

## 2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD423 - UINTA

HUNT AREAS: 132-133, 168

PREPARED BY: JEFF SHORT

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

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

Management Strategy: Recreational

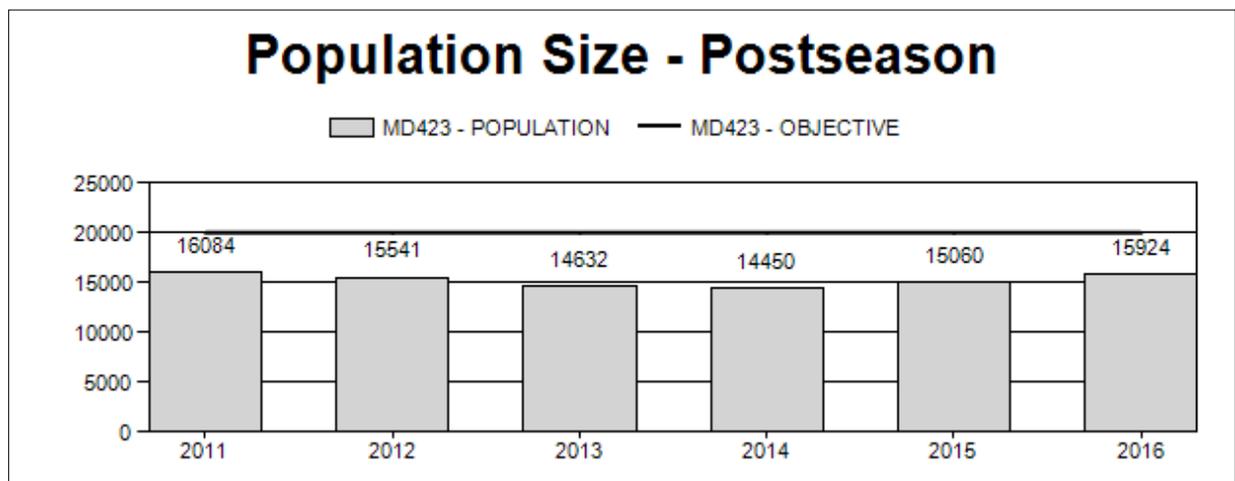
Percent population is above (+) or below (-) objective: -20.4%

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

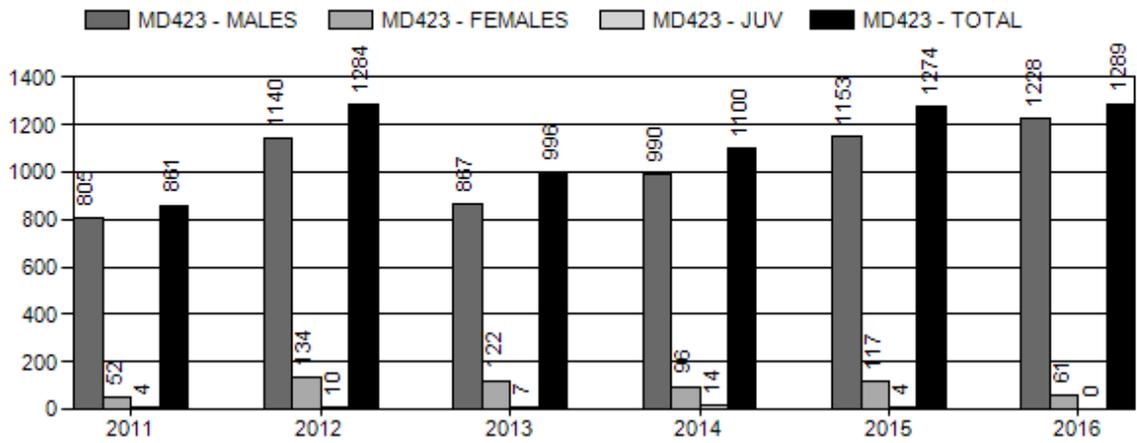
Model Date: 02/20/2017

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

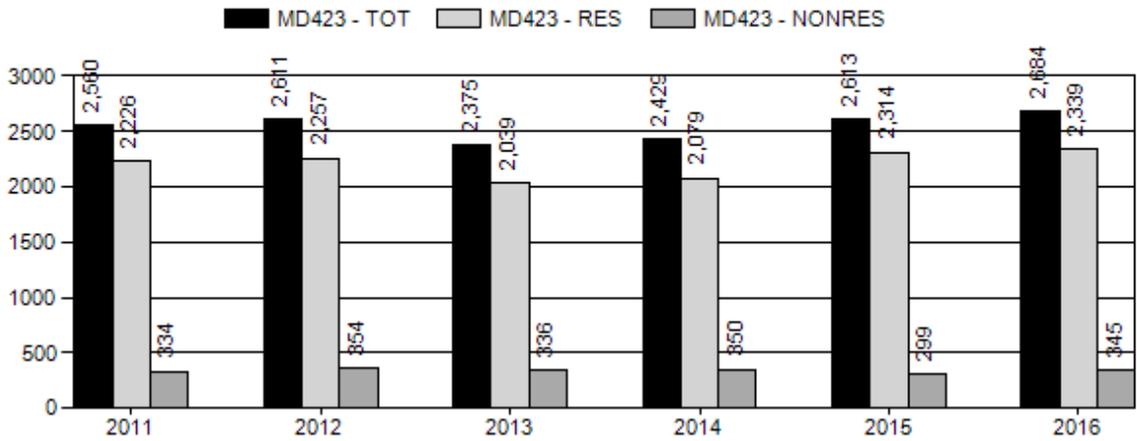
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	.007%	.005%
Males ≥ 1 year old:	33.24%	18.97%
Total:	7.4%	4.3%
Proposed change in post-season population:	+3.0%	+3.4%



