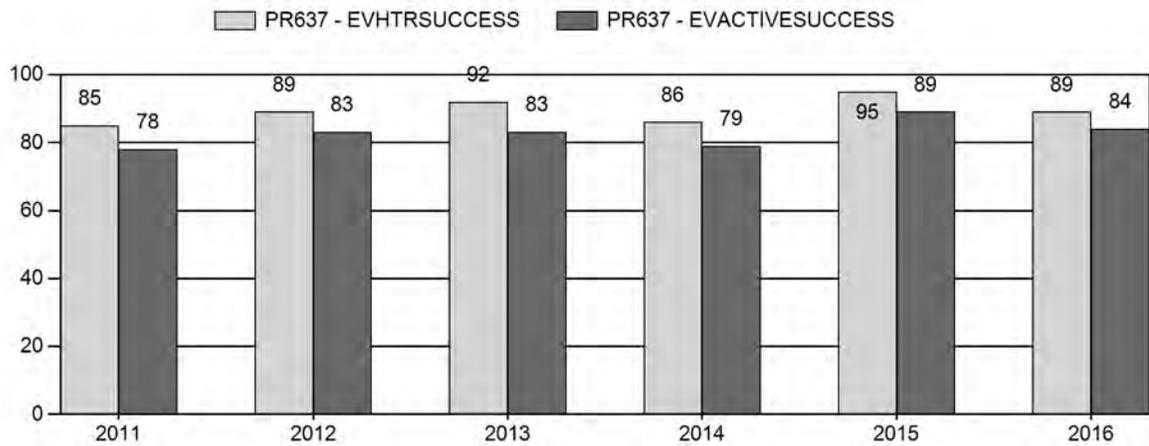
Harvest



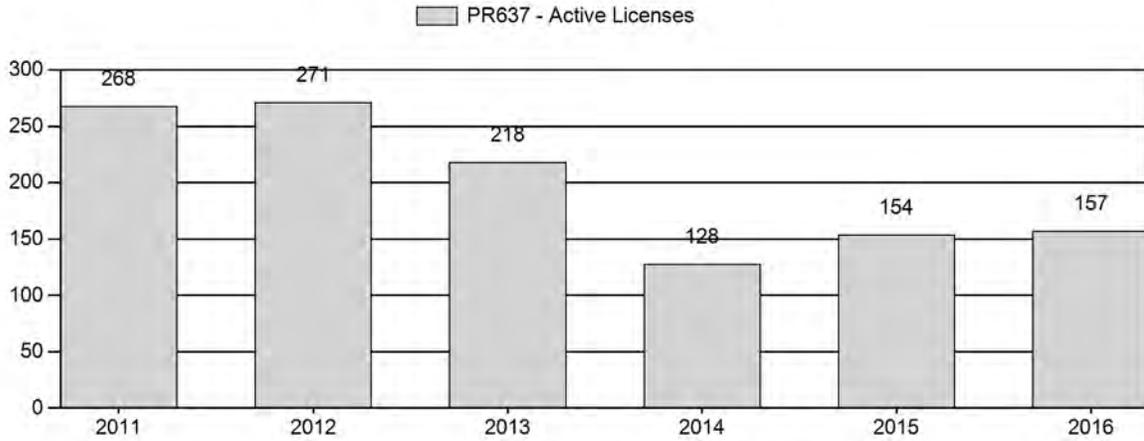
Number of Active Licenses



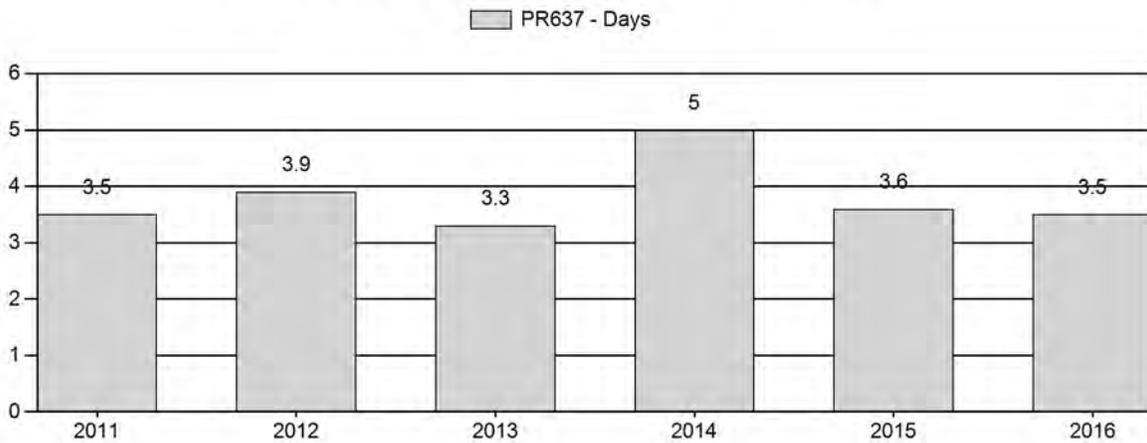
Harvest Success



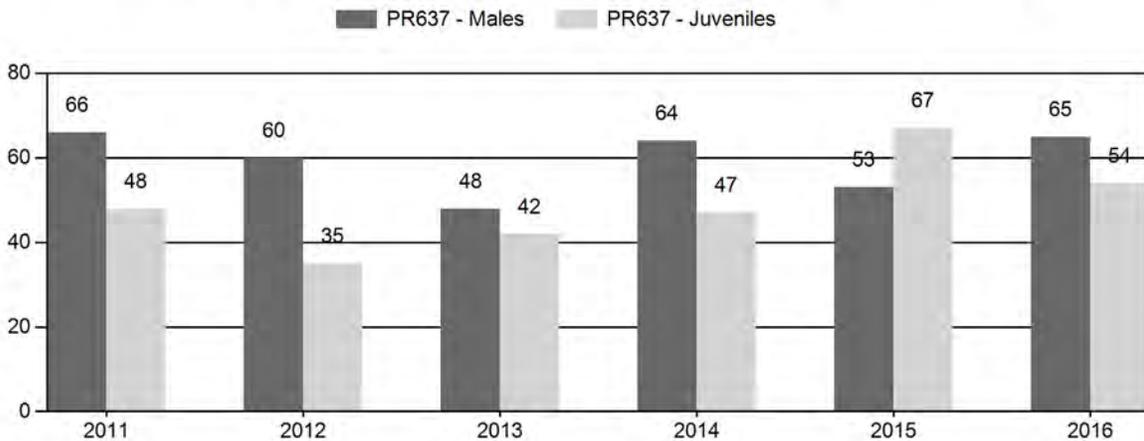
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2011 - 2016 Preseason Classification Summary

for Pronghorn Herd PR637 - SOUTH FERRIS

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	10,350	144	477	621	31%	943	47%	451	22%	2,015	1,776	15	51	66	± 5	48	± 4	29
2012	4,760	47	452	499	31%	827	51%	293	18%	1,619	1,502	6	55	60	± 5	35	± 3	22
2013	4,500	53	312	365	25%	766	53%	319	22%	1,450	1,145	7	41	48	± 4	42	± 4	28
2014	4,580	82	354	436	30%	686	47%	324	22%	1,446	1,638	12	52	64	± 5	47	± 4	29
2015	4,790	89	261	350	24%	661	45%	443	30%	1,454	1,711	13	39	53	± 5	67	± 6	44
2016	7,050	141	263	404	30%	620	46%	334	25%	1,358	1,868	23	42	65	± 6	54	± 5	33

**2017 HUNTING SEASONS
SOUTH FERRIS PRONGHORN HERD (PR637)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
62	1	Sep. 9	Oct. 31	75	Limited quota	Any antelope valid east of the Continental Divide and north of Wise Dugout Draw Doe or fawn valid east of the Continental Divide and north of Wise Dugout Draw Doe or fawn valid in the Muddy Creek drainage
	2	Sep. 9	Oct. 31	100	Limited quota	
	6	Sep. 9	Oct. 31	50	Limited quota	
	7	Aug. 15	Oct. 31	25	Limited quota	
Archery 62		Aug. 15	Sep. 8			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2016
62	1	+35
	2	0
	6	+50
	7	0
Herd Unit Total	1	+35
	2	0
	6	+50
	7	0

Management Evaluation

Current Postseason Population Management Objective: 6,500

Management Strategy: Recreation

2016 Postseason Population Estimate: 6,900

2017 Proposed Postseason Population Estimate: 7,100

Herd Unit Issues

The South Ferris pronghorn herd is managed toward a post-hunt population size of 6,500 pronghorn, an objective last publicly reviewed in 2014. Population size is estimated using a spreadsheet model developed in 2015 and last updated in 2017. The herd is in recreational management, with harvest quotas designed to maintain pre-hunt buck:doe ratios below 60:100.

Hunter access to much of the eastern half of the herd has been severely limited by private landowners since the mid-1990s and has resulted in buck:doe ratios and pronghorn densities greatly skewed between the western and eastern portions.

Fawn crops have only ranged from 28 to 67:100 over the past 15 years, averaging ~43:100. In addition to limited access to much of the herd, poor production and recruitment has reduced harvest levels the herd can support.

The large Peterson Ranch in the south-central portion of the herd has changed hands several times in recent years, and it is not known how the newest owners will handle hunter access. They have already decided to not renew the large Walk-In area along US287.

Losses to EHD were documented in this herd in 2013. By the number of reported and observed carcasses, losses appeared to be greatest along the west shore of Seminole Reservoir, but spanned down to Rawlins and up towards Lamont. No similar mortalities were found in following years, but the presence of the disease should remain a concern whenever drought conditions arise.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving fawn survival, and was followed by another wet spring in 2016. High fawn production was seen again in 2016 as a result. Condition of pronghorn going into the 2016-17 winter is expected to have been good because of high forage production. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Winter losses may have been above average, but are not expected to be excessive.

Habitat

While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional in 2015, due to record precipitation, and appeared above normal again in 2016. Only one shrub transect has been established near this herd unit, on the Morgan Creek WHMA. This transect, used to monitor bitterbrush growth and utilization in the Seminole Mountains, was burned in the 2012 fires.

Owners of the Pathfinder Ranch, which encompasses the north-central portion of this herd, have expressed interest in looking for opportunities for improving habitat conditions for wildlife, possibly as mitigation for wind power projects in other parts of the state. Treatment of browse on winter ranges, adjustments of grazing use, and modification of sheep-tight fences would benefit pronghorn in this herd unit.

Field Data

Classification sample size declined again in 2016, the smallest sample since 1978, and failed to meet the desired statistical precision. These data have been collected on standard routes for more than 20 years for most of the herd unit, and it is difficult to reconcile low sample sizes with estimates suggesting the herd is near objective size.. Fawn production dropped to 54:100 from

67:100 in 2015, but was still the second highest ratio since 2005 and well above the 5-year average. Fawn production was again lower in the western portion of the herd at 49:100, compared to 57:100 in the east.

The buck:doe ratio jumped from 53:100 in 2015 to 65:100 in 2016, with almost all the increase in the yearling buck:doe ratio. This rose to 20:100, the highest yearling recruitment since 1992, and was a result of exceptional forage production in 2015 and the mild 2015-16 winter. As is typical, the buck:doe ratio was significantly higher in the eastern portion of the herd unit, where access is strictly limited. The eastern ratio rose from 68:100 in 2015 to 75:100 in 2016. Both the adult buck:doe and yearling buck:doe ratios increased in the eastern third of the herd unit. Type 2 licenses introduced in 2012 to address the disparity between buck densities between the two portions of the area have only been moderately successful, due to continued access restriction to much of the eastern third.

Buck:doe ratios in the western portion of the herd improved to 51:100, but all of the increase resulted from increased numbers of yearling bucks. The adult buck:doe ratio remained essentially stable at 31:100, while the yearling buck:doe ratio jumped from 5:100 in 2015 to 20:100 in 2016. Buck:doe ratios for this herd have exceeded the 60:100 maximum criterion for recreational management in three of the past five years, but always due to high ratios in the east half of the herd which is largely unavailable to most hunters. Buck:doe ratios in the western, publicly accessible portion only averaged 40:100 over the past five years, generating complaints of poor buck numbers and quality by hunters. Buck:doe ratios in the eastern portion, however, averaged 77:100 over those five years, nearly twice as high.

Harvest Data

The difference in supply of bucks between the two portions of the herd unit is also apparent in harvest statistics. Success for hunters with Type 1 licenses remained low, at only 79 percent, while those hunting the eastern portion with Type 2 licenses enjoyed 90 percent success. Those hunters limited to the eastern portion of the herd unit only expended an average of 2.6 days to harvest an animal, despite the difficult access issues, while the Type 1 hunters expended an average of 6.1 days for each pronghorn harvested. Again, it is difficult to reconcile poor hunter success for most of the herd unit with population estimates indicating the herd is near objective.

Type 7 doe/fawn licenses valid only in the Muddy Creek drainage were introduced in this area in 2013 to address complaints about high concentrations of pronghorn on irrigated fields along that creek. Nineteen does were harvested the first year, 10 were removed in 2014, 18 were taken in 2015 and 19 reported for 2016. Pronghorn use of the irrigated fields has lessened, and the landowner has requested these licenses not be issued in 2017. Pronghorn use of these fields may increase if drought conditions return, but this strategy was effective in addressing that issue.

Population

Efforts to develop a reasonable spreadsheet model for this herd in 2012 and 2013 failed, a failure attributed to the highly skewed buck:doe ratios between the eastern and western portions of the herd unit. Population estimates in 2013 were obtained using two separate spreadsheet models, one each for the east and west portions of the herd unit. While effective, these separate models could not be anchored to defensible line-transect estimates of herd size. The addition of the 2014

and 2015 classification and harvest data allowed for a reasonable unified model which incorporates line-transect estimates, despite the highly skewed buck:doe ratios within portions of the herd. This unified model still worked well when 2016 data were added.

A line-transect survey in spring of 2016 estimated 5,482 pronghorn in this herd, and again found a noticeable disparity in pronghorn densities between the east and west portions. The population estimate was 19 percent higher than from a similar survey three years earlier, despite declines in classification samples and hunter success. This survey was flown with a single, inexperienced observer, which may have affected survey estimates. The current model incorporates four years of variable survival in the SCJ,SCA model, accounting for three severe winters and losses due to the 2012 drought.

The resultant SCJ,SCA model has a reasonable AICc value, aligns closely with all three line-transect estimates, has a reasonable track compared to historic trend counts, and aligns well with most observed buck:doe ratios. Adult survival for the majority of years in the model is estimated at a high 95 percent, while dropping to reasonable levels for the severe winters and drought. Juvenile survival is a reasonable 49 percent in most years, however, juvenile survival rate exceeded adult survival rate in one year of the model. This is difficult to accept biologically, and as a result the model is only considered to be a “Fair” representation of the herd.

The CJ,CA model had a higher AICc value, but did not track observed buck:doe ratios and only aligned with one line-transect estimate. The TSJ,CA model had the highest AICc value, and only aligned with two of three line transect estimates.

The new SCJ,SCA model predicts the herd was about 6 percent above objective in 2016. Fawn production in 2017 was projected to be near the 5-year average. Assuming a mid-range fawn survival of 60 percent, the model predicts the herd will be essentially stable in 2017.

Management Summary

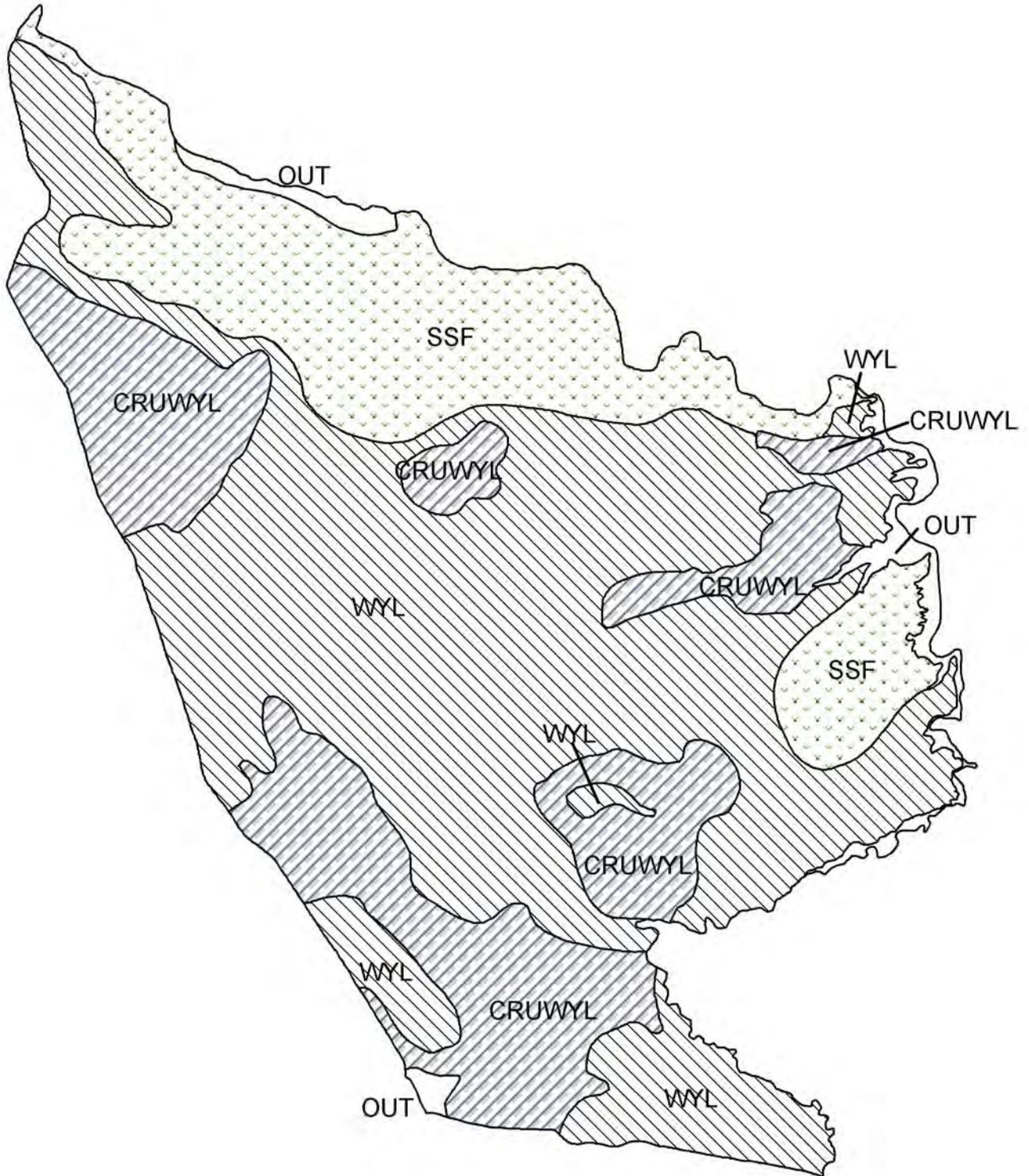
With the population apparently at objective, harvests are increased to maintain herd size. Herd growth has been slow due to poor fawn production, so large increases in harvest are not necessary. The high buck:doe ratio in the eastern portion of the herd indicates there is still a surplus of bucks that can be harvested in that portion, but access to most of those surplus bucks is still limited. Moderately improved buck:doe ratios in the western portion suggest harvest from this segment could also be increased. Classification and line-transect observations suggest most doe harvest should also come from the eastern portion of the area, and the Type 6 doe/fawn licenses are designed to do that. Landowners along Muddy Creek have expressed a desire to end the doe/fawn harvest directed towards their irrigated croplands, but the Type 7 licenses have already been available for applications from hunters. To meet hunter expectations for an early doe/fawn hunt, and alleviate landowner concerns, the private land restriction is removed for those licenses.

The expected harvest of roughly 135 bucks and 70 does and fawns from the proposed license quotas should maintain herd size near the 2016 level of approximately 7,000 pronghorn. With the herd so close to objective, either poor winter survival or low fawn production in 2017 could require harvest reductions in future years.

Opening date falls on the traditional day of the week and will synchronize with neighboring Area 61. The closing date is the same as in the previous five years and extends to the closing of the local deer season. A standardized opening date is used for the archery season, which closes the day before the opening of the regular season.



PH637 - South Ferris
HA 62
Revised - 8/95



2016 - JCR Evaluation Form

SPECIES: Mule Deer
 HERD: MD642 - DUBOIS
 HUNT AREAS: 128, 148

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

 PREPARED BY: GREG
 ANDERSON

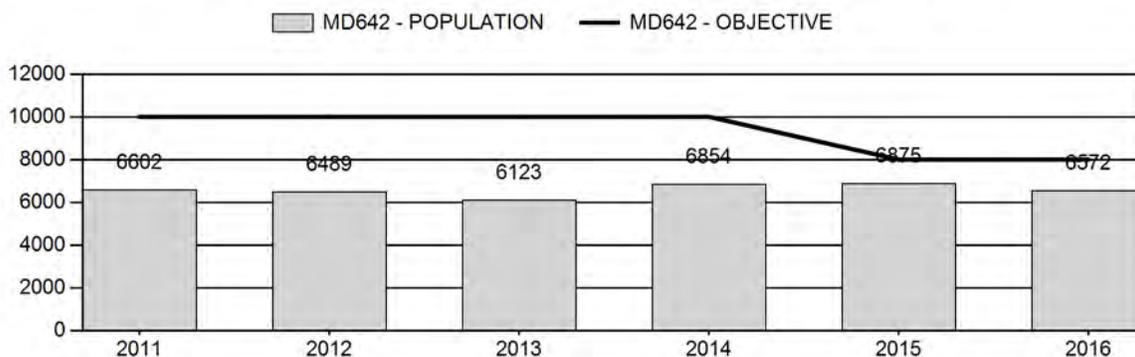
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	6,589	6,572	6,469
Harvest:	441	597	385
Hunters:	1,173	1,217	1,200
Hunter Success:	38%	49%	32 %
Active Licenses:	1,209	1,228	1,225
Active License Success:	36%	49%	31 %
Recreation Days:	6,766	5,925	5,500
Days Per Animal:	15.3	9.9	14.3
Males per 100 Females	29	25	
Juveniles per 100 Females	65	57	

Population Objective (± 20%) :	8000 (6400 - 9600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.8%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/19/2017

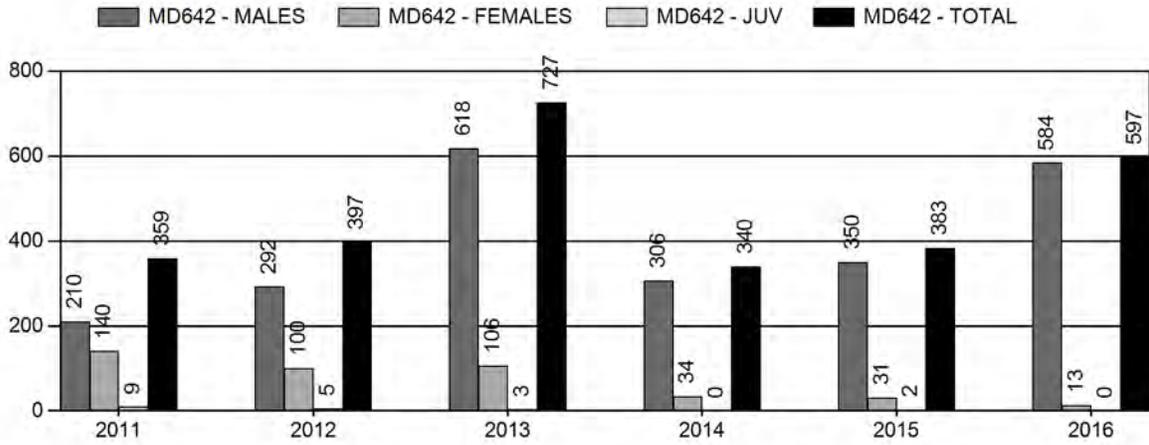
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	42%	33%
Total:	8%	6%
Proposed change in post-season population:	-5%	-2%

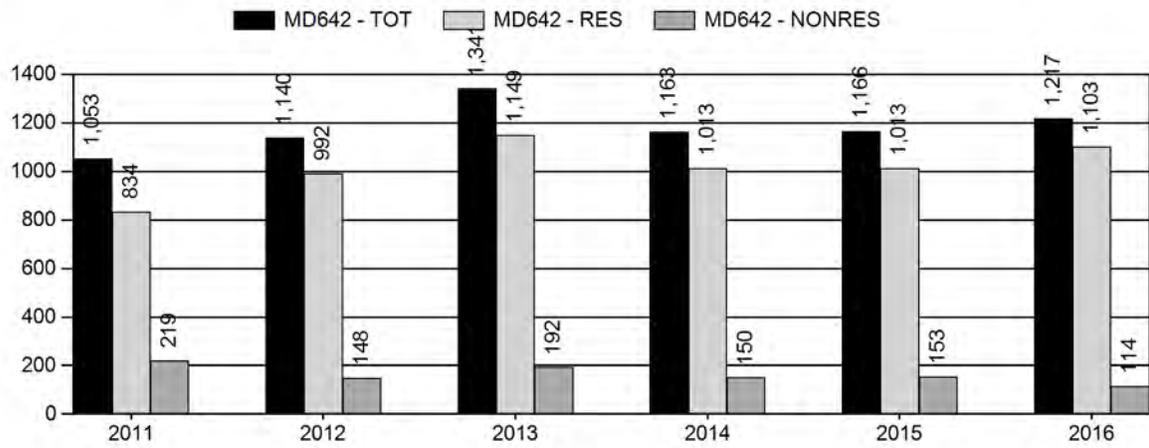
Population Size - Postseason



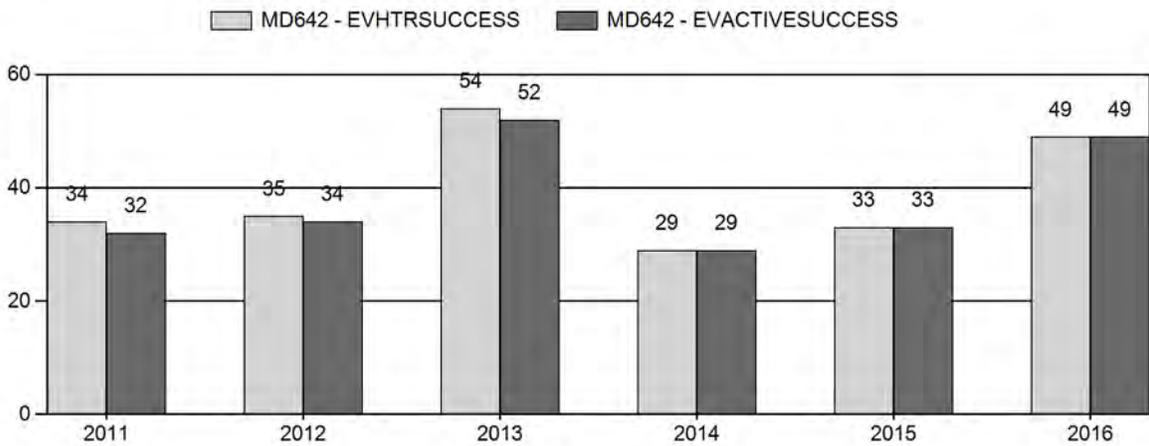
Harvest



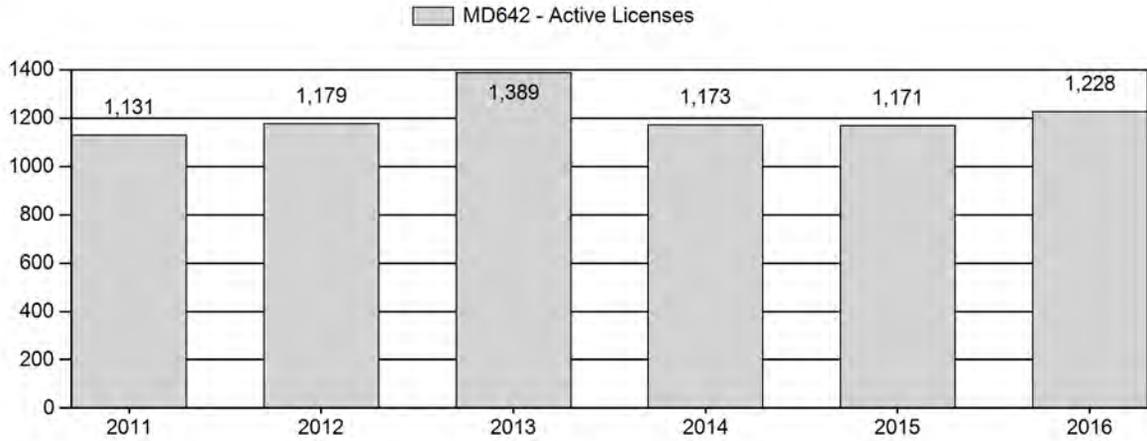
Number of Active Licenses



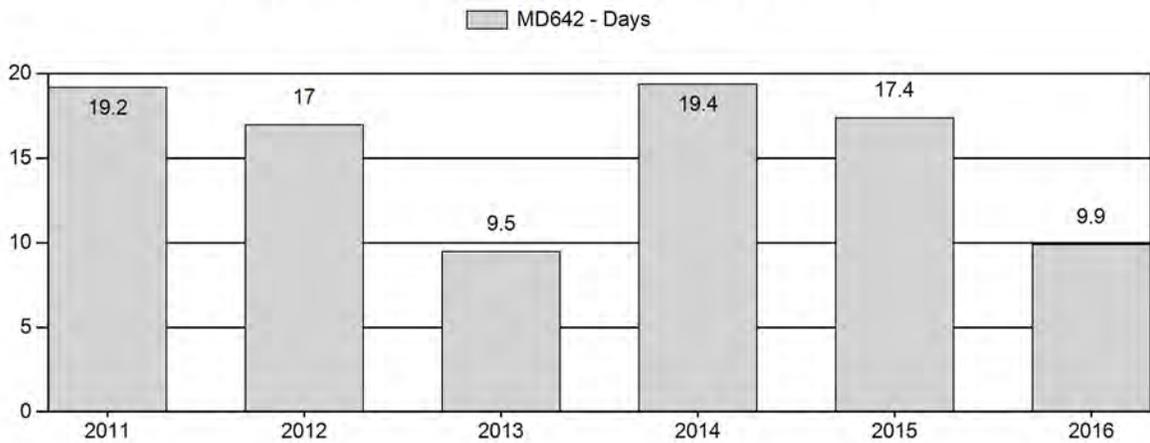
Harvest Success



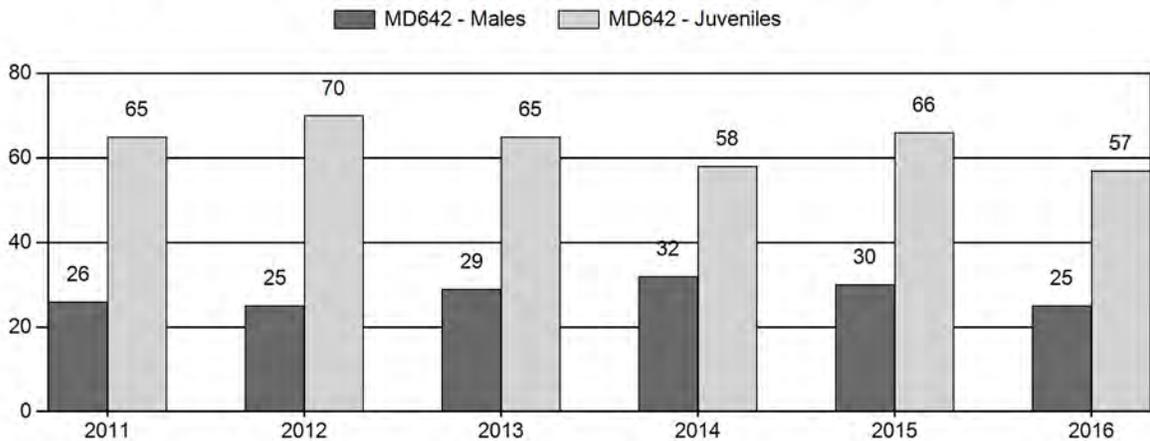
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD642 - DUBOIS

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females			Young to			
		Ylg	2+ CIs 1	2+ CIs 2	2+ CIs 3	2+ UnCIs	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,602	36	0	0	0	52	88	14%	340	52%	221	34%	649	1,073	11	15	26	± 4	65	± 7	52
2012	6,489	26	0	0	0	78	104	13%	415	51%	291	36%	810	1,232	6	19	25	± 3	70	± 6	56
2013	6,123	73	0	0	0	102	175	15%	605	51%	395	34%	1,175	1,117	12	17	29	± 3	65	± 5	51
2014	6,854	66	0	0	0	110	176	17%	555	53%	320	30%	1,051	980	12	20	32	± 3	58	± 5	44
2015	6,875	69	0	0	0	120	189	15%	628	51%	415	34%	1,232	1,172	11	19	30	± 3	66	± 5	51
2016	6,572	61	78	63	6	0	208	14%	846	55%	478	31%	1,532	920	7	17	25	± 2	57	± 4	45

**2017 HUNTING SEASONS
DUBOIS MULE DEER (MD 642)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
128		Oct. 1	Oct. 15		General	Antlered mule deer or any white-tailed deer
128	1	Nov. 1	Nov. 20	50	Limited quota	Any deer
128	3	Nov. 1	Nov. 20	50	Limited quota	Any white-tailed deer
128	7	Nov. 1	Nov. 20	25	Limited quota	Doe or fawn valid on private land
148		Sep. 15	Oct. 25		General	Antlered deer
Archery						
128		Sep. 1	Sep. 30			
148		Sep. 1	Sep. 14			

Non Resident Region E Quota: 500

Hunt Area	Type	Quota change from 2016
Total		

Management Evaluation

Current Postseason Population Management Objective: 8,000

Management Strategy: Recreational

2016 Postseason Population Estimate: ~6,600

2017 Proposed Postseason Population Estimate: ~6,500

Management Issues

The Dubois mule deer herd had a revised population objective of 8,000 adopted in 2015. The previous objective of 10,000 had been in place since 1994. Over the 20 years the previous objective had been in place the population was never close to 10,000. Additionally, when the historical population did grow above 8,000 deer damage concerns in the area began to increase dramatically. The new objective is considered a better management target. The herd also has a recreational management strategy.

Deer in this herd unit winter in hunt area 128. It is known many of the deer migrate out of the herd unit in late spring and do not return until early winter. Migration routes and the extent of summer range are unknown. To help define deer movements better a migration/movement study began in 2016. The study began with 16 does being collared in March, 2016. These deer will be

tracked over several years to help determine migration routes and summer and transition range used by deer in the herd unit. In March, 2017 up to 24 more does will be collared.

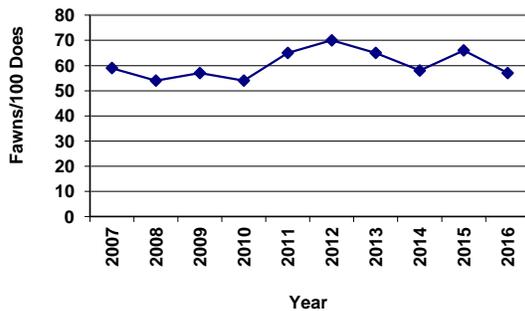
Habitat/Weather

The past year was characterized by mild conditions and good vegetation growth throughout the herd unit. Vegetation transects monitored to determine the amount of forage available on elk winter range revealed herbaceous vegetation production was well above the 20-year average for the area. No shrub data is collected in the herd unit, but the good growing conditions undoubtedly resulted in higher browse production than previous drought years. Given the good feed resource in 2016, deer in the herd unit undoubtedly entered winter in good shape. Fall weather was mild followed by harsh winter conditions in December and January. Snow cover and depth were greater than normal on the low elevation winter range occupied by deer. A number of long time residents of the area have commented they can't recall a winter with as much snow at lower elevation winter range sites. It is possible winter survival could be well below average if harsh winter conditions continue through spring.

Field/Harvest Data/Population

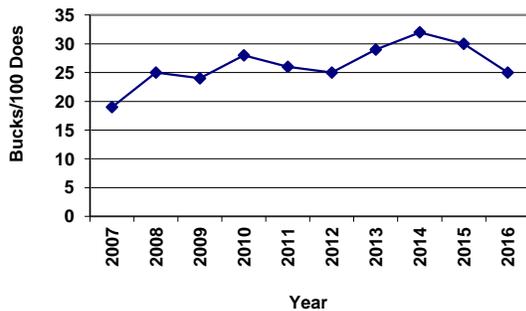
In 2016, personnel classified 1,532 mule deer. The sample exceeded the desired sample size for calculating accurate confidence intervals around age/sex ratios. Annual classification samples generally meet or exceed desired sample sizes in this herd unit. The 2016 classification sample yielded a fawn/doe ratio of 57/100. This was lower than the 2015 ratio of 66/100 but well within the normal historical recruitment range typically recorded in this herd unit. Despite annual fluctuations, there are no long term recruitment trends evident in this population and fawn production has been remarkably stable for many years (Fig. 1).

Figure 1. Ten year recruitment history for the Dubois mule deer herd.



The buck/doe ratio has also been fairly stable in the herd unit. Over the past 10 years the ratio has generally fluctuated between 25/100 and 30/100. In 2016 the buck/doe ratio was 25/100. The decline in the buck/doe ratio in 2016 can likely be attributed to higher than average harvest during the general season in October. It was apparent many migratory deer moved into the herd unit by the end of the first week of October, 2016. This is earlier than migratory deer typically move into the herd unit. The presence of migratory bucks led to the increase harvest and decline in the buck/doe ratio for the year. Note two management actions were taken in 2012 to facilitate an increase in buck numbers and quality. The general, October season was reduced 7 days that year to curtail pressure on bucks migrating into the herd unit in the second half of October. Also, Type 1 licenses were reduced by 50% to decrease pressure on bucks in November.

Figure 2. Ten year buck/doe ratio in the Dubois mule deer herd.

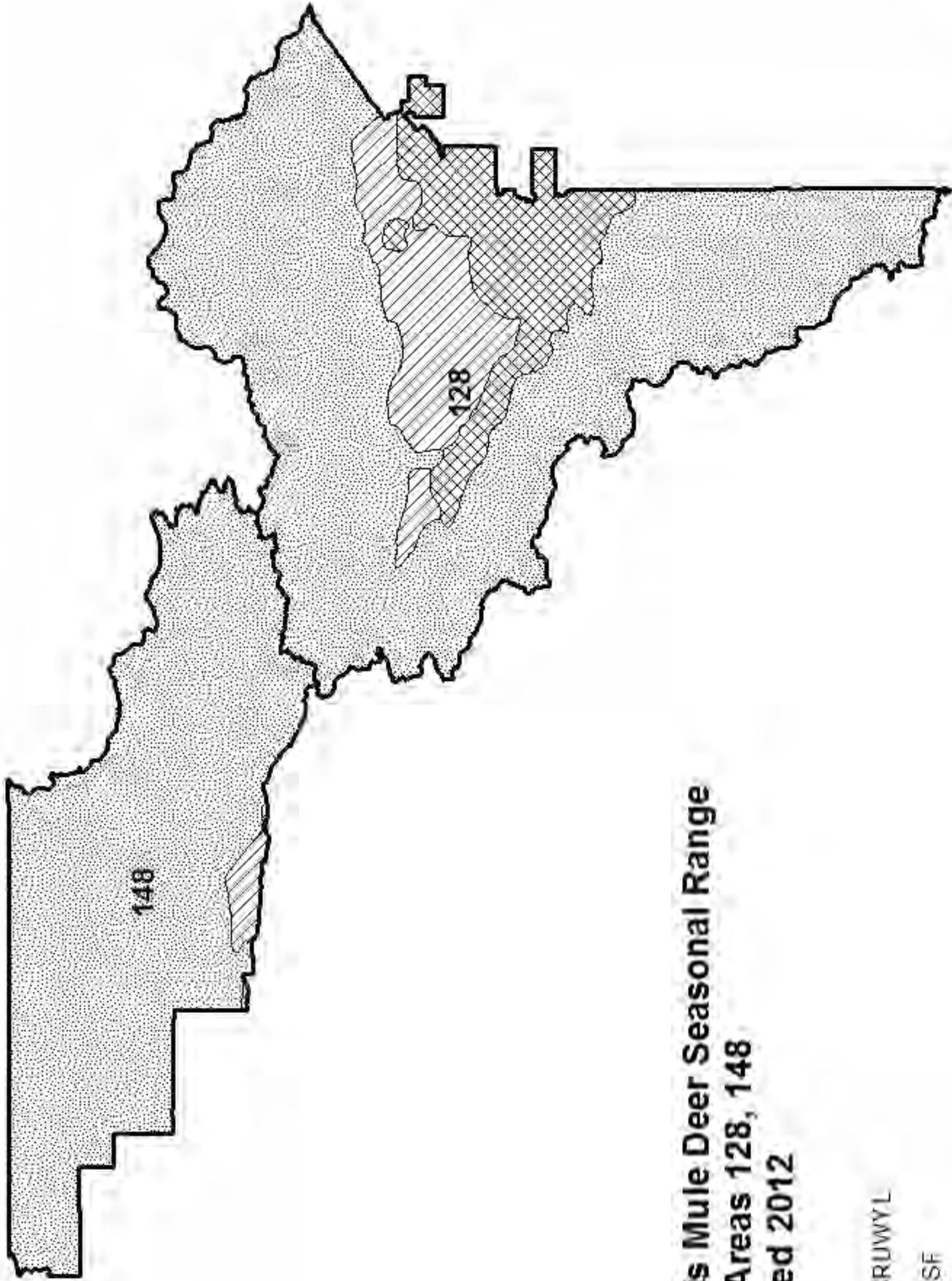


Hunter success during the general, October season tends to be low and is related to the fact many deer are not in the herd unit during that period. Deer typically migrate into the herd unit in late October and are present for the limited quota season in November. By contrast, many migratory deer moved into the herd unit this year by the end of the first week of October. The presence of so many migratory deer resulted in abnormally high buck harvest during the general season in the first half of October. In 2016 general license hunters harvested 484 bucks in October and had a success rate of 50%. Concurrently the days/animal for general license hunters was 9.1. Each of these 3 harvest statistics indicate unusually good hunting in 2016. Again, the high level of harvest, increased success and lower than average effort are more likely the result of an early migration movement as opposed to population growth.

A new spreadsheet model was developed for the population in 2012. The model did not exhibit any erratic behavior with the addition of data through 2016. Each year of the model's use, the TSJ/CA version of the model was selected to track the population. In 2016 the model AIC value was essentially the same as the other 2 comparative models but the fit was much better. Also the other 2 models produce estimates nearly 2 times as high as the TSJ/CA or other historical models for the herd. The selected model simulates a population over the past 20 years fluctuating between 6,000 and 8,000 deer. More recently, the model indicates the population declined from 2006 through 2012. Since 2012, the population has been stable. The 2016 population estimate is 6,600 and 82% of objective. The model is considered fair given adequate age/sex ratio data but lacking survival estimates.

Management Summary

The 2017 hunting season is designed to maintain recreational opportunity at close to the same level as the 2016 season. The non-resident Region E quota will be reduced by 100 licenses to 500 for the 2017 season. This is primarily to deal with reduced buck numbers and hunter density issues in other Region E hunt areas. Although no season changes are proposed in this herd unit for 2017, harvest is expected to lower than the 2016 harvest since the number of deer killed in 2016 on general licenses was far above average. The population is expected to relatively stable at 6,500 deer in 2017.



**Dubois Mule Deer Seasonal Range
Hunt Areas 128, 148
Revised 2012**

-  CRUWYL
-  SSF
-  WIN
-  WYL

2016 - JCR Evaluation Form

SPECIES: Mule Deer

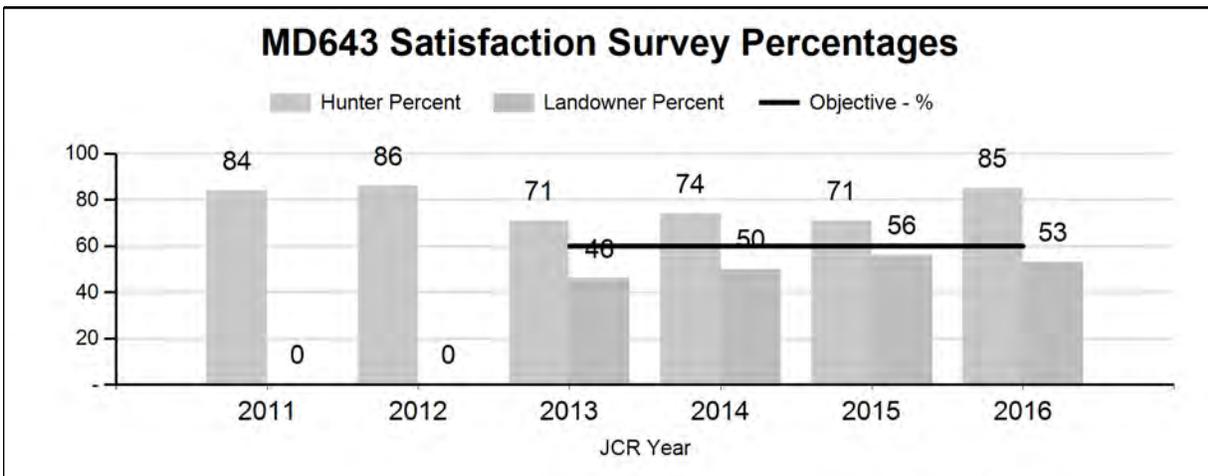
PERIOD: 6/1/2016 - 5/31/2017

HERD: MD643 - PROJECT

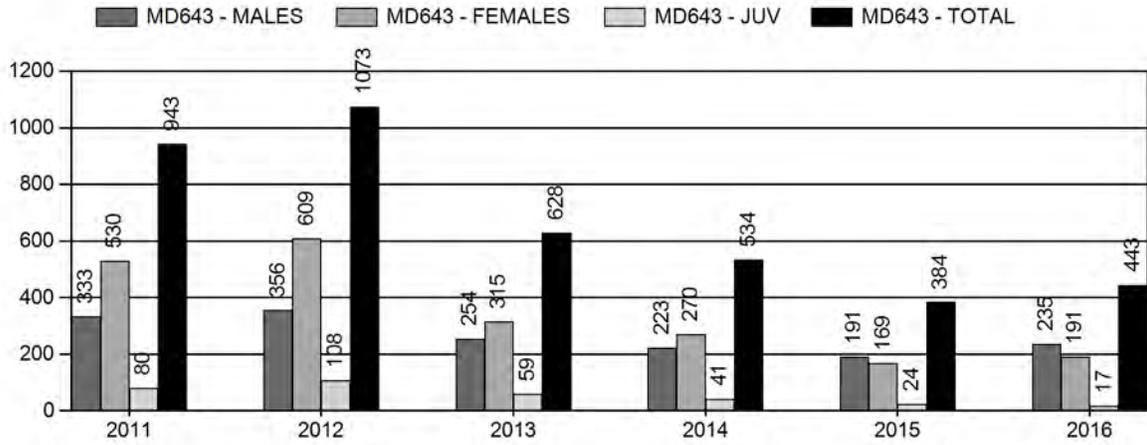
HUNT AREAS: 157, 170-171

PREPARED BY: GREG ANDERSON

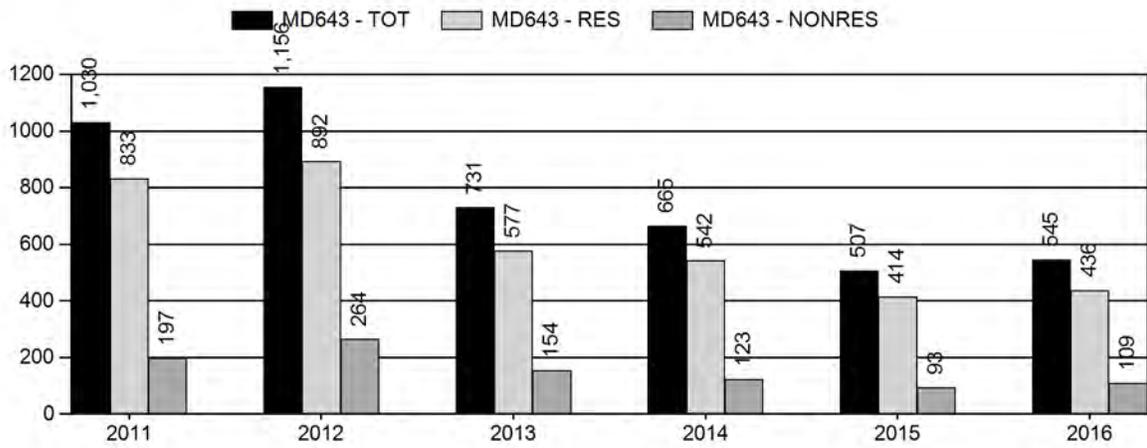
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	78%	78%	85%
Landowner Satisfaction Percent	49%	49%	60%
Harvest:	712	443	500
Hunters:	818	545	600
Hunter Success:	87%	81%	83 %
Active Licenses:	957	654	680
Active License Success:	74%	68%	74 %
Recreation Days:	3,717	2,078	2,200
Days Per Animal:	5.2	4.7	4.4
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			9%
Number of years population has been + or - objective in recent trend:			3



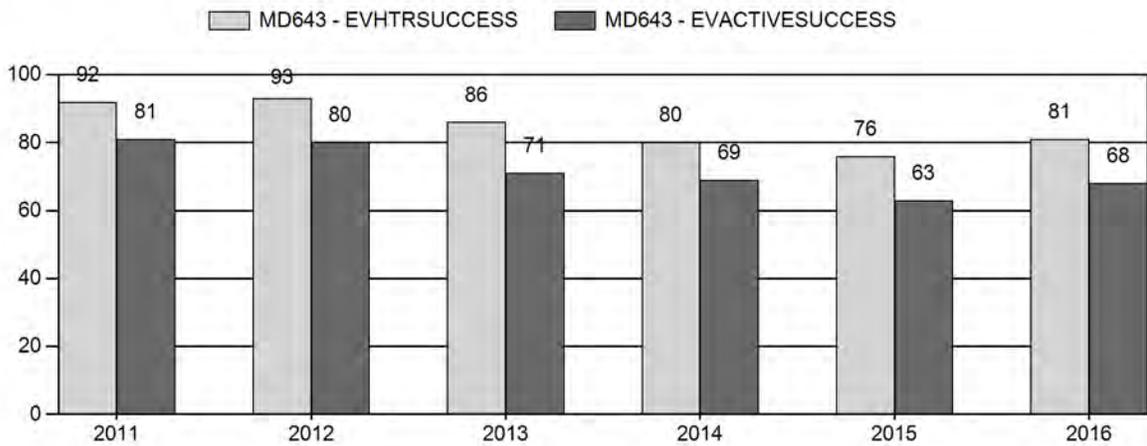
Harvest



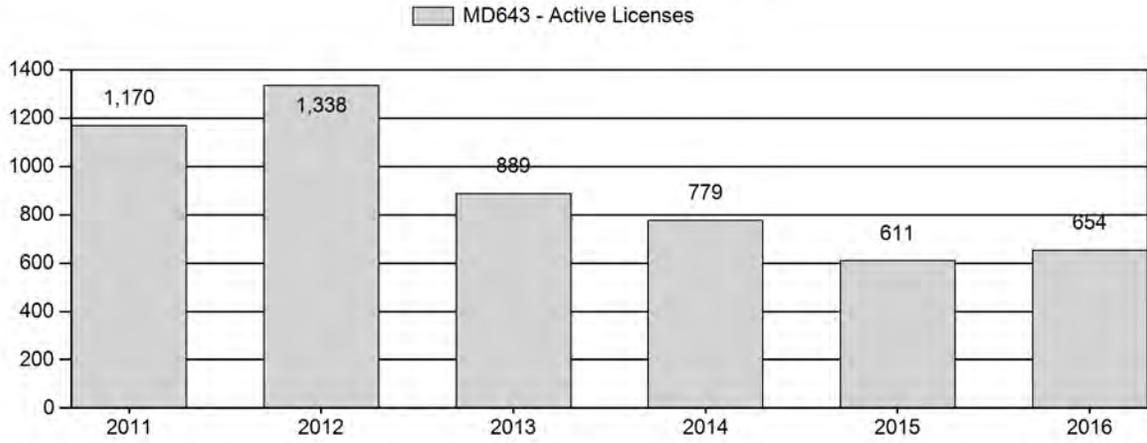
Number of Active Licenses



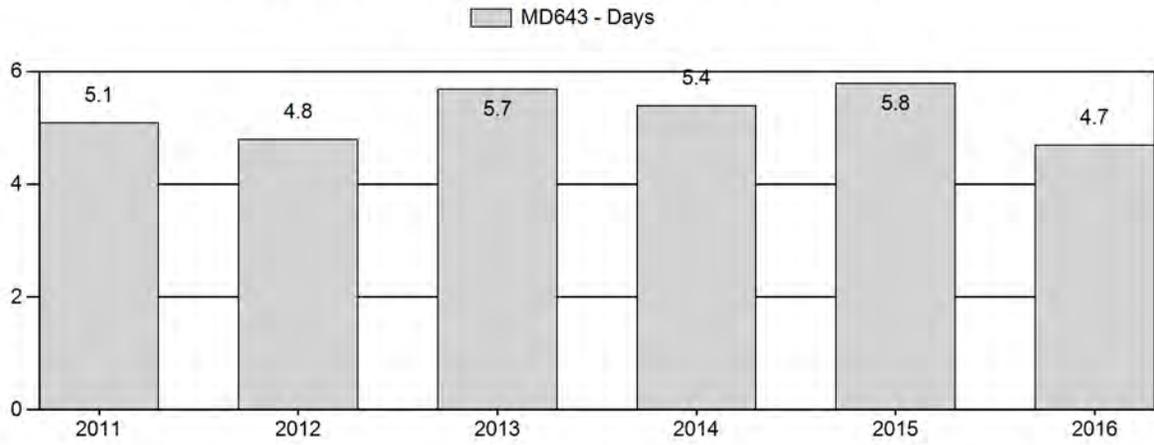
Harvest Success



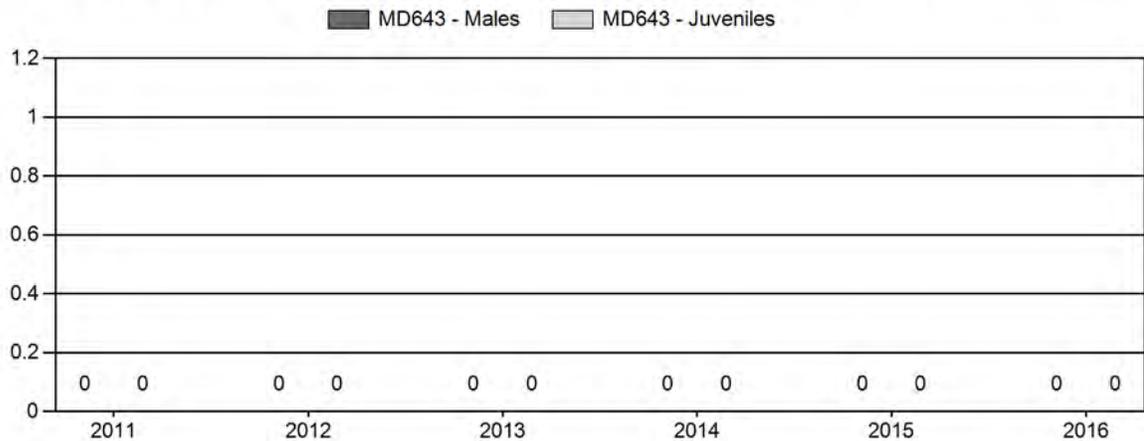
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2017 HUNTING SEASONS
PROJECT MULE DEER (MD 643)**

Hunt Area	Type	Season Dates		Quota	Licenses	Limitations
		Opens	Closes			
157, 170	1	Oct. 1	Oct. 31	300	Limited quota	Any deer
157, 170	3	Nov. 1	Nov. 30	100	Limited quota	Any white-tailed deer
157, 170	6	Oct. 1	Nov. 10	300	Limited quota	Doe or fawn
157, 170	8	Oct. 1	Oct. 31	125	Limited quota	Doe or fawn white-tailed deer
157, 170	8	Nov. 1	Nov. 30			Doe or fawn white-tailed deer valid on private land
171		Oct. 1	Oct. 31		General	Any deer
171	3	Nov. 1	Nov. 30	75	Limited quota	Any white-tailed deer
171	6	Oct. 1	Nov. 30	250	Limited quota	Doe or fawn
Archery						
157, 170		Sep. 1	Sep. 30			
171		Sep. 1	Sep. 30			

Hunt Area	Type	Quota change from 2016
157, 170	1	+50
	6	+50
	8	+50
Total		+150

Management Evaluation

Current hunter/landowner satisfaction management objective: Hunter/Landowner Satisfaction 60%

2016 Hunter satisfaction estimate: 85%

2016 Landowner satisfaction estimate: 53% (19 contacts)

Most recent 3-Year running average hunter satisfaction estimate: 77%

Most recent 3-Year running average landowner satisfaction estimate: 53%

Management Issues

In 2013 the Department conducted an objective review for the Project mule deer herd unit. Previously the herd had a population objective of 500 mule deer. The population objective was impractical because personnel were unable to collect adequate demographic data due to extensive interchange with the neighboring Wind River Reservation (WRR). Following an internal review, a public meeting and contact with numerous landowners the objective was changed in 2013 to manage for 60% hunter and 60% landowner satisfaction. Hunter satisfaction is taken directly from the harvest survey while landowner satisfaction in 2013 was determined by mailing a survey to 98 landowners in the herd unit. Landowner response to the survey was extremely low. In 2014, landowners were polled via an e-mail survey in an attempt to increase response rate. The e-mail survey was ineffective as well, so in 2015 personnel began making personal contacts and phone calls to assess landowner opinions on deer numbers.

