

2015 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2015 - 5/31/2016

HERD: MO415 - UINTA

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

PREPARED BY: JEFF SHORT

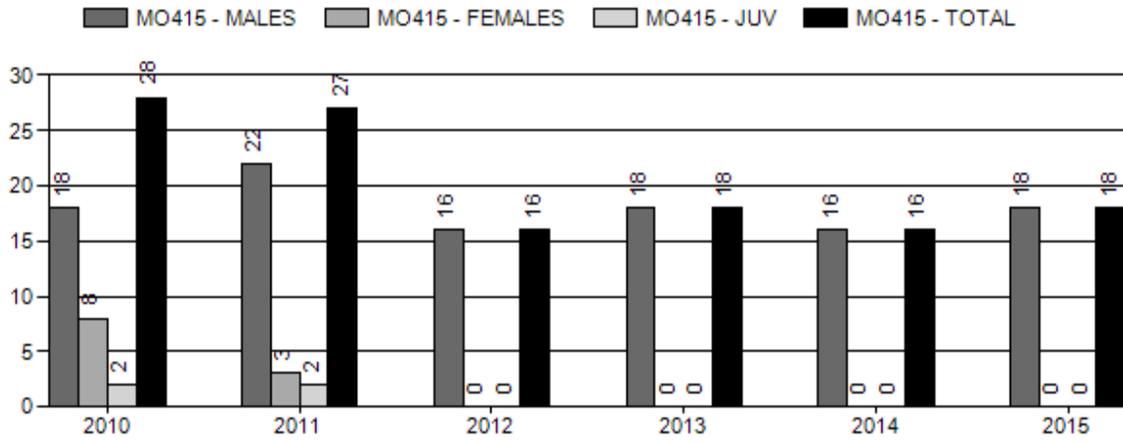
	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	NA	NA	NA
Harvest:	21	18	18
Hunters:	25	19	20
Hunter Success:	84%	95%	90 %
Active Licenses:	25	19	20
Active License Success:	84%	95%	90 %
Recreation Days:	212	137	150
Days Per Animal:	10.1	7.6	8.3
Males per 100 Females	45	57	
Juveniles per 100 Females	51	29	

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

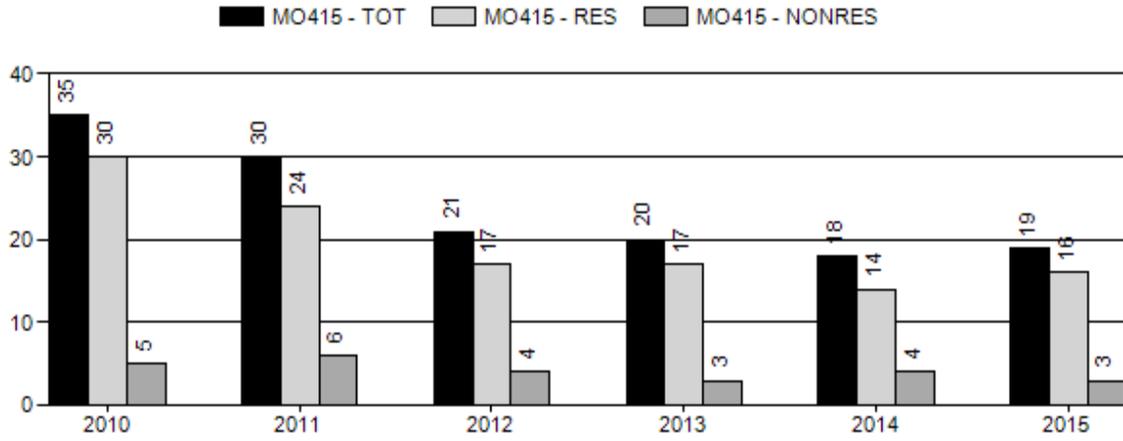
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females \geq 1 year old:	NA	NA
Males \geq 1 year old:	NA	NA
Juveniles (< 1 year old):	NA	NA
Total:	NA	NA
Proposed change in post-season population:	NA	NA