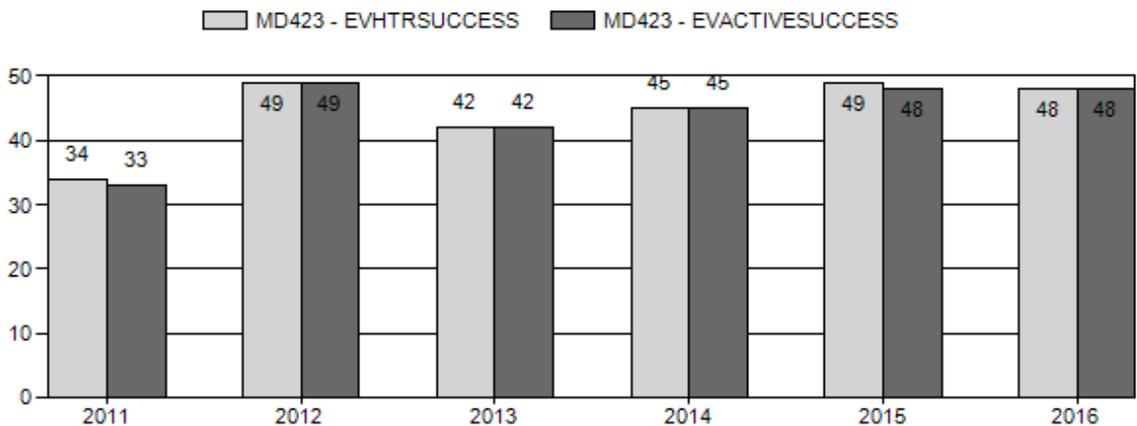
# Harvest



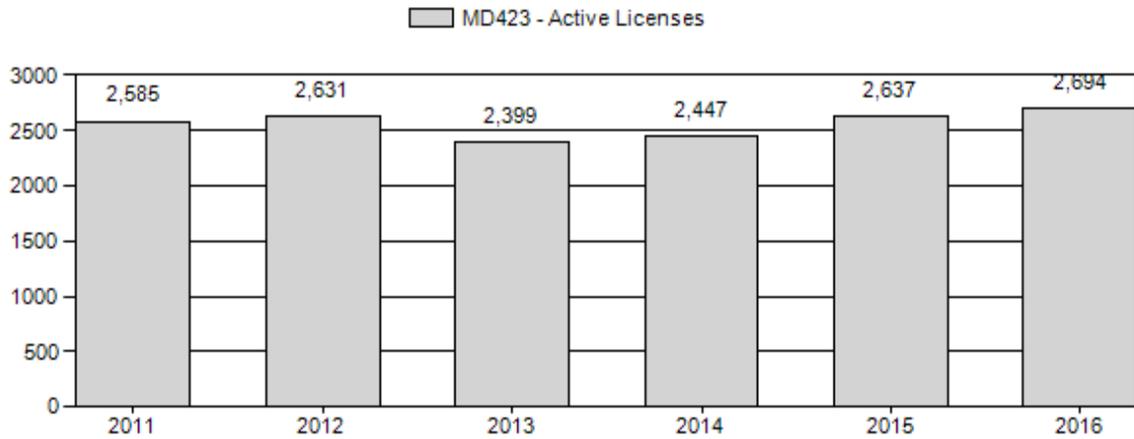
# Number of Active Licenses



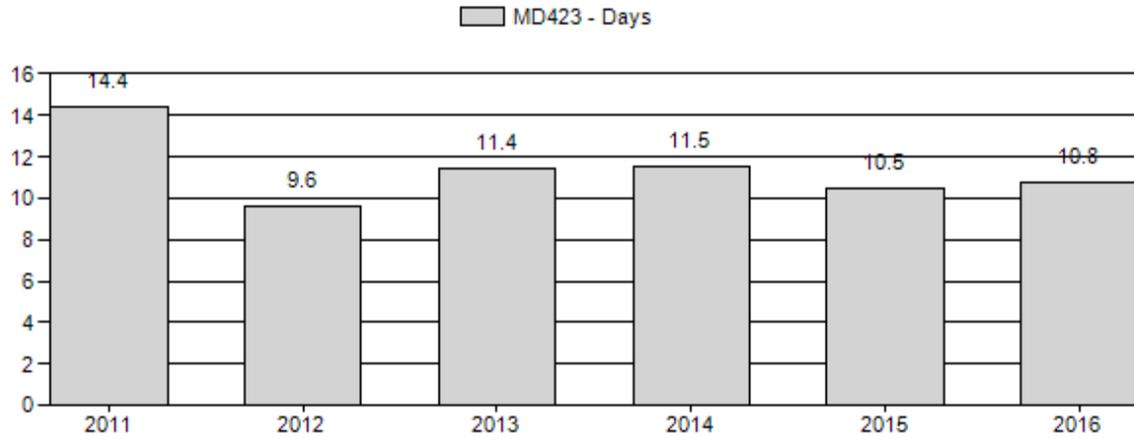
# Harvest Success



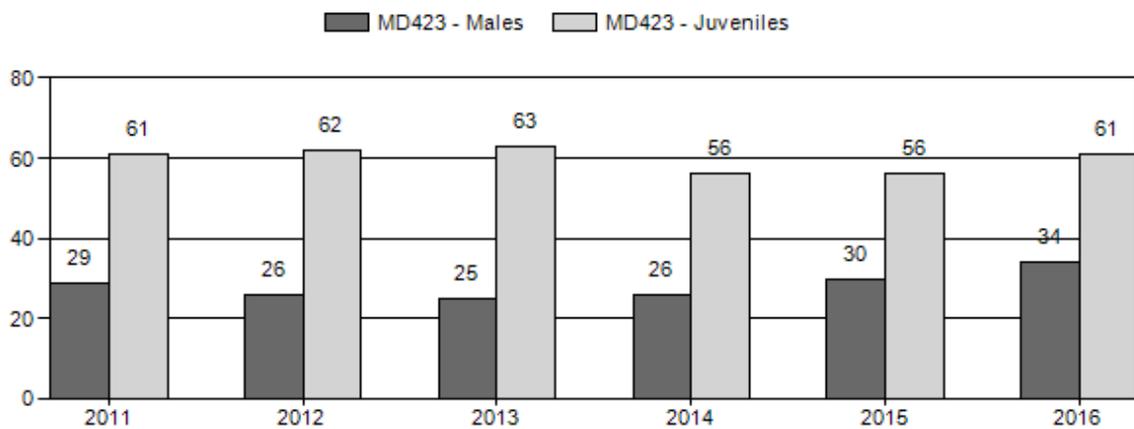
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



**2011 - 2016 Postseason Classification Summary**

for Mule Deer Herd MD423 - UINTA

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

**2017 HUNTING SEASONS**

SPECIES : Mule Deer

HERD UNIT : Uinta (423)

HUNT AREAS: 132, 133, 168

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

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

**Region K Nonresident Quota: 500**

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

**Management Evaluation**

**Current Postseason Population Management Objective: 20,000**

**Management Strategy: Recreational**

**2016 Postseason Population Estimate: ~15,924**

**2017 Proposed Postseason Population Estimate: ~16,469**

## **Herd Unit Issues**

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

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

## **Weather**

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

## **Habitat**

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

## **Field Data**

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

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

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

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

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

## **Harvest Data**

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

## **Population**

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

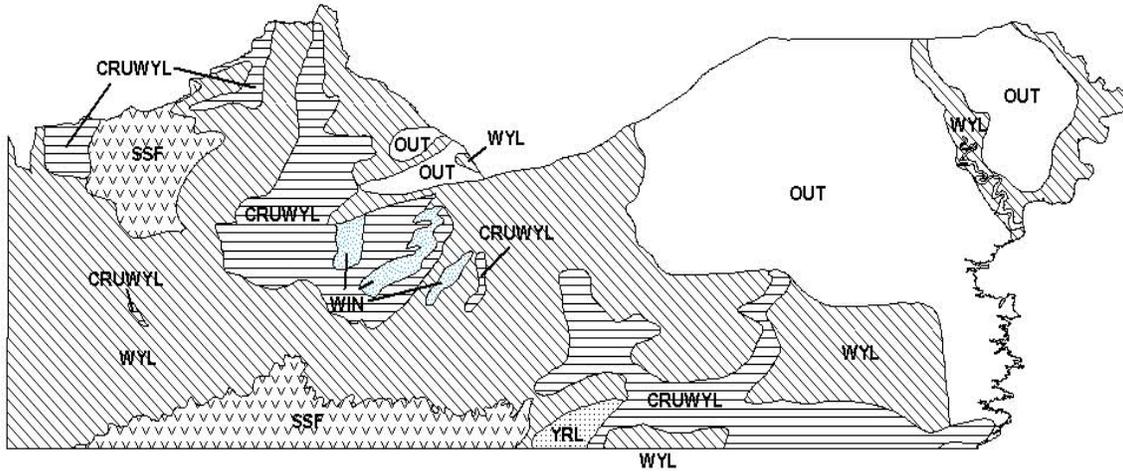
interstate population with some interchange across state boundaries (herd shared with Utah). Recent radio collar data documents over 12% interchange with our neighbor to the south and west. However, this rate of interchange is far lower than we once thought occurred. More significant radio collar studies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

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

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

### **Management Summary**

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



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



## 2016 - JCR Evaluation Form

SPECIES: Mule Deer

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

HERD: MD424 - SOUTH ROCK SPRINGS

HUNT AREAS: 101-102

PREPARED BY: PATRICK BURKE

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

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

Management Strategy: Special

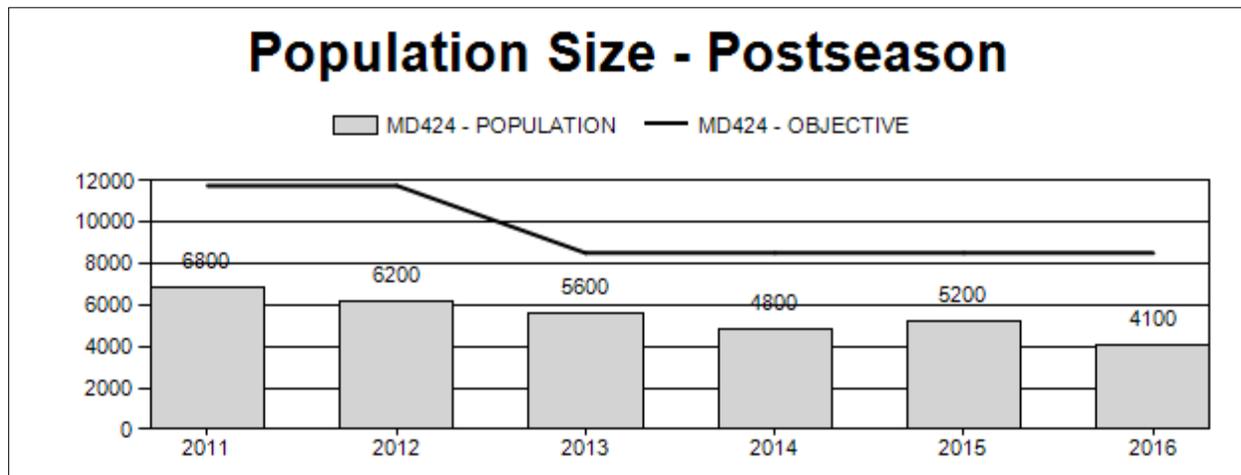
Percent population is above (+) or below (-) objective: -51.8%