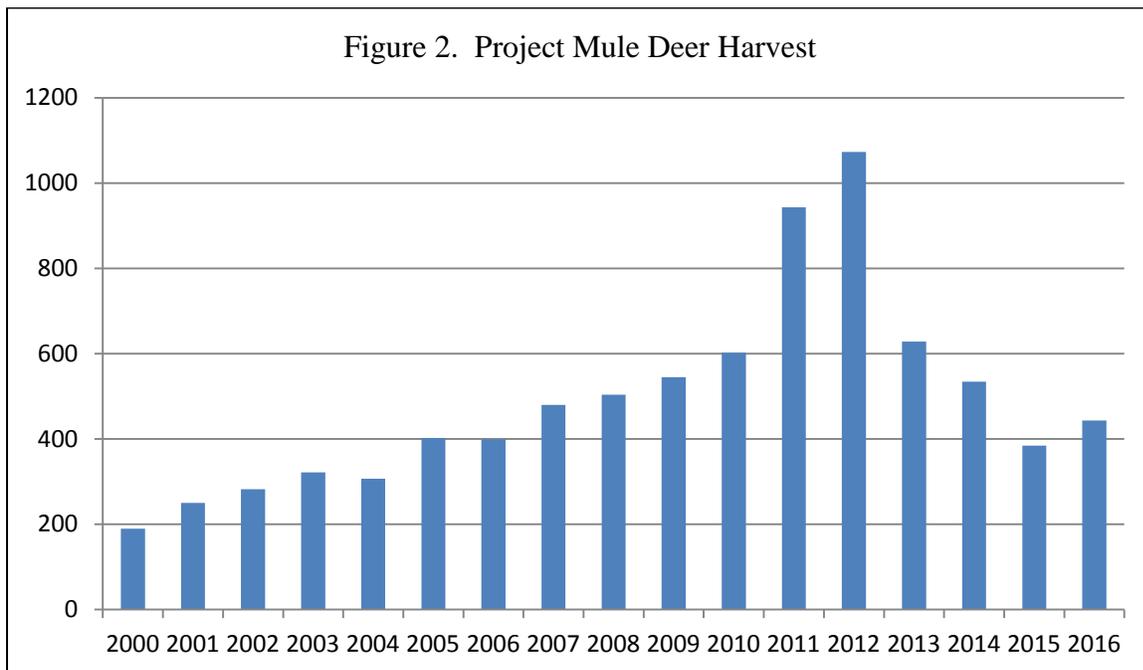
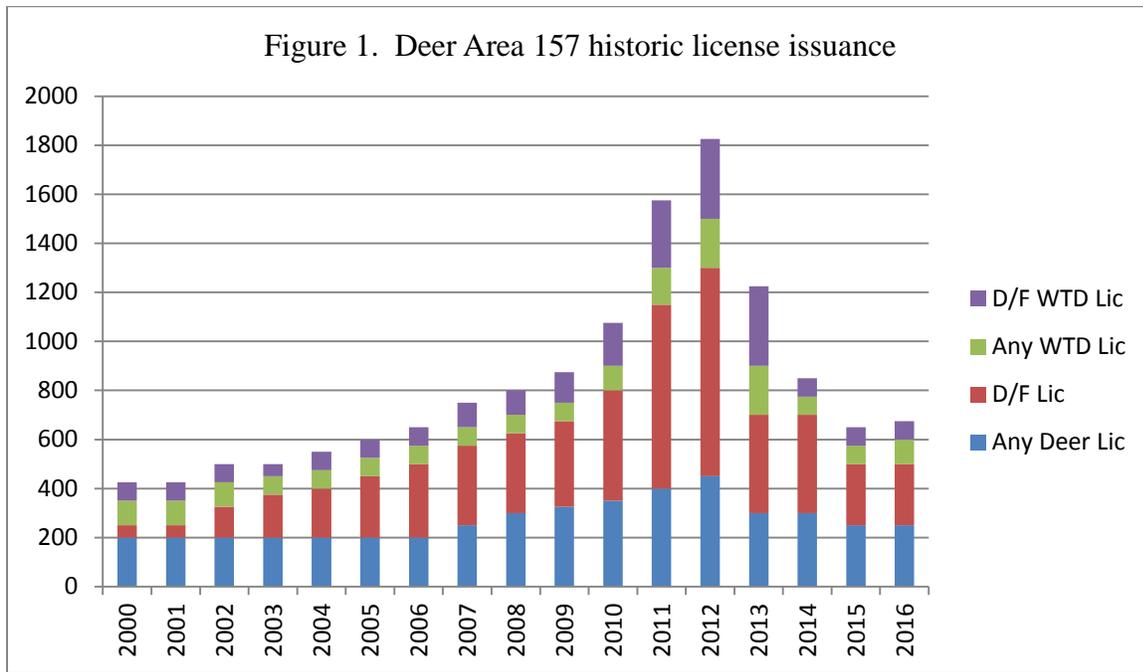
Habitat/Weather

This herd occupies a predominantly agricultural area in central Wyoming as well as lands interspersed with the WRR. Land ownership patterns and extensive border with the WRR make it cost prohibitive to collect adequate demographic data in the herd unit. Deer densities are highest along the drainages throughout the herd unit, in particular the Wind River. As this is one of the main boundaries with the WRR, interchange is quite high. During periods of drought, this herd has typically been impacted less than surrounding populations due to the abundance of feed associated with agricultural operations. In 2016, weather conditions were conducive to good vegetative production throughout the herd unit including upland, native range. As such, mule deer were well dispersed throughout the area. Fall observations and field checks indicate mule deer in the herd unit entered winter in excellent body condition.

Field/Harvest Data/Population

Classification data have never been collected in this herd unit due to interchange with the WRR and access issues throughout much of the herd unit. Personnel observations as well as numerous comments from landowners throughout the herd unit indicate this population grew significantly from the mid-2000's through 2012. In response to perceived growth and increased damage claims, harvest pressure increased steadily from 2000 through 2012. In 2012, an historic high number of licenses were issued in hunt area 157 where the majority of harvest in the herd unit occurs (Fig. 1). That year, over 1,000 mule deer were harvested in the herd unit. In 2013 harvest pressure was reduced, but harvest was still the third highest on record over the past 20 years at over 600 mule deer. The hunt season remained unchanged between 2013 and 2014. In response to a perception of continued decline in deer numbers, license numbers were decreased in 2015 and license numbers were closer to the historical average for this area. The result was a decrease

in mule deer harvest bringing the 2015 harvest closer to the historical average for the herd. The season remained unchanged from 2015 to 2016 so deer harvest remained low compared to the 2009 through 2014 period (Fig. 2).



Following the years of high harvest from 2010 through 2014, the mule deer population appears to have declined significantly. While no demographic data is available for the population, harvest statistics in 2015 and 2016 indicate hunters had a harder time harvesting deer. Type 1 license success was 76% in 2015 and 84% in 2016. Both of these figures were below the previous 5-year average of 88%. The days/harvest was 4.7 in 2016 and close to the 5-year average of 5.2.

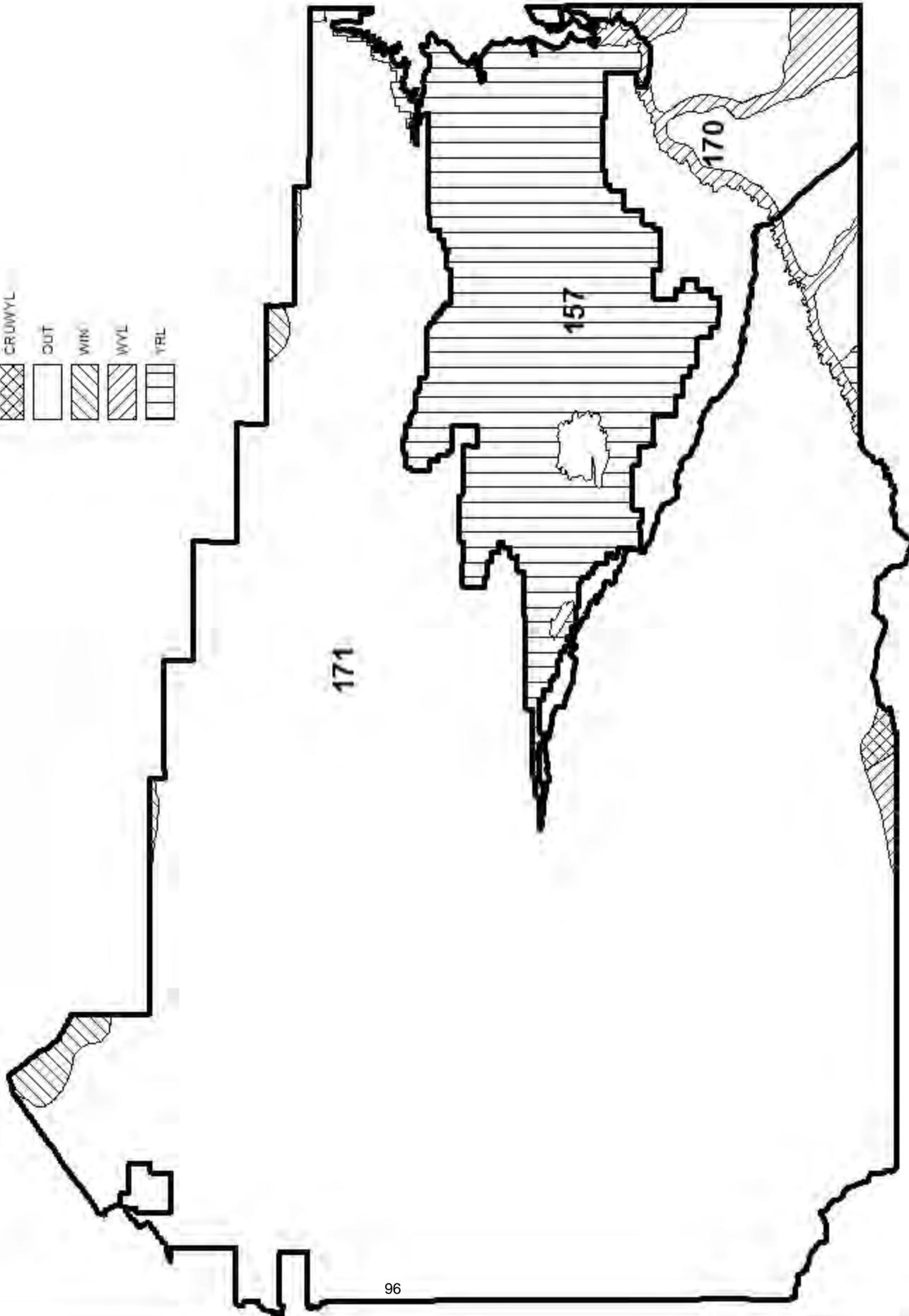
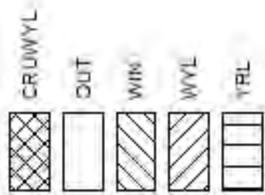
Hunter satisfaction was 85% in 2016. This was higher than both 2015 and the 3-year average indicating hunters likely saw more deer in 2016. Prior to 2013 hunter satisfaction was closer to 85% similar to 2016. Comments from hunters in the field indicated they were seeing more deer than in 2015 and generally the population had grown. This is reasonable since more recent hunt seasons reduced harvest pressure for several years. This was the fourth year the landowner satisfaction survey was conducted so long term comparisons are not possible. It appears landowners are somewhat ambivalent about the survey. Response rates to the satisfaction survey in 2013 and 2014 were anemic. In an attempt to generate more interest in the survey, personnel began contacting landowners in person and by phone in 2015 and continued to do so in 2016. Landowner satisfaction was 53% in 2015. Although it was below the desired level of 60% it should be noted landowner satisfaction remained close to 50% for each of the past 3 years. Personnel did receive more landowner comments regarding an increase in deer numbers. Information, including harvest statistics, hunter satisfaction, and landowner satisfaction indicate this mule deer population declined recently, but appears to have stabilized in 2015 and perhaps increased slightly in 2016.

While mule deer numbers declined in response to high harvest over the past several years, anecdotal information suggests both the mule deer and the white-tailed deer populations in the area were also significantly impacted by an EHD outbreak in 2013. White-tailed deer licenses were subsequently reduced for the 2014 season and remained at the lower level for the 2015 season (Fig. 1). Casual observations suggest white-tailed deer numbers began increasing in 2015 and increased again in 2016. A number of landowners commented about the growing white-tailed deer population.

Management Summary

Perceptions of hunters, landowners, and Department personnel are that liberal seasons from 2010 through 2014 effectively reduced the deer population in this herd unit. Based on comments primarily from landowners it seems the past 2 years of relatively conservative deer seasons resulted in population growth. Although satisfaction data do not reveal any remarkable changes in 2016, the landowners commenting on too many deer seemed more vocal. Hunter success also increased in 2016 as well as hunter satisfaction, likely indicating population growth. Thus, despite no significant change in landowner satisfaction, Type 1, 3, and 8 licenses will be increased by 50 each to increase deer harvest. Small, incremental license increases like this at the first indication of population growth should preclude the need for large license increase such as those in 2011 and 2012.

**Project Mule Deer Seasonal Range
Hunt Areas 157, 170, 171
Revised 2012**



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD644 - SOUTH WIND RIVER

HUNT AREAS: 92, 94, 160

PREPARED BY: STAN HARTER

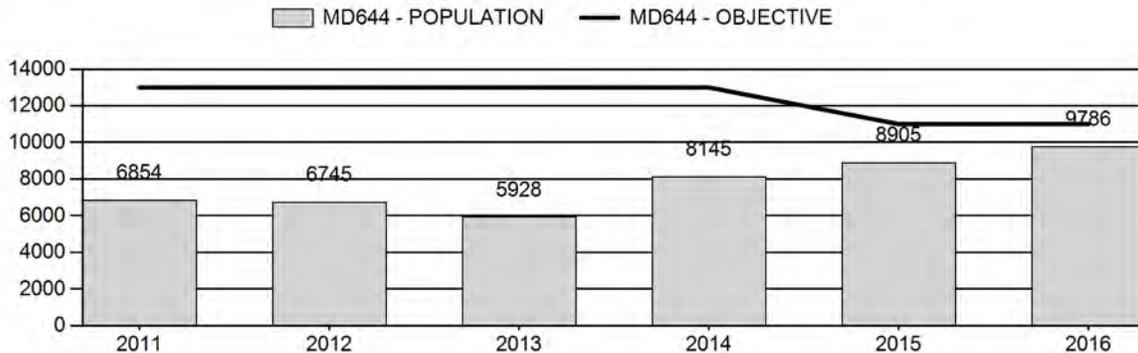
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	7,315	9,786	10,333
Harvest:	568	806	790
Hunters:	1,425	1,620	1,600
Hunter Success:	40%	50%	49 %
Active Licenses:	1,469	1,620	1,600
Active License Success:	39%	50%	49 %
Recreation Days:	6,218	6,128	6,000
Days Per Animal:	10.9	7.6	7.6
Males per 100 Females	27	34	
Juveniles per 100 Females	77	76	

Population Objective (± 20%) :	11000 (8800 - 13200)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-11.0%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/18/2017

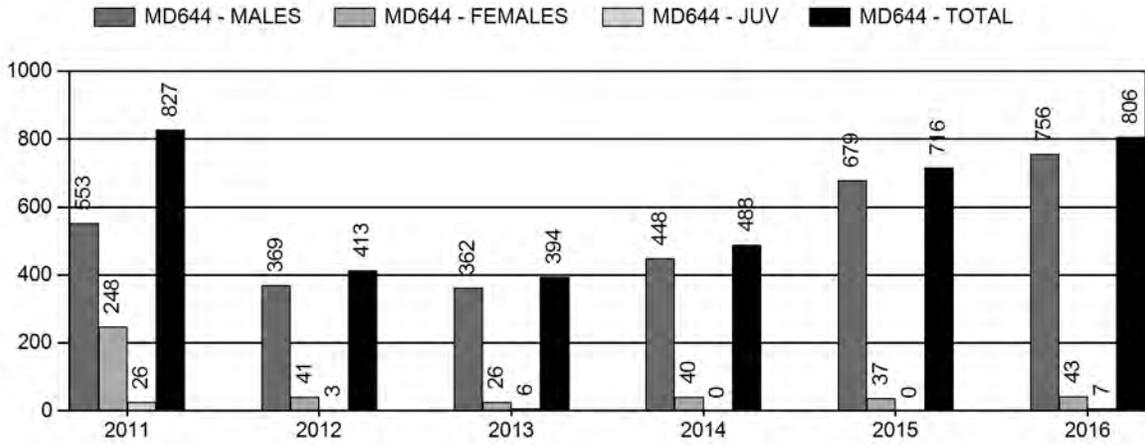
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.0%	0.9%
Males ≥ 1 year old:	34.7%	34.3%
Total:	7.6%	7.1%
Proposed change in post-season population:	+2.4%	+5.6%

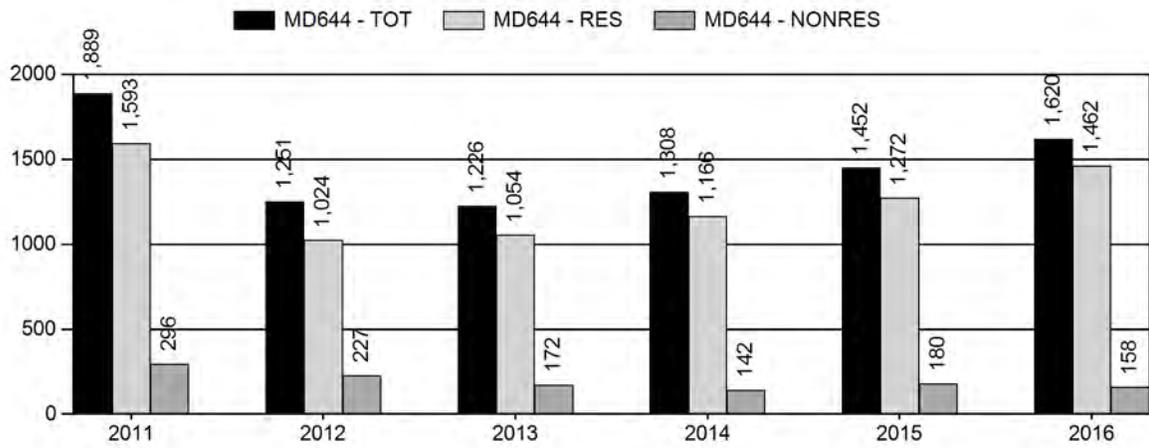
Population Size - Postseason



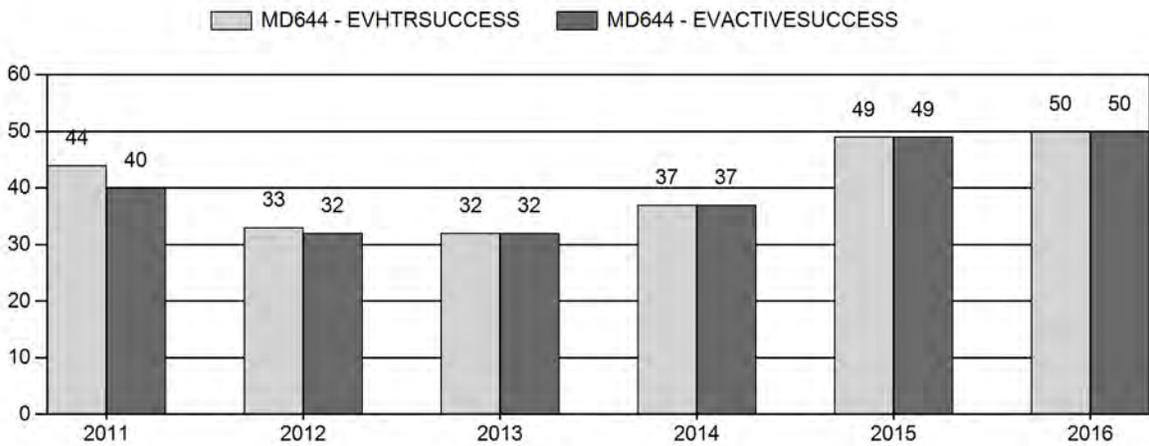
Harvest



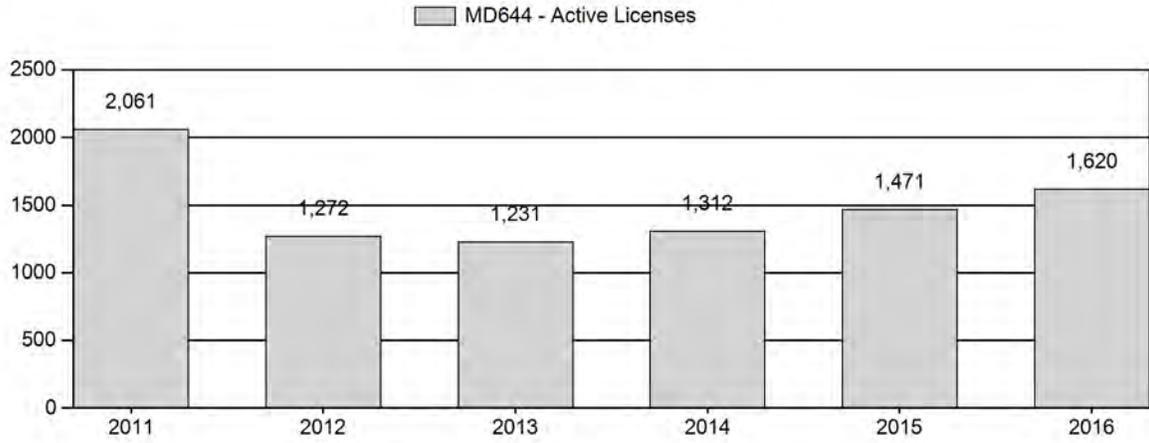
Number of Active Licenses



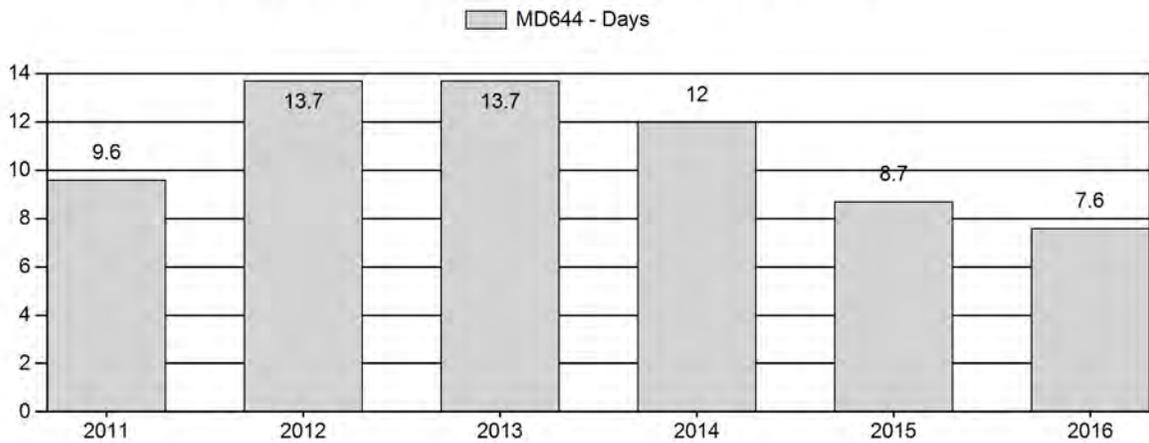
Harvest Success



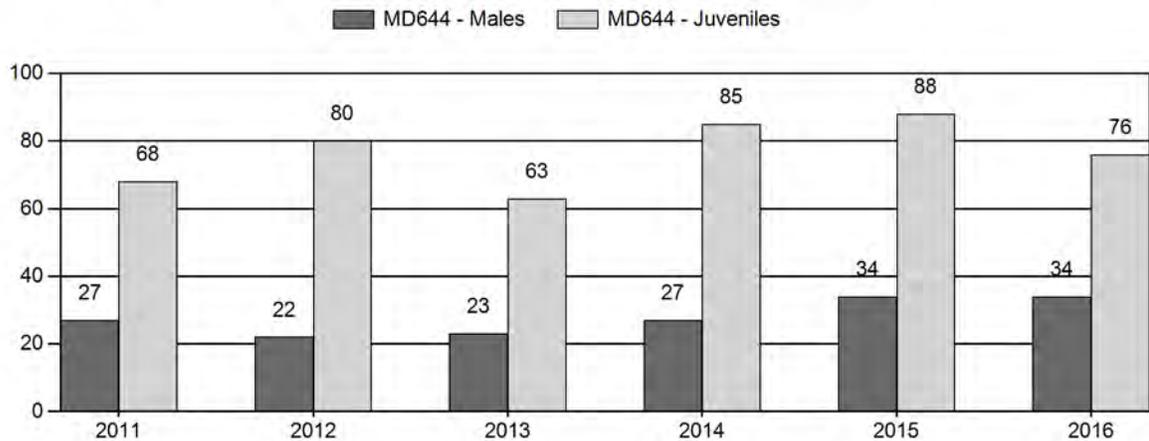
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD644 - SOUTH WIND RIVER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot		Males to 100 Females			Young to			
		Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Cls	Obj	YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	6,854	154	0	0	0	199	353	14%	1,319	51%	892	35%	2,564	1,277	12	15	27	± 2	68	± 3	53
2012	6,745	102	106	40	3	0	251	11%	1,129	49%	908	40%	2,288	1,543	9	13	22	± 2	80	± 4	66
2013	5,928	146	161	53	6	0	366	12%	1,581	54%	1,003	34%	2,950	1,036	9	14	23	± 1	63	± 2	52
2014	8,145	144	132	42	5	0	323	13%	1,184	47%	1,009	40%	2,516	1,761	12	15	27	± 2	85	± 4	67
2015	8,905	304	206	57	4	0	571	15%	1,664	45%	1,457	39%	3,692	1,905	18	16	34	± 2	88	± 3	65
2016	9,786	309	301	159	18	0	787	16%	2,347	48%	1,792	36%	4,926	1,554	13	20	34	± 1	76	± 2	57

**2017 HUNTING SEASONS
South Wind River Mule Deer Herd Unit (MD 644)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
92		Oct. 1	Oct. 22		General youth license	Any deer
92		Oct. 15	Oct. 22		General	Antlered mule deer or any white-tailed deer
92, 94, 160	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
92, 94, 160	8	Oct. 1	Nov. 30	100	Limited quota	Doe or fawn white-tailed deer
94		Oct. 1	Oct. 22		General youth license	Any deer
94		Oct. 15	Oct. 22		General	Antlered mule deer or any white-tailed deer
160		Oct. 1	Oct. 22		General youth license	Any deer
160		Oct. 15	Oct. 22		General	Antlered mule deer or any white-tailed deer
Archery		Sept. 1	Sept. 30			

Region E Non-Resident Quota: 500

Hunt Area	License Type	Quota Change from 2016
Herd Unit Total	Region E	-100

MANAGEMENT EVALUATION

Current Post-Season Population Management Objective: 11,000

Management Strategy: Recreation (20-29 bucks/100 does)

2016 Post-season Population Estimate: ~9,800

2017 Post-season Population Estimate: ~10,300

Herd Unit Issues

The management objective was reviewed in 2015, and the long-term post-season objective of 13,000 mule deer was reduced to 11,000. The secondary objective of Recreational Management Strategy (20-29 bucks/100 does) will continue. Population growth occurred from 2002 to 2009, but declined from 2010 to 2013, due to poor fawn recruitment as a result of intense drought. However, fawn/doe ratios have significantly improved the last two years, demonstrating the population seems capable of recovery with improved habitat conditions which follow increased precipitation. The 2016 post-season population rose to nearly 9,800 mule deer, 11% below objective.

Weather

Precipitation

The following precipitation information is generated from the PRISM (Parameter-elevation Relationships on Independent Slopes Model) dataset developed by Oregon State University. For the South Wind River Herd Unit, precipitation information is based on 9 weather stations located throughout the herd unit, which indicate precipitation from October 2015 through September 2016 was markedly higher than the 30-year average (Figure 1). The growing season precipitation (April-June 2016) was also notably higher than the 30-year average, while the high elevation spring- summer -fall range growing season precipitation was equal to the 30-year average. In May 2016, a large storm over Mothers' Day Weekend, delivered very heavy rainfall to the South Wind River area, and caused landscape-wide runoff and flooding. The majority of the growing season precipitation fell in this one weekend. Also of note, during the month of July there was zero measurable precipitation, and June and July temperatures were higher than average. The majority of the annual precipitation came during the growing season (April-June) which was followed by a mild, dry fall.

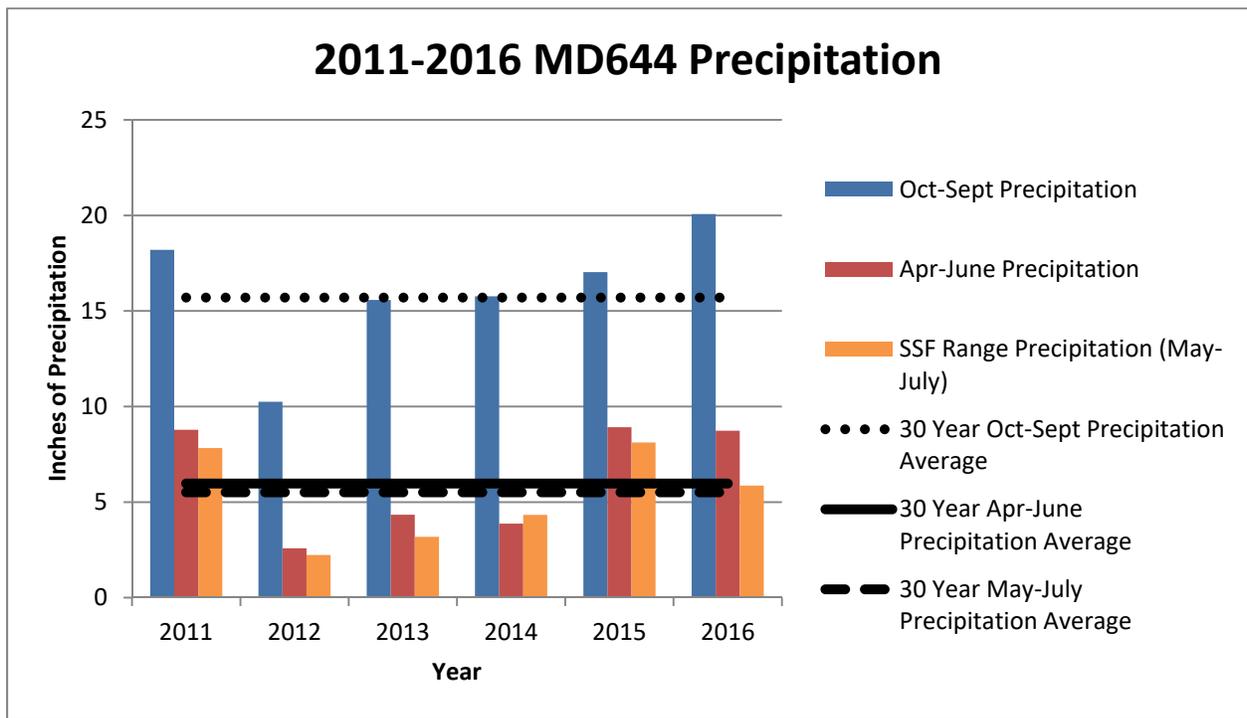


Figure 1. Precipitation values for South Wind River mule deer (2011-2016).

Winter Conditions

Following a mild fall, winter 2016-17 was colder than average in December and January, with near average snowfall overall. However, snow accumulations were periodically above average, particularly at higher elevation winter ranges and raised concerns about winter mortality. But, warm, windy periods often occurred between storms, reducing snow cover to zero in many of the winter ranges, providing much needed relief. Precipitation was 102% above average for the first four months of 2017 in Lander, which should lead to excellent summer forage conditions.

All 17 doe mule deer with working GPS collars going into winter were active through January 2017. However, two mortalities occurred near Lander (one in Sinks Canyon, one on Table Mountain) in February. The exact cause of death is not known for these 2 deer, but the doe in Sinks Canyon was in poor condition in mid-summer and potentially never recovered before winter. Data downloads from these collars from January 1 through February 28 indicate all 17 deer were in close proximity to where they were captured on March 15, 2016, with movements consistent with normal foraging behavior and seemingly not exhibiting unusual movements in response to deep snow or other weather related factors. Collars were also recovered from 3 more mortalities in the Lander and Cottonwood Divide areas in April and early May, with predation being known for 2 deer (1 by wolf, 1 by mountain lion) and unknown cause for the 3rd deer. Snow water equivalents for the South Pass, Deer Park, and Townsend Creek SnoTel sites recorded February 1st, 2017 were 227%, 245%, and 185% of the official mean for those respective sites.

Habitat

Precipitation was above average during the spring of 2016 which provided good early forage production across the herd unit for mule deer does in early parturition. Above normal temperatures, and very low precipitation amounts from June-August likely caused lower vegetation production than the previous two years. Habitat conditions were still good overall, likely contributing to the fawn/doe ratio observed in the South Wind River Herd Unit (76 fawns/100 does).

Field Data

Good flying conditions allowed us to survey winter ranges thoroughly using a Bell 206B Jet Ranger helicopter in late-November and early-December 2016. We observed 4,926 mule deer, the highest sample on record since 1980. Rut appeared to be ongoing, but waning a little with some bachelor buck groups observed away from female groups. Still, a total of 787 yearling and adult bucks were observed. The 2016 post-season total buck/doe ratio of 34M/100F equaled the 2015 ratio, the highest buck/doe ratio observed in 35 years and 50% above the average since 1994. This buck/doe ratio was likely due to high buck detection during late rut along with good fawn survival and yearling buck recruitment following an excellent fawn/doe ratio in 2015. The fawn/doe ratio dropped to 76J/100F in 2016, in part due to the influx of non-breeding yearling does following the high fawn/doe ratio of 88J/100F in 2015.

Antler width class data have been collected during post-season classification surveys the past 4 years, with the number of bucks in each width class shown in Figure 2. In 2016, nearly 78% of the mule deer bucks classified in the South Wind River Herd Unit were either yearlings or had Class 1 antler widths (adult bucks \leq 19" wide), with over 22% in the Class 2 or 3 widths. The increase in older bucks can be partially attributed to overall population growth, leading to an increase in overall numbers of bucks available to hunters, especially 1+ and 2+ age classes, providing less pressure on mature bucks as many hunters often choose to take the first "legal" antlered deer they see.

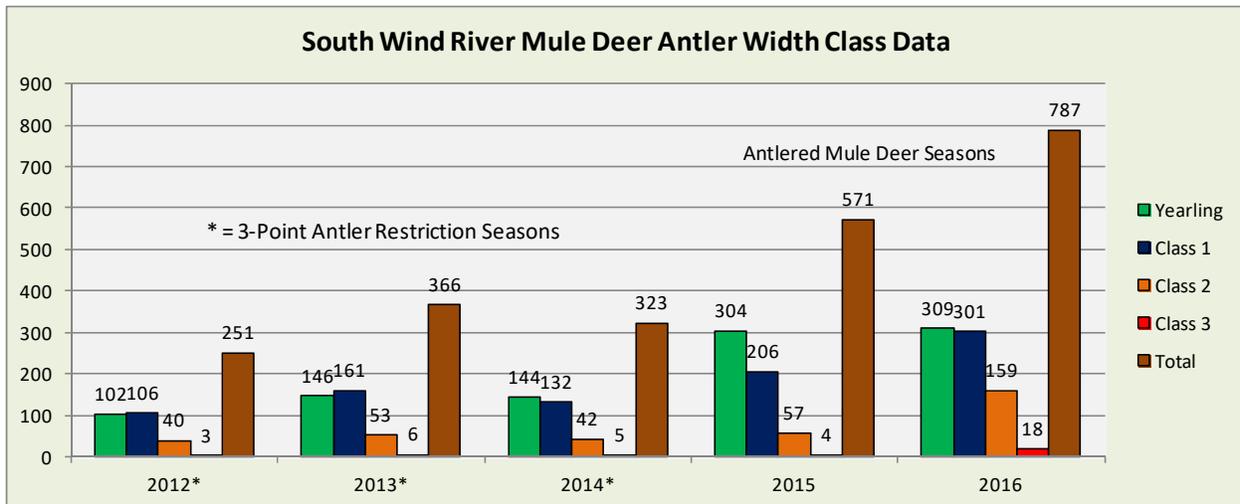


Figure 2. Antler width class data (number of bucks in sample) from classification surveys in the South Wind River Mule Deer Herd Unit, 2012 – 2016.

Harvest Data

Weather during the 2016 deer season was quite mild across the South Wind River Herd Unit. Mostly dry conditions allowed mule deer and hunters to be dispersed across the herd unit. Very windy conditions on opening weekend led to seemingly low harvest. However, total harvest did increase in 2016, with 806 mule deer taken, but perhaps less than would have been with more typical fall weather. Hunters reported improved numbers of mule deer overall, but still with lower numbers of adult bucks than desired. The harvest of 756 bucks in 2016 was 11% higher than in 2015. Fewer mule deer bucks were checked in the field or at check stations perhaps due to mild, windy weather, and data collected indicates 22% were yearlings and 54% were Class 1 bucks, showing a reduction in focus on older age bucks for which APRs had targeted for 3 years. Hunter success was 50%, compared with an average of 34% during the latest APR seasons. The “days per animal harvested” statistics for general licenses, as an indicator of hunter effort, dropped to 7.6 days/animal in 2016. Doe/fawn mule deer hunting by youth and archery hunters allowed to hunt for “Any” deer, resulted in minimal harvest of 43 does and 7 fawns.

Antler width class data have been collected since 2012 during field checks and at check stations. Antler widths in field checks have not substantially improved over the last 5 years, and the proportion of Class 1 bucks harvested has increased compared with Class 2 and Class 3 bucks (Figure 2). This mimics the trend in antler width classes observed in post-season classification surveys outlined in the previous section.

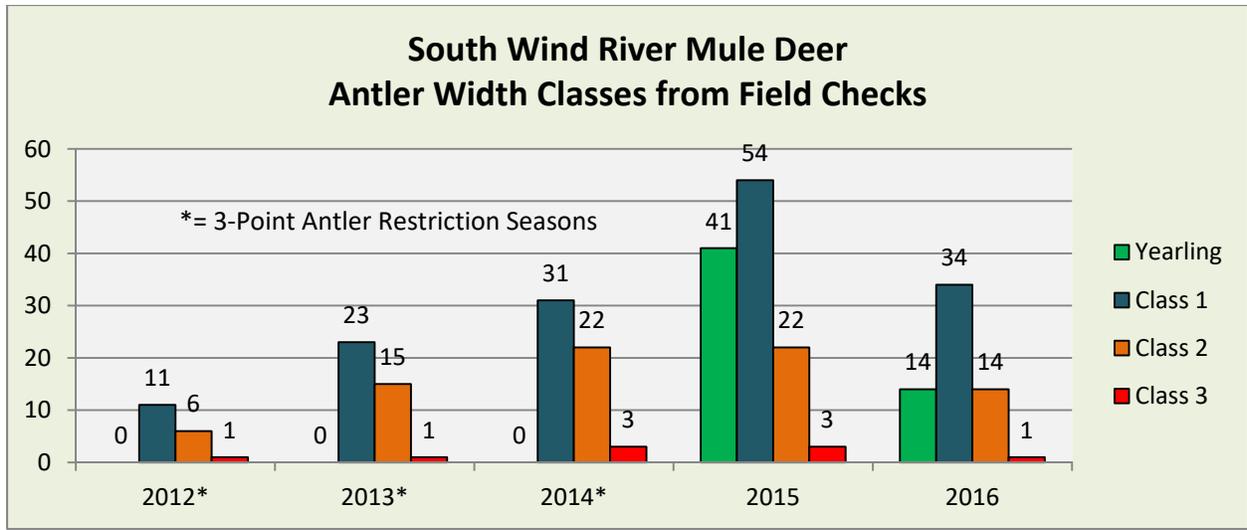


Figure 2. Antler width classes as measured during field checks and at check stations, 2012 – 2016.

Population

A spreadsheet model developed for this population in 2012 has been updated, utilizing 2016 post-season classification and harvest data. The TSJ, CA model was selected as the best fit model, with the lowest Relative AICc value and producing population estimates aligned with trends observed in buck harvest, fawn recruitment, and buck/doe ratios. It also matches professional perceptions of field personnel and public opinion about mule deer population trends. In addition to traditional classification and harvest data, the model now anchors to a population estimate derived from the sightability survey completed for this herd unit in February 2015. This survey utilized actual mule deer counts, along with snow and vegetation cover variables to provide a correction factor for each cluster of mule deer, thereby estimating the number of deer missed in the survey. The sightability model provided a total estimate of mule deer and the standard error for the estimate. In the inaugural survey, we observed 6,640 mule deer, with a model estimate of 8,517 (± 208). Utilizing traditional classification and harvest data, along with this post-season estimate, the spreadsheet model produces a post-season 2016 estimate of 9,786 mule deer. This spreadsheet model (TSJ, CA) is anchored to the sightability estimate and though lacking actual survival metrics is considered GOOD.

Management Summary

Past management included implementation of antler point restrictions (4-point in 2004 and 2005 and 3-point in 2012-14), in response to declines in buck/doe ratios and population trends, and perceived increases in hunter numbers. Expectedly, both APR types resulted in lower hunter numbers and reduction of overall buck harvest. The 4-point APR implemented in 2004 and 2005 coincided with improved buck/doe ratios as a result of improved fawn survival/yearling buck recruitment with favorable weather patterns and improved, albeit short-term, habitat conditions. The recent 3-point APR seasons did not lead to dramatic improvements in buck/doe ratios, largely due to drought concurrent with the first 2 years of APRs. However, buck/doe ratios improved substantially in 2015 and remained quite good in 2016, following improvements in fawn survival/yearling recruitment and increased buck detection during classification surveys, with the total buck/doe ratio of 34M/100F surpassing upper end of the Recreational Management range.

This herd unit is part of the Lander/Green Mountain Mule Deer Initiative, complete with a public “Working Group”. Short-term recommendations for the South Wind River Mule Deer Herd Unit were presented to the Department in December 2014. Long-term recommendations followed, with final recommendations presented to the Department in August 2015. These recommendations were comprehensive in nature, incorporating the following prioritized management issues: 1) Research and Monitoring, 2) Adaptive Management, 3) Hunting Season Structure, 4) Habitat Management, 5) Education and Public Outreach, 6) All Terrain Vehicles (ATVs), 7) Predator Management, and 8) Wildlife Law Enforcement and WGFD Field Presence. The final “Habitat Management Plan for South Wind River and Sweetwater Mule Deer Herd Units” will be released soon, with direction to focus on transitional ranges and other important mule deer habitats.

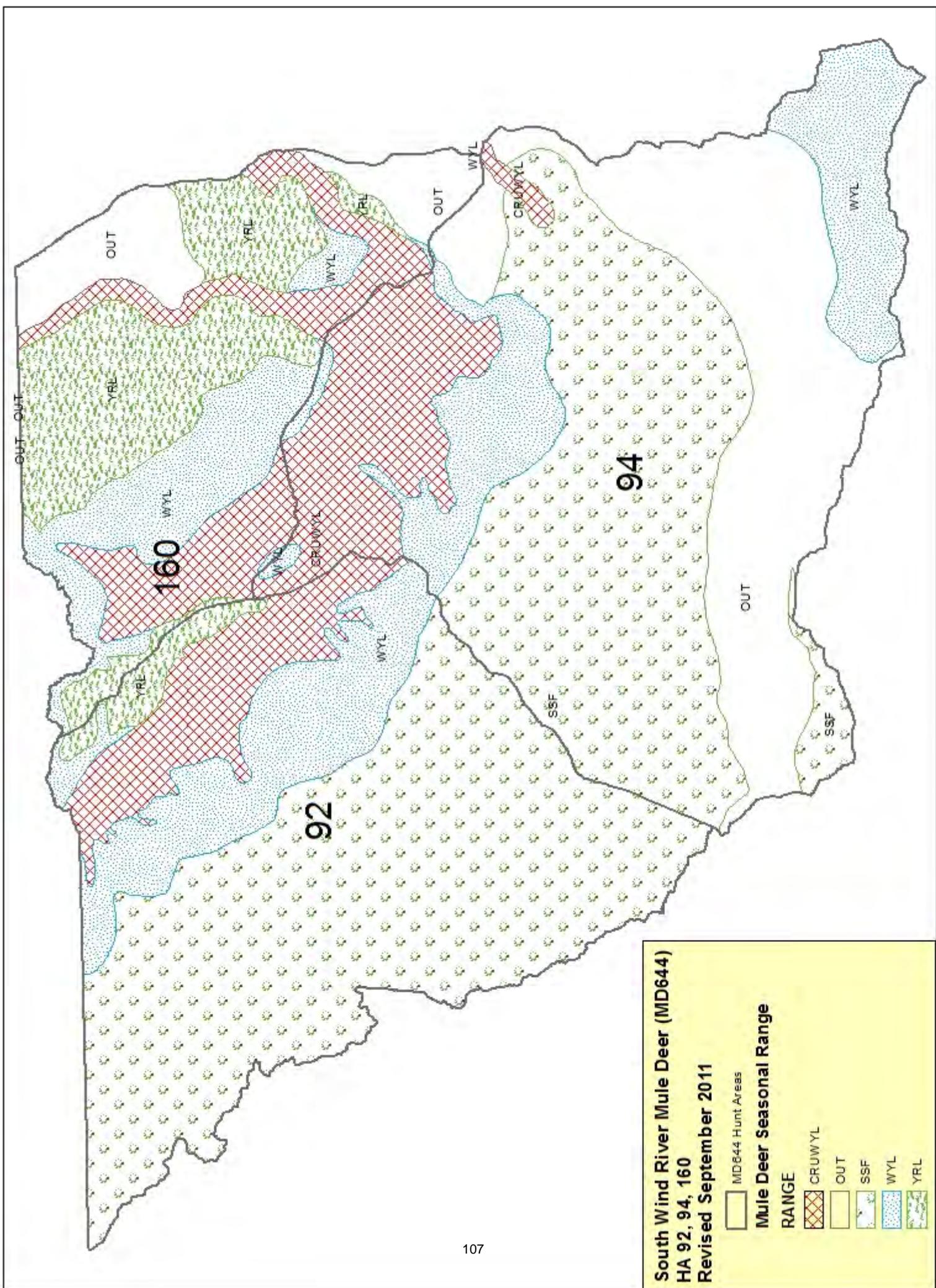
Youth hunters with General Licenses will continue to have added opportunity with their season opening on October 1 valid for any deer to promote youth hunter retention and recruitment.

Specific hunts for white-tailed deer are again being offered with seasons running from October 1 through November, with 50 Type 3 (Any white-tailed deer) and 100 Type 8 (Doe or fawn white-tailed deer) licenses valid in Hunt Areas 92, 94, and 160 collectively. White-tailed deer numbers have increased following the 2013 EHD die-off, although maybe not to the same level. With most white-tailed deer hunting opportunities occurring on privately owned lands, these seasons should apply harvest pressure on white-tailed deer in appropriate locations to increase harvest, as well as reduce the potential for overwhelming landowners with access requests.

With Youth General License hunters being allowed to harvest “any deer”, we will work with landowners to provide opportunities to youth hunters in 2017 should the need arise to address any unforeseen damage issues.

In March 2016, 20 mule deer does were collared on winter ranges throughout the South Wind River herd unit in an effort to better understand migrations, seasonal use areas, and key stopover habitats associated with migration routes and corridors. Following 2 initial mortalities and 2 collar failures, there were 17 mule deer with functioning collars as late as early-February 2017 (one collar retrieved via mortality was re-deployed in Sinks Canyon in April 2016). Another 20 collars will be deployed in March 2017, in addition to 3 collars recovered from dead deer over the last 11 months. Plans are to deploy collars in areas where movement/migration is most likely, and to fill in gaps between capture locations from 2016.

The 2017 season structure should result in a harvest of approximately 790 mule deer, including 750 bucks, along with 40 does. With anticipated fawn survival, this should allow for slight population growth to about 10,300 mule deer, moving the herd toward objective.



