2016 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2016 - 5/31/2017

HERD: MD642 - DUBOIS

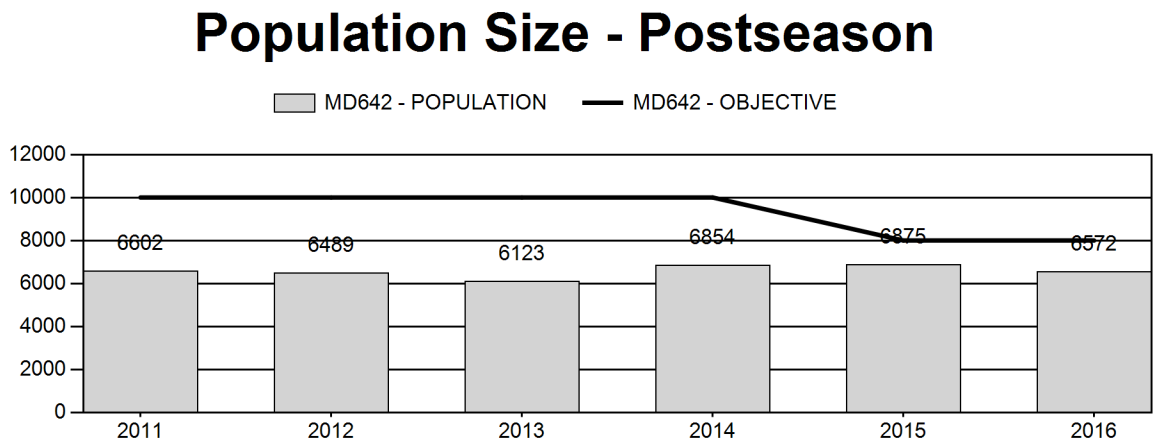
HUNT AREAS: 128, 148
PREPARED BY: GREG ANDERSON

	2011 - 2015 Average	2016	2017 Proposed
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	

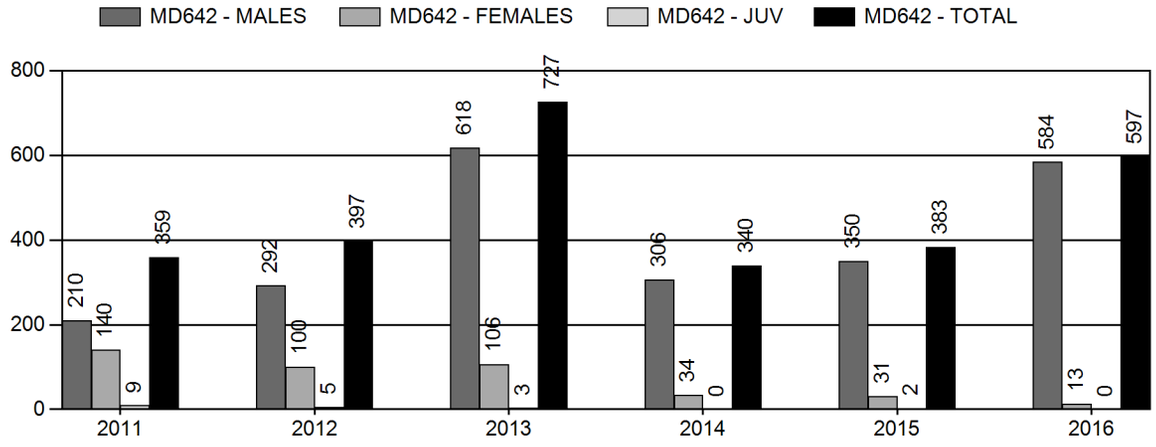
Population Objective (± 20%) :	8000 (6400 - 9600)
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.8%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/19/2017

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

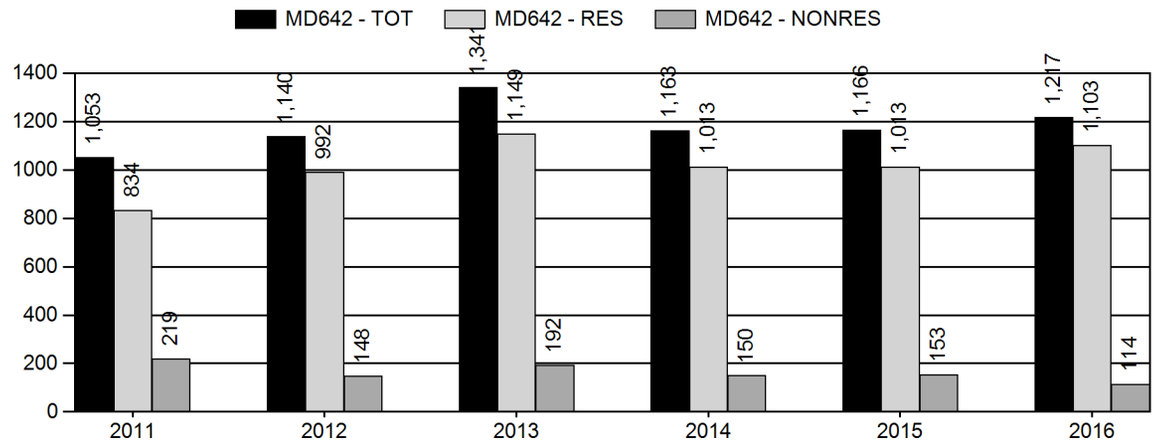
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	42%	33%
Total:	8%	6%
Proposed change in post-season population:	-5%	-2%



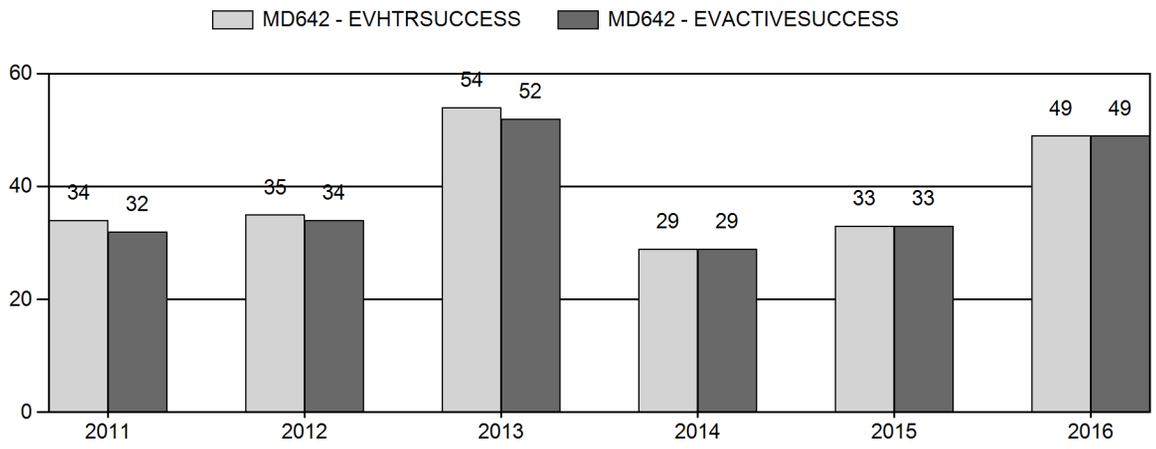
Harvest



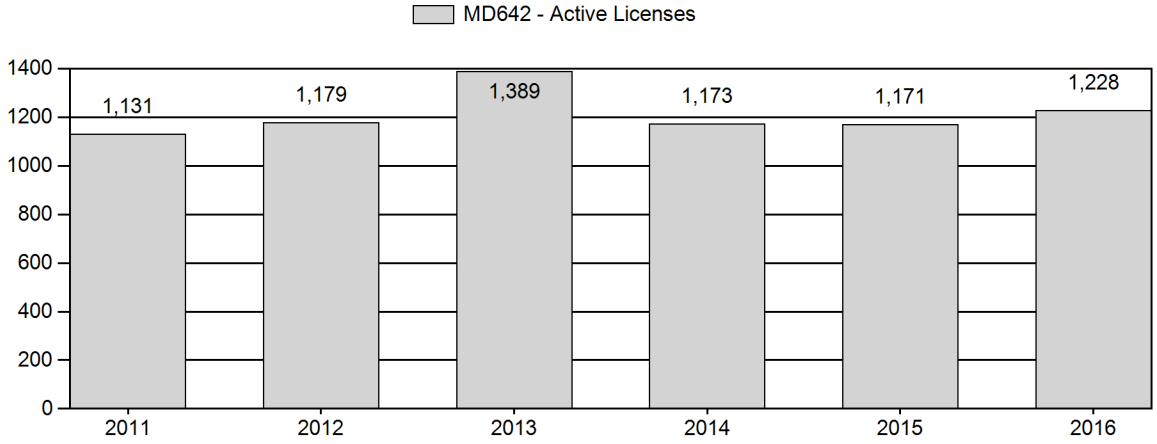
Number of Active Licenses



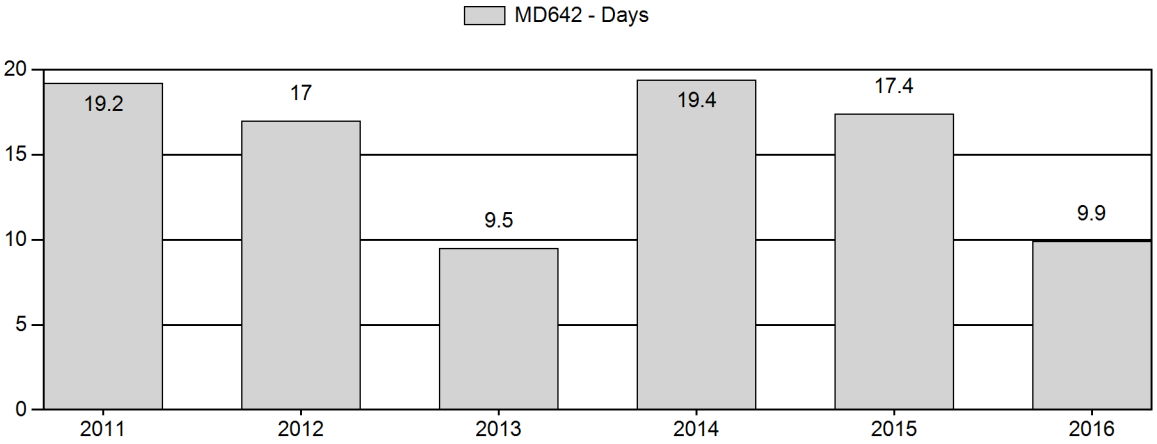
Harvest Success



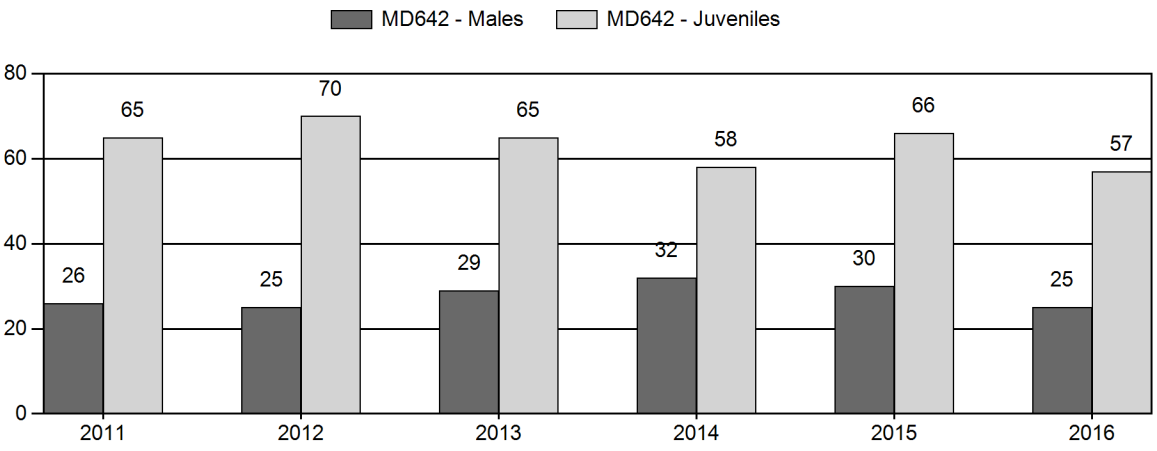
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD642 - DUBOIS

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	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 Opens	Closes	Quota	License	Limitations
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.

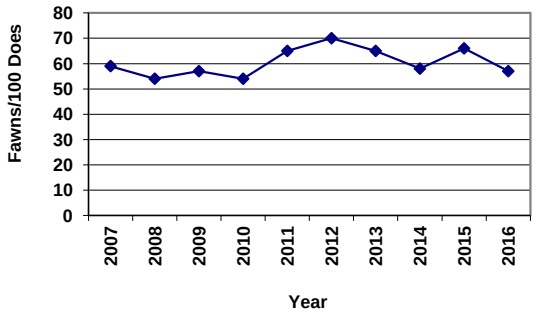
Habitat/Weather

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

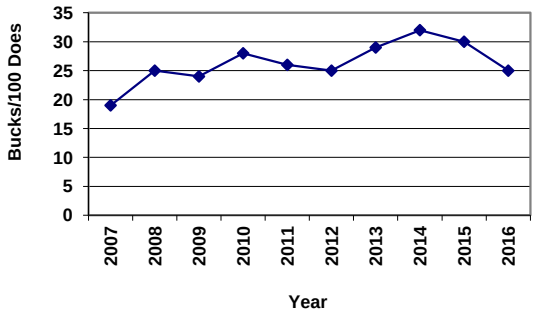
In 2016, personnel classified 1,532 mule deer. The sample exceeded the desired sample size for calculating accurate confidence intervals around age/sex ratios. Annual classification samples generally meet or exceed desired sample sizes in this herd unit. The 2016 classification sample yielded a fawn/doe 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.

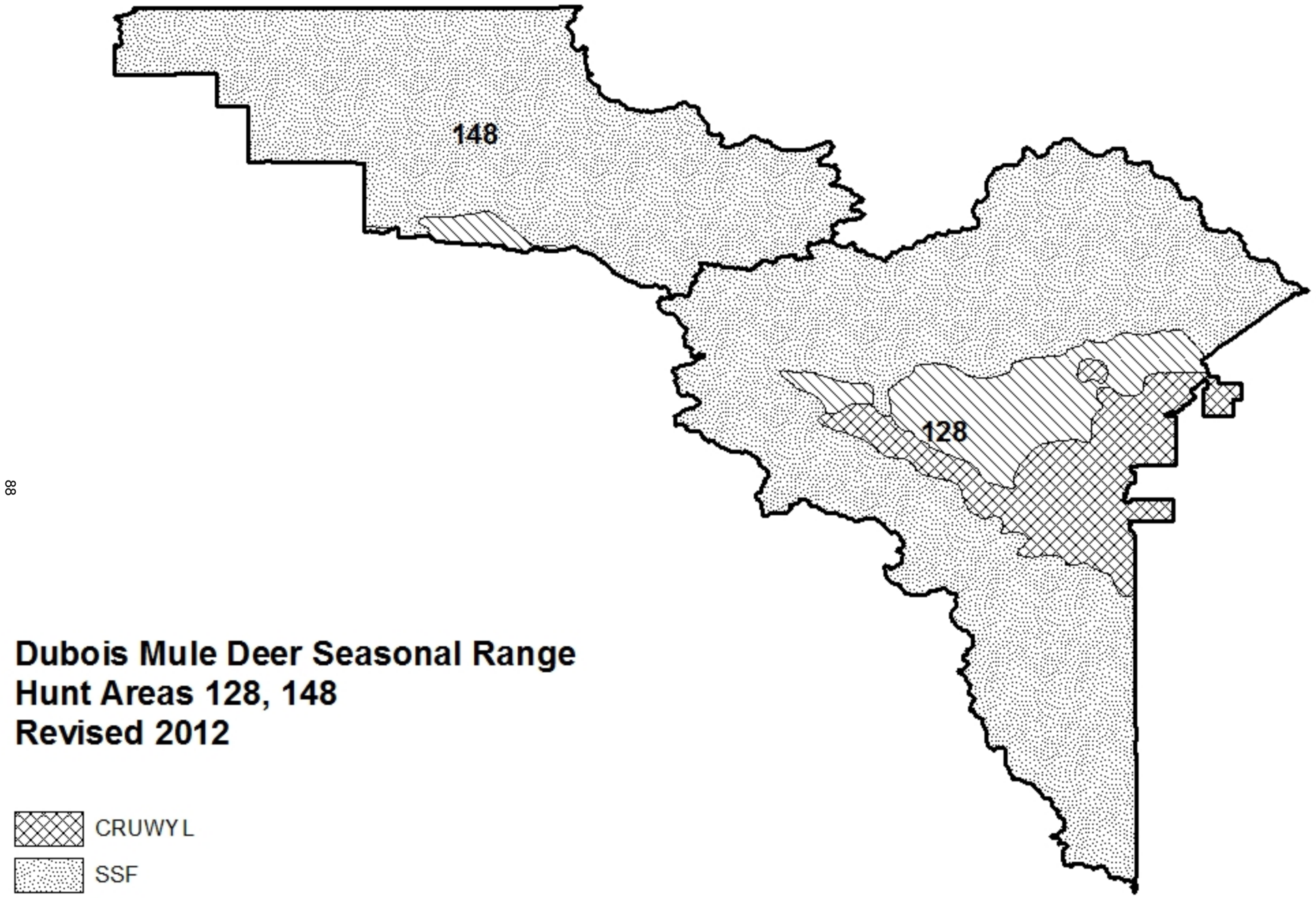


Hunter success during the general, October season tends to be low and is related to the fact many deer are not in the herd unit during that period. Deer typically migrate into the herd unit in late October and are present for the limited quota season in November. By contrast, many migratory deer moved 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.


