

2018 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2018 - 5/31/2019

HERD: MO415 - UINTA

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

PREPARED BY: JEFF SHORT

	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Population:		N/A	N/A
Harvest:	17	16	18
Hunters:	18	16	20
Hunter Success:	94%	100%	90 %
Active Licenses:	18	16	20
Active License Success:	94%	100%	90 %
Recreation Days:	147	146	175
Days Per Animal:	8.6	9.1	9.7

Limited Opportunity Objective:

5-year median age of > 4 years for harvested moose

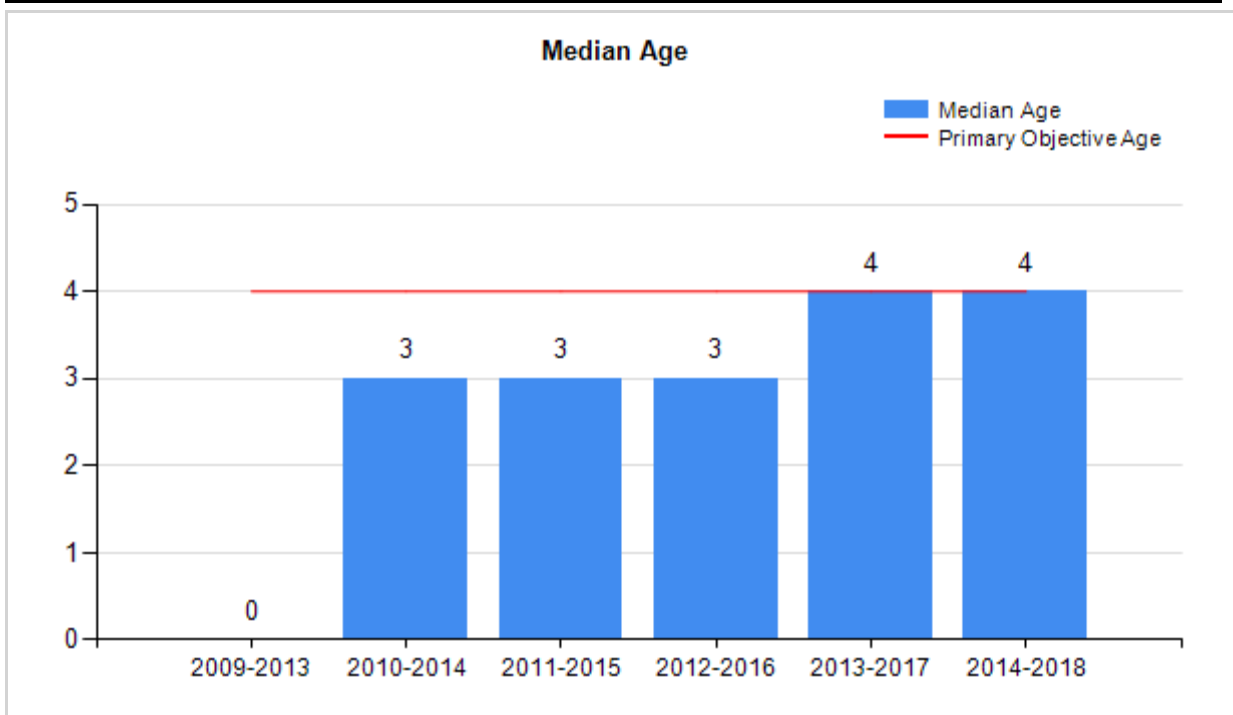
5-year average of <= 10 days/animal to harvest