South Wind River Mule Deer (MD644)
HA 92, 94, 160
Revised September 2011

MD644 Hunt Areas
Mule Deer Seasonal Range
RANGE
 CRUWYL
 OUT
 SSF
 WYL
 YRL

2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD646 - SWEETWATER

HUNT AREAS: 96-97

PREPARED BY: STAN HARTER

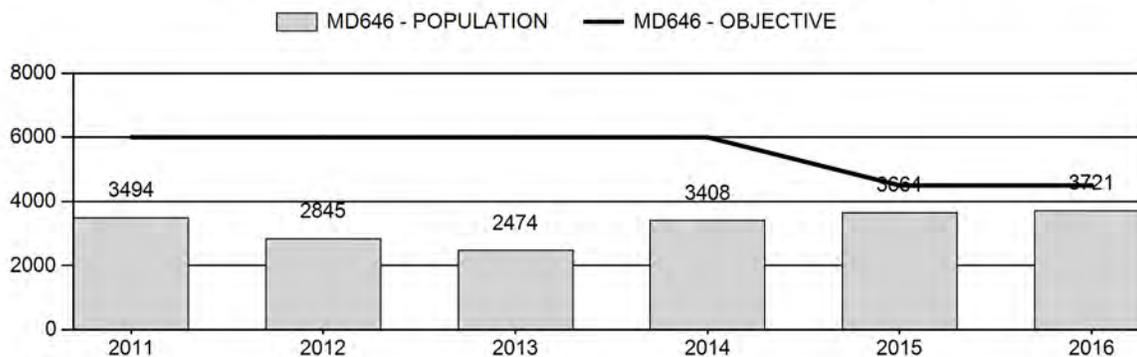
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	3,177	3,721	4,061
Harvest:	411	476	420
Hunters:	978	945	900
Hunter Success:	42%	50%	47 %
Active Licenses:	1,006	945	900
Active License Success:	41%	50%	47 %
Recreation Days:	3,832	3,055	2,800
Days Per Animal:	9.3	6.4	6.7
Males per 100 Females	21	19	
Juveniles per 100 Females	79	72	

Population Objective (\pm 20%) :	4500 (3600 - 5400)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.3%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/16/2017

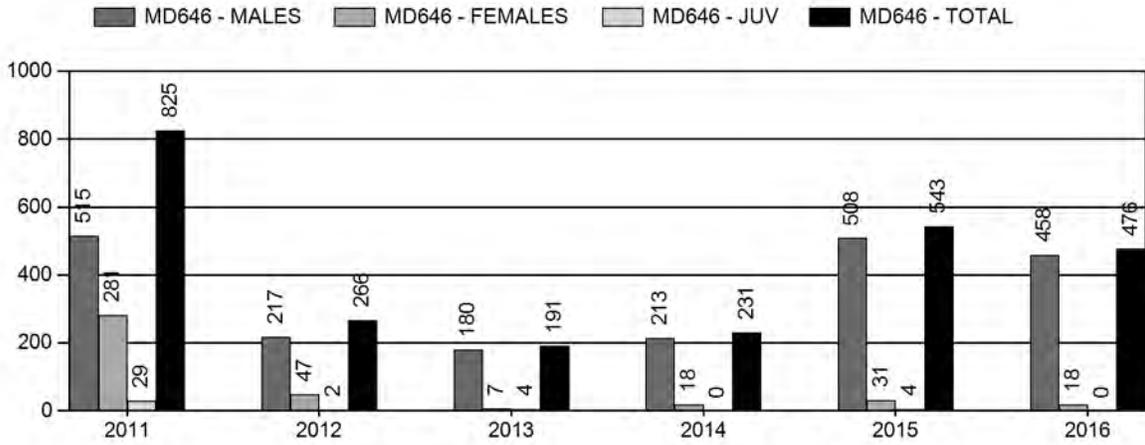
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	1.0%	1.1%
Males \geq 1 year old:	57.8%	51.6%
Total:	11.2%	9.3%
Proposed change in post-season population:	+1.6%	+9.1%

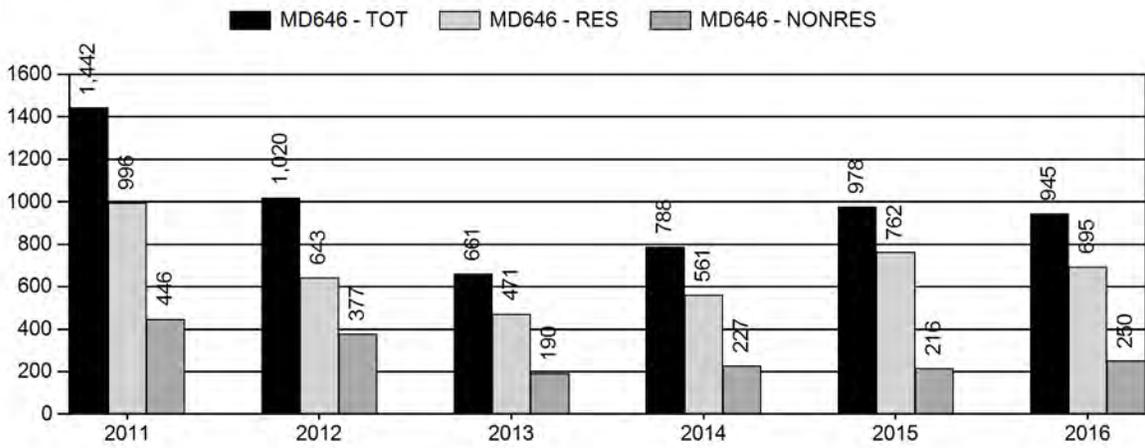
Population Size - Postseason



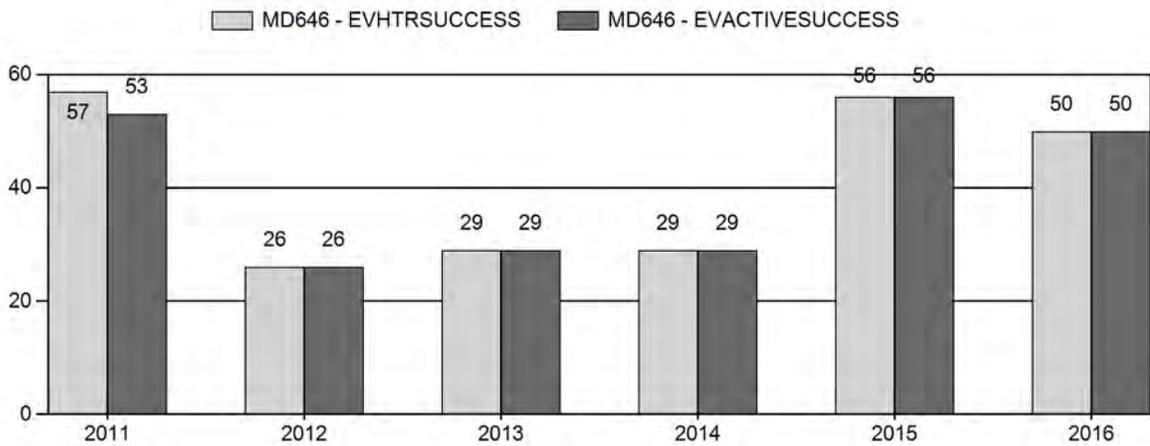
Harvest



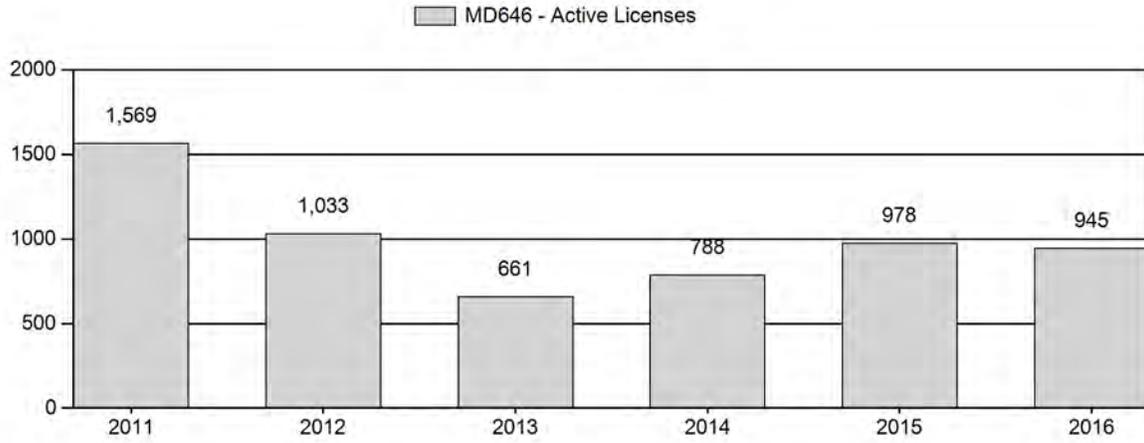
Number of Active Licenses



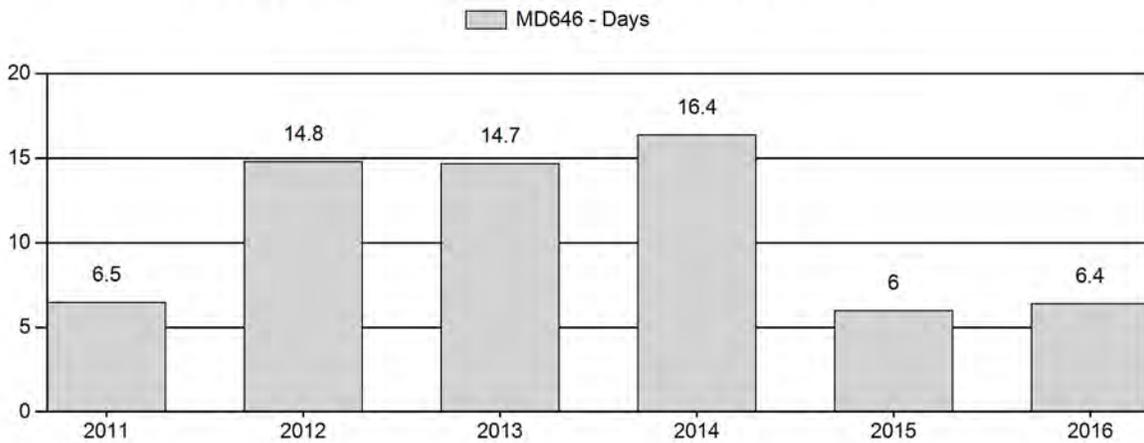
Harvest Success



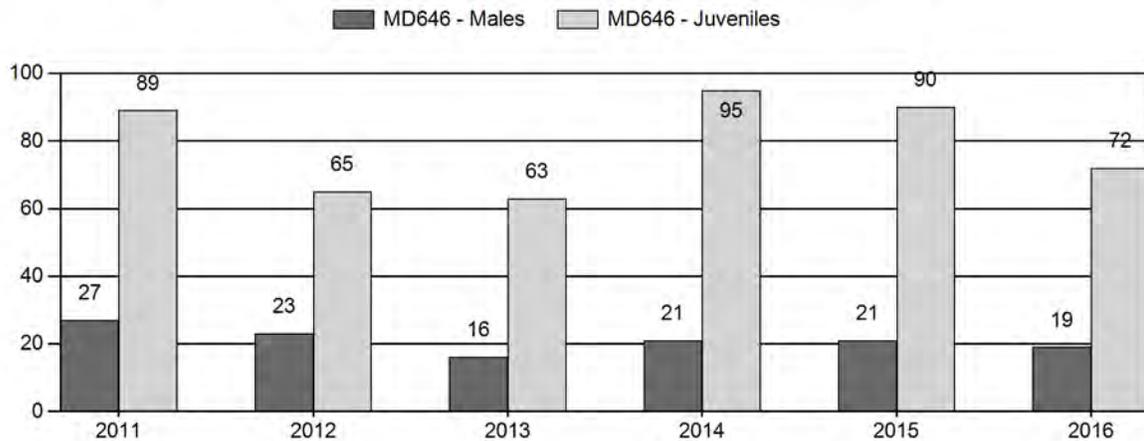
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD646 - SWEETWATER

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females			Young to			
		Ylg	2+ CIs 1	2+ CIs 2	2+ CIs 3	2+ UnCIs	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	3,494	49	0	0	0	101	150	13%	547	46%	486	41%	1,183	1,616	9	18	27	± 3	89	± 6	70
2012	2,845	48	36	18	4	0	106	12%	462	53%	302	35%	870	996	10	13	23	± 3	65	± 5	53
2013	2,474	67	42	18	1	0	128	9%	813	56%	514	35%	1,455	813	8	8	16	± 1	63	± 3	55
2014	3,408	52	32	11	1	0	96	10%	451	46%	429	44%	976	1,281	12	10	21	± 3	95	± 7	78
2015	3,664	92	42	14	1	0	149	10%	719	48%	644	43%	1,512	1,456	13	8	21	± 2	90	± 5	74
2016	3,721	105	47	10	0	0	162	10%	858	52%	618	38%	1,638	1,096	12	7	19	± 2	72	± 4	61

**2017 HUNTING SEASONS
Sweetwater Mule Deer Herd Unit (MD 646)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
96		Oct. 15	Oct. 20		General	Antlered mule deer or any white-tailed deer
96		Oct. 15	Oct. 22		General youth license	Any deer
97		Oct. 15	Oct. 20		General	Antlered mule deer or any white-tailed deer
97		Oct. 15	Oct. 22		General youth license	Any deer
97	3	Oct. 15	Nov. 30	25	Limited quota	Any white-tailed deer
97	8	Oct. 15	Nov. 30	25	Limited quota	Doe or fawn white-tailed deer
Archery		Sept. 1	Sept. 30			

Region E Non-Resident Quota: 500

Hunt Area	Type	Quota Change from 2016
Herd Unit Total	Region E	-100

MANAGEMENT EVALUATION

Current Post-Season Population Management Objective: 4,500

Management Strategy: Recreation (20-29 bucks/100 does)

2016 Post-season Population Estimate: ~3,700

2017 Post-season Population Estimate: ~4,100

Herd Unit Issues

The management objective was reviewed in 2015, and the long-term post-season objective of 6,000 mule deer was reduced to 4,500. The secondary objective of Recreational Management Strategy (20-29 bucks/100 does) will continue. Population growth occurred from 2002 to 2009, but declined from 2010 to 2013, due to poor fawn survival/recruitment as a result of intense drought. Fawn/doe ratios have significantly improved the last 3 years, demonstrating the population seems capable of recovery with improved habitat conditions which follow increased precipitation. The 2016 post-season population reached about 3,700 mule deer, 17% below objective.

Weather

Precipitation

For the Sweetwater Herd Unit, precipitation information is based on one weather station located near Jeffrey City, where recorded precipitation from October 2015 through September 2016 was markedly higher than the 30-year average (Table 1). The growing season precipitation (April-June 2016) was slightly above the 30-year average, while the high elevation SSF seasonal range average precipitation (May- July 2016) was below the 30-year average. A large storm in May, over Mothers' Day weekend delivered much of the May precipitation in a single weekend causing runoff and flooding events. The majority of the annual precipitation came during April and May with no measurable precipitation falling in July, with above average temperatures

through summer. This precipitation information is generated from the PRISM (Parameter-elevation Relationships on Independent Slopes Model) dataset developed by Oregon State University.

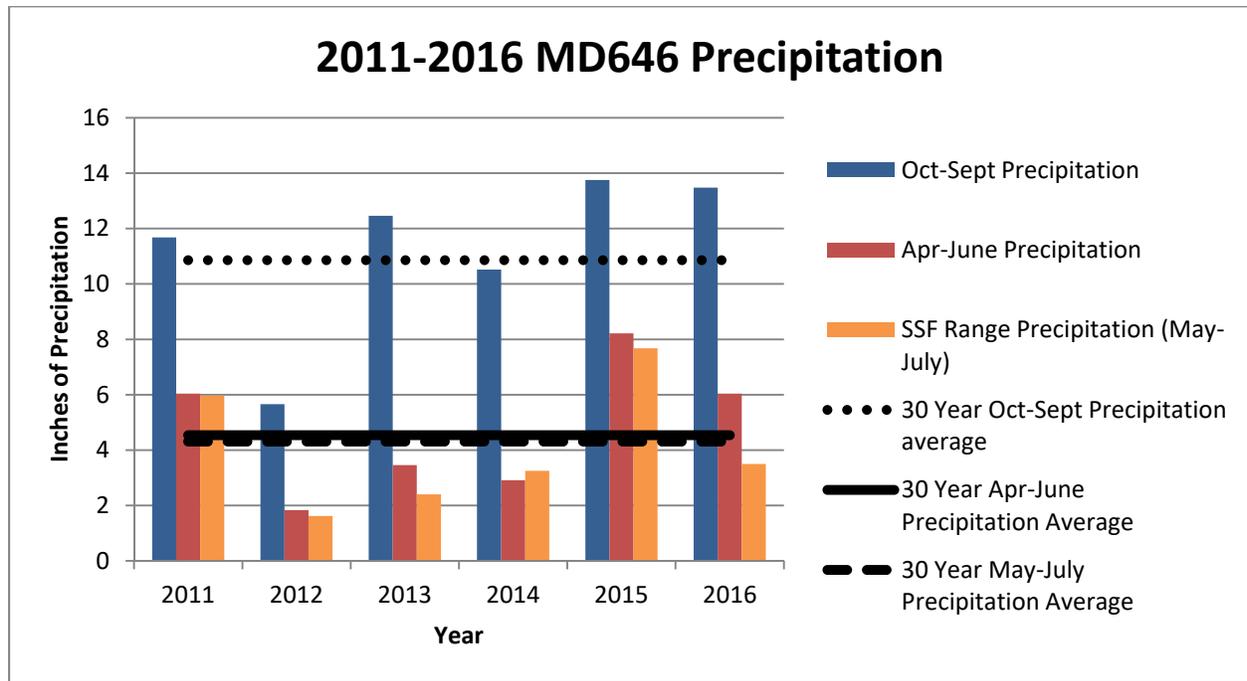


Table 1. Precipitation values for Sweetwater Mule Deer (MD646) from 2011 – 2016.

Winter Conditions

Following a mild fall, winter 2016-17 was colder than average in December and January, with near average snowfall overall. However, snow accumulations were periodically above average, particularly east of Riverton and raised concerns about winter mortality. But, warm, windy periods often occurred between storms, reducing snow cover to zero in many of the winter ranges, providing much needed relief. Precipitation was above average for the first four months of 2017 (+102% in Lander, +75% in Jeffrey City, and +176% in Riverton), which should lead to excellent summer forage conditions.

Habitat

Growing season precipitation was nearly average during the spring/early summer of 2016 which provided good forage across the herd unit for mule deer does in early parturition. Above normal temperatures and very low precipitation amounts from June-August likely caused lower vegetation production than the previous two years. Habitat conditions were still good overall, likely contributing to the fawn/doe ratio observed in the Sweetwater Herd Unit (77 fawns/100 does).

Field Data

Classification flights were conducted in early-December 2016, with winter ranges surveyed using a Bell 206B Jet Ranger helicopter. New snow helped detection of mule deer, leading to the 3rd highest classification sample ever collected of 1,638 mule deer. The 2016 post-season

fawn/doe ratio dropped to 72J/100F, perhaps due to a high number of yearling does which have yet to begin producing fawns. Yearling bucks remained good at 12YM/100F in 2016, in spite of overall high buck harvest in the 2016 hunting season with no antler point restrictions. Antler width class data have been collected (Figure 1) during classification surveys the past 5 years. In 2016, nearly 94% of the mule deer bucks classified in the Sweetwater Herd Unit were either yearlings or have Class 1 antler widths (adult bucks $\leq 18''$ wide), indicating a shortage of older age-class bucks, likely due to high harvest in extremely accessible areas with high hunter density.

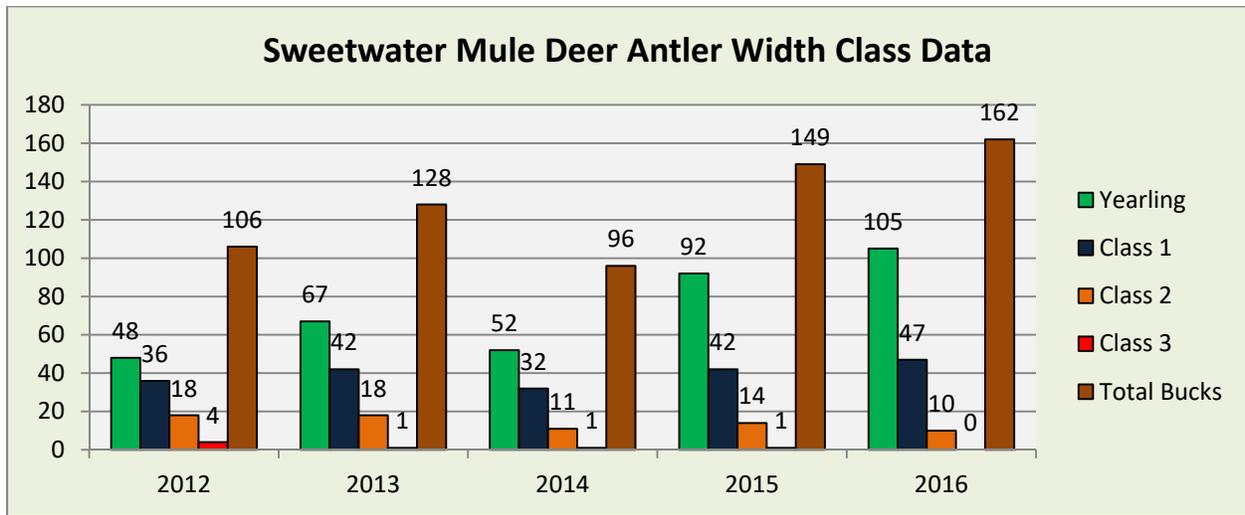


Figure 1. Antler class data from classification surveys in the Sweetwater Mule Deer Herd Unit, 2012 – 2016.

Harvest Data

Weather during the 2016 deer season was once again quite mild in the Sweetwater Herd Unit. Mostly dry conditions allowed hunters to go wherever they pleased. Hunters reported good numbers of mule deer overall, but low numbers of adult bucks. The total harvest of 458 mule deer bucks was 60 lower than in 2015, but still equates to taking 58% of the pre-season bucks from this population, which is unlikely to be sustainable. The adult buck/doe ratio declined again to 7AM/100F along with a drop in the yearling buck/doe ratio to 12YM/100F, reducing the total buck/doe ratio to 19M/100F, amplifying our concern about continued harvest at such a high level. Hunter success dropped to 50%, but remained quite good compared with an average of 28% during the latest APR seasons. The “days per animal harvested” statistics for general licenses, as an indicator of hunter effort, was 6.4 days/animal in 2016, near the long-term average for seasons without APRs. Antlerless mule deer harvest as allowed by youth and archery hunters, resulted in minimal take of 18 does.

Antler width class data have been collected since 2012 during field checks and at check stations. Antler widths have not improved over the last 5 years, and the proportion of Class 1 bucks harvested has increased compared with Class 2 and Class 3 bucks (Figure 2). This follows the general trend in antler width classes observed in post-season classification surveys outlined in the previous section.

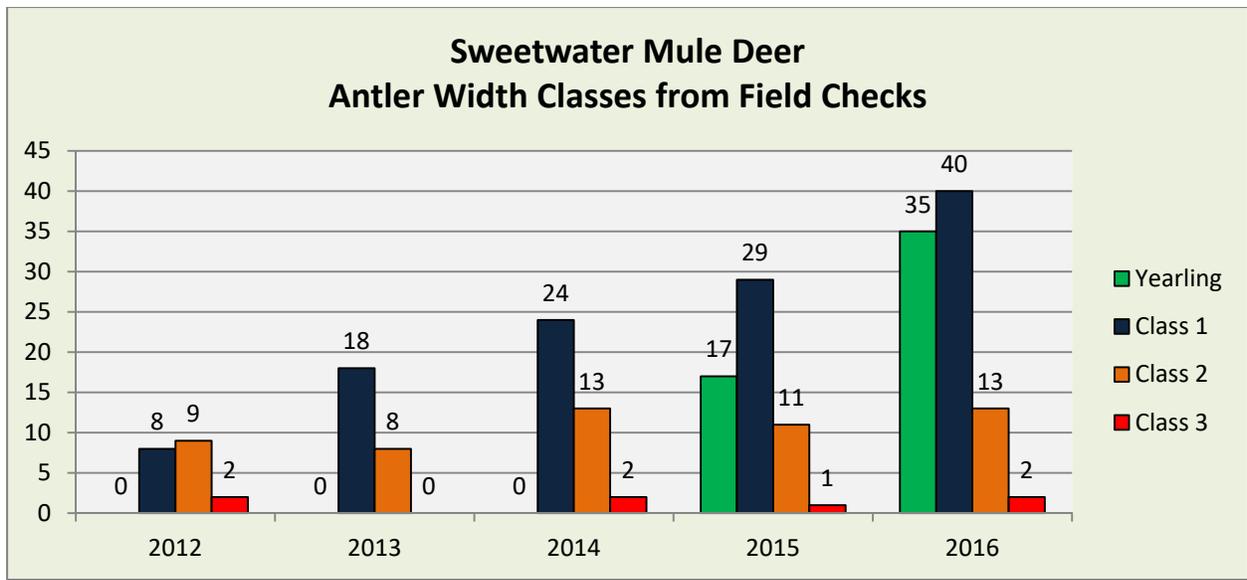


Figure 2. Antler class data as measured during field checks and at check stations, 2012 –2016.

Population

A spreadsheet model developed for this population in 2012 has been updated, utilizing 2016 post-season classification and harvest data. The TSJ, CA model was selected as the best fit model and produces population estimates aligned with trends observed in buck harvest, fawn recruitment, and buck/doe ratios. It also matches professional perceptions of field personnel and public opinion about mule deer population trends. While this model does not produce the lowest Relative AICc value, it provides believable trends and population estimates, whereas both the CJ/CA and SCJ/CA models do not. Utilizing traditional classification and harvest data, along with this post-season estimate, the spreadsheet model (TSJ, CA) produces a post-season 2016 estimate of 3,721 mule deer, and since actual survival estimates are lacking, is considered Fair.

Management Summary

Past management included implementation of antler point restrictions (4-point in 2004 and 2005 and 3-point in 2012-14), in response to declines in buck/doe ratios and population trends, and perceived increases in hunter numbers. Expectedly, both APR types resulted in lower hunter numbers and reduction of overall buck harvest. The 4-point APR implemented in 2004 and 2005 coincided with improved buck/doe ratios as a result of improved fawn survival/yearling buck recruitment with favorable weather patterns and improved, albeit short-term, habitat conditions. The recent 3-point APR seasons did not lead to dramatic improvements in buck/doe ratios, largely due to drought concurrent with the first 2 years of APRs. However, post-season buck/doe ratios have declined in 2016, despite improvements in fawn survival/yearling buck recruitment, and the total buck/doe ratio of 19M/100F is below the low end of the Recreational Management range.

This herd unit is part of the Lander/Green Mountain Mule Deer Initiative, complete with a public “Working Group”. Short-term recommendations for the Sweetwater Mule Deer Herd Unit were presented to the Department in December 2014. Long-term recommendations followed, with final recommendations presented to the Department in August 2015. These recommendations were comprehensive in nature, incorporating the following prioritized management issues: 1)

Research and Monitoring, 2) Adaptive Management, 3) Hunting Season Structure, 4) Habitat Management, 5) Education and Public Outreach, 6) All Terrain Vehicles (ATVs), 7) Predator Management, and 8) Wildlife Law Enforcement and WGFD Field Presence.

Youth hunters with General Licenses will have 2 days of additional opportunity following the “regular” season with their licenses valid through October 22 for any deer, to promote youth hunter retention and recruitment.

In response to concern about low buck/doe ratios, we are shortening the General License season to a 6 day season – beginning on Sunday and ending on Friday. All General License seasons will end on Friday, October 20, instead of the traditional closing date of October 22. This will allow for youth hunting opportunity as described above.

Specific hunts for white-tailed deer are again being offered with longer seasons running from October 15 through November, with 25 Type 3 (Any white-tailed deer) and 25 Type 8 (Doe or fawn white-tailed deer) licenses valid in Hunt Area 97. White-tailed deer numbers have slowly increased following the 2013 EHD die-off, but apparently not to the same level as yet. With most white-tailed deer hunting opportunities occurring on privately owned lands, these seasons should apply harvest pressure on white-tailed deer in appropriate locations to increase harvest.

Most hunting seasons in the Sweetwater mule deer herd have experienced elevated numbers of non-resident hunters, particularly in Hunt Area 96. The 2016 harvest survey indicated non-residents made up 26% of the total number of hunters in the Sweetwater herd unit (30% in Hunt Area 96). As such, the non-resident Region E general license quota is being reduced by 100 licenses in 2017 in hopes of reducing the percentage of non-residents hunting in the Sweetwater herd unit and lessen hunter crowding. If buck/doe ratios continue to falter even with reductions in non-resident hunters and a shortened season, we will likely need to consider other options to further reduce buck harvest in order to maintain buck/doe ratios at desired levels.

Additionally, the Department and our partners will begin implementation of many of the Working Group’s recommendations for research, habitat, and other categories, beginning with an aspen regeneration/riparian restoration project on private and BLM lands on the north side of Green Mountain. The final “Habitat Management Plan for South Wind River and Sweetwater Mule Deer Herd Units” will be released soon, with direction to focus on transitional ranges and other important mule deer habitats. Additional habitat use mapping will be a key component of a planned GPS movement study to be implemented in late-2017 or early-2018, with the intent of focusing future habitat projects where deemed likely to provide the greatest benefit to mule deer in the Sweetwater herd unit.

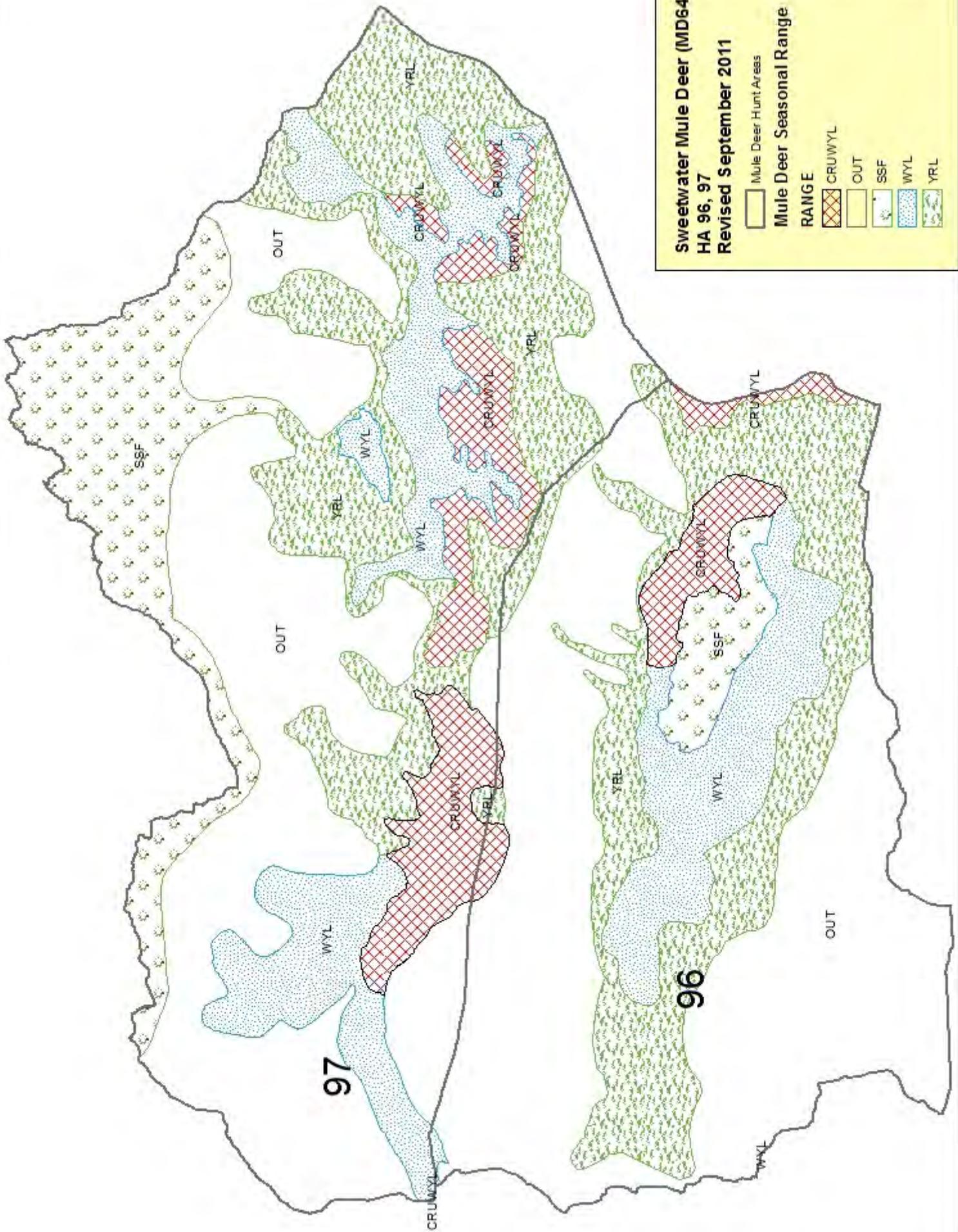
The 2017 season structure should result in a harvest of approximately 400 buck mule deer and about 20 does and fawns. With anticipated fawn survival, this should allow for slight population growth to about 4,100 mule deer following the 2017 hunting season, moving toward objective.

Sweetwater Mule Deer (MD646)
HA 96, 97
Revised September 2011

Mule Deer Hunt Areas

Mule Deer Seasonal Range

RANGE	
	CRUWYL
	OUT
	SSF
	WYL
	YRL



2016 - JCR Evaluation Form

SPECIES: Mule Deer
 HERD: MD647 - FERRIS
 HUNT AREAS: 87

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: GREG HIATT

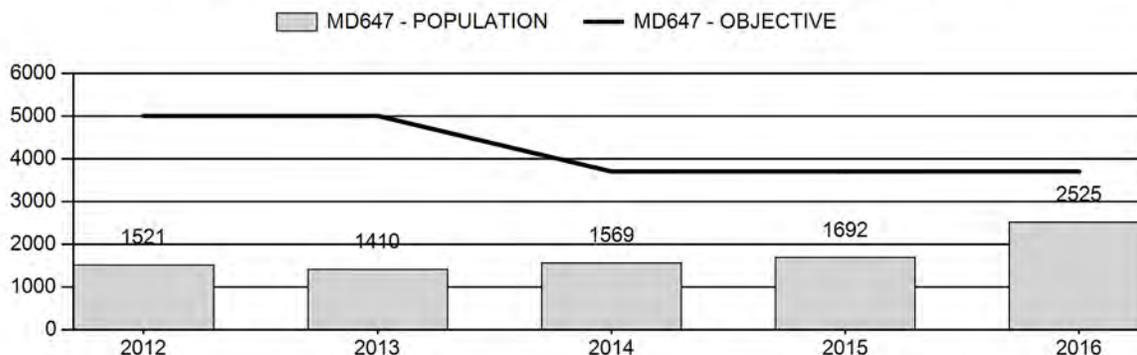
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	1,812	2,525	2,570
Harvest:	54	65	90
Hunters:	69	71	115
Hunter Success:	78%	92%	78 %
Active Licenses:	69	71	115
Active License Success:	78%	92%	78 %
Recreation Days:	350	329	500
Days Per Animal:	6.5	5.1	5.6
Males per 100 Females	41	58	
Juveniles per 100 Females	53	92	

Population Objective (± 20%) : 3700 (2960 - 4440)
 Management Strategy: Special
 Percent population is above (+) or below (-) objective: -31.8%
 Number of years population has been + or - objective in recent trend: 9
 Model Date: 2/27/2017

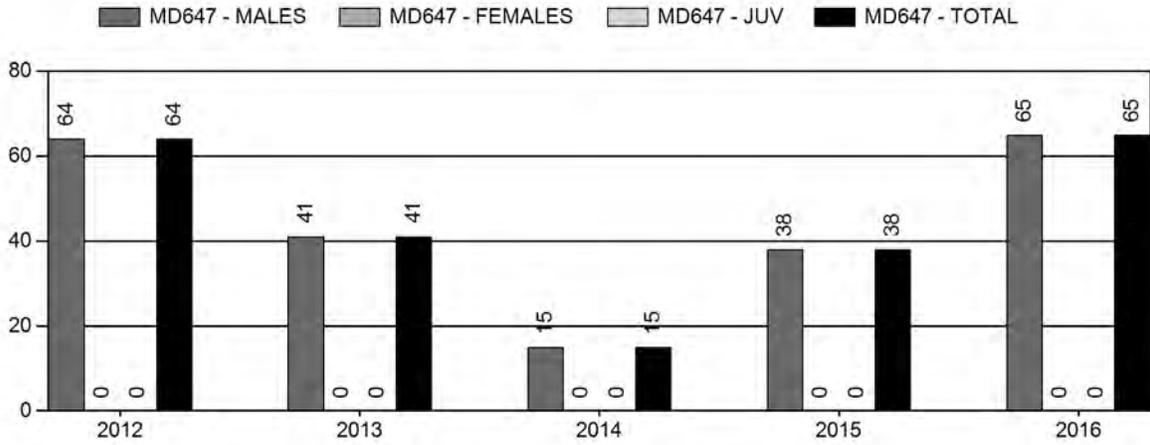
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	11.1%	11.3%
Total:	3.0%	3.4%
Proposed change in post-season population:	+4.5%	+1.7%

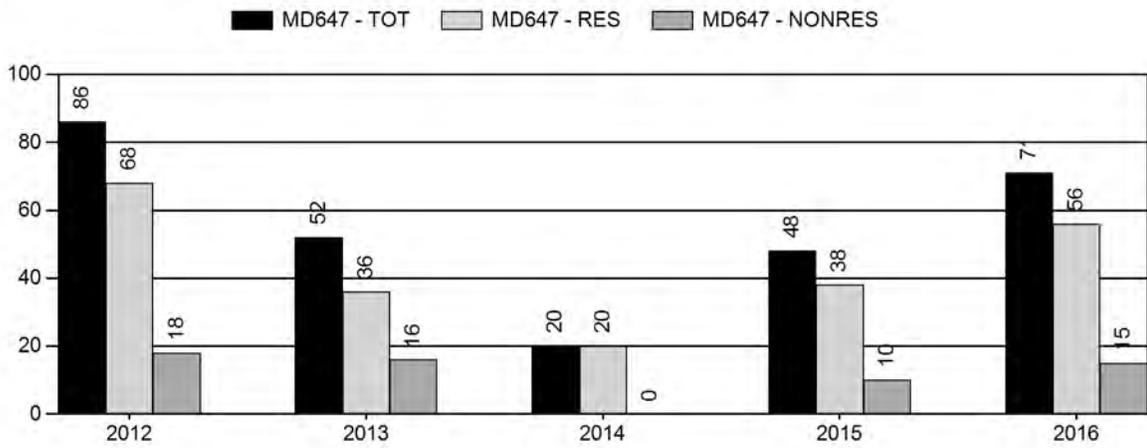
Population Size - Postseason



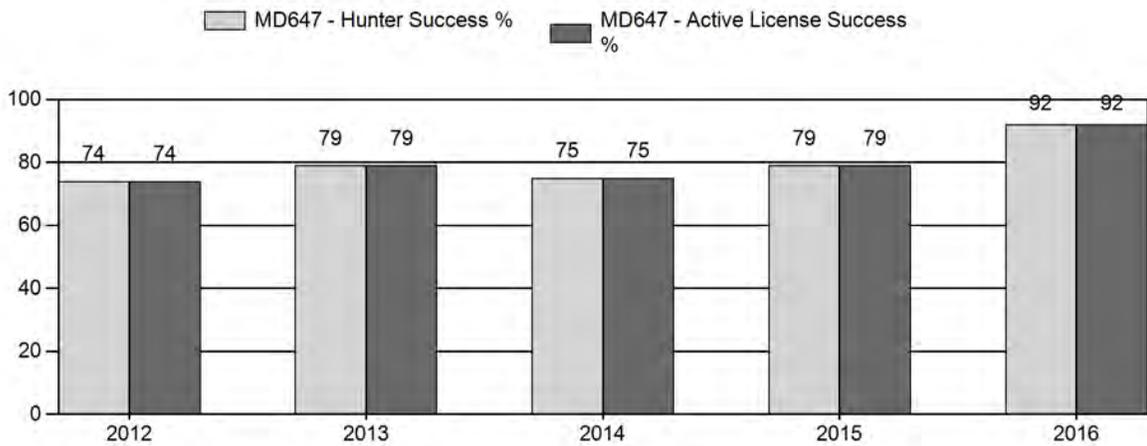
Harvest



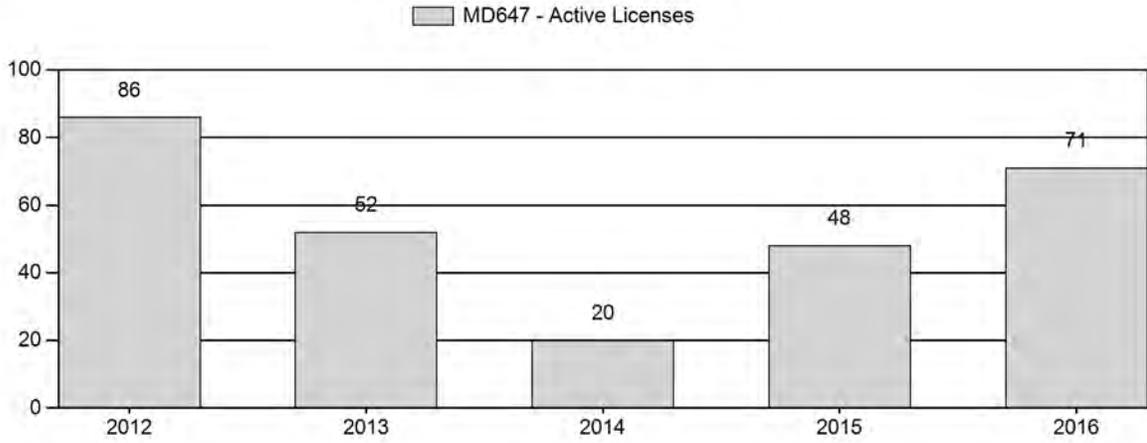
Number of Active Licenses



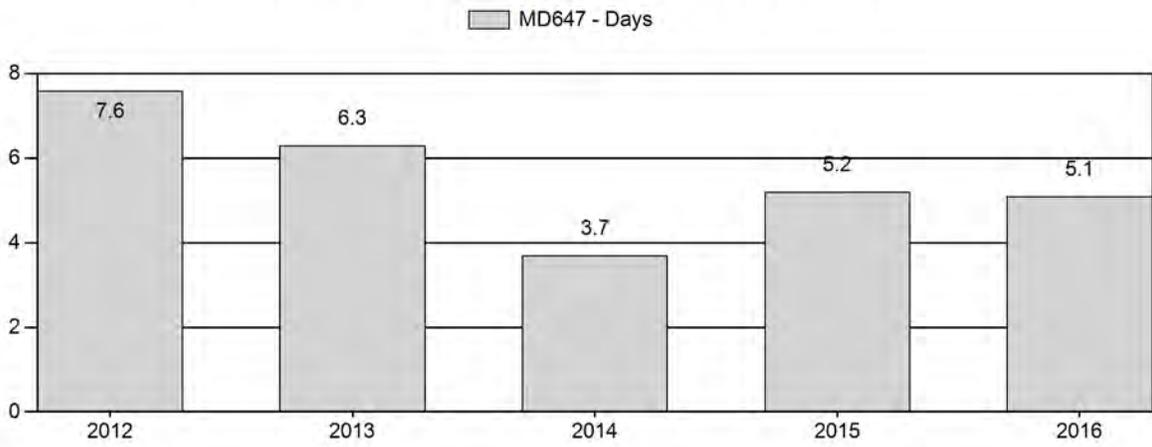
Harvest Success



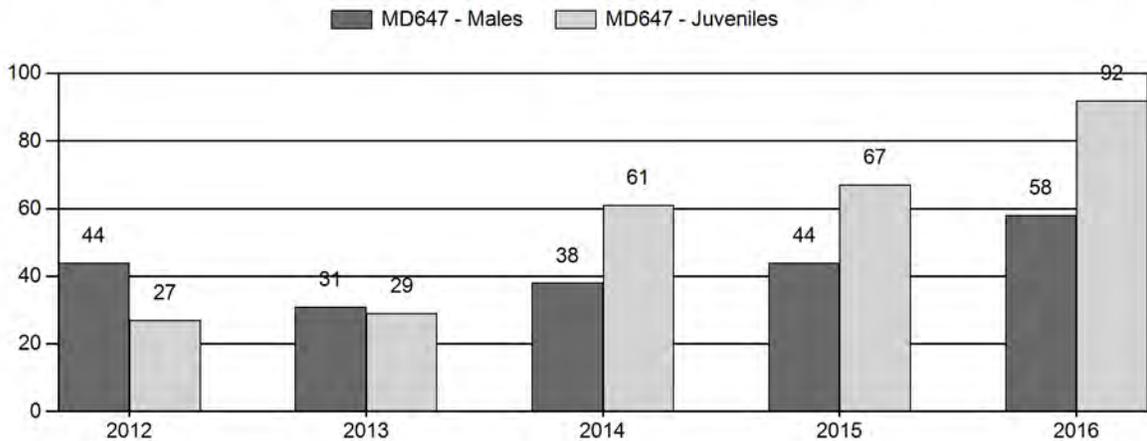
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD647 - FERRIS

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	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	2,869	50	0	0	0	111	161	22%	356	49%	204	28%	721	790	14	31	45	± 5	57	± 6	39
2012	1,521	0	0	0	0	0	125	26%	281	58%	75	16%	481	528	0	0	44	± 5	27	± 4	18
2013	1,410	14	0	0	0	58	72	20%	230	62%	66	18%	368	347	6	25	31	± 5	29	± 4	22
2014	1,569	42	0	0	0	105	147	19%	386	50%	234	31%	767	695	11	27	38	± 3	61	± 5	44
2015	1,692	65	105	72	25	0	267	21%	610	47%	411	32%	1,288	827	11	33	44	± 2	67	± 3	47
2016	2,525	101	141	114	25	0	381	23%	656	40%	604	37%	1,641	0	15	43	58	± 3	92	± 4	58

**2017 HUNTING SEASONS
FERRIS MULE DEER HERD (MD647)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
87	1	Oct. 15	Oct. 31	125	Limited quota	Antlered mule deer or any white-tailed deer
Archery						
87		Sep. 1	Sep. 30			

Hunt Area	License Type	Quota change from 2016
87	1	+50
Herd Unit Total	1	+50

Management Evaluation

Current Postseason Population Management Objective: 3,700

Management Strategy: Special

2016 Postseason Population Estimate: 2,525

2017 Proposed Postseason Population Estimate: 2,570

Herd Unit Issues

The management objective for the Ferris Mule Deer Herd Unit is a post-season population size objective of 3,700 deer. The current management strategy is special management, with buck:doe ratios allowed to exceed 29:100. The objective and management strategy were last publicly reviewed in 2014.

The 2016 post-season population estimate was about 2,500 deer with the population climbing slowly upward from a low of about 1,400 deer in 2013. The herd was last near objective size in 2007, with the previous peak being prior to the 1992-93 winter. Restricted hunting access to major blocks of private and checkerboarded lands has concentrated hunting pressure on the remaining portions of the area, making it difficult to manage buck numbers and quality in the accessible portions of the herd.

Due to low deer numbers and poor fawn production, the Ferris herd was identified as a herd where focused predator control might benefit fawn survival. Through ADMB funding, a three-year project of coyote control in identified fawning habitat between the Ferris Mountains, Junk Hill and Bradley Peak was initiated in spring of 2016. Coyote control, consisting primarily of aerial gunning by Wildlife Services, was repeated in spring of 2017 and funding has been requested for a third, final year, in spring of 2018.

Weather

Severe drought in 2012 and 2013 was followed by record precipitation in 2015, producing exceptional vegetative growth and the highest fawn crop since 2009 at 67 fawns:100 does. Above average precipitation continued through spring of 2016, further enhancing vegetative recovery and fawn production. Condition of mule deer going into the 2016-17 winter was good, and perhaps the best in generations. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through at least February. Despite good physical condition of most mule deer and winter ranges, winter losses are expected to be above average, but not excessive.

Habitat

Lack of fire has resulted in decadent shrub stands encroached by conifer in large portions of this herd unit. Prolonged, severe drought has reduced the quantity and quality of forage for mule deer. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2016.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminole and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminole Mountains and the eastern Ferris Mountains burned thousands of acres, including crucial mule deer winter habitat as well as year round habitats. These prescribed burns should benefit mule deer productivity with the return of young vigorous shrub complexes, but benefits from the wildfires will be longer term.

The Seminole Fire burned over 3,800 acres in the Seminole Mountains including areas within Morgan Creek WHMA. Following the fires, the Rawlins BLM coordinated and funded aerial application of Plateau® to mitigate cheatgrass spread on BLM and WGF D managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions.

Plans for additional prescribed fires in the Seminole Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire. Plans for returning fire to the Ferris Mountains also call for additional prescribed fires, moving west from the 2011 and 2012 fires to take advantage of the firebreaks created by those burned habitats. First of these burns is proposed for fall of 2017.

Field Data

Despite conservative seasons, deer numbers slowly declined over the past two decades due to several severe winters and persistent drought conditions. Poor habitat conditions on most seasonal ranges prevented the rapid population response seen after similar weather events in previous decades. Fawn:doe ratios remained exceptionally low until 2014, inhibiting recovery of the population. With increased precipitation and vegetative response from both prescribed and wild fires, fawn production improved to 61:100 in 2014 and 67:100 in 2015. Classification

sample size increased again in 2016, by 27 percent, yielding the largest sample in at least 35 years without increasing the number of helicopter survey hours. Fawn production rose to a record 92:100, exceeding the previous record for this herd of 91:100 recorded in 1985.

The buck:doe ratio increased again to a record 58:100 in 2016, exceeding the previous records of 45:100 recorded in 2005 and 2011. Both the adult and yearling buck ratios increased. The high yearling buck:doe ratio reflects increased fawn production in 2015 and good survival during the mild 2015-16 winter. Hunter access is greatly restricted to large portions of this herd, yielding segments of the population that are essentially unharvested, inflating the adult buck:doe ratio. Rapid fluctuations in buck:doe ratios early in the previous decade are suspected to have been caused by changes in how observers surveyed between hunted and unharvested segments of the herd. Classification surveys the past 10 years have attempted to uniformly cover all winter ranges, yielding more representative ratios. While ratios may no longer fluctuate as wildly, a significant proportion of the bucks in the sample still come from areas with limited or no public access. Less than 7 percent of the bucks in the sample were Class 3, compared to 9 percent in 2015. Roughly 64 percent were yearlings or Class 1.

Harvest Data

Hunter success jumped to 92 percent, the highest ever recorded for this herd, and well above the previous high of 88 percent recorded in 2005. Hunter effort remained essentially unchanged, but was still the second lowest average recorded in the past ten years. Both statistics suggest the number of bucks available for harvest has increased, despite limited access to much of the herd unit. With the high demand for licenses in this herd, hunters tend to be more selective about the quality of bucks they are willing to harvest, but still managed to harvest 65 bucks. This was the largest harvest in five years, but about half the harvests taken annually prior to 2011.

Population

The Time-Specific Juvenile & Constant Adult Survival (TSJ/CA) spreadsheet model provided the best fit with observed buck:doe ratios for this herd, the only data available for modeling this herd. The model behaved predictably when 2016 classification and harvest data were added. Best fit was attained by altering the model to allow adult survival rates to fluctuate independently in 2007 and 2011, two years with severe winters. The resulting model is considered “fair” and matched well with observed buck:doe ratios and predicted annual adult survival at 88 percent, a reasonable level. It also tracks closely with classification sample sizes. AICc value for the selected model was slightly higher than the simpler SCJ,SCA model but vastly improved over the CJ,CA model. Population estimates from the simpler SCJ,SCA model were only a few hundred animals less than the selected model. The selected model, which mimics changes in adult survival during severe winters, predicts population sizes roughly 15 percent lower than the simpler TSJ/CA model without the fluctuating adult survival rates during the 2007 and 2011 winters.

Fawn production in 2017 was projected at a 5-year average. The model predicts a slight increase in herd size, but also predicts an increase in the buck:doe ratios. As with many mule deer herds, herd growth appears to be limited by fawn production and survival. If improved precipitation

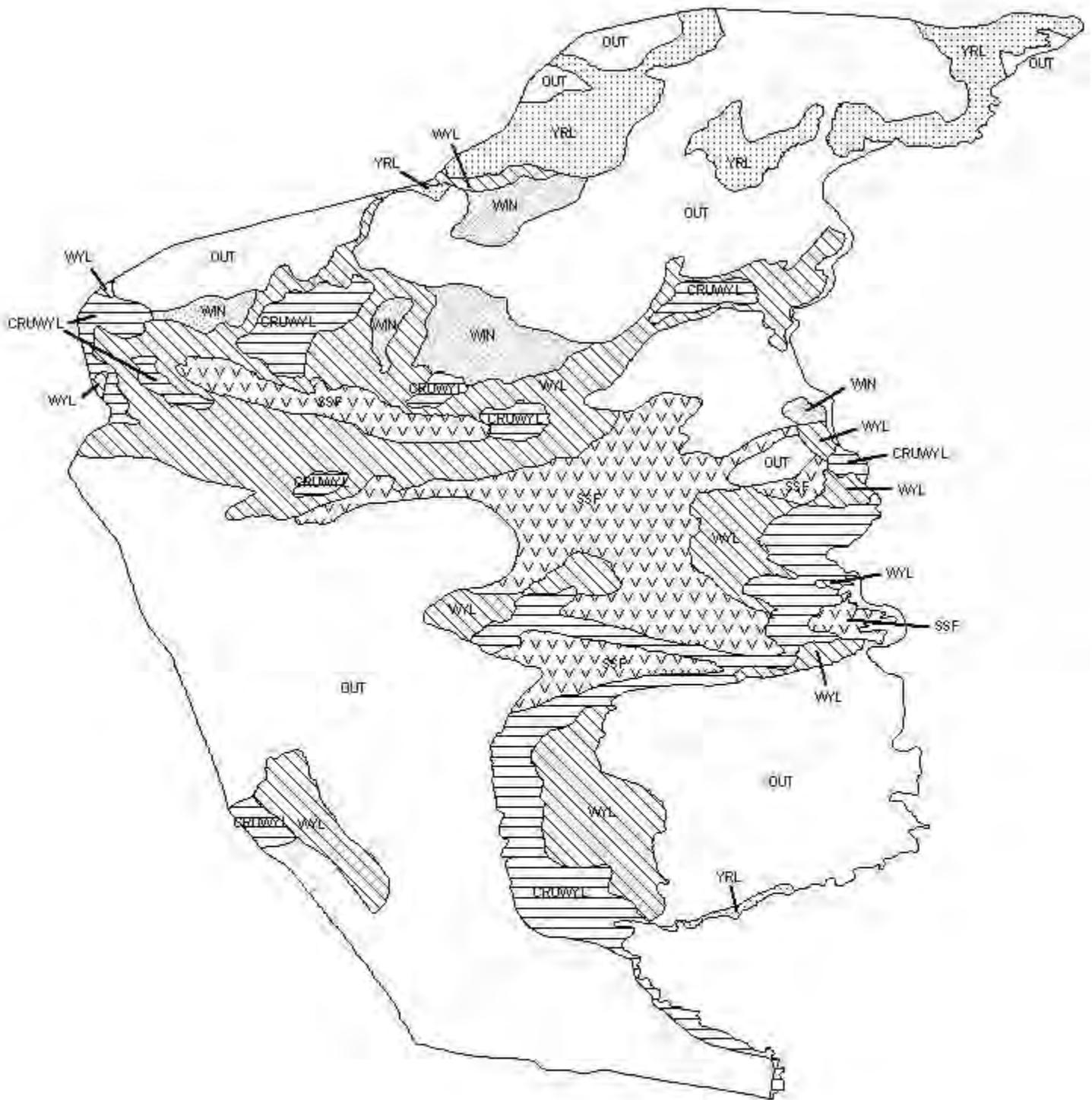
seen in the past three years continues, the large acreages of treated habitat may improve fawn production and survival and provide for more significant herd growth in the future.

Management Summary

With the low numbers of permits allowed in this herd and the special management designation, hunters have come to expect better opportunities to see and harvest larger bucks than available in neighboring general license, more productive herds. High demand for these licenses is attributed as much to an expectation of high buck quality as it is for a less crowded hunting experience. To take advantage of the improved buck:doe ratio and apparent increase in deer numbers, the recommended license quota is increased by 50 licenses in 2017.

Expected harvest would be roughly 90 buck deer. As in the previous 21 years, these licenses are valid only for antlered mule deer during the regular season. As in 2015 and 2016, hunters will also be allowed to harvest any white-tailed deer. The quota is increased by 67 percent over that available in 2016 and more than double the 2015 quota. With the herd still far below objective, no doe harvest is warranted and no doe/fawn licenses are available. Youth hunters will still be able to harvest antlerless deer.

Opening date is traditional, coincides with hunts in neighboring areas in Regions D and E, and is consistent with the application booklets. Closing date is the same as in the previous 17 years. Archery season dates are standard and the same as used in previous years.