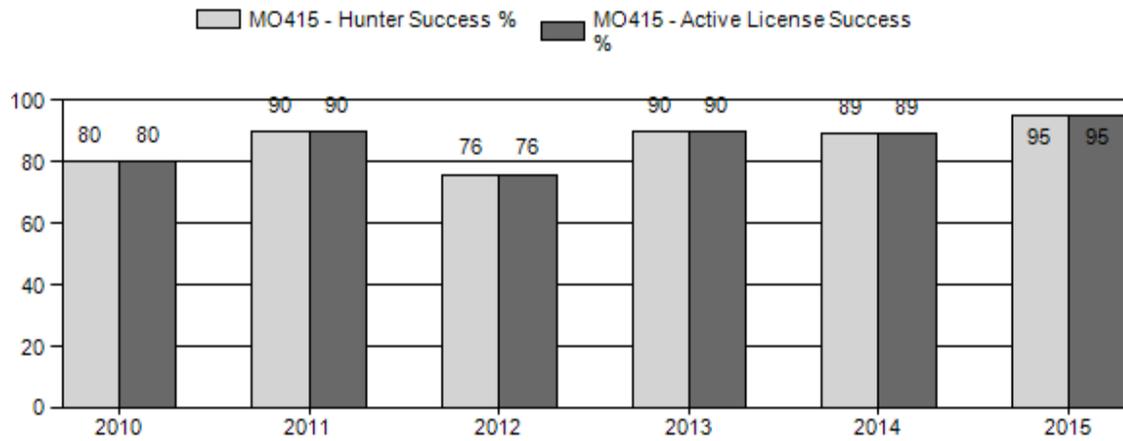
Harvest



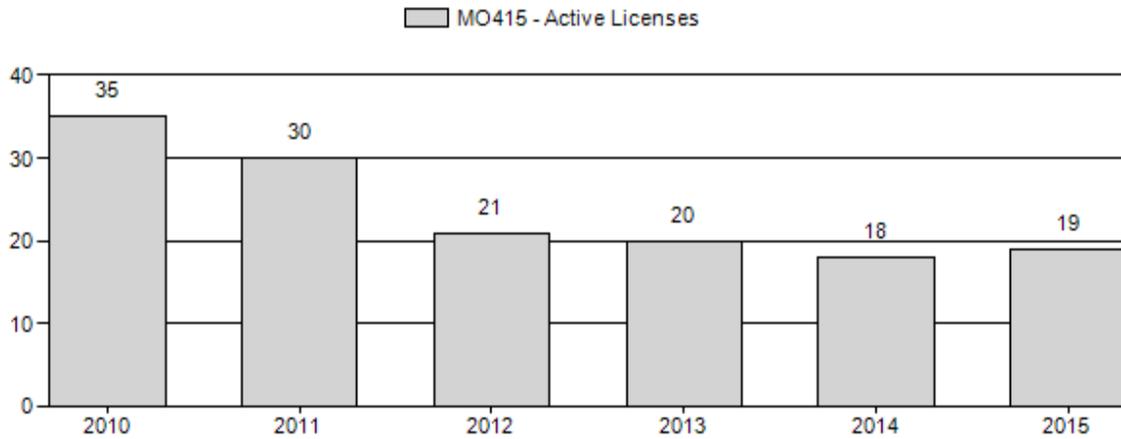
Number of Hunters



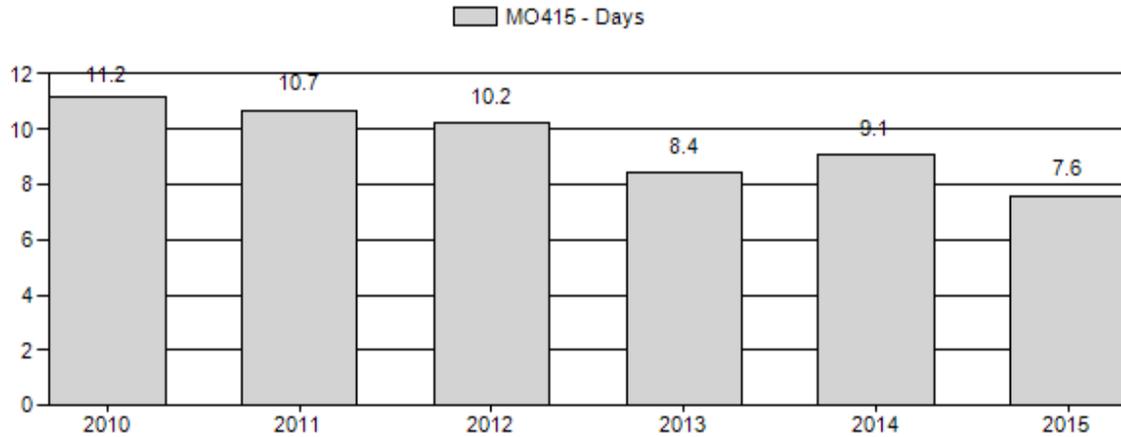
Harvest Success



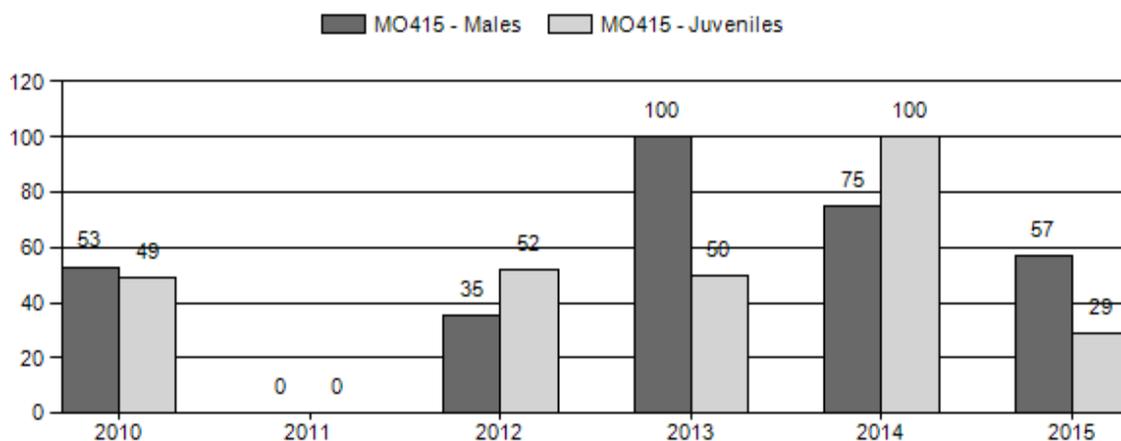
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Moose Herd MO415 - UINTA

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	0	0	0	62	26%	118	50%	58	24%	238	0	0	0	53	±0	49	±0	32
2011	0	0	0	0	0%	0	0%	0	0%	0	0	0	0	±0	0	±0	0	
2012	0	0	52	52	19%	149	54%	77	28%	278	0	0	35	±0	52	±0	38	
2013	0	0	8	8	40%	8	40%	4	20%	20	0	0	100	±0	50	±0	25	
2014	0	1	2	3	27%	4	36%	4	36%	11	0	25	50	±0	100	±0	57	
2015	0	1	3	4	31%	7	54%	2	15%	13	0	14	43	±0	29	±0	18	

2015 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **UINTA (415)**

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

Hunt Area	Type	Dates of Seasons		Quota	Licenses	Limitations
		Opens	Closes			
27	1	Oct. 1	Nov. 20	15	Limited quota	Antlered moose
35, 44	1	Oct. 1	Nov. 20	5	Limited quota	Antlered moose
27, 35	Archery	Sept. 1	Sept. 30		Limited quota	Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2015
Herd Unit Total		

Management Evaluation

Current Postseason Population Management Objective: Harvest Based

Management Strategy: Special

2015 Postseason Population Estimate: ~300

2016 Proposed Postseason Population Estimate: ~300

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 may have had a significant population effected on the herd. This has stabilized and elaeophorosis caused mortalities have reduced significantly in the last two years. However, we are continuing our conservative management strategy until we see moose numbers rebound significantly.

In 2006 Hunt Area 44 was added to the herd unit. There have been increasing numbers of moose in this area. This 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. In 2015 Area 44 was closed to moose hunting due to concern over offering an opportunity with extremely low moose numbers. For 2016 Area 44 is again added to the Area 35 hunt.