148
128
Dubois Mule Deer Seasonal Range
Hunt Areas 128, 148
Revised 2012
CRUWYL
SSF
WIN
WYL
N

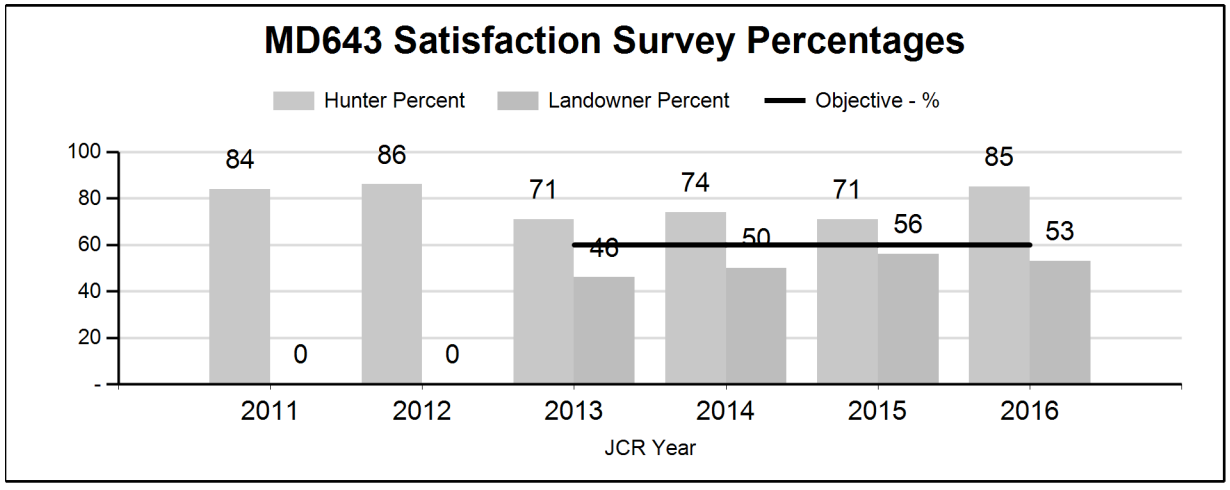
2016 - JCR Evaluation Form

SPECIES: Mule Deer
HERD: MD643 - PROJECT
HUNT AREAS: 157, 170-171

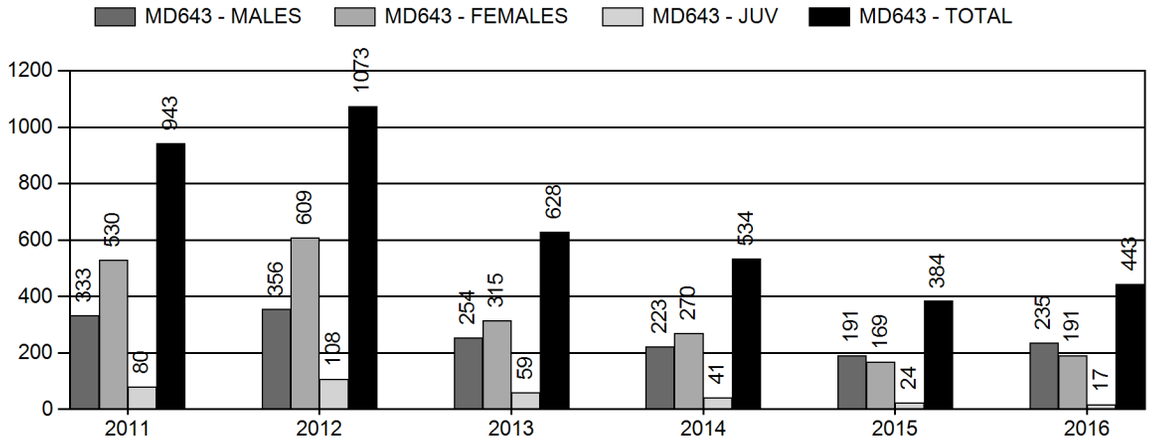
PERIOD: 6/1/2016 - 5/31/2017
PREPARED BY: GREG ANDERSON

	2011 - 2015 Average	2016	2017 Proposed
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	

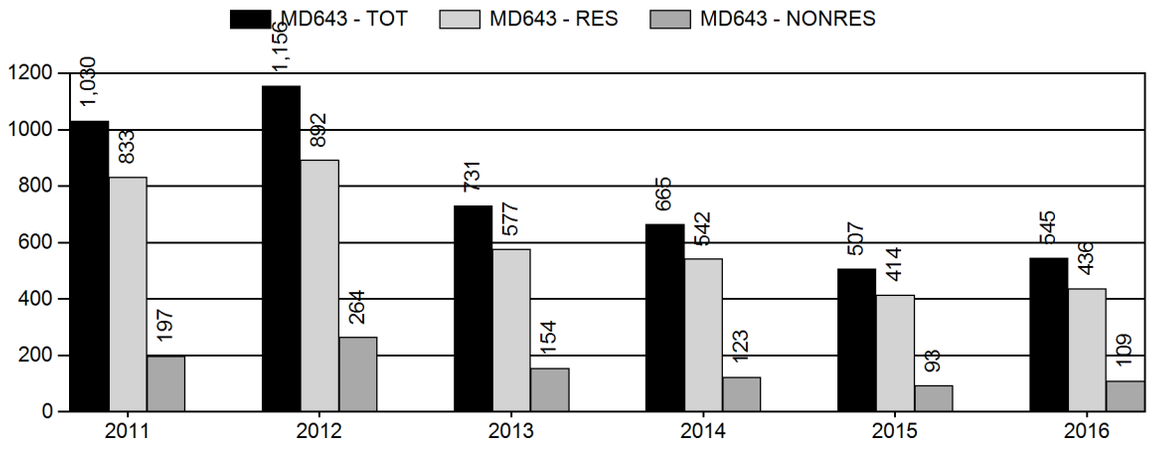
Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	9%
Number of years population has been + or - objective in recent trend:	3



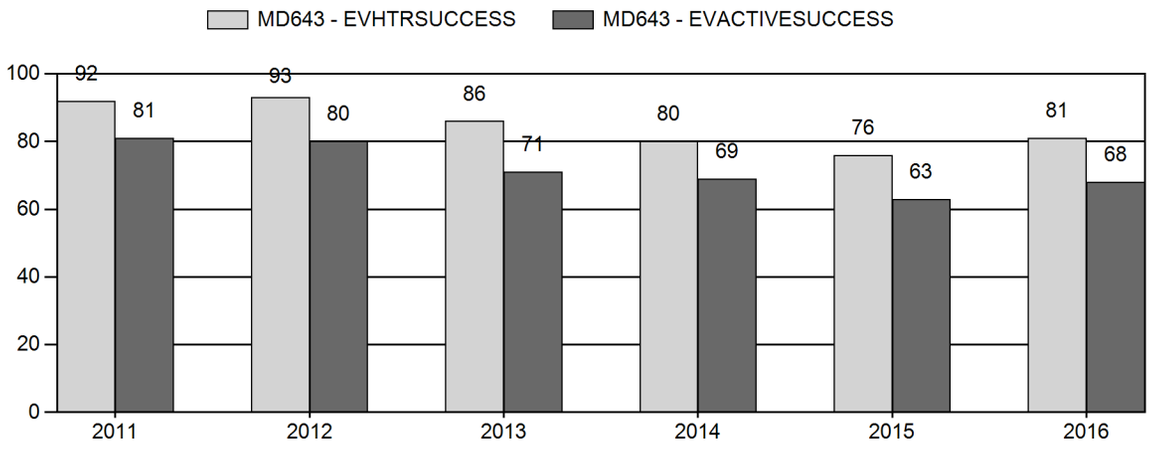
Harvest



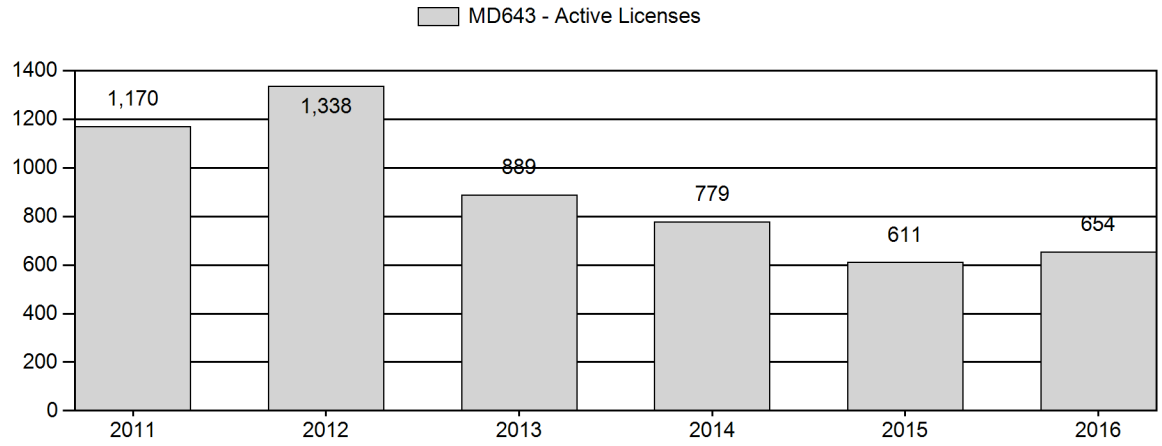
Number of Active Licenses



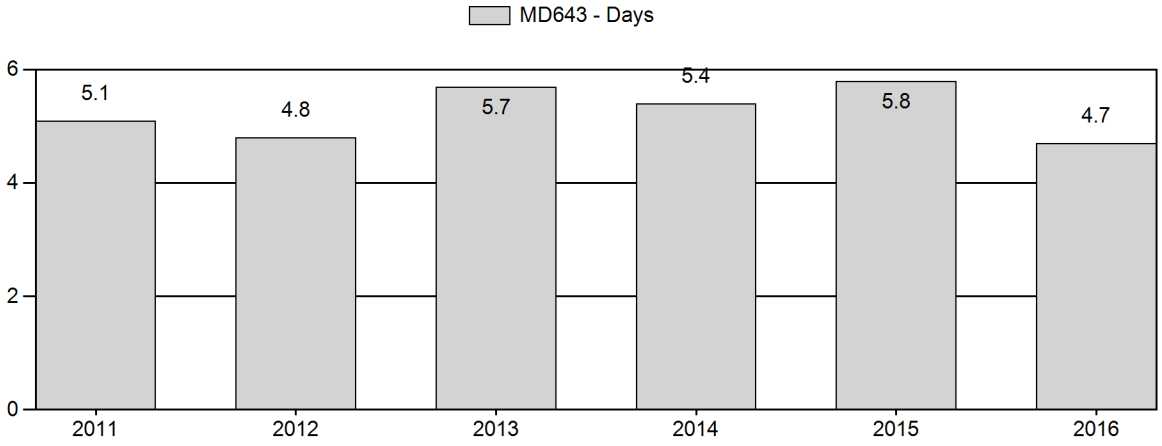
Harvest Success



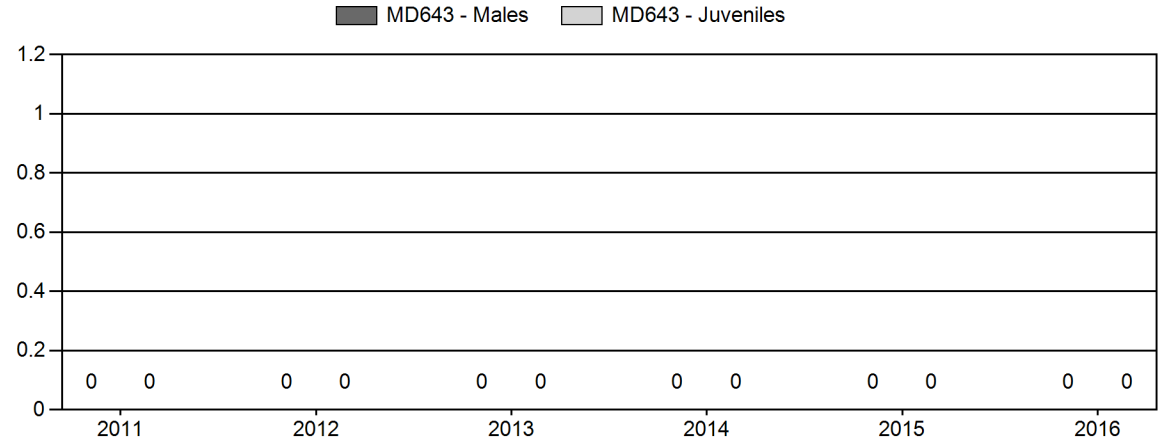
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2017 HUNTING SEASONS
PROJECT MULE DEER (MD 643)

Hunt Area	Type	Season Dates Opens	Closes	Quota	Licenses	Limitations
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).

Figure 1. Deer Area 157 historic license issuance

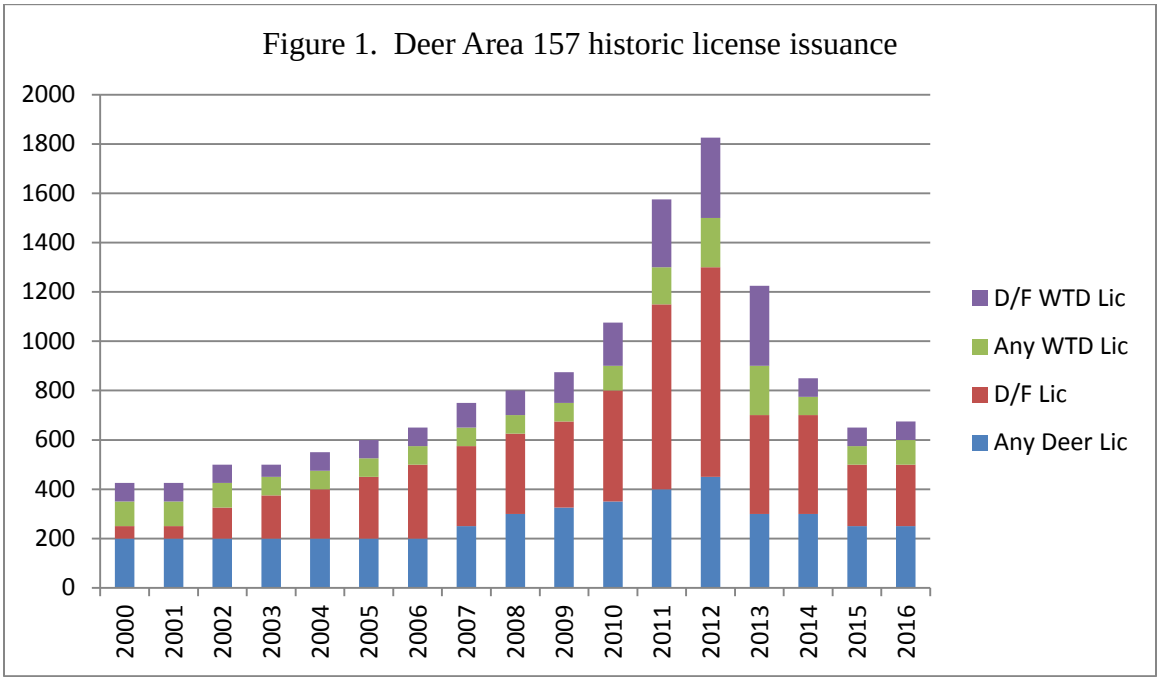
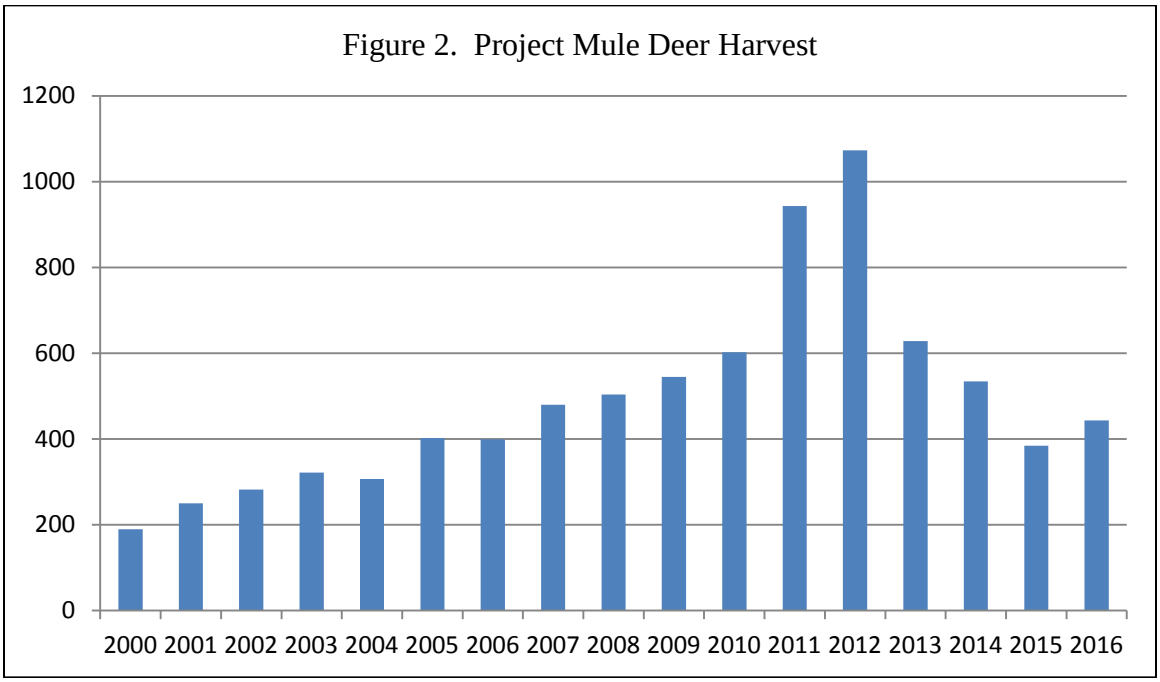


