2015 - JCR Evaluation Form

SPECIES: Moose
HERD: MO620 - LANDER
HUNT AREAS: 2, 30, 39

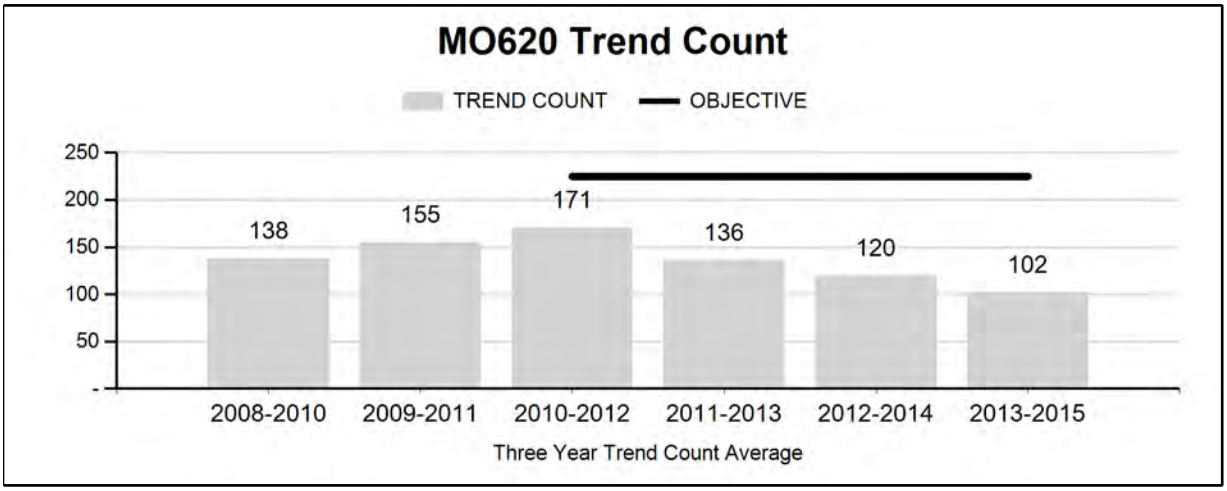
PERIOD: 6/1/2015 - 5/31/2016
PREPARED BY: STAN HARTER

	2010 - 2014 Average	2015	2016 Proposed
Trend Count:	146	86	150
Harvest:	8	6	10
Hunters:	11	9	10
Hunter Success:	73%	67%	100 %
Active Licenses:	11	9	10
Active License Success	73%	67%	100 %
Recreation Days:	103	162	100
Days Per Animal:	12.9	27	10
Males per 100 Females:	69	45	
Juveniles per 100 Females	36	43	

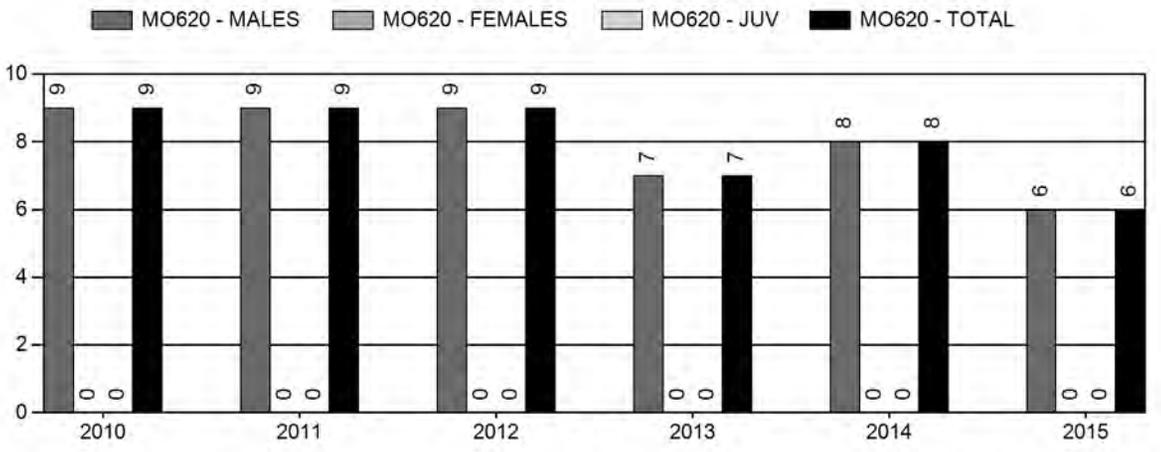
Trend Based Objective (± 20%)	225 (180 - 270)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-61.8%
Number of years population has been + or - objective in recent trend:	5

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

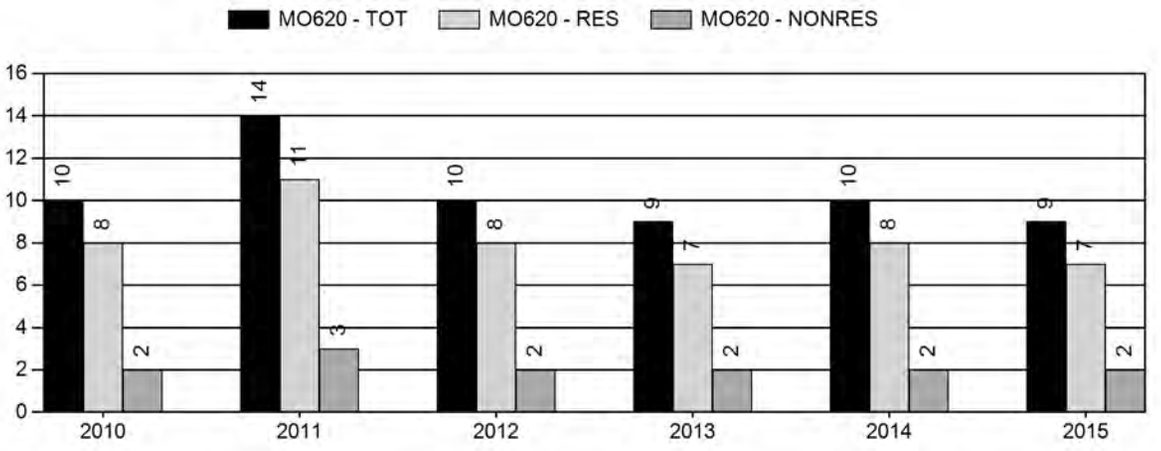
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%