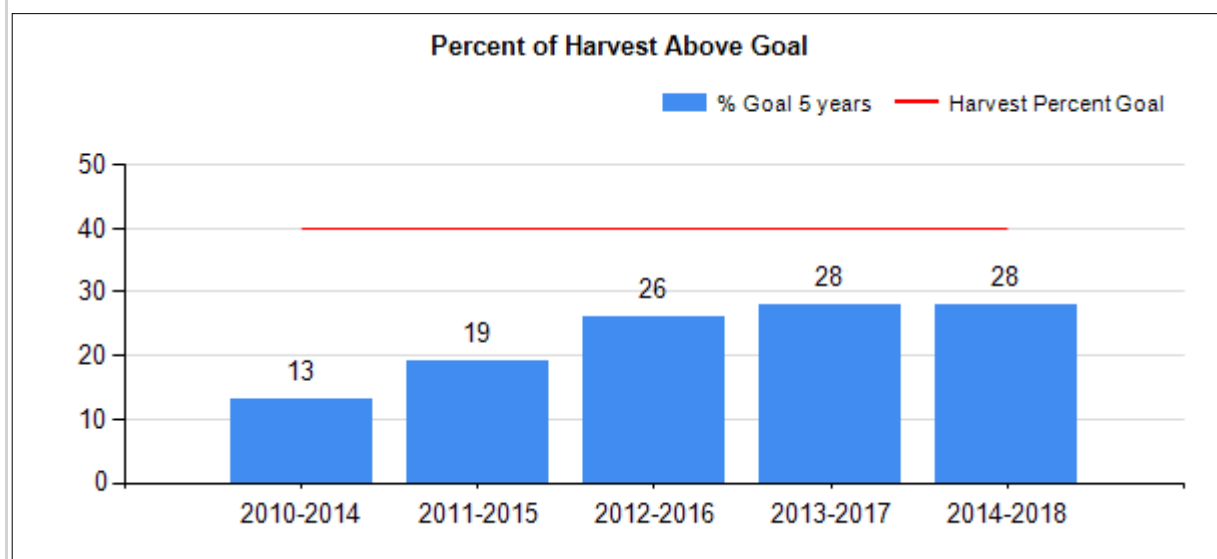
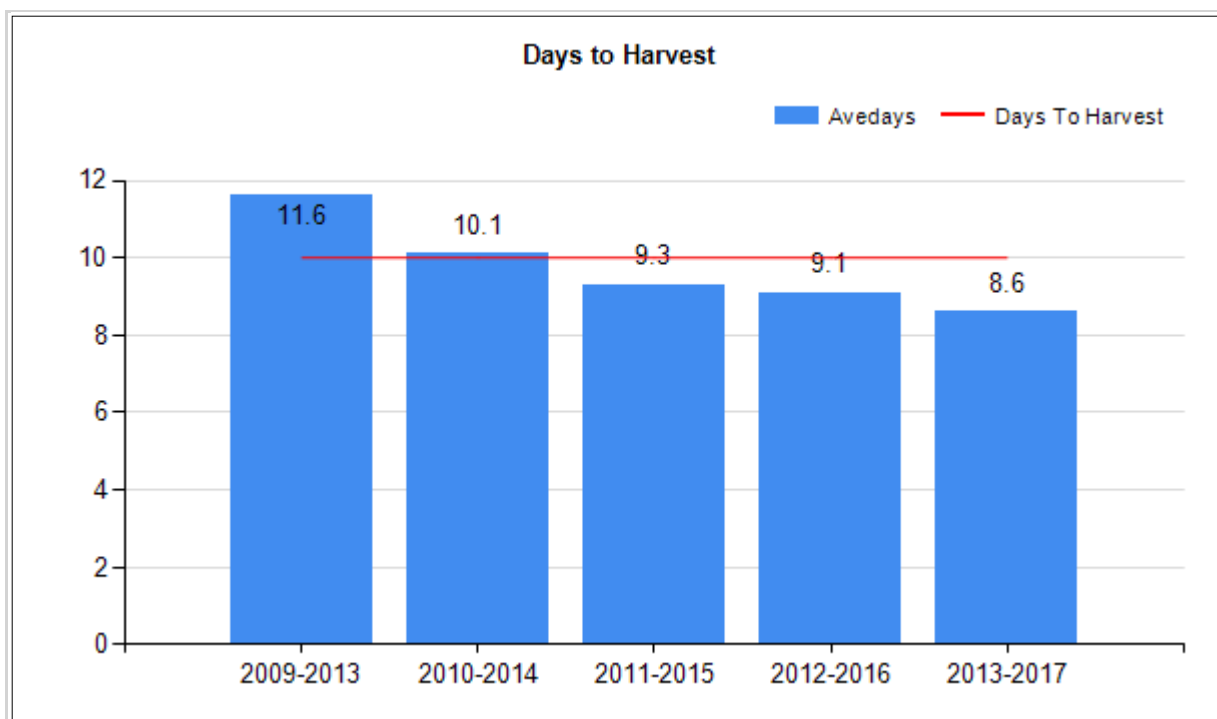
Secondary Objective:

5-year average of 40% of harvested moose are > 5 years of age

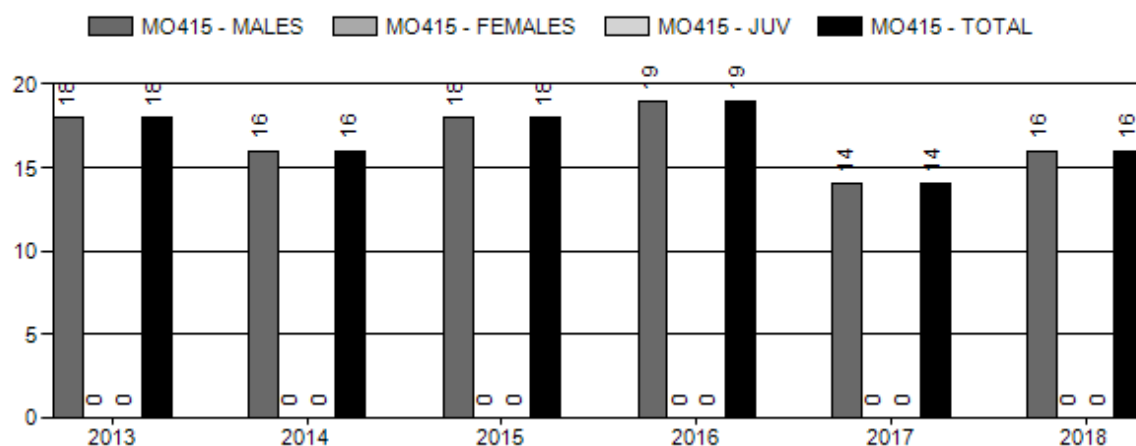
Management Strategy:

Special

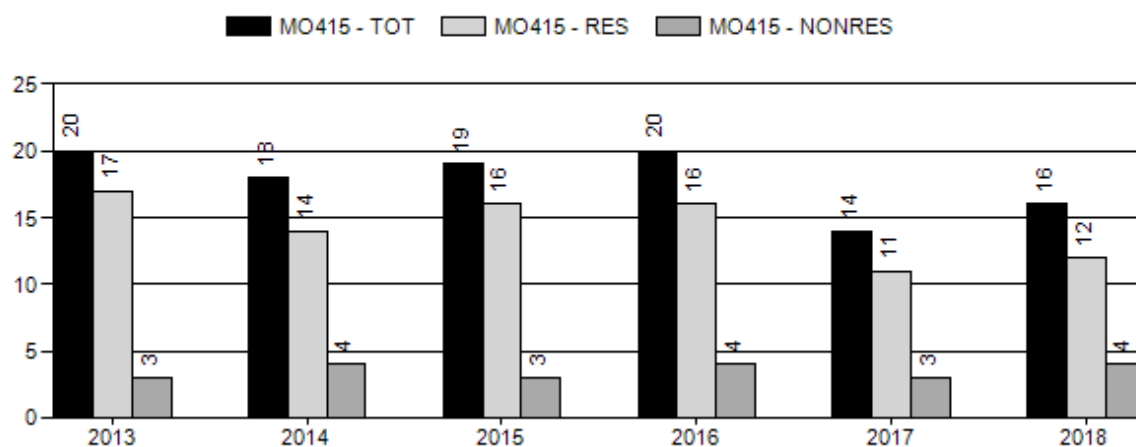




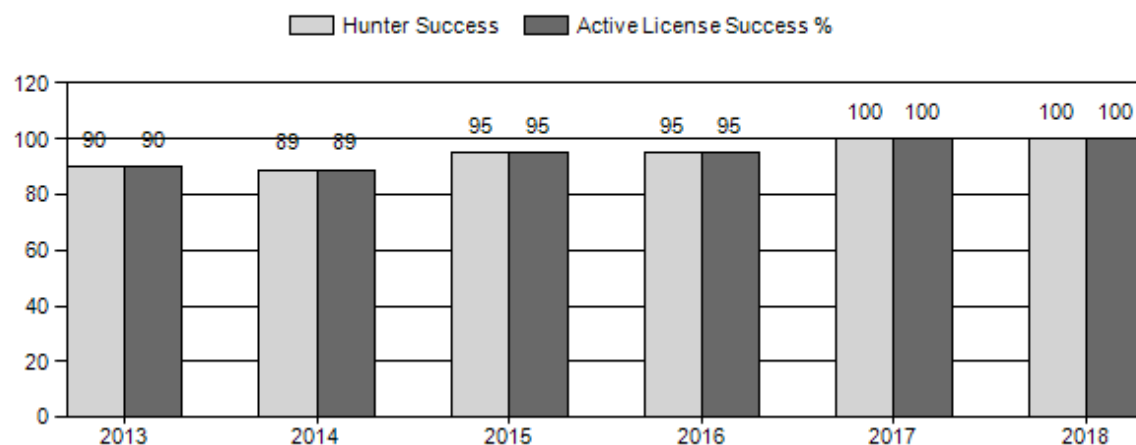
Harvest



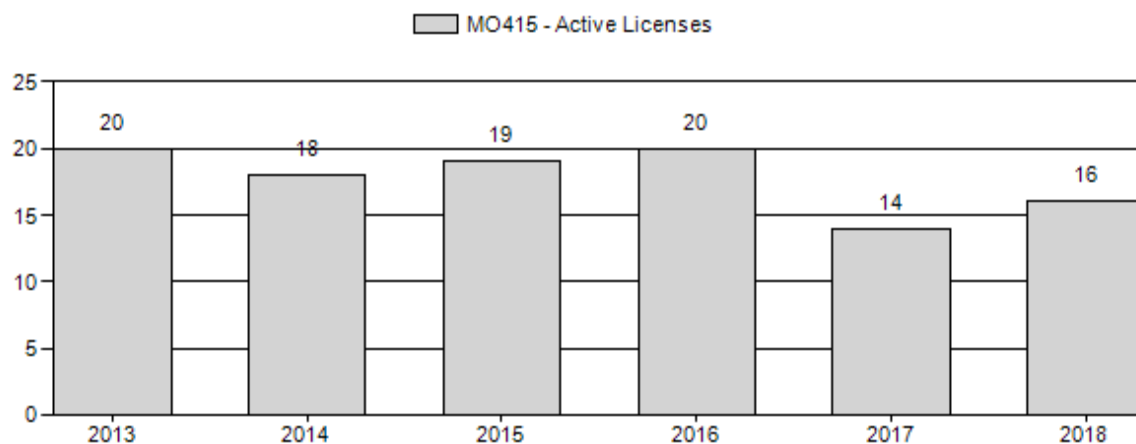
Number of Active Licenses



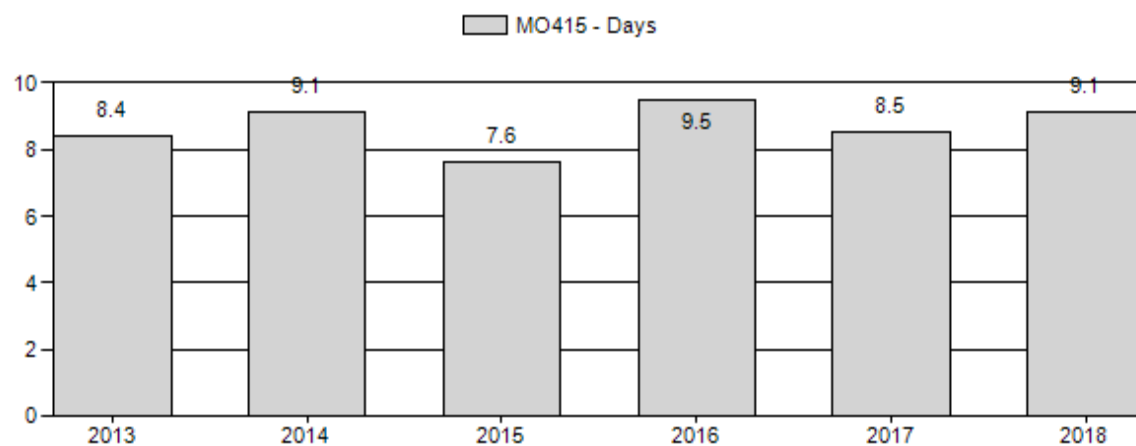
Harvest Success



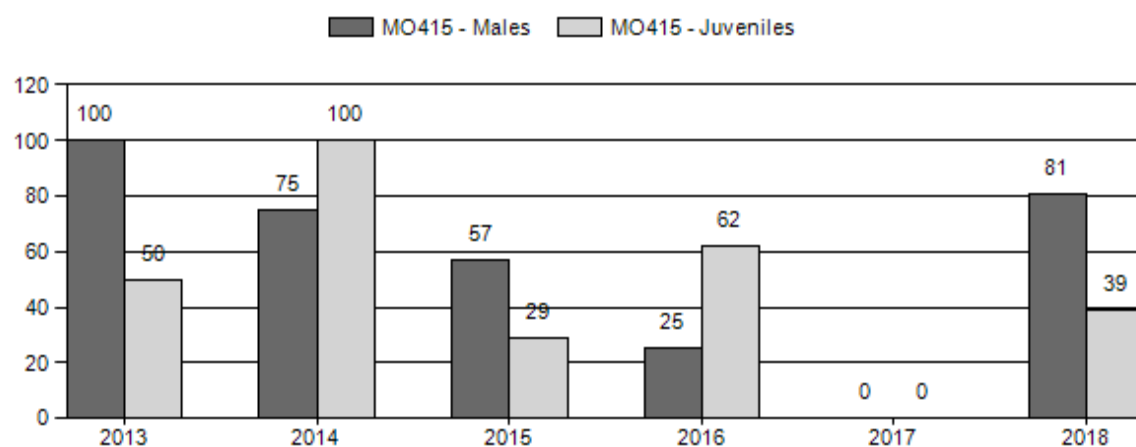
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Postseason Classification Summary