Mule Deer (MD647) - Ferris
 HA 87
 Revised - 3/91



2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD648 - BEAVER RIM

HUNT AREAS: 90

PREPARED BY: GREG
ANDERSON

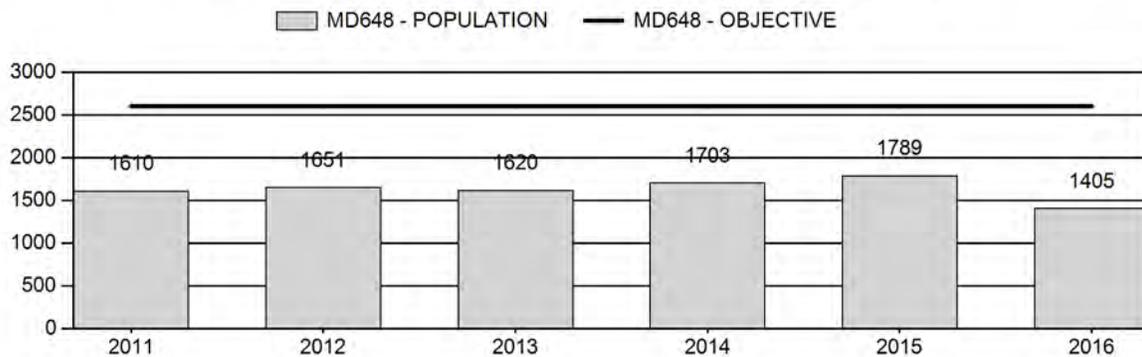
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	1,675	1,405	1,486
Harvest:	58	42	60
Hunters:	76	49	74
Hunter Success:	76%	86%	81 %
Active Licenses:	76	49	74
Active License Success:	76%	86%	81 %
Recreation Days:	527	309	400
Days Per Animal:	9.1	7.4	6.7
Males per 100 Females	34	37	
Juveniles per 100 Females	48	37	

Population Objective (± 20%) :	2600 (2080 - 3120)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-46.0%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/19/2017

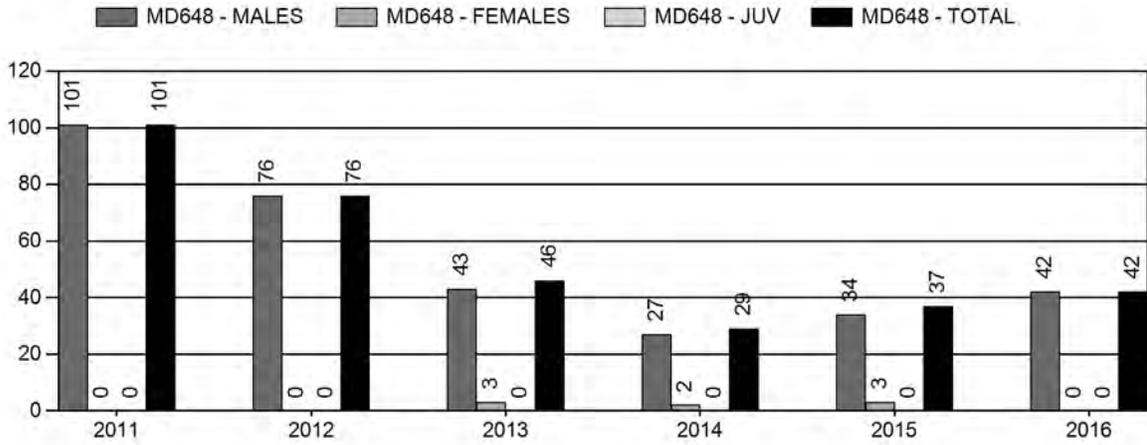
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	13%	18%
Total:	3%	4%
Proposed change in post-season population:	-9%	+7%

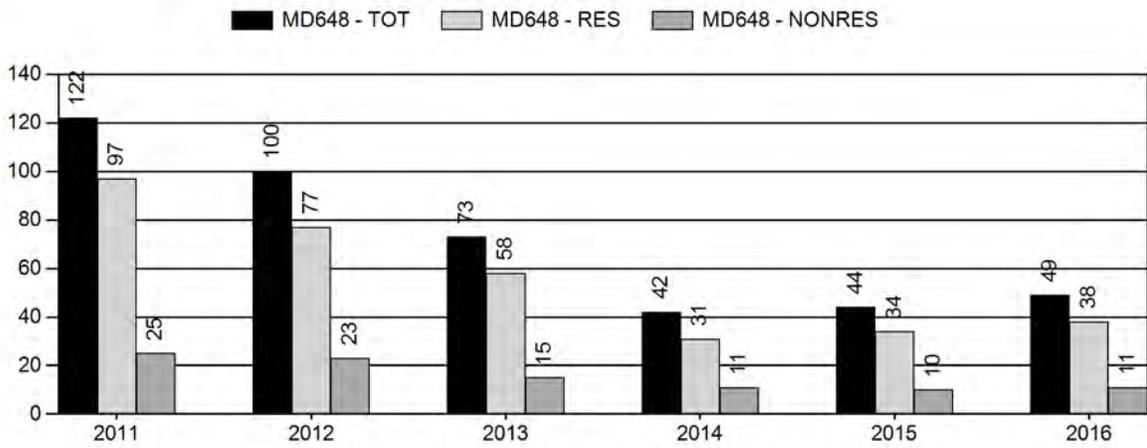
Population Size - Postseason



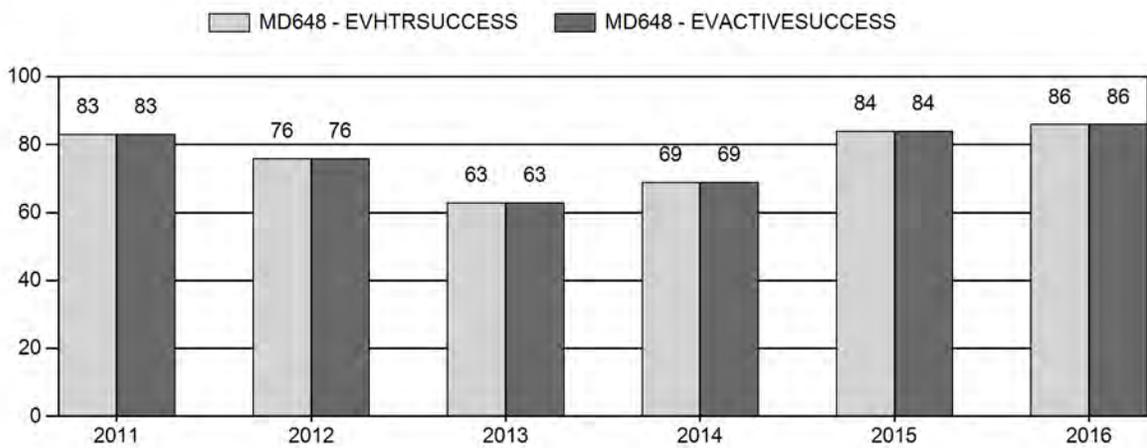
Harvest



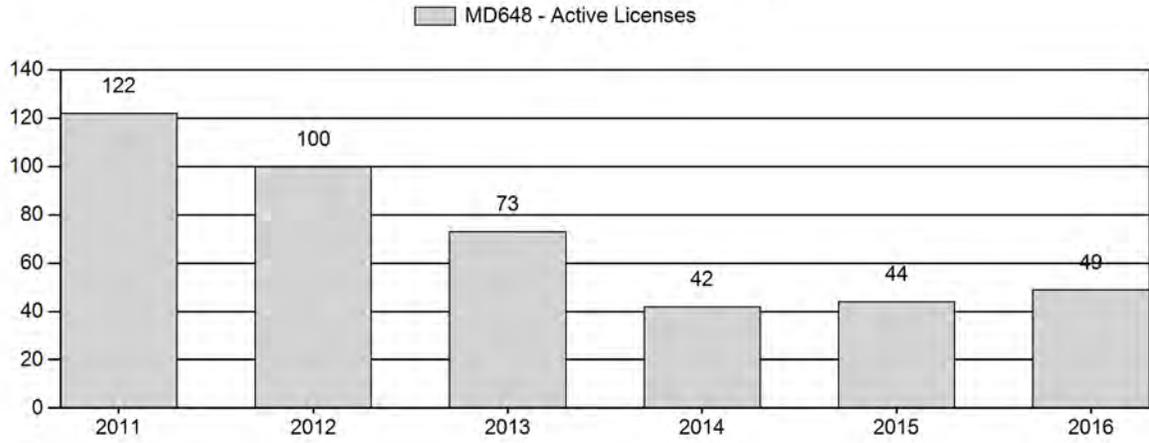
Number of Active Licenses



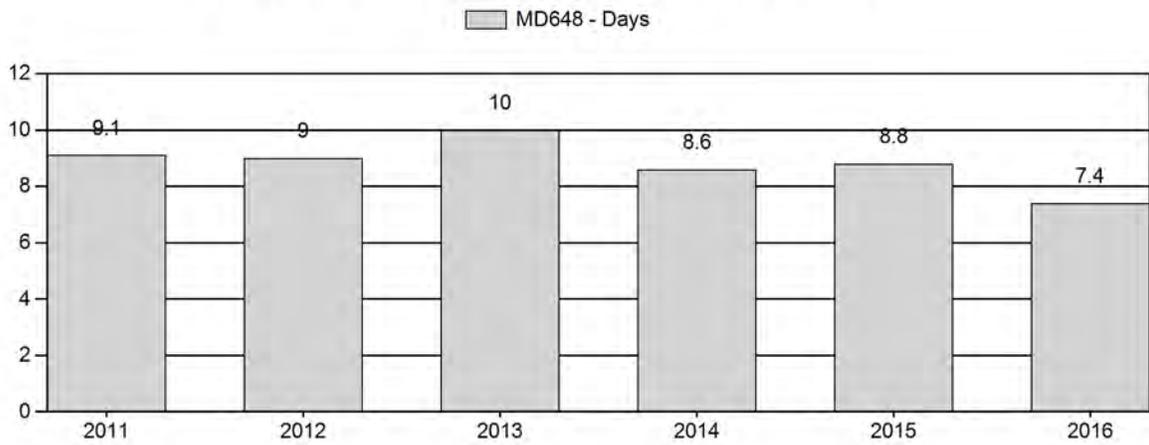
Harvest Success



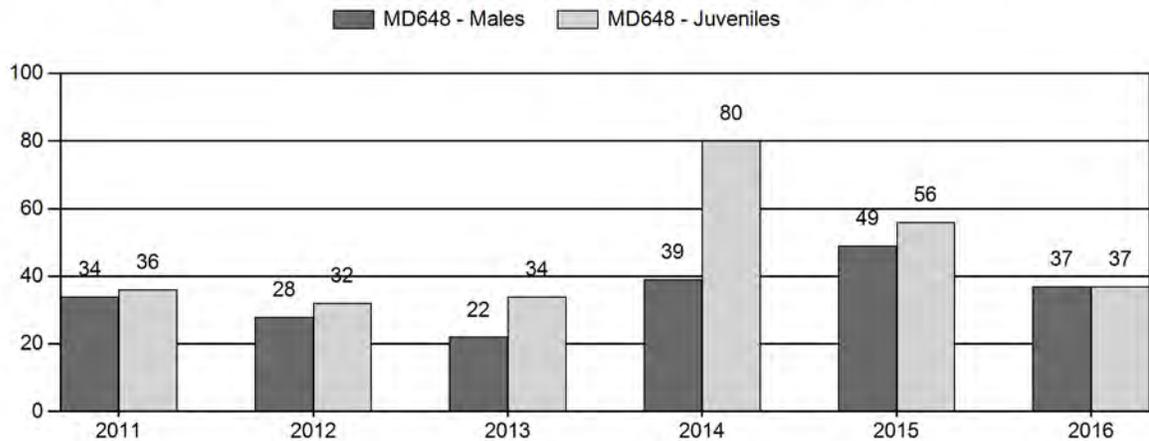
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD648 - BEAVER RIM

Year	Post Pop	MALES							FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	2+ CIs 1	2+ CIs 2	2+ CIs 3	2+ UnCIs	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	1,610	10	0	0	0	31	41	20%	119	59%	43	21%	203	389	8	26	34	± 7	36	± 8	27
2012	1,651	4	0	0	0	29	33	17%	120	62%	39	20%	192	362	3	24	28	± 7	32	± 7	25
2013	1,620	3	0	0	0	17	20	14%	90	64%	31	22%	141	362	3	19	22	± 7	34	± 9	28
2014	1,703	17	0	0	0	27	44	18%	114	46%	91	37%	249	936	15	24	39	± 8	80	± 13	58
2015	1,789	12	0	0	0	26	38	24%	77	49%	43	27%	158	710	16	34	49	± 12	56	± 13	37
2016	1,405	25	28	24	9	0	86	21%	235	58%	87	21%	408	410	11	26	37	± 5	37	± 5	27

**2017 HUNTING SEASONS
BEAVER RIM MULE DEER (MD 648)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
90	1	Oct. 1	Oct. 31	75	Limited quota	Any deer
Archery						
90		Sep. 1	Sep. 30			

Hunt Area	Type	Quota change from 2016
90	1	+25
Total	1	+25

Management Evaluation

Current Postseason Population Management Objective: 2,600

Management Strategy: Special

2016 Postseason Population Estimate: ~1,400

2017 Proposed Postseason Population Estimate: ~1,500

Management Issues

The Beaver Rim mule deer herd has a post-season population objective of 2,600 and has a special management designation. The population objective has been in place since 1994. Most recently, the objective was reviewed at a series of public meetings and by the Commission in 2015 and remained unchanged.

The landscape in this herd unit has remained relatively undisturbed compared to neighboring herd units. That said vegetation throughout much of the area has been in poor condition for a number of years due to drought. In particular, the mid-2000's, 2012, and 2013 were extremely dry. No vegetation data is collected in the herd unit, but casual observation indicated new growth was almost non-existent in both 2012 and 2013. In contrast, vegetation growth in 2015 appeared to be well above average and fairly average in 2016. It is believed recent drought conditions resulted in a substantial population decline from 2010 through 2013. Casual observations as well as the current population model suggest the population has been stable over the past 2 years.

Habitat/Weather

This population was once significantly larger than it currently is. The population declined dramatically in the early 1990's following a catastrophic winter die-off. Deer numbers then languished for over a decade. The population showed signs of a slow, steady increase from 2000

through 2010. A harsh winter in 2010 followed by extreme drought in 2012 and 2013 resulted in a population decline through 2013. While no vegetation data is collected in the herd unit, casual observations suggest vegetation production in 2015 was outstanding and average in 2016. Two years of good vegetation growth are believed to have contributed to a stable population in the herd unit.

Field/Harvest Data/Population

Due to low deer densities in the herd unit, classification sample sizes have generally been far below desired levels for the population. That said, deer seen during classification surveys declined consistently from 2010 through 2013 concurrent with a perceived population decline. In 2015 personnel classified 158 mule deer. The sample size was less than 1/4 of the desired number for accurately calculating confidence intervals around age/sex ratios. In 2016, 408 deer were observed during classification flights. This was the highest number of deer observed in over a decade. Low classification samples have been the norm for well over a decade in this herd. As such, all age/sex ratio data should be viewed with caution. The classification sample in 2016 yielded a fawn/doe ratio of 37/100. This was below the 5-year average of 48/100. The buck/doe ratio in 2016 was 37/100 and was close to the 5-year average of 32/100 but well below the 2015 ratio of 49/100. The buck/doe ratio in this herd unit does tend to fluctuate significantly from year to year, likely an artifact of small sample sizes. In 2016 personnel began distinguishing between mature buck classes during surveys. As this data accumulates it should provide another measure of trophy hunting potential in the area. For 2016, 9 of 61 (15%) mature bucks classified were Class III bucks.

Both the days/animal statistic and Type 1 license success indicate hunting improved from 2013 to 2016 annually. During that time period hunter success increased from 63% in 2013 to 86% in 2016. At the same time the days/animal decreased from 10 to 7.4 (Figs. 1 and 2). Taken in combination, harvest statistics indicate hunt quality was better in 2016 than it was over the previous 5 year period.

Figure 1. Type 1 license success in deer area 90.

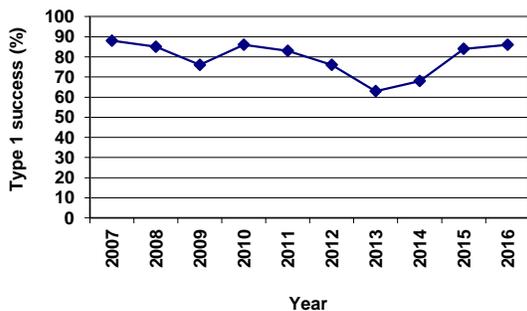
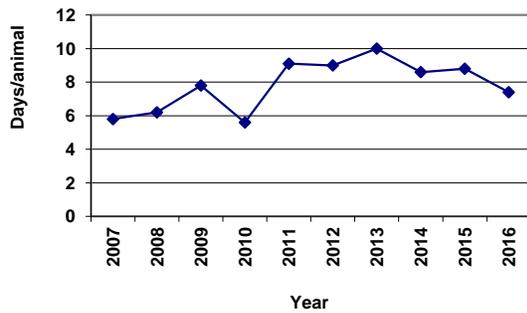


Figure 2. Type 1 license days/animal statistic

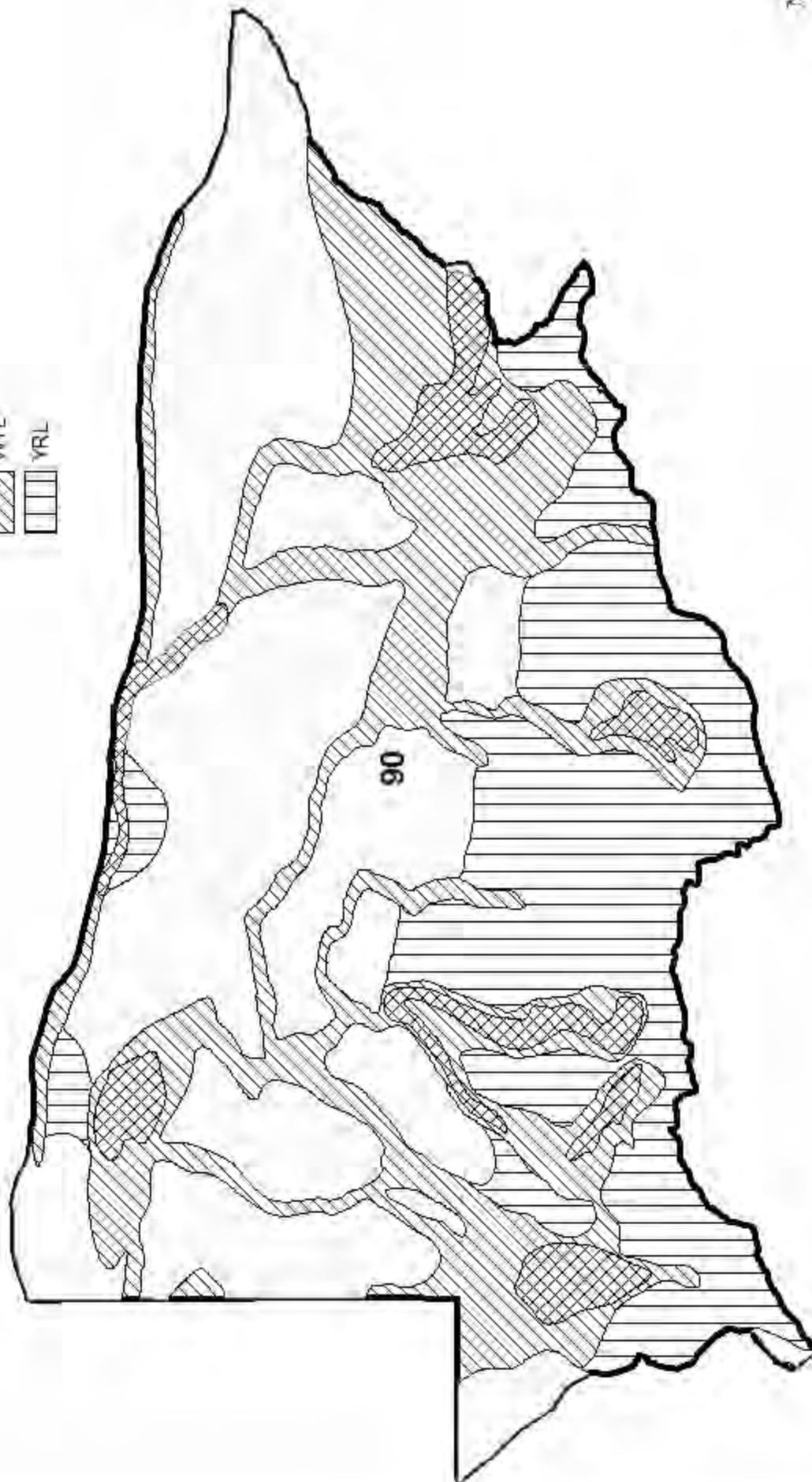
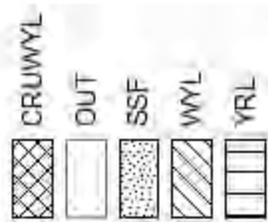


A spreadsheet model was developed for this population in 2012. The addition of 2013 and 2014 data did not dramatically change the estimates produced by the model. The SCJ/SCA model appeared to provide the best fit in both 2013 and 2014, however, with the addition of data in 2015, the model inexplicably produced an estimate 53% higher than what was previously modeled for 2015. The same trend held true with the addition of 2016 data. In the current spreadsheet both the CA/CJ and SCJ/SCA produce trends showing unmitigated growth over the life of the model. These trends are not biologically realistic. As such, the TSJ/CA model was selected as the population estimator in both 2015 and 2016. Although population trends are the same between the 2 years, the 2016 model estimates are 15% lower than estimates from the 2015 model. While the TSJ/CA model has a higher AIC value than the other 2 versions, it does provide a better fit to the data. The 2016 population estimate is approximately 1,400 deer and is 46% below objective. Given average reproduction and survival, the population is expected to increase around 7% to 1,500. This model is considered poor quality due to the fact age/sex ratio data are based on very small samples and classification data are completely missing several years.

Management Summary

All factors indicate this population declined significantly from 2010 through 2013 then grew in 2014. It appears the population has been relatively stable over the past couple of years. Although the population is still well below objective, some other factors indicate hunt quality improved over the past 2 years. In response, Type 1 licenses will be increased by 25 for 2017 to provide more opportunity in the area. Given average winter conditions, it is expected this population will increase slightly to 1,500 in 2017.

**Beaver Rim Mule Deer Seasonal Range
Hunt Area 90
Revised 2012**



2016 - JCR Evaluation Form

SPECIES: Mule Deer

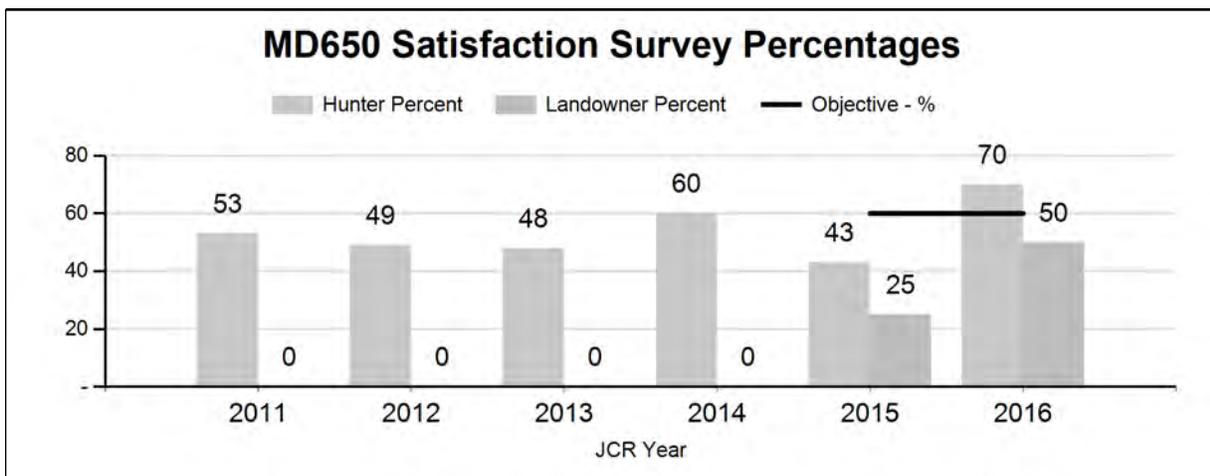
PERIOD: 6/1/2016 - 5/31/2017

HERD: MD650 - CHAIN LAKES

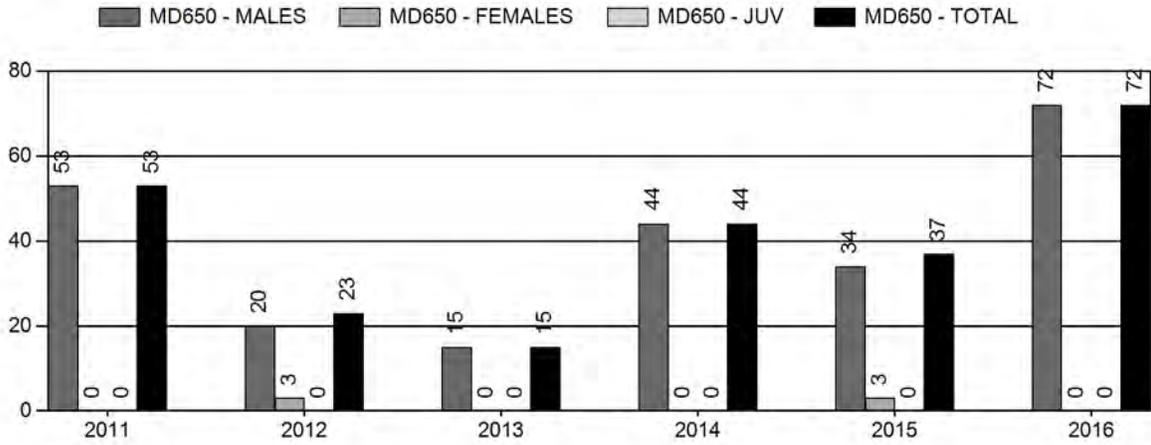
HUNT AREAS: 98

PREPARED BY: GREG HIATT

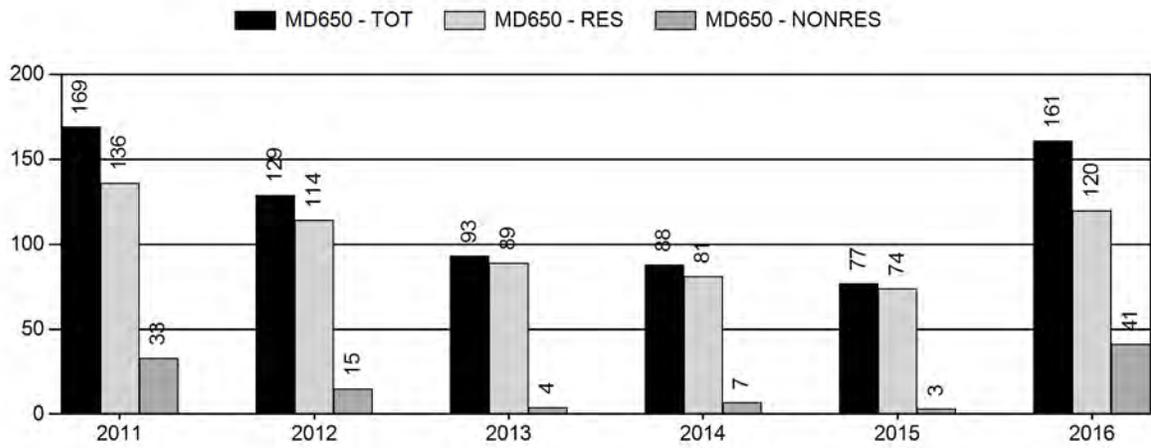
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Hunter Satisfaction Percent	51%	70%	65%
Landowner Satisfaction Percent	25%	50%	50%
Harvest:	34	72	50
Hunters:	111	161	110
Hunter Success:	31%	45%	45%
Active Licenses:	111	161	110
Active License Success:	31%	45%	45%
Recreation Days:	448	643	400
Days Per Animal:	13.2	8.9	8
Males per 100 Females:	0	0	
Juveniles per 100 Females	0	0	
Satisfaction Based Objective			60%
Management Strategy:			Recreational
Percent population is above (+) or (-) objective:			0%
Number of years population has been + or - objective in recent trend:			5



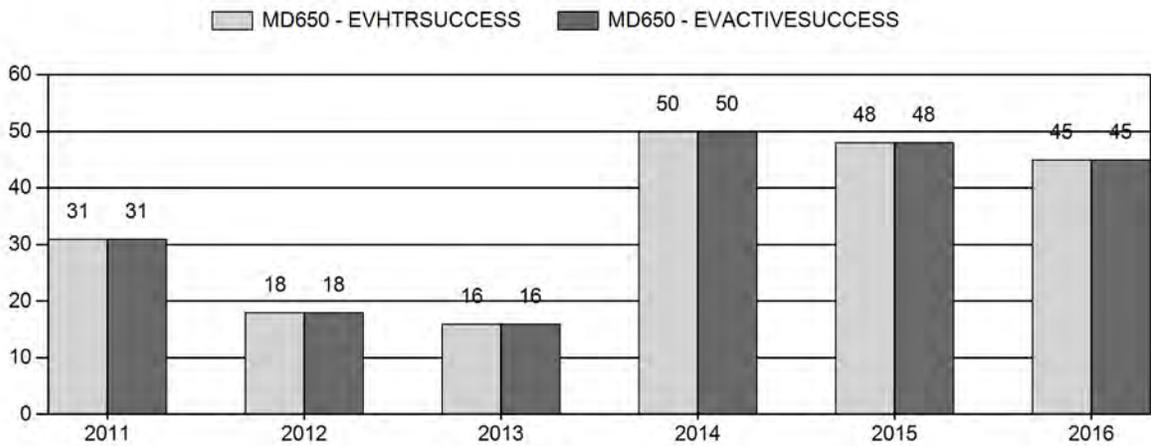
Harvest



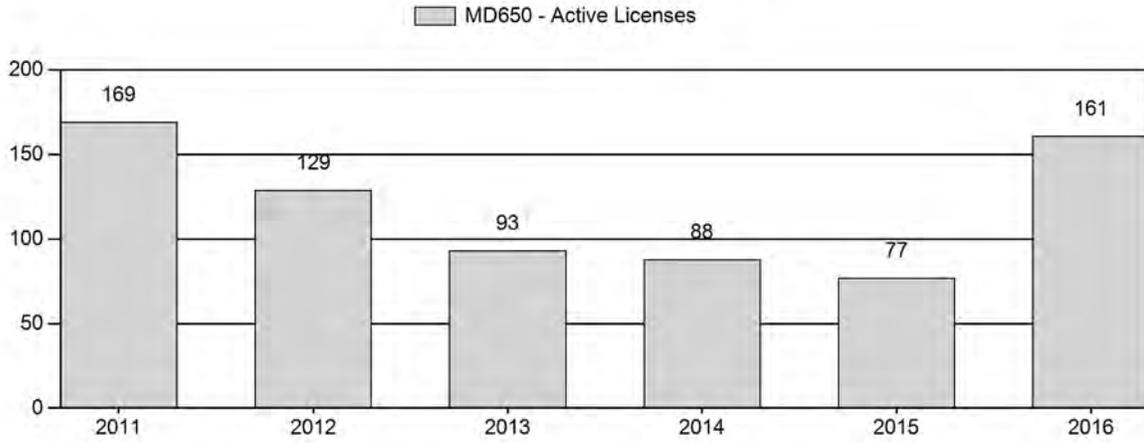
Number of Active Licenses



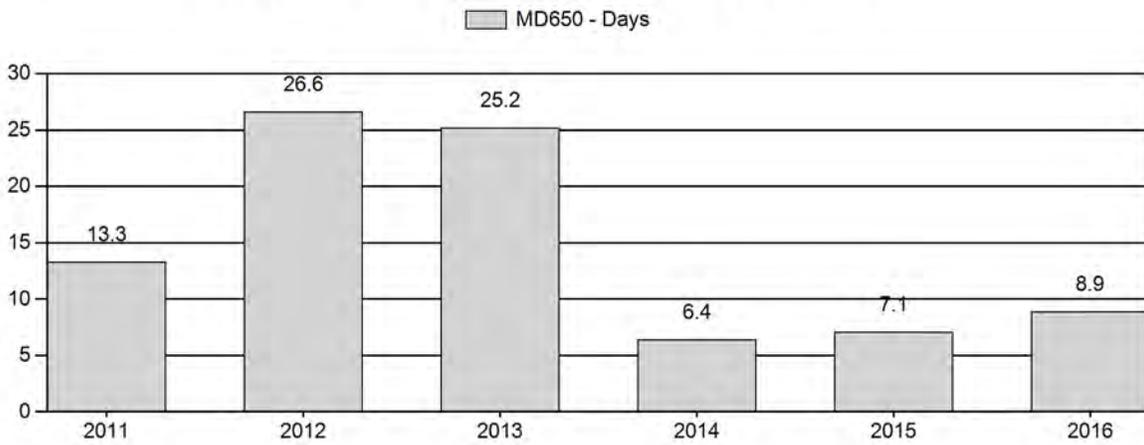
Harvest Success



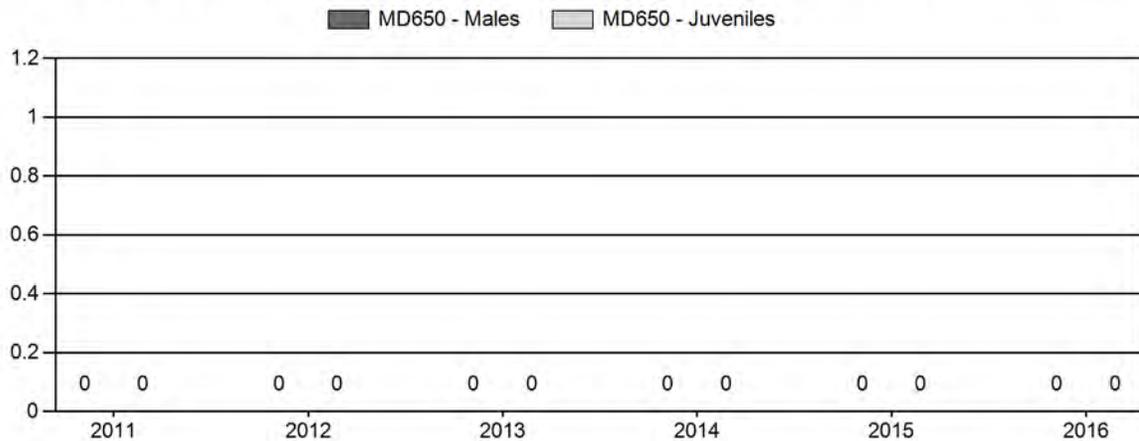
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD650 - CHAIN LAKES

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	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2011	410	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2012	0	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2013	0	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2014	0	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2015	0	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2016	0	0	0	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0

**2017 HUNTING SEASONS
CHAIN LAKES MULE DEER HERD (MD650)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
98		Oct. 15	Oct. 20		General	Antlered mule deer or any white-tailed deer, archery or muzzleloading firearms only
Archery 98		Sep. 1	Sep. 30			

Hunt Area	License Type	Quota change from 2016
98	Gen	Shorten by 1 day.
Herd Unit Total		Shorten by 1 day.

Management Evaluation

Current Hunter/Landowner Satisfaction Management Objective: 60% hunter/landowner satisfaction; 35% hunter success

Management Strategy: Recreational

2016 Hunter Satisfaction Estimate: 70%

2016 Landowner Satisfaction Estimate: 50%

Most Recent 3-year Running Average Hunter Satisfaction Estimate: 58%

Most Recent 2-year Running Average Landowner Satisfaction Estimate: 37%

Herd Unit Issues

Historically, the management objective for the Chain Lakes Mule Deer Herd Unit was a post-season population size objective of 500 deer, but dispersal of these deer in small bands across hundreds of square miles of sagebrush makes both aerial and ground classifications prohibitively expensive. Without reliable estimates of herd ratios, herd size could not be modeled and objectives based on population size could not be quantitatively evaluated. A hunter/landowner satisfaction objective was adopted following public review in 2015.

Hunters and Department personnel have expressed concern that improved range, accuracy and faster reloading times of modern in-line muzzle-loading firearms may increase hunter success, rather than increases in numbers of deer. If true, a redefinition of legal weapons allowed in this season may be necessary in the future to prevent excessive harvests from these vulnerable small bands of deer.

Weather

Record precipitation was received in 2015, producing exceptional vegetative growth and good fawn survival. This was followed by good precipitation again in spring of 2016, allowing some recovery of winter ranges from the severe drought of 2012 and 2013. Condition of mule deer going into the 2016-17 winter is expected to have been excellent. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Despite improved condition of both animals and forage, winter losses are expected to be above average.

Habitat

Only one shrub transect has been established in this herd unit, on the Chain Lakes WHMA, but was not read in 2016. Shrub production presumably improved with the increased moisture and many sagebrush plants that had appeared dead from drought in 2013 produced small but viable sprouts of green growth in 2015 and 2016. While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional due to the increased precipitation.

Field Data

All classification samples for this herd have been statistically inadequate and no posthunt classification data were collected again this year. Increased moisture improved fawn production in neighboring herds and fawn production in this desert herd is presumed to have improved as well. Despite increased fawn production and survival, the herd is still expected to be below objective size due to losses during 2011-13.

Harvest Data

General license seasons with weapons restrictions allowed this herd to recover from severe losses in the past and that strategy is continued in 2017. These combined muzzleloader and archery seasons, used for the past 34 years, have been popular with both resident and nonresident hunters, with hunter numbers jumping to 161 in 2016. This was the highest hunter numbers since 2011, and more than double the number reported in 2015.

Hunter success was slightly less than seen in 2015 and 2014, at 45 percent. The average number of days hunted for each harvested deer rose slightly, to almost 9 days, probably a reflection of the increased number of hunters rather than a decrease in deer. Unlike in 2015, no antlerless deer were reported in the 2016 harvest, a possibility created by youth hunters who were allowed to harvest any deer. These data suggest buck numbers were at least stable the past year.

Population

This herd consists of small bands of deer residing yearlong in pockets of suitable habitat in the eastern Red Desert. No reliable population estimate is available for this herd, nor is one likely under current manpower and budget constraints. A simplistic population model was developed that supported the reported harvests, but its accuracy could not be evaluated because of the absence of classification data and limited harvest field check samples. Instead, population trends are monitored through harvest data and classification ratios of neighboring herds.

With the adoption of a hunter/landowner satisfaction objective for this herd, major landowners were personally queried on their satisfaction with deer numbers in 2016. Two of four who responded were satisfied, the other two still wishing to see more mule deer.

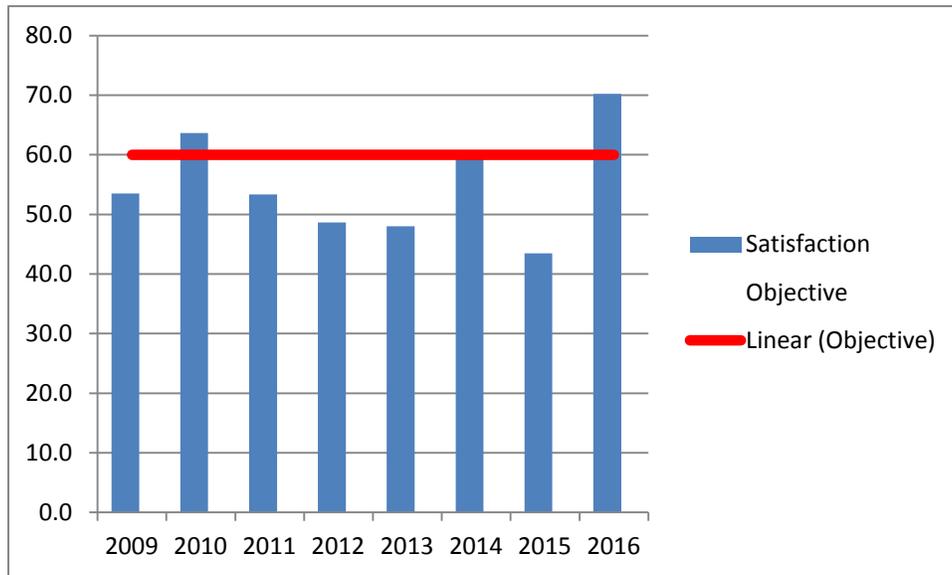


Figure 1. Hunter satisfaction for the Chain Lakes Mule deer Herd.

Hunter satisfaction exceeded the objective of 60 percent for the first time since losses in 2011 winter (Figure 1.). Hunters have been mostly dissatisfied with the number of deer they see in this herd for the past six years. While hunters were mostly satisfied in 2016, landowners are largely not satisfied with current deer numbers in this herd and harvests should remain conservative, particularly in light of the possibility of increased losses during the past winter.

A secondary objective of 35 percent hunter success was also adopted for this herd in 2015. As shown in Figure 2, the past three hunting seasons attained that objective.

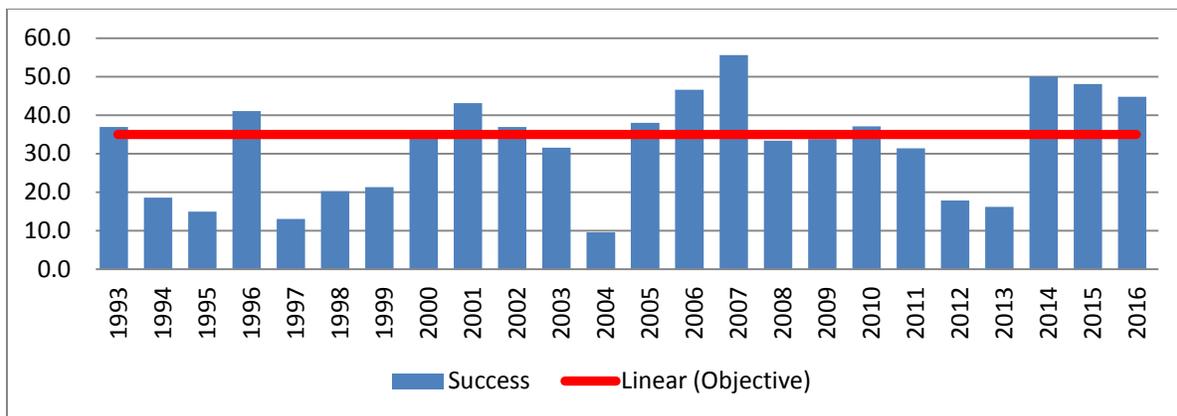
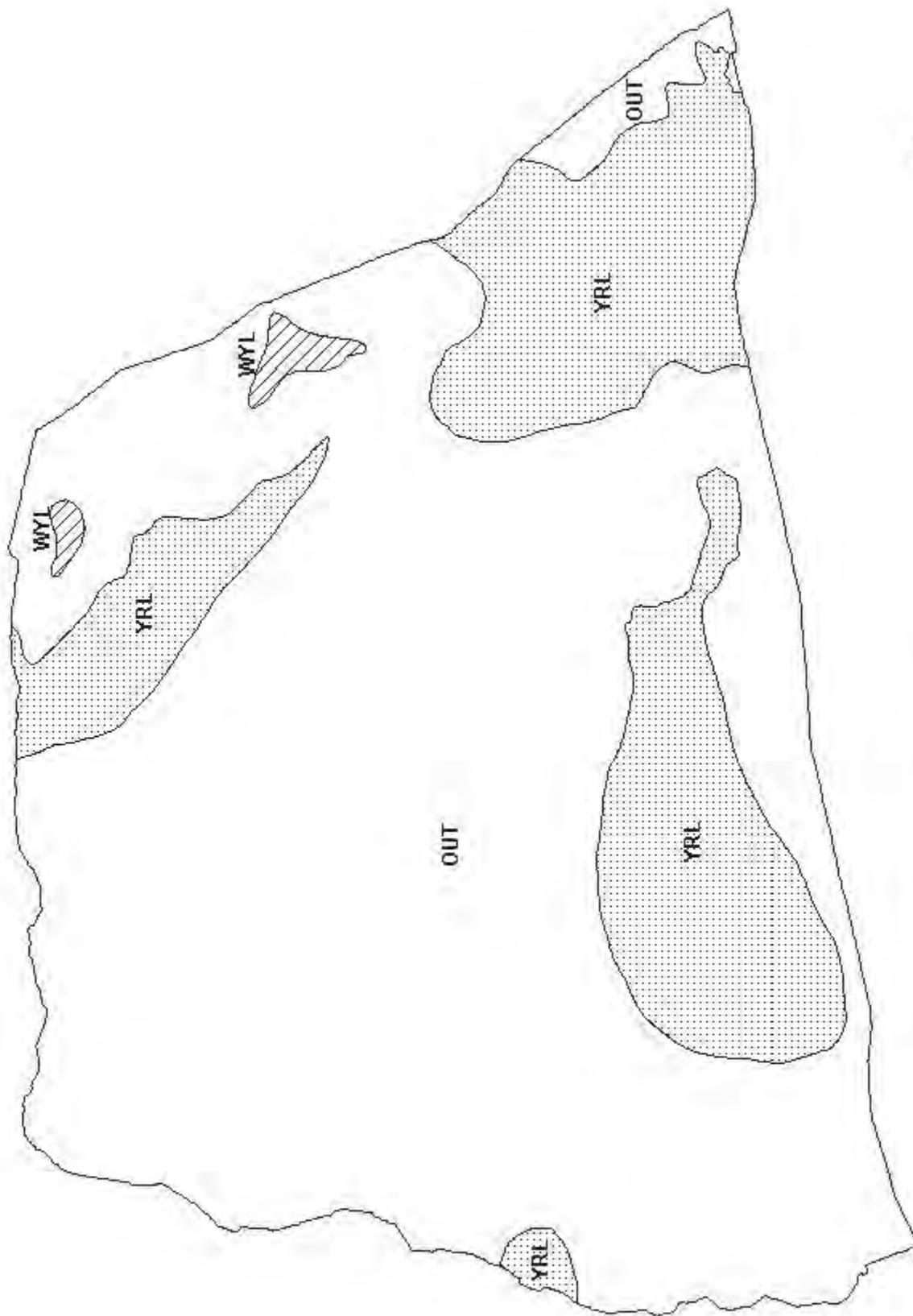


Figure 2. Hunter success for the Chain Lakes Mule deer Herd.

Management Evaluation

Deer in this desert herd unit have few options for finding green forage during dry conditions, with no high elevation habitats available. Body condition of deer entering the 2016-17 winter is expected to have improved because of improved precipitation, but survival through the 2016-17 winter may be less than average due to winter severity.

Expected harvest from the 2017 season would be about 50 antlered deer by roughly 110 hunters. The opening date is the same used in the past 21 years and opens simultaneously with neighboring areas in Region E. The closing date is shortened by one day to align with general license hunts in neighboring areas in Region E. As in 21 of the previous 22 years, most hunters during the regular season would be restricted to harvesting only antlered deer. Opportunities for archery hunting will again be available during the October season in addition to the special archery season in September.



Mule Deer (MD650) - Chain Lakes
HA 98
Revised - 3/94

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL635 - WIGGINS FORK

HUNT AREAS: 67-69, 127

PREPARED BY: GREG ANDERSON

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	6,052	5,410	5,500
Harvest:	1,092	974	900
Hunters:	2,628	2,500	2,450
Hunter Success:	42%	39%	37%
Active Licenses:	2,714	2,644	2,550
Active License Success	40%	37%	35%
Recreation Days:	17,778	18,492	16,500
Days Per Animal:	16.3	19.0	18.3
Males per 100 Females:	12	29	
Juveniles per 100 Females	25	29	

Trend Based Objective (± 20%) 5,500 (4400 - 6600)

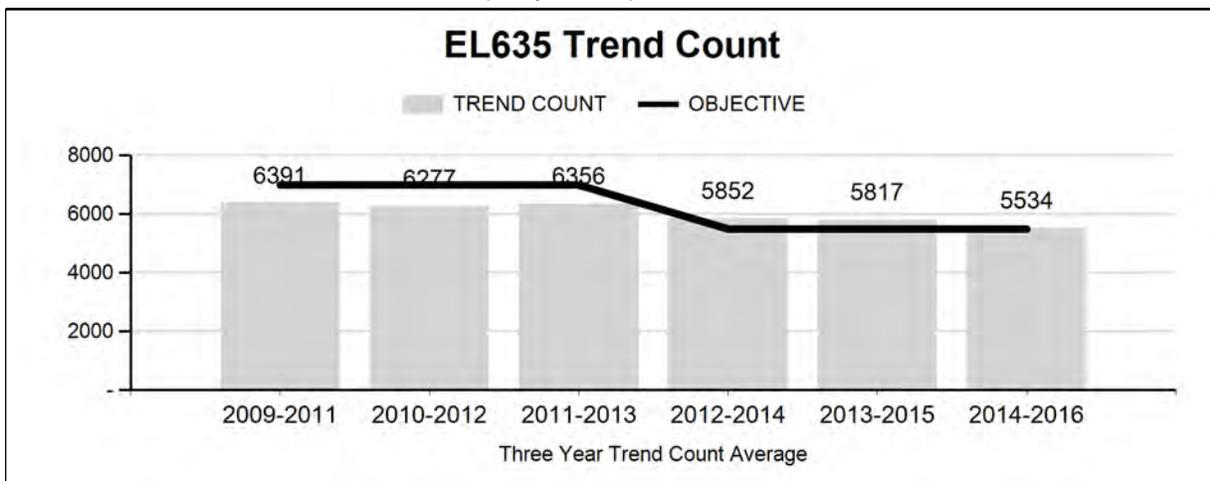
Management Strategy: Recreational

Percent population is above (+) or (-) objective: -1.6%

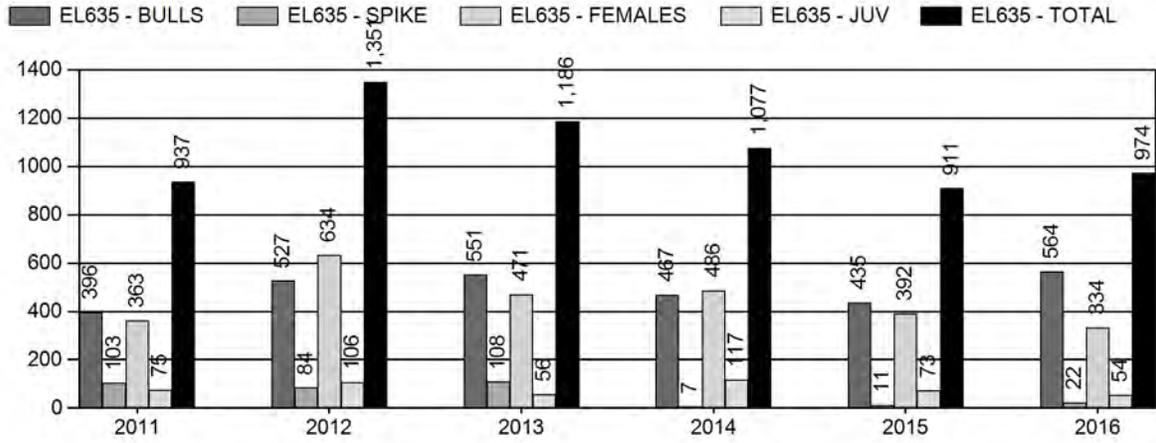
Number of years population has been + or - objective in recent trend: 5

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

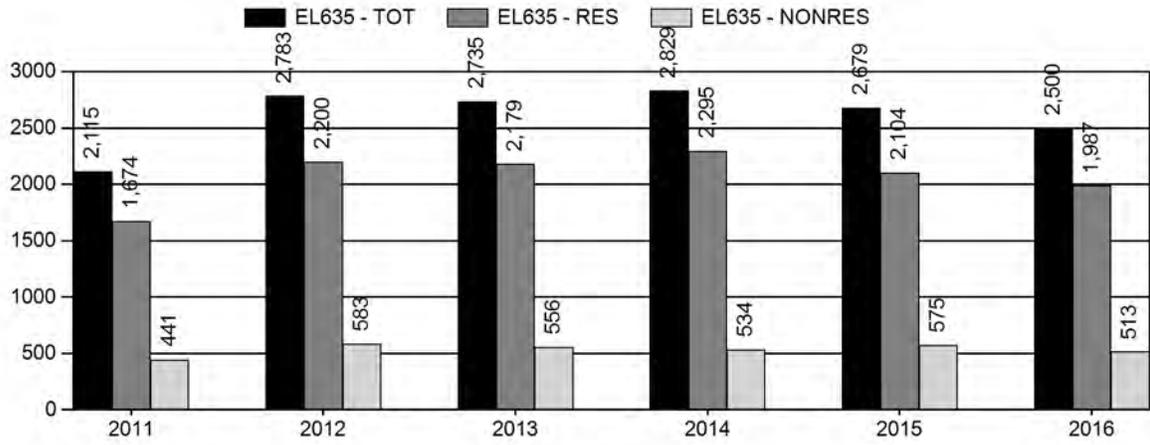
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



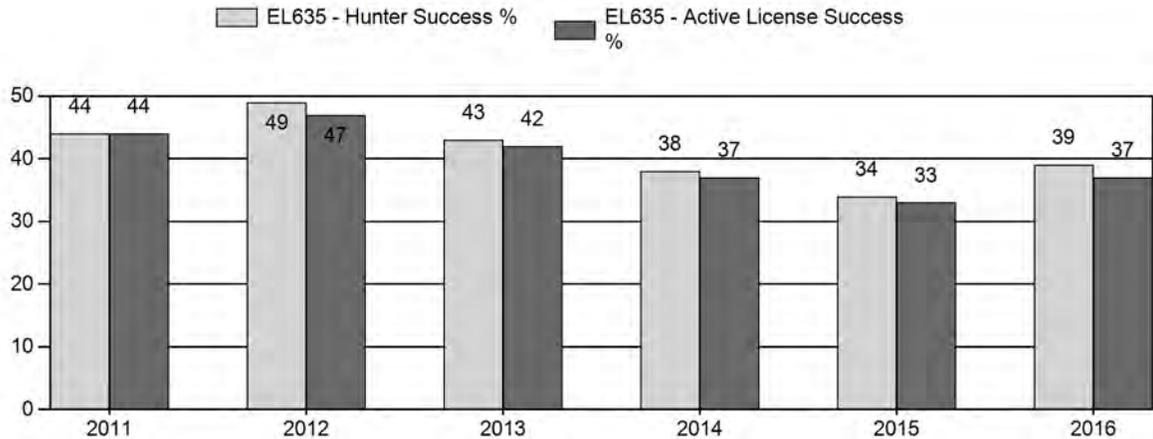
Harvest



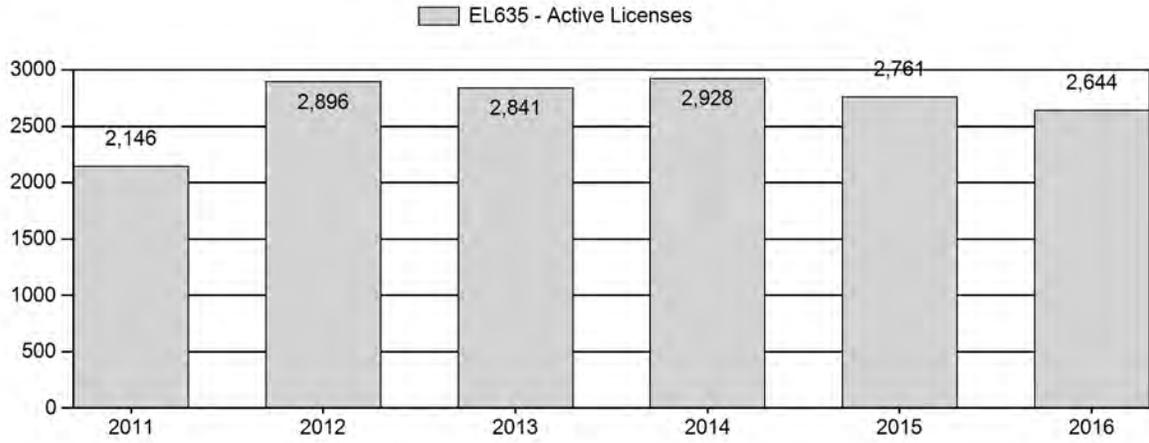
Number of Hunters



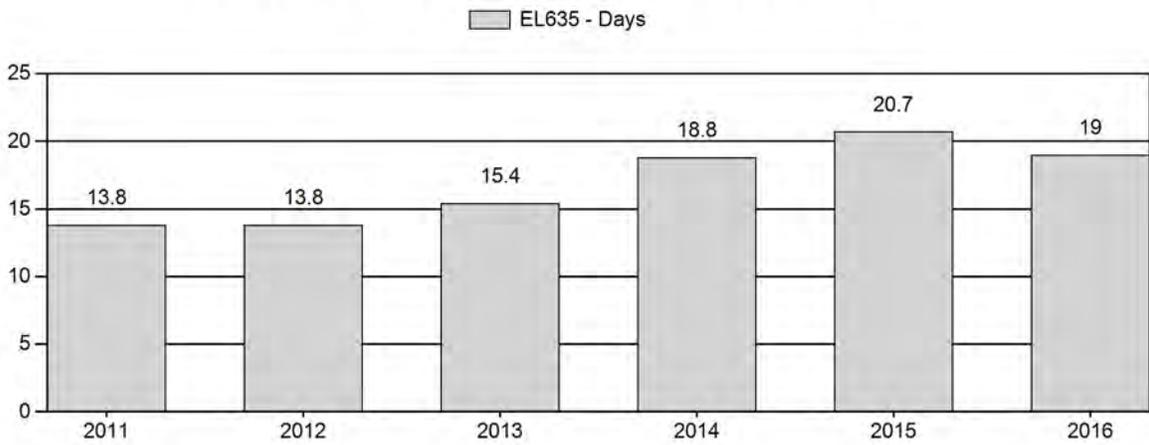
Harvest Success



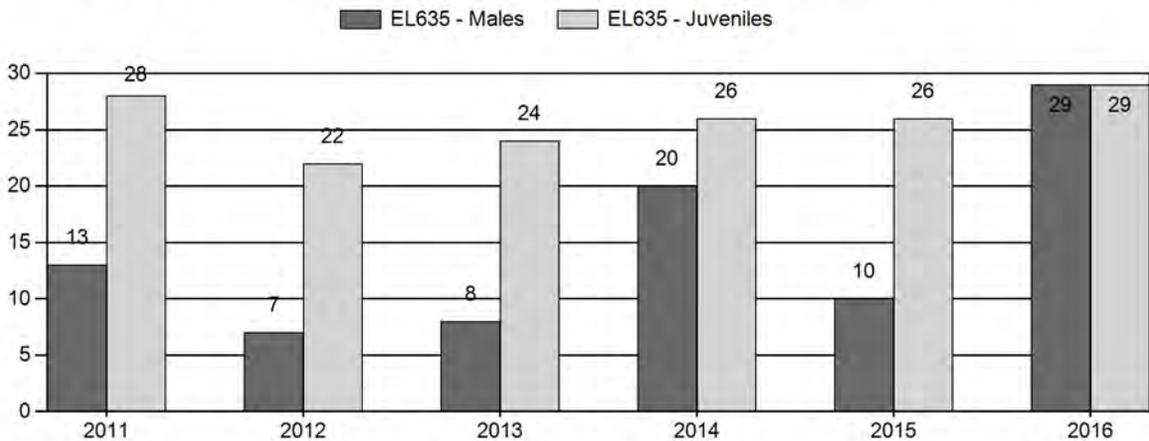
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL635 - WIGGINS FORK

Year	Post 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	9,083	202	28	230	9%	1,802	71%	498	20%	2,530	321	11	2	13	± 1	28	± 2	25
2012	0	138	22	160	6%	2,143	77%	463	17%	2,766	0	6	1	7	± 0	22	± 0	20
2013	0	135	23	158	6%	1,881	76%	451	18%	2,490	0	7	1	8	± 0	24	± 0	22
2014	0	304	256	560	14%	2,817	69%	720	18%	4,097	0	11	9	20	± 0	26	± 0	21
2015	0	120	166	286	8%	2,741	73%	705	19%	3,732	0	4	6	10	± 0	26	± 0	23
2016	0	311	480	791	18%	2,731	63%	804	19%	4,326	0	11	18	29	± 0	29	± 0	23

**2017 HUNTING SEASONS
WIGGINS FORK ELK (EL 635)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
67		Oct. 1	Oct. 10		General	Antlered elk
67		Oct. 11	Oct. 31		General	Antlered elk, spikes excluded
67	4	Nov. 1	Dec. 15	150	Limited quota	Antlerless elk
67	6	Nov. 15	Dec. 15	400	Limited quota	Cow or calf valid west of the Wiggins Fork and west of the East Fork downstream from the confluence with the Wiggins Fork
67, 68, 69	9	Sep. 1	Sep. 30	125	Limited quota	Any elk, archery only
68		Oct. 1	Oct. 10		General	Antlered elk
68		Oct. 11	Oct. 31		General	Antlered elk, spikes excluded
68	6	Nov. 1	Nov. 30	150	Limited quota	Cow or calf
69		Oct. 1	Oct. 31		General	Any elk
69	6	Oct. 1	Nov. 30	50	Limited quota	Cow or calf
127		Oct. 1	Oct. 31		General	Any elk
127		Nov. 1	Dec. 31		General	Antlerless elk
Archery 67, 68, 69	All	Sep. 15	Sep. 30			Valid in the entire area(s)
127	All	Sep. 1	Sep. 30			Valid in the entire area(s)

Hunt Area	Type	Quota change from 2016
67	4	-50
68	6	-50
69	6	-50
Total		-150

Management Evaluation

Current mid-winter trend count management objective: 5,500

Management strategy: Recreational

2016 trend count: 5,410

Most recent 3-Year running average trend count: 5,534

Management Issues

The Wiggins Fork elk herd is managed based on a winter trend count. The trend count management objective has been in place since 2002. The original, 2002, objective sought to maintain 6,000 to 7,000 wintering elk in the herd. The number of elk was determined by multiplying an annual trend count by a constant sightability factor to calculate a population estimate. Over time, the extra step of calculating an estimate confused the public. In response, the objective was reviewed in 2014 and the Department decided to base a new objective on actual trend count numbers eliminating the use of a sightability factor and population estimate. The new objective set in 2014 is to maintain a mid-winter count of 5,500 elk in the herd unit with a recreational management strategy. Annual trend counts are conducted each January to assess the population.