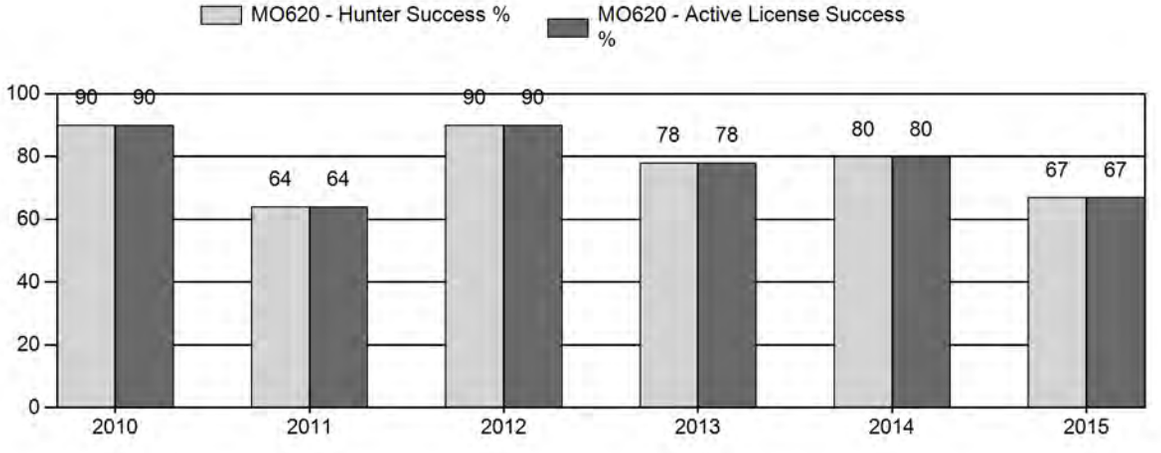
Harvest



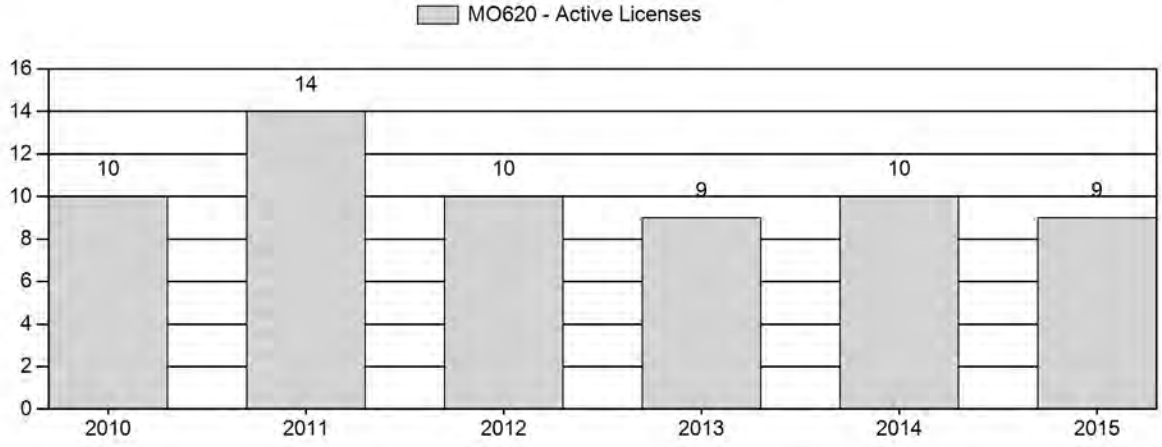
Number of Hunters



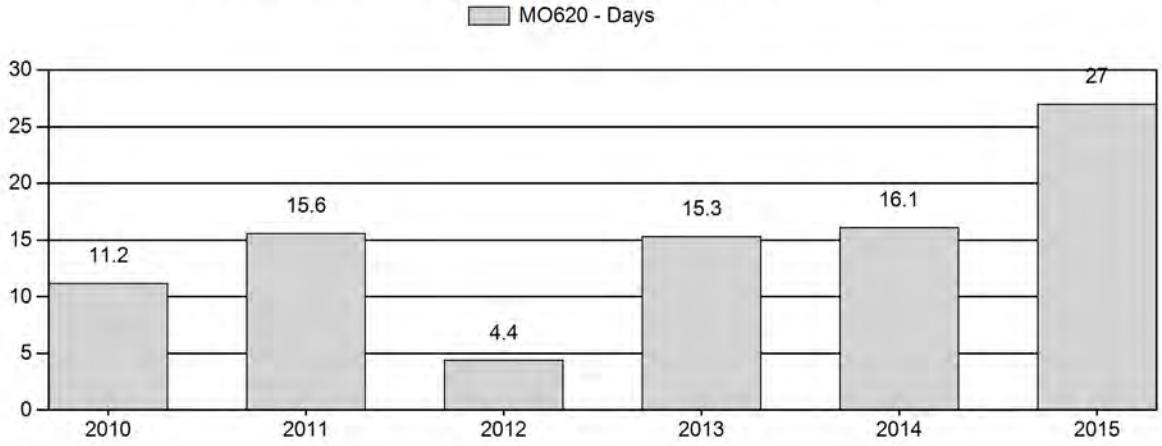
Harvest Success



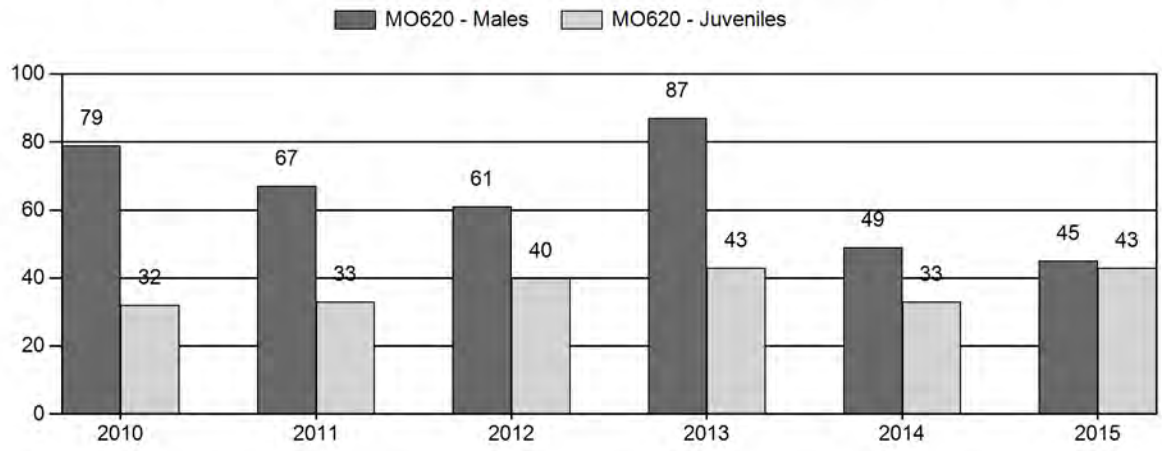
Active Licenses



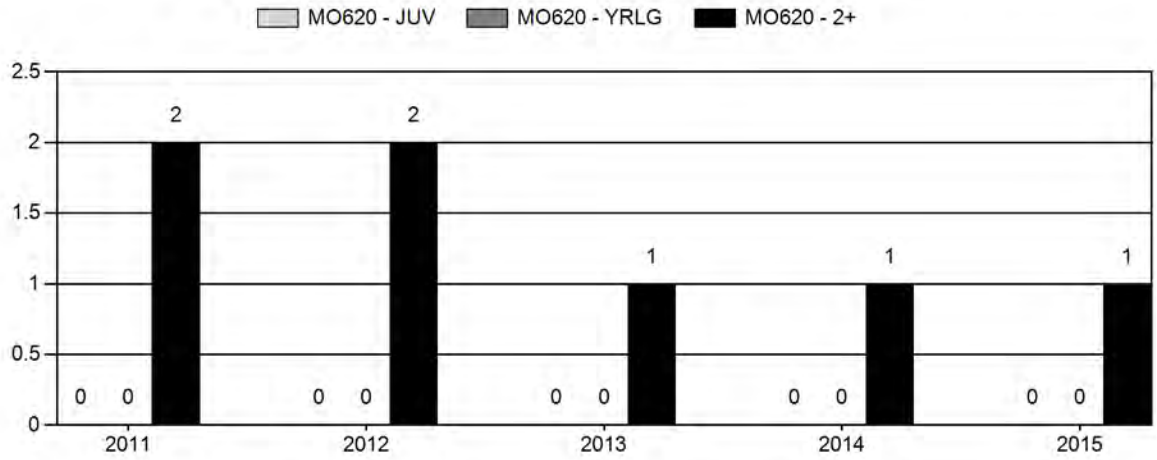
Days per Animal Harvested



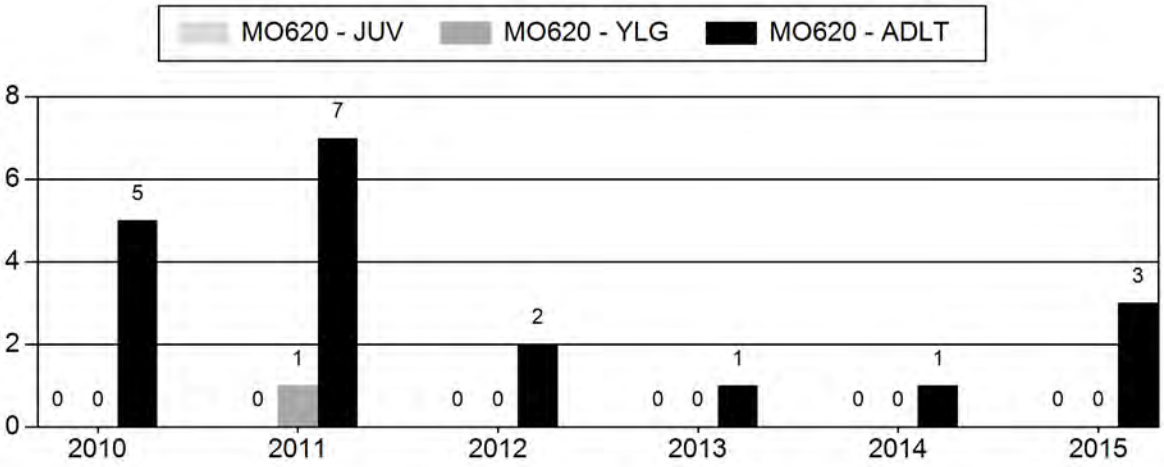
Postseason Animals per 100 Females



Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female

No Data Available

2010 - 2015 Postseason Classification Summary

for Moose Herd MO620 - LANDER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	0	0	0	78	37%	99	47%	32	15%	209	281	0	0	79	± 9	32	± 5	18
2011	0	0	0	54	33%	81	50%	27	17%	162	263	0	0	67	± 11	33	± 7	20
2012	0	0	0	43	30%	70	50%	28	20%	141	0	0	0	61	± 12	40	± 9	25
2013	0	0	0	40	38%	46	43%	20	19%	106	0	0	0	87	± 0	43	± 0	23
2014	0	0	0	30	27%	61	55%	20	18%	111	0	0	0	49	± 0	33	± 0	22
2015	0	0	0	20	24%	44	53%	19	23%	83	0	0	0	45	± 0	43	± 0	30

2016 HUNTING SEASONS
Lander Moose Herd Unit (MO 620)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
2	1	Oct. 1	Nov. 20	5	Limited Quota	Antlered moose
30	1	Oct. 1	Oct. 31	5	Limited Quota	Antlered moose
30	1	Nov. 1	Nov. 20			Antlered moose also valid in Area 2
39		CLOSED				
Archery		Sept. 1	Sept. 30			Refer to license type and limitations in Section 2

MANAGEMENT EVALUATION

Current Mid-Winter Trend Count Management Objective: 225
Management Strategy: 60-70 bull/100 cows
2015 Trend Count = 83
Most Recent 3-year Running Average Trend Count = 102

Herd Unit Issues/Population

This population has experienced a general decline beginning in 1995. Trend counts showed a general upward trend from 2004 through 2010, an excellent year for detecting moose with near optimal snow cover and flight conditions. Starting in 2011, sample sizes have declined quite sharply, mostly due to less favorable snow cover and/or flight conditions. While this decline is possibly only the result of reduced detection of moose, it may also indicate a real decline in moose numbers. While some wolf activity has been reported for several years, documentation and public reports of wolves in several portions of the herd unit have substantially increased since fall 2015.

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

Attempts to develop a spreadsheet model for Lander Moose were not successful. In the absence of an accurate, or even usable, population estimate for the Lander Moose Herd Unit, a change to an alternative objective was necessary. Mid-winter trend counts, collected as classification survey data were deemed the best alternative, and seem to be a reliable trend indicator as we fly all available winter ranges annually. Therefore, the management objective was changed in 2013 to a trend count of 225 moose (range of 180-270 moose). The 2015 trend count was 86 moose.