for Moose Herd MO415 - UINTA

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ying	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	0	0	8	8	40%	8	40%	4	20%	20	0	0	100	100	± 0	50	± 0	25
2014	0	1	2	3	27%	4	36%	4	36%	11	0	25	50	75	± 0	100	± 0	57
2015	0	1	3	4	31%	7	54%	2	15%	13	0	14	43	57	± 0	29	± 0	18
2016	0	0	2	2	13%	8	53%	5	33%	15	0	0	25	25	± 0	62	± 0	50
2017	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2018	0	0	0	88	37%	108	45%	42	18%	238	0	0	0	81	± 0	39	± 0	21

2019 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **UINTA (415)**

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

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
27	1	Oct. 1	Nov. 20	15	Limited quota	Antlered moose
35	1	Oct. 1	Nov. 20	5	Limited quota	Antlered moose
44						CLOSED

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

Hunt Area	License Type	Quota change from 2018
27	1	+3
35	1	+2
Herd Unit	1	+5
Total		

Management Evaluation

Current Postseason Population Management Objective: Harvest Based

Management Strategy: Special

2018 Postseason Population Estimate: ~350

2019 Proposed Postseason Population Estimate: ~350

Herd Unit Issues

This is an interstate herd shared with Utah. Many moose that summer in the Uinta Mountains in Utah come to Wyoming to winter. Limited winter range is an issue for this herd. A significant portion of the lower elevation moose habitat is on private land so landowner tolerance of moose can be an issue. Moose coming into towns and residing in yards has been a reoccurring issue but far less common than in the past.

Our biggest concern is our lack of knowledge on disease issues in this herd. We have had several documented cases of elaeophorosis caused deaths in this herd and feel that this has had a significant population effect on the herd. This has stabilized and elaeophorosis caused mortalities have reduced significantly in the last four years. However, we are continuing a conservative management strategy until we see moose numbers rebound significantly.

In 2006 Hunt Area 44 was added to the herd unit. There have been fluctuating numbers of moose in this area. When numbers are high it has created some concern to habitat managers since these moose are impacting the ability to bring back riparian shrubs in these xeric habitats. The objective has been to keep moose from establishing in this area. In 2012 Area 44 was added to the Area 35 hunt in the packet. Starting in 2015 Area 44 was closed to moose hunting due to concern over offering an opportunity with extremely low moose numbers.

Weather

Weather during 2018 and into 2019 has been highly variable. In the early part of 2018 the winter was mild. Snowpack was low in the higher elevations. This reduced moisture made forage production lower than normal. In July and August conditions dried even more and habitat conditions were poor in the area. The winter of 2018/19 was very harsh with high snow loads and cold temperatures.

Habitat

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

Field Data

Since data is very limited in this herd it is difficult to look at data trends. It is not possible to model this interstate herd. Classification data is not collected consistently. We experienced a significant reduction in nuisance moose complaints and reduced field observations of moose in the starting in 2007. Field observations indicated we had a sharp reduction in moose populations. We also received complaints from moose hunters about moose numbers. This prompted us to drastically reduce moose hunting opportunity over the last 10 year period.

Moose flight data supported our concerns about a reduction in moose numbers in the Uinta Herd Unit. The 2011 survey was conducted in ideal circumstances with high snow loads making moose highly visible and concentrated on specific wintering areas. The survey was also more intensely flown than previous surveys. This indicates that it was a good reference count and that we would have not missed large numbers of animals that may have been seen in previous surveys. The 2011 count represented the lowest total moose seen in Wyoming since the counts began. Counts since then have continued to be low. This information supported the deep cuts we made in moose harvest over those years. In 2017 we got even more conservative with harvest. This was due to not meeting our minimum age of harvest objective and animals harvested in Areas 27 and 35 were not meeting the % of male harvest ≥ 5 years of age objective. There were no changes made to seasons in 2018. For 2019 we are now above objective for all objective criteria and feel that we can offer slightly more opportunity.

Moose surveys are flown in cooperation with Utah DNR, most recently in January 2019. Past results are shown below. Utah pays for a joint elk and moose survey approximately every 3 to 5 years. Classification data is collected during those surveys with Utah. In the off years some moose classification data is collected during aerial mule deer surveys in December. That data is reported in the JCR report graphs and tables but sample sizes are very inadequate and those ratios are not reliable.

TOTAL MOOSE COUNTED BY YEAR

	1996	1998	2001	2004	2007	2011	2013	2019
UTAH DAGGETT (8B)	103	84	109	107	95	NA	74	55
UTAH SUMMIT (8A)	182	229	243	150	181	92	104	110
WYOMING	393	289	334	270	314	232	174	238
TOTAL WYOMING AND UTAH SUMMIT	575	518	577	420	495	324	278	348
TOTAL	678	602	686	527	590	324	352	403

Harvest Data

Antlerless harvest opportunity has been eliminated in this herd unit. We have drastically reduced the number of licenses from what it was ten years ago. Type 1 hunts have still had very high success rates and hunters have had quality hunts with several good adult bulls harvested. Tooth age data indicates at current hunting levels we are able to recruit a few older animals into the population and have them available to hunters. However, sample sizes are very low and may be biased easily.