Weather

Weather during 2015 and into 2016 has been highly variable. In the early part of 2015 the winter was very mild and dry. A moist spring and summer followed. In late August conditions dried considerably and into late December low precipitation was received. Winter did not set in until mid December. The winter of 2015-2016 has been very cold and snowy to this point and moose have migrated to crucial winter ranges.. The winters from 2011 to 2015 were very mild with low snowpack and relatively warm temperatures resulting in mild 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 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 period between 2007 and 2011. Between the 2007 and the 2011 survey our 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 during that period.

The moose flight data supported our concern 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 represents the lowest total moose seen in Wyoming since the counts have been conducted. This information supported the deep cuts we made in moose harvest over those years and we propose to stay conservative with harvest for 2016.

Moose surveys are flown in cooperation with Utah DNR, most recently in February 2013. Past results are shown below. Utah pays for a joint elk and moose survey on average every 3rd year. 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
UTAH DAGGETT (8B)	103	84	109	107	95	NA	74
UTAH SUMMIT (8A)	182	229	243	150	181	92	104
WYOMING	393	289	334	270	314	232	174
TOTAL WYOMING AND UTAH SUMMIT	575	518	577	420	495	324	278
TOTAL	678	602	686	527	590	324	352

Harvest Data

Antlerless harvest opportunity has been eliminated in this herd unit. We have drastically reduced the number of licenses in the last six years. Type 1 hunts have had very good success rates in the last five years. 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.