Field Data

Moose winter range trend count/classification surveys were conducted January and February 2016, in combination with elk and deer classifications. All hunt areas were surveyed using a Bell Jet Ranger helicopter to survey traditional winter habitats throughout the herd unit. Most moose were observed in traditional willow riparian areas and adjacent sagebrush/bitterbrush slopes, or aspen stands. However, due to very light snow cover and increasing winds affecting flight safety, we did not observe as many moose as we anticipated in several locations, particularly in Area 30, and the Middle Popo Agie drainage, Maxon Basin, Pass Creek burn, and lower Sweetwater River portions of Area 2. The classification sample of 83 moose was the lowest since 2010 and also 39% below the average in that time frame (range 83-209). The post-season calf/cow ratio increased to 43J/100F, but the bull/cow ratio dropped to 45M/100F (Figure 1).

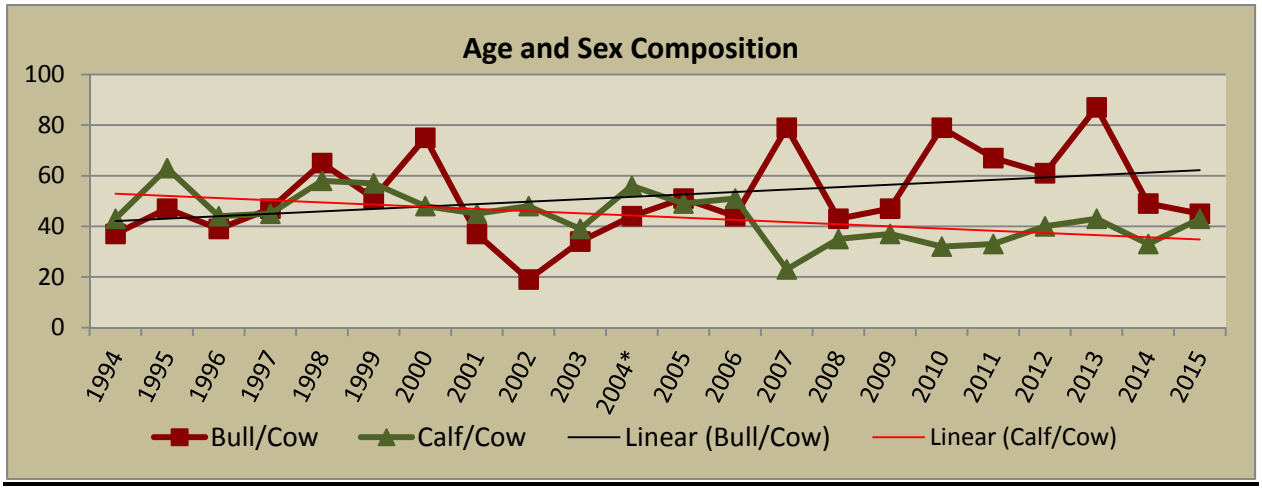


Figure 1. Age and sex composition for Lander Moose, 1994 – 2015.

Weather

Precipitation has improved substantially since fall 2013, after a period of intense drought. Precipitation from October 2013 through September 2014 was about average in the Lander moose herd unit. Winter 2014-15 had lower than average snowfall, yet precipitation from October 2014 through September 2015 was higher than the 30-year average due to April and May 2015 getting nearly double the average precipitation in Lander and Jeffrey City. Precipitation in Lander was 140% above average for the first four months of 2016, with record breaking rain falling in the first week of May, which should lead to excellent summer forage conditions.

Habitat

Future management of Lander Moose will also include evaluation and monitoring of habitat conditions on key moose winter ranges. Habitat management and monitoring strategies are being deliberated by the Department's Moose Working Group, and we are awaiting direction from them before moving forward with establishing transects. In the meantime, recently developed "Rapid Habitat Assessments" will be implemented as appropriate to develop a baseline from which to gauge overall habitat condition across the landscapes of the Lander moose herd unit. These assessments will include visits to several old monitoring locations in 2016, as well as at selected new locations.

Harvest Data

In 2015, nine hunters harvested 6 moose (3 in each hunt area) for hunter success of only 67%. The number of days per moose harvested increased to 27 days, the most in over 20 years. No hunters from Area 30 reported harvesting moose in November in Area 2, but at least one hunter did hunt both areas.

According to the tooth aging report, teeth were submitted from only 2 of the 6 harvested bull moose. The average age of 2 harvested bulls via cementum annuli was 3.5 years (range 3 – 4 years). With such a small sample size, comparing these data with prior years has little value, but the average age was down from 5 years in 2014. Hunters reported seeing 62 moose in Area 2 and 48 moose in Area 30 in 2015. Antler width averaged 35 inches (range 26 – 44 inches) for the 2 moose from which we received width measurements.

Management Summary

Hunting seasons remain conservative in 2016 with 5 Type 1 Antlered Moose licenses in Hunt Area 2 and with 5 Type 1 licenses in Hunt Area 30. The bull/cow ratio trend has been increasing in recent years, but experienced a small decline this year. Also, calf/cow ratios remain low (average of 35/100 since 2006, range 32 – 43) and with lower trend counts, we don't believe this population can yet sustain an increase in bull harvest, and in fact may need to be reduced. Hunter success averaged less than 80% the past several years, in spite of increases in bull/cow ratios.

Given poor detection of moose, it is likely the actual number of moose is much higher than that observed in the 2015 classification/trend survey. Regardless, the population seems to be experiencing a relatively stable trend since 2004 (Figure 2). However, decreasing counts after 2010 are increasing our concern this population is declining.