2013 - 2018 Harvest Summary

for Moose Herd MO415 - UINTA

Year	HUNTERS					HARVEST										SUCCESS			
	Res Htrs	NRes Htrs	% NRes	Total Htrs	Act Lic	Ylg Male	Adult Male	Total Male	% Male	Fem	% Fem	Juv	% Juv	Tot Harv	Hntrs	Act Lic	Hntr Days	Days to Harv	
2013	17	3	15%	20	20	0	18	18	100%	0	0%	0	0%	18	90%	90%	151	8.4	
2014	14	4	22%	18	18	0	16	16	100%	0	0%	0	0%	16	89%	89%	146	9.1	
2015	16	3	16%	19	19	0	18	18	100%	0	0%	0	0%	18	95%	95%	137	7.6	
2016	16	4	20%	20	20	0	19	19	100%	0	0%	0	0%	19	95%	95%	180	9.5	
2017	11	3	21%	14	14	0	14	14	100%	0	0%	0	0%	14	100%	100%	119	8.5	
2018	12	4	25%	16	16	0	16	16	100%	0	0%	0	0%	16	100%	100%	146	9.1	

Population

Due to interstate nature of this herd no working model exists. Weather severity is usually the determining factor in the number of moose that come into Wyoming from Utah during the winter. This and other factors make data collected inconsistent and unreliable.

Management Summary

For 2019 hunting seasons we feel we can offer slightly more opportunity for hunters. In 2018 we were above objective for all criteria and slightly more hunter harvest is possible. We will add 2 type 1 licenses to Hunt Area 35 and 3 to Hunt Area 27. Hunt area 44 will be closed again for 2018 and no antlerless harvest will be allowed in the herd unit. This is an effort to allow maximum growth of the herd. However, hunting is not likely to be the limiting factor for this herd.

Herd Unit Objective

Objective criteria (Harvest Based)

- Minimum age of Harvest (median ≥ 4 years)
- Days per Harvest (average ≤ 10 days)

Secondary objective:

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

Uinta Moose Herd Harvest Data 2014 -2018

	2014	2015	2016	2017	2018	5 year average
Mean age of harvest	4.125	4.37	4.18	4.2	5.09	4.93
Median age of harvest	3	4	4	4	6	4.2
Days per harvest	9.1	7.6	9.5	8.5	8.6	8.66
% male harvest ≥ 5 years	12%	25%	45%	40%	55%	35.4%
Average Antler spread (in)	36.0	35.75	38.2	39.37	36.40	37.14

The Uinta Herd Unit has small sample sizes for harvest so outliers or missed samples have a large affect on the data. Currently the 5 year average for the herd is slightly below objective for percent of male harvest ≥ 5 years of age, however, the yearly data has risen rapidly to well over the objective for 2018. We are above objective for median age of Harvest and above objective on days per harvest. We are trending upward and feel slightly more harvest is justifiable.

The objective and management strategy were revised in 2014. During that objective review process we moved to a new objective type for this herd. Due to the issues associated with modeling and tracking this population we switched from a population based objective to a harvest statistic based objective. This entailed the age of harvest objectives and an average days per harvest objective seen above. In 2019 we went through an internal review of the objective and harvest strategy. The recommendation for the Uinta Moose Herd is to maintain the newly adopted harvest statistic based objective. 2014 was the first year of this type of objective option. Since there are very low harvest sample sizes averages over time will be most useful. There is also an unknown amount of variation around tooth cementum analysis estimates of age.

2018 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2018 - 5/31/2019

HERD: MO417 - LINCOLN

HUNT AREAS: 26, 33, 36, 40

PREPARED BY: JEFF SHORT

	<u>2013 - 2017 Average</u>	<u>2018</u>	<u>2019 Proposed</u>
Population:	757	676	641
Harvest:	46	38	38
Hunters:	47	40	40
Hunter Success:	98%	95%	95%
Active Licenses:	47	40	40
Active License Success:	98%	95%	95%
Recreation Days:	380	266	270
Days Per Animal:	8.3	7	7.1
Males per 100 Females	48	0	
Juveniles per 100 Females	40	0	

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

Management Strategy: Special

Percent population is above (+) or below (-) objective: -35.9%

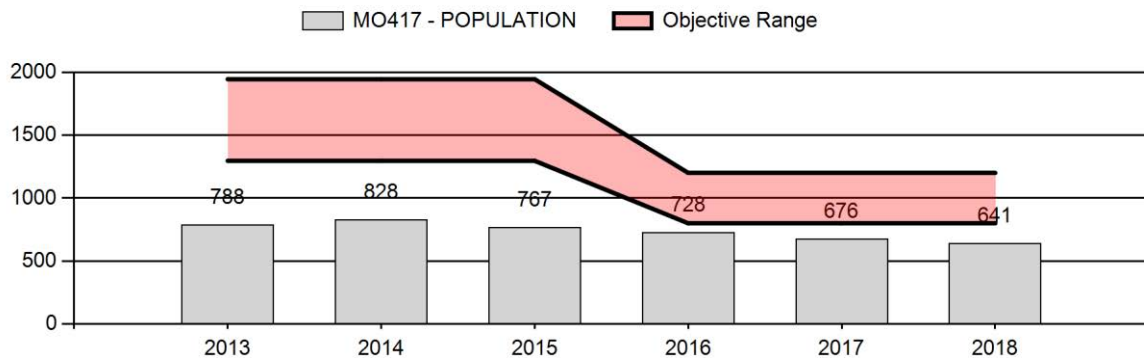
Number of years population has been + or - objective in recent trend: 3