2010 - 2015 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
2010	30	5	14%	35	35	0	18	18	64%	8	29%	2	7%	28	80%	80%	314	11.2
2011	24	6	20%	30	30	0	22	22	81%	3	11%	2	7%	27	90%	90%	288	10.7
2012	17	4	19%	21	21	0	16	16	100%	0	0%	0	0%	16	76%	76%	163	10.2
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

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 2015 hunting seasons we will remain conservative with hunter harvest. Hunt area 44 will be reopened for 2016 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. 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 have switched to a harvest statistic based objective. This entails an age of harvest objective and an average days per harvest objective.

New objective criteria (Harvest Based)

- Minimum age of Harvest (median \geq 4 years)
- Days per Harvest (average \leq 10 days)

Secondary objective:

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

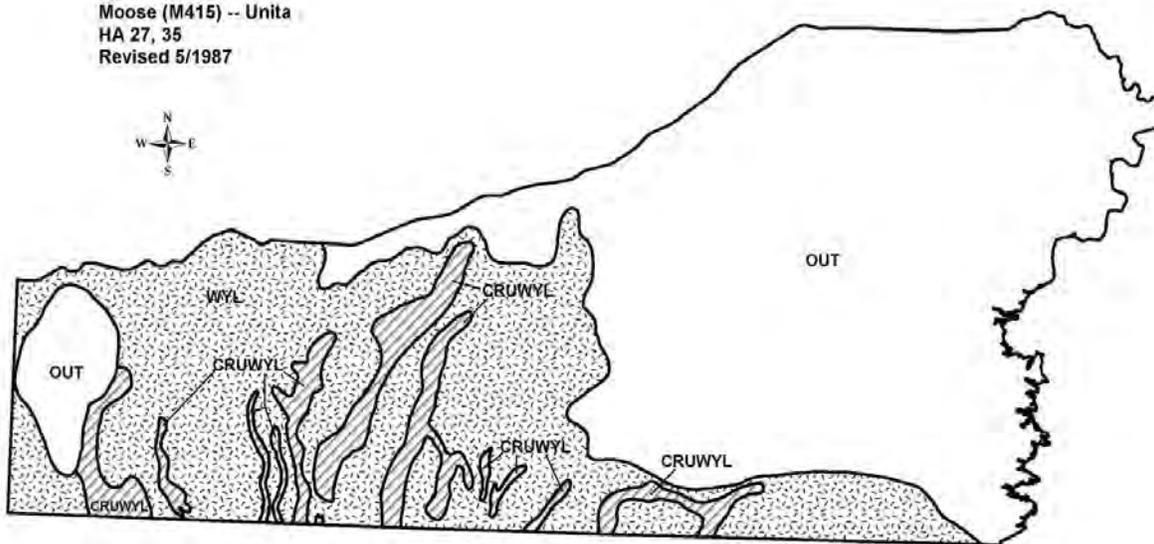
Uinta Moose Herd Harvest Data 2010 -2015

	2011	2012	2013	2014	2015	5 year average
Mean age of harvest	5.63	5.0	4.333	4.125	4.37	4.69
Median age of harvest	4	4	4	3	4	3.8
Days per harvest	10.7	10.2	8.4	9.1	7.6	9.2
% male harvest \geq 5 years	45%	45%	33%	12%	25%	32%
Average Antler spread (in)	42.88	40.35	38.8	36.0	35.75	38.756

The Uinta Herd Unit has small sample sizes for harvest so outliers or missed samples have a large affect on the data. Currently the herd is slightly below objective for Minimum age of Harvest, above objective on days per harvest and below objective on percent of male harvest \geq 5 years of age.

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. Currently, the JCR system is not set up to report this type of objective data.

Moose (M415) -- Unita
HA 27, 35
Revised 5/1987



2015 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2015 - 5/31/2016

HERD: MO417 - LINCOLN

HUNT AREAS: 26, 33, 36, 40

PREPARED BY: JEFF SHORT

	<u>2010 - 2014 Average</u>	<u>2015</u>	<u>2016 Proposed</u>
Population:	890	767	726
Harvest:	46	48	56
Hunters:	48	50	55
Hunter Success:	96%	96%	102 %
Active Licenses:	48	50	55
Active License Success:	96%	96%	102 %
Recreation Days:	382	366	400
Days Per Animal:	8.3	7.6	7.1
Males per 100 Females	68	38	
Juveniles per 100 Females	38	42	

Population Objective (± 20%) : 1620 (1296 - 1944)