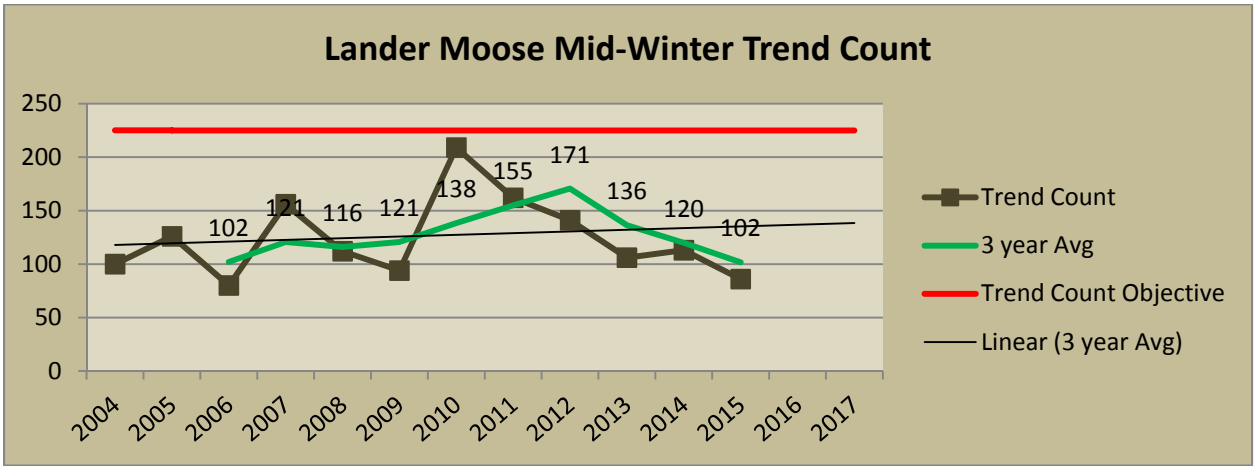
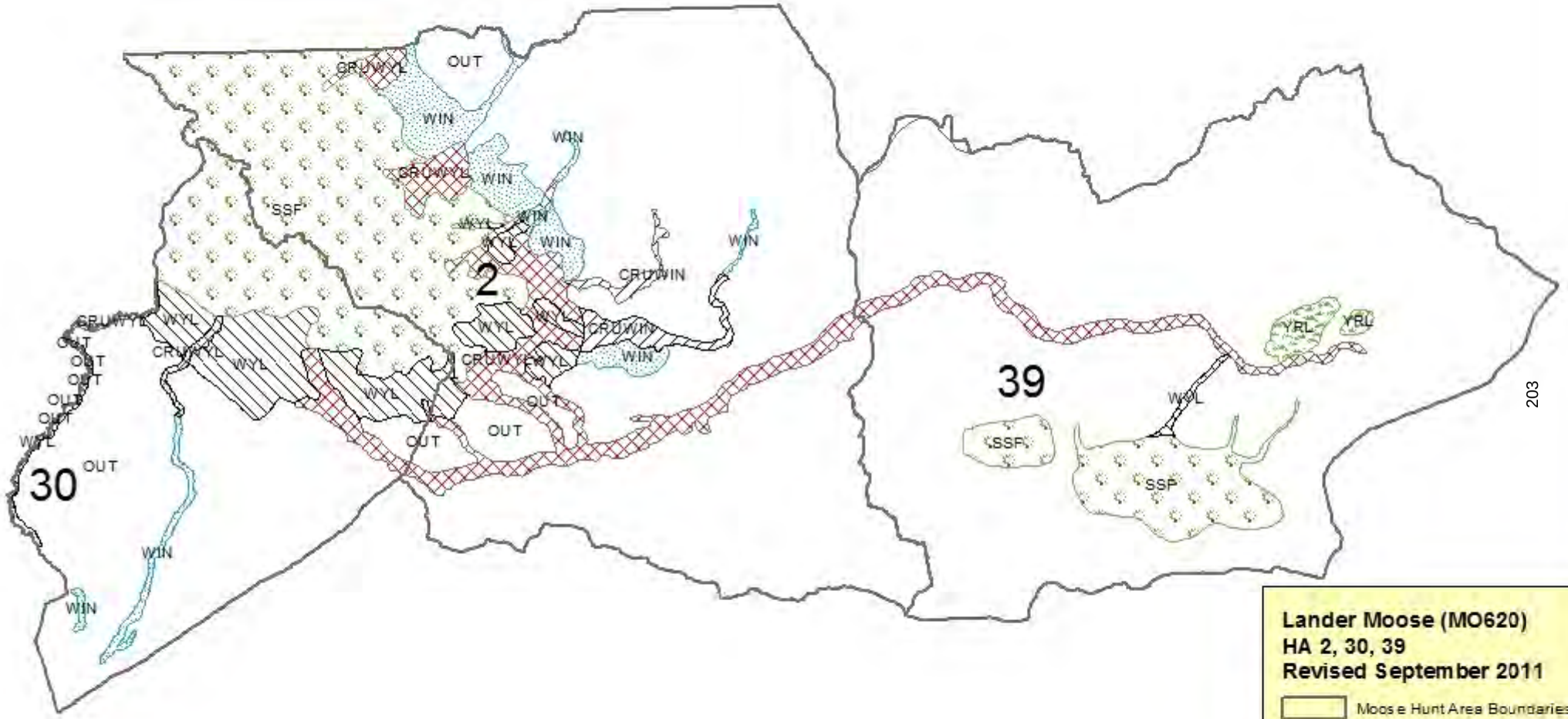


Figure 2. Mid-winter trend count data for Lander Moose (2004-2015) with projected trend through 2017 based on 3-year running average.

Area 30 hunters will continue to be allowed to hunt in Area 2 after November 1, if they are unsuccessful in Area 30 during October. We have discussed the potential for combining hunting opportunities for both areas simultaneously. If the recent poor hunter/harvest statistics continue, we will consider this in 2017, along with a reduction in total moose licenses for the herd unit. The 2016 seasons should provide a quality experience for moose hunters and improved hunter statistics. We expect hunter success to be 100%, resulting in a harvest of 10 bulls.


2
30
39
CRUWYL
CRUWIN
WYL
WIN
OUT
SSF
YRL
Lander Moose (MO620)
HA 2, 30, 39
Revised September 2011
Moose Hunt Area Boundaries
Moose Seasonal Range
CRUWIN
CRUWYL
OUT
SSF
WIN
WYL
YRL