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

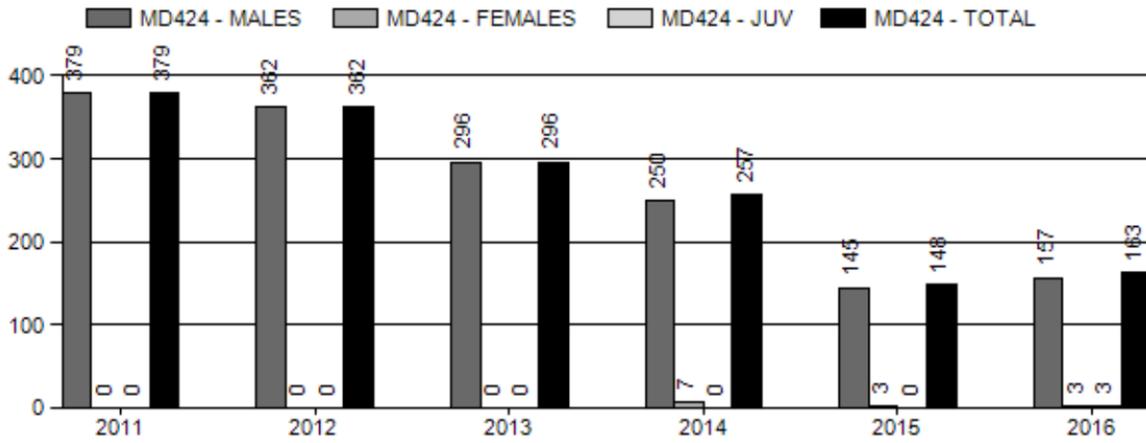
Model Date: 2/24/2017

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

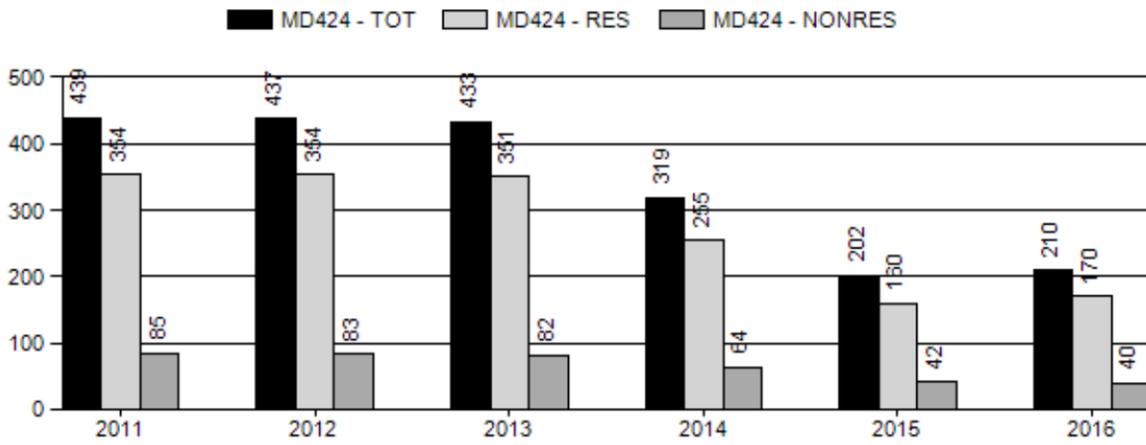
	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0%	0%
Males $\geq$ 1 year old:	20%	15%
Total:	3%	3%
Proposed change in post-season population:	10%	-5%