Management Strategy: Special

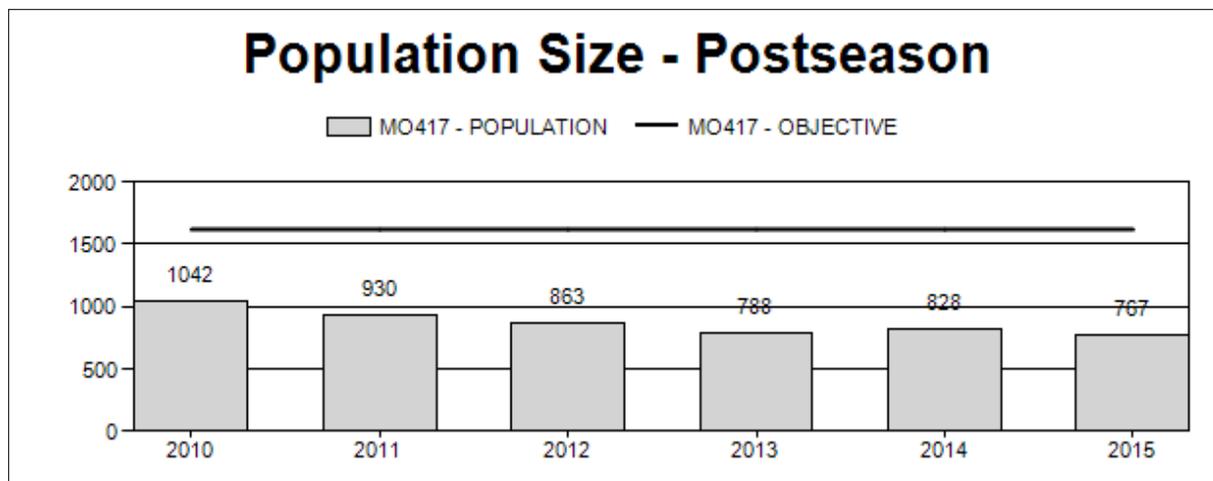
Percent population is above (+) or below (-) objective: -52.7%

Number of years population has been + or - objective in recent trend: 6

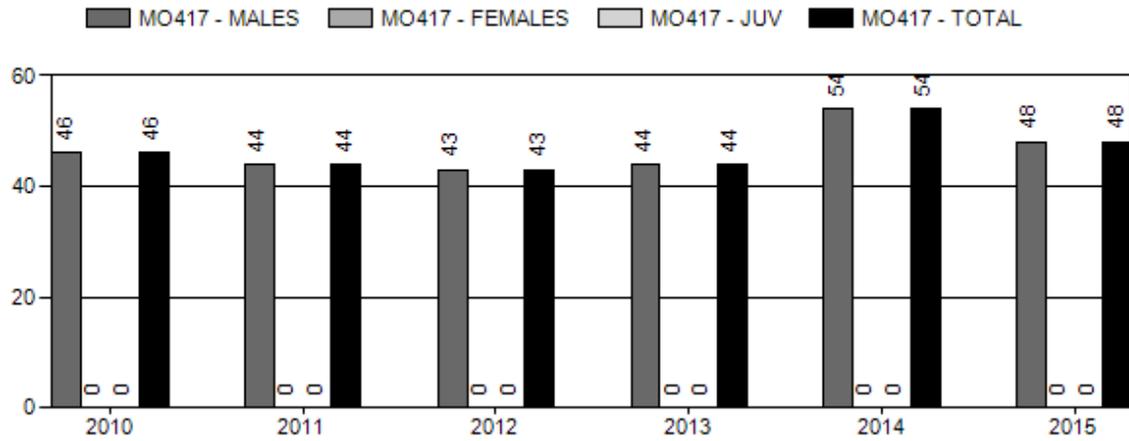
Model Date: 02/22/2016

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

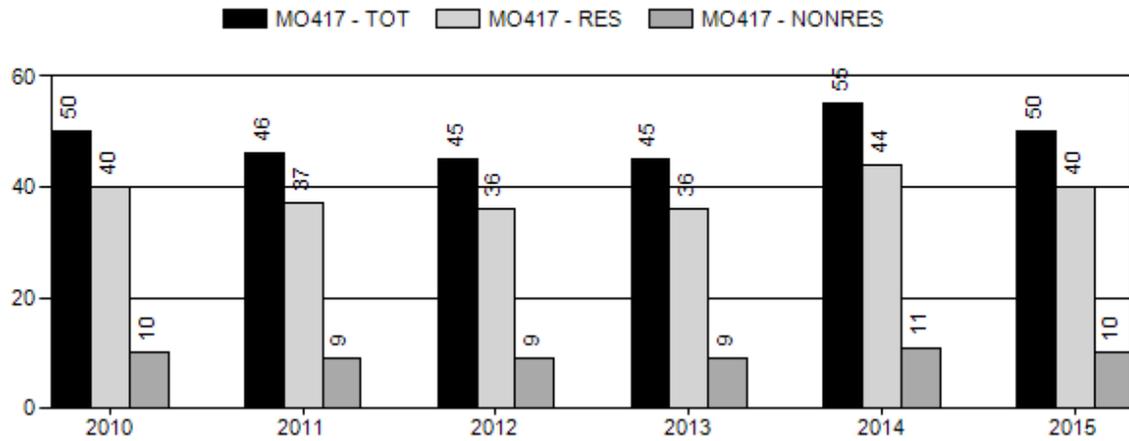
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	24.6%	28.5%
Juveniles (< 1 year old):	0%	0%
Total:	6.3%	6.9%
Proposed change in post-season population:	-8.6%	-6.3%