Figure 2. Project Mule Deer Harvest



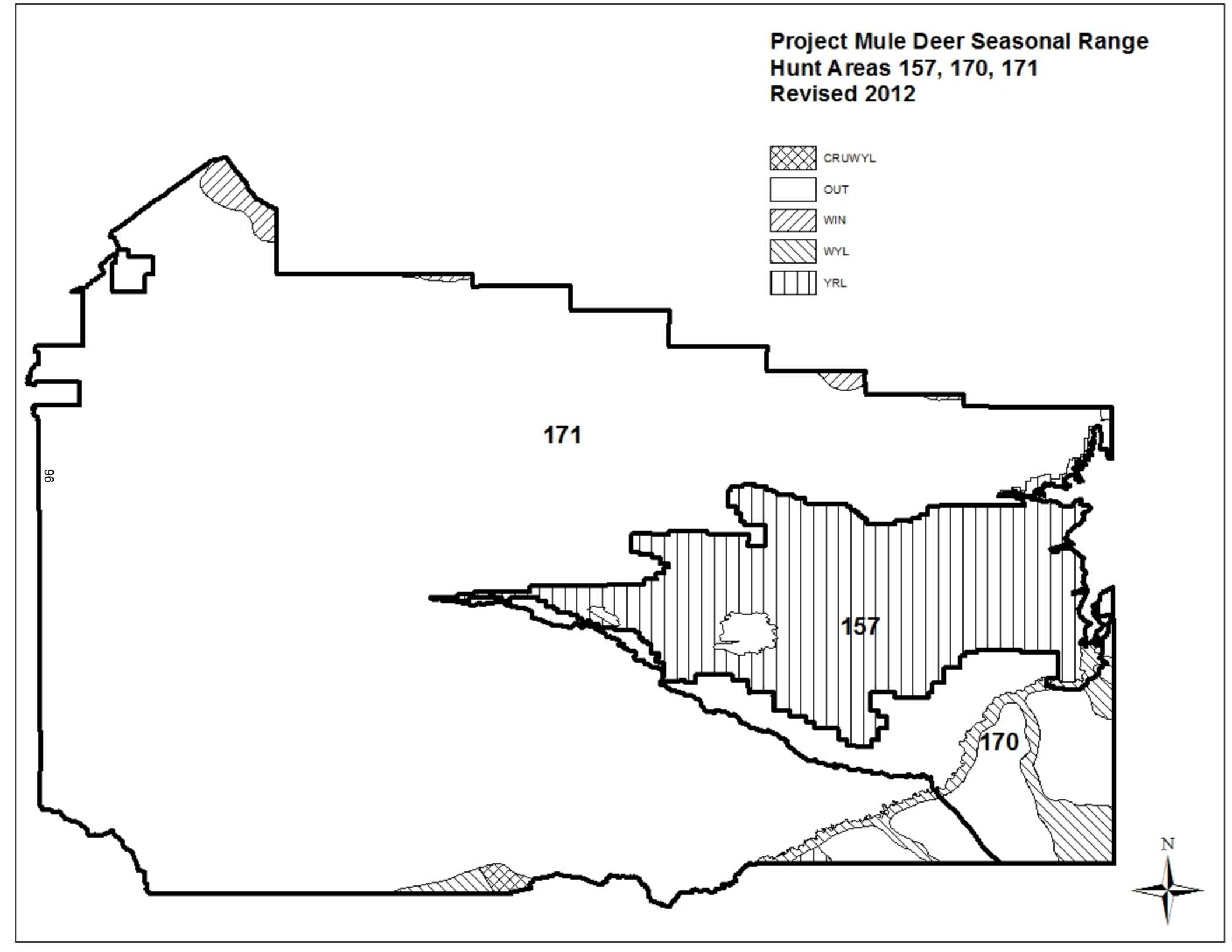
Following the years of high harvest from 2010 through 2014, the mule deer population appears to have declined significantly. While no demographic data is available for the population, harvest statistics in 2015 and 2016 indicate hunters had a harder time harvesting deer. Type 1 license success was 76% 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
CRUWYL
OUT
WIN
WYL
YRL
171
157
170
96
N

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

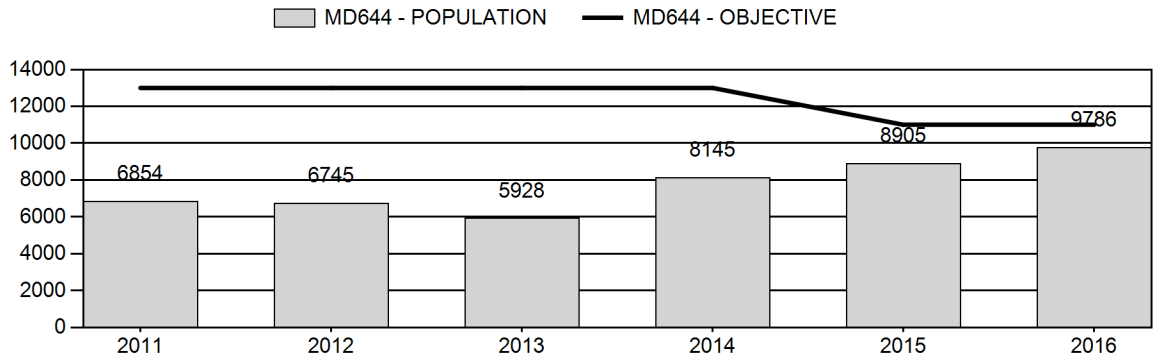
	2011 - 2015 Average	2016	2017 Proposed
Population:	7,315	9,786	10,333
Harvest:	568	806	790
Hunters:	1,425	1,620	1,600
Hunter Success:	40%	50%	49 %
Active Licenses:	1,469	1,620	1,600
Active License Success:	39%	50%	49 %
Recreation Days:	6,218	6,128	6,000
Days Per Animal:	10.9	7.6	7.6
Males per 100 Females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

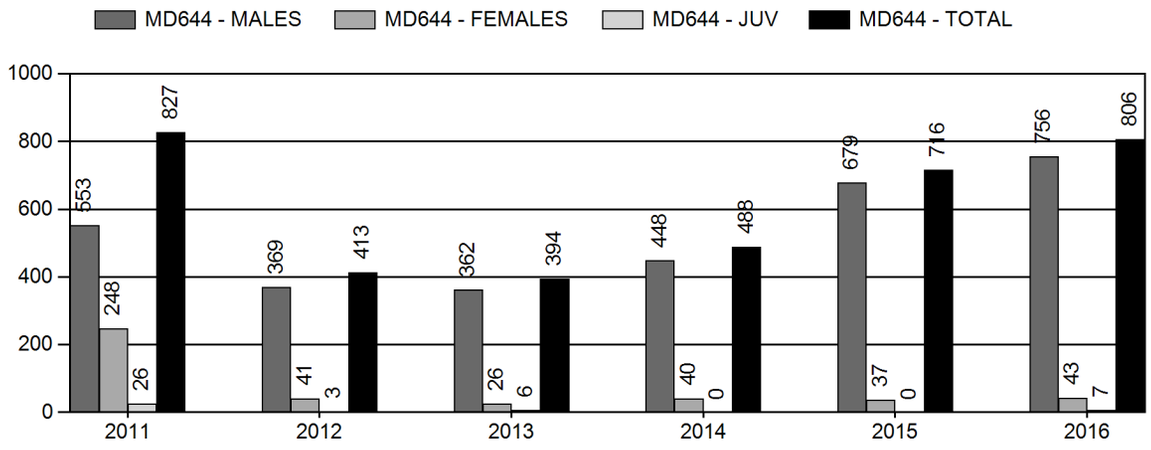
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
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%

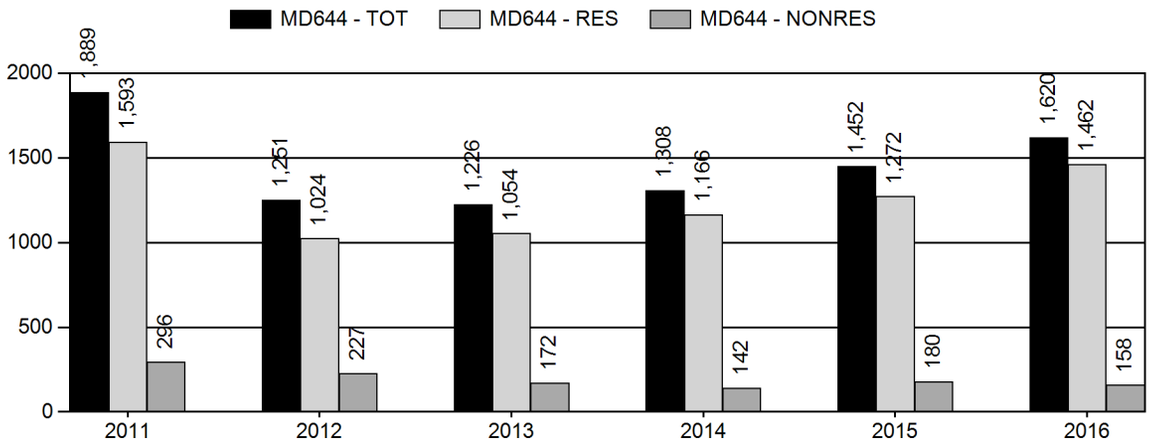
Population Size - Postseason



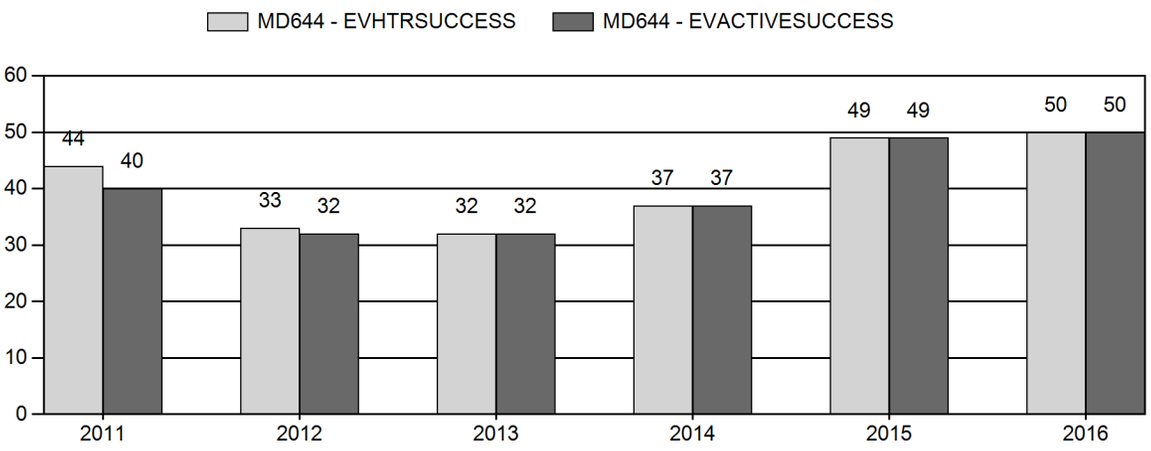
Harvest



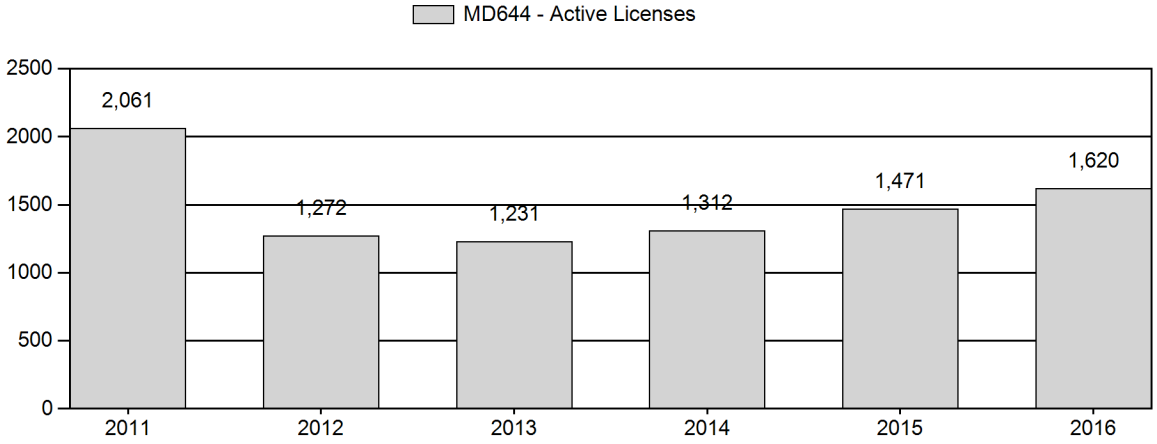
Number of Active Licenses



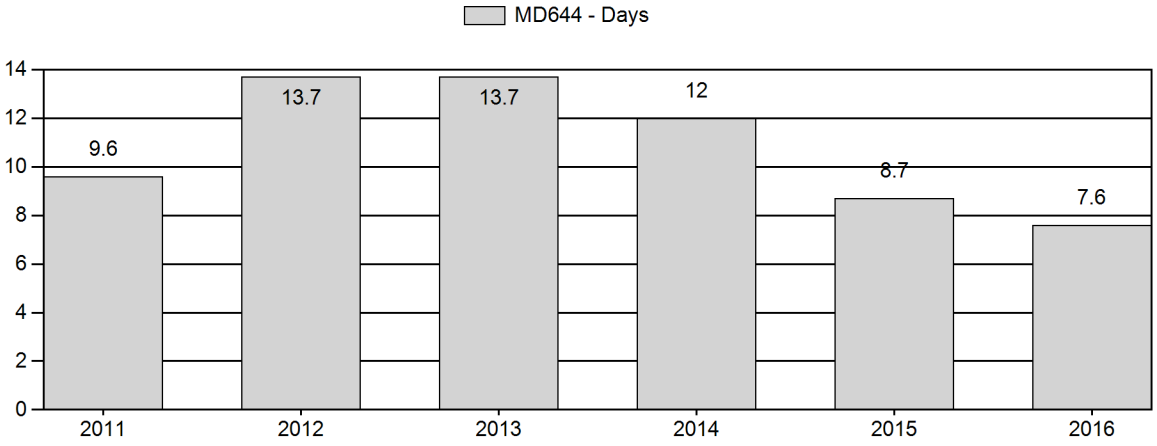
Harvest Success



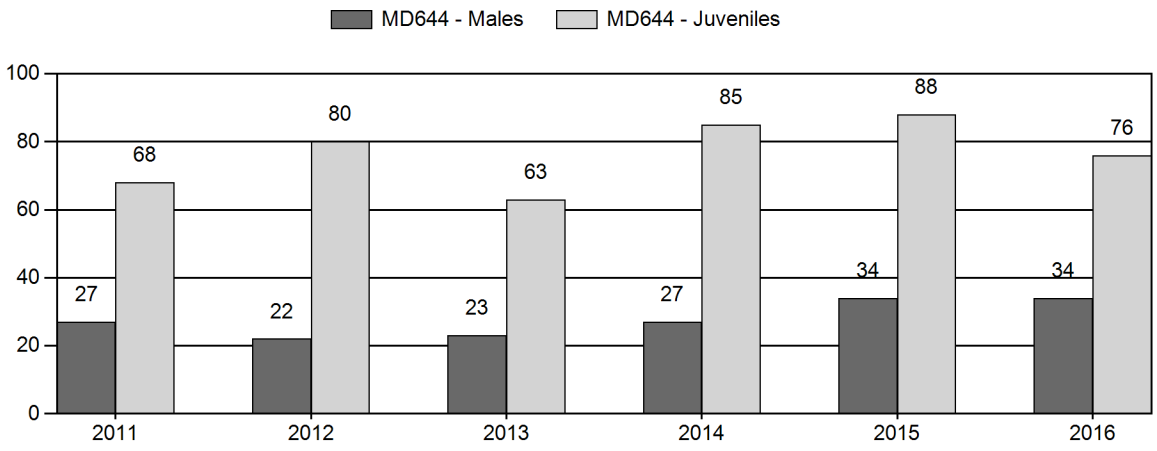
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD644 - SOUTH WIND RIVER

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	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 Opens	Closes	Quota	License	Limitations
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.