Model Date: 02/18/2019

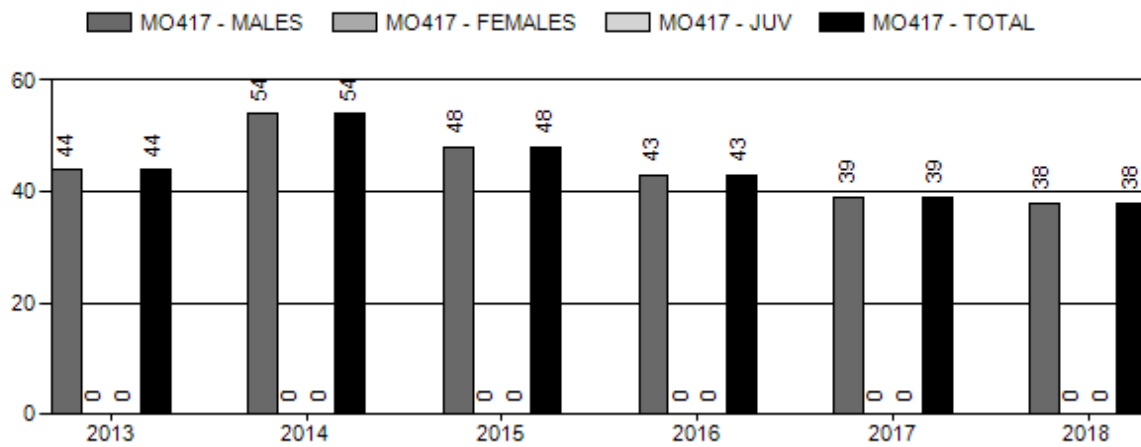
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	23.9%	25.9%
Total:	5.6%	6.0%
Proposed change in post-season population:	-6.4%	-6.6%