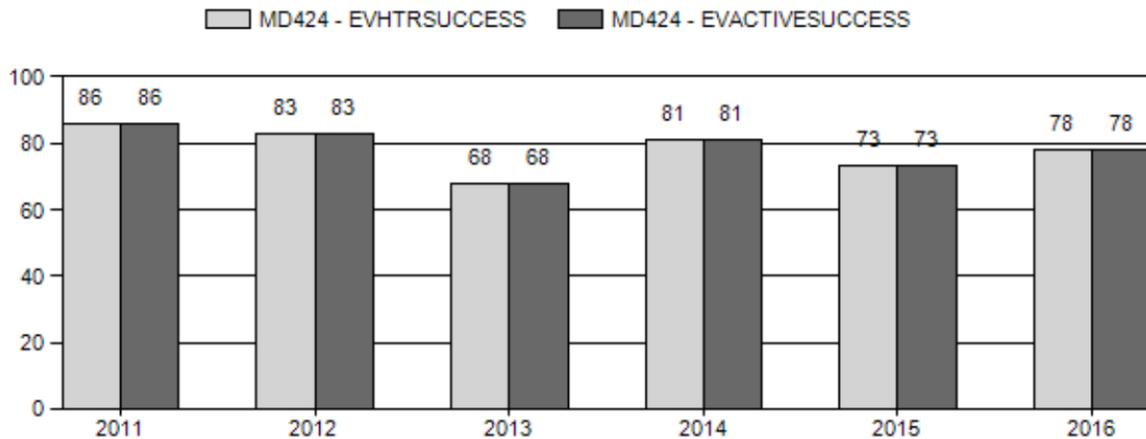
# Harvest



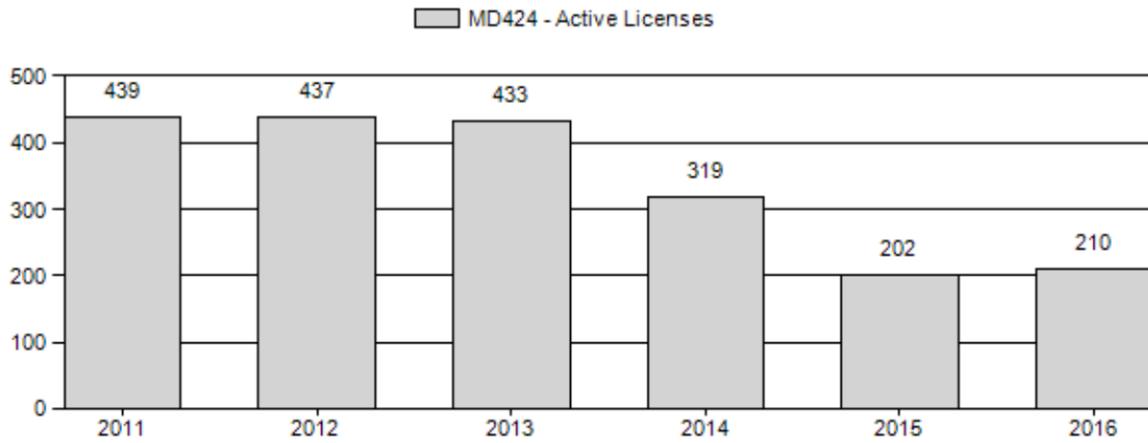
# Number of Active Licenses



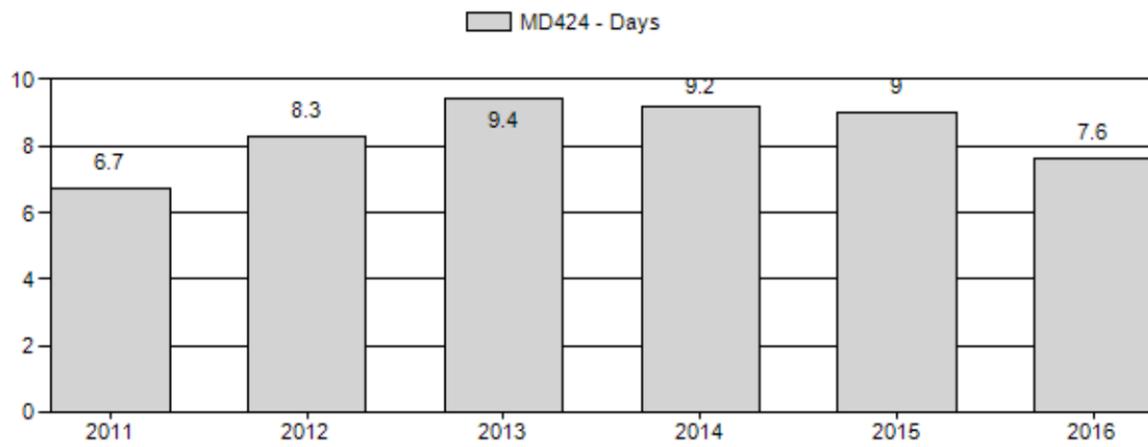
# Harvest Success



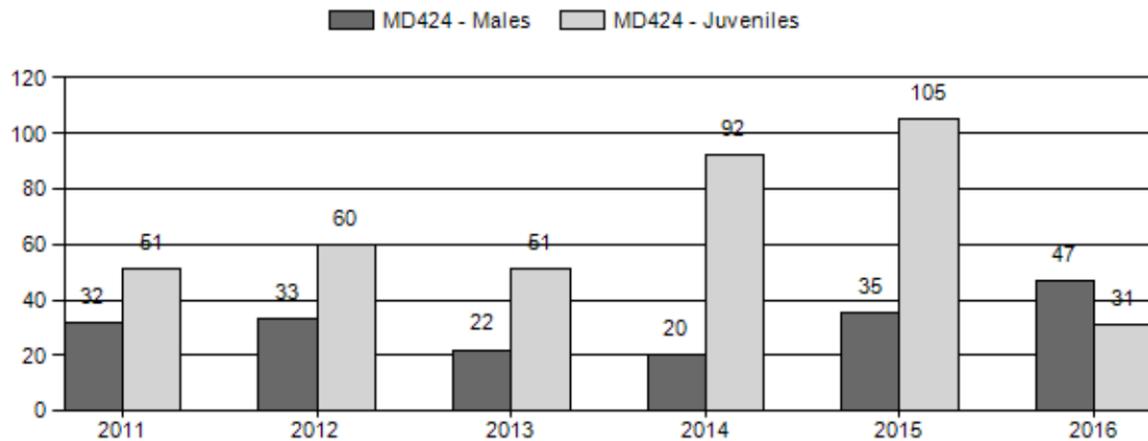
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



**2011 - 2016 Postseason Classification Summary**

for Mule Deer Herd MD424 - SOUTH ROCK SPRINGS

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

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

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

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

Hunt Area	Type	Quota change from 2016
<b>Herd Unit Total</b>		<b>No Changes</b>

## **Management Evaluation**

**Current Management Objective:** 8,500

**Management Strategy:** Special

**2016 Postseason Population Estimate:** ~4,100

**2017 Projected Postseason Population Estimate:** ~4,000

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

## **Herd Unit Issues**

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

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

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

## **Weather**

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

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

## **Habitat**

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

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

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

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

## **Field Data**

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

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

## **Harvest Data**

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

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

## **Population**

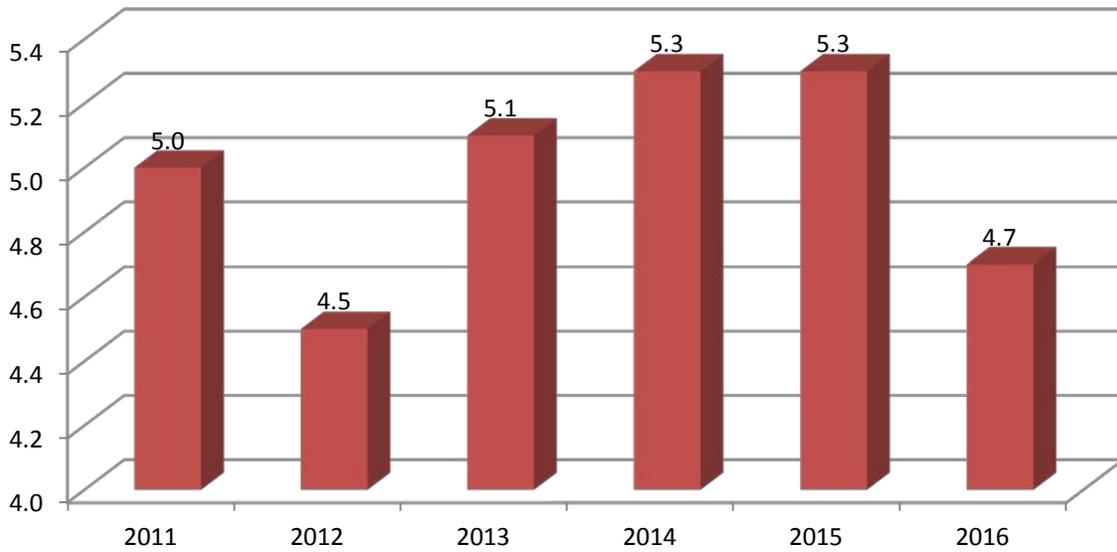
The model selected for this herd is the time-specific juvenile survival model based since it produces the most realistic estimate for this population, and is consistent with the biology of mule deer. However, the model seems to be unable to track the trend for the population and will often change the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