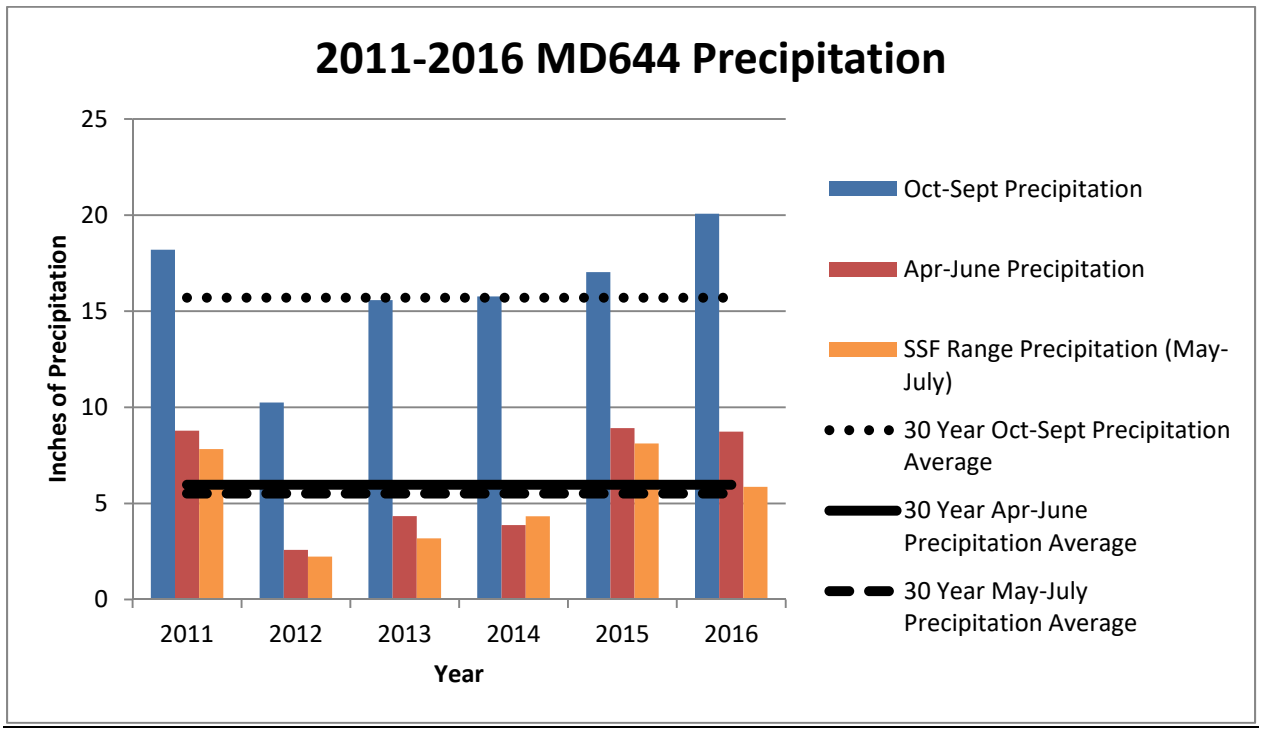


Figure 1. Precipitation values for South Wind River mule deer (2011-2016).

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 ≤ 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.

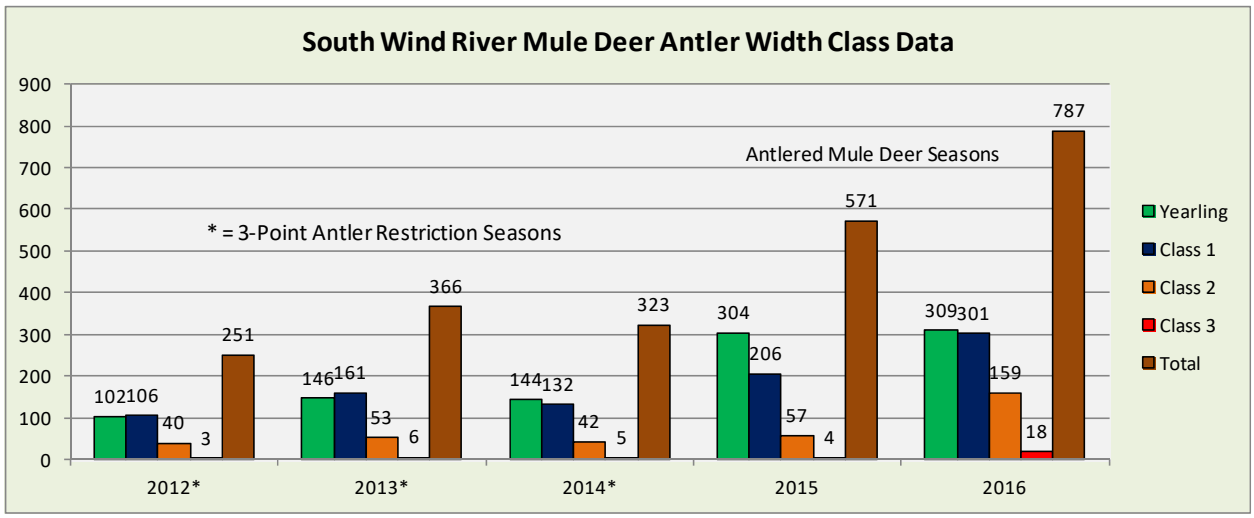


Figure 2. Antler width class data (number of bucks in sample) from classification surveys in the South Wind River Mule Deer Herd Unit, 2012 – 2016.

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.

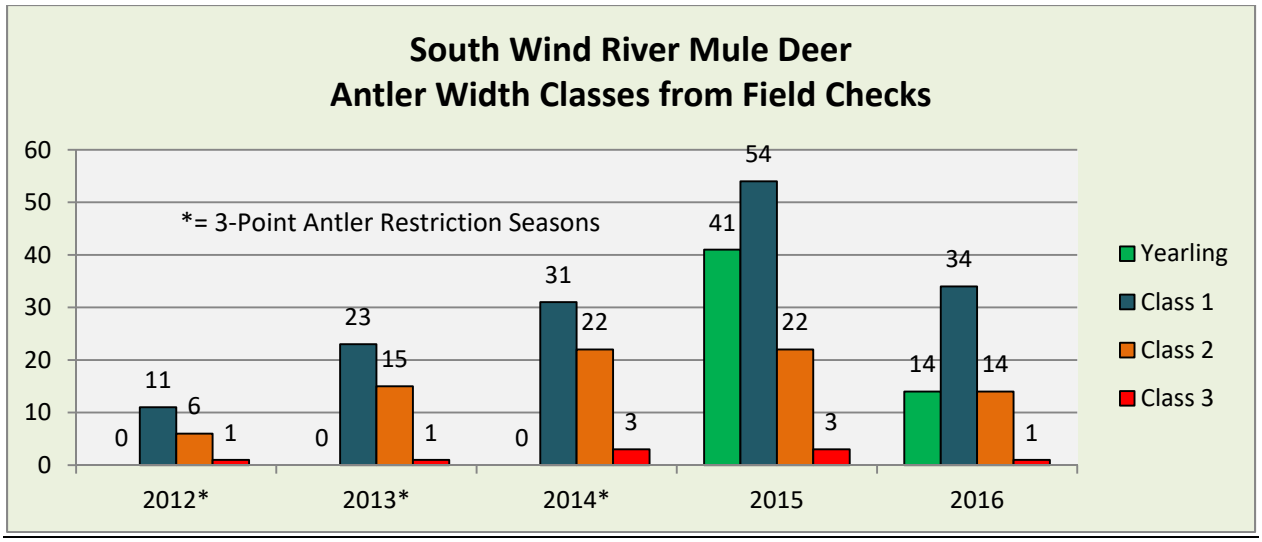


Figure 2. Antler width classes as measured during field checks and at check stations, 2012 – 2016.

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.

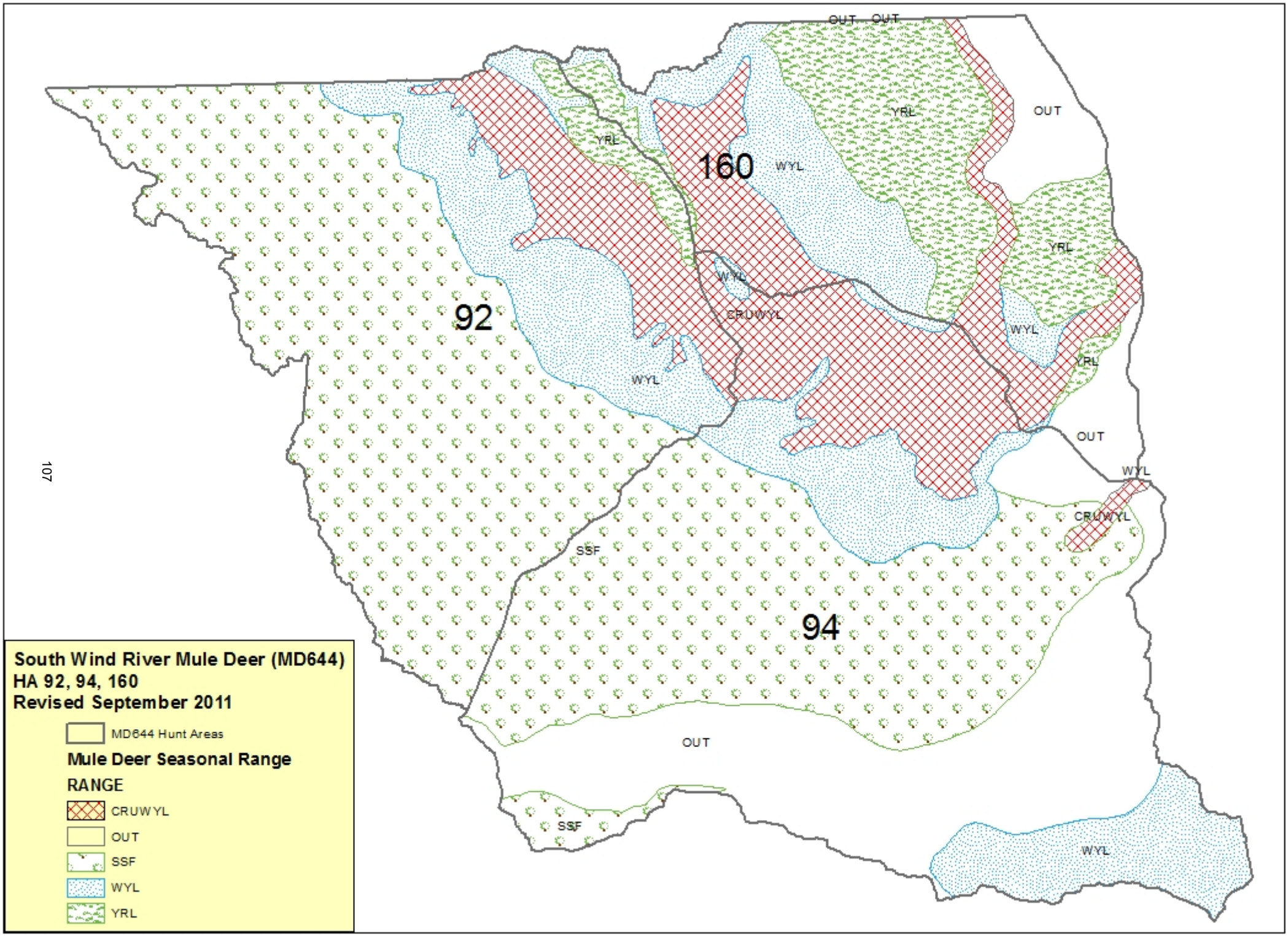
Youth hunters with General Licenses will continue to have added opportunity with their season opening on October 1 valid for any deer to promote youth hunter retention and recruitment.

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.


OUT
OUT
YRL
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160
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CRUWYL
92
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CRUWYL
SSF
94
OUT
SSF
WYL
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

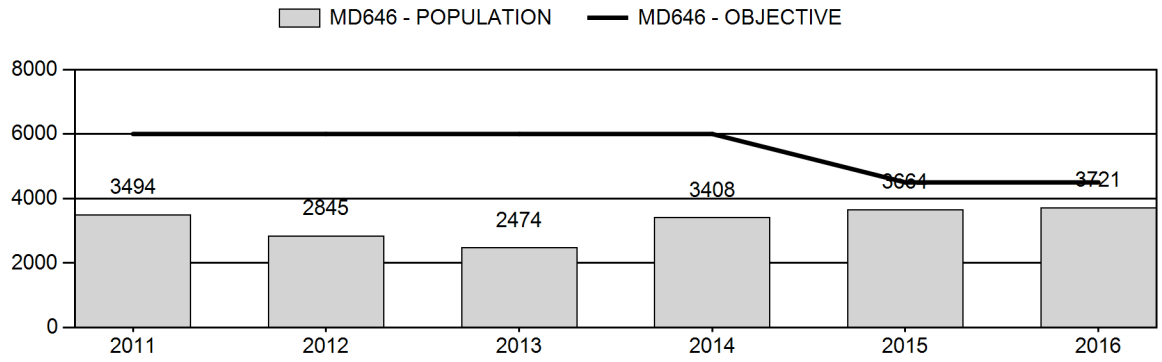
	2011 - 2015 Average	2016	2017 Proposed
Population:	3,177	3,721	4,061
Harvest:	411	476	420
Hunters:	978	945	900
Hunter Success:	42%	50%	47 %
Active Licenses:	1,006	945	900
Active License Success:	41%	50%	47 %
Recreation Days:	3,832	3,055	2,800
Days Per Animal:	9.3	6.4	6.7
Males per 100 Females	21	19	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

Population Objective (± 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

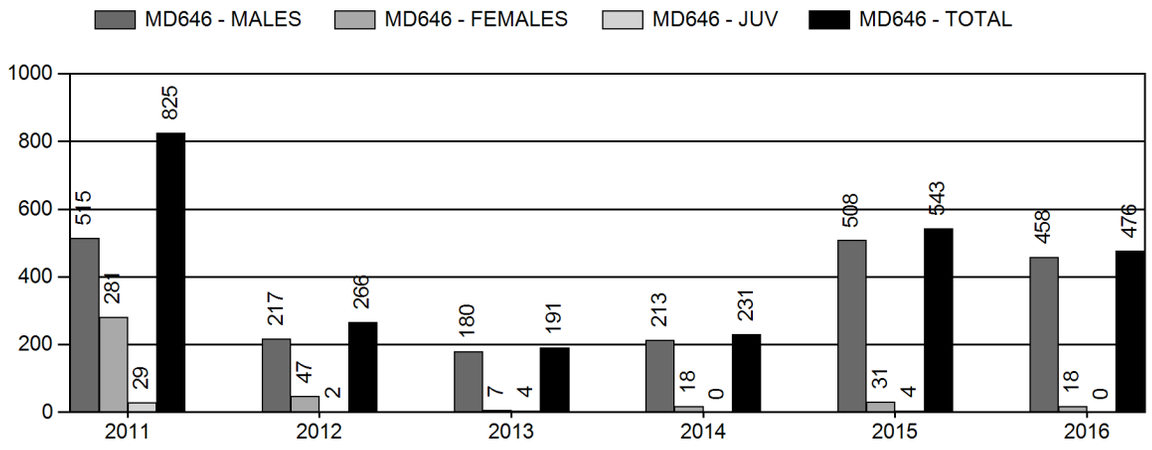
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	1.0%	1.1%
Males ≥ 1 year old:	57.8%	51.6%
Total:	11.2%	9.3%
Proposed change in post-season population:	+1.6%	+9.1%