The Wiggins Fork elk herd occupies the upper Wind River drainage west of the Wind River Reservation (WRR). There is good documentation elk wintering in the herd unit migrate into a number of other northwest Wyoming elk herd units in the summer and early fall. Given the amount of interchange with neighboring herd units, the number of elk present can vary significantly throughout the hunting season. Seasons structured to reduce the elk population generally need to include antlerless elk harvest after mid-November to allow elk to migrate into the herd unit from neighboring areas.

For the past 3 hunt seasons, limitations in hunt areas 67 and 68 have included a ‘spikes excluded’ restriction. This was originally put in place at the request of area outfitters for the 2014 season. At the time, there was no apparent management or biological necessity to have the limitation as the population, recruitment, and bull harvest were all relatively stable and indicative of a healthy elk herd. Despite the lack of necessity, the Department agreed to implement the restriction for up to 3 years in areas 67 and 68. In the 5 years prior to the ‘spikes excluded’ restriction, spikes constituted on average 18% of the male harvest in these areas. In 2015 and 2016 with the ‘spikes

excluded' restriction, spikes constituted 2% of the male harvest in areas 67 and 68 (by youth hunters). Classification data reveals the spike/cow ratio averaged 7/100 in the 5 years prior to having 'spikes excluded'. From 2014 through 2016 the spike/cow ratio averaged 9/100. This is a minimal increase and within the range of variability for the ratio data. From 2011 through 2013 an average of 71% of area 67 hunters were satisfied/very satisfied. In contrast, from 2014 through 2016 with the 'spikes excluded' restriction only 60% of area 67 hunters were satisfied/very satisfied. Interestingly, hunter satisfaction decreased during the 'spikes excluded' seasons despite nearly identical adult bull harvest in the herd unit when compared to the 3 years prior to 'spikes excluded'. In the fall of 2016, a total of 102 hunting parties were asked about their preference regarding the 'spikes excluded' restriction. Of the contacts, 36% preferred to keep the 'spikes excluded' restriction, 31% preferred to remove the restriction, and 32% indicated no preference. Despite information indicating no need to restrict yearling bull harvest there was significant opposition to removing the restriction for the 2017 season. In particular, Dubois area outfitters expressed a strong desire to maintain the spikes excluded limitation. Outfitters circulated a petition requesting the restriction remain in effect and collected over 300 signatures supporting their viewpoint. As a compromise to provide recreational opportunity and satisfy a large group of publics requesting continuation of the 'spikes excluded' restriction, the 2017 season in hunt areas 67 and 68 will include 10 days of unrestricted antlered elk harvest followed by a 'spikes excluded' restriction for the remainder of the season. This will allow unrestricted recreational opportunity for the first part of the season when more hunters are present. It will also limit harvest of yearling bulls later in the season when elk are migrating into the herd unit from adjacent hunt areas where managers and publics have concerns about bull numbers and quality.

Habitat/Weather

Herbaceous vegetation production was quite high throughout the herd unit in both 2015 and 2016. Following 2 years of extreme drought, vegetation production increased significantly in 2014 and remained quite good in 2015 and 2016. In 2016 production averaged 451 lbs/acre across monitoring sites on elk winter range. This was much lower than 639 lbs/acre in 2015, but still above the 5-year average of 440 lbs/acre. Although no vegetation monitoring is conducted at high elevation summer range, it appeared vegetation growth was good on summer and transitional ranges as well. Fall weather was warm and dry throughout much of the hunting season. The combination of abundant feed and mild, fall weather resulted in elk entering winter in excellent body condition. Snowfall in December forced elk onto low elevation winter ranges. Unusually deep snow and colder than average temperatures resulted in bull elk remaining on lower elevation winter ranges throughout the winter. Winter conditions continued to be very harsh through February with much of the winter range completely snow covered. A number of long-time residents of the area have commented they cannot recall a year with as much low elevation snow cover as this year.

Field/Harvest Data/Population

Trend counts to estimate the wintering population are conducted each January. Trend count numbers declined from 1997 through 2003. From 2004 through 2007, the population appeared to stabilize. Winter count numbers fluctuated year-to-year but did not indicate any consistent population trends. In 2008, personnel counted a significantly higher number of elk (5,504). This was the highest count since 1998. In 2009 and 2010, personnel again counted a significantly

greater number of elk; 6,110 and 6,023 respectively (Fig. 1). In 2011 the trend count increased significantly again to 7,039. Following a liberal season in 2012, the trend count declined to 5,768. The count increased again in 2013 by 500 elk to 6,260 followed by a decline to 5,528 in 2014 (Fig. 1). The 2016 count of 5,410 was quite close to the 2014 and 2015 counts and indicates the herd has been fairly stable over the past 3 years.

The trend count objective includes sub-objectives for 3 areas in the herd unit. The sub-objectives were set to recognize reasonably well-defined, spatially segregated elk groups wintering in the area. The sub-groups include the East Fork, Dunoir/Spring Mountain, and South Dubois groups. While there is a significant amount of interchange, elk from the three groups tend to segregate themselves on winter range and utilize different spring/fall migration routes. Since elk in the three sub-groups are subjected to different demographic influences, sub-objectives were set for each of the three groups (Table 1). One of the sub-groups (East Fork) has been below objective for the past decade. The 2015 count for this group was the highest in over 15 years but the 2016 count of 1,591 was similar to the 4 year period prior to 2015. This herd sub-unit continues to remain below the desired objective. The Dunoir/Spring Mtn sub-group has been above objective for the past 7 years. Liberal cow harvest in November and December has been structured to target this sub-group. The South Dubois segment has historically been above objective. However, personnel counted significantly fewer elk in the this sub-group each of the past 2 years. The sub-herd is currently at objective.

Between 2006 and 2009, recruitment in this herd unit was well below historic levels (Fig. 2). Despite low recruitment between 2006 and 2009, the number of elk counted still increased. In 2010 and 2011 recruitment increased significantly and likely contributed to some of the trend count increase. Since 2012, recruitment increased annually and the calf/cow ratio was 29/100 in 2016. This was the highest recruitment in over 5 years.

Figure 1. Wiggins Fork Elk trend count

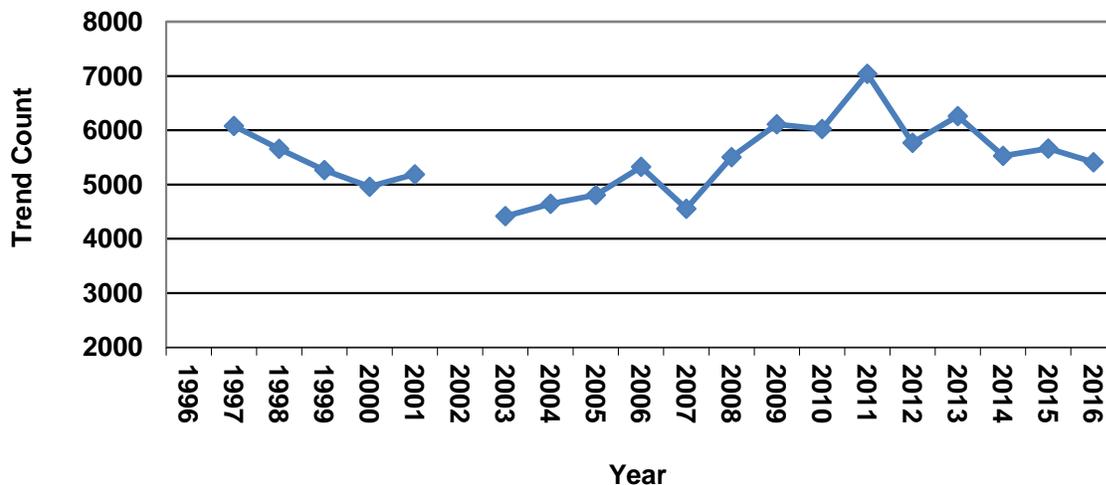
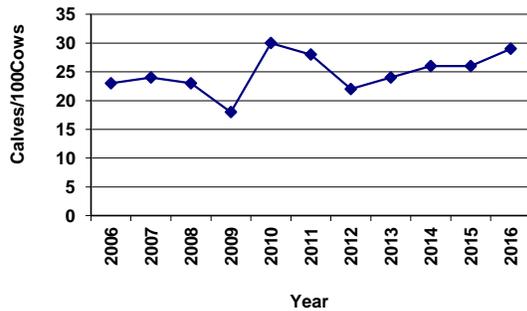


Table 1. Trend count numbers from sub-groups in the Wiggins Fork Elk Herd Unit.

Year	East Fork	Dunoir/Spring Mountain	South Dubois	Wiggins Fork Herd Unit	
	Objective: 2,200 Count	Objective: 2,200 Count	Objective: 1,100 Count	Objective: 5,500 Count	3 Year Average
1998	2154	2457	1046	5657	
1999	2180	2109	977	5266	
2000	1883	2014	1061	4958	5294
2001	2100	1818	1269	5187	5137
2002	nc	nc	nc	nc	5073
2003	1857	1666	895	4418	4803
2004	1832	1601	1211	4644	4531
2005	1669	1807	1331	4807	4623
2006	1623	2297	1406	5326	4926
2007	1478	1634	1441	4553	4895
2008	1294	2620	1590	5504	5128
2009	1457	3186	1467	6110	5389
2010	1930	2704	1389	6023	5879
2011	1765	3680	1594	7039	6391
2012	1834	2580	1354	5768	6277
2013	1713	3022	1525	6260	6356
2014	1620	2551	1357	5528	5852
2015	2118	2497	1048	5663	5817
2016	1591	2715	1104	5410	5534

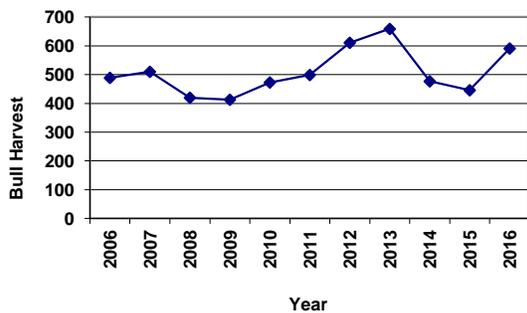
Figure 2. Ten year recruitment history in the Wiggins Fork Elk Herd.



Unfortunately, bull/cow ratio data for this herd are very unreliable. Classification surveys have typically been conducted on the ground throughout the DAU. Since mature bulls generally winter in timber at the fringes of the winter ranges, the number of bulls seen is quite low and mature bull/cow ratios for the herd are not considered accurate. Starting in 2014 personnel used

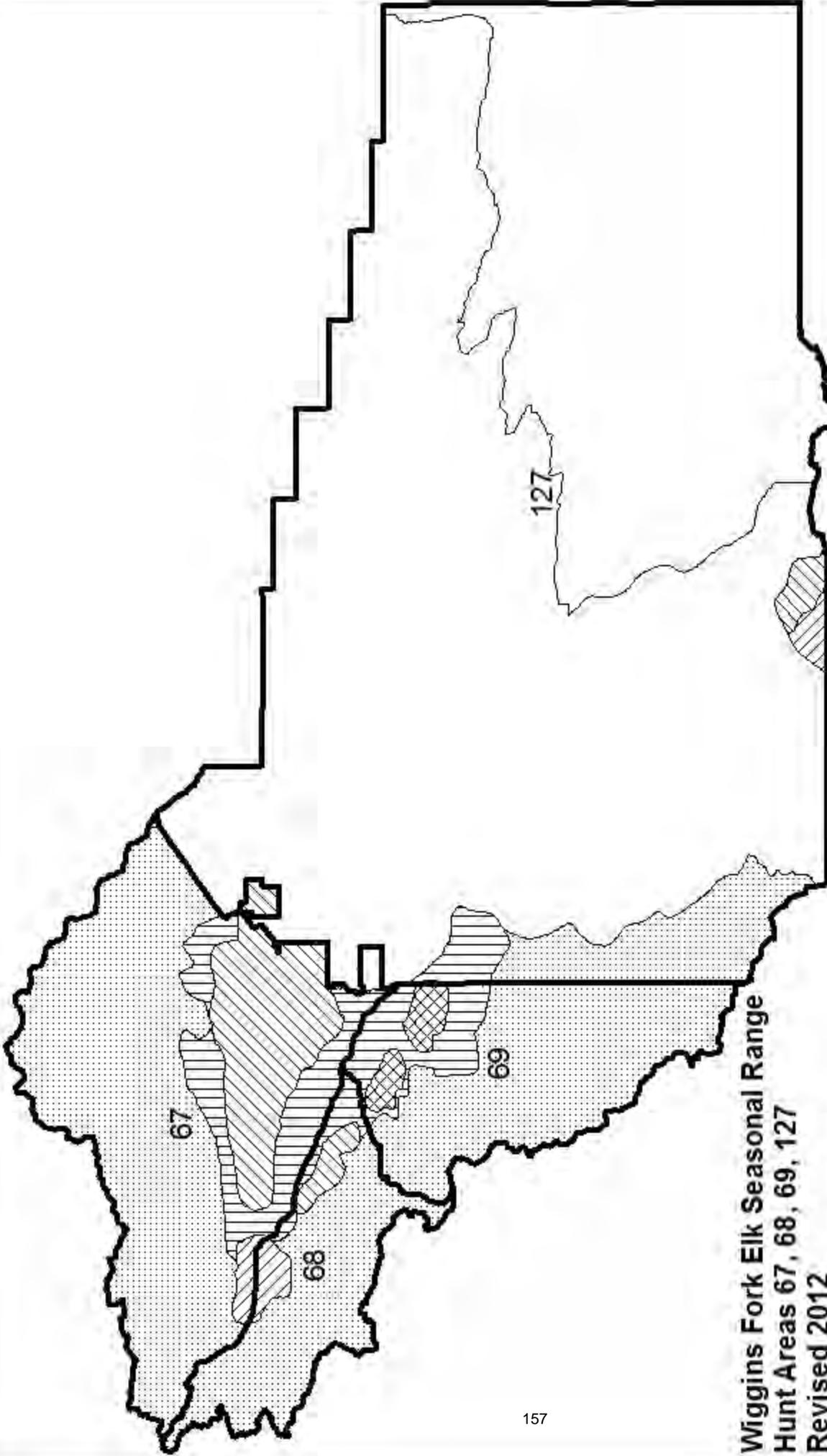
aerial trend count video to classify elk. This methodology did yield a significant increase in the mature bull/cow ratio each of the past 3 years. That said the mature bull/cow ratio is still artificially low due to poor sightability. There was a significant increase in the bull/cow ratio in 2016. The mature bull/cow ratio of 18/100 was the highest recorded in the herd unit. As mentioned previously, aerial classifications appear to have contributed to better bull/cow ratios over the past 3 years. In 2016 the ratio was much higher than normal because large bull groups were wintering at lower elevations in more open areas due to unusually deep snow at their typical wintering sites in timbered mountainous areas. Regardless of fluctuations in the mature bull/cow ratio, bull harvest has not declined over the past 10 years (Fig. 3). Antlered elk harvest in both 2012 and 2013 was unusually high for the herd unit. The high bull harvest in 2013 is not indicative of any demographic changes in the population. Instead, the high harvest can be directly linked to environmental conditions. Heavy snows in late September forced elk (including bulls) onto winter range where they were extremely vulnerable to harvest throughout the general, October season. Likewise, the decreased bull harvest in 2014 and 2015 is certainly tied to more typical hunting conditions throughout the fall. Bull harvest increased again in 2016. Over the past 5 years bull harvest in the herd unit has been at near record levels for 3 of them. It should be noted 2 of the most recent 3 years of high harvest occurred prior to the implementation of the ‘spikes excluded’ restriction.

Figure 3. Antlered elk harvest in the Wiggins Fork Elk Herd.



Management Summary

The 2016 trend count indicates the Wiggins Fork elk population is at objective. The population appears to have been fairly stable over the past 4 years with slight declines in the East Fork and South Dubois herd segments. Given the small declines in these herd segments and to maintain the population at objective, cow licenses targeting each segment will be reduced. To provide recreational opportunity and satisfy a large group of publics requesting continuation of the ‘spikes excluded’ restriction, the 2017 season in hunt areas 67 and 68 will include 10 days of unrestricted antlered elk harvest followed by a ‘spikes excluded’ restriction for the remainder of the season. With small reductions in cow harvest, the population should remain stable and at objective in 2017.



**Wiggins Fork Elk Seasonal Range
Hunt Areas 67, 68, 69, 127
Revised 2012**

- CRUWIN
- CRUWYL
- OUT
- SSF
- WIN
- WYL

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL637 - SOUTH WIND RIVER

HUNT AREAS: 25, 27-28, 99

PREPARED BY: STAN HARTER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	2,696	2,469	2,600
Harvest:	644	652	575
Hunters:	2,114	2,030	1,850
Hunter Success:	30%	32%	31%
Active Licenses:	2,175	2,069	1,880
Active License Success	30%	32%	31%
Recreation Days:	16,130	15,552	14,500
Days Per Animal:	25.0	23.9	25.2
Males per 100 Females:	27	35	
Juveniles per 100 Females	30	33	

Trend Based Objective ($\pm 20\%$) 2,600 (2080 - 3120)

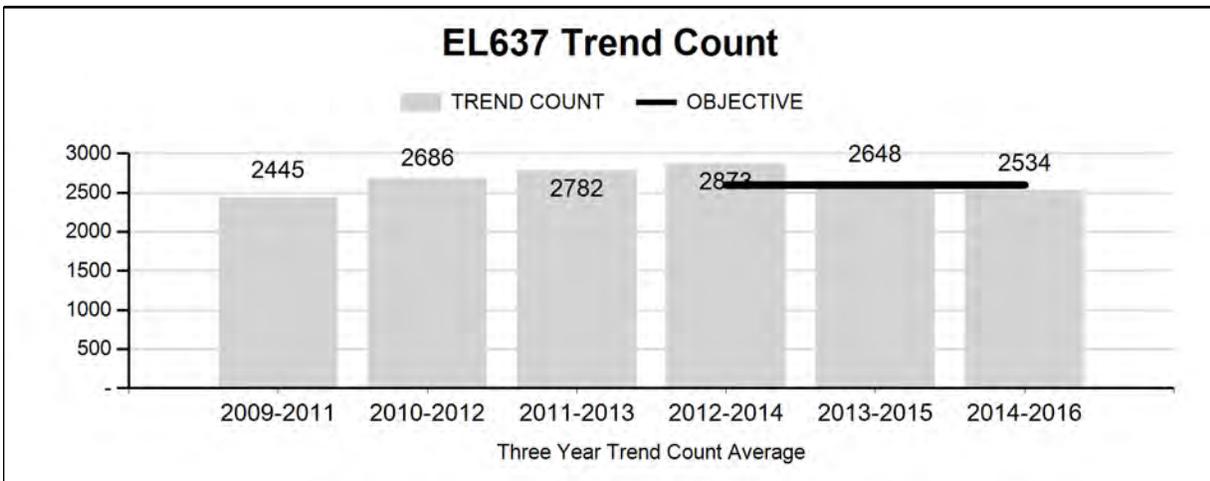
Management Strategy: Recreational

Percent population is above (+) or (-) objective: -5.0%

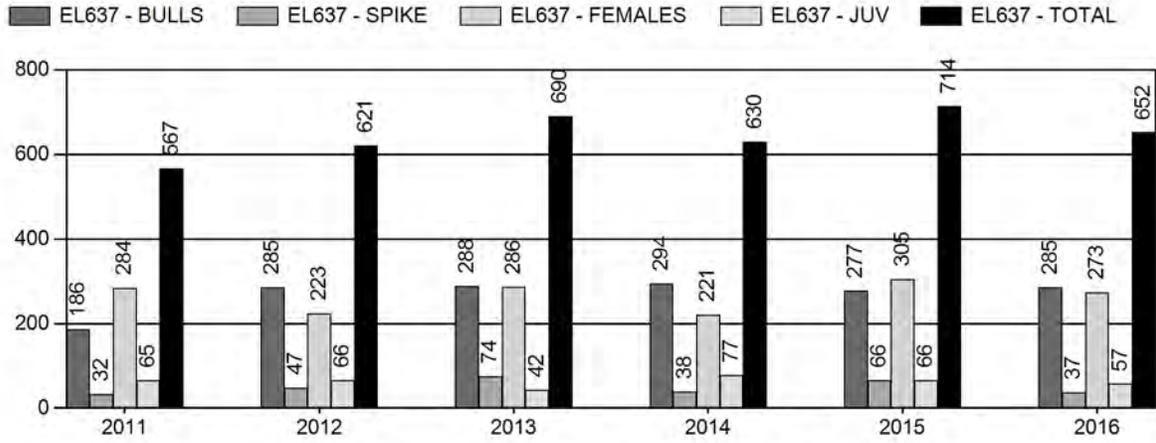
Number of years population has been + or - objective in recent trend: 1

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

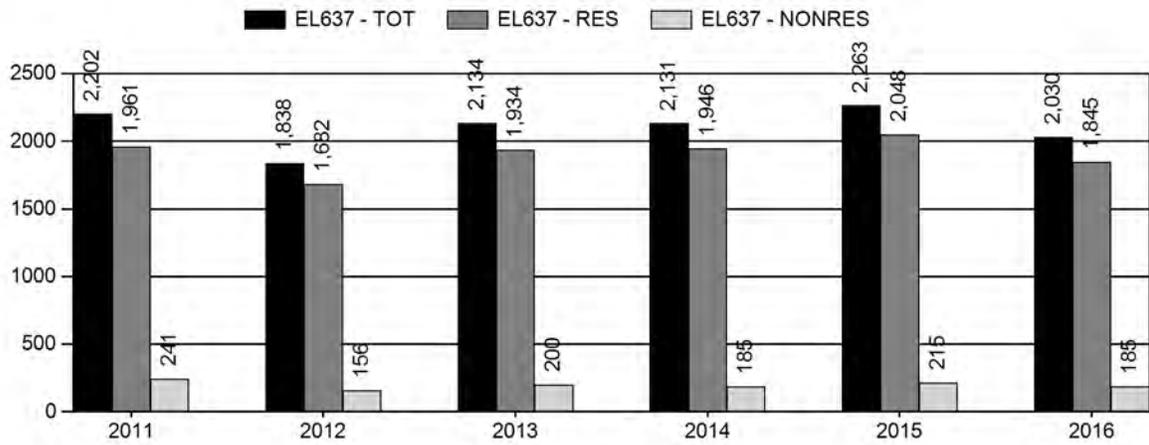
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



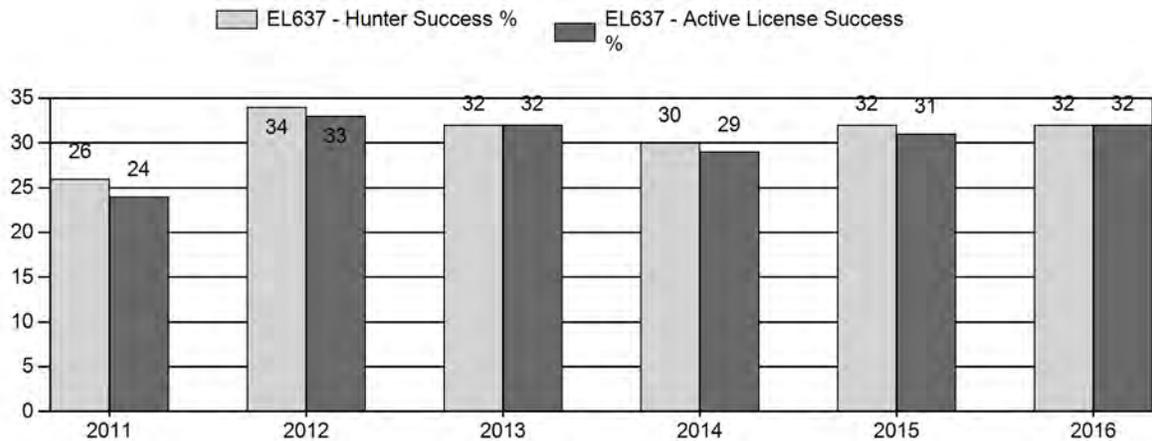
Harvest



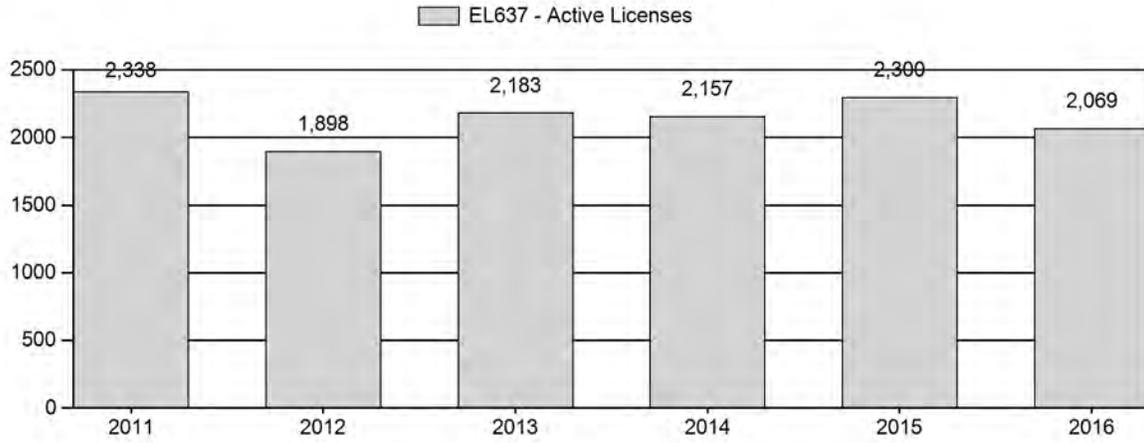
Number of Hunters



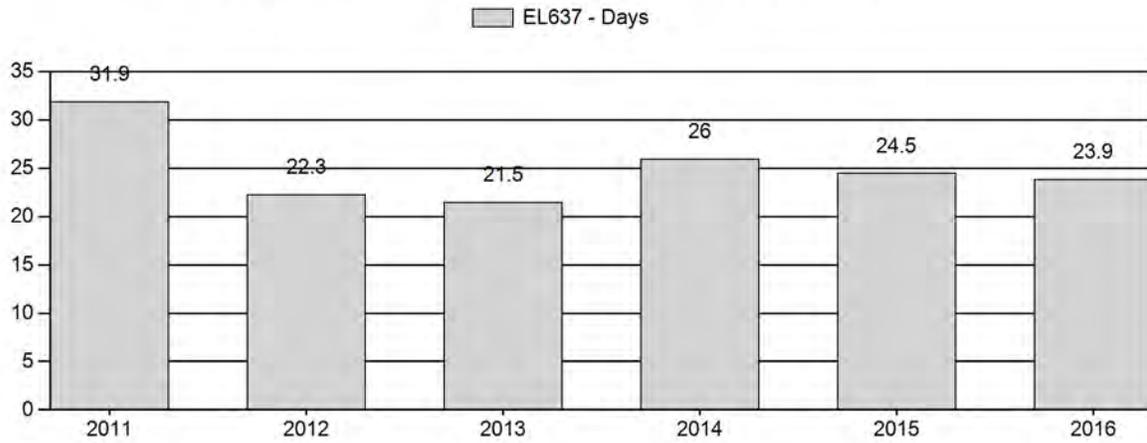
Harvest Success



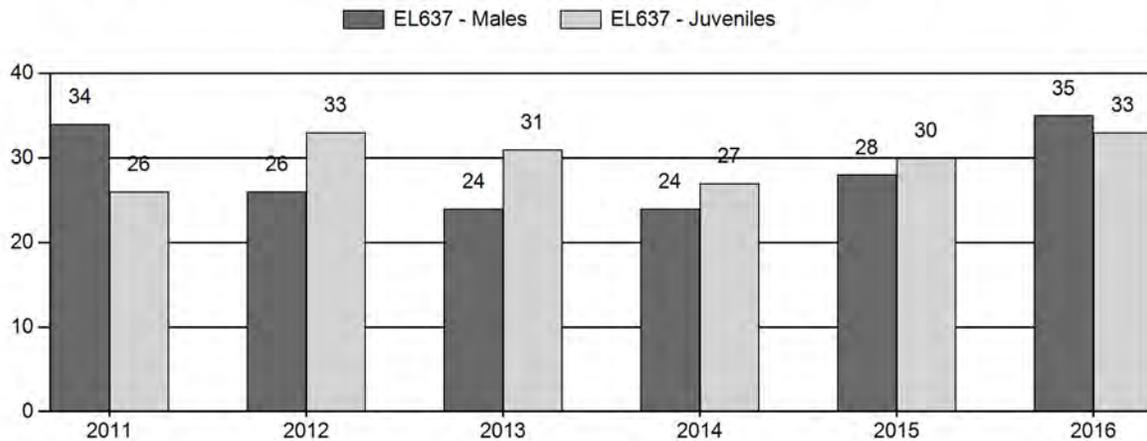
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL637 - SOUTH WIND RIVER

Year	Post 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	0	179	299	478	21%	1,397	62%	365	16%	2,240	0	13	21	34	± 2	26	± 1	19
2012	0	183	356	539	16%	2,066	63%	691	21%	3,296	0	9	17	26	± 1	33	± 1	27
2013	0	165	228	393	16%	1,623	65%	499	20%	2,515	0	10	14	24	± 0	31	± 0	25
2014	0	149	226	375	16%	1,550	66%	420	18%	2,345	0	10	15	24	± 0	27	± 0	22
2015	0	181	288	469	18%	1,650	63%	502	19%	2,621	0	11	17	28	± 0	30	± 0	24
2016	0	158	352	510	21%	1,472	60%	487	20%	2,469	0	11	24	35	± 0	33	± 0	25

2017 HUNTING SEASONS
South Wind River Elk Herd Unit (EL 637)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
25, 27	1	Oct. 1	Oct. 31	200	Limited quota	Any elk
25, 27	1	Nov. 1	Nov. 20			Antlerless elk
25	4	Oct. 15	Nov. 20	150	Limited quota	Antlerless elk
25	6	Nov. 1	Nov. 20	100	Limited quota	Cow or calf
27	4	Oct. 1	Nov. 20	75	Limited quota	Antlerless elk
28		Oct. 1	Oct. 6		General	Any elk
28		Oct. 7	Oct. 22		General	Antlered elk
28	4	Nov. 1	Nov. 20	200	Limited quota	Antlerless elk
99	1	Oct. 1	Oct. 31	150	Limited quota	Any elk
99	1	Nov. 1	Nov. 20			Antlerless elk
99	4	Oct. 1	Nov. 20	175	Limited quota	Antlerless elk
Archery		Sept. 1	Sept. 30			Valid in the entire area(s)

Hunt Area	License Type	Quota Change from 2016
25	4	-50
27	4	-25
99	1	-25
99	4	-25
Herd Unit Total	1	-25
	4	-100

MANAGEMENT EVALUATION

Current Mid-Winter Trend Count Management Objective: 2,600

Management Strategy: Recreation (15 – 29 bulls/100 cows)

2016 Mid-winter Trend Count: 2,469

Most Recent 3-year Running Average Trend Count: 2,534

Herd Unit Issues/Population

The management objective for the South Wind River Elk Herd Unit was changed in 2014 to a mid-winter trend count of 2,600 elk, based on a running 3-year average. Trend count data vary due to annual changes in snow depth, light and wind conditions during flights, and condition of habitats each winter. A key factor in our ability to detect elk in winter is the variability and extent of winter habitats, which range from mixed aspen/conifer/sagebrush habitats to open sagebrush/grassland habitats. The 2016 trend count/classification survey was completed in January and February 2017, with a total of 2,469 elk

observed. Survey conditions were very favorable, with good to excellent snow cover in most areas and few issues with wind; as such we believe this to be a good trend count. However, increased wolf activity in several portions of Hunt Areas 25 and 28, along with increased snow in all hunt areas, led to distribution shifts we observed in a few locations and may have led to missed groups of elk.

Weather

Precipitation from October 2015 through September 2016 was markedly higher than the 30 year average. The growing season precipitation (April-June 2016) was also notably higher than the 30 year average, while the high elevation spring- summer -fall range growing season precipitation was equal to the 30 year average. In May, over Mothers' Day Weekend, a large storm delivered very heavy rainfall most of the South Wind River herd unit, and caused landscape-wide runoff and flooding. The majority of the growing season precipitation fell in this one weekend. Also of note, during the month of July there was zero measurable precipitation, and June and July temperatures were higher than average.

Winter 2016-17 has been characterized by colder than average temperatures following a mild fall, with the temperature from November-February averaging 23.6° Fahrenheit, which is considered below normal for this time period in the Lander area. So far, 61" of snowfall has been recorded in Lander mostly after December 1, 2016. This is 11.4" above the 30 year average. Above average snowfall for Lander and the surrounding foothills likely causes some concern for wintering wildlife, with most elk observed in open sagebrush habitats and many in lower elevations than normally observed. However, if the snow melts gradually, it will benefit vegetation production in the coming growing season. Snow water equivalents for the South Pass, Deer Park, and Townsend Creek SnoTel sites recorded February 1, 2017 were 227%, 245%, and 185% of the official mean for those respective sites.

Habitat

Precipitation was above average during the spring of 2016 which provided good early forage production across the herd unit. Above average temperatures, and very low precipitation amounts from June-August likely caused lower vegetation production than the previous two years. Recently developed "Rapid Habitat Assessments" will be implemented for the South Wind River mule deer herd unit to develop a baseline from which to gauge overall habitat condition across the landscapes. These assessments should also be useful for evaluating habitat conditions for South Wind River elk.

Field Data

Classification flights were conducted in mid-January and a second flight in February 2017 with a Bell Jet Ranger 206 helicopter in Areas 25, 27, and 28. Personnel from the Pinedale Region surveyed Area 99 in early-February 2017, also with a Bell Jet Ranger 206 helicopter. A total of 2,469 elk were counted and classified. However, we likely missed groups in the Farson area where winter has been worse than in the Lander area. We have not seen any large groups wintering in the portion Area 25 south of the Sweetwater River in a several years, despite awareness of expanding elk numbers there during other seasons. The observed post-season calf/cow ratio of 33J/100F and bull ratio of 35M/100F were above the previous 5-year average.

Harvest Data

Weather during fall 2016 hunting seasons was once again mild in the South Wind River Herd Unit, with above average temperatures and below average snowfall. The biggest snow event occurred over the last few days of the November antlerless elk seasons.

Total harvest was only slightly below average in 2016, mostly likely due to mild weather, despite complaints from many hunters of low elk numbers and purported and documented increased wolf activity. Total bull harvest dropped to 322 in 2016, with a slight increase to 285 adult bulls harvested, but with a decrease in yearling bull take with only 37 spikes harvested. Antlerless harvest dropped to 330 cows and calves, near the previous 5-year average. Based on harvest survey results, total harvest dropped about 9% in 2016 to 652 elk, just above the previous 5-year average. Hunter success rates have remained fairly stable, with the 2016 success rate of 32% also being just above the 5-year average. Hunter effort data indicate hunters were better able to find elk compared with the previous 5 years (23.9 days/harvest in 2016 vs. an average of 25.0 days per harvest since 2011).

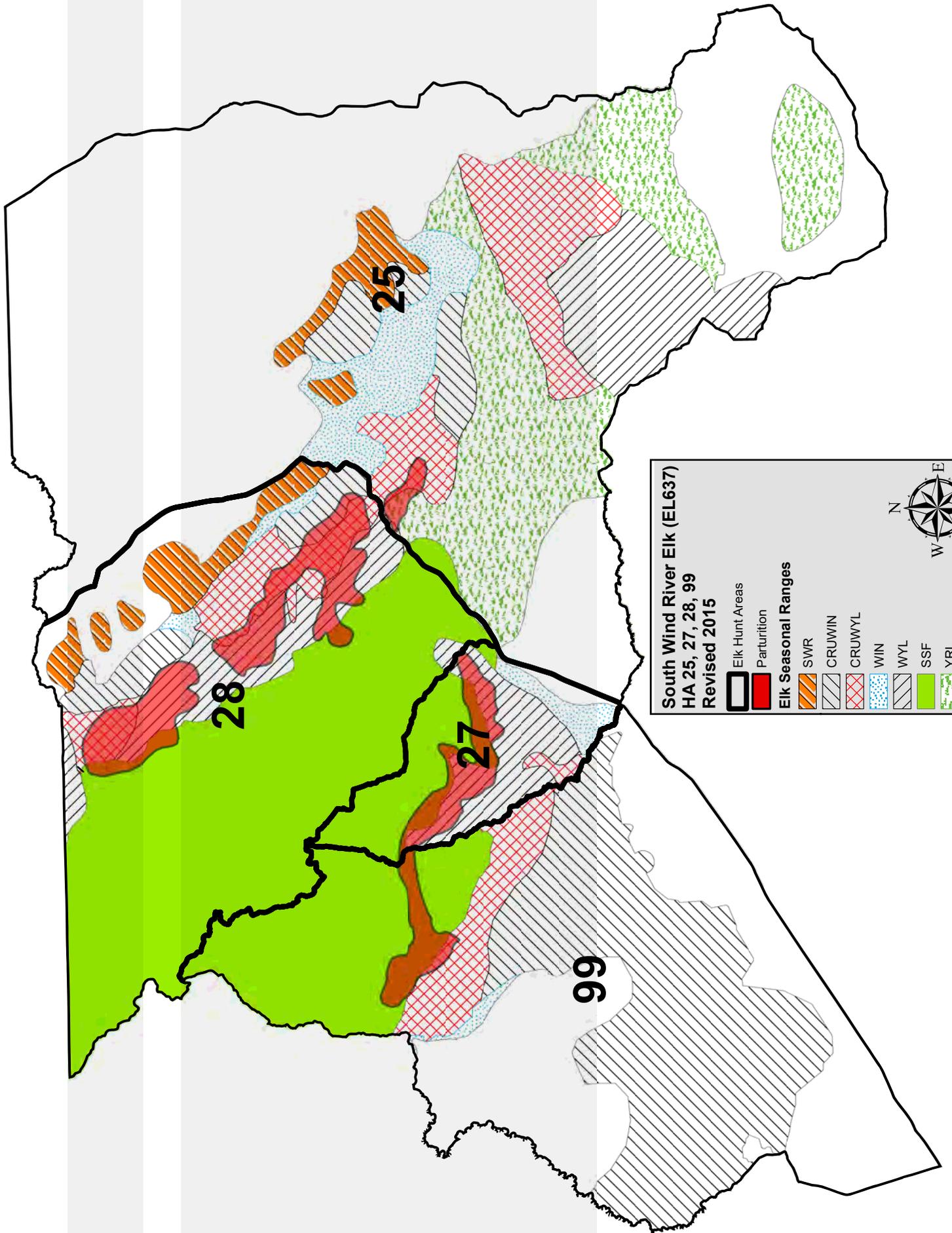
Management Summary

With the 2016 mid-winter and 3-year running average trend counts being nearly the same as the objective, the 2017 seasons are designed to maintain this population at the current level. Elk hunters will again be allowed to harvest “any elk” for the first part of the general license season in hunt area 28 (October 1–6), shifting to antlered only for the remainder of the season (October 7–22). This season structure in 2016 resulted in a 15% decrease in hunter numbers (which was not expected with opening day on Saturday) and minimal change in harvest, and seems to have contributed to less pressure on adult bulls, which may lead to improved bull quality over time. Regardless of reason, we observed 198 branch-antlered bulls in Area 28 in the January 2017 classification survey/trend count, the second highest since 1994.

With increased snow loads and fewer elk observed in Areas 27 and 99, we are making small reductions in license numbers for those license types specific to those hunt areas. In addition, we are making a slightly larger reduction in Hunt Area 25 Type 4 licenses for similar reasons, along with hunter crowding concerns, which are compounded with private land access and opening day coinciding with opening day of general deer season in deer Hunt Area 94. With South Wind River elk being at objective, there is less need for intensive female elk harvest, and license numbers have remained nearly the same as they were before the objective review in 2014, prior to which the herd was considered well above objective. Changes in elk distribution in Hunt Area 28 have been documented over the last 2 winters due to snow depths in 2016-17, coupled with wolf presence and potentially due to heavy hunting pressure at the end of the November hunting season. As such, a few groups of elk have become acclimated to spending substantial time in and around rural subdivisions and agricultural lands just outside Lander. Having elk close to town has become very popular with many people; yet concerns have also been raised over increasing damage to fences, agricultural interests, and elk/vehicle collisions. Discussions and landowner meetings are planned regarding the potential for additional late cow seasons, and other counter measures to reduce elk conflicts.

Beginning in 2015, we extended the hunt area 25 boundary southerly to encompass the Cyclone Rim area and south to the Rocky Crossing Road. This was popular with many hunters and met with few complaints. We will continue to monitor elk numbers, distribution, and other metrics to determine if this boundary move is successful or if elk begin to avoid this area and move across the boundary where hunting pressure is often lower in that portion of Hunt Area 100.

We expect the 2017 seasons outlined above should result in a harvest of at least 575 elk with lower cow harvest. If calf recruitment remains near the average and winter losses are minimal, this harvest should maintain the population at objective.



South Wind River Elk (EL637)
HA 25, 27, 28, 99
Revised 2015

Elk Hunt Areas

- Elk Hunt Areas: 25, 27, 28, 99
- Parturition: Red solid fill

Elk Seasonal Ranges

- SWR: Orange diagonal lines (top-left to bottom-right)
- CRUWIN: White diagonal lines (top-left to bottom-right)
- CRUWYL: Red cross-hatch pattern
- WIN: Blue dotted pattern
- WYL: White diagonal lines (top-right to bottom-left)
- SSF: Light green solid fill
- YRL: Green dotted pattern
- OUT: White solid fill

North Arrow: N, E, S, W

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL638 - GREEN MOUNTAIN

HUNT AREAS: 24, 128

PREPARED BY: STAN HARTER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	605	734	650
Harvest:	252	192	230
Hunters:	645	505	535
Hunter Success:	39%	38%	43%
Active Licenses:	652	511	500
Active License Success	39%	38%	46%
Recreation Days:	3,617	3,437	3,500
Days Per Animal:	14.4	17.9	15.2
Males per 100 Females:	38	23	
Juveniles per 100 Females	45	31	

Trend Based Objective (± 20%)

500 (400 - 600)

Management Strategy:

Recreational

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

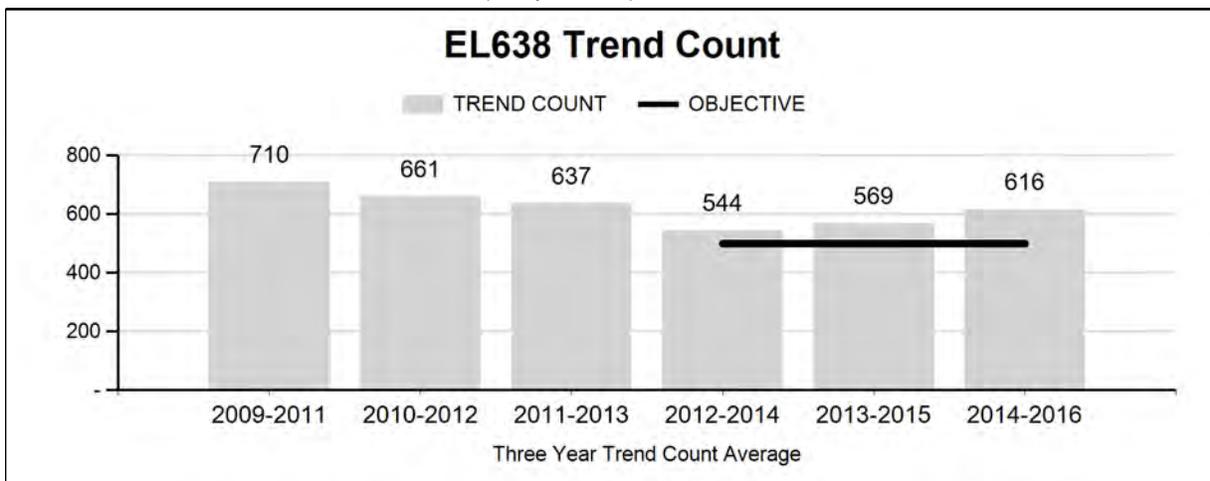
47%

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

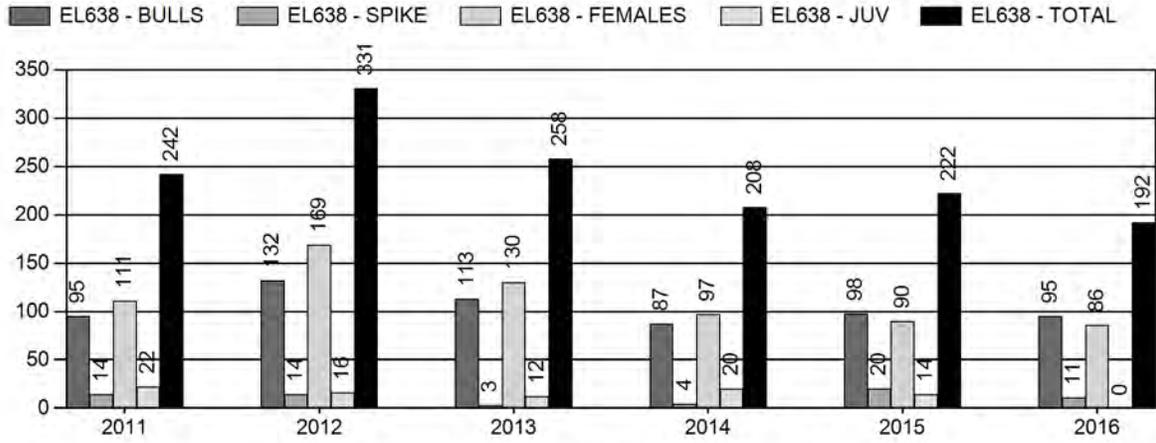
2

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

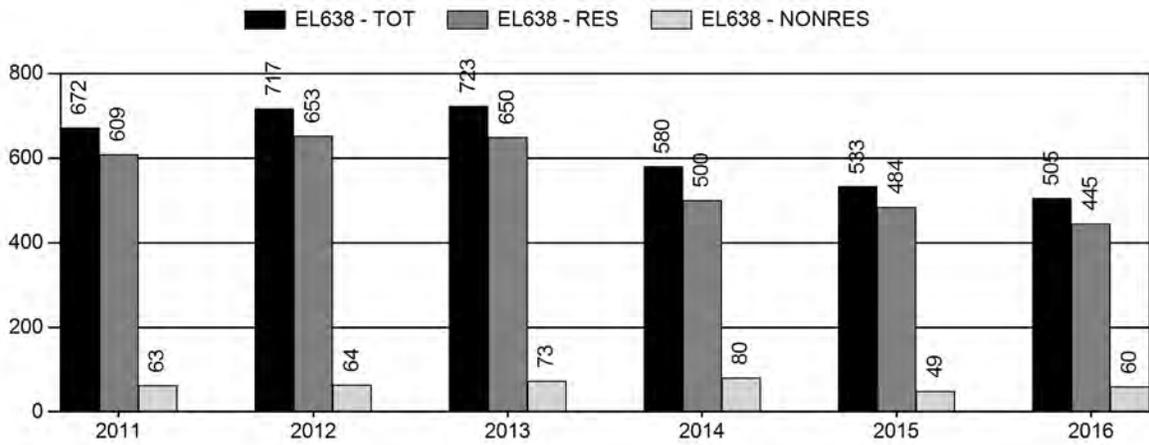
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



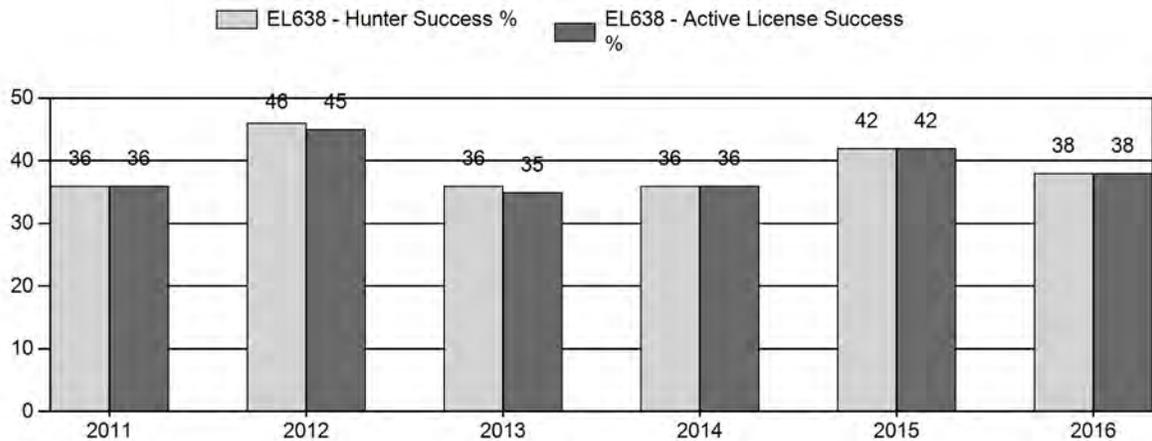
Harvest



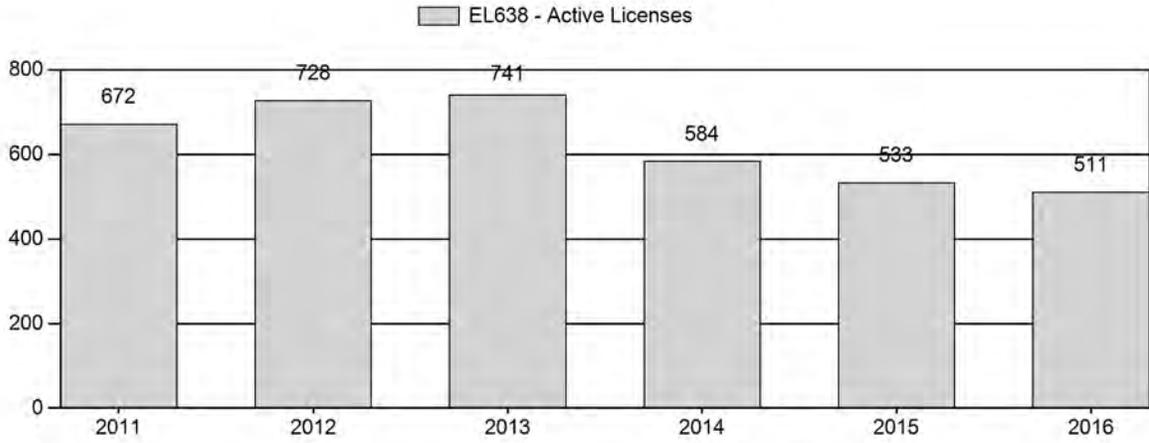
Number of Hunters



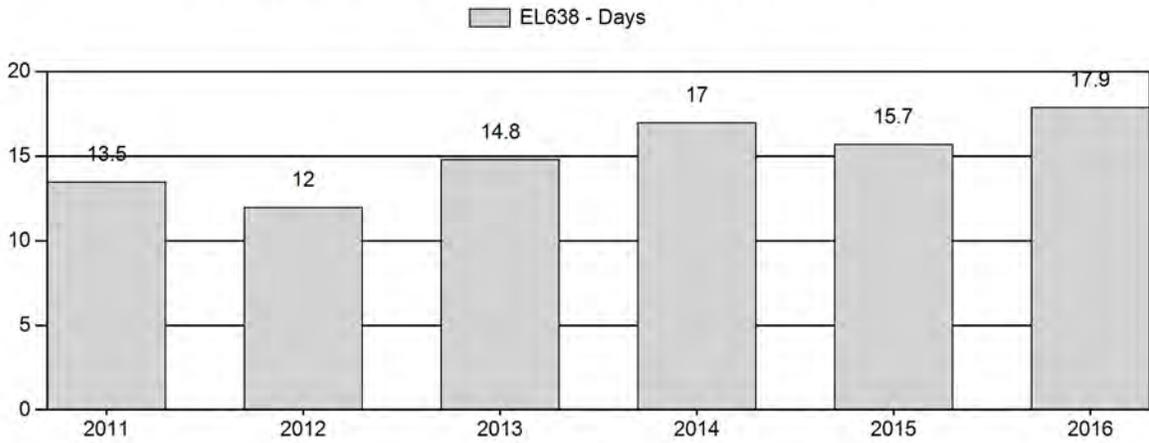
Harvest Success



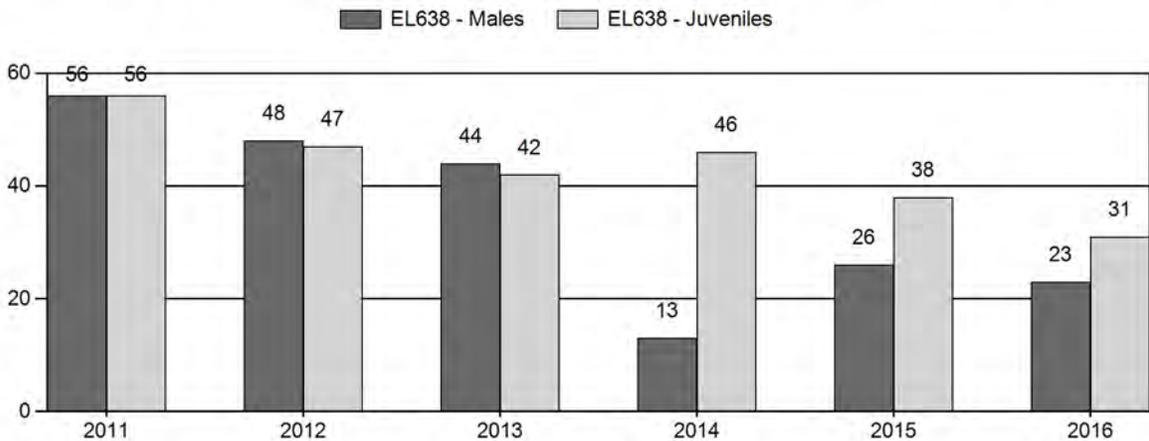
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL638 - GREEN MOUNTAIN

Year	Post 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	0	47	127	174	26%	313	47%	176	27%	663	0	15	41	56	± 0	56	± 0	36
2012	0	49	111	160	24%	336	51%	158	24%	654	0	15	33	48	± 0	47	± 0	32
2013	0	41	99	140	24%	319	54%	135	23%	594	0	13	31	44	± 0	42	± 0	29
2014	0	19	12	31	8%	243	63%	111	29%	385	0	8	5	13	± 0	46	± 0	41
2015	0	73	44	117	16%	444	61%	167	23%	728	0	16	10	26	± 0	38	± 0	30
2016	0	64	45	109	15%	478	65%	147	20%	734	0	13	9	23	± 0	31	± 0	25

**2017 HUNTING SEASONS
Green Mountain Elk Herd Unit (EL 638)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
24	1	Oct. 1	Oct. 14	150	Limited quota	Any elk
24	1	Nov. 1	Nov. 30			Antlerless elk
24	4	Oct. 1	Oct. 14	75	Limited quota	Antlerless elk
24	4	Nov. 1	Nov. 30			Antlerless elk
24	5	Nov. 1	Nov. 30	150	Limited quota	Antlerless elk
128		Oct. 1	Oct. 14		General	Antlered elk
Archery		Sept. 1	Sept. 30			Valid in the entire area(s)

Hunt Area	License Type	Quota Change from 2016
24	1	-25
24	4	+25
24	5	+25
Herd Unit Total	1	-25
	4	+25
	5	+25

MANAGEMENT EVALUATION

Current Mid-Winter Trend Count Management Objective: 500

Management Strategy: Recreation (15 – 29 bulls/100 cows)

2016 Mid-Winter Trend Count: 734

Most Recent 3-year Running Average Trend Count: 616

Herd Unit Issues/Population

The management objective for the Green Mountain Elk Herd Unit was changed in 2014 to a mid-winter trend count of 500 elk, based on a running 3-year average. Trend count data vary due to annual changes in snow depth, light and wind conditions during flights, and condition of habitats each winter. A key factor in our ability to detect elk in winter is the extreme variability and extent of winter habitats, which range from mixed aspen/conifer/sagebrush habitats to open sagebrush/grassland habitats. The 2016 trend count/classification survey was completed in February 2017, with a total of 734 elk observed.