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

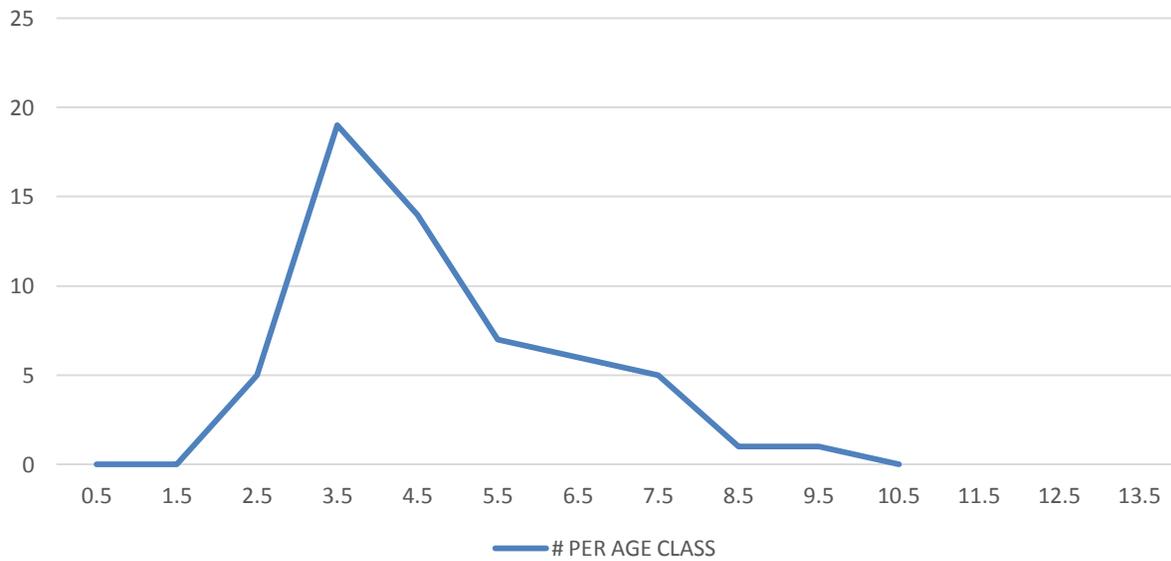
## **Management Summary**

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

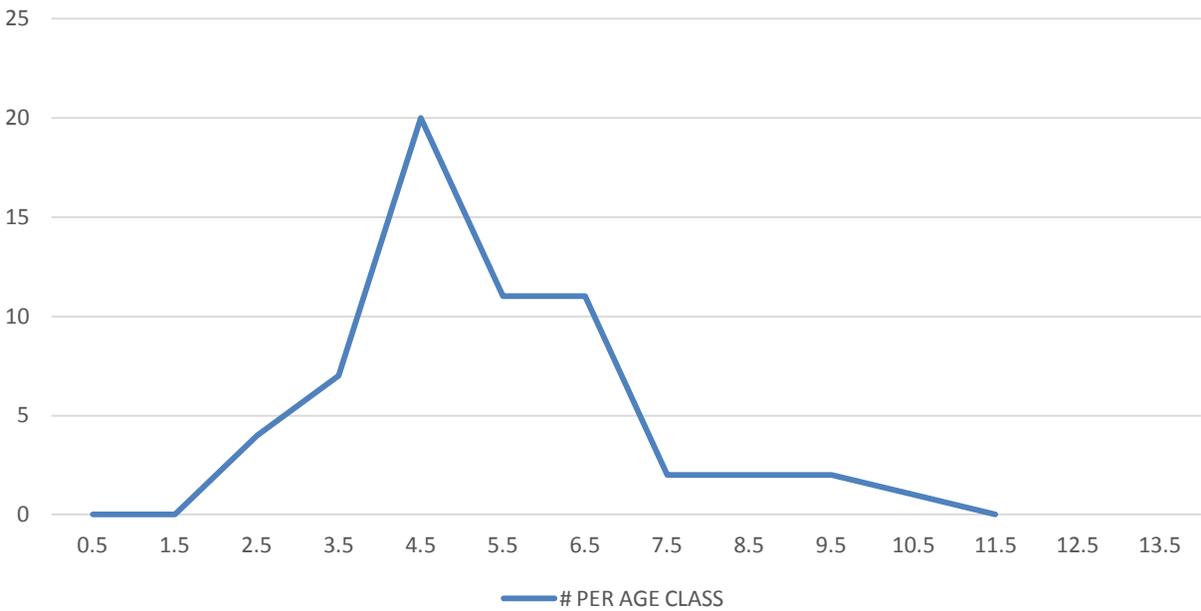
### SRS Deer Average Age of Harvested Bucks



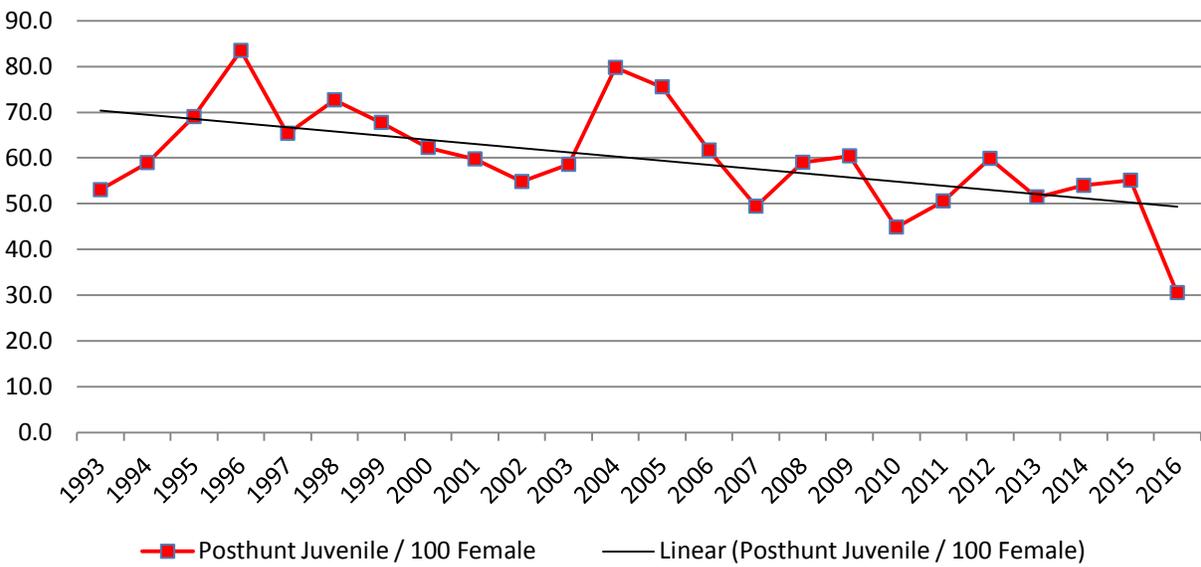
### 2016 SRS DEER # HARVESTED PER AGE CLASS

