2015 - JCR Evaluation Form

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

HERD: MO101 - TARGHEE

HUNT AREAS: 16, 37
PREPARED BY: ALYSON COURTEMANCH

	2010 - 2014 Average	2015	2016 Proposed
Harvest:	5	4	5
Hunters:	6	5	5
Hunter Success:	83%	80%	100 %
Active Licenses:	6	5	5
Active License Success:	83%	80%	100 %
Recreation Days:	42	54	60
Days Per Animal:	8.4	13.5	12
Males per 100 Females:			
Juveniles per 100 Females			

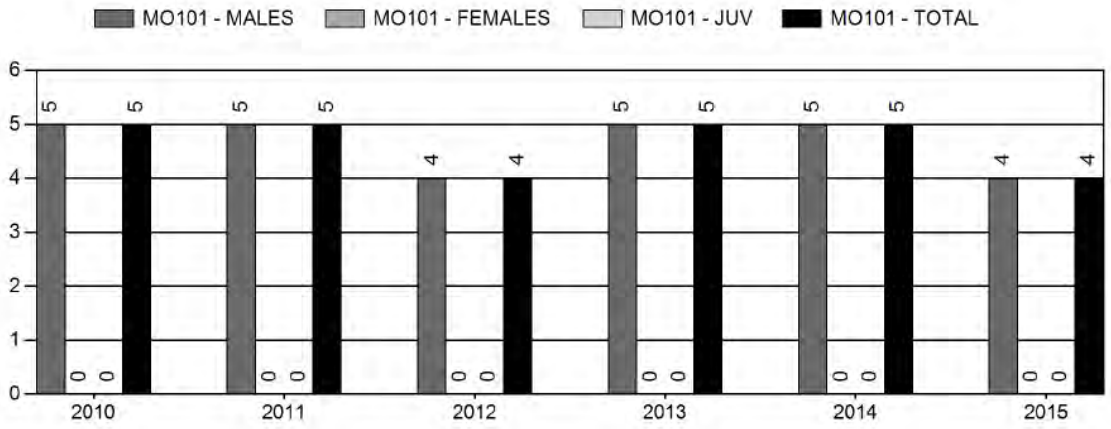
Management Strategy:	Special
Percent population is above (+) or (-) objective:	0%
Number of years population has been + or - objective in recent trend:	0

Population Objective Type: Limited Opportunity

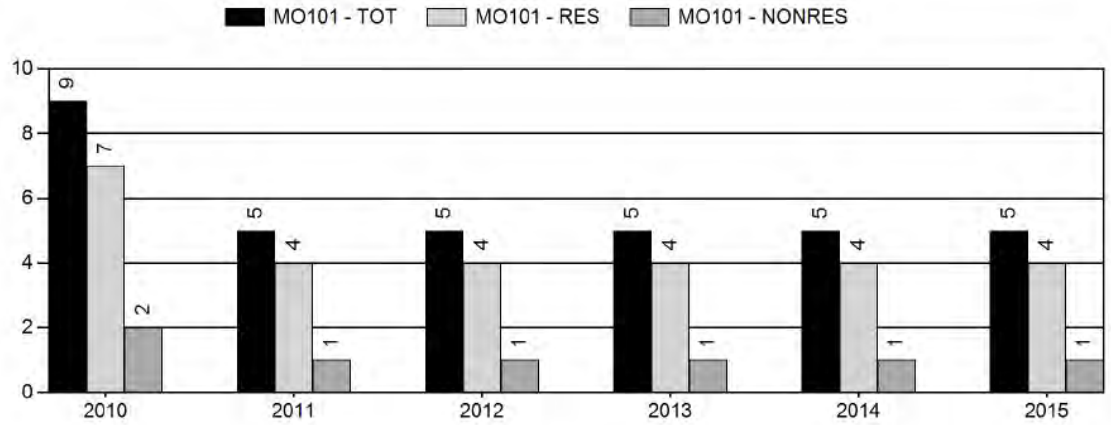
Primary Objectives:
1. Achieve a 5-year median age of ≥ 4.5 years for harvested moose, and
2. Achieve a 5-year average of ≤ 12 days/animal to harvest.