Weather

Precipitation information for Green Mountain elk is based on one weather station located near Jeffrey City, which indicates precipitation from October 2015 through September 2016 was markedly higher than the 30 year average. The growing season precipitation (April-June 2016) was slightly above the thirty year average, while the high elevation SSF seasonal range average precipitation (May- July 2016) was below the 30 year average. A large storm in May 2016, over Mothers' Day weekend delivered much of that month's precipitation in a single weekend causing heavy runoff and flooding events. The majority of the annual precipitation came during April and May with no measurable precipitation falling in July. Temperatures through the summer were above average.

Winter 2016-2017 has been characterized by above normal snowfall with slightly above average temperatures for the November-April time period in the Jeffrey City area. A total of 46" of snowfall was recorded in Jeffrey City from November 2016 through April 2017, 8.4" above the 30-year average for those months. The above average snowfall for Jeffrey City and the surrounding area caused some concern for wintering wildlife, with most elk observed in open sagebrush habitats away from Green and Crooks Mountains in February. However, open country snow dissipated between storms, and concurrent with spring rainfall, the increase in precipitation should benefit vegetation production in the growing season.

Habitat

Growing season precipitation was nearly average during the spring/early summer of 2016 which provided good forage across the herd unit for mule deer does in early parturition. Above normal temperatures and very low precipitation amounts from June-August likely caused lower vegetation production than the previous two years, possibly leading to the reduced calf/cow ratio of 31J/100F observed this winter. Recently developed "Rapid Habitat Assessments" will be implemented for the Sweetwater mule deer herd unit to develop a baseline from which to gauge overall habitat condition across the landscapes. These assessments should also be useful for evaluating habitat conditions for the Green Mountain elk herd.

Field Data

The 2016 trend count/classification survey was conducted in mid-February 2017 using a Bell 206 Jet Ranger helicopter, with new snow providing the best observation conditions in several years. We observed 734 elk in Hunt Area 24, with most elk found in the lower elevations away from Green Mountain and Crooks Mountain, placing the annual trend count 47% over the mid-winter trend count objective of 500 elk. No elk were observed in Hunt Area 128 this year. The 3-year trend count average of 616 is 23% above objective. Fewer bulls were observed this year than in 2015, but since some bull groups were observed in timbered areas even though snow was deeper than usual on and around Green and Crooks Mountains, we believe we missed seeing some groups of bulls. The resulting post-season calf/cow ratio of 31J/100F is considered fair, but is 31% below the previous 5-year average. The number of calves observed was about average, but the number of females (478) was the second highest observed since 1994, partly due to lower harvest in 2016. The observed bull/cow ratio of 23M/100F was 39% below average. At least 17 more branch-antlered bulls were observed during mule deer classification surveys flown in December 2016, than during the actual elk survey in February 2017. Overall, the size/age of mature bulls observed seems to have diminished over the last few years, perhaps the result of high hunting pressure on mature bulls in a highly accessible area.

Harvest Data

In 2016, a total of 192 elk were harvested in the Green Mountain herd unit, the lowest total since 2004. Warm weather with minimal snowfall throughout the hunting season seems the likely culprit for such low harvest levels. Hunter success increased in Area 24 this year, with 61% for the Type 1 any elk season, 31% and 42% respectively for Type 4 and Type 5 antlerless elk hunters (50% overall – below the long-term average of 58%). Fall 2016 was abnormally warm with little snow during the elk hunting season, which seemed to cause hunters difficulty in locating elk. Changes were made to the season structure in 2016 to address the burgeoning number of elk observed in Hunt Area 24, by focusing harvest there rather than allowing most hunters the opportunity to hunt in Hunt Area 128 in November. Elk numbers in Area 128 have been relatively stable over the past several years, lessening the need to focus additional harvest there. Type 5 hunters were still allowed to hunt both areas as they were listed that way in the application information prior to setting seasons, but will be limited to Area 24 in 2017. Hunters with antlerless license types in neighboring Rattlesnake Hills Area 23 were also allowed to hunt in Area 128 in the 2016 season, but only 2 cow elk were harvested by a small number of hunters taking advantage of that opportunity. Hunters with Area 24 Type 1 and 4 were allowed to hunt for antlerless elk in November, if unsuccessful in October, but this resulted in minimal additional harvest according to the “date of harvest” data provided by the harvest survey and field checks. Complaints about hunter crowding were minimal during the 2016 seasons. Concurrent with lower hunter success, the number of days/animal harvested increased in 2016 to 17.9 days/elk killed, 3.5 days per animal longer than the previous 5-year average.

Management Summary

Over the last decade or so, various management strategies have been implemented to attempt population reduction in the Green Mountain herd unit with varying results. Increases in licenses available in Area 24 did not achieve desired increases in harvest as illustrated in Figure 1, but certainly led to many complaints about crowded hunter densities, prompting reductions in licenses beginning in 2014. With the population remaining well above objective, we increased the number of Type 4 and Type 5 licenses in Area 24 for the 2017 season, cautiously hoping to increase female harvest without re-creating hunter crowding problems.

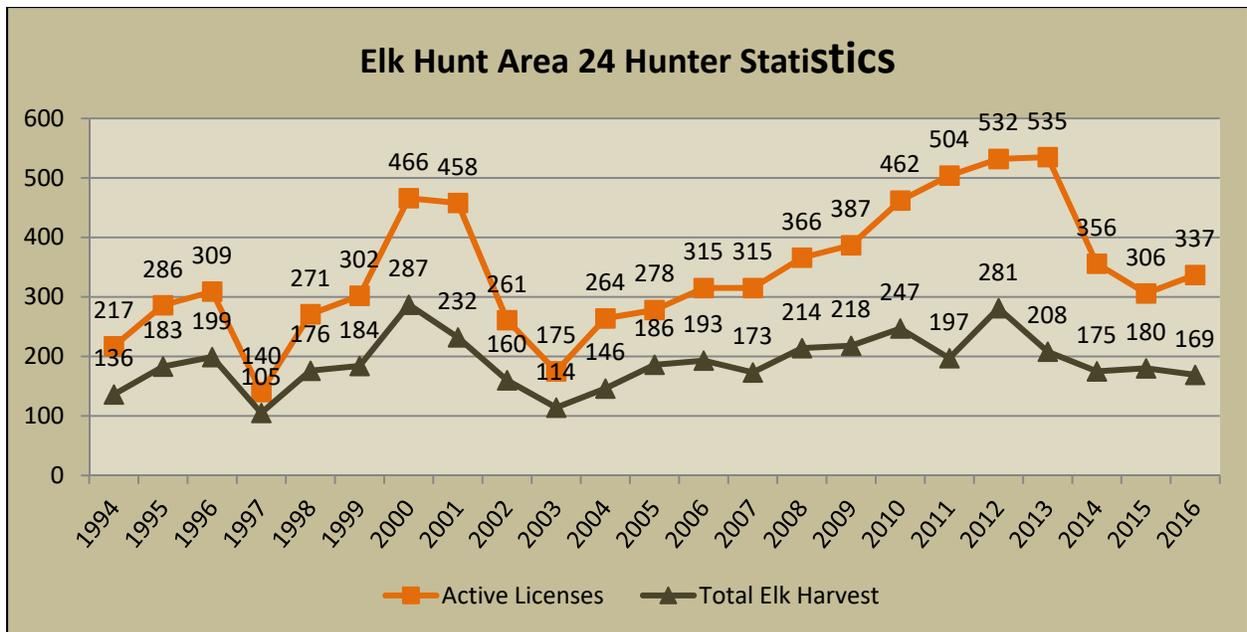


Figure 1. Comparison of elk license numbers and elk harvest trends in Elk Hunt Area 24, 1994-2016.

All of the elk observed during the mid-February 2017 trend count were in Hunt Area 24. In response to declining bull numbers and bull/cow ratios over the last 6 years, we reduced the number of Type 1 licenses to 150, attempting to reduce pressure on mature bulls, yet maintain opportunity for hunters to harvest bulls following the recreational management strategy.

We are refocusing our emphasis on harvesting female elk where the most elk are, by increasing the number of Type 4 licenses to 75 and Type 5 licenses to 150 valid only in Hunt Area 24, and allowing Area 24 Type 1 and 4 hunters who are not successful in October to hunt for antlerless elk in November in only Hunt Area 24. But, November harvest from Type 1 and 4 hunters was very low in 2016, with few successful hunters checked in the field and no Type 1 or 4 hunters reporting a November date of harvest via harvest surveys.

We will maintain the General License season in Hunt Area 128 as an “antlered elk” season again in 2016 in response to observed high hunter densities in portions of the hunt area, which prompted some concerns from area landowners, especially in the west half of the hunt area. Harvest of antlerless elk in Area 128 will continue with late-season opportunities but with only Area 23 (Rattlesnake Elk Herd Unit) hunters continuing to have the ability to hunt in Area 128 from mid-November to mid-December, mostly targeting elk that move off the Rattlesnake Hills into the Gas Hills/Beaver Rim area. The expected 2017 harvest should consist of about 230 elk, mostly from Area 24, and move the herd closer to objective, which will be reviewed again in 2018.

Green Mountain Elk (EL638)
HA 24, 128
Revised 2015

- Elk Hunt Areas
- Parturition

- RANGE**
- CRUWYL
 - OUT
 - SSF
 - WIN
 - WYL
 - YRL



128

24

2016 - JCR Evaluation Form

SPECIES: Elk
 HERD: EL639 - FERRIS
 HUNT AREAS: 22, 111

PERIOD: 6/1/2016 - 5/31/2017
 PREPARED BY: GREG HIATT

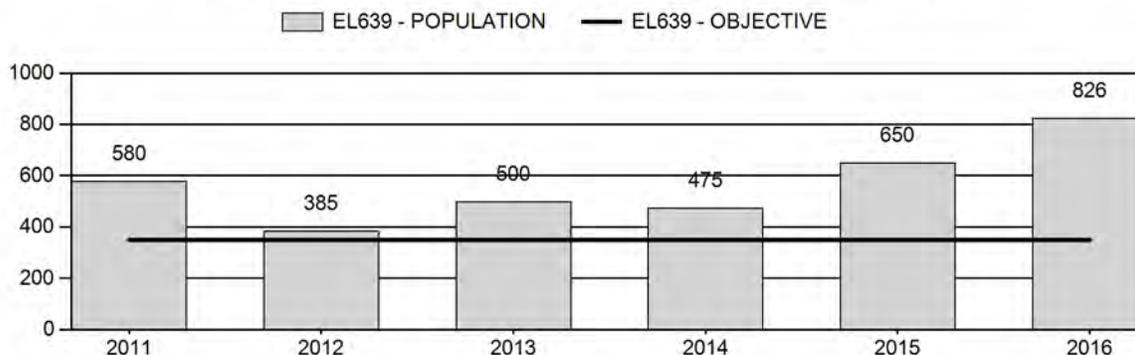
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	518	826	800
Harvest:	124	194	215
Hunters:	234	273	380
Hunter Success:	53%	71%	57 %
Active Licenses:	245	278	380
Active License Success:	51%	70%	57 %
Recreation Days:	1,695	1,324	2,970
Days Per Animal:	13.7	6.8	13.8
Males per 100 Females	52	60	
Juveniles per 100 Females	36	36	

Population Objective ($\pm 20\%$) : 350 (280 - 420)
 Management Strategy: Special
 Percent population is above (+) or below (-) objective: 136%
 Number of years population has been + or - objective in recent trend: 36
 Model Date: None

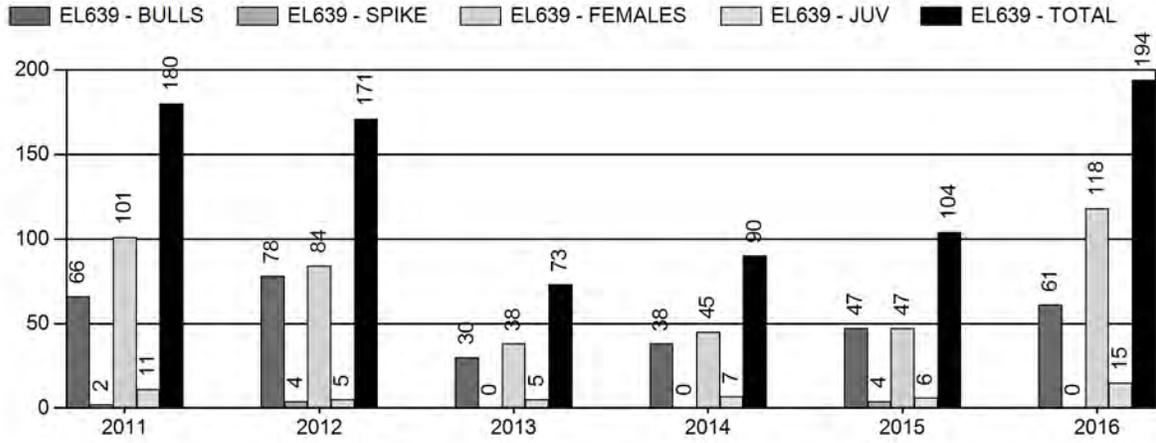
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Total:	0%	0%
Proposed change in post-season population:	-8%	-3%

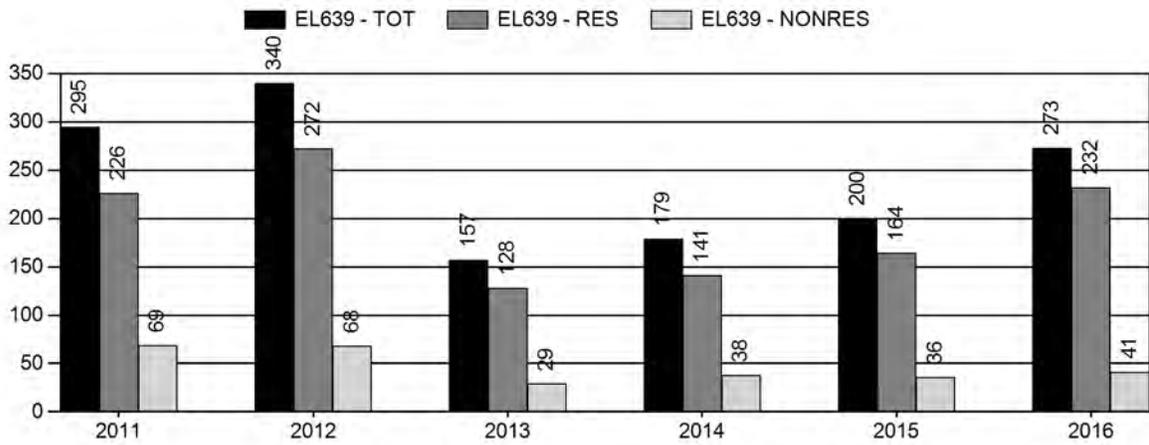
Population Size - Postseason



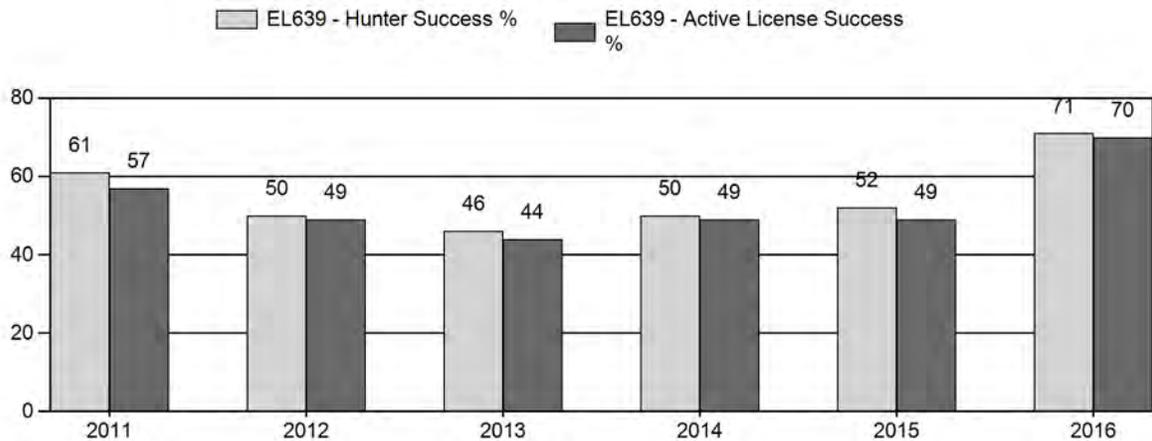
Harvest



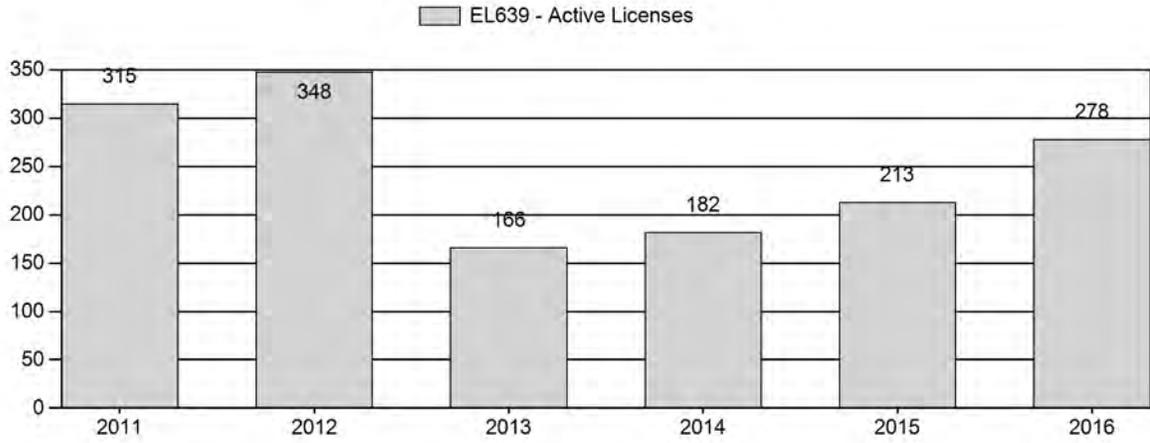
Number of Hunters



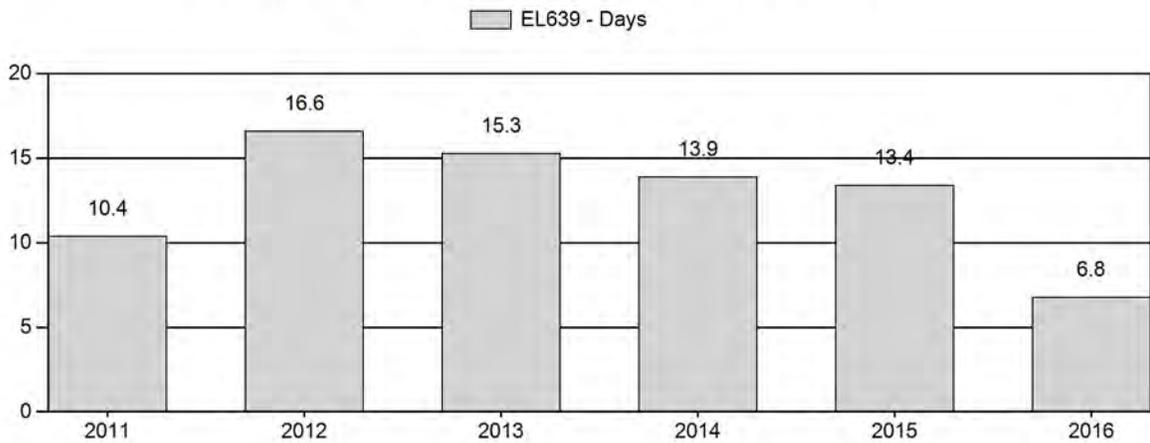
Harvest Success



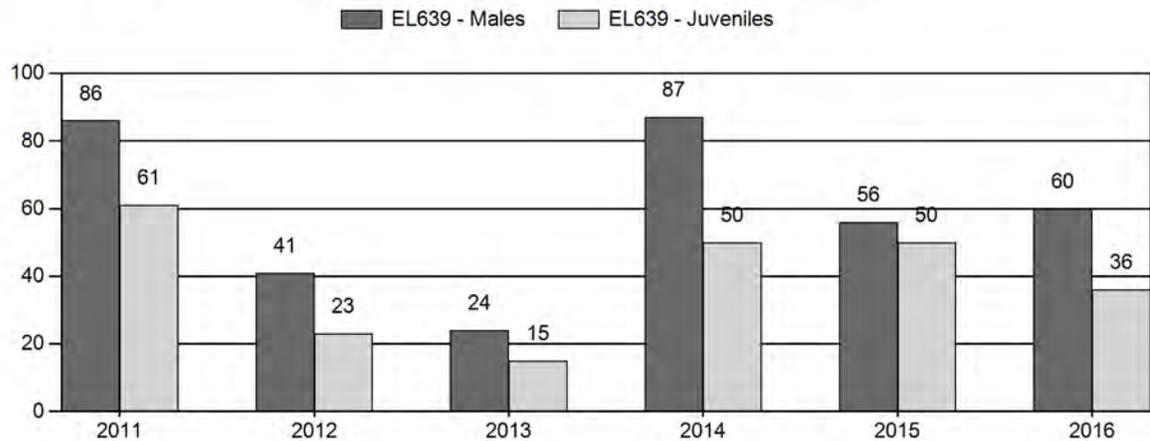
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL639 - FERRIS

Year	Post 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	580	23	87	110	35%	128	41%	78	25%	316	474	18	68	86	± 10	61	± 8	33
2012	385	25	50	75	25%	182	61%	42	14%	299	237	14	27	41	± 3	23	± 2	16
2013	500	34	49	83	17%	353	72%	54	11%	490	176	10	14	24	± 1	15	± 0	12
2014	475	39	112	151	37%	174	42%	87	21%	412	400	22	64	87	± 5	50	± 3	27
2015	650	55	108	163	27%	291	49%	145	24%	599	420	19	37	56	± 2	50	± 2	32
2016	826	70	184	254	31%	420	51%	152	18%	826	0	17	44	60	± 0	36	± 0	23

**2017 HUNTING SEASONS
FERRIS ELK HERD (EL639)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
22	1	Oct. 8 Nov. 1	Oct. 31 Jan. 31	40	Limited quota	Any elk Antlerless elk
	6	Oct. 8 Nov. 1	Oct. 31 Jan. 31	50	Limited quota	Cow or calf valid in the Muddy Creek drainage Cow or calf valid in the entire area
111	1	Oct. 10	Oct. 31	40	Limited quota	Any elk Antlerless elk valid off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area
	1	Nov. 1	Jan. 31			
	4	Oct. 10	Oct. 31	50	Limited quota	Antlerless elk Antlerless elk valid off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area
	4	Nov. 1	Jan. 31			
	6	Nov. 1	Jan. 31	150	Limited quota	Cow or calf valid off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area
7	Nov. 10	Jan. 31	150	Limited quota	Cow or calf valid off the Wyoming Game and Fish Commission's Morgan Creek Wildlife Habitat Management Area	
Archery 22, 111		Sep. 1	Sep. 30			Valid in the entire area(s)

Hunt Area	License Type	Quota change from 2016
22	1	0
	6	+25
111	1	0
	4	+25
	6	0
	7	+25
Herd Unit Total	1	0
	4	+25
	6	+25
	7	+25

Management Evaluation

Current Postseason Population Management Objective: 350

Management Strategy: Special

2016 Postseason Population Estimate: ~826

2017 Proposed Postseason Population Estimate: ~800

Herd Unit Issues

The management objective for the Ferris Elk Herd Unit is a post-season population objective of 350 elk. The management strategy is “special” management, with bull:cow ratios allowed to exceed 30:100 and the proportion of branch-antlered bulls expected to exceed 66 percent of the antlered harvest. The population objective and management strategy were last publicly reviewed in 2012. All affected major landowners strongly endorsed keeping the population objective of 350 elk.

Access is a major issue with this herd unit. While there are large blocks of accessible, public land, refuges created by several large ranches that are either closed to hunting or greatly limit hunter numbers have prevented harvest from most of the elk in this herd unit, particularly in Area 111. As license quotas are increased to reduce elk numbers to objective, the lack of hunter access to these animals leads to over-harvest of public land areas while still preventing the harvest necessary to reach the population objective.

Weather

Improved precipitation which arrived in the latter half of 2014, following severe drought conditions in 2012 and 2013, continued through 2015 and into spring of 2016. Record precipitation was received in 2015, producing exceptional vegetative growth, improving calf survival. Condition of elk going into the 2016-17 winter is expected to have been excellent. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through at least February. Most groups of elk seen during the February trend count were in crucial winter ranges well off the mountain ranges, indicative of heavy snow cover.

Habitat

While no herbaceous habitat transects are established within occupied habitats of this herd unit, herbaceous forage production appeared to be exceptional due to the increased precipitation. Two shrub transects have been established within this herd unit, primarily to monitor mule deer winter forage. One of these, on the Morgan Creek WHMA, was burned in the 2012 fires and the second was not read in 2016.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminoe and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent aspen, mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminoe Mountains and the eastern Ferris Mountains burned thousands of acres. These prescribed burns and the recent wildfires have benefited elk as herbaceous forage reclaims burned areas.

The Seminoe Fire burned over 3,800 acres in the Seminoe Mountains including areas within Morgan Creek WHMA. As in other years following the fire, the Rawlins BLM coordinated and funded aerial application of Plateau® to inhibit cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions.

Plans for additional prescribed fires in the Ferris and Seminoe Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire.

Field Data

Obtaining reliable classification samples from small populations is difficult because, statistically, the majority of the population must be included in the sample to have any confidence in the resulting ratios. Ratios collected for this herd can be further skewed because elk in this herd are not distributed randomly among the winter bands. Missing any of a handful of bachelor bull herds will significantly under-estimate bull:cow ratios. Failure to classify even one of the large cow/calf bands will greatly over-estimate bull:cow ratios, as happened in 2011 and 2014. Without reliable, consistent herd ratios, spreadsheet modeling for this small herd does not work.

Conditions during a helicopter trend count in February 2017 were near ideal, with good snow cover and most elk being found well off the mountain ranges. All 826 elk counted were also classified, yielding the largest sample ever collected from this herd. As with most recent surveys, elk numbers were skewed between the two hunt areas, with only 267 being found in Area 22 and 559 in Area 111, where access is limited to large portions of the area. Of the elk found in Area 111, 164 were in the checkerboard in the southern portion, where there is almost no hunter access. Only 395 were in the northern portion of Area 111.

Calf production dropped to 36:100, after remaining high at 50:100 in 2014 and 2015, but was still well above record low ratios recorded in 2012 and 2013. Calf production was highest in Area 111 at 38:100, compared to 31:100 in Area 22. The essentially un hunted segment of the population in the Haystack Mountains in southern Area 111 had calf production at 44:100.

Since most bull groups appear to have been located, as well as all major cow/calf groups, the bull:cow ratio of 60:100 from the 2016 classification sample is probably a realistic estimate of herd composition, and exceeded the special management criterion. Distribution of antlered elk was highly skewed, with 46 percent in Area 22, yielding a ratio of 104:100. The bull:cow ratio in Area 111 was 44:100, but 58 percent of those were in the unhunted checkerboard. The bull:cow ratio for the accessible northern portion of Area 111 was only 23:100, and two-thirds of those were spikes. Many bull groups in this herd unit are known to winter along the border between Areas 22 and 111, and it appears most were on ridges in Area 22 when the count was flown. Subtracting the unhunted elk in the checkerboard, the ratio for the remaining portion of the herd was 48:100, near the upper limit for special management.

The spike:cow ratio declined slightly to 17:100, despite high calf production in 2015. Spikes were almost twice as common in Area 111 as in Area 22.

Harvest Data

Hunter success for Type 1 licenses remained high for both areas, but was within ranges seen in recent years. Success was lower for bull hunters in Area 111, again indicating many of the bulls counted there were not available during the hunting season. Eighteen percent of the successful Type 1 hunters in Area 22 harvested antlerless elk, the highest proportion since 1999. None of the Type 1 hunters in Area 111 chose to do so.

Beginning in 2010, Type 6 licenses in Area 22 were restricted to the Muddy Creek drainage for the first portion of the 5-week season to address damage concerns on irrigated hayfields. Initial success for hunters with these licenses was high, at 72 percent, but has steadily declined and was only 21 percent in 2013, 25 percent in 2014 and 19 percent in 2015. The average number of days hunted per elk harvested on these licenses began at 5 days in 2010 and steadily rose to 11 days in 2015. But this trend reversed in 2016, with success for these hunters rising to 77 percent and the days per elk declining to 5.3.

To address a problem of inadequate harvests resulting from poor license sales, most of the antlerless licenses in Area 111 were converted into reduced price cow/calf licenses beginning in 2009. To address crowding issues in the Seminole Mountains and to direct harvest to the segments of the herd protected by ranches with limited access during the fall hunt, those cow/calf licenses were not valid on the Morgan Creek WHMA. Seasons were extended through January to offer hunters opportunity to harvest antlerless elk in early winter when they are often found in winter ranges on accessible public lands. Success for hunters with these licenses dropped off each year since, yielding only 33 percent success in 2015, but this trend also reversed in 2016. While success for the 111 Type 4 hunters remained low, success for the Type 6 and 7 hunters rose to 66 and 59 percent respectively. Increased harvest is attributed to harsher winter conditions that moved more elk north to public lands, and addition of the staggered of the Type 7 season.

Population

Past efforts to model this herd using spreadsheet modeling failed, largely due to widely fluctuating bull:cow ratios. As a result, population estimates and harvest recommendations have been based on winter trend counts. In years when counting conditions were not favorable,

estimates of herd size are made using the most recent reliable trend count, adding annual calf production and subtracting harvest for each intervening year. Ideal conditions during the 2015 count yielded a count of 599 elk, still well above objective and little different from numbers seen in 2009, despite large increases in antlerless license quotas and seasons extended through January. This year's count of 826 elk was the highest recorded for this herd, exceeding the 2015 count by 38 percent and twice the 2014 count. All of the surplus elk are still in Area 111 where access is limited. A total of 164 elk were found in the Haystack Mountains in the checkerboard in the southern portion of Area 111 where landowners do not allow public access. In Area 22 where most lands are accessible to hunters, numbers have been successfully reduced and remain low.

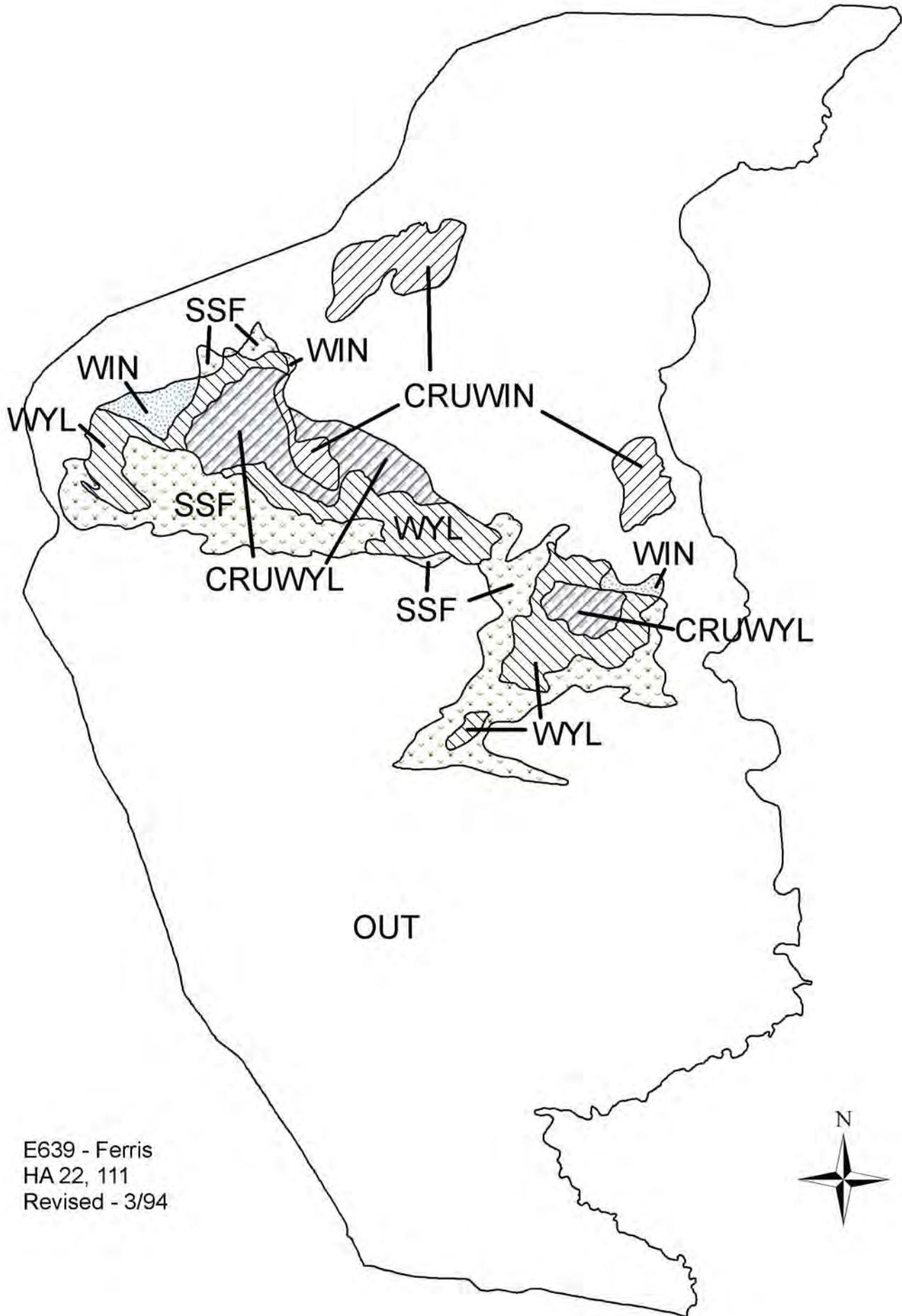
Management Evaluation

License quotas were reduced in 2013 in response to the low 2012 trend count, poor hunter success and exceptionally low calf production, intended to maintain herd reduction while providing reasonable chances of success for hunters applying for such tags. This was the proper response for Area 22, but elk numbers were still above objective in Area 111 and quotas for that area have been increased each subsequent year. The high bull:cow ratio seen in Area 22 is probably skewed by bulls from Area 111 wintering in 22. More than 30 percent of the bulls in the herd classification are in the checkerboard in Area 111 and unavailable to hunters. As a result, Type 1 quotas were not increased. Quotas for cow/calf licenses were increased by 75 in 2017, with 25 more in Area 22 on the Muddy Creek drainage, 25 more Type 4 tags in Area 111, and an additional 25 Type 7 licenses for the late hunt in Area 111.

Expected harvest from the 2017 seasons would be about 215 elk, with roughly 74 percent being antlerless. About 80 percent of the harvest should come from Area 111. Assuming normal calf production and improved hunter success, the herd should be reduced to approximately 800 elk in 2017. Achieving this harvest will largely depend upon gaining managed access to addition tracts of deeded lands within Area 111.

Comments from several major landowners indicated they want elk harvested from this herd, but do not want public hunters on their lands. This herd offers an unusual opportunity where large portions of summer/fall habitats are on private lands with limited or no public access, but many winter ranges are on accessible public lands. Hence a strategy was initiated with an emergency regulation in 2012 and continued in the following years to allow hunters to pursue antlerless elk as late as January, where most of the elk are expected to be on public land. The intent is to achieve harvest of the reproductive segment of most of the elk herd, not just the segments which are publicly available in the fall. This same strategy is repeated in the 2017 seasons. Barring changes in access across private lands, elk occupying the Haystack Mountains in checkerboarded lands in Area 111 will continue to be unavailable to most hunters, and will thwart efforts to reduce this herd towards objective.

All 2017 license types are consistent with the application booklets. Opening dates in both areas are consistent with the application booklets. Closing dates are the same as in the 2016 season. Archery seasons coincide with local deer archery seasons and archery seasons in neighboring elk areas.



E639 - Ferris
HA 22, 111
Revised - 3/94

2016 - JCR Evaluation Form

SPECIES: Elk

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

HERD: EL643 - SHAMROCK

HUNT AREAS: 118

PREPARED BY: GREG HIATT

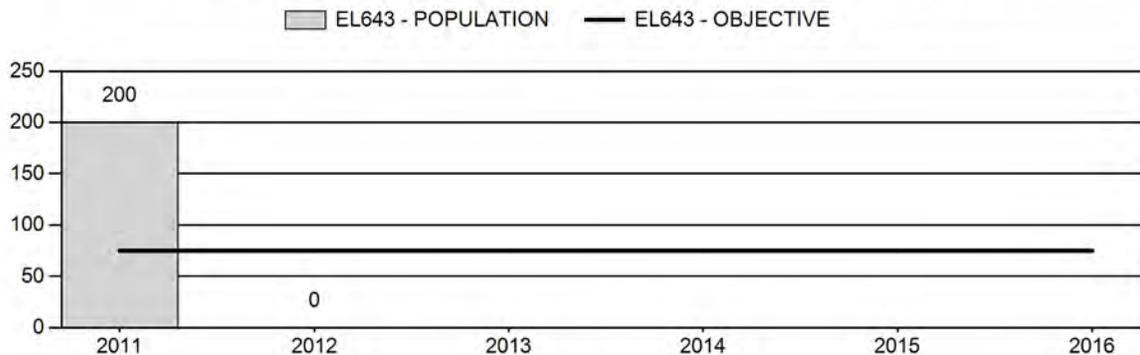
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	40	N/A	N/A
Harvest:	49	86	85
Hunters:	88	113	120
Hunter Success:	56%	76%	71 %
Active Licenses:	93	119	120
Active License Success:	53%	72%	71 %
Recreation Days:	490	533	460
Days Per Animal:	10	6.2	5.4
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

Population Objective (\pm 20%) :	75 (60 - 90)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

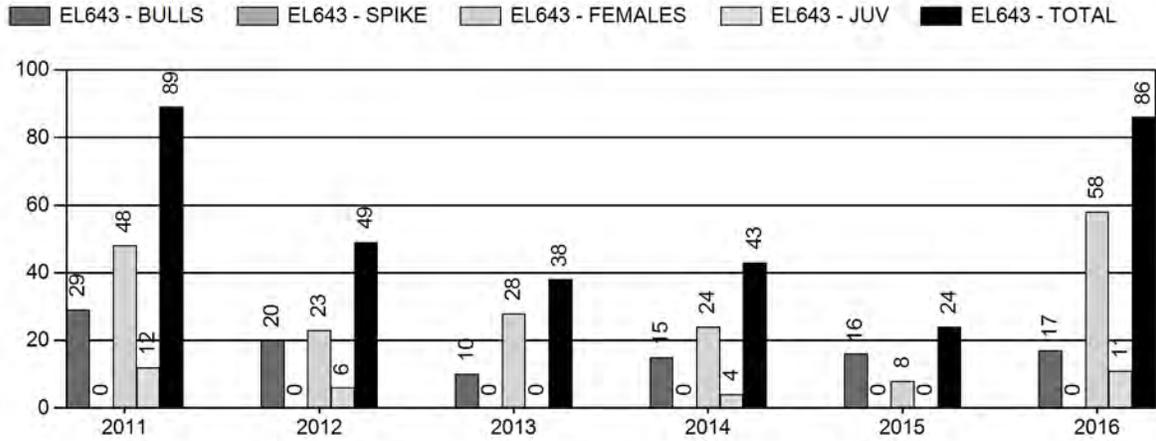
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

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

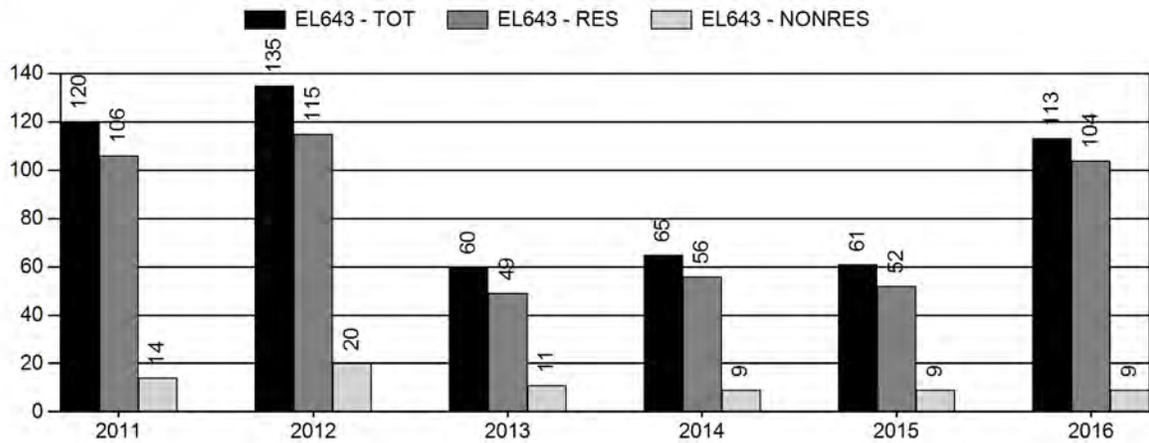
Population Size - Postseason



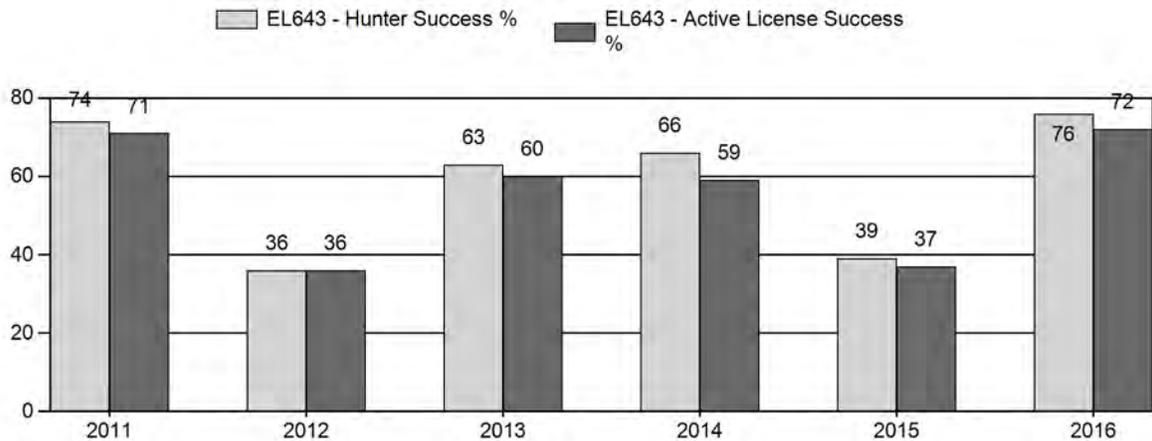
Harvest



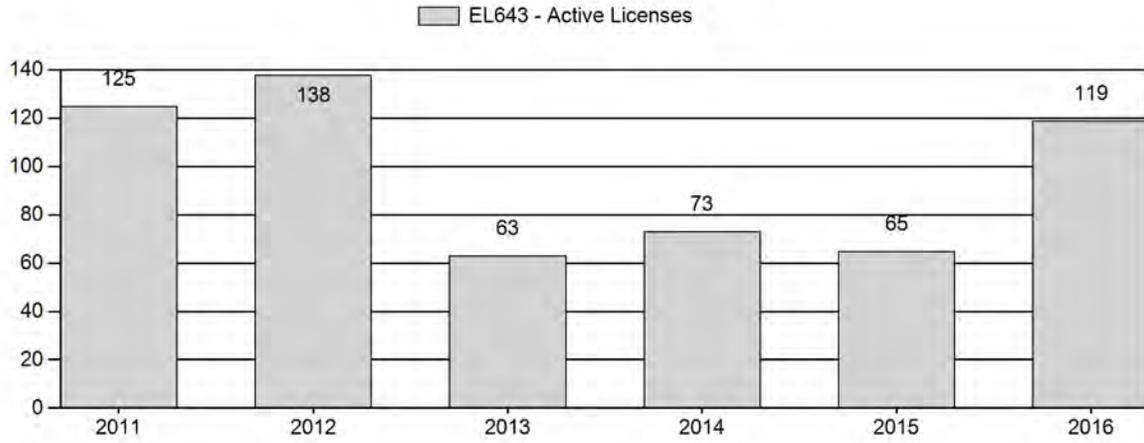
Number of Hunters



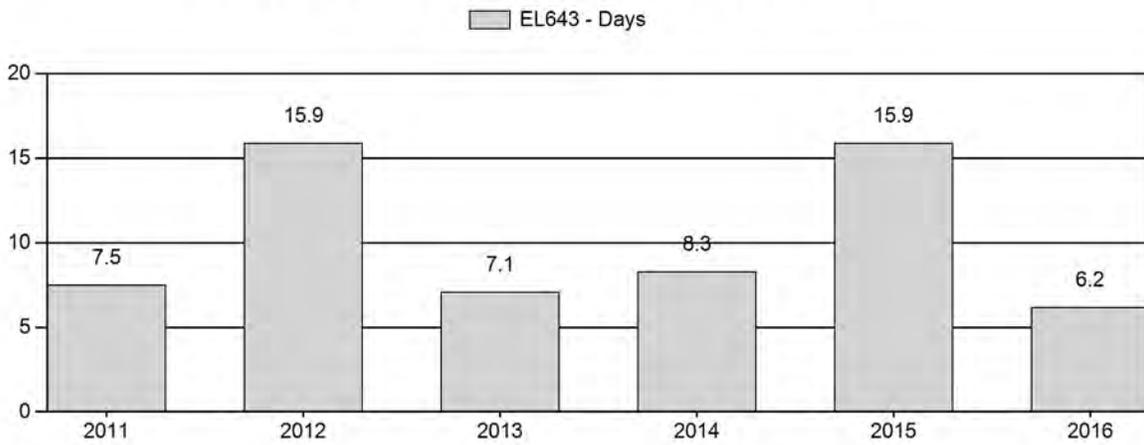
Harvest Success



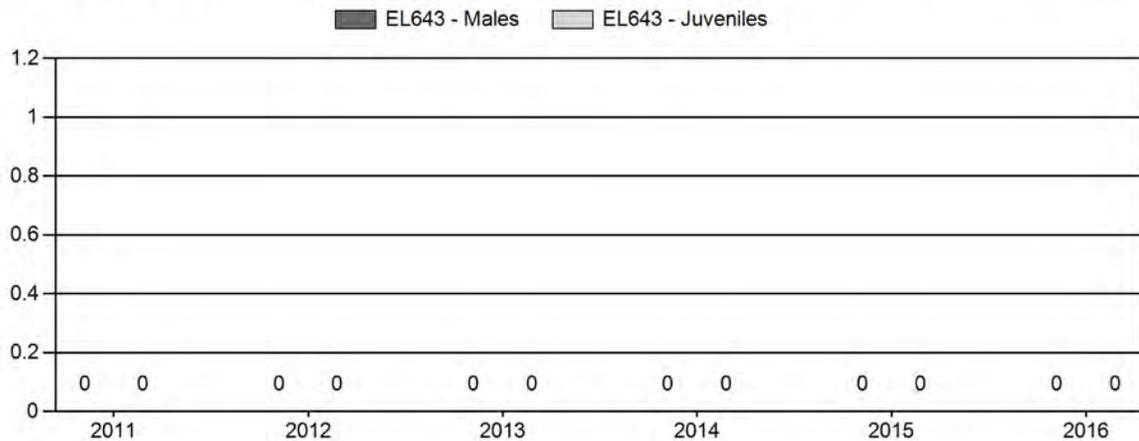
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Elk Herd EL643 - SHAMROCK

Year	Post 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	200	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2012	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2013	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2014	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2015	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2016	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0

**2017 HUNTING SEASONS
SHAMROCK ELK HERD (EL643)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
118	1	Oct. 22	Nov. 12	25	Limited quota	Antlered elk
	4	Oct. 22	Nov. 30	25	Limited quota	Antlerless elk; valid also in that portion of Area 100 east of the Bar-X Road (Sweetwater County Road 21) and south of the Luman Road (Sweetwater County Road 20)
	6	Oct. 1	Nov. 30	75	Limited quota	Cow or calf valid south of the Mineral X Road (Sweetwater County Road 63 and BLM Road 3206); and also in that portion of Area 100 east of the Bar-X Road (Sweetwater County Road 21) and south of the Luman Road (Sweetwater County Road 20)
Archery 118		Sep. 1	Sep. 30			Valid in the entire area(s)

Hunt Area	License Type	Quota change from 2016
118	1	0
	4	0
	6	0
Herd Unit Total	1	0
	4	0
	6	0

Management Evaluation

Current End-of-Year Population Trend Count Objective: 75

Management Strategy: Recreation

2016 Postseason Population Estimate: N/A

2017 Proposed Postseason Population Estimate: N/A

Herd Unit Issues

The management objective for the Shamrock Elk Herd Unit is an end-of-year trend count of 75 elk. The management strategy is recreational management. This objective and management strategy were first established in 1984, when elk were found almost exclusively in the southeastern quarter of the herd unit, and were last publicly reviewed in 2015. Change to a landowner and hunter satisfaction objective was proposed in 2015 but was met with resistance by landowners who prefer management be committed to a fixed number of elk. A new spring trend count management objective was adopted, with the first count scheduled for spring 2017.