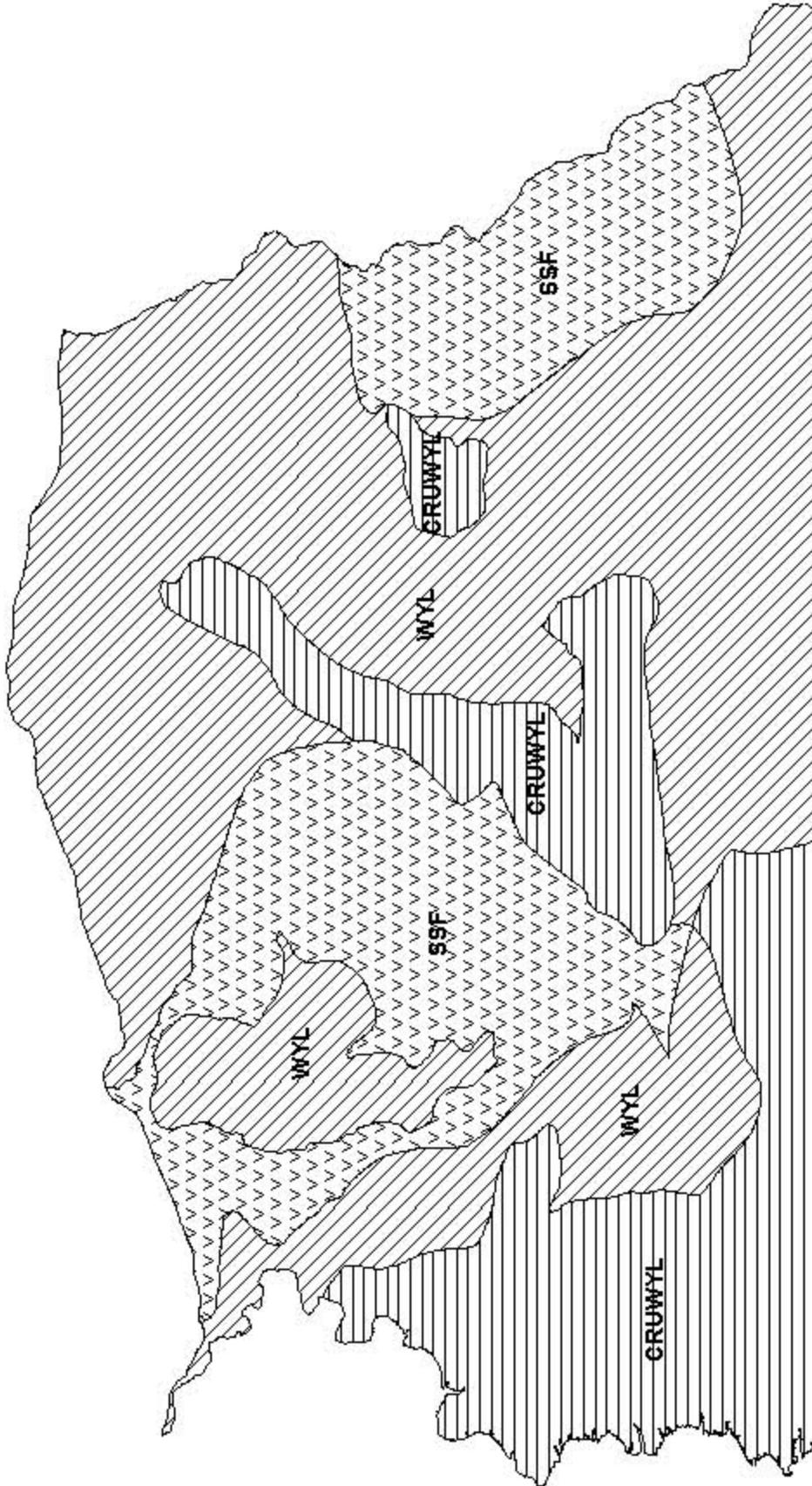


### 2015 SRS DEER # HARVESTED PER AGE CLASS



### Posthunt Juvenile / 100 Female





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



## 2017 Proposed - Season Setting Evaluation Form

SPECIES: Mule Deer

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

HERD: MD427 - BAGGS

HUNT AREAS: 82, 84, 100

PREPARED BY: TONY MONG

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

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

Management Strategy: Recreational

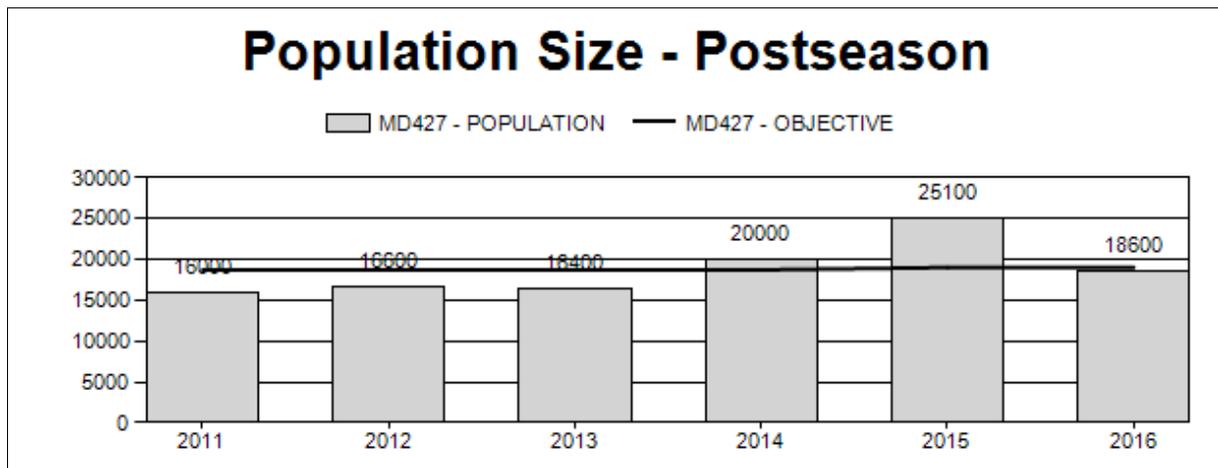
Percent population is above (+) or below (-) objective: -2.1%

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

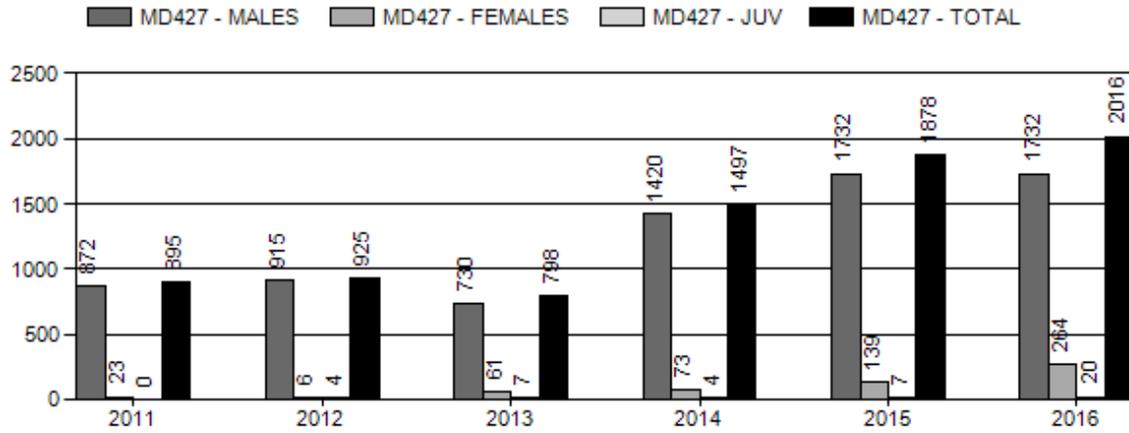
Model Date: 2/23/2017

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

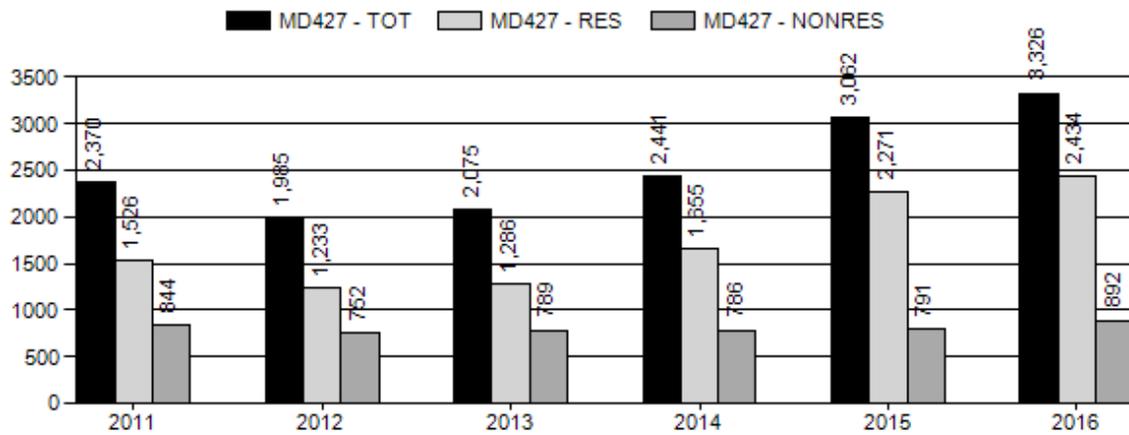
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	3.4%	3%
Males ≥ 1 year old:	35.2%	32%
Total:	9%	10%
Proposed change in post-season population:	6%	1%