2015 - JCR Evaluation Form

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

HERD: MO621 - DUBOIS

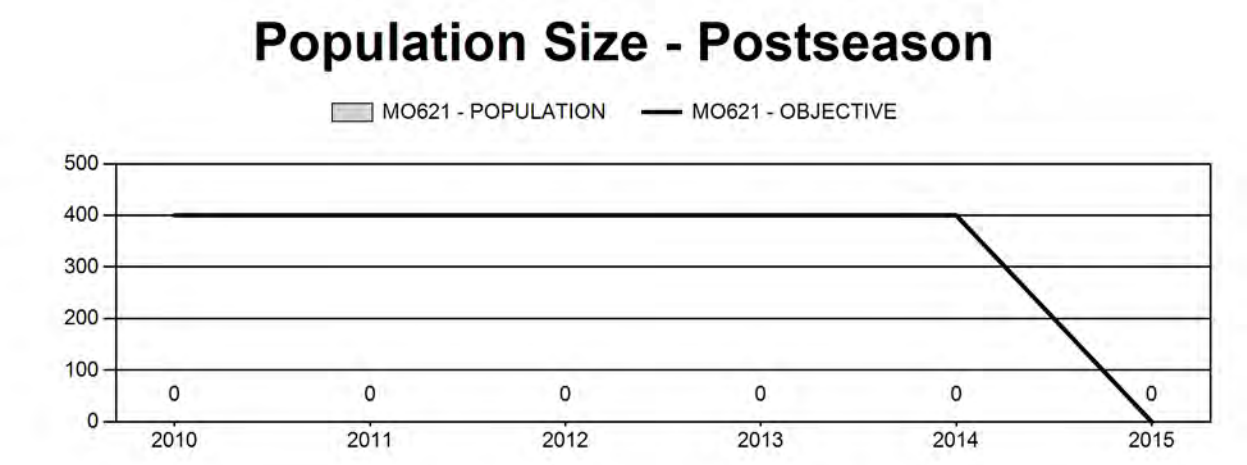
HUNT AREAS: 6
PREPARED BY: GREG ANDERSON

	2010 - 2014 Average	2015	2016 Proposed
Population:	0	N/A	N/A
Harvest:	5	4	4
Hunters:	5	5	5
Hunter Success:	100%	80%	80 %
Active Licenses:	5	5	5
Active License Success:	100%	80%	80 %
Recreation Days:	45	49	40
Days Per Animal:	9	12.2	10
Males per 100 Females	0	0	
Juveniles per 100 Females	0	0	

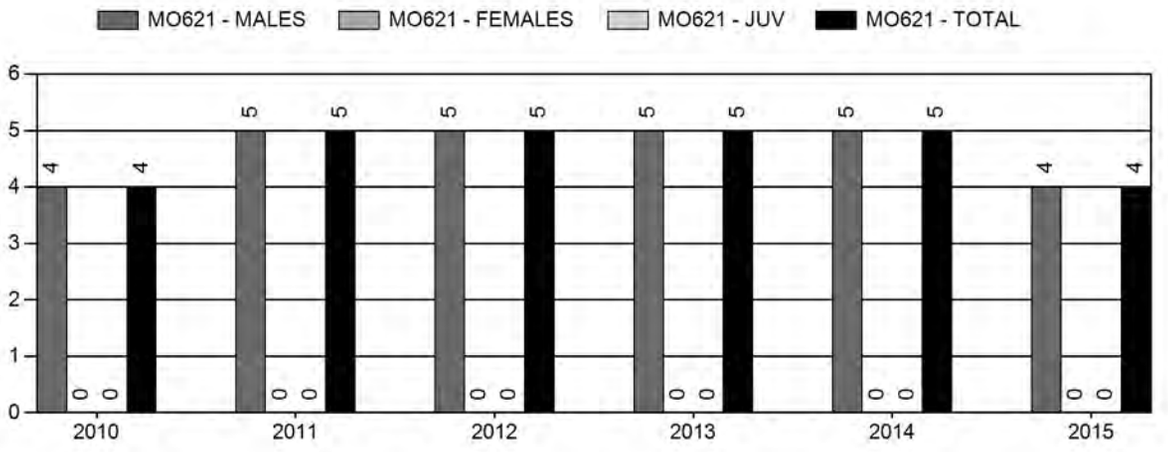
Population Objective (± 20%) :	0 (0 - 0)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	1/1/2016

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

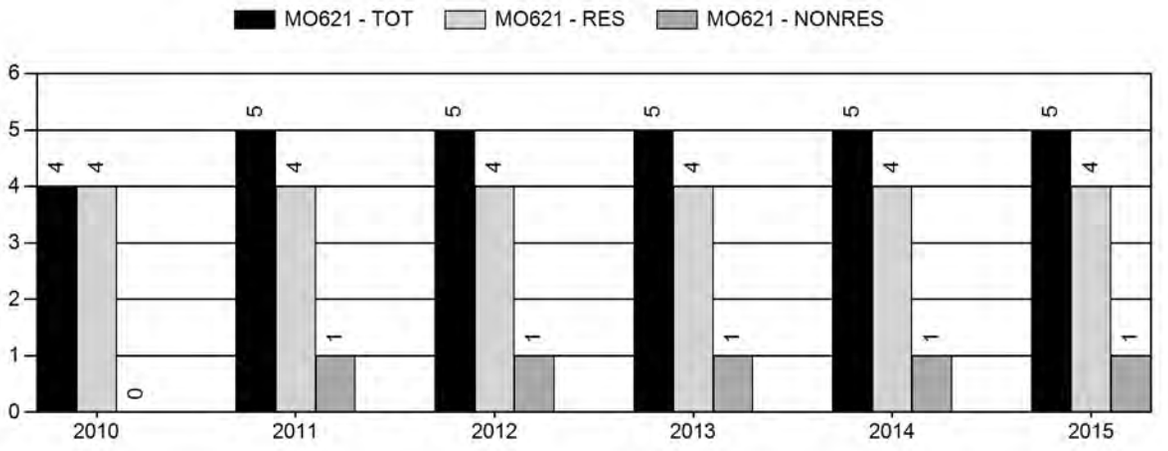
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	0%	0%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	0%	0%