This herd consists of bands of elk scattered in open sagebrush desert with three main areas of concentration in the southeast, southwest and the northeast corners of the herd unit. Observations have documented movement of bands of elk between these three concentration areas, as well as into Area 100 to the west, producing uncertainty on the actual numbers of elk in the population. Aerial trend counts have been attempted, but often failed to find elk in all three areas simultaneously. Snow cover is rarely adequate for good visibility of elk from an aircraft. Classification samples have been too small and inconsistent to allow for a reliable herd population model to guide management. As a result, license quotas have been based upon harvest statistics and simple assumptions of annular herd growth and harvest.

These bands of elk are highly mobile, and observations before and during the 2012 hunt suggested a significant number of elk from the southwestern portion of the herd may have moved west into more mesic habitats in the eastern portion of Area 100. This shift into Area 100 was noted again in 2014 and 2015, but may have been due to hunting pressure from cow/calf hunters rather than weather or drought.

A cow elk died of lichen toxicity just a few miles into Area 100 in September of 2012, presumably induced into consuming lichen as a result of extremely poor forage conditions that year. At least eight elk died of lichen toxicity in the eastern portion of Area 100 during the 2015-16 winter. No incidences of lichen toxicity in elk were noted in this herd, however roughly 150-200 elk wintering along the border between Areas 118 and 100 were reported to have left orange and red urine stains, indicative of lichen consumption, during both the 2014-15 and 2015-16 winters.

Weather

Record precipitation was received in 2015, producing exceptional vegetation growth and, presumably, high calf survival. This was followed by good precipitation again in spring of 2016, allowing further recovery of ranges from the severe drought of 2012 and 2013. Condition of elk going into the 2016-17 winter is expected to have been excellent. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. Despite improved condition of both animals and forage, winter losses may have been above average.

Habitat

While no herbaceous habitat transects are established within this herd unit, herbaceous forage production appeared exceptional in 2015 and above average in 2016. Only one shrub transect has been established near this herd unit, on the Chain Lakes WHMA, but was not read in 2016.

Habitat losses to uranium development increased with the opening of the Lost Creek *in situ* uranium mine near the center of the herd unit, but the disturbance is not in or near crucial elk ranges. Habitat losses to gas development have slowed in portions of the herd unit due to low oil and gas prices, but recently surged on the west end of the Chain Lakes WHMA.

Field Data

All classification samples for this herd have been statistically inadequate and no posthunt classification data were collected again this year. Dispersal of these elk in small bands across hundreds of square miles of sagebrush makes both aerial and ground classifications prohibitively expensive. Increased precipitation during 2015 and 2016 improved calf production in neighboring herds and production in this desert herd probably increased as well.

Harvest Data

Hunter success is typically high in this herd unit due to the open terrain and limited cover, but was exceptionally poor in 2012 when large numbers of elk were reported to have moved into the southeastern portion of Area 100. Success improved when license quotas were reduced beginning in 2013, but success for Type 1 hunters was still below the long-term average. Success fell for all three license types again in 2015, to record lows for the Type 4 and Type 6 hunters. Many hunters attributed the low numbers of elk in Area 118 to movement west into the southeast portion of Area 100. To compensate, Type 4 and 6 hunters were allowed to hunt in the southern portion of Area 100 in 2016, where landowners had requested increased elk harvest. The strategy was successful, with success for these license types increasing significantly. At 77 percent success, the Type 6 hunters enjoyed the highest antlerless success ever recorded in this herd.

As would be expected with improved hunter success, the average number of days hunted per elk harvested decreased in 2016 for both antlerless license types. The effort required to harvest an antlered elk, however, rose to its highest level in 13 years, suggesting having access to a portion of Area 100 greatly simplified harvest for the antlerless elk hunters. Not surprisingly, hunter satisfaction jumped to 84 percent with the increased access to elk for harvest.

With the increase in the Type 6 quota and despite having the option to hunt in a portion of Area 100, harvest in 2016 was more than three times that taken in 2015. The added pressure along the eastern edge of Area 100 may have prevented the border crossing seen in 2012 and 2015. Even with fewer elk to hunt, none of the Type 1 holders reported having to harvest a spike or antlerless elk.

Of 30 Type 6 license holders that responded to the harvest survey, only 5 (17 percent) reported harvesting their elk in Area 100, yet a phone survey of 53 of these 75 license holders found 63 percent reporting that they harvested their elk in Area 100. A portion of the hunters in Area 100

were also allowed to hunt in the southwestern portion of Area 118, but none reported doing so in the phone survey.

Population

While initially found only in the southeastern portion of the herd unit, over the past 20 years elk have expanded into most portions of Area 118, at least for some seasons of the year. Numbers increased as well, with Department personnel being able to confirm at least 270 elk in this area prior to the 2010 hunting season. Harvests were increased, and the herd was estimated at about 200 elk following the 2011 hunt. Harvest from Type 6 licenses was most effective at reducing elk numbers in the southeast corner where elk use of private lands had been a concern.

Localized movement of elk westward into Area 100 from the southwest portion of Area 118 cannot explain all of the difficulty hunters had finding elk to harvest in the entire area in 2015. Harvest statistics indicate increased harvests in recent years have reduced elk numbers across the herd unit.

Management Evaluation

Expected harvest from the 2017 season is about 85 elk, with roughly 80 percent being antlerless. In previous years, cow/calf licenses were restricted to the southeastern portion of the area to address landowner concerns about elk numbers on private lands close to Rawlins. This strategy was successful, and the restricted area for those Type 6 licenses was expanded to include all of the hunt area south of the Mineral X Road beginning in 2013, which encompasses most private lands within the checkerboard. A similar delineation for the Type 6 licenses is used in 2017.

Opening date in this hunt area has been in the third week of October since it was reopened to hunting in 1992. Recently, there have been years when significant numbers of elk moved west out of the southwestern portion of this herd unit into Area 100 before or during hunting season, reducing harvests. In an attempt to compensate for this movement, the opening date for this area was synchronized with Area 100 in 2011 and 2012, on Oct 15. The attempt failed, with a large number of elk still moving west in 2012. There simply was not enough hunting pressure in the eastern end of Area 100 to shift elk back into Area 118. Complaints about the earlier opening date were received from nearly every hunter contacted, most being upset about crowding due to the season opener coinciding with that for the deer season. Others commented on the lack of a Department presence in the field on opening day, and subsequent poor hunting behavior (chasing with vehicles, herd shooting) by some participants.

Opening date for the Type 1 and Type 4 seasons was returned to the traditional third week of October beginning in 2014, avoiding overlap with the general license deer hunt in the same area. Closing date for the Type 4 season is extended to the end of November to match the opportunity available to the Type 6 hunters. The archery season uses standardized dates and is comparable to those in neighboring areas.

To address the problem of elk dispersing into the southeastern portion of Area 100, Area 118 Type 4 and Type 6 licenses were also valid in the southeastern corner of Area 100 in 2016, bounded by the Bar-X and Luman Roads. This strategy was also intended to test the boundary change between these two herd units that was proposed in 2014. To prevent those elk residing along the herd unit boundary from avoiding harvest by moving east into Area 118, hunters with

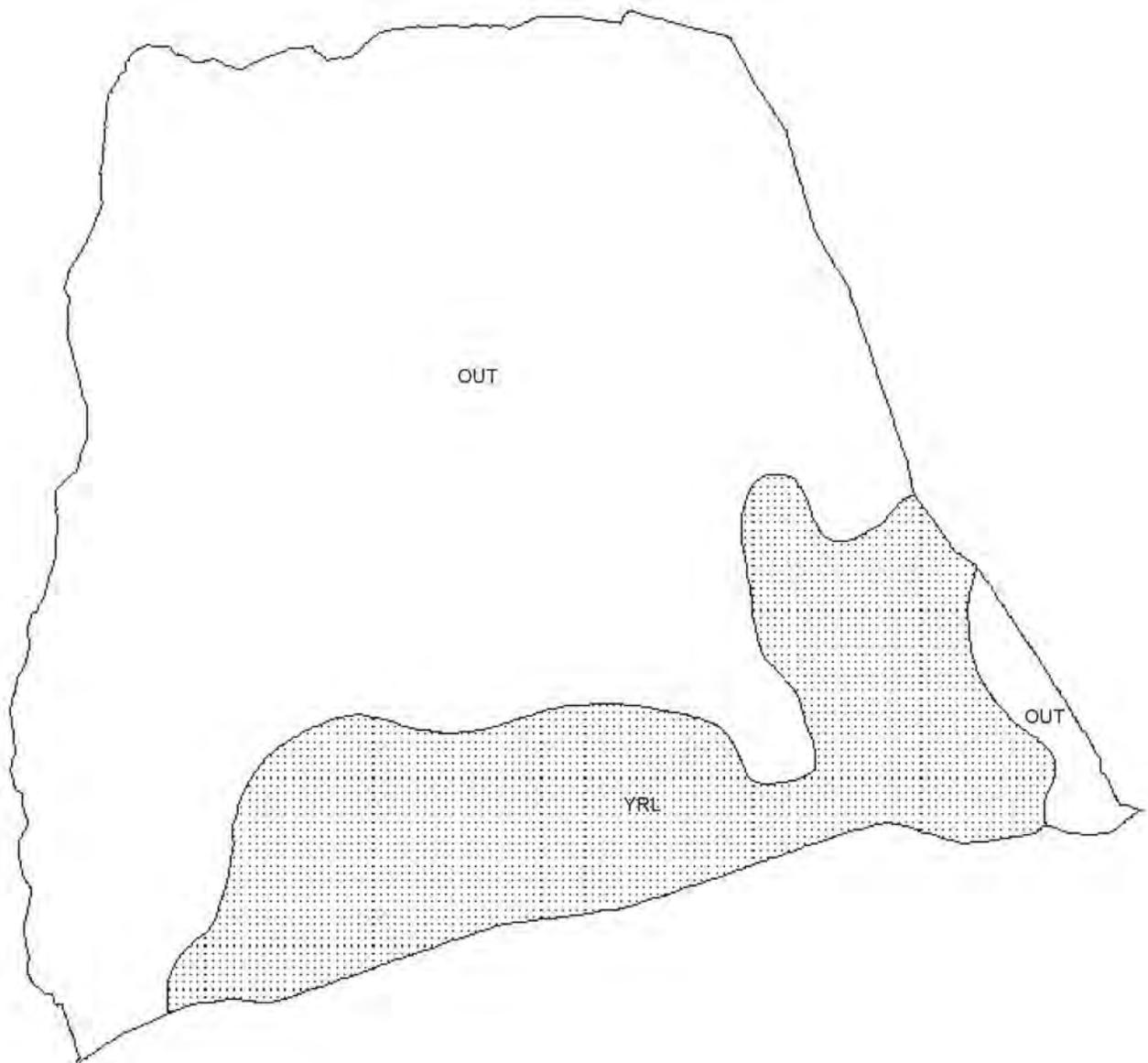
Area 100 Type 6 licenses were also able to hunt in that portion of Area 118 south of the Mineral X Road and west of the Riner Road. The opening dates for the Area 118 Type 1 and Type 4 seasons were advanced by one day to synchronize with the Area 100 Type 6 season.

While this strategy successfully increased harvest from the southeast portion of Area 100, most of that harvest did not come from the targeted band of elk that straddle the boundary between these two herds. Instead, phone contacts with hunters discovered most elk harvested in Area 100 on Area 118 licenses came from farther west, mainly along the Tipton Road. Unfortunately, preliminary season information provided to the public at the end of 2016 already committed to a second year of the overlapping cow harvest from the corners of these two herds in 2017. As a result, the 2017 seasons for Area 118 and 100 repeat the overlap used in 2016. Hunters were advised at public meetings that this strategy had not accomplished its purpose and was unlikely to be continued in 2018.

The population objective of 75 elk adopted for this herd unit in 1984 may have been appropriate when elk were only resident in the checkerboard, primarily in the southeast corner near Rawlins. With increased elk numbers in the habitats shared with Area 100 to the west and expansion of the population into mostly public lands north of the Mineral X Road, it may be reasonable to consider a different objective, particularly since collection of adequate data to model the herd is unlikely with current budgetary restraints. Realigning herd unit and hunt area boundaries with Area 100 to the west may also improve management of elk in this portion of the Red Desert.

To address concerns over elk use on private lands, a commitment to retain the 75 objective was made in 2016, to be based upon standardized spring End-of-Year Trend counts. The first of these spring counts is scheduled to occur in 2017, in conjunction with pronghorn line transect surveys.

E643 - Shamrock
HA 118
Revised - 5/88



2016 - JCR Evaluation Form

SPECIES: Moose

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

HERD: MO620 - LANDER

HUNT AREAS: 2, 30, 39

PREPARED BY: STAN HARTER

	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Trend Count:	122	151	175
Harvest:	8	9	5
Hunters:	10	10	5
Hunter Success:	80%	90%	100 %
Active Licenses:	10	10	5
Active License Success	80%	90%	100 %
Recreation Days:	116	89	50
Days Per Animal:	14.5	9.9	10
Males per 100 Females:	62	53	
Juveniles per 100 Females	38	44	

Trend Based Objective (± 20%) 225 (180 - 270)

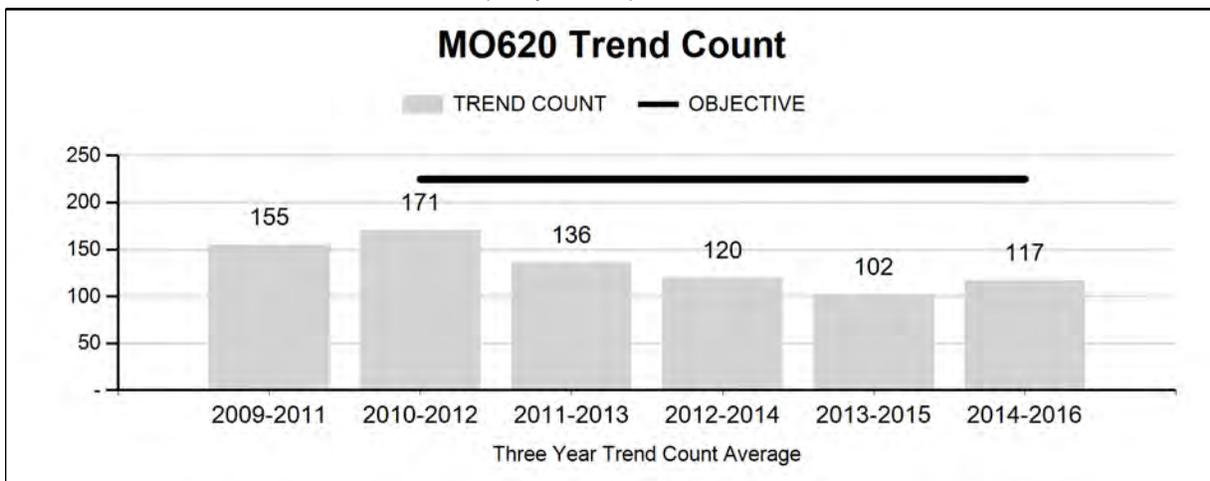
Management Strategy: Special

Percent population is above (+) or (-) objective: -32.9%

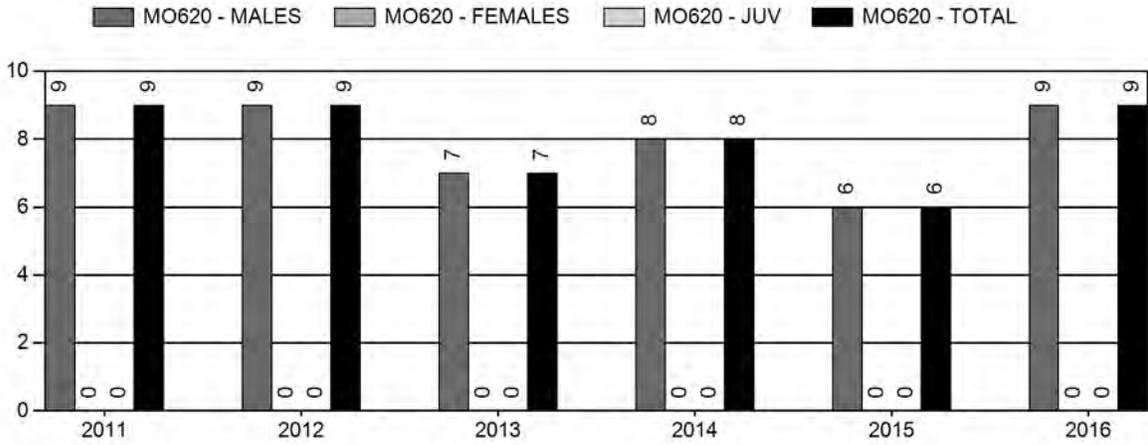
Number of years population has been + or - objective in recent trend: 4

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

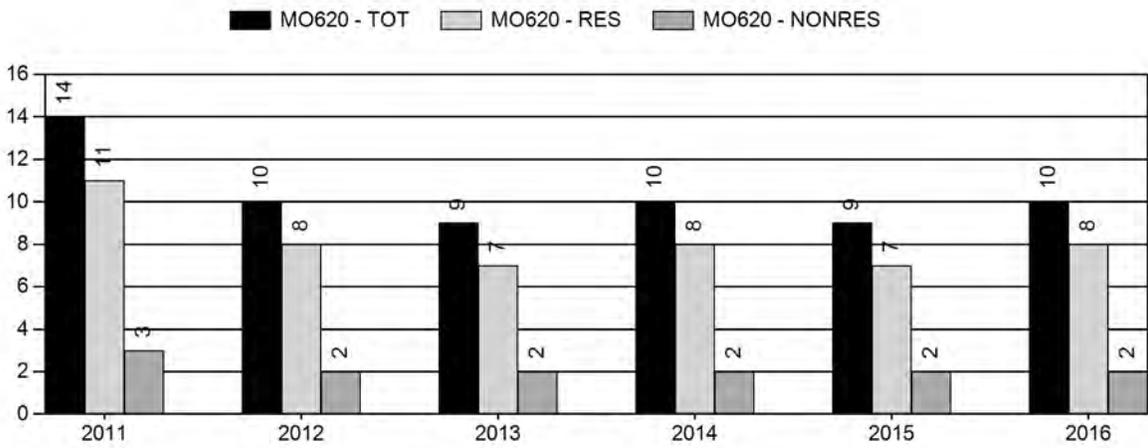
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



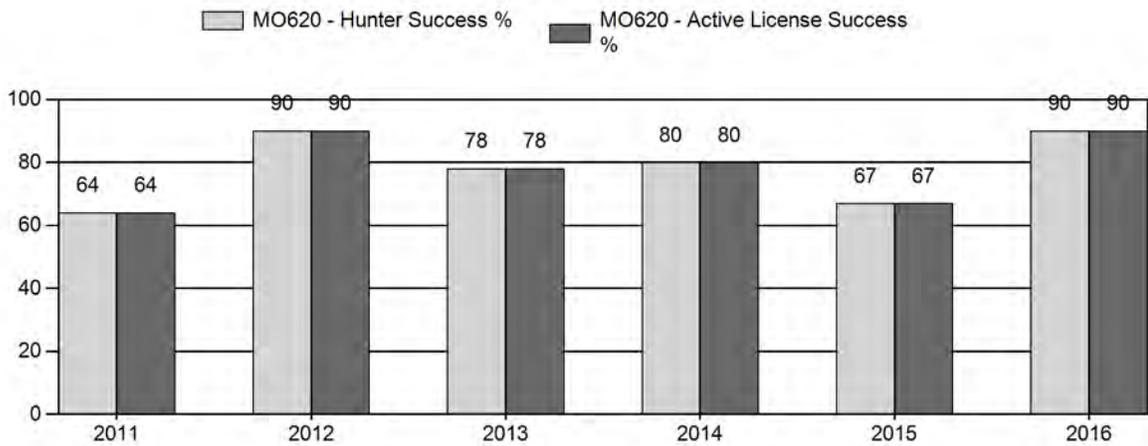
Harvest



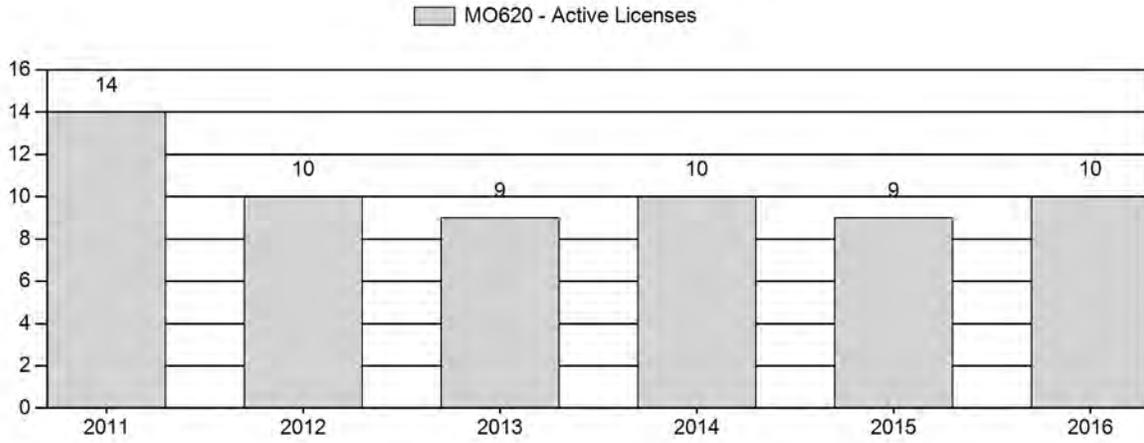
Number of Active Licenses



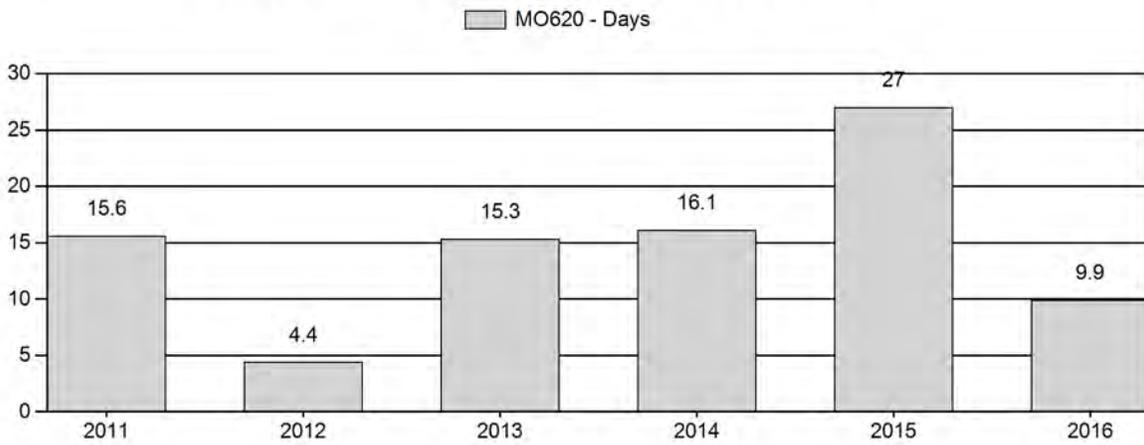
Harvest Success



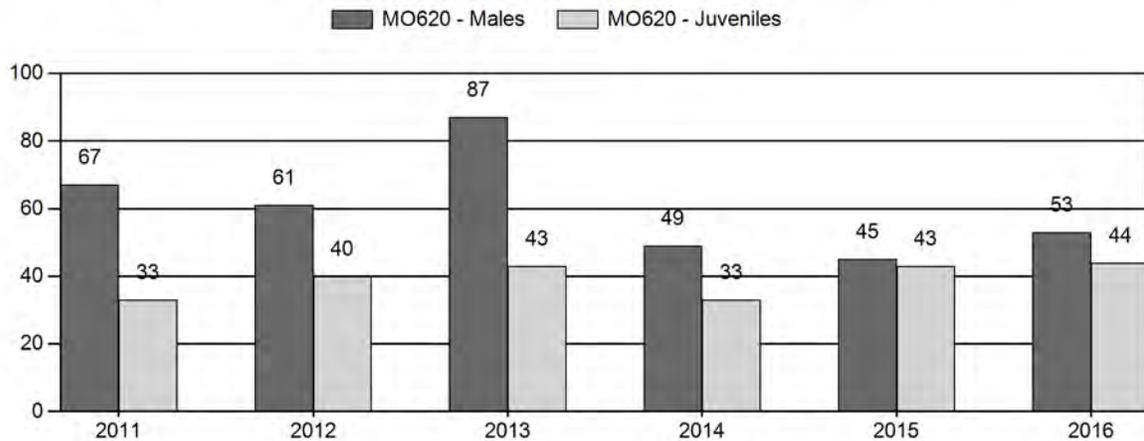
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Moose Herd MO620 - LANDER

Year	Post 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	0	0	0	54	33%	81	50%	27	17%	162	263	0	0	67	± 11	33	± 7	20
2012	0	0	0	43	30%	70	50%	28	20%	141	0	0	0	61	± 12	40	± 9	25
2013	0	0	0	40	38%	46	43%	20	19%	106	0	0	0	87	± 0	43	± 0	23
2014	0	0	0	30	27%	61	55%	20	18%	111	0	0	0	49	± 0	33	± 0	22
2015	0	0	0	20	24%	44	53%	19	23%	83	0	0	0	45	± 0	43	± 0	30
2016	0	0	0	38	27%	72	51%	32	23%	142	0	0	0	53	± 0	44	± 0	29

2017 HUNTING SEASONS
Lander Moose Herd Unit (MO 620)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
2, 30	1	Oct. 1	Nov. 20	5	Limited quota	Antlered moose
Archery		Sept. 1	Sept. 30			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota Change from 2016
30	1	-5
Herd Unit Total	1	-5

MANAGEMENT EVALUATION

Current Mid-Winter Trend Count Management Objective: 225

Management Strategy: Median age of harvested bulls > 4.5yr; 50-70 bull/100 cows

2016 Trend Count = 151

Most Recent 3-year Running Average Trend Count = 117

Herd Unit Issues/Population

This population has experienced a general decline beginning in 1995. Trend counts showed a general upward trend from 2004 through 2010, an excellent year for detecting moose with near optimal snow cover and flight conditions. Starting in 2011, sample sizes have declined quite sharply, mostly due to less favorable snow cover and/or flight conditions. This year's trend count bounced back substantially to 151 moose, with deep snow and favorable flight conditions allowing us to detect more moose in open habitats and reduce risk of missing them in timbered areas. While this is good news, we were disappointed the count was not higher. While some wolf activity has been reported for several years, especially in Area 30, documentation and public reports of wolves in Area 2 have substantially increased since fall 2015.

Moose, especially throughout the southern extent of their range, are susceptible to a variety of diseases, parasites, and other maladies. Presence of carotid artery worms (*Elaeophora schneideri*) has been increasingly documented in most herd units in Wyoming. However, no worms have been found in moose from the Lander Herd Unit recently. In fact, no presence of *Elaeophora* worms has been detected in this herd unit since it was first discovered in 1999 and 2000. Several cases of winter ticks were reported in bio-year 2015, with at least one confirmed mortality of a bull calf at Slate Creek along Wyoming Highway 28, but detections of parasites or disease were low in 2016.

Attempts to develop a spreadsheet model for Lander Moose were not successful. In the absence of an accurate, or even usable, population estimate for the Lander Moose Herd Unit, a change to an alternative objective was necessary. Mid-winter trend counts, collected as classification survey data were deemed the best alternative, and seem to be a reliable trend indicator as we fly

all available winter ranges annually. Therefore, the management objective was changed in 2013 to a trend count of 225 moose (range of 180-270 moose). The 2016 trend count was 151 moose which is an improvement over the last 4 years, but the 3-year average of 117 is 48% below objective.

Field Data

Moose winter range trend count/classification surveys were conducted January and February 2017, in combination with elk classification and trend count surveys. All hunt areas were flown using a Bell Jet Ranger helicopter to survey traditional winter habitats throughout the herd unit. Most moose were observed in traditional willow riparian areas and adjacent sagebrush/bitterbrush slopes, or aspen stands. With excellent snow cover in most moose habitats, we believe we detected nearly all moose in the flight path. Few tracks were observed where we felt moose were missed, and a few moose reported by a landowner were added to the trend count despite not being classified. The trend count of 151 moose was the fourth best since 2006 as shown in Figure 1 and was 20% above the average in that time frame (range 80-209).

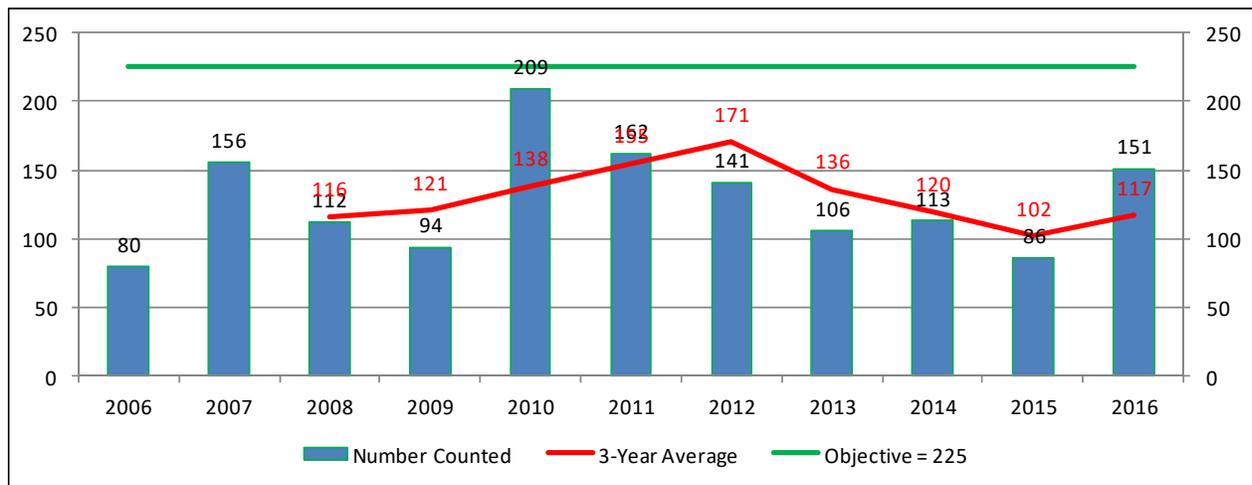


Figure 1. Lander Moose Herd Unit trend counts, 2006-2016.

The post-season calf/cow ratio increased slightly to 44J/100F, and the bull/cow ratio increased to 53M/100F (Figure 2). Since 1994, calf/cow ratios have been in a downward trend, but have shown gradual improvement since 2007. Bull/cow ratios are widely variable, but have demonstrated a general upward trend since 1994, and have averaged about 59 bulls per 100 cows since 2006 (range 44 – 87), well above the recommended minimum level of 50M/100F to assure an adequate number of males are available to breed receptive females, to provide prime age males in the social structure of the population, and to provide quality recreational opportunity, as per the Moose Working Group’s Population Management Recommendations (January 2008).

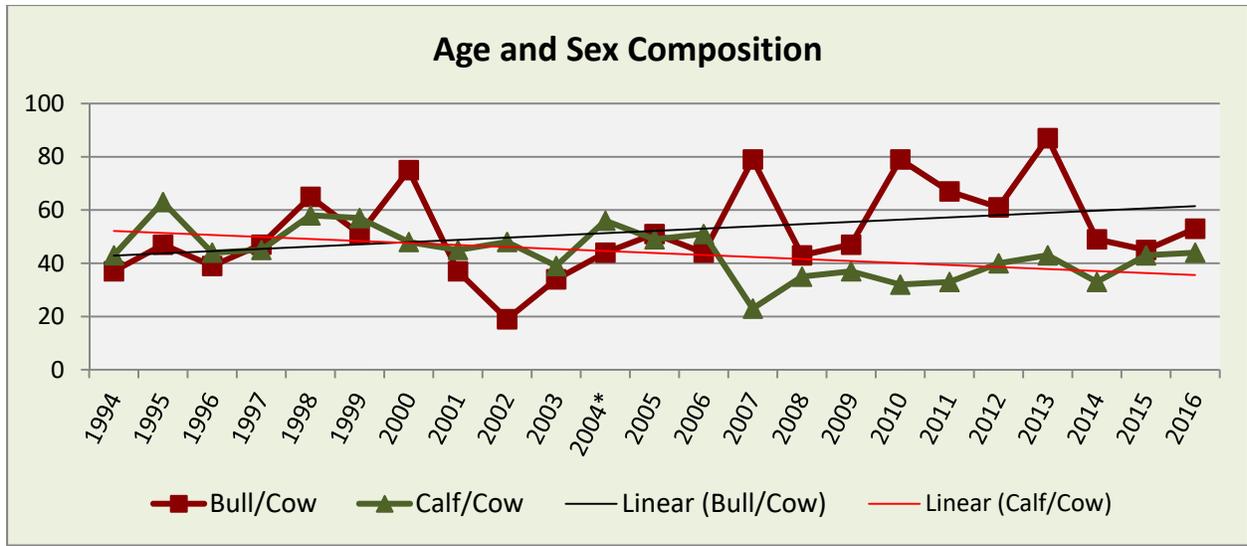


Figure 2. Age and sex composition for Lander Moose, 1994 – 2016.

Weather

Precipitation from October 2015 through September 2016 was markedly higher than the 30 year average. The growing season precipitation (April-June 2016) was also notably higher than the 30 year average, while the high elevation spring-summer-fall range growing season precipitation was equal to the 30 year average. In May, over Mothers’ Day Weekend, a large storm delivered very heavy rainfall most of the Lander moose herd unit, and caused landscape-wide runoff and flooding. The majority of the growing season precipitation fell in this one weekend. Also of note, during the month of July there was zero measurable precipitation, and June and July temperatures were higher than average.

Winter 2016-17 has been characterized by colder than average temperatures following a mild fall, with the temperature from November-February averaging 23.6^o Fahrenheit, which is considered below normal for this time period in the Lander area. So far, 61” of snowfall has been recorded in Lander mostly after December 1, 2016. This is 11.4” above the 30 year average. Above average snowfall for Lander and the surrounding foothills likely causes some concern for wintering moose especially in Area 30 and near South Pass in Area 2. However, if the snow melts gradually, it will benefit vegetation production in the coming growing season. Snow water equivalents for the South Pass, Deer Park, and Townsend Creek SnoTel sites recorded February 1, 2017 were 227%, 245%, and 185% of the official mean for those respective sites.

Habitat

Future management of Lander Moose will also include evaluation and monitoring of habitat conditions on key moose winter ranges. Habitat management and monitoring strategies are being deliberated by the Department’s Moose Working Group, and we are awaiting direction from them before moving forward with establishing transects. In the meantime, recently developed riparian “Rapid Habitat Assessments” will be implemented for the South Wind River mule deer herd unit to develop a baseline from which to gauge overall habitat conditions. These assessments should also be useful for evaluating habitat conditions for the Lander moose herd unit, especially where the assessments include visits to several old moose habitat monitoring locations, as well as at selected new locations.

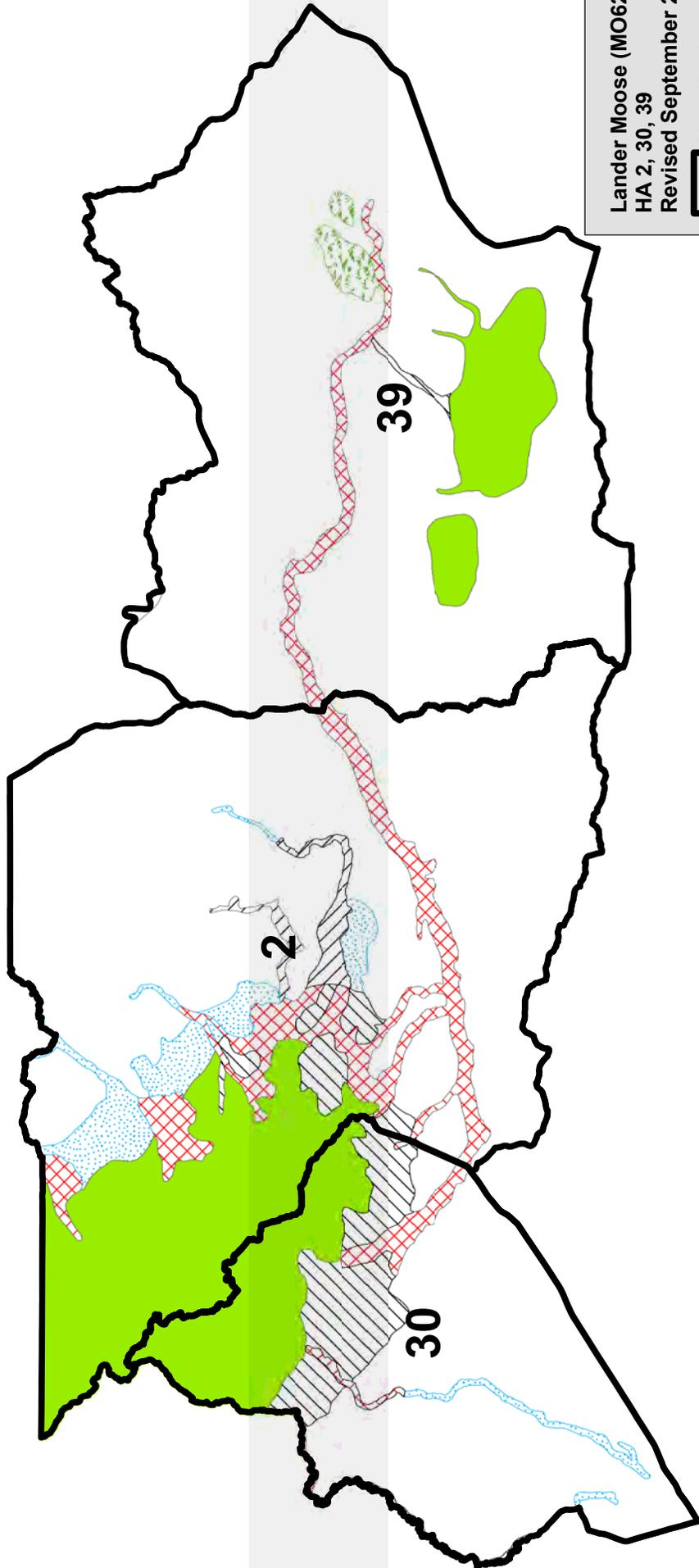
Harvest Data

In 2016, 10 hunters harvested 9 moose (4 in hunt area 2, and 5 in hunt area 30) for hunter success of 90%. The number of days per moose harvested dropped to 9.9 days, indicating better detection of bull moose by hunters. According to the tooth aging report, teeth were submitted from 6 of the 9 harvested bull moose. The median age of harvested bulls as measured via cementum annuli was 5 years (range 3 – 8 years). Hunters reported seeing 36 moose in Area 2 and 15 moose in Area 30 in 2016, a reduction from 2015 but since success rates were higher and days per animal were lower, hunters seemingly had less time to observe other moose. Antler width averaged 33 inches (range 30 – 39 inches) for the 6 moose from which we received width measurements.

Management Summary

Due to concerns about overall moose population trend, we changed the 2017 season structure for the application “packet” to combine both Hunt Areas 2 and 30 into a single hunt opportunity. For now, we are maintaining separate hunt areas, but allowing hunters to hunt the entire season in both areas. Although the 2016 trend count was much improved, it is still 33% below objective (48% below based on the most recent 3-year average) and we have concerns that deep snow in many moose habitats may lead to increased mortality. Therefore, we are limiting hunters to 5 Type 1 antlered moose licenses valid in both hunt areas concurrently for the entire season.

The 2017 season should provide a quality experience for moose hunters and improved hunter statistics. We expect hunter success to be 100%, resulting in a harvest of 5 bulls.



Lander Moose (MO620)
 HA 2, 30, 39
 Revised September 2011

Moose Hunt Areas

	RANGE		CRUWYL
	WIN		WYL
	YRL		SSF
	OUT		



2016 - JCR Evaluation Form

SPECIES: Moose
 HERD: MO621 - DUBOIS
 HUNT AREAS: 6

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

PREPARED BY: GREG
 ANDERSON

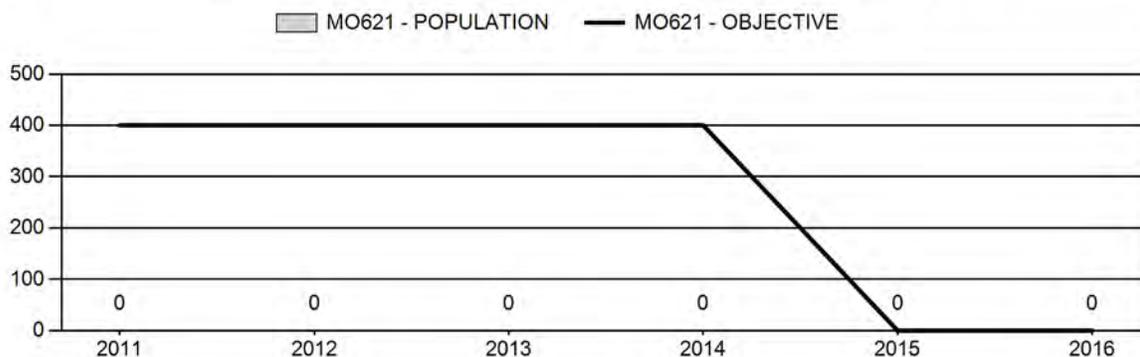
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	0	N/A	N/A
Harvest:	5	5	5
Hunters:	5	5	5
Hunter Success:	100%	100%	100 %
Active Licenses:	5	5	5
Active License Success:	100%	100%	100 %
Recreation Days:	48	36	40
Days Per Animal:	9.6	7.2	8
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

Population Objective (± 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: 2
 Model Date: 1/1/2016

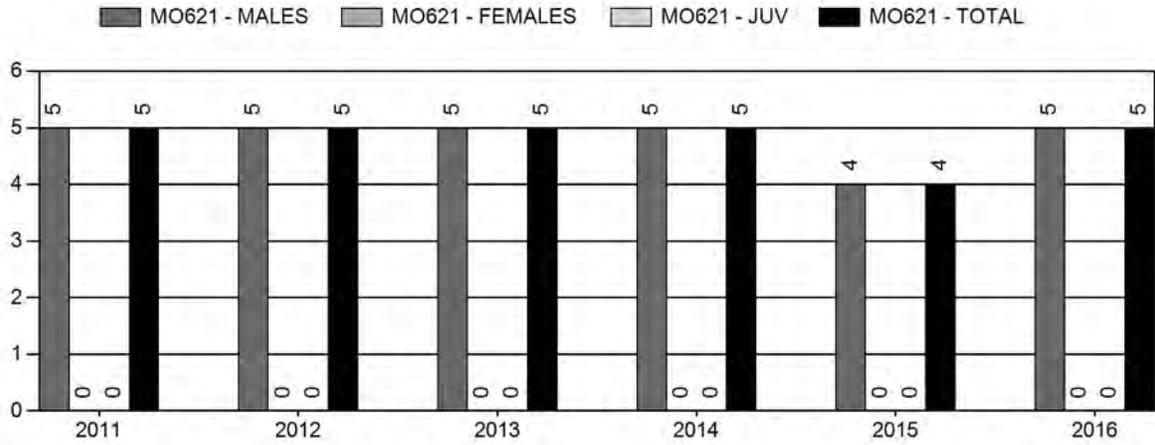
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<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%

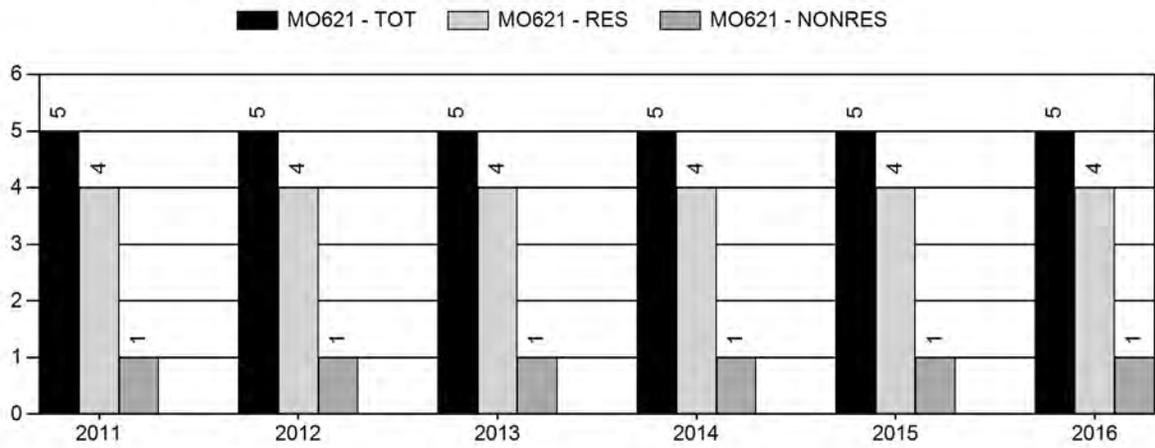
Population Size - Postseason



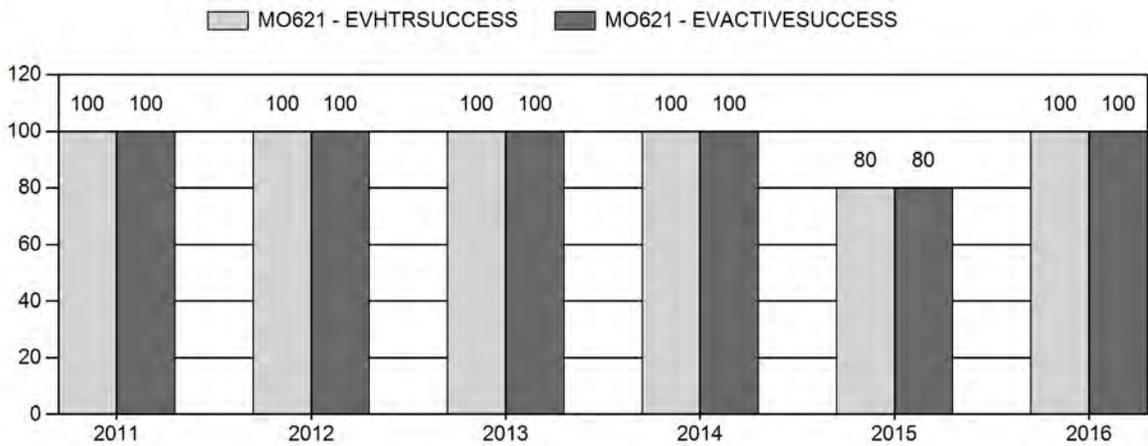
Harvest



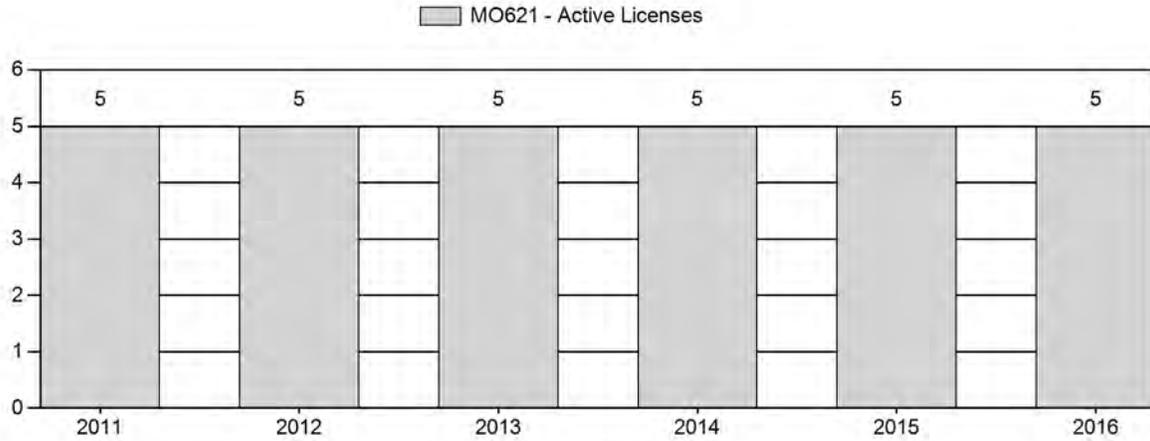
Number of Active Licenses



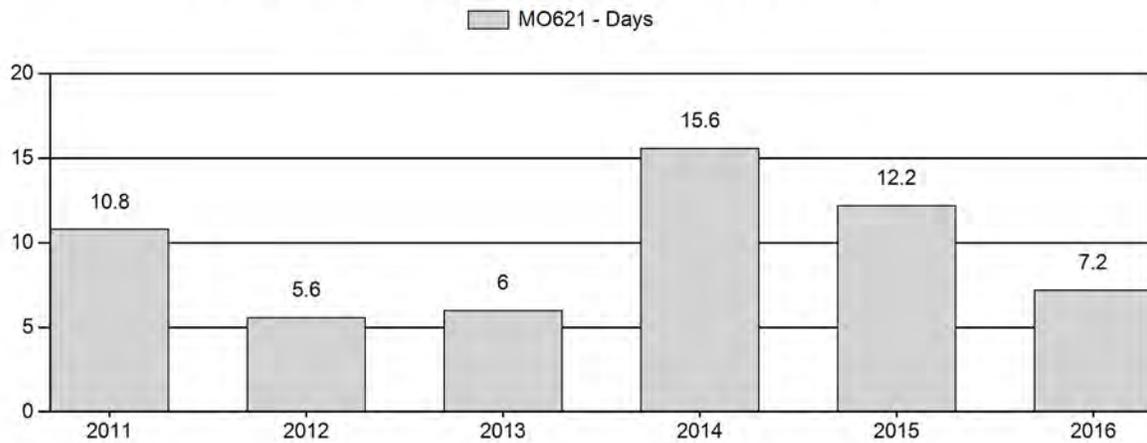
Harvest Success



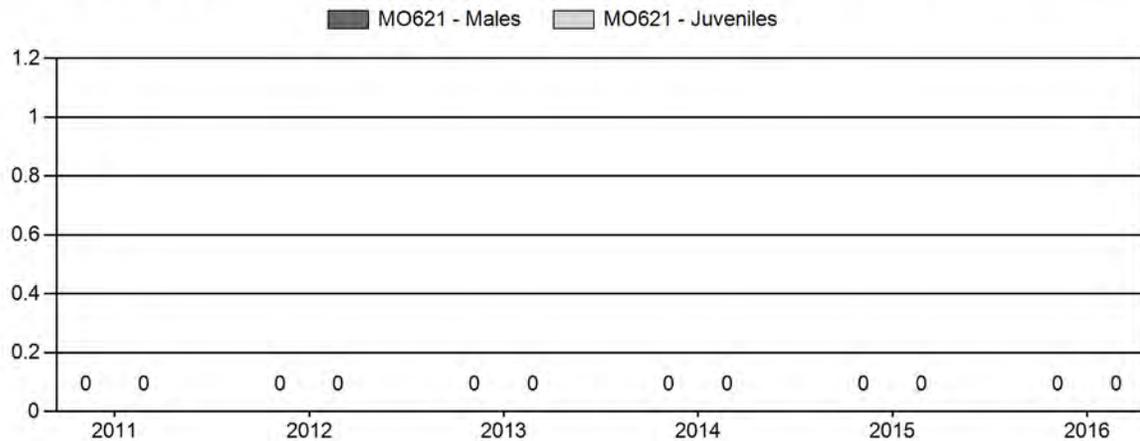
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2017 HUNTING SEASONS
DUBOIS MOOSE (MO 621)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
6	1	Oct. 1	Nov. 20	5	Limited quota	Antlered moose
Archery 6		Sep. 1	Sep. 30			Refer to section 2 of this chapter

Hunt Area	Type	Quota change from 2016
6		
Total		

Management Evaluation

Current Management Objective: Moose limited opportunity objective

Objective Status: At objective

Management Strategy: Special

Management Issues

In 2014, the management objective for the Dubois Moose Herd was changed to a ‘moose limited opportunity objective.’ This objective includes a list of several items to gauge the hunting experience in the herd unit and to ensure adequate herd health. The intent is to provide a small number of license holders a high quality experience. To this end, the Department aims to issue licenses such that:

1. The 5-year running median age of harvested bulls is ≥ 4 years.
2. The 5-year running average of the days/animal statistic for Type 1 license holders is ≤ 10 .
3. Department personnel document adult bulls in the herd unit each year.
4. 40% of harvested bulls are ≥ 5 years old for a 5-year running average.

Over the past 8 years, the Department has only issued 5 licenses in this herd unit annually. Since the objective criteria in the herd unit are dependent on harvest statistics and particularly tooth age data it can be problematic at times evaluating even these basic items. For example, only 1 set of teeth was submitted for age analysis in 2012 and only 2 sets were submitted in 2013. In 2016 all 5 hunters harvested moose and submitted teeth for aging. In 2015, personnel began collecting

annual census data at 5 select moose wintering sites to document the presence of adult bulls in the population as well as providing a mechanism to identify major population changes.

Habitat/Weather

No specific data regarding moose habitat are collected within this herd unit on an annual basis. Vegetation monitoring transects on both sheep and elk winter range indicated herbaceous vegetation production was quite good in 2016. Good moisture and growing conditions should have resulted in high feed production for moose on both low elevation winter sites and mid-elevation summer range. Moose observed throughout winter appeared to be in good body condition. It is likely this population has been and will continue to be impacted by large tracts of beetle killed timber across the herd unit. The effects of this natural successional change on moose in this herd unit should manifest themselves over the next decade. In summer, 2016 the Lava Mountain fire burned a significant amount of timber adjacent to moose winter range along the upper Wind River. This large burn will also result in more early seral stage vegetation on moose winter range.

Harvest Data/Population

Anecdotal evidence suggests this population declined significantly over the past decade. Concurrently, harvest pressure was reduced and the small amount of harvest data collected annually became less useful for making management decisions. In 2014, the Department adopted the ‘moose limited opportunity objective’ for use in herds like Dubois. This objective seeks to utilize the minimal amount of harvest data available to ensure herd health and hunt quality standards are met in small moose herds.