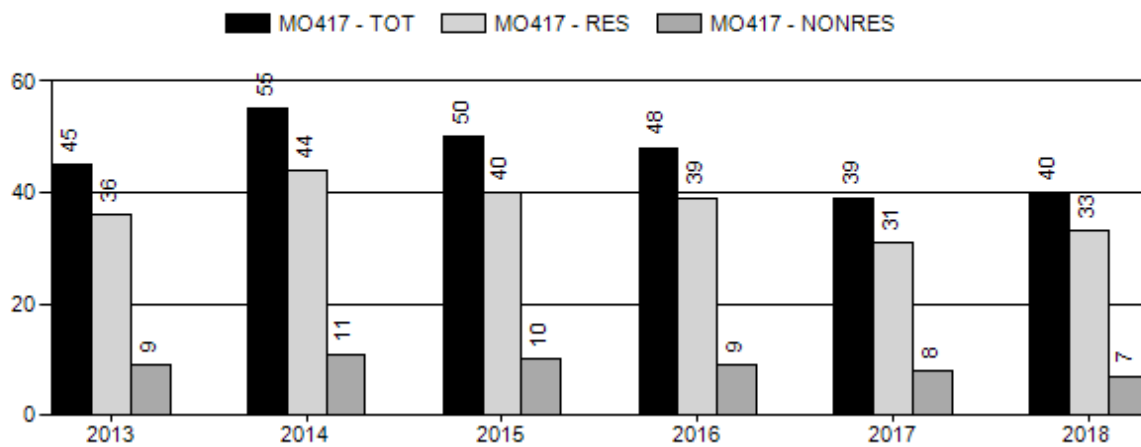
Population Size - Postseason



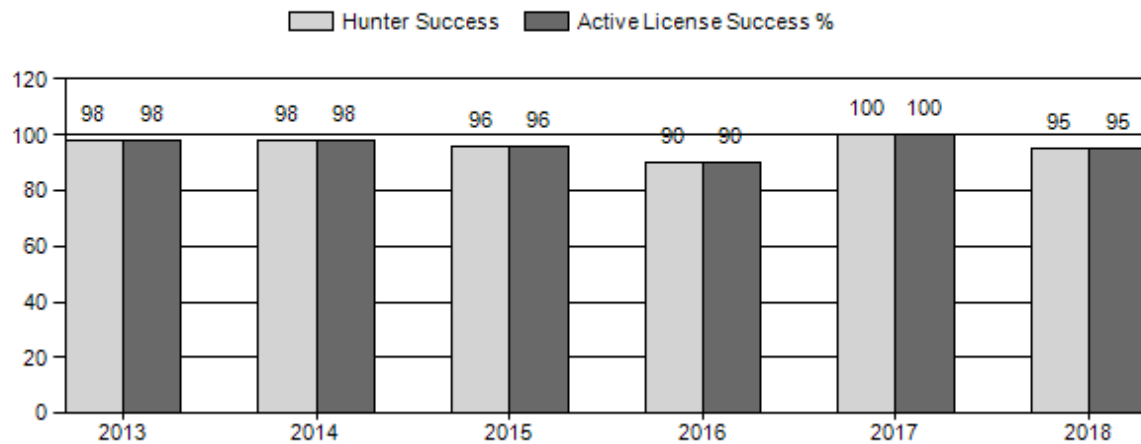
Harvest



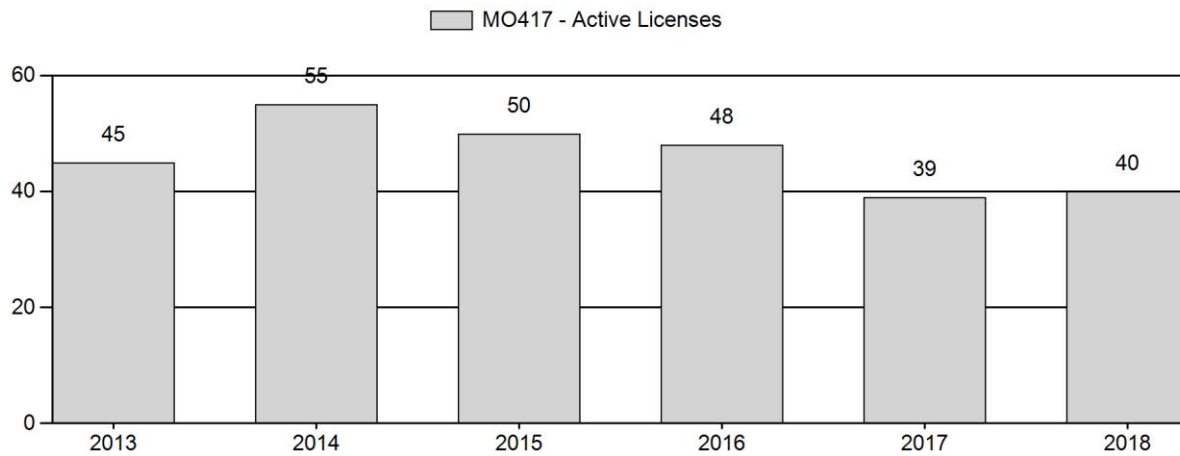
Number of Active Licenses



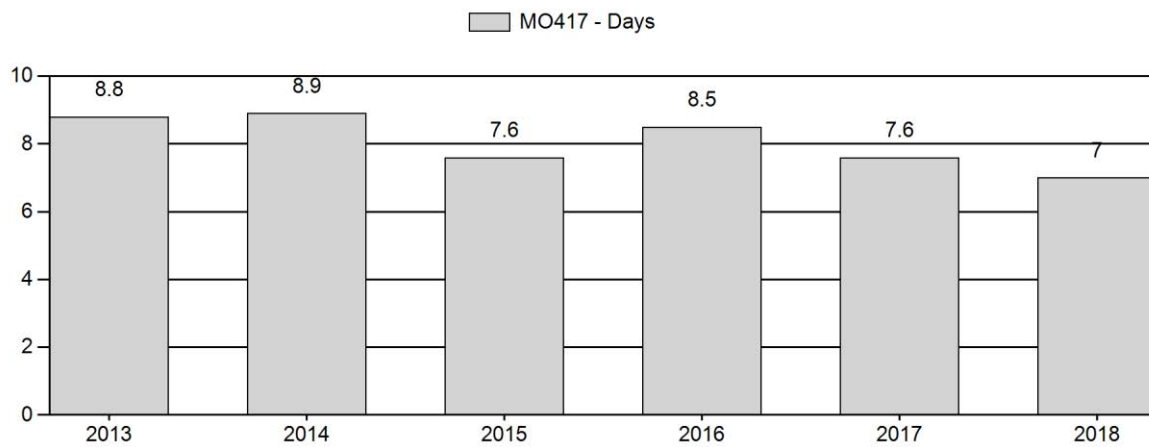
Harvest Success



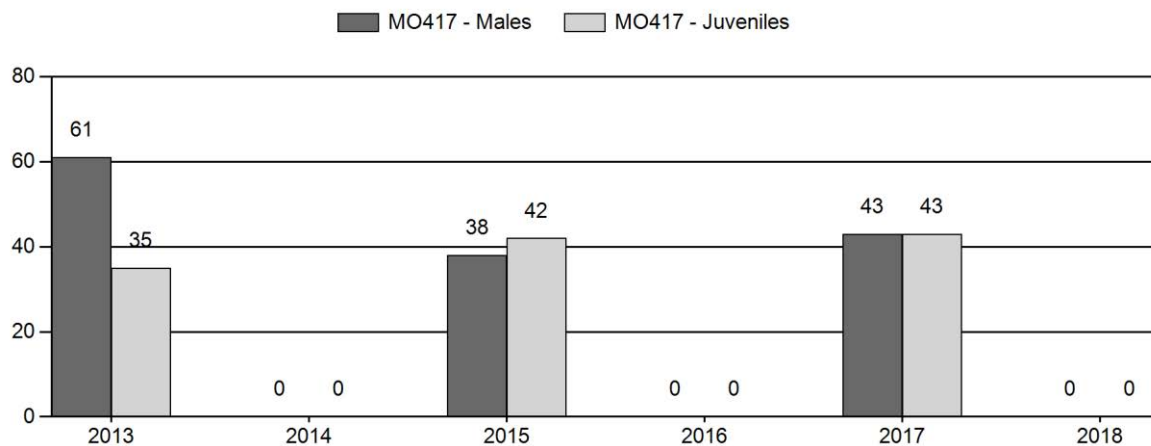
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2013 - 2018 Postseason Classification Summary

for Moose Herd MO417 - LINCOLN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2013	788	0	124	124	31%	202	51%	71	18%	397	0	0	61	61	± 6	35	± 4	22
2014	828	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 27	0	± 34	0
2015	767	11	59	70	21%	183	55%	77	23%	330	0	6	32	38	± 5	42	± 6	30
2016	728	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2017	676	0	58	58	23%	136	54%	59	23%	253	0	0	43	43	± 7	43	± 7	30
2018	641	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 40	0	± 38	0

2019 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **LINCOLN (417)**

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

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

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

Hunt Area	License Type	Quota change from 2018
Herd Unit Total		

Management Evaluation

Current Postseason Population Management Objective: 1,000

Management Strategy: Special

2018 Postseason Population Estimate: ~ 676

2019 Proposed Postseason Population Estimate: ~ 641

Herd Unit Issues

A portion of the lower elevation riparian moose habitat is on private land so landowner tolerance of moose can be an issue. Moose coming into towns and residing in yards has been an issue in the past. This herd unit is not a closed population with the northeast boundary line being through prime moose habitat.

The advent of parasite caused mortalities of unknown magnitude in the herd complicates management. There is a lack of knowledge on disease issues in this herd. We have had many documented cases of Elaeophorosis caused deaths in this herd and that has had a significant population effect. However, Elaeophorosis caused mortalities have reduced in the last four to five years.

Hunt area 36 is a small moose herd that is scattered over a large expanse of non-typical open moose habitat. This area acts as an “over flow” area for adjacent larger populations of moose in the Uinta and Lincoln herds. The young average age of animal harvested there supports our concept that younger age class animals are immigrating into this area. We do not survey this area for moose. In hunt area 40 the moose population is almost entirely on private lands along the Hams Fork. Like Area 36, it has a small population of moose. Area 33 also has a very limited number of moose. They primarily occur on Seedskaadee National wildlife refuge and along the Green River. Area 33 had been closed for hunting from 2003 to 2013 and has been closed again since 2017.