Secondary Objective:
Achieve a 5-year average of 40% of harvested moose are > 5 years of age.

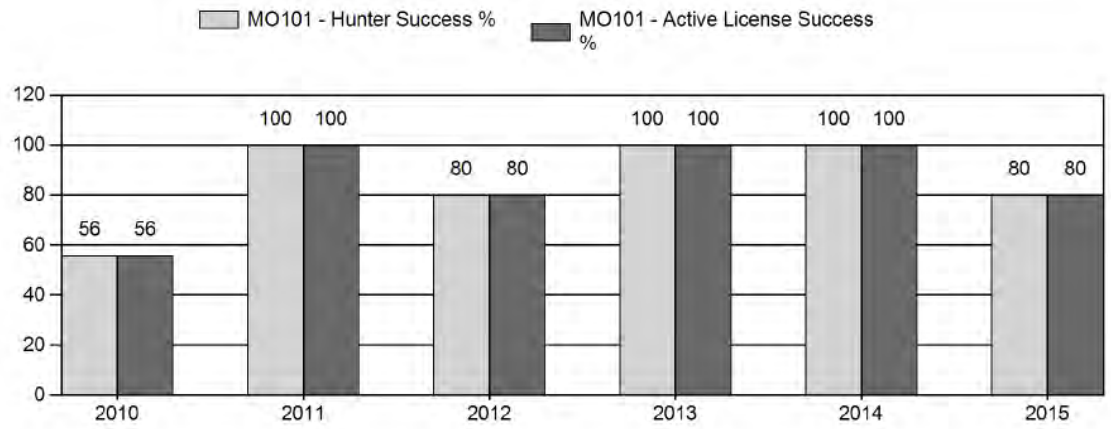
Harvest



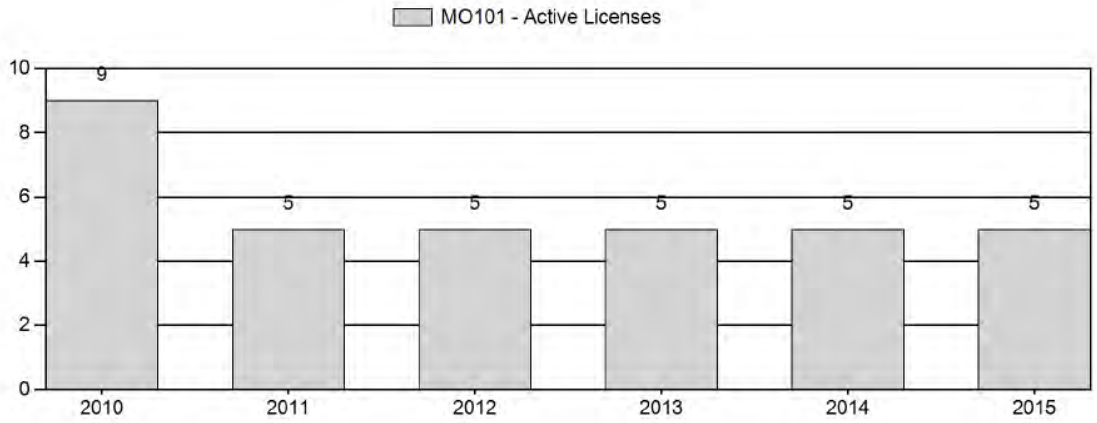
Number of Hunters



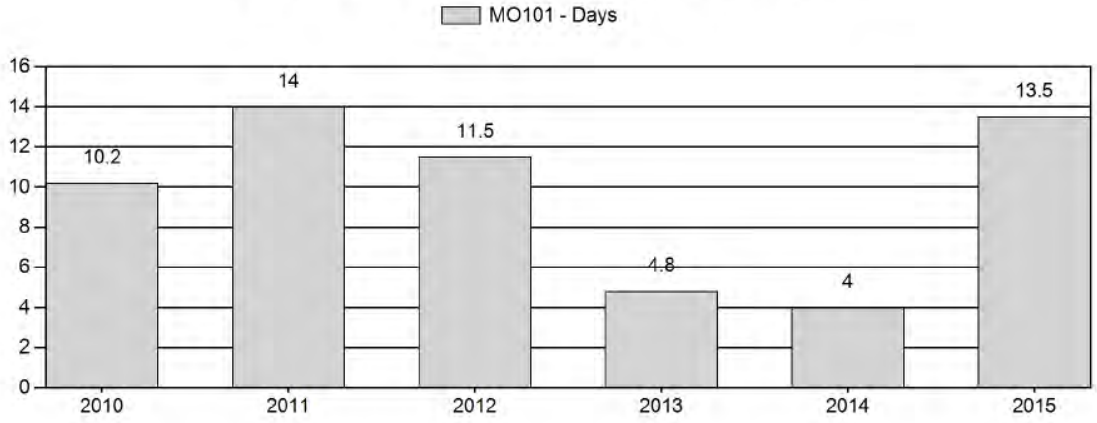
Harvest Success



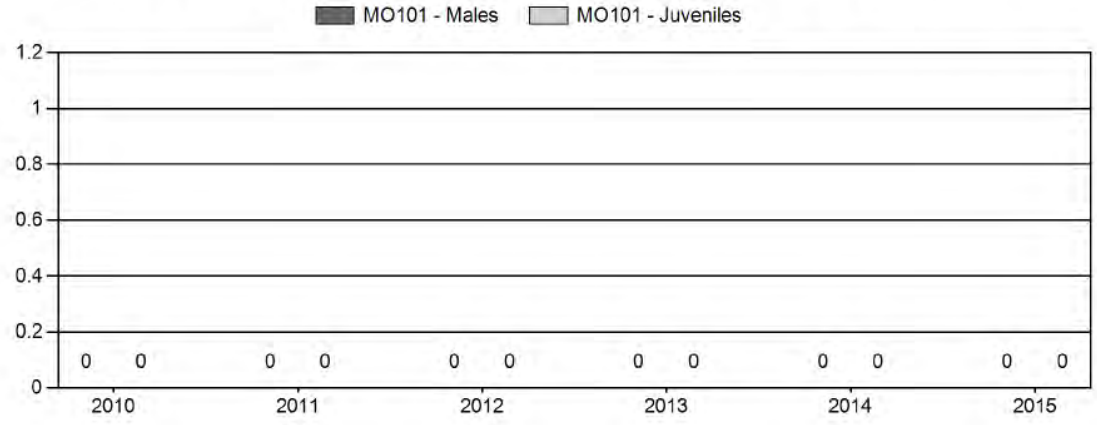
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2016 HUNTING SEASONS
TARGHEE MOOSE HERD (MO101)

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
16, 37	1	Sep. 15	Nov. 15	5	Limited quota	Antlered moose

Special Archery Seasons

Hunt Area	Season Dates	
	Opens	Closes
16, 37	Sep. 1	Sep. 14

Management Evaluation

Management Strategy: Special

Population Objective Type: Limited Opportunity

Primary Objectives:
1. Achieve a 5-year median age of ≥ 4.5 years for harvested moose, and
2. Achieve a 5-year average of ≤ 12 days/animal to harvest.

Secondary Objective:
Achieve a 5-year average of 40% of harvested moose are > 5 years of age.

The Wyoming Game and Fish Department (WGFD) proposed changing the objective for the Targhee Moose Herd from a postseason population objective to a limited opportunity objective in 2014. The objective change was needed because the herd is rarely surveyed due to budget priorities elsewhere and spreadsheet models do not appear to adequately simulate observed population trends. In addition, the interstate nature of the herd poses additional challenges to population surveys and management. A limited opportunity objective was adopted in 2014 after public review, and included primary and secondary objectives (listed above).

In 2015, the median age of harvested moose was 6.5 years (n = 4 samples, range = 3.5-10.5 years). The median age of harvested moose for the past 5 years is 4.5 years (n = 15 samples) (Fig. 1). Therefore, the first primary objective of a median age of ≥ 4.5 years for harvested moose for 5 years is currently being met.

In 2015, the average number of days per animal to harvest was 13.5. This is higher than the last two years, when average days to harvest were 4. The 5-year average of number of days per animal to harvest was 9.6 (Fig. 2). Therefore