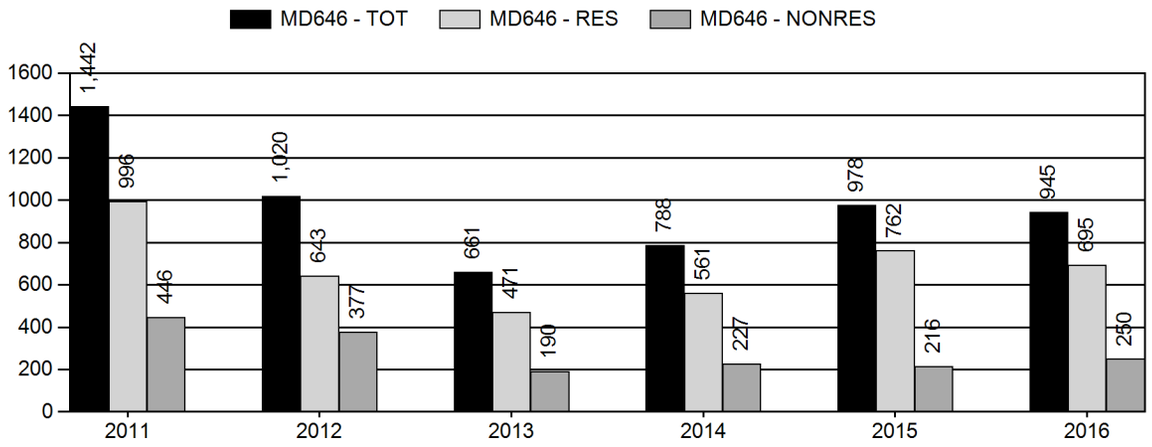
Population Size - Postseason



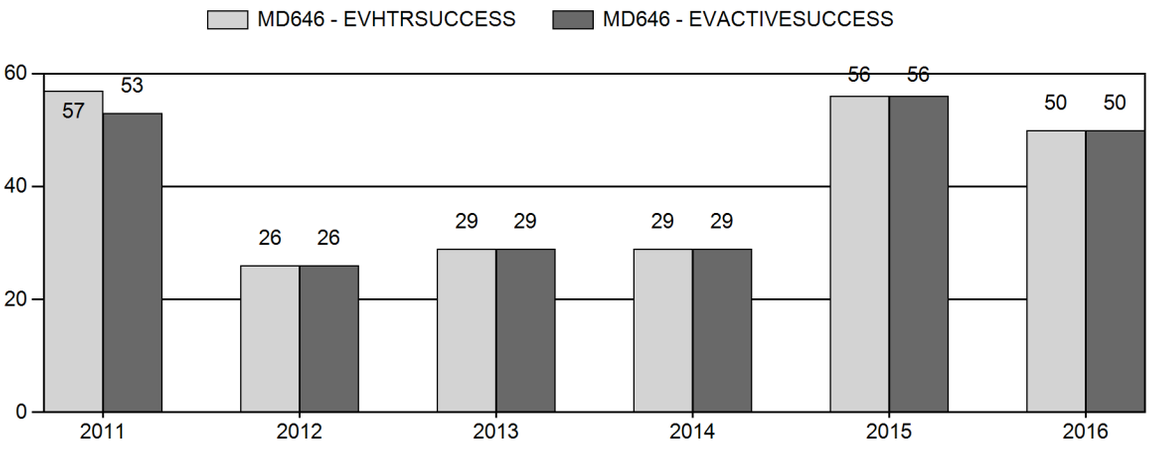
Harvest



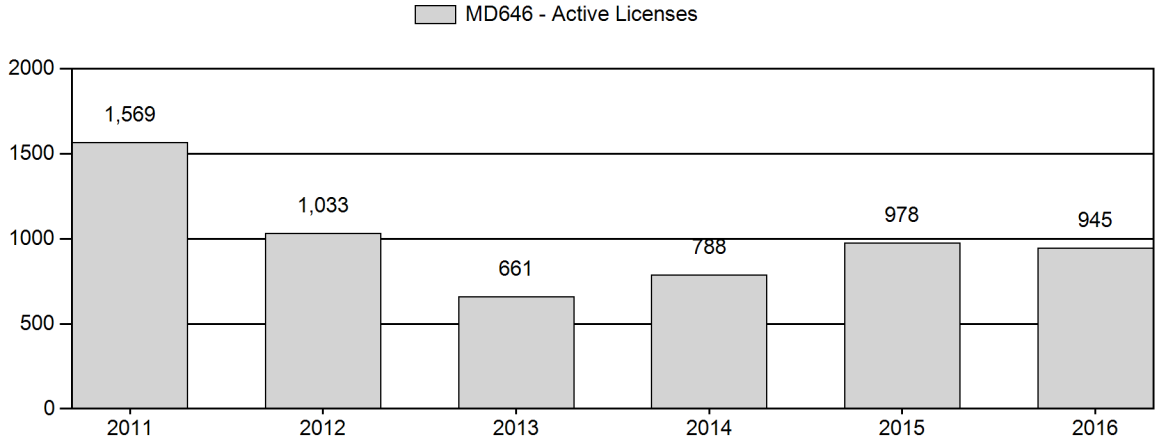
Number of Active Licenses



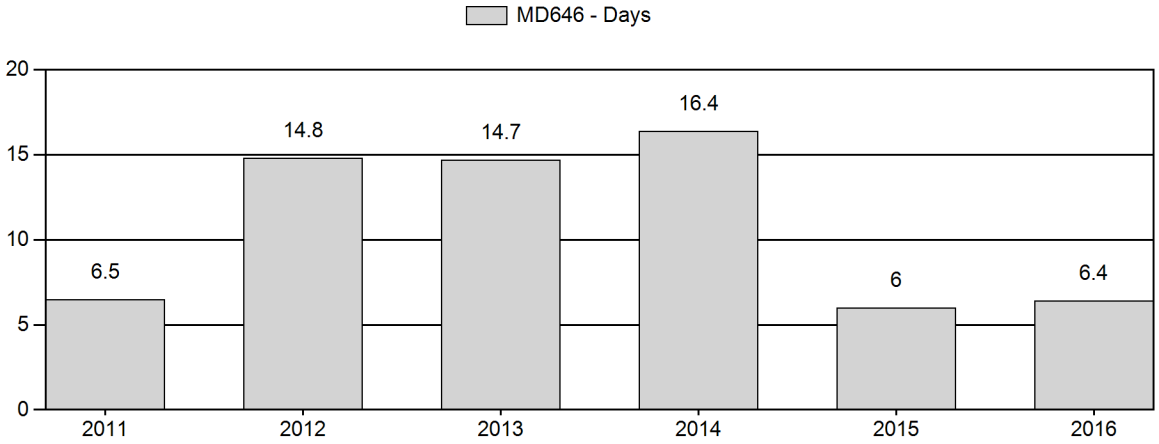
Harvest Success



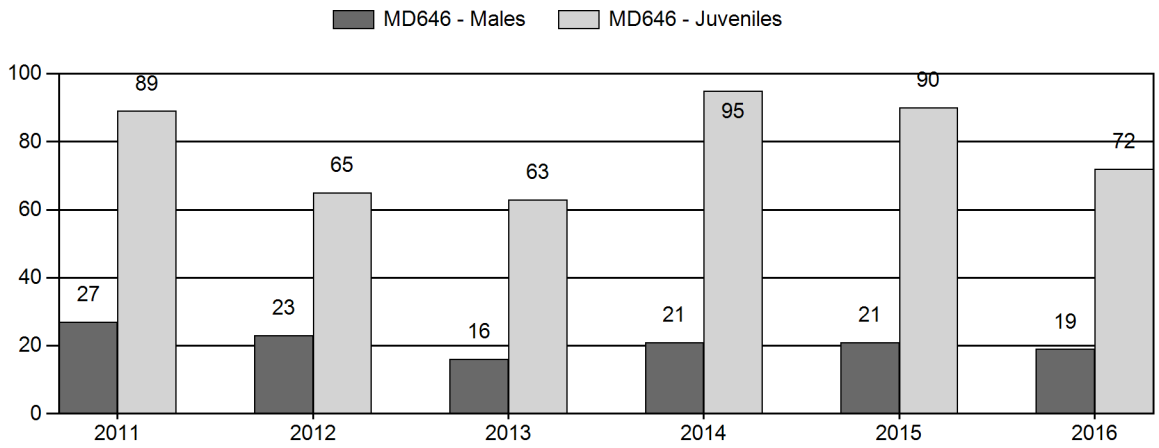
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD646 - SWEETWATER

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	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 Opens	Closes	Quota	License	Limitations
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.

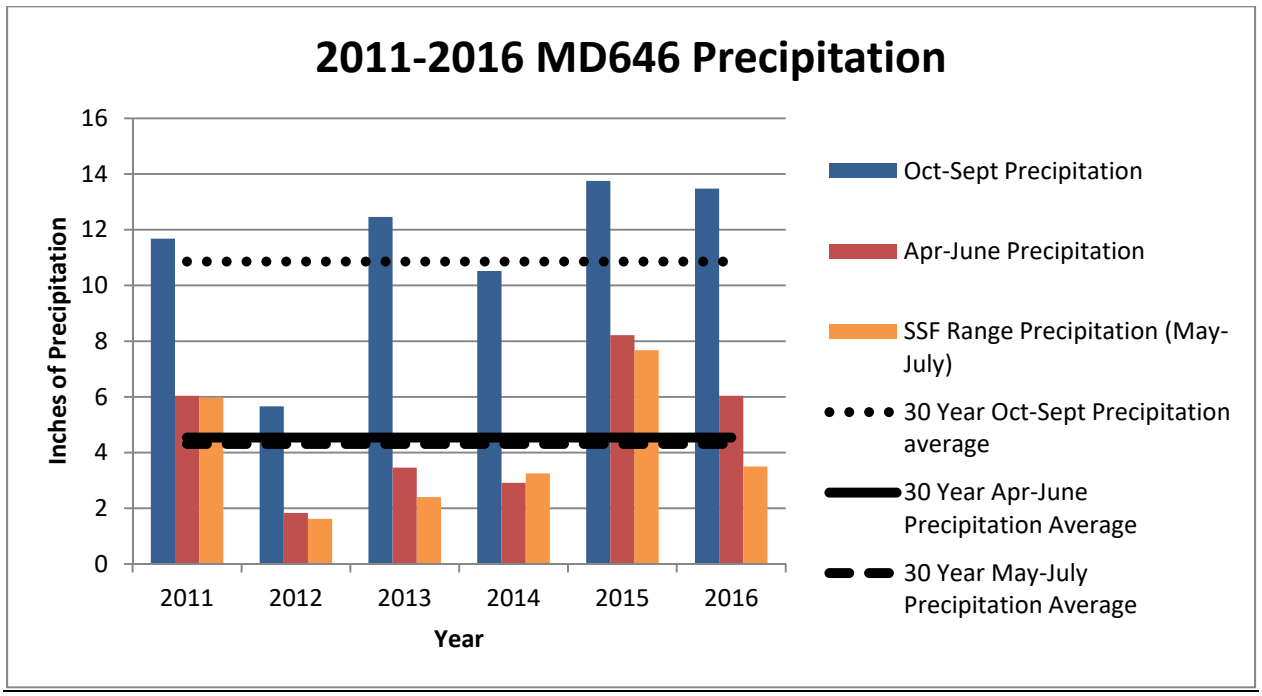


Table 1. Precipitation values for Sweetwater Mule Deer (MD646) from 2011 – 2016.

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 ≤ 18" wide), indicating a shortage of older age-class bucks, likely due to high harvest in extremely accessible areas with high hunter density.

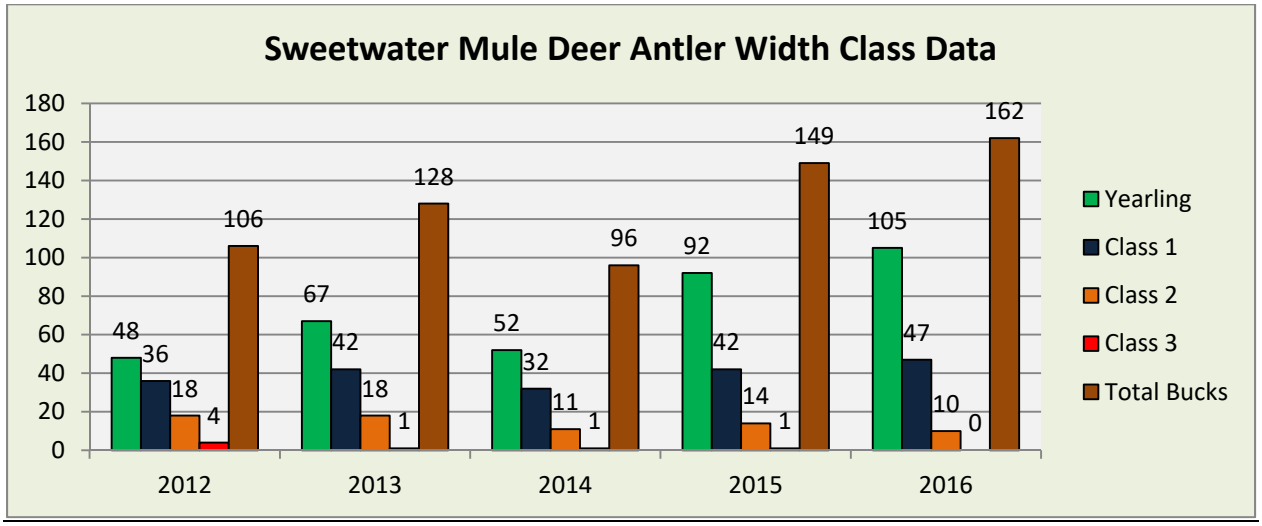


Figure 1. Antler class data from classification surveys in the Sweetwater Mule Deer Herd Unit, 2012 – 2016.

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.

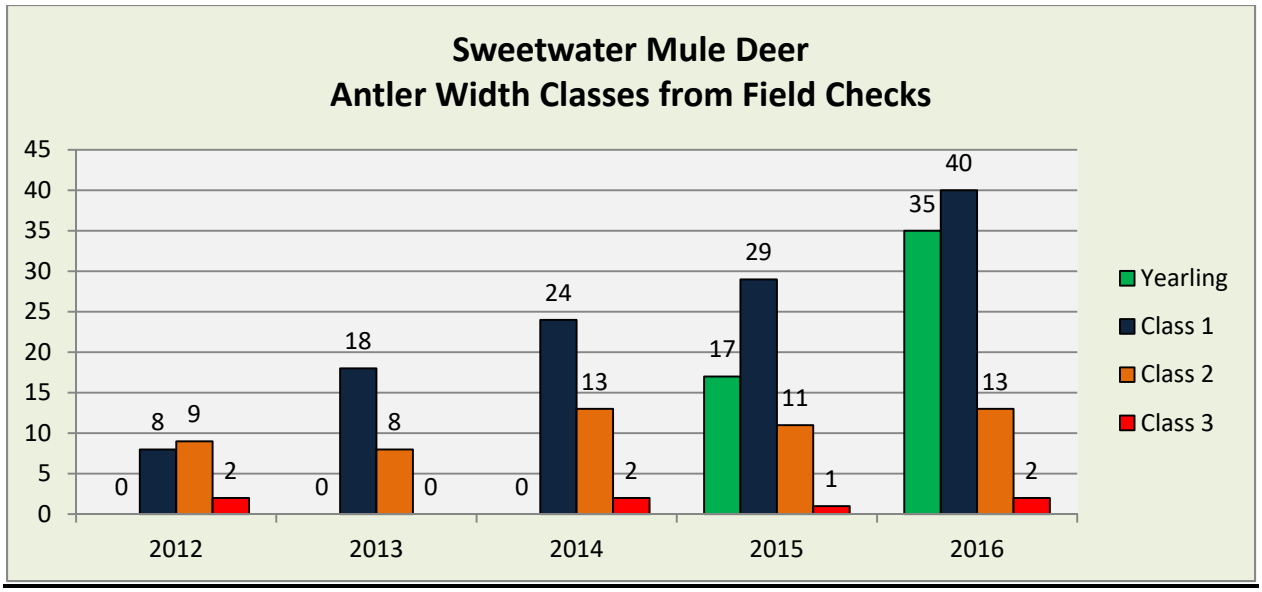


Figure 2. Antler class data as measured during field checks and at check stations, 2012 –2016.

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.

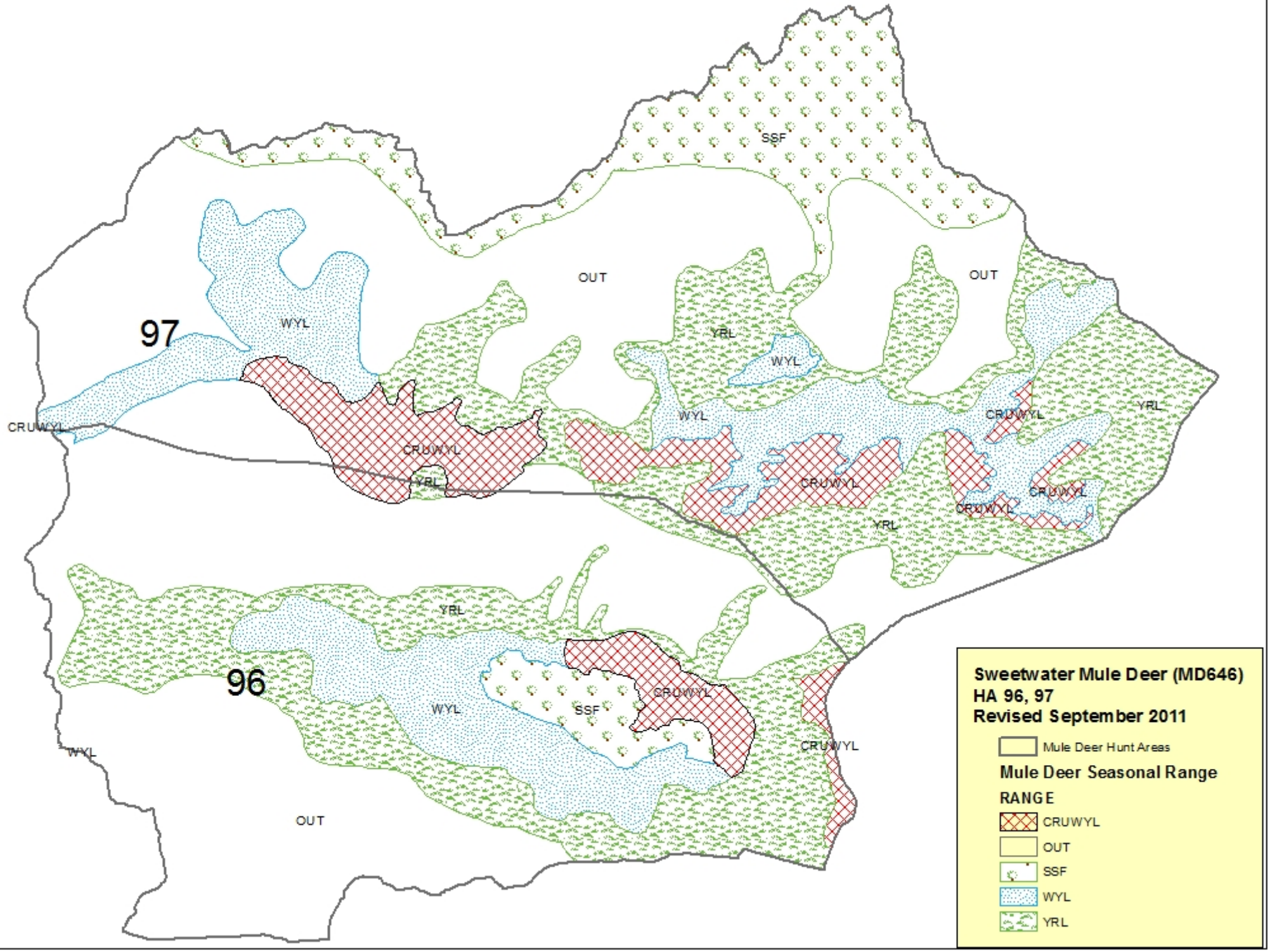
In response to concern about low buck/doe ratios, we are shortening the General License season to a 6 day season – beginning on Sunday and ending on Friday. All General License seasons will end on Friday, October 20, instead of the traditional closing date of October 22. This will allow for youth hunting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


97
96
SSF
OUT
WYL
YRL
CRUWYL
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
PERIOD: 6/1/2016 - 5/31/2017