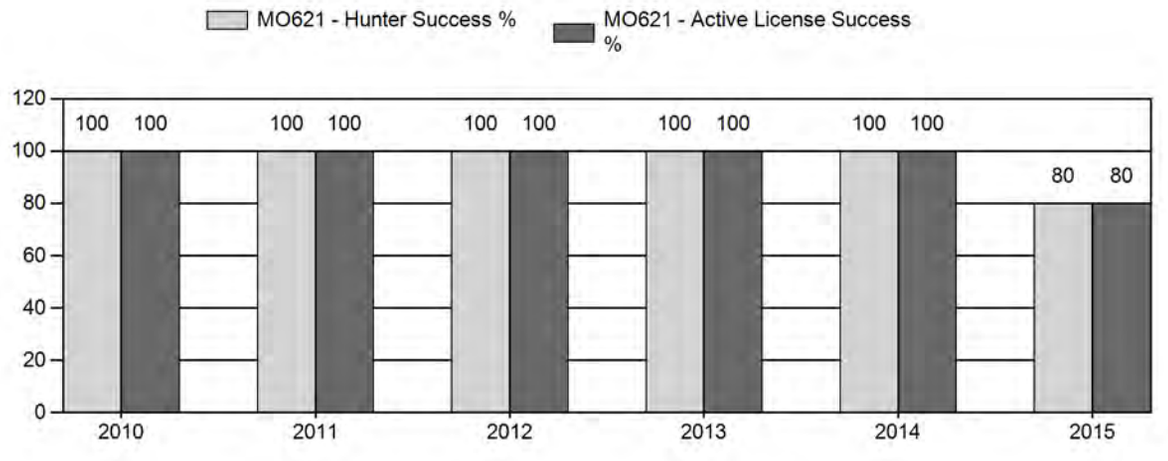
Harvest



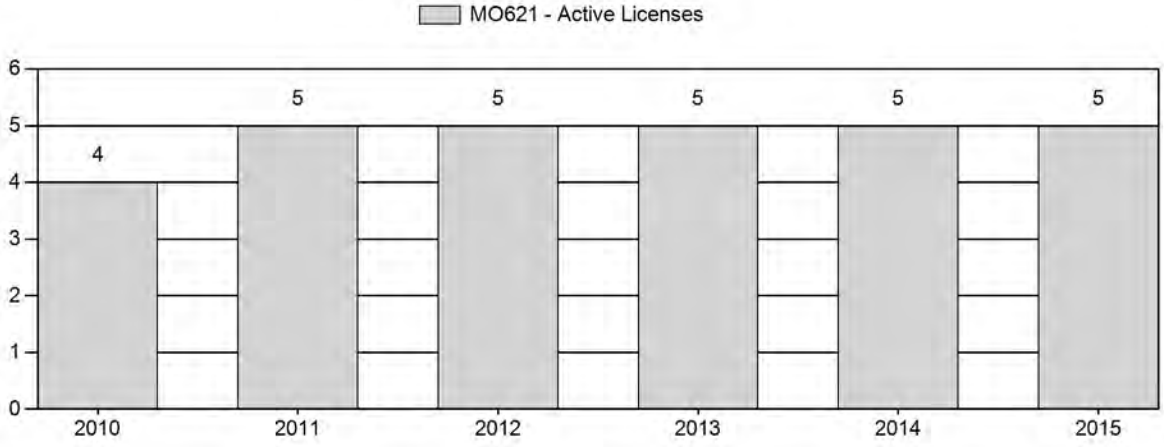
Number of Hunters



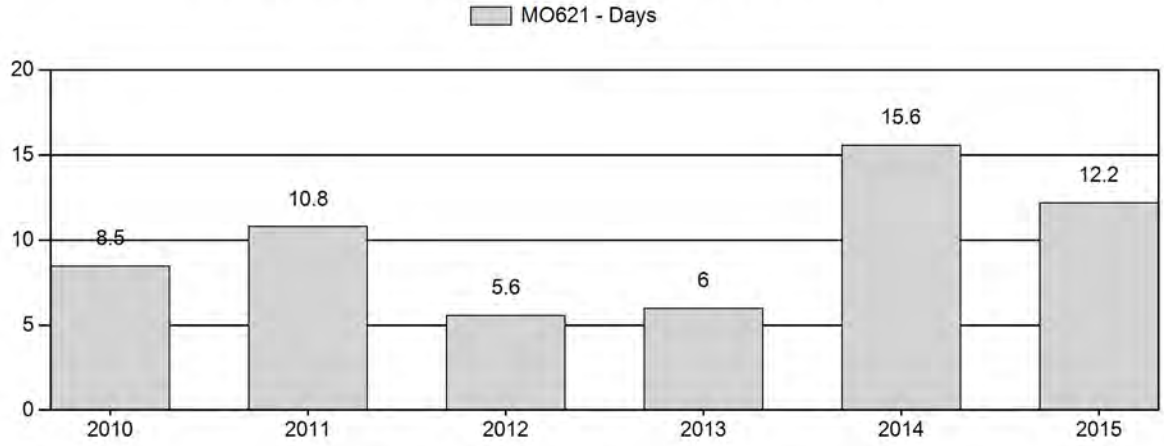
Harvest Success



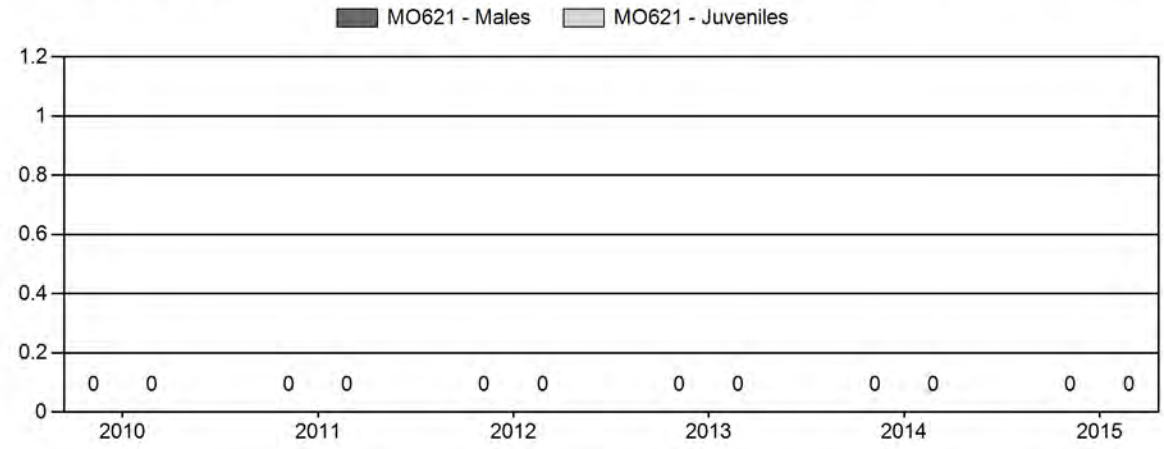
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2016 HUNTING SEASONS
DUBOIS MOOSE (MO 621)

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

Hunt Area	Type	Quota change from 2015
6		
Total		

Management Evaluation
Current Management Objective: Moose limited opportunity objective
Objective Status: At objective
Management Strategy: Special

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

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

Over the past 7 years, the Department has only issued 5 licenses in this herd unit annually. Since the objective criteria in the herd unit are dependent on harvest statistics and particularly tooth age data it can be problematic at times evaluating even these basic items. For example, only 1 set of teeth was submitted for age analysis in 2012 and only 2 sets were submitted in 2013. That said, in 2015, personnel did begin collecting annual census data at 5 select moose wintering sites to document the presence of adult bulls in the population as well as providing a mechanism to identify major population changes.