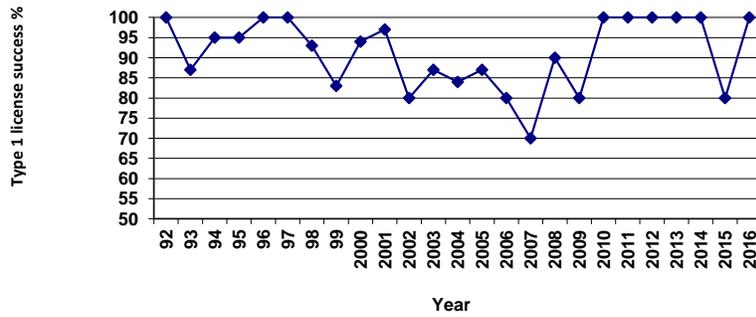
In 2016, Type 1 license holders had a 100% success rate in the Dubois Moose Herd Unit. Over the previous 5 years, Type 1 license success was 100% annually except in 2015 when success was 80% (Fig. 1). The days/animal was 7.2 in 2016 and was lower than the previous 5-year average of 10.0.

Given the 2016 harvest, the following conditions were met:

1. Five-year median age of bull harvest was 5.
2. Five-year average of days/animal was 10.0
3. Fifteen mature bulls were classified in a sample size of 31 moose.
4. Over the past five years, 7 out of 16 (62%) of tooth aged, harvested bulls were 5 years or older.

As such, all objective criteria for the herd were met and the herd is considered at objective.

Figure 1. Type 1 license success in the Dubois Moose Herd



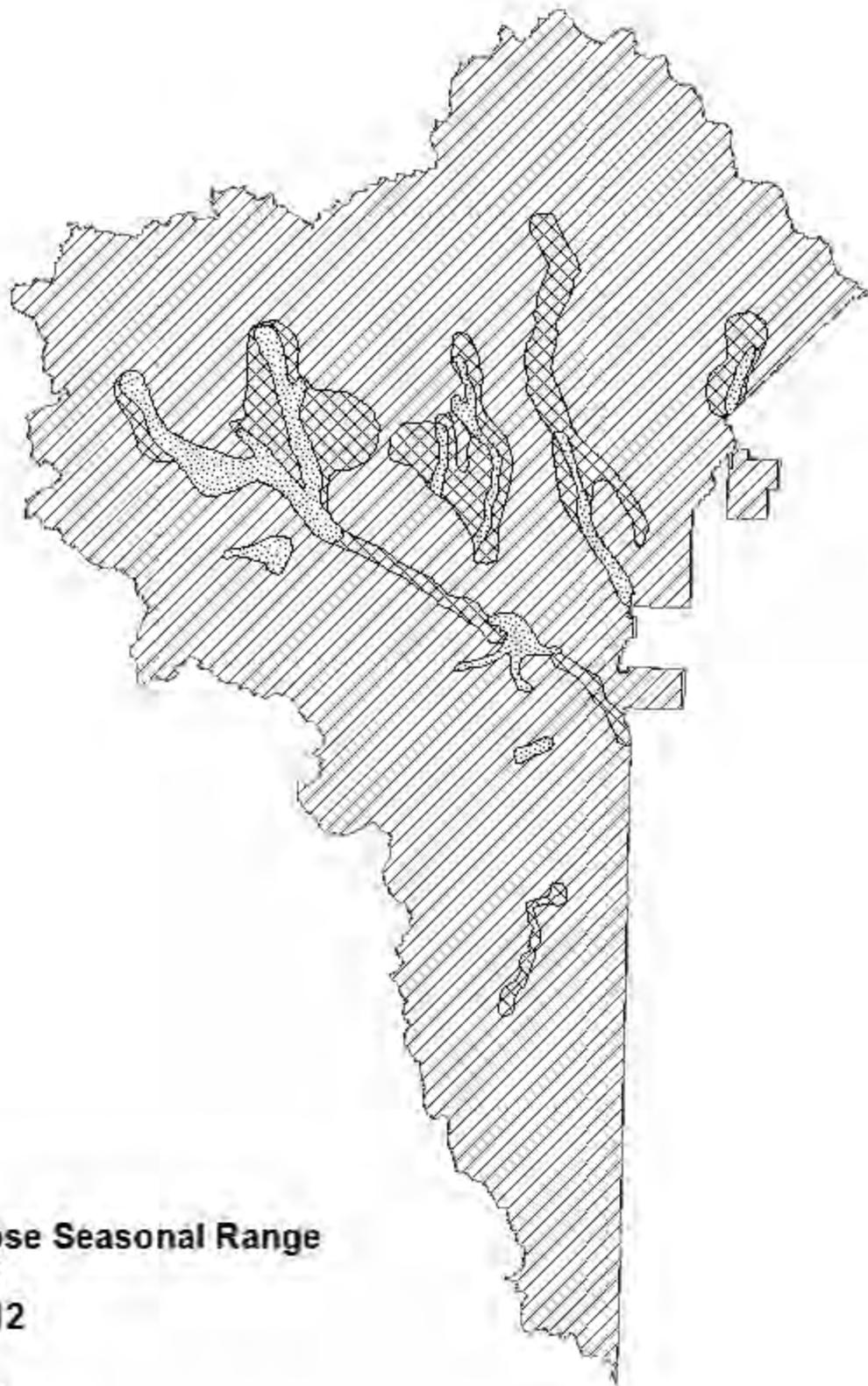
In January, 2015, personnel began counting moose at five distinct wintering areas within this herd unit (Table 1). These counts should provide a useful year-to-year comparison in the future. Significant population changes should be evident based on the presence of more or less moose at these sites. Additionally, monitoring these sites provides documentation of adult bulls in the population each year.

Table 1. Moose numbers at select wintering sites in the Dubois Moose Herd.

Location	2015		2016		2017	
	Bulls	Total Moose	Bulls	Total Moose	Bulls	Total Moose
East Fork Basin	1	6	4	9	3	6
Lower Horse Creek		3	4	4	1	1
Double Cabin		2	2	2	6	12
Upper Dunoir	4	10	5	11	5	7
Upper Wind River		8		3		5
Total	5	29	15	29	15	31

Management Summary

While hunter success has been high the past 5 years, there is no indication the moose population increased dramatically. A significant population increase should be indicated by greater moose numbers on key, highly visible winter ranges throughout the herd unit. Several years of data collection at the sites listed in Table 1 should provide some anecdotal information on the moose population in the area. Given no good information suggesting population growth in this herd unit the 2017 hunt season will remain unchanged with the issuance of 5 Type 1 licenses.



**Dubois Moose Seasonal Range
Hunt Area 6
Revised 2012**

-  CRUWYL
-  SSF
-  WYL



2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS609 - WHISKEY MOUNTAIN

HUNT AREAS: 8-10, 23

PREPARED BY: GREG
ANDERSON

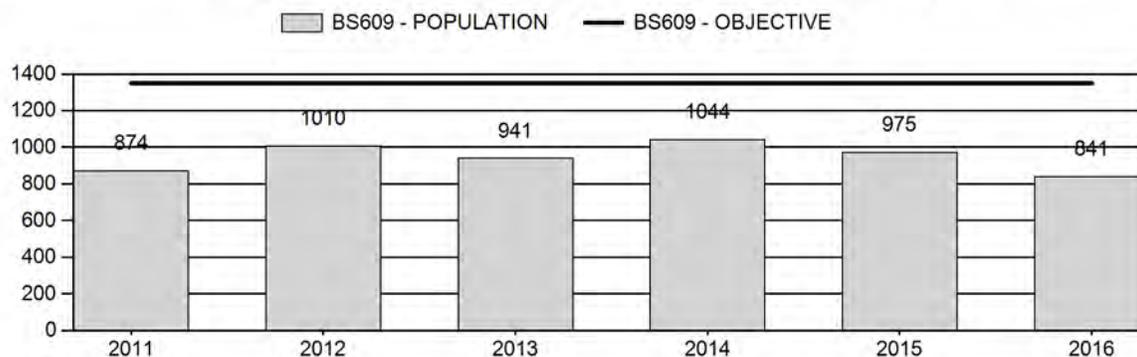
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	969	841	842
Harvest:	15	14	15
Hunters:	23	22	27
Hunter Success:	65%	64%	56%
Active Licenses:	23	22	27
Active License Success:	65%	64%	56%
Recreation Days:	210	374	350
Days Per Animal:	14	26.7	23.3
Males per 100 Females	49	47	
Juveniles per 100 Females	30	18	

Population Objective ($\pm 20\%$) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-37.7%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/16/2017

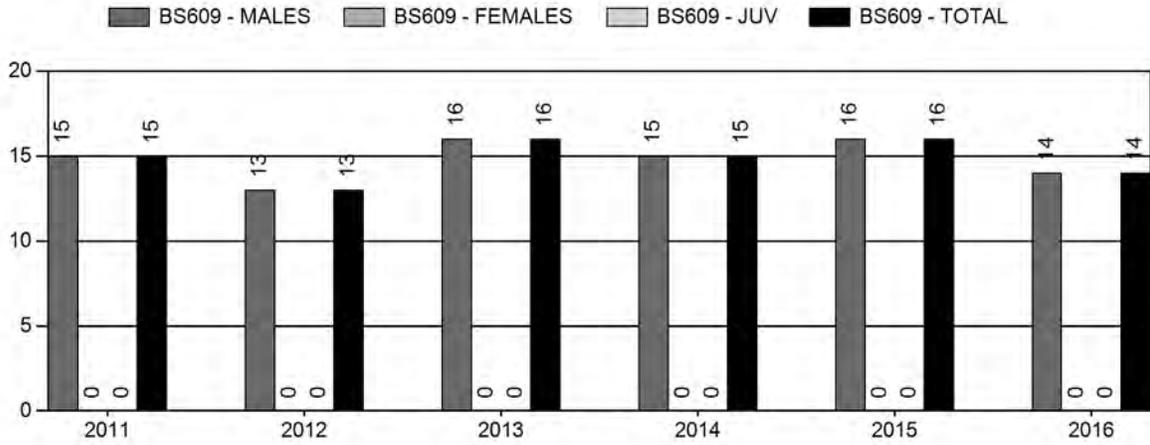
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	7%
Total:	2%	2%
Proposed change in post-season population:	-8%	0%

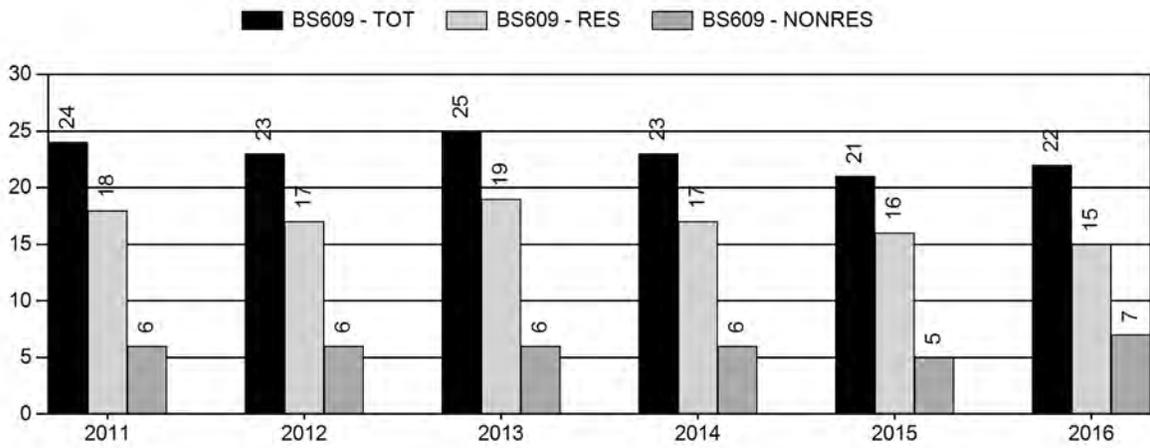
Population Size - Postseason



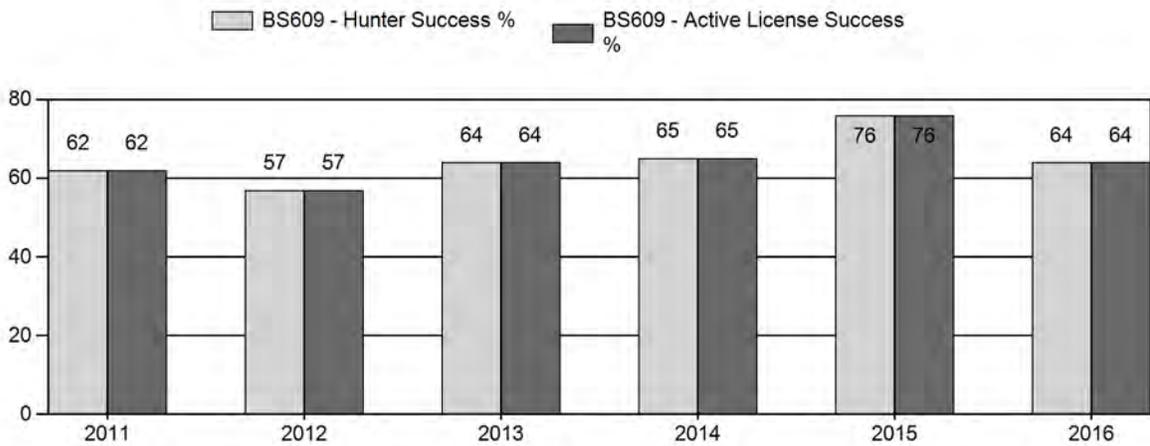
Harvest



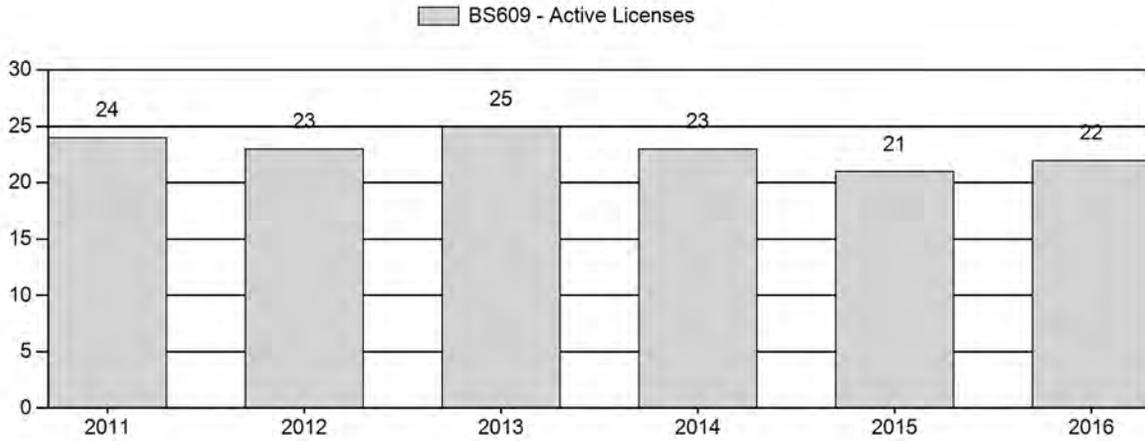
Number of Active Licenses



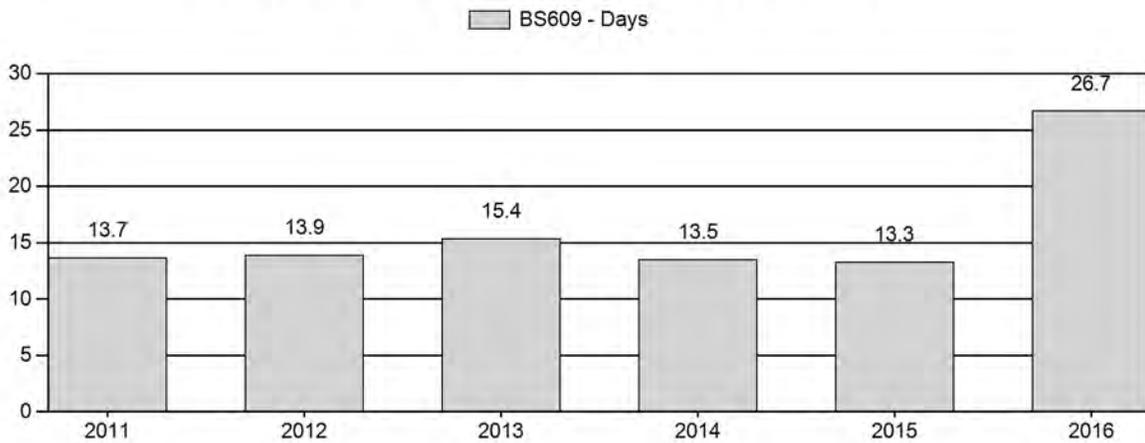
Harvest Success



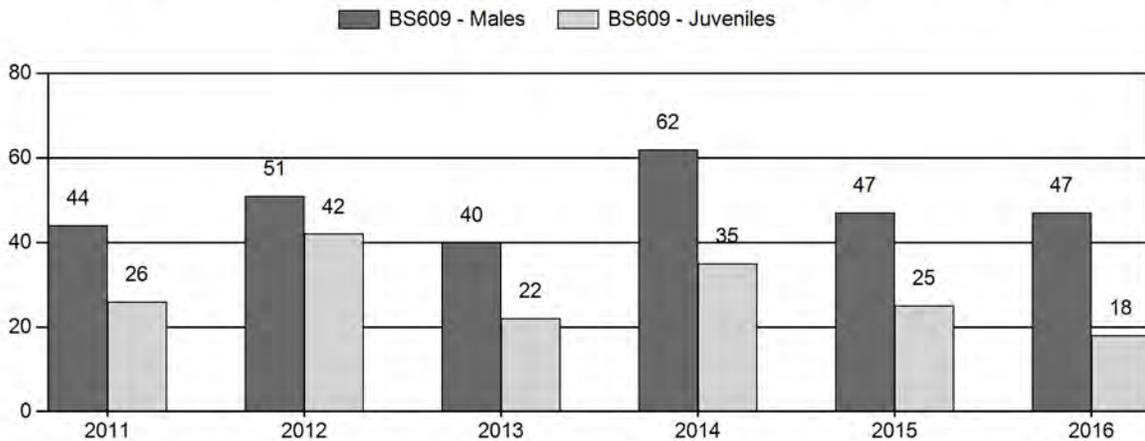
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Bighorn Sheep Herd BS609 - WHISKEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	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	874	15	83	98	26%	223	59%	58	15%	379	328	7	37	44	± 5	26	± 4	18
2012	1,010	14	149	163	26%	320	52%	133	22%	616	496	4	47	51	± 4	42	± 3	28
2013	941	16	79	95	24%	240	62%	53	14%	388	365	7	33	40	± 5	22	± 3	16
2014	1,044	22	132	154	31%	249	51%	88	18%	491	559	9	53	62	± 6	35	± 4	22
2015	975	24	128	152	27%	323	58%	81	15%	556	0	7	40	47	± 4	25	± 3	17
2016	841	9	93	102	28%	217	60%	40	11%	359	396	4	43	47	± 5	18	± 3	13

**2017 HUNTING SEASONS
WHISKEY MOUNTAIN BIGHORN SHEEP (BS 609)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
8	1	Sep. 1	Oct. 31	12	Limited quota	Any ram
9	1	Aug. 15	Oct. 15	4	Limited quota	Any ram
10	1	Aug. 15	Oct. 15	8	Limited quota	Any ram
Archery						
8		Aug. 15	Aug. 31			Refer to section 3 of this chapter
9		Aug. 1	Aug. 14			
10		Aug. 1	Aug. 14			

Hunt Area	Type	Quota change from 2016
Total		

Management Evaluation

Current Postseason Population Management Objective: 1,350

Management Strategy: Special

2016 Postseason Population Estimate: ~850

2017 Proposed Postseason Population Estimate: ~850

Management Issues

The post-season population objective for this herd is 1,350 sheep and it is classified as special management. The current objective was originally adopted in 2002. In 2013 the Department conducted an objective evaluation and review including a public meeting. The objective was left at 1,350 following the 2013 review. The herd has been below objective for over two decades following a catastrophic, all-age pneumonia die-off in 1991. The population continues to languish below objective primarily due to low recruitment associated with persistent lamb pneumonia. The Department collected blood samples from 47 sheep in 2012 and 22 sheep in 2014 to document the presence and frequency of various pathogens. In 2015, 20 sheep were

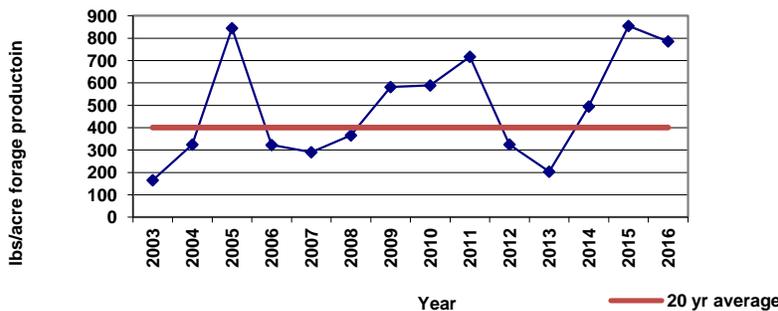
outfitted with GPS collars as part of a 3-year study tracking body condition, lamb production, and overall health of the 20 collared ewes. The monitoring will allow comparisons between ewe health and environmental conditions.

Habitat/Weather

The Whiskey Mountain bighorn sheep herd occupies the northern Wind River Mountain Range. The majority of sheep winter at sites located along the very northern tip of the Wind River Mountains. Some sheep winter at high elevation along the continental divide and scattered throughout the west slope of the mountains. Sheep disperse from the wintering sites to populate the entire northern portion of the Wind River Mountains in the summer and fall. Much of the sheep habitat is located in wilderness areas and remains undisturbed. Important winter range sites in the upper Wind River Valley are part of the Department’s Whiskey Mountain WHMA and are also relatively undisturbed.

Despite protection from development and disturbance, the condition of key winter range throughout this herd unit is still subject to change based on environmental conditions. In 2012 and 2013, sheep range throughout the herd unit was impacted by extreme drought. Casual observations both years suggest vegetation production was quite low at high elevation summer range. Based on data from vegetation monitoring transects, herbaceous production on winter range in both 2012 and 2013 was well below average for the area (Fig. 1). In contrast to the previous 2 years, vegetation production throughout the herd unit was quite good in 2014 and was even higher in 2015 and 2016. In 2016 average production across all monitoring sites on winter range was 786 lbs/acre and well above the 20-year average of 401 lbs/acre. Again, based on casual observations, it appeared forage production was also good at high elevation summer range sites. Body condition of sheep entering winter appeared to be very good. Despite appearing to enter winter in good body condition, preliminary results from monitoring collared sheep in December, 2016 indicate adult ewes in this population continue to have less fat and lower body mass than sheep in other herds.

Figure 1. Annual, herbaceous forage production on bighorn sheep winter range



Field/Harvest Data/Population

Classification data yielded a lamb/ewe ratio of 18/100 in 2015 (Fig. 2). This was the lowest recruitment ratio over the past 10 years. The low recruitment level was corroborated by re-capture of 15 collared ewes in December, 2016. Only 1 of the 15 re-captured sheep had a lamb.

Also concerning was the low sample size obtained during classification surveys. Over the past 5 years, the classification sample has averaged 486 sheep in the herd unit. In 2016, personnel were only able to find 359 sheep. In particular personnel found far fewer sheep than normal in hunt area 10 and the lamb/ewe ratio was remarkably low in the area at 11/100. Reasons for the low recruitment ratios and sample sizes at these sites are unknown as it appeared forage conditions were good throughout the year and environmental conditions were mild. Personnel do not believe a major die-off occurred during the summer or fall since no collared ewes in the herd unit died from unknown causes (one collared sheep was predated by a mountain lion). Despite low recruitment for much of the last 20 years, the ram/ewe ratio has remained fairly stable over that time period. Since 2011 the ram/ewe ratio steadily increased and peaked at 62/100 in 2014 (Fig. 3). The ram/ewe ratio remained exactly the same as in 2015 at 47/100.

A population model developed in 2012 behaved predictably with the addition of data in 2016. For 2016, the TSJ/CA version of the model was selected to track the population. As in past years, this model had a higher AIC value than 2 other models, but it was the only version to produce reasonable population estimates. Both the CJ/CA and SCJ/SCA models produce estimates of less than 500 sheep annually for the past 10 years and show a declining population. Many of the estimates produced by these 2 models are well below the number of sheep personnel classified on a given year. Indications are the TSJ/CA model does a fair job of simulating the population. The model simulates a long, steady decline in the sheep population from the late 1990's through 2010. The population then increased in 2012 and remained fairly stable through 2015. The model indicates a population decline of about 8% in 2016 to approximately 850 sheep.

Harvest success in the herd unit was 64% in 2016 which was essentially the same as the 5-year average of 65%. This included success rates of 75% in hunt area 9, 60% in hunt area 10, and 62% in hunt areas 8/23. It should be noted 3 resident hunters elected to carry licenses over to the 2017 season due to problems associated with the Lava Mountain fire. The average age of rams harvested in areas 8/23 remained essentially unchanged between 2014 and 2016 (Fig. 4). The average harvest age increased in both hunt areas 9 and 10. In area 10 the average age of harvest increased from 6.3 in 2015 to 7.7 in 2016 and was higher than most recent years. The average age of harvested rams in 9 increased from 4.5 in 2015 to 7.4 in 2016. Average age in area 9 tends to fluctuate more dramatically than most areas due to low harvest levels. Overall, the average age of harvested rams does not reveal any significant demographic trend in any hunt areas throughout the herd unit over the past 10 years.

Figure 2. Ten-year recruitment history in the Whiskey Mountain Bighorn Sheep Herd

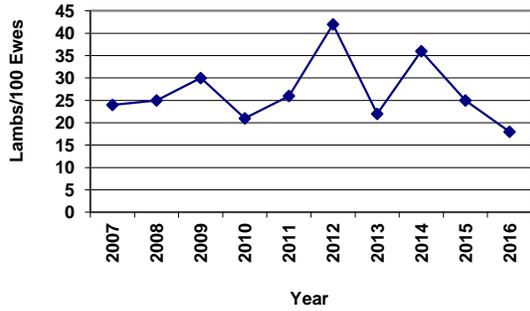


Figure 3. Ten-year history of the ram/ewe ratio in the Whiskey Mountain Bighorn Sheep Herd.

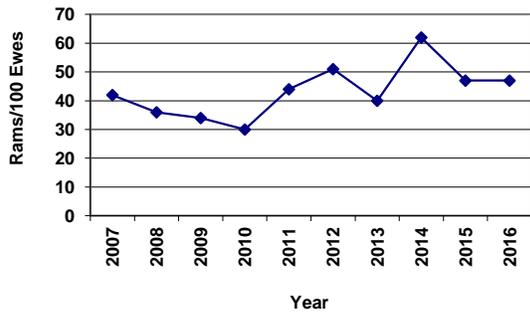
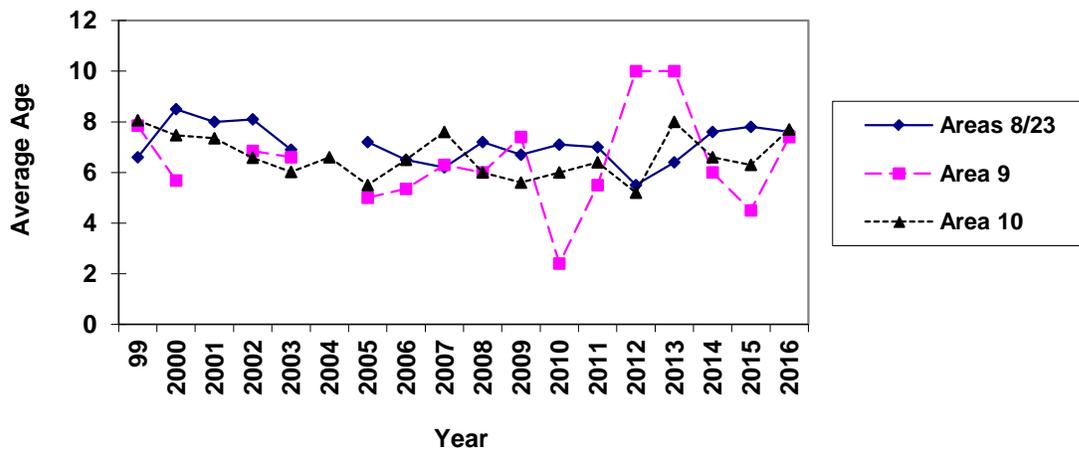


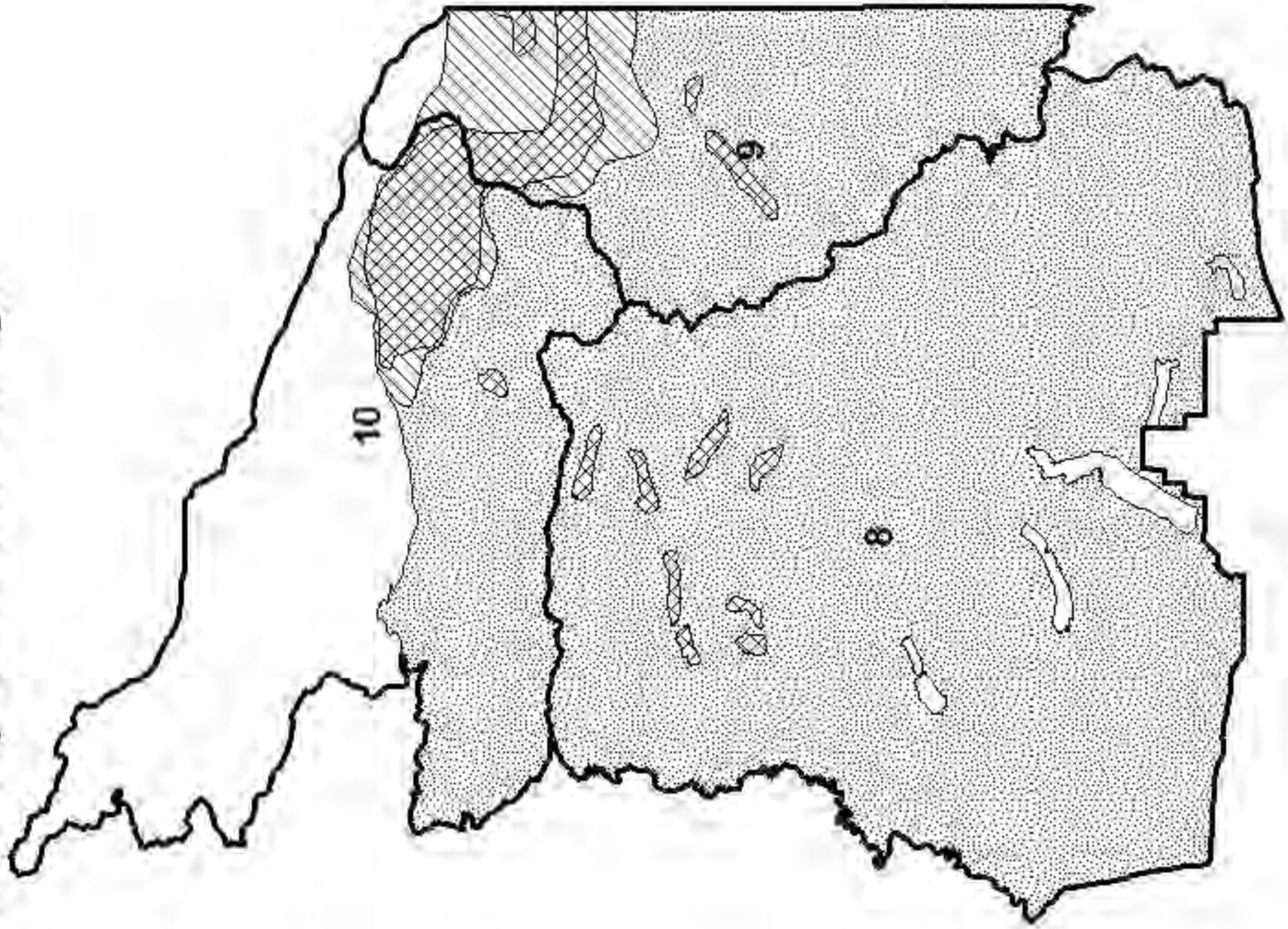
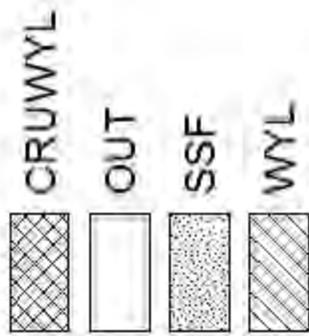
Figure 4. Average age of rams harvested in the Whiskey Mountain Bighorn Sheep Herd.



Management Summary

Overall, indications are this population declined in the past year. The population continues to be below objective. Given indications of a population decline over the past year, but no indication of a decline in ram numbers, license numbers for the 2017 hunting season will remain unchanged. With 24 licenses issued throughout the herd unit and 3 carry over licenses, hunters are expected to harvest 15 rams in 2017. The population is expected to remain stable in 2017 at about 850 animals.

Whiskey Mountain Bighorn Sheep Seasonal Range Hunt Areas 8, 9, 10 Revised 2012



2016 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS615 - FERRIS-SEMINOE

HUNT AREAS: 17, 26

PREPARED BY: GREG HIATT

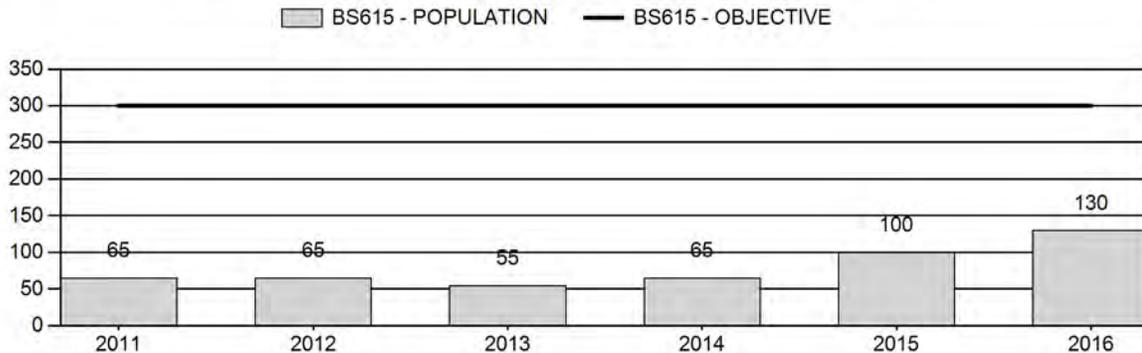
	<u>2011 - 2015 Average</u>	<u>2016</u>	<u>2017 Proposed</u>
Population:	70	130	200
Harvest:	1	2	2
Hunters:	1	2	2
Hunter Success:	100%	100%	100 %
Active Licenses:	1	2	2
Active License Success:	100%	100%	100 %
Recreation Days:	3	42	20
Days Per Animal:	3	21	10
Males per 100 Females	83	90	
Juveniles per 100 Females	79	79	

Population Objective (\pm 20%) :	300 (240 - 360)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-56.7%
Number of years population has been + or - objective in recent trend:	32
Model Date:	None

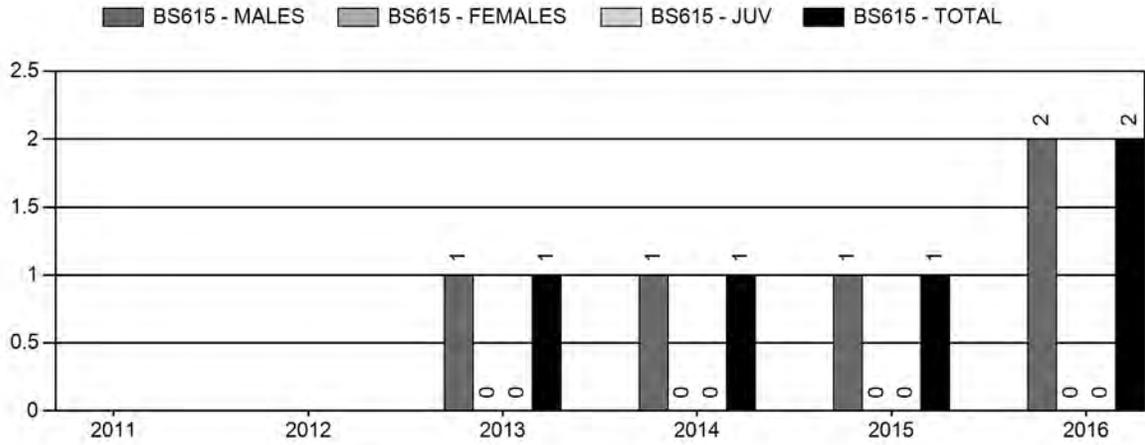
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	0%	0%
Males \geq 1 year old:	6%	6%
Total:	1%	1%
Proposed change in post-season population:	+50%	+54%

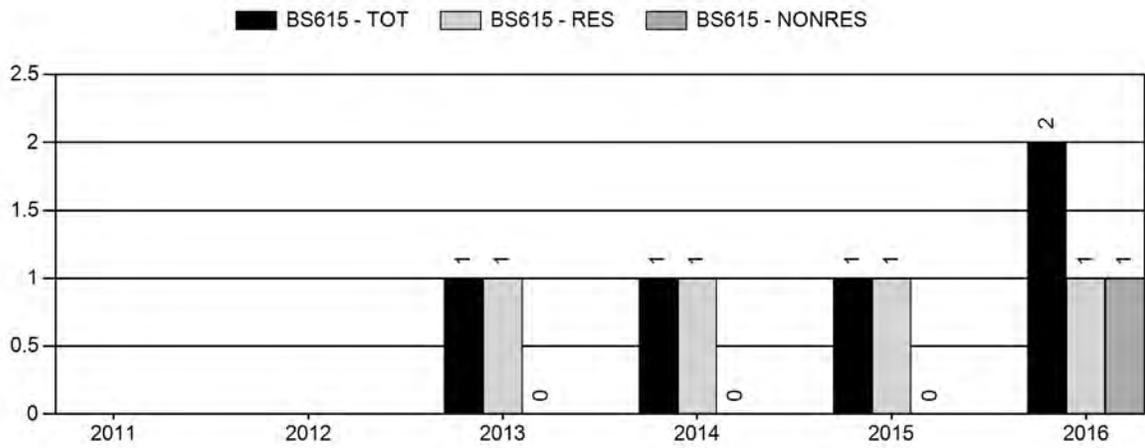
Population Size - Postseason



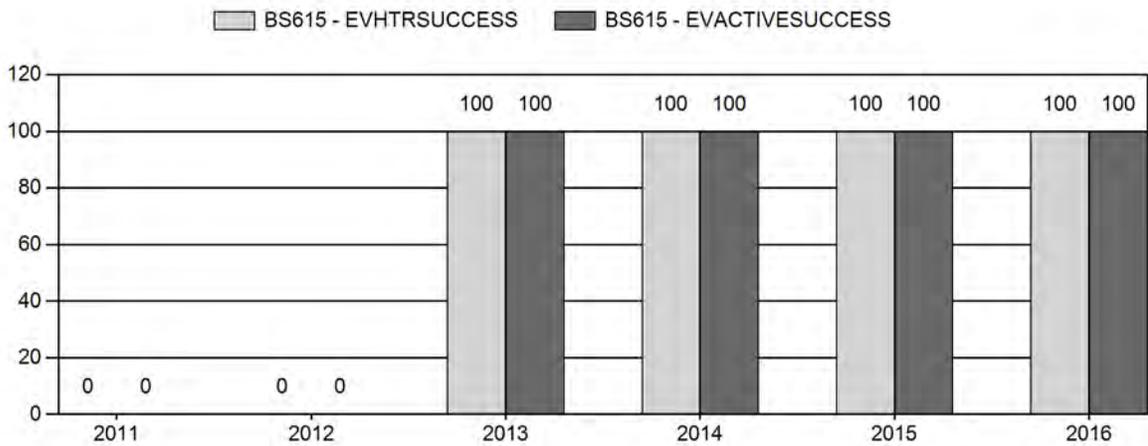
Harvest



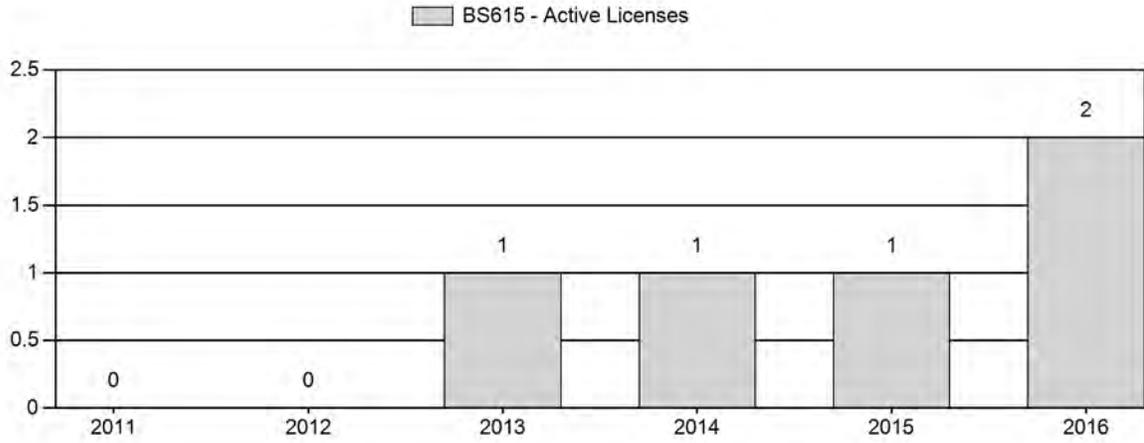
Number of Active Licenses



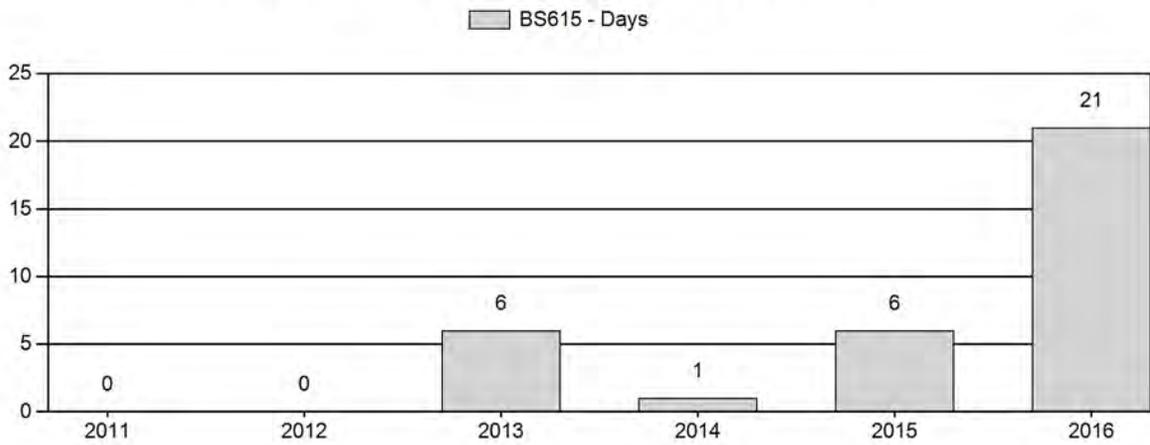
Harvest Success



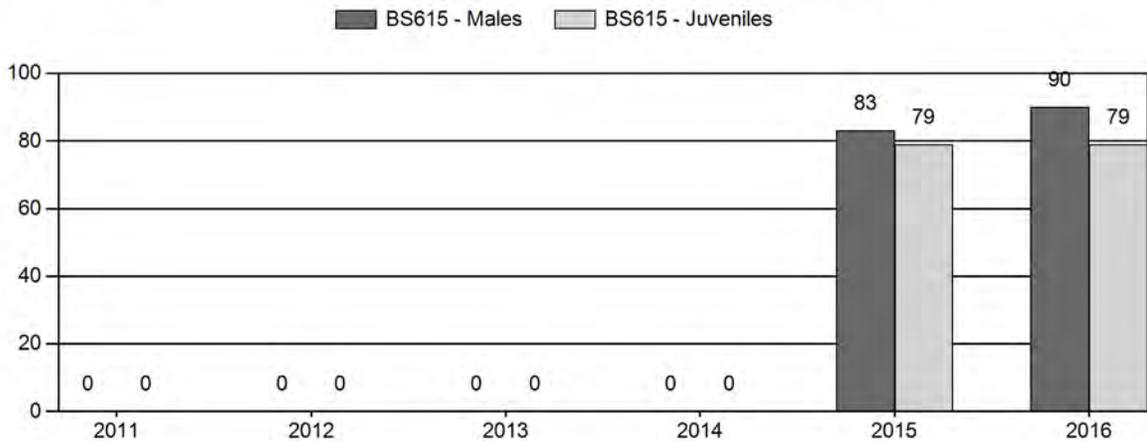
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Bighorn Sheep Herd BS615 - FERRIS-SEMINOE

Year	Post 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	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	55	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2014	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2015	100	1	19	20	32%	24	38%	19	30%	63	97	4	79	83	± 20	79	± 19	43
2016	130	0	26	26	33%	29	37%	23	29%	78	0	0	90	90	± 20	79	± 18	42

**2017 HUNTING SEASONS
FERRIS-SEMINOE BIGHORN SHEEP HERD (BS615)**

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
17, 26	1	Sep. 1	Oct. 31	2	Limited quota	Any ram (2 residents)
Archery 17		Aug. 15	Aug. 31			Refer to Section 3 of this Chapter

Hunt Area	License Type	Quota change from 2016
17	1	0
Herd Unit Total	1	0

Management Evaluation

Current Postseason Population Management Objective: 300

Management Strategy: Special

2016 Postseason Population Estimate: ~130

2017 Proposed Postseason Population Estimate: ~200

Herd Unit Issues

The management objective for the Ferris-Seminole Bighorn Sheep Herd Unit is a post-season population objective of 300 sheep, established in 1984 and last publicly reviewed in 2016. As with all bighorn sheep herds, management strategy is “special” management.

Bighorn sheep were first reintroduced into the Ferris Mountains in the late 1940's with two small transplants, one of which consisted of desert bighorns from Nevada. Neither produced a viable population. Slightly larger transplants were made into the Seminole Mountains in the 1950's and 1960's, but numbers never increased appreciably. A total of one hundred bighorn sheep from the Whiskey Mountain herd were released on the Morgan Creek Unit in the Seminole Mountains in 1978 and 1980 and, after initial losses and dispersal, a reproducing population was established. Survival of transplanted animals was high, and animals were successfully recruited into the population, but growth rate for the herd was low. To expand the herd's size and range, another 100 bighorn sheep from Whiskey Mountain were released in the Muddy Creek drainage of the Ferris Mountains in January of 1985. Dispersal was high, but roughly 40 to 60 of the sheep remained in the herd unit. As with the Seminole transplant, survival of transplanted animals was good.

Poor lamb survival during summer months was a major problem for this reintroduced herd, in both the Seminoe and Ferris portions, with few yearling bighorns recruited each year. Three summers of intensive monitoring identified poor forage quality as the most likely cause of lamb loss. Few losses to predation were found, with numerous lambs dying untouched on lambing grounds. No herd threatening diseases were identified. The source population for these transplanted sheep was the Whiskey Mountain herd by Dubois, where sheep are adapted to high elevation summer habitats and lamb in the first half of June. In the Ferris and Seminoe Mountains, sheep were in essentially low elevation year-long range where much of the lush spring growth is cured and gone by the time lambs were born. Low recruitment failed to replace natural mortality and the herd steadily declined. By 2003, there were estimated to be fewer than 15 sheep remaining in this population.

Forty low elevation, non-migratory bighorn sheep from Oregon and 12 surplus sheep from the Devil's Canyon herd in Wyoming were transplanted into the Seminoe Mountains in 2009 and 2010. These animals typically lamb 4-6 weeks sooner than the high-elevation migratory sheep brought in from Dubois and lambing appears to be better synchronized with spring green-up for the Seminoe and Ferris habitats. About a half dozen of these sheep established themselves in the Bennett Mountains east of Seminoe Reservoir and have successfully reproduced and recruited young animals. Habitats there appear to be suitable for bighorns, and the herd unit boundary was expanded to encompass the ranges of these animals in a new Hunt Area 26.

Indications are these sheep are reproducing well in the Seminoe and Bennett Mountains, and an additional transplant of low-elevation, non-migratory, early-lambing sheep from the Devil's Canyon herd were released into the Ferris Mountains in February of 2016 to expand their range. The 2011 prescribed natural fire and 2012 wildfire on the eastern end of the Ferris Mountains provide improved habitats for these bighorn, and telemetry shows most ewes making almost exclusive use of those burned habitats, with good lamb production. An additional transplant into the east Ferris Mountains of 22 bighorn from the Devil's Canyon herd was made in February 2017.

Weather

Record precipitation in 2015 produced exceptional vegetative growth, improving lamb survival, and was followed by another wet spring in 2016. High lamb production was seen again in 2016 as a result. Condition of bighorn sheep going into the 2016-17 winter is expected to have been good because of high forage production. The 2016-17 winter had numerous periods of bitter cold with significant snowfall, continuing through February. While winter losses may have been above average, collar data of transplanted sheep did not show any excessive losses.

Habitat

Decades without fire resulted in decadent shrub stands encroached by conifer in this herd unit. Severe drought reduced the quantity and quality of forage in 2012 and 2013. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2016. While no herbaceous habitat transects are established within this herd unit, herbaceous forage production appeared to be exceptional due to the increased precipitation.

Herbaceous production measured on the Morgan Creek WHMA in the Seminole Mountains was exceptionally high in 2015.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminole and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany, aspen and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminole Mountains and the eastern Ferris Mountains burned thousands of acres, including occupied bighorn habitat. In addition to opening habitats adjacent to rocky escape cover, the prescribed burns should benefit bighorn sheep productivity with herbaceous cover and return of young vigorous shrub complexes. Forage benefits from the wildfires will be longer term.

The Seminole Fire burned over 3,800 acres in the Seminole Mountains including areas within Morgan Creek WHMA. The Rawlins BLM again coordinated and funded aerial application of Plateau® to inhibit cheatgrass spread on BLM and WGFD managed areas within the fire perimeter. The wildfire enveloped several previously planned prescribed burns, although not with the desired prescriptions. Plans for additional prescribed fires in both the Seminole and Ferris Mountains have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire. Current plans call for the use of prescribed fire between Young's Pass and the 2011 and 2012 burn areas on the Ferris Mountains in fall of 2017.

Field Data

Obtaining reliable classification samples from small populations is difficult because, statistically, the majority of the population must be included in the sample to have any confidence in the resulting ratios. These low elevation sheep do not congregate in restricted, well-defined winter ranges like many herds in high mountain valleys, having instead the option to move wherever winds have exposed forage.

Fifty-three bighorn sheep were classified during helicopter surveys for mule deer in December 2016, on the south slopes of the Seminoes and the eastern end of the Ferris Mountains. Another 25 sheep were classified along the north slope of the Seminoes during elk classification flights in early February 2017, yielding a total sample of 78 sheep classified out of an estimated population of 130 animals. The sample did not include any sheep on the south slopes of the Bennett Mountains, which are presumed to number ~15-20 sheep.

Lamb production was exceptional again in 2016, presumably a consequence of the continued precipitation. Twenty-three lambs were found in the classification sample, matching the 2015 lamb:ewe ratio of 79:100. Even if the high ratio is a result of a statistically inadequate sample size, 23 lambs is a significant improvement over the one or two lambs that used to be found in this herd when it consisted of sheep from a high-elevation, migratory source herd. While only three of the sheep in the sample came from the Ferris Mountains, anecdotal reports indicate lamb production was high in that part of the herd unit as well.

Classifications also confirmed 26 rams, for a ram:ewe ratio of 90:100. Again possibly an artifact of the small sample, these data do indicate there are more than enough rams in the herd for the harvest proposed in 2017.

Harvest Data

The resident hunter in this area harvested a 5-year old ram in 2016 while the non-resident harvested a 3-year old ram. The two hunters reported a combined 42 days of hunting, compared to six days by the single hunter in 2015, a single day for the hunter in 2014 and six days for the hunter in 2013. One ram was harvested off the Morgan Creek WHMA, and the other from the crest of the Seminoes on the south side. Of the three rams harvested prior to 2016, two were taken from the ridges on the south face of the Seminoe Mountains, and one came from the north slope of the Seminoes. It is surprising that the two rams harvested in 2016 only averaged four years of age, while quite a few older rams were included in the classification sample.

Population

No model exists for this small herd and with limited classification data, one is not likely in the near future. Current population estimates are based upon limited observations of bands in the Seminoe, Ferris and Bennett Mountains. Based upon known mortality of telemetered bighorns, losses during the 2012-13 winter were probably high, and the herd was estimated to be between 60 to 70 sheep at post-hunt 2014, roughly the same size as after the 2010 transplants. Lamb production was high in 2015 and 2016, and the herd is estimated near 130 animals at posthunt 2016, prior to the 2017 transplant. While lamb production is unlikely to remain at the level seen in 2015 and 2016, recovery of burned areas should improve the quantity and quality of forage available for gestating and lactating ewes and the herd is expected to continue to increase.

Twenty-four low-elevation, non-migratory, early-lambing bighorn sheep from the Devil's Canyon herd near Lovell were released in Miner's Canyon on the east end of the Ferris Mountains on 21 February 2016. All but the single male lamb and one ewe were marked with satellite-uplink telemetry collars. To date, only two ewes have been lost, one to lion predation and the second to apparent physical distress during lambing.

Twenty-two more bighorn sheep from Devil's Canyon were released at the same site in Miner's Canyon on 19 February 2017. Addition of these 18 ewes, 1 male lamb and 3 young rams should raise the herd near 150 sheep, and all ewes were pregnant at capture. Transplant of 18 more sheep was planned for early March, but had to be postponed due to concerns the mortality of a ewe during capture may have been pneumonia related. Days later, tests revealed that was not the case, but the window of opportunity for safe transplant of pregnant ewes had passed. Another ewe died soon after release, and based upon her physical struggles at release was also presumed to be due to capture stress. A third ewe was killed by a lion in April near the release site. If lamb production remains high in 2017, this herd should be approaching 200 animals by posthunt 2017. If feasible, further transplant of sheep from Devil's Canyon into this herd is planned for winter 2017-18.

Management Evaluation

The population was first hunted in 1983, with two rams being harvested by four hunters. Minimal hunts with only four licenses were held each year through 1989, with a total of 21 rams being harvested by 28 hunters. Illegal killing of both rams and ewes was a problem during this period, but decline of the herd was attributed to late lambing of the high elevation sheep used to re-establish this population being asynchronous with plant phenology in these lower mountain

ranges. With better adapted “low-elevation, early lambing sheep” introduced into this herd, that issue appears to be resolved.

Non-consumptive use of this herd is high, particularly in the Seminole Mountains near Seminole State Park and the Miracle Mile. Classification and transplant data indicate there are at least 32 rams available in the Seminole, Ferris and Bennett Mountains, several of which should be nearing true trophy age classes. With these numbers of trophy animals available, 2 licenses are issued again in 2017. To satisfy the 25:75 split between non-resident and resident hunters, both of these licenses need to be issued to a resident.

Opening and closing dates are the same used in this herd during the 1980s, the same as in the past four years and comparable to most other sheep areas in the state. Archery season dates are standard for most areas.

Bighorn Sheep
Ferris (615)
08/1999