Weather

Weather during 2018 and into 2019 has been highly variable. In the early part of 2018 the winter was mild. Snowpack was low in the higher elevations. This reduced moisture made forage production lower than normal. In July and August conditions dried even more and habitat conditions were poor in the area. The winter of 2018/19 has been very harsh with high snow loads and cold temperatures.

Habitat

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

Field Data

Moose surveys are conducted in hunt area 26 from a helicopter concurrent with West Green River elk surveys. Classification data is collected during these flights. Those surveys are conducted every other year. Areas 33, 36 and 40 are not flown due to the large geographic area and very low moose densities. The joint elk and moose survey was last flown in the winter of 2017/18. Total numbers of moose seen were 262. The Idaho sightability model was used to estimate a total population for the area flown. That estimate was 353 moose with a standard error of 45. Good coverage of occupied moose winter habitat was achieved in the survey. However, there are some peripheral habitats that were not flown due to budget constraints and the very mild winter conditions spreading out moose. For population modeling we have added 50 animals to the estimate and enlarged the SE to account for those areas. Two previous surveys have been flown. In the off years between elk/moose flights, some moose classification data is collected during aerial deer surveys in December. That data is not reported in the JCR report graphs and tables since sample sizes are inadequate and those ratios are not reliable. The extensive surveys conducted in 2014, 2016 and 2018 resulted in estimates that are lower than survey sample sizes were in the late 1990s and early 2000s with lower effort back then. This substantiates field observations that moose populations were greatly reduced around 2006/2007. Reduced habitat condition and Elaeophorosis were likely contributors to the population reduction.

Harvest Data

Harvest opportunity has been very limited in this herd unit. We have drastically reduced the number of licenses in the last 10 years due to the population crash and antlerless harvest has been eliminated since 2010. Type 1 hunts still have very good success rates. Hunt area 26 is considered a very good quality moose hunt with potential for trophy animals. Area 26 has ample public access and a variety of places to hunt moose. Hunts in areas 33, 36 and 40 are considered good hunts with good success rates but require more time to find moose spread out over large areas. Public access can be more challenging in these areas but access to moose hunting is available. Those areas are not typically considered trophy areas but mature animals do exist and are harvested. Harvest data from 33, 36 and 40 does not give us much information since sample sizes are very small. In Hunt area 26 harvest data has a better sample size. Tooth age data indicates we have an average age of harvest of 3.95 years old for 2018. Average antler spread was 36.76 for 2018.

In addition to the population-based objective, the Lincoln herd unit also has two secondary objectives. Those objectives are to have a median age of harvested bulls ≥ 4 years old and a bull:cow ratio range of 50-70 males/100 females. We are currently below both of those objectives. We instituted more conservative seasons with reduced license numbers in 2016 and again in 2017 to address this. We are continuing this strategy to increase those parameters. However, without increased calf recruitment and natural adult survival it may not be possible to meet those objectives, as they are very possibly not harvest driven.

Lincoln Moose Herd Harvest Data 2014 -2018

	2014	2015	2016	2017	2018	5 year average
Mean age of harvest	4.1	3.6	3.2	3.4	3.95	3.65
Median age of harvest	4	4	3	3	4	3.6
Days per harvest	8.9	7.6	8.5	7.6	7	7.92
% male harvest ≥ 5 years	34%	20%	12%	19%	35%	24%
Average Antler spread (in)	37.84	37.40	35.20	35.84	36.76	36.61

2013 - 2018 Harvest Summary

for Moose Herd MO417 - LINCOLN

	HUNTERS					HARVEST										SUCCESS			
Year	Res Htrs	NRes Htrs	% NRes	Total Htrs	Act Lic	Ylg Male	Adult Male	Total Male	% Male	Fem	% Fem	Juv	% Juv	Tot Harv	Hntrs	Act Lic	Hntr Days	Days to Harv	
2013	36	9	20%	45	45	0	44	44	100%	0	0%	0	0%	44	98%	98%	386	8.8	
2014	44	11	20%	55	55	0	54	54	100%	0	0%	0	0%	54	98%	98%	482	8.9	
2015	40	10	20%	50	50	0	48	48	100%	0	0%	0	0%	48	96%	96%	366	7.6	
2016	39	9	19%	48	48	0	43	43	100%	0	0%	0	0%	43	90%	90%	366	8.5	
2017	31	8	21%	39	39	0	39	39	100%	0	0%	0	0%	39	100%	100%	298	7.6	
2018	33	7	18%	40	40	0	38	38	100%	0	0%	0	0%	38	95%	95%	266	7	

Population

Previous to 2015 there was no model for this moose herd. It was not possible to build a reasonable model with the available data. With the new sightability estimates we now have population estimate data points and are able to build a reasonable model. The new model is to be used with caution. This modeling technique is not designed to be used for moose populations. It is based on an elk population model and some parameters may be different. With a new model population

trends will often be unrealistic in the early timeframe as the model works to try to figure out the data. Only the last few years of model estimates should be considered since they are anchored by aerial population estimates. 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 reported model is for hunt area 26 only. It is not feasible to collect adequate data for modeling in the rest of the herd unit. Total herd unit estimates in the JCR are reported as model estimates plus 120 animals to account for the overall objective.

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

For several consecutive years in Area 26 we saw very low numbers of moose on post-season classification surveys. This was very concerning considering counting conditions were ideal in several of those surveys. We also experienced a reduction in nuisance moose complaints and reduced field observations of moose.

Management Summary

We instituted more conservative license numbers in the 2017 season due to continued low trends in moose populations and low average age of harvested bulls in the Herd Unit. In Hunt Area 26 we reduced licenses from 40 to 32. That area had fallen below objective in bull:cow ratio and mean age of harvested bulls. In Hunt Areas 33, 36 and 40 we split the hunt areas into separate hunts. We have 5 licenses in Hunt Area 36 and 3 licenses in Hunt Area 40. Hunt Area 33 was closed. We will continue this license structure since we are still below objective but are trending in the right direction. The objective and management strategy were last revised in 2016.