HERD: MD647 - FERRIS

HUNT AREAS: 87
PREPARED BY: GREG HIATT

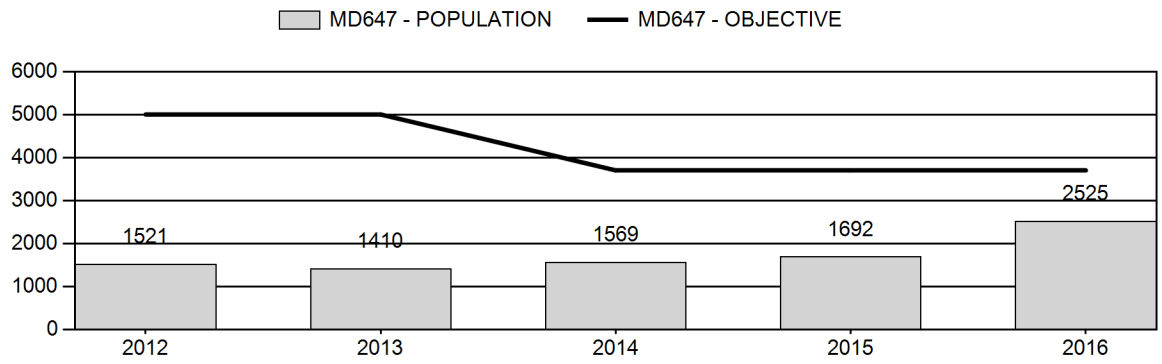
	2011 - 2015 Average	2016	2017 Proposed
Population:	1,812	2,525	2,570
Harvest:	54	65	90
Hunters:	69	71	115
Hunter Success:	78%	92%	78 %
Active Licenses:	69	71	115
Active License Success:	78%	92%	78 %
Recreation Days:	350	329	500
Days Per Animal:	6.5	5.1	5.6
Males per 100 Females	41	58	
Juveniles per 100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

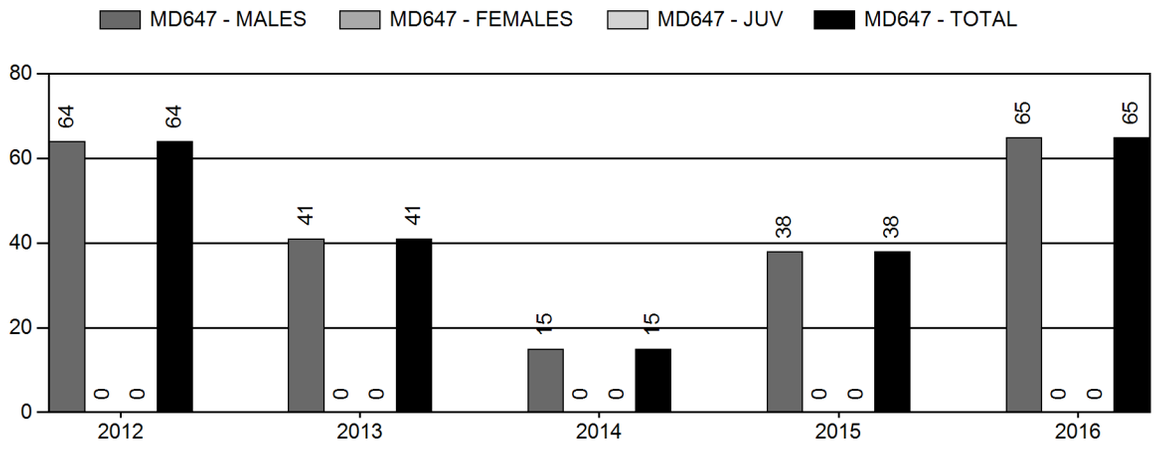
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
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%

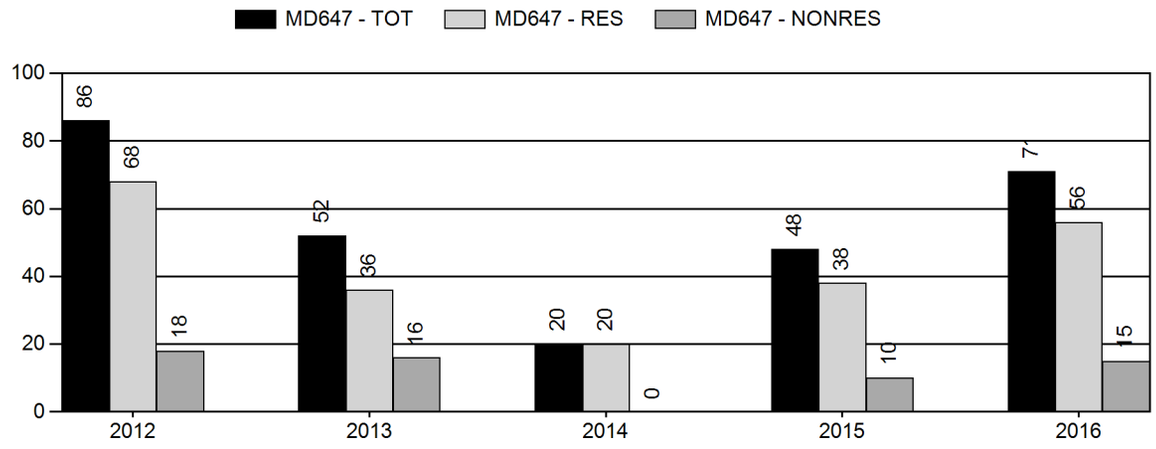
Population Size - Postseason



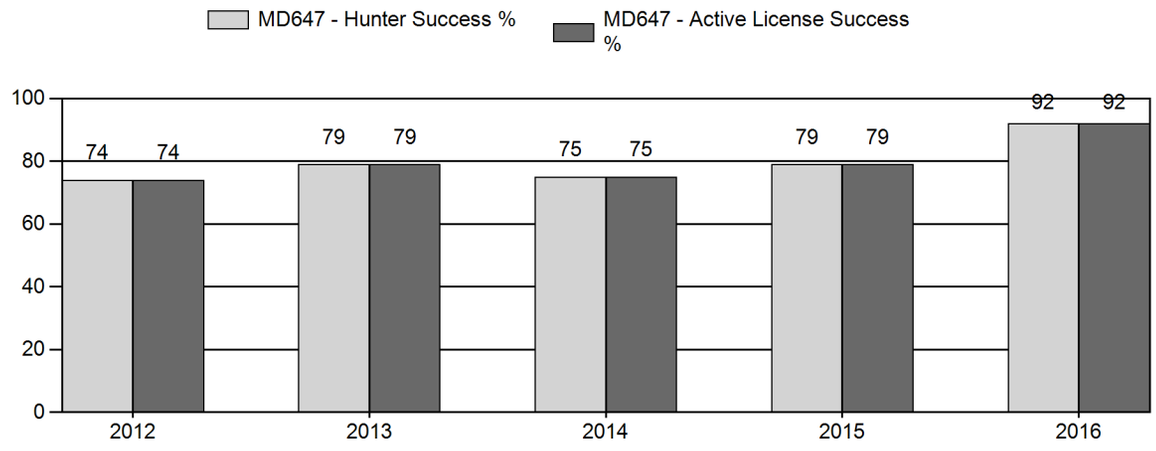
Harvest



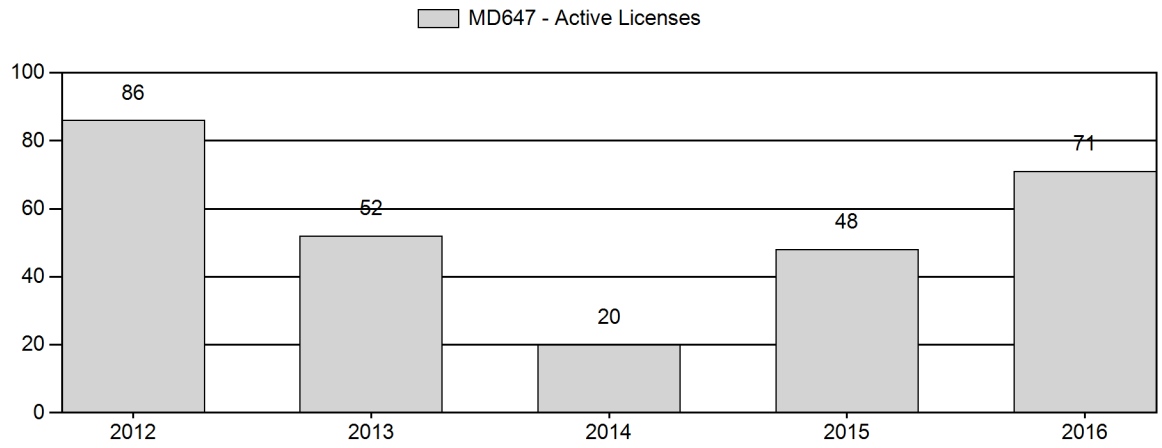
Number of Active Licenses



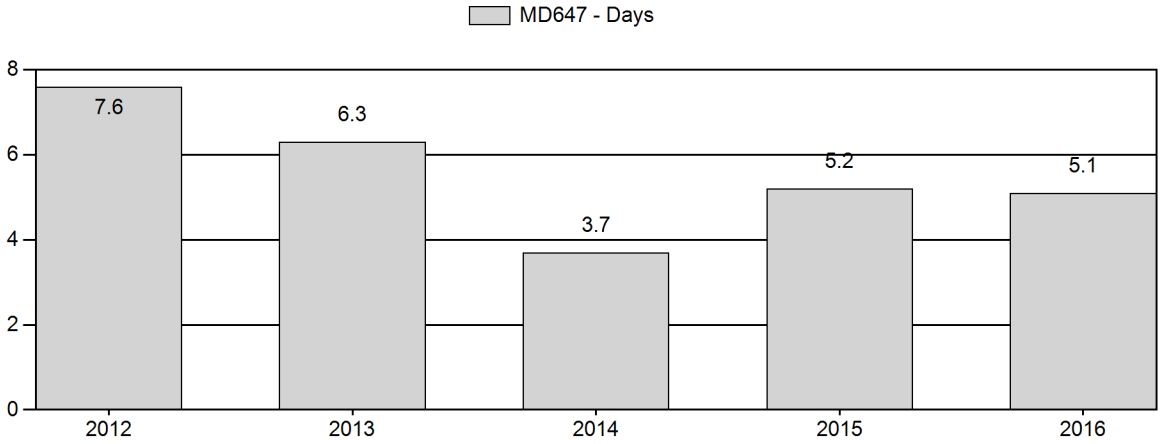
Harvest Success



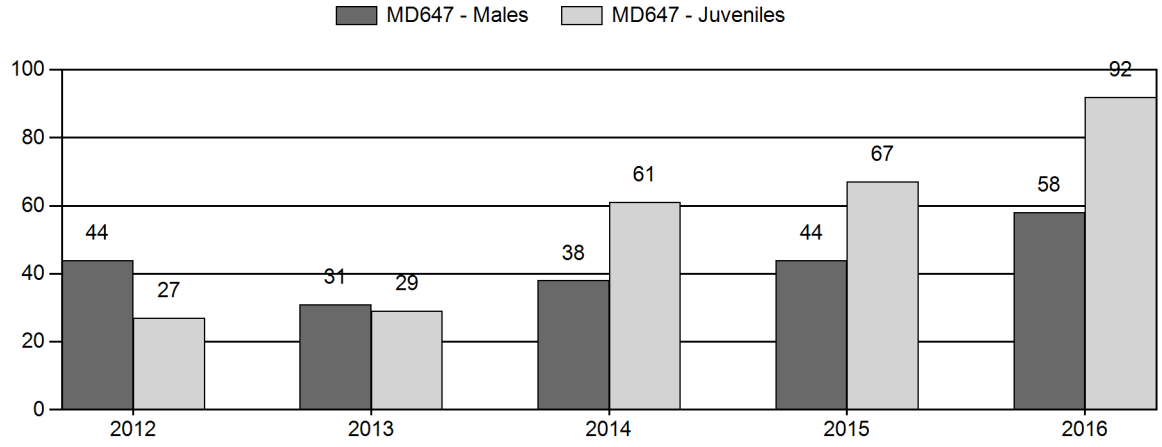
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD647 - FERRIS

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	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 Opens	Closes	Quota	License	Limitations
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 niot 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 Seminoe 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 Seminoe 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 Seminoe Fire burned over 3,800 acres in the Seminoe 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 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 Seminoe 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 unhunted, 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 unhunted 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

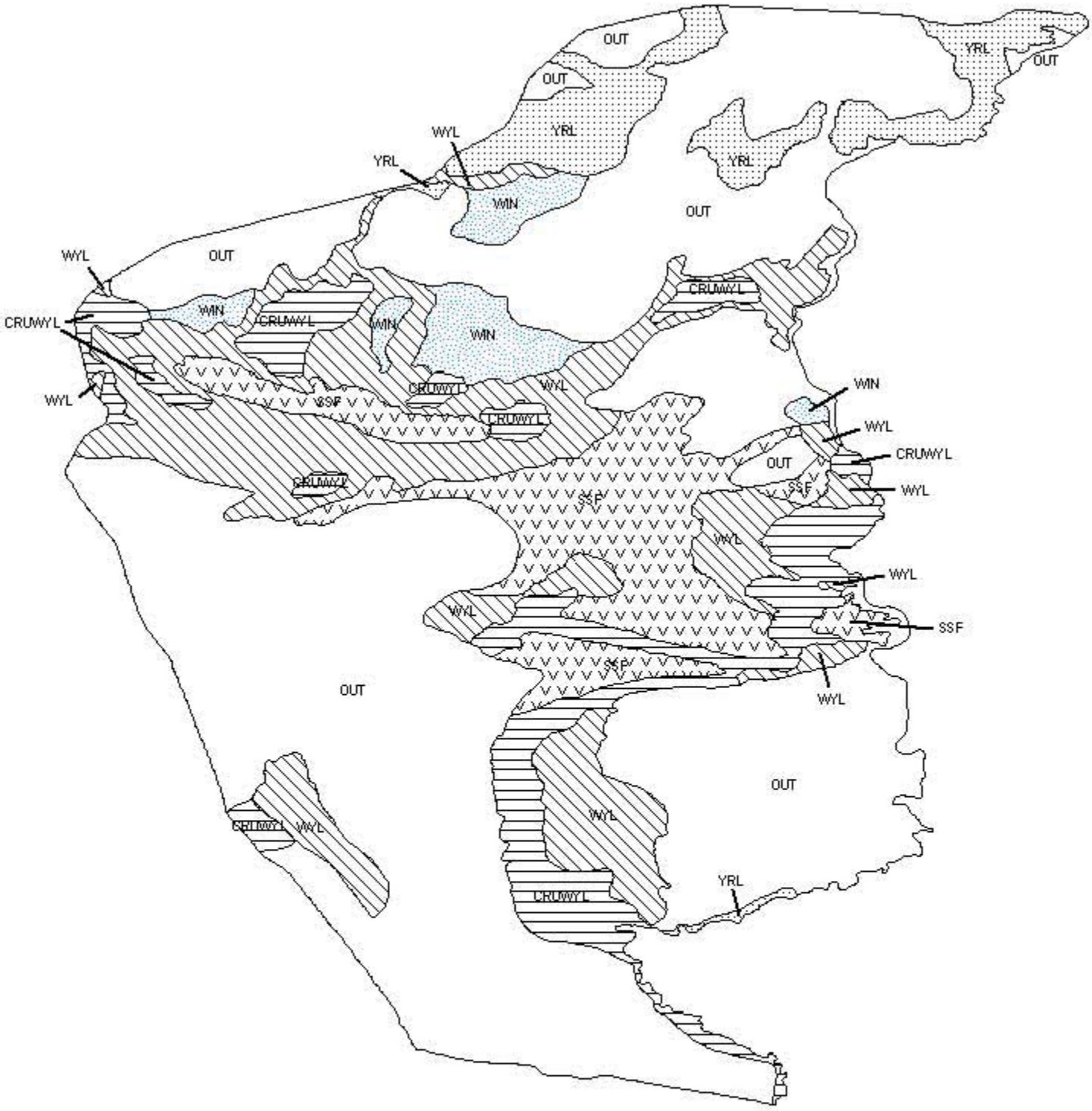
seen in the past three years continues, the large acreages of treated habitat may improve fawn production and survival and provide for more significant herd growth in the future.