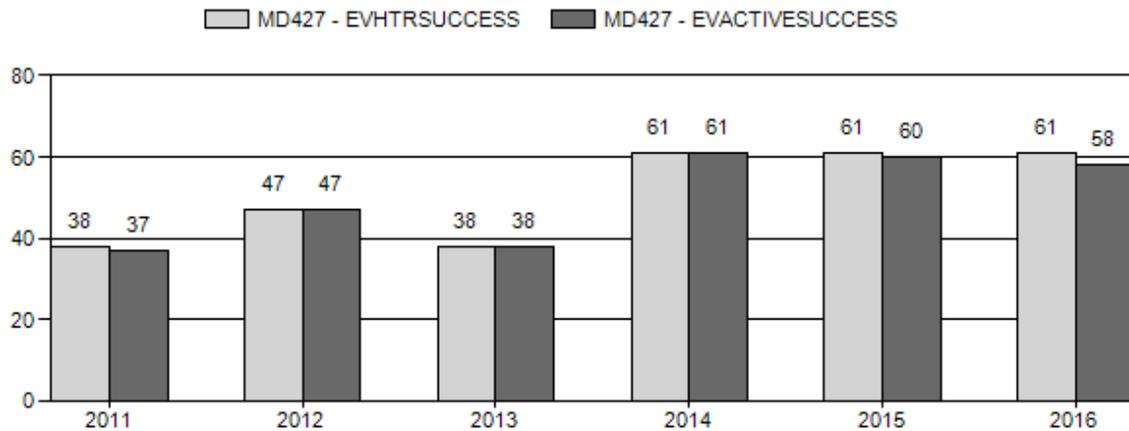
# Harvest



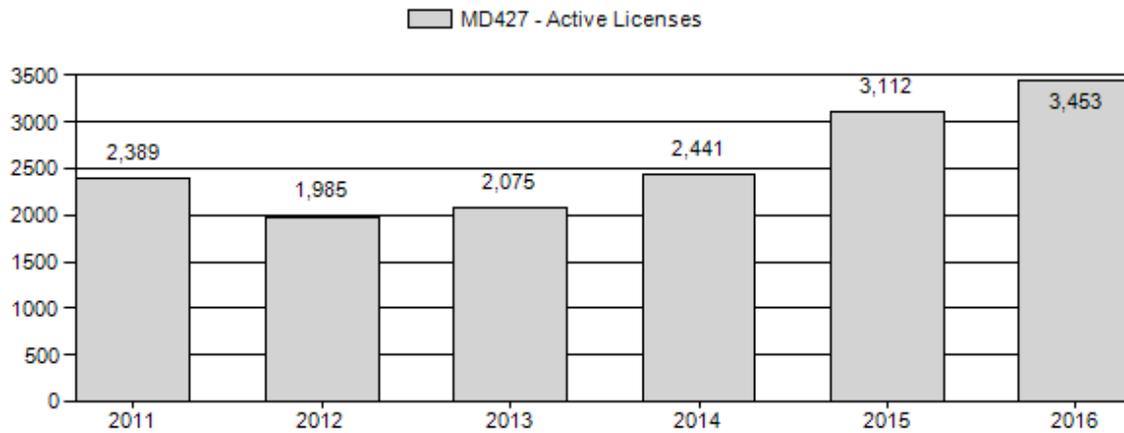
# Number of Active Licenses



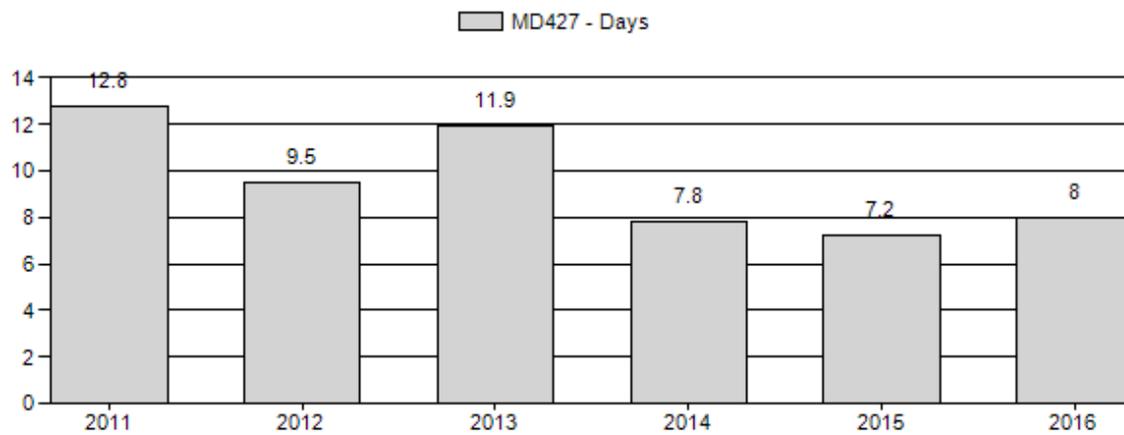
# Harvest Success



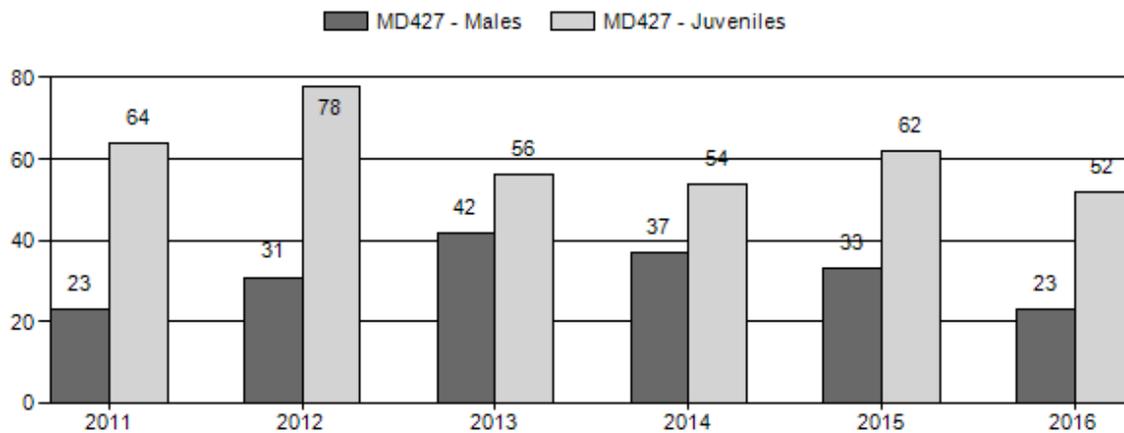
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



**2011 - 2016 Postseason Classification Summary**

for Mule Deer Herd MD427 - BAGGS

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

## 2017 PROPOSED HUNTING SEASONS

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

HERD UNIT : Baggs (427)

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

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

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

### **Management Evaluation**

**Current Management Objective:** 19,000 (2015)

**Management Strategy:** Special (2015)

**2016 Postseason Population Estimate:** 18,600

**2017 Proposed Postseason Population Estimate:** 21,200

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

### **Herd Unit Issues**

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

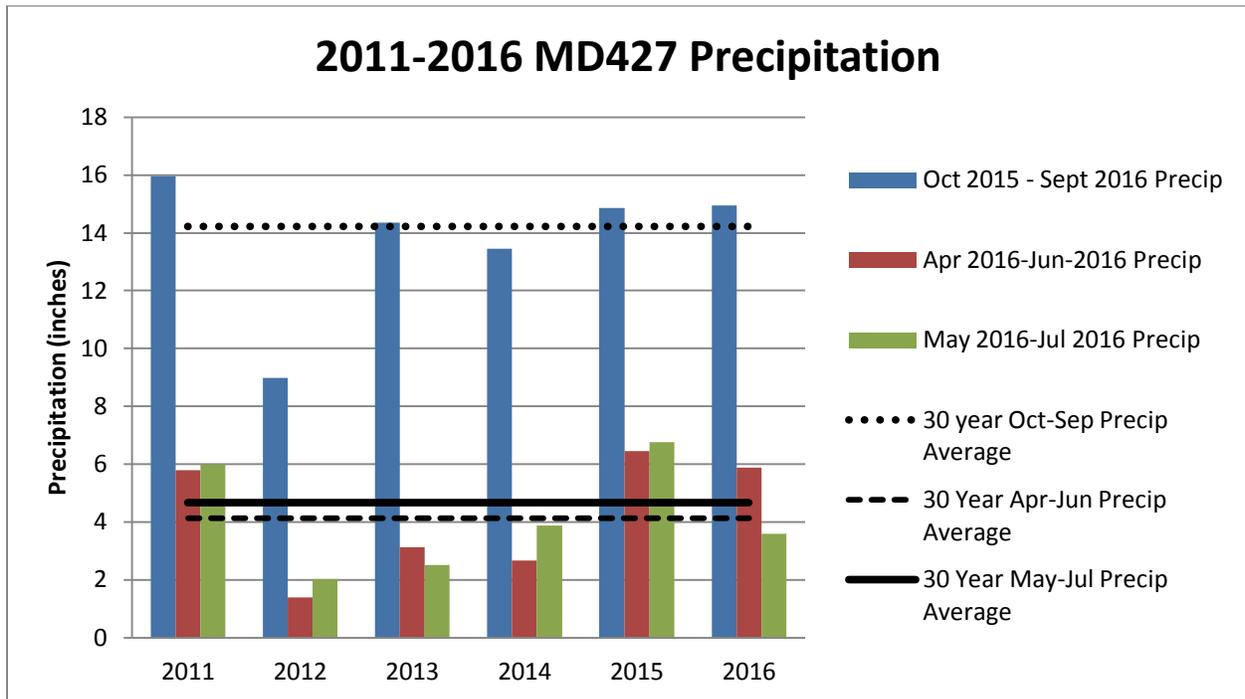
Habitat quality within transitional and winter ranges has been documented as poor and in need of treatment and enhancement. This is being addressed through a large effort to collect funds from a variety of sources to start treating cheatgrass, address juniper encroachment, and rehab decadent mountain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