Habitat/Weather
No specific data regarding moose habitat is collected within this herd unit on an annual basis. Vegetation monitoring transects on both sheep and elk winter range indicated herbaceous vegetation production was quite good in 2015. Good moisture and growing conditions should have resulted in high feed production for moose on both low elevation winter sites and mid-elevation summer range. Moose observed throughout winter appeared to be in excellent body condition. It is likely this population has been and will continue to be impacted by large tracts of beetle killed timber across the herd unit. The effects of this natural successional change on moose in this herd unit should manifest themselves over the next decade.

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

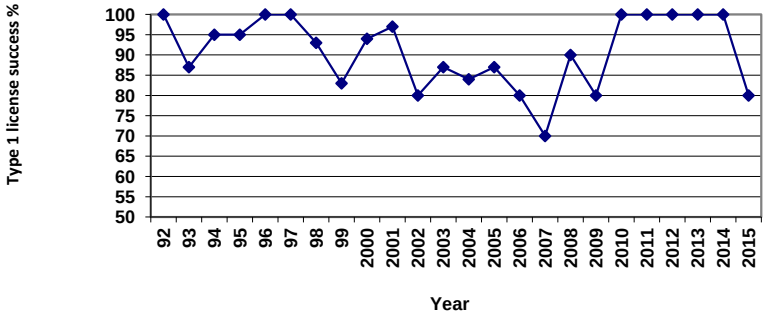
In 2015, Type 1 license holders had an 80% success rate in the Dubois Moose Herd Unit. Over the previous 5 years, Type 1 license success was 100% annually (Fig. 1). The days/animal was 12.3 in 2015 and was somewhat higher than the previous 5-year average of 9.3.

Given the 2015 harvest, the following conditions were met:

1. Five-year median age of bull harvest was 5.
2. Five-year average of days/animal was 10.0
3. Fifteen mature bulls were classified in a sample size of 29 moose.
4. Over the past five years, 7 out of 13 (54%) of tooth aged, harvested bulls were 5 years or older.

As such, all objective criteria for the herd were met and the herd is considered at objective. That said, harvest success did decline in 2015 and the days/animal was above the 5-year average.

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



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

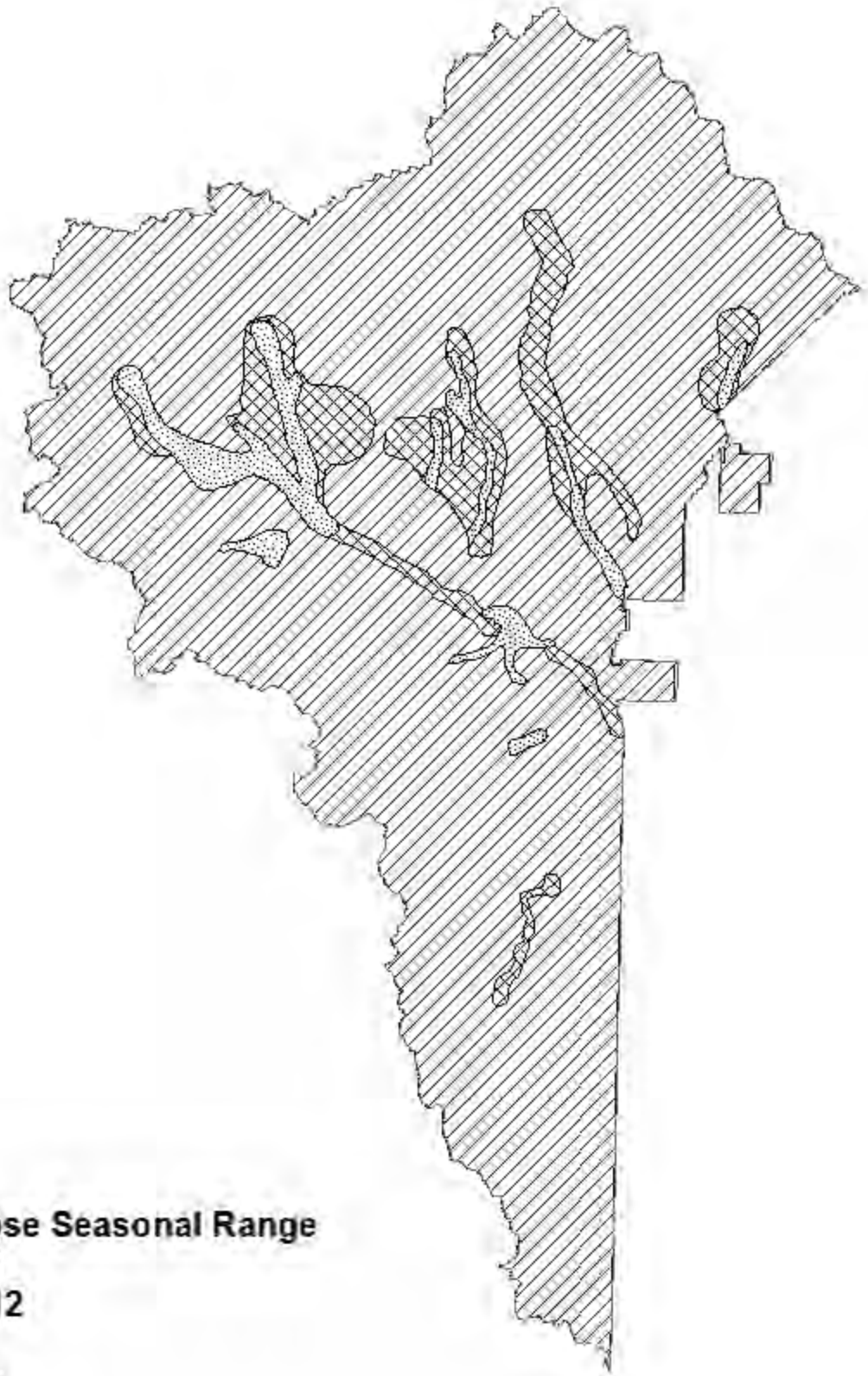
moose at these sites. Additionally, monitoring these sites provides documentation of adult bulls in the population each year.

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

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

Management Summary

While hunter success has been high the past 5 years, there is no indication the moose population increased dramatically. A significant population increase should be indicated by greater moose numbers on key, highly visible winter ranges throughout the herd unit. Several years of data collection at the sites listed in Table 1 should provide some anecdotal information on the moose population in the area. Given no good information suggesting population growth in this herd unit as well as decreased hunter success, the 2016 hunt season will remain unchanged with the issuance of 5 Type 1 licenses.



Dubois Moose Seasonal Range
Hunt Area 6
Revised 2012

CRUWYL
SSF
WYL

N