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

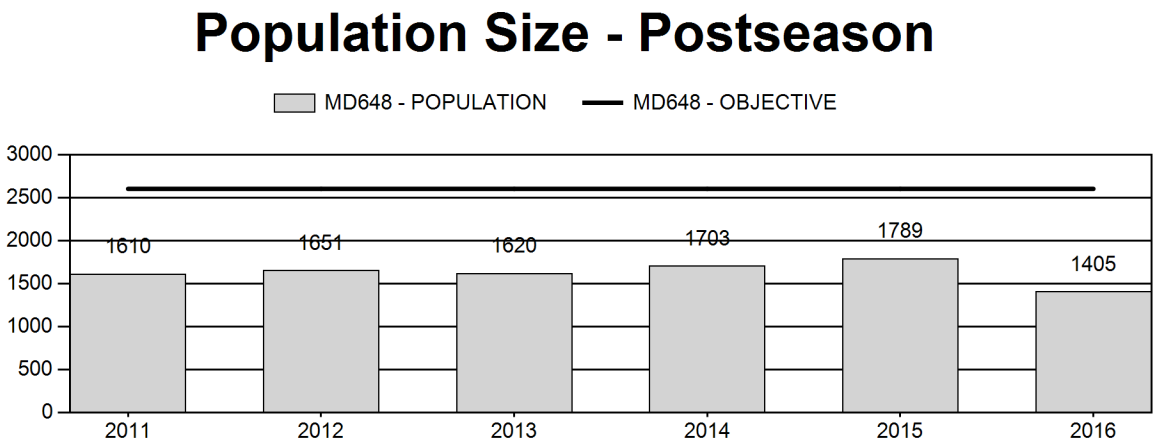
HUNT AREAS: 90
PREPARED BY: GREG ANDERSON

	2011 - 2015 Average	2016	2017 Proposed
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	

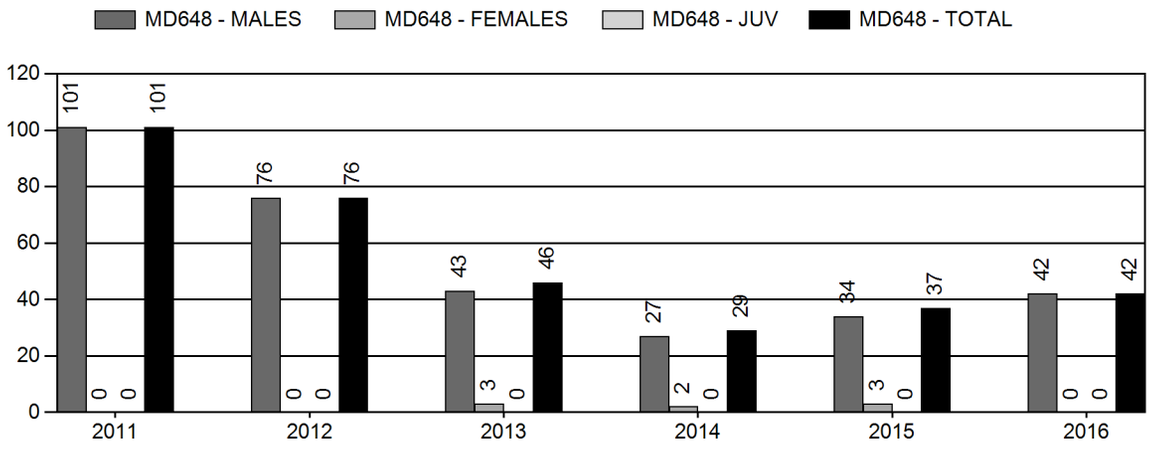
Population Objective (± 20%) :	2600 (2080 - 3120)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-46.0%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/19/2017

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

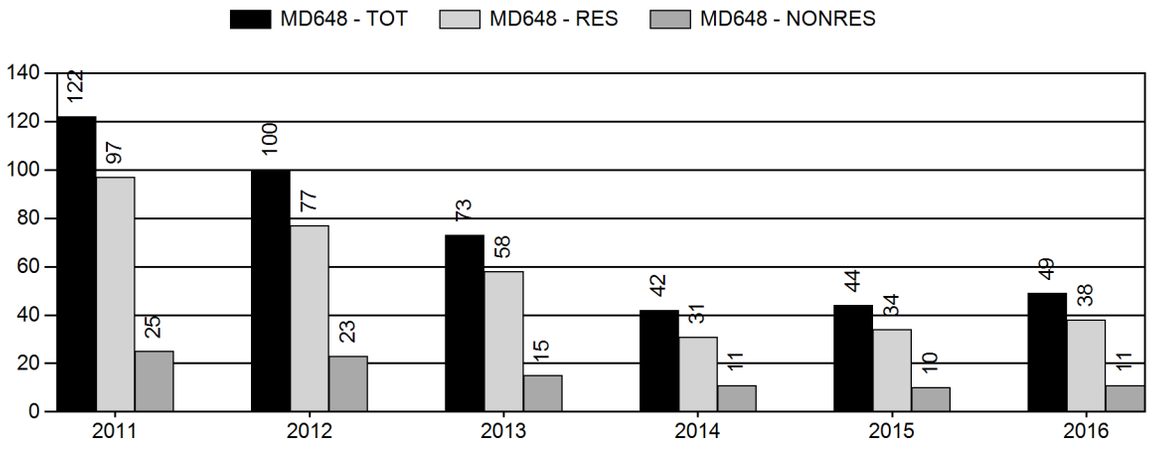
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	13%	18%
Total:	3%	4%
Proposed change in post-season population:	-9%	+7%



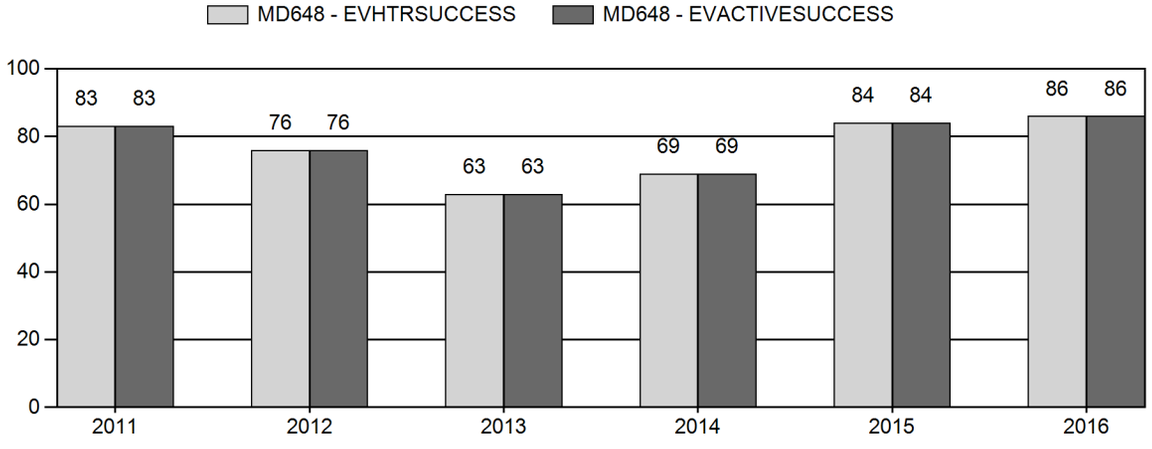
Harvest



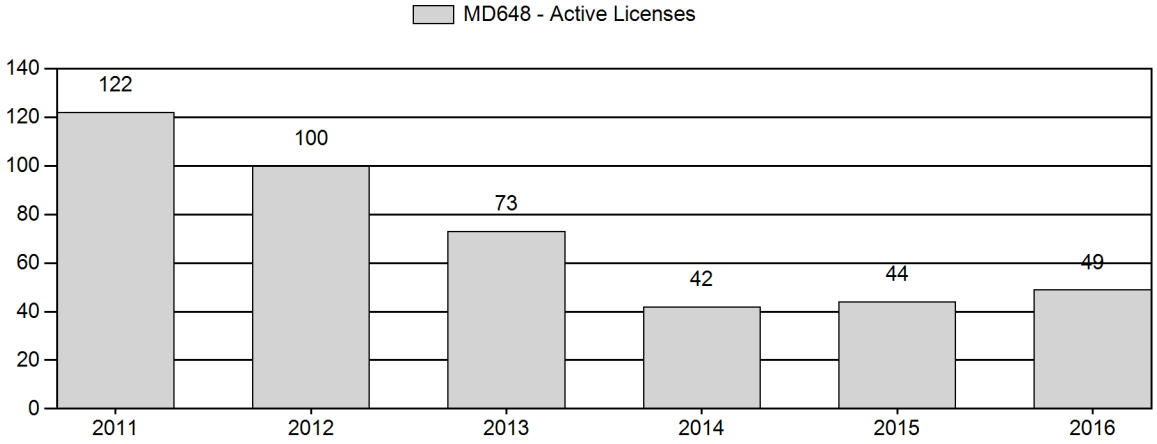
Number of Active Licenses



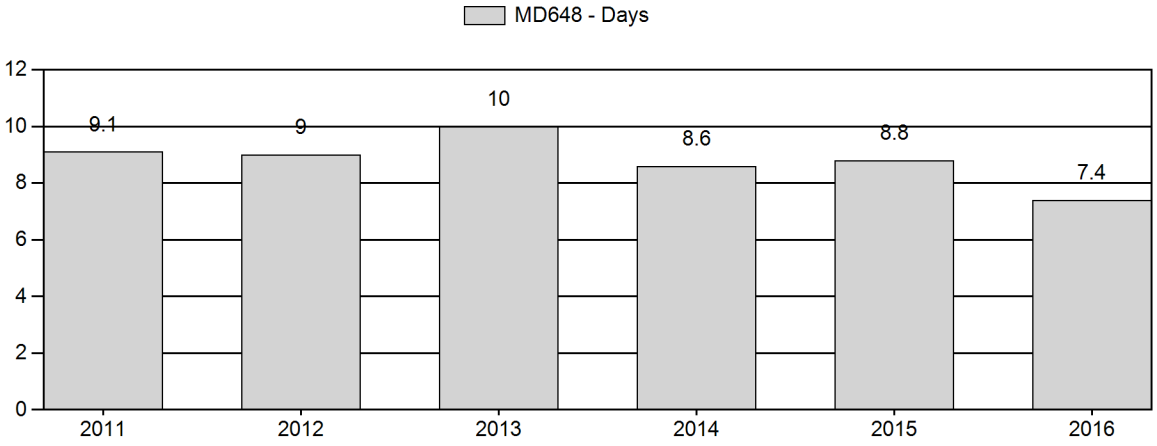
Harvest Success



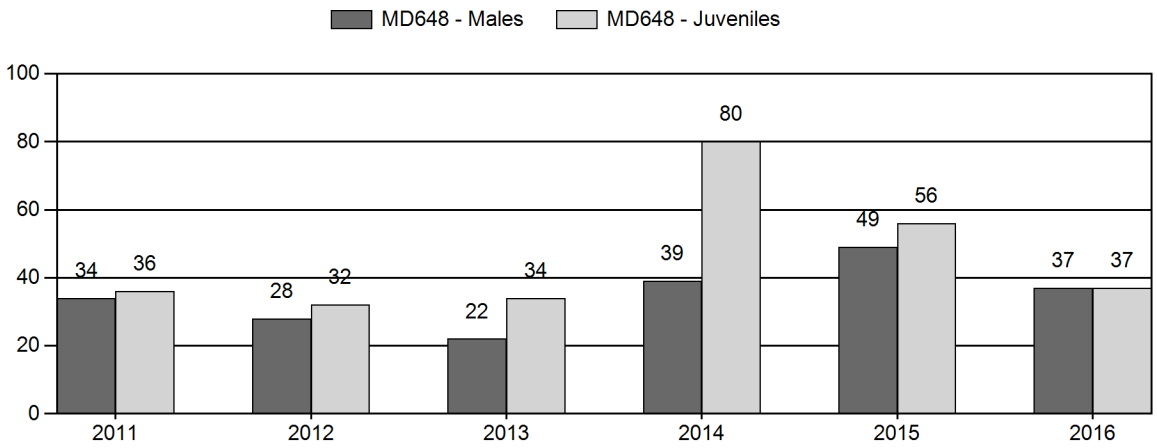
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD648 - BEAVER RIM

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	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 Opens	Closes	Quota	License	Limitations
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.

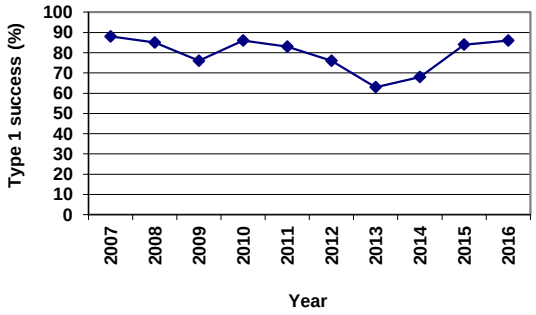
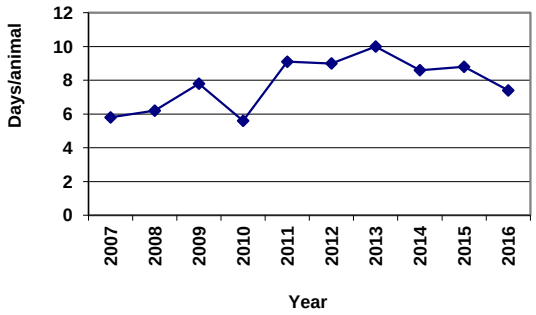


Figure 2. Type 1 license days/animal statistic

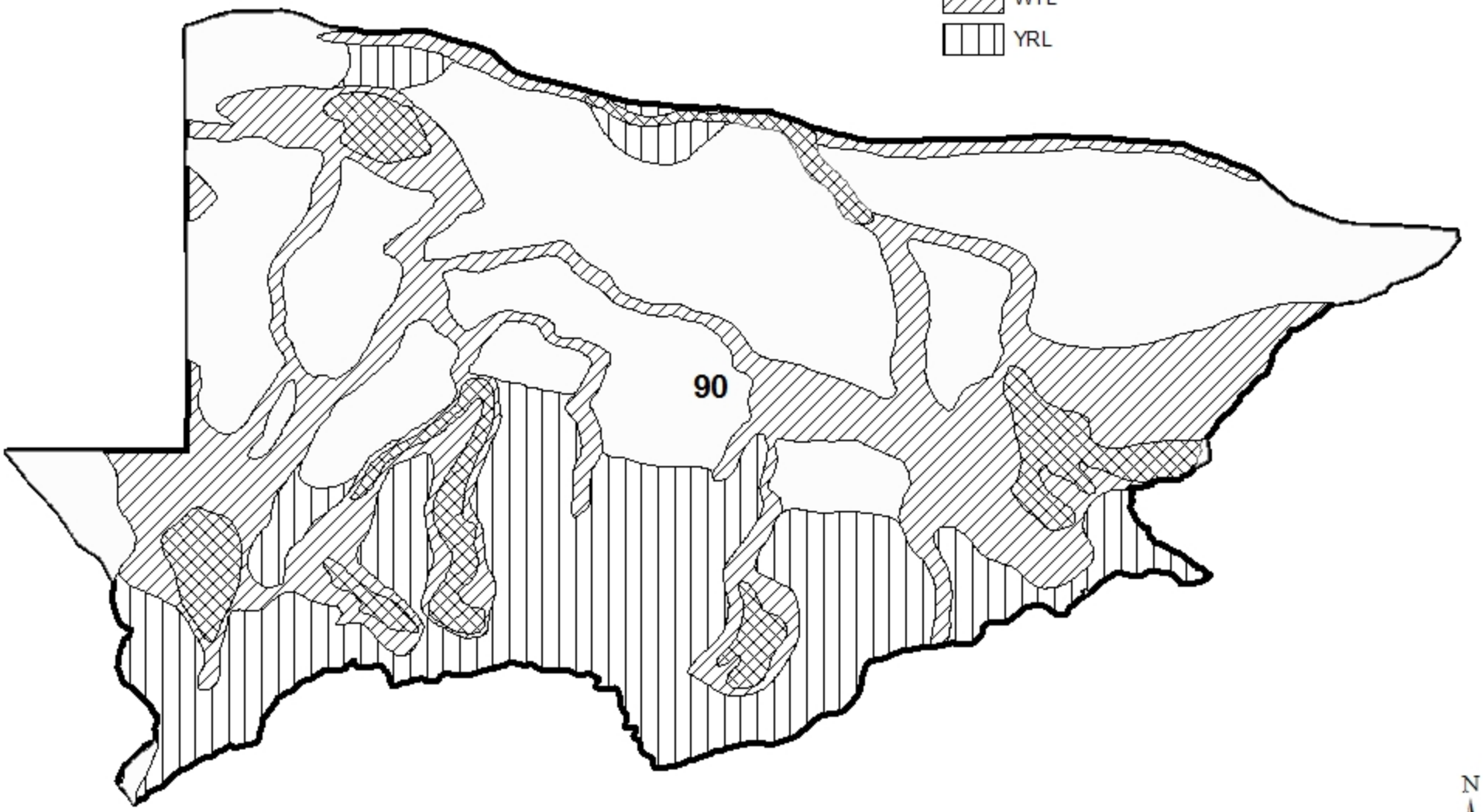


A spreadsheet model was developed for this population in 2012. The addition of 2013 and 2014 data did not dramatically change the estimates produced by the model. The SCJ/SCA model appeared to provide the best fit in both 2013 and 2014, however, with the addition of data in 2015, the model inexplicably 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



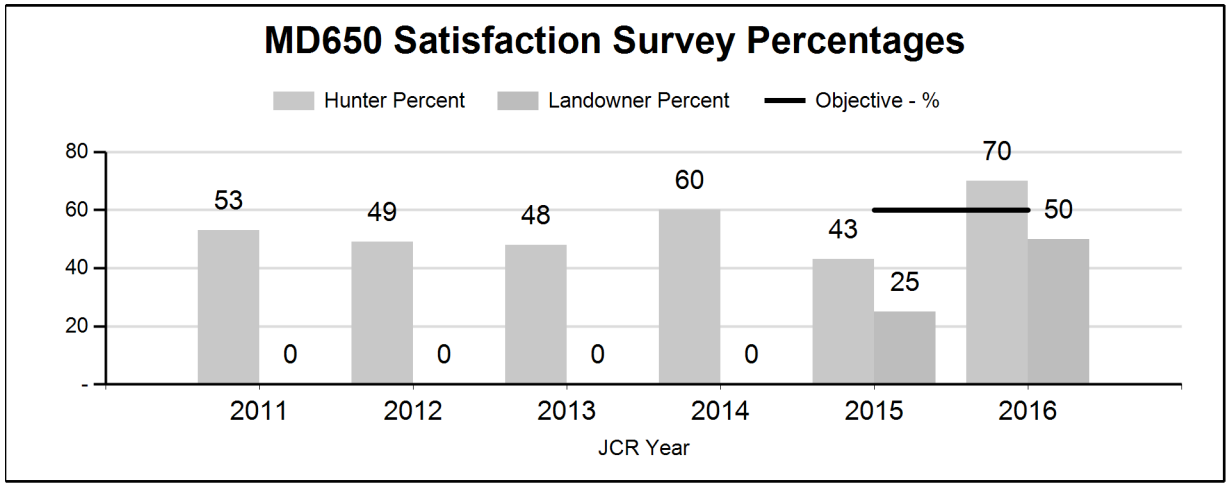
2016 - JCR Evaluation Form

SPECIES: Mule Deer
HERD: MD650 - CHAIN LAKES
HUNT AREAS: 98

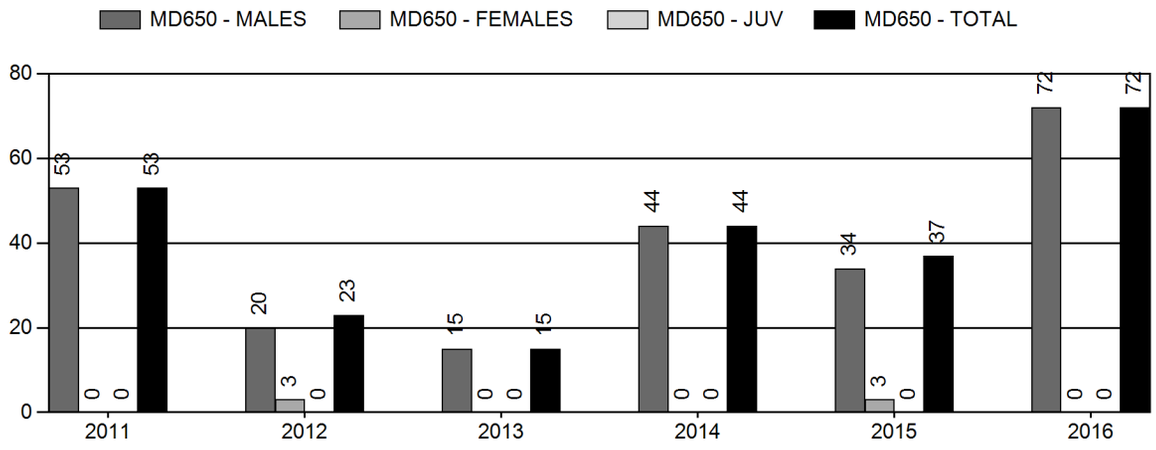
PERIOD: 6/1/2016 - 5/31/2017
PREPARED BY: GREG HIATT