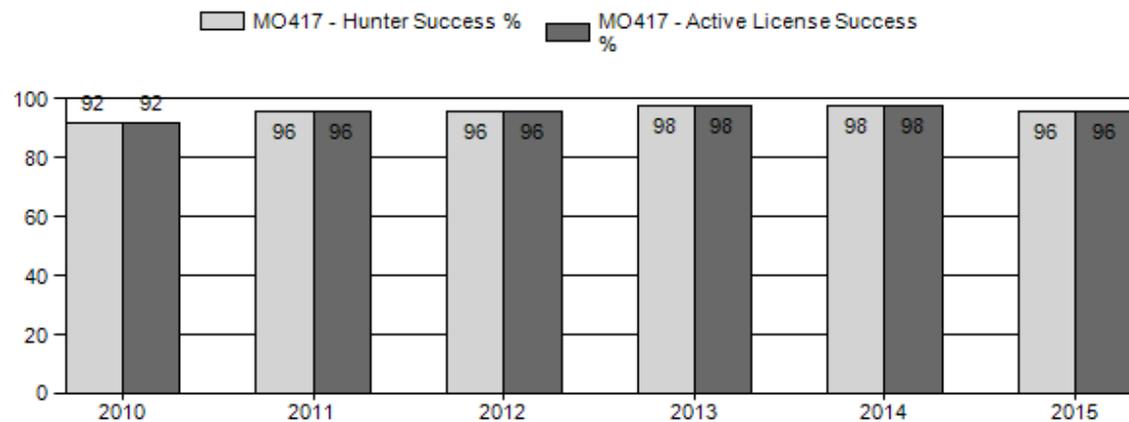
Harvest



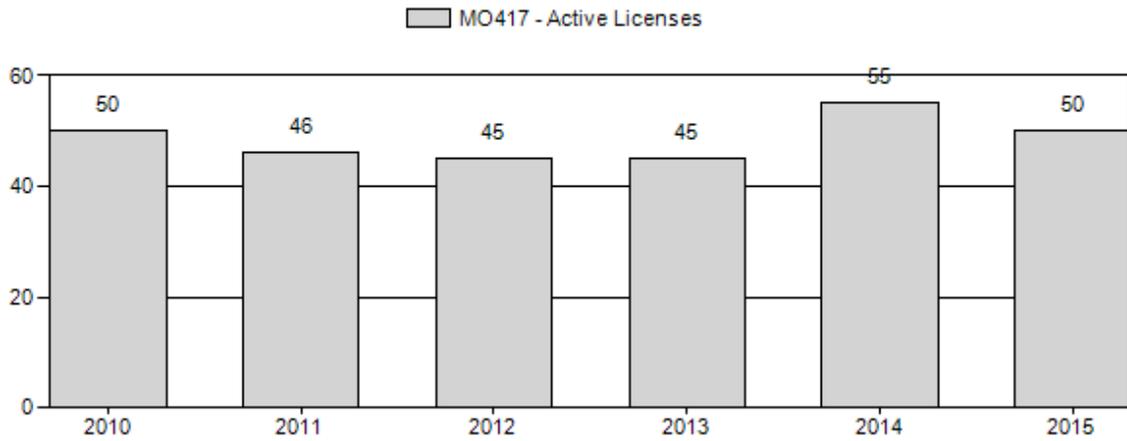
Number of Hunters



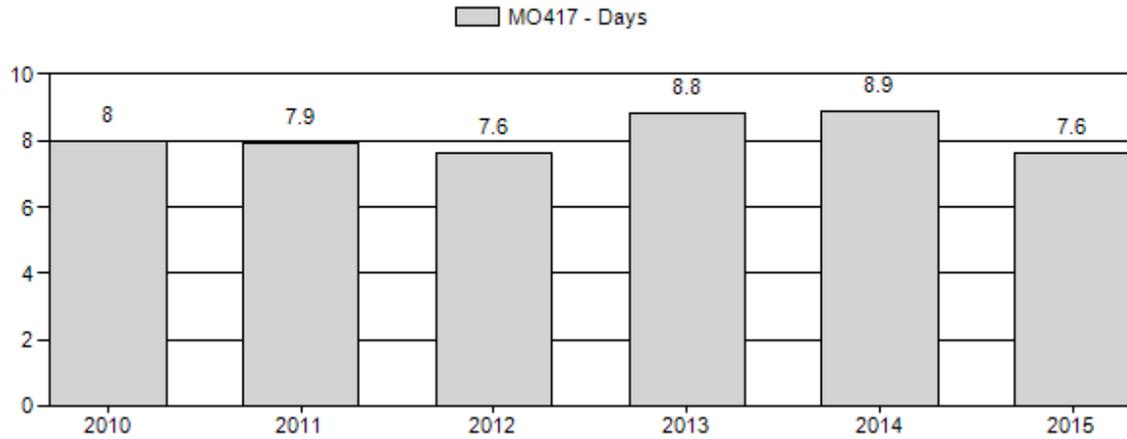
Harvest Success



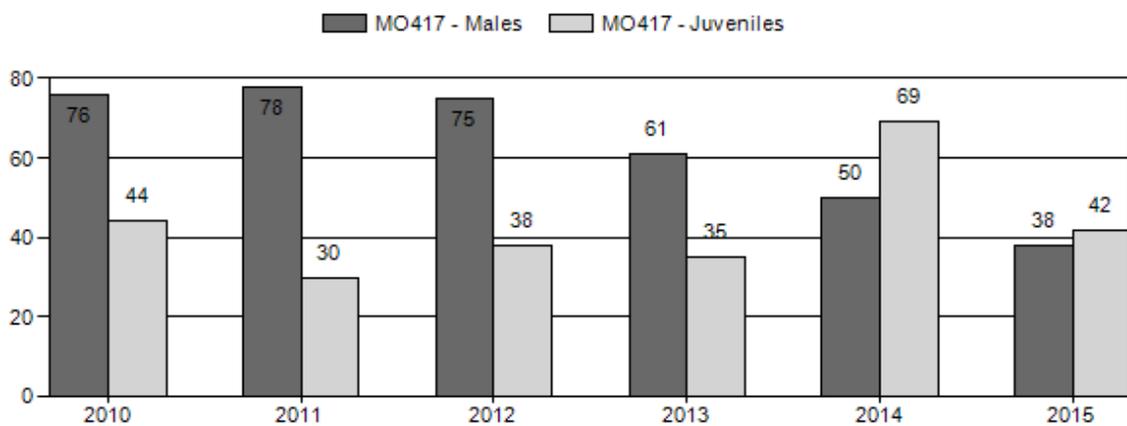
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Moose Herd MO417 - LINCOLN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	1,042	0	0	103	35%	135	45%	59	20%	297	0	0	0	76	± 11	44	± 7	25
2011	930	0	0	47	38%	60	48%	18	14%	125	0	0	0	78	± 18	30	± 10	17
2012	863	0	6	6	35%	8	47%	3	18%	17	0	0	75	± 51	38	± 32	21	
2013	788	0	124	124	31%	202	51%	71	18%	397	0	0	61	± 6	35	± 4	22	
2014	828	1	7	8	23%	16	46%	11	31%	35	0	6	44	± 27	69	± 34	46	
2015	767	11	59	70	21%	183	55%	77	23%	330	0	6	32	± 5	42	± 6	30	

2016 HUNTING SEASON

SPECIES : **Moose**

HERD UNIT : **LINCOLN (417)**

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

Hunt Area	Hunt Type	Dates of Seasons		Quota	Licenses	Limitations
		Opens	Closes			
26	1	Oct. 1	Oct. 31	40	Limited quota	Antlered moose
33, 36, 40	1	Oct. 1	Oct. 31	10	Limited quota	Any moose, except cow moose with calf at side in Areas 36 and 40; valid for antlerless moose, except cow moose with calf at side in Area 33
26, 33, 36, 40	Archery	Sep. 1	Sep. 30		Limited quota	Refer to Section 2 of this chapter

Hunt Area	License Type	Quota change from 2015
33, 36, 40	1	+5
26	1	-10
Herd Unit Total	1	-5

Management Evaluation

Current Postseason Population Management Objective: 1,620

Management Strategy: Special

2014 Postseason Population Estimate: ~767

2015 Proposed Postseason Population Estimate: ~726

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 feel that this has had a significant population effect. However, Elaeophorosis caused mortalities have reduced in the last four years.