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

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

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

## Weather



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

## Precipitation

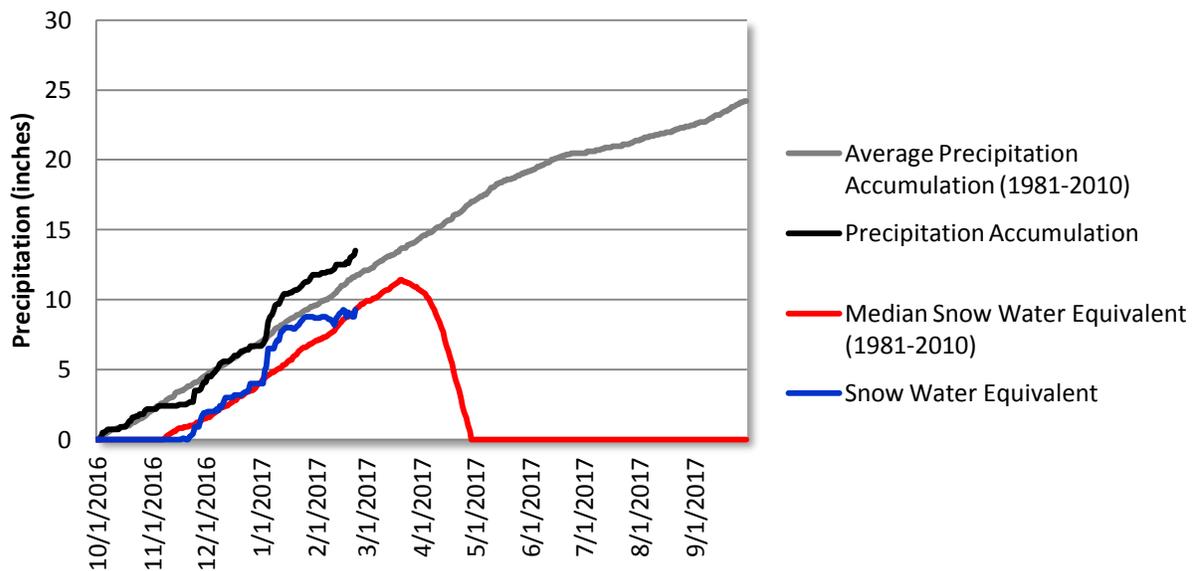
Annual bio-year precipitation from October 2015 through September 2016 was slightly higher than the 30 year average, as was growing season precipitation (April-June 2016). However later

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

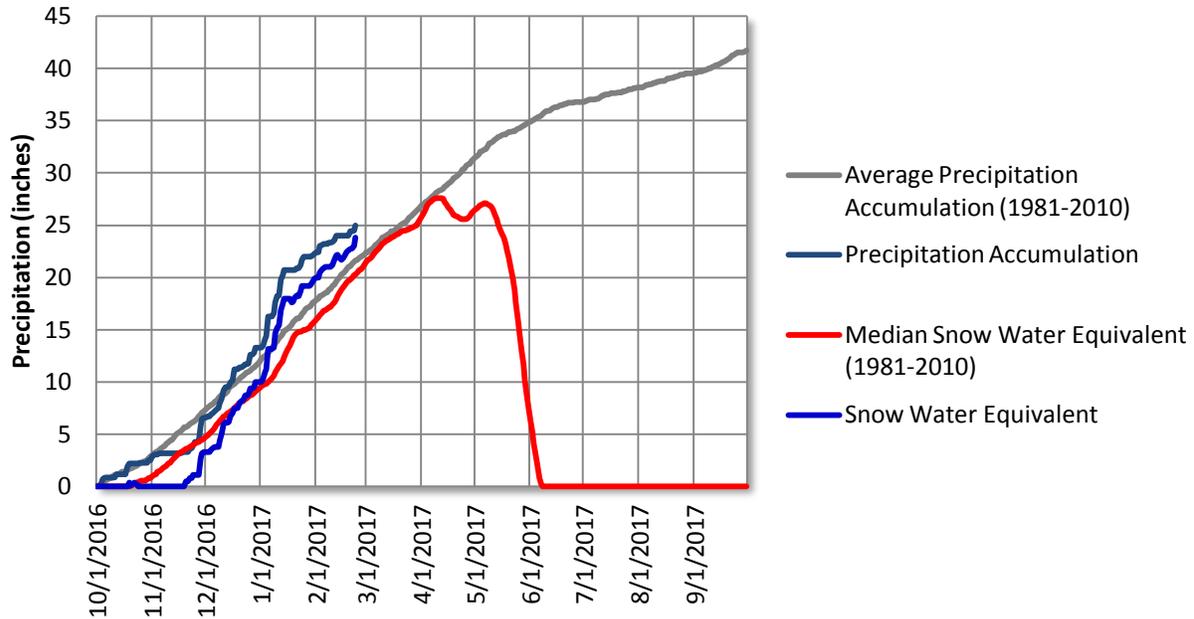
### Winter Severity

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

### Battle Mountain Snotel Site - 7,440 ft



## Whiskey Park Snotel Site - 8,950 ft



### Habitat

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

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

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

### Field Data

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

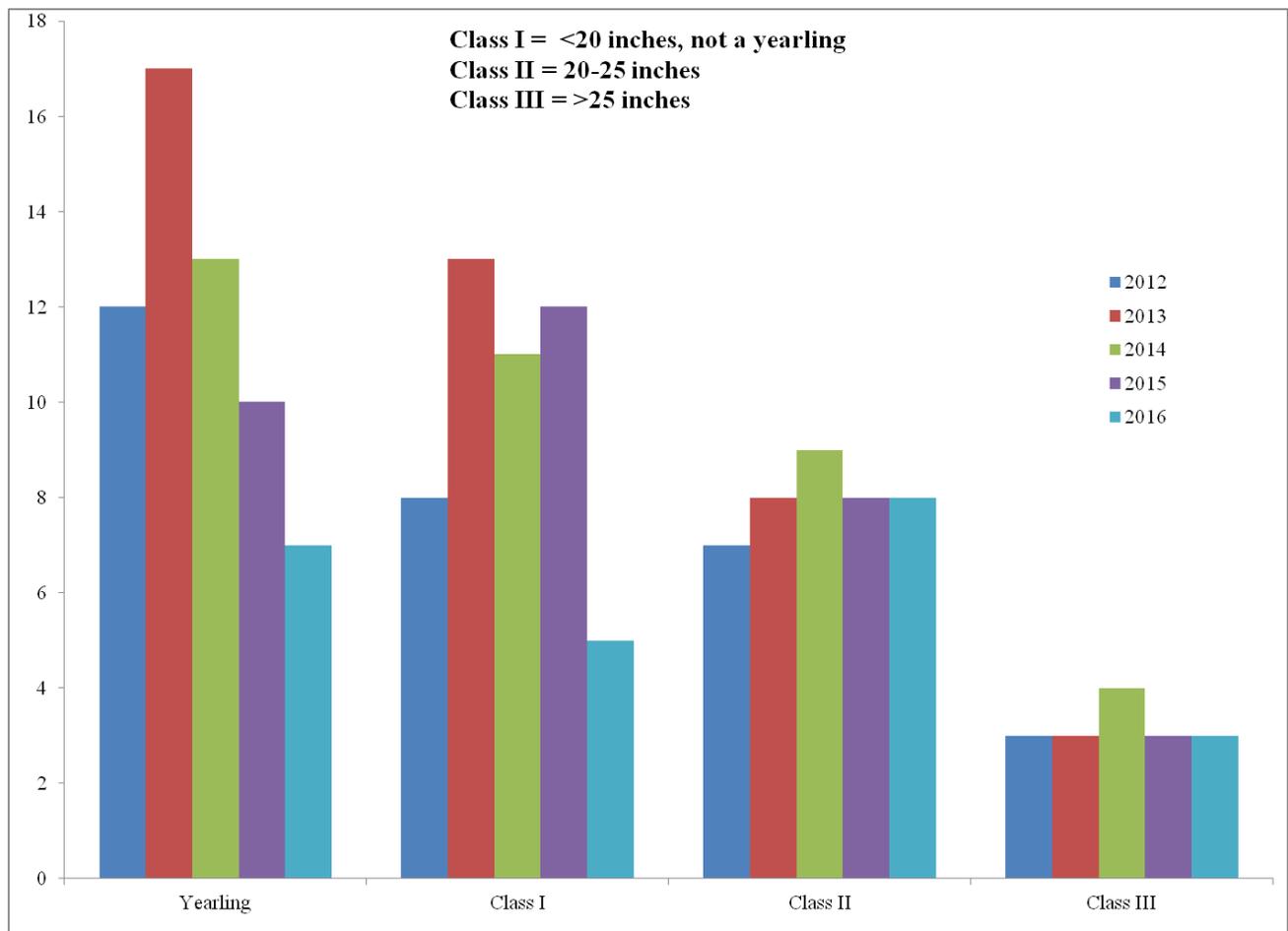
Fawn ratios for 2016 (52:100) are the lowest we have observed since 2008, and well below the previous 5-year average of 63:100. This low fawn ratio was unexpected because of the relatively good conditions found throughout most of the summer with good feed available. The extremely

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

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

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

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



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

## Harvest Data

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

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

## Population

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

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

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

## **Management Summary**

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

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

# MD427 Baggs Mule Deer Herd Seasonal Ranges



**Baggs Mule Deer Seasonal Range**

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