	2011 - 2015 Average	2016	2017 Proposed
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	

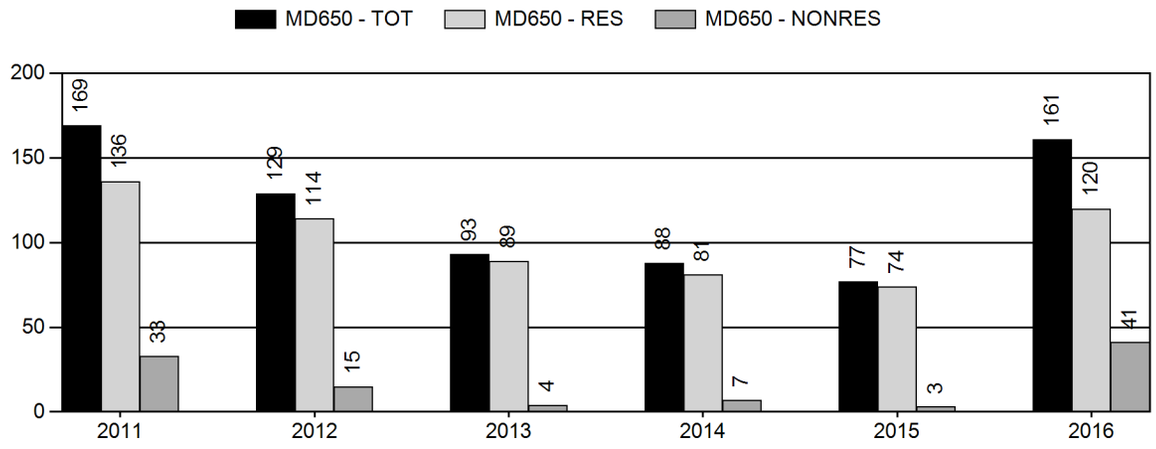
Satisfaction Based Objective	60%
Management Strategy:	Recreational
Percent population is above (+) or (-) objective:	0%
Number of years population has been + or - objective in recent trend:	5



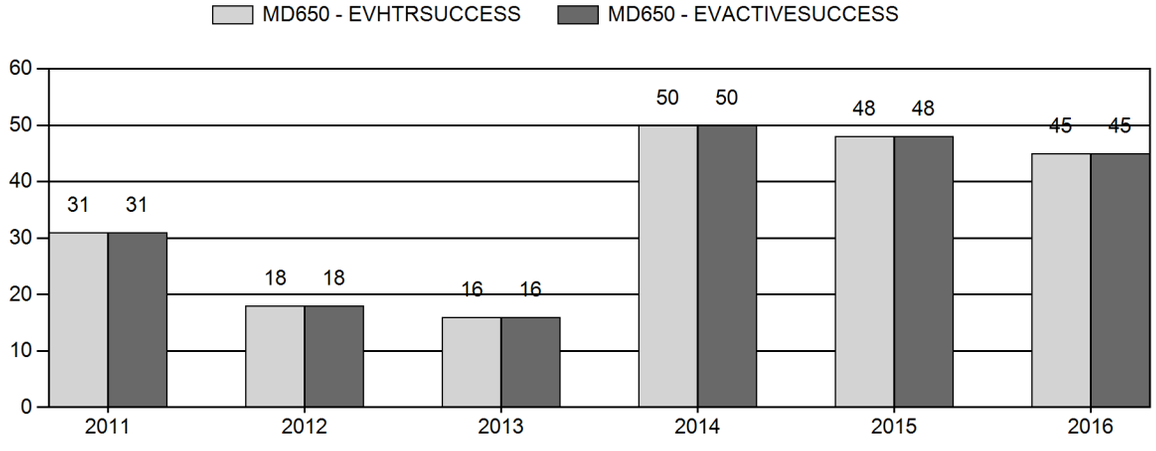
Harvest



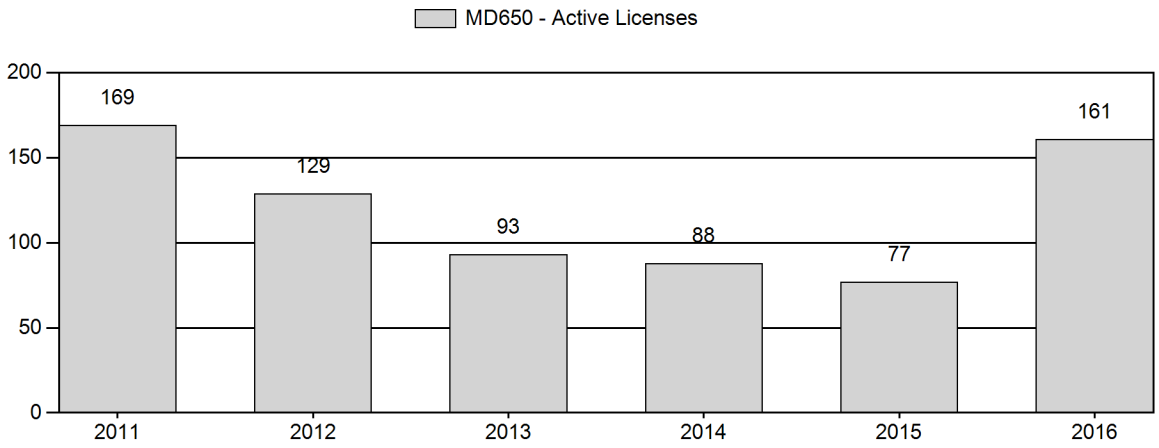
Number of Active Licenses



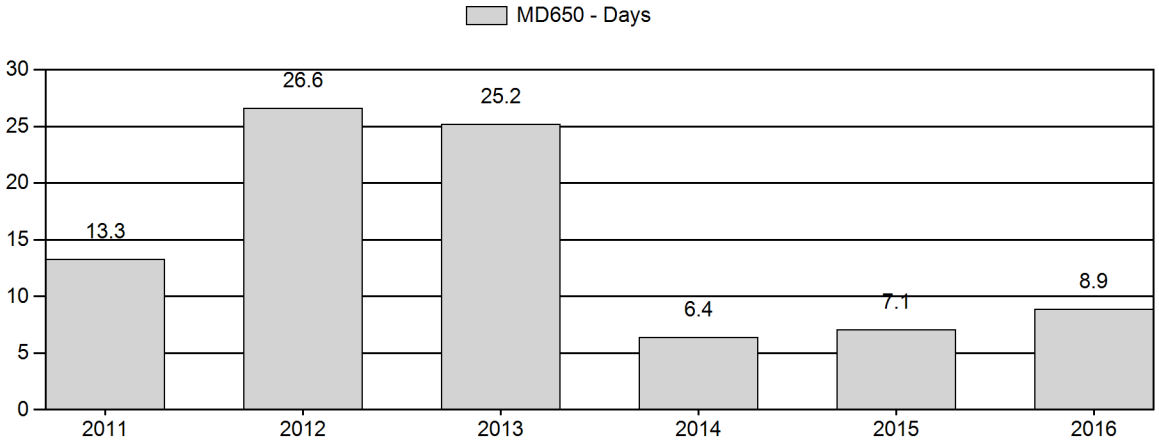
Harvest Success



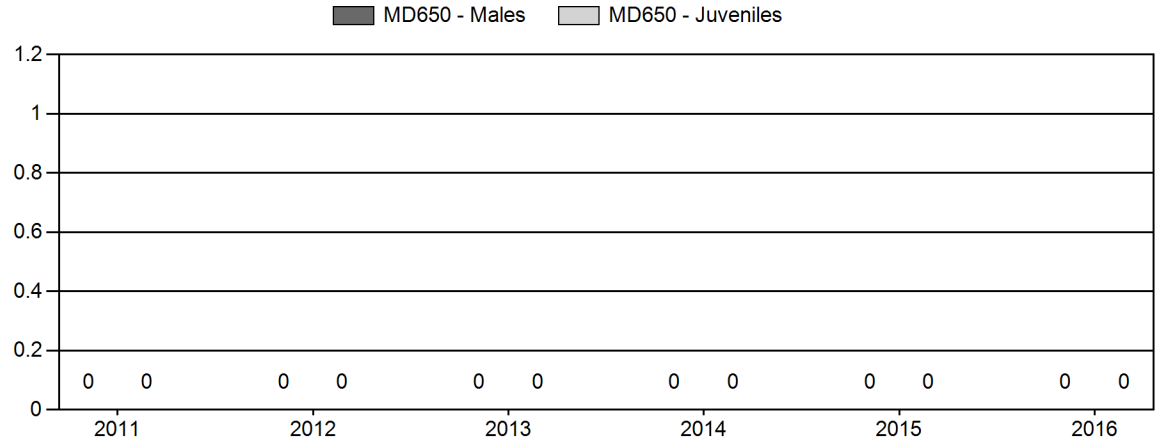
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2011 - 2016 Postseason Classification Summary

for Mule Deer Herd MD650 - CHAIN LAKES

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	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 Opens	Closes	Quota	License	Limitations
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.

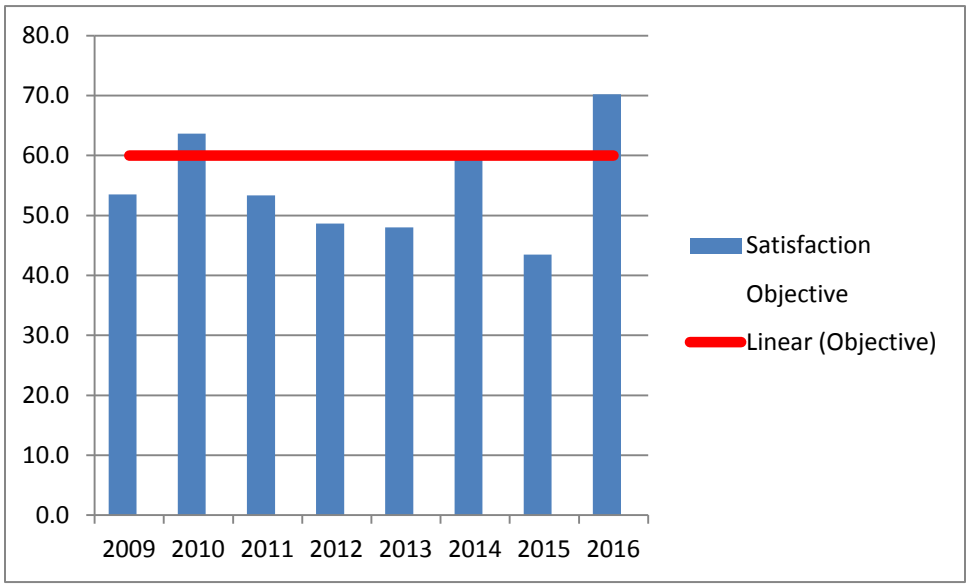


Figure 1. Hunter satisfaction for the Chain Lakes Mule deer Herd.

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.

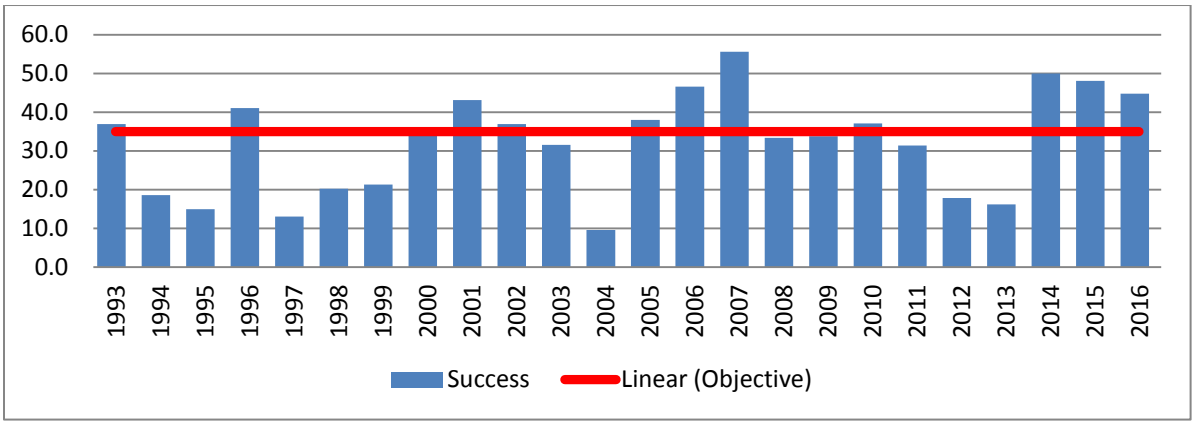
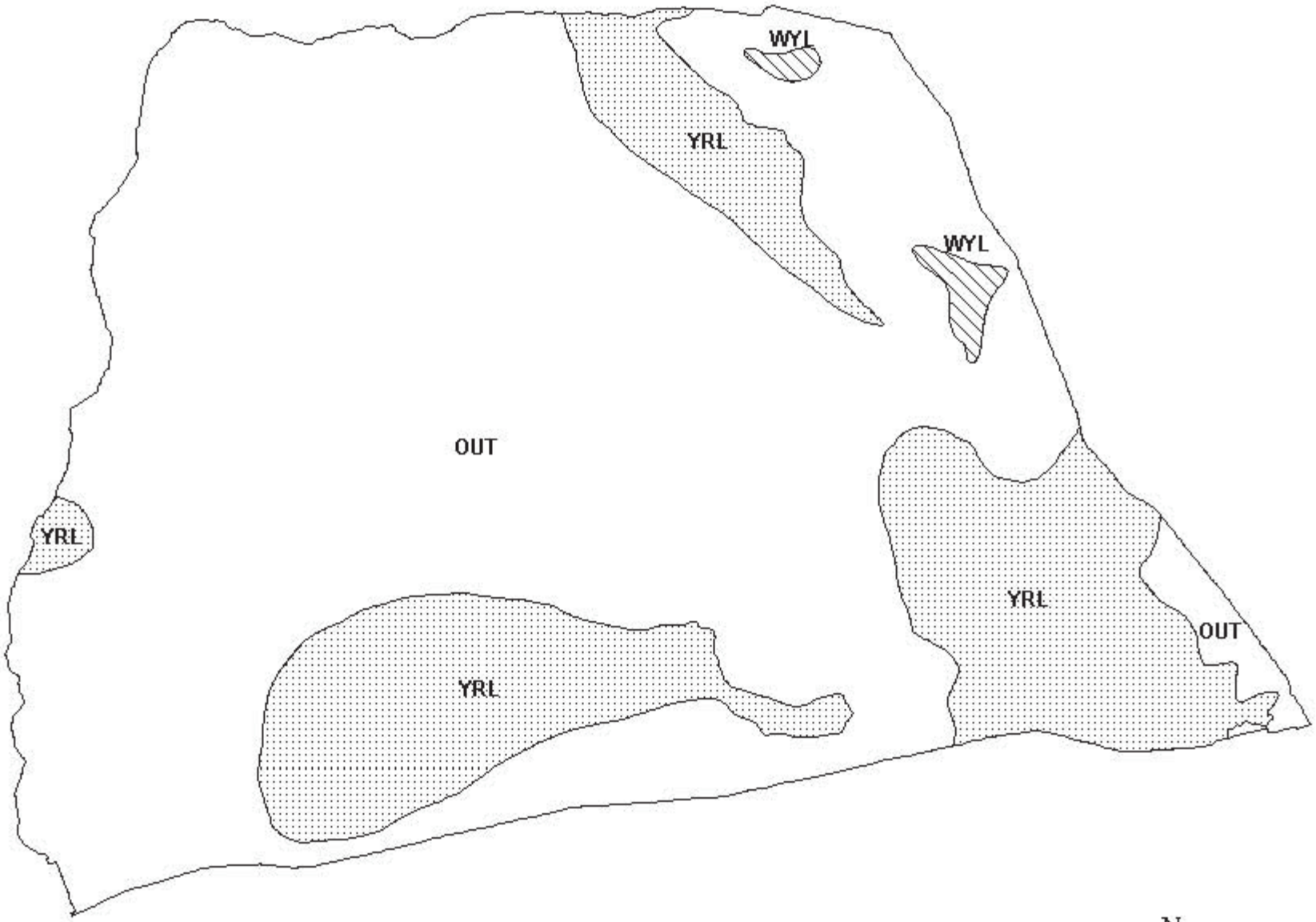


Figure 2. Hunter success for the Chain Lakes Mule deer Herd.

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