Hunt area 36, formerly the Bear River Divide moose herd, is now considered part of the Lincoln moose herd. This is a small moose herd that is scattered over a large expanse of non-typical open moose habitat. The herd unit objective was 120 moose. Harvest data will continue to be analyzed separately. 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. 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. It can be difficult for hunters to locate moose in areas 36 and 40. We have combined areas 33, 36 and 40 into one hunt. This structure allows hunters to travel more to find moose. In 2015 Area 33 will only allow for hunting of cow moose without a calf at side.

Weather

Weather during 2015 and into 2016 has been highly variable. In the early part of 2015 the winter was very mild and dry. A moist spring and summer followed. In late August conditions dried considerably and a relatively dry fall continued into late December. Winter did not set in until mid December but it came in abruptly. The winter of 2015-2016 has been very cold with high snow loads to this point and moose have mostly migrated to winter ranges. A much needed warming trend has occurred in February and it remains to be seen how the winter will ultimately shape out. The winters from 2011 to 2015 were very mild with low snowpack and relatively warm temperatures resulting in very mild 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 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. Areas 33, 36 and 40 are not flown due to the large geographic area and very low moose densities. Classification data is collected during these flights. Those surveys are conducted every other year. The joint elk and moose survey was flown this year in the winter of 2015/16. Total numbers of moose seen were 331. The Idaho sightability model was used to estimate a total population for the area flown. That estimate is 383 moose with a standard error

of 12.409. Very 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. For population modeling we have added 50 animals to the estimate and enlarged the SE to account for those areas. The previous survey was flown in the winter of 2013/14 and resulted in a raw count of 406 moose with a sightability estimate of 476. In the off years between elk/moose flights, some moose classification data is collected during aerial deer surveys in December. That data is reported in the JCR report graphs and tables but sample sizes are inadequate and those ratios are not as reliable. The extensive surveys conducted in 2014 and 2016 resulted in estimates that are lower than survey sample sizes were in the late 1990s and early 2000s with lower effort during that time. 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

Antlerless 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. 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. They 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 from Area 26 indicates we have an average age of harvest of 3.6 years old for 2014. Average antler spread in Hunt Area 26 was 37.40 for 2014.

Lincoln Moose Herd Harvest Data 2010 -2015

	2011	2012	2013	2014	2015	5 year average
Mean age of harvest	3.90	4.4	4.4	4.1	3.6	4.08
Median age of harvest	4	5	4	4	4	4.2
Days per harvest	7.9	7.6	8.8	8.9	7.6	8.16
% male harvest ≥ 5 years	25%	52%	43%	34%	20%	34.8%
Average Antler spread (in)	35.43	37.63	36.12	37.84	37.40	36.88

2010 - 2015 Harvest Summary

for Moose Herd MO417 - LINCOLN

Year	HUNTERS					HARVEST										SUCCESS			
	Res Htrs	NRes Htrs	% NRes	Total Htrs	Act Lic	Yig Male	Adult Male	Total Male	% Male	Fem	% Fem	Juv	% Juv	Tot Harv	Hntrs	Act Lic	Hntr Days	Days to Harv	
2010	40	10	20%	50	50	0	46	46	100%	0	0%	0	0%	46	92%	92%	367	8.0	
2011	37	9	20%	46	46	0	44	44	100%	0	0%	0	0%	44	96%	96%	348	7.9	
2012	36	9	20%	45	45	0	43	43	100%	0	0%	0	0%	43	96%	96%	326	7.6	
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	

Population

Previous to this year 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 estimate we now have 2 population estimate data points to anchor the 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. 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 had also experienced a reduction in nuisance moose complaints and reduced field observations of moose. This information prompted us to reduce harvest on this herd significantly during that time. After the more detailed survey conducted in March of 2014 resulted in 406 observed moose we felt confident that we could offer 50 licenses beginning in the 2014 season.

Management Summary

Harvest opportunity was substantially limited in this herd from 2008 to 2014. We will remain conservative for 2016. In Hunt Area 26 for the 2016 hunting season we will reduce licenses from 50 to 40. That area has fallen below objective in bull:cow ratio and mean age of harvested bulls. In Hunt Areas 33, 36 and 40 we will raise licenses from 5 to 10 licenses. Hunt Area 33 will be for antlerless moose only (except cow moose with calf at side). Moose in this area are confined to the riparian areas along the Green River. Due to high hunter success, and low densities of moose, this area cannot sustain high harvest every year. Any moose harvest (except cow moose with calf at side) will be allowed in Hunt Areas 36 and 40 due to private landowner concerns and licenses will be raised from 5 to 10. The objective and management strategy were last revised in 2004. It is due to be revised in 2016.

M417 - Lincoln
HA 26, 33, 36, 40
Revised 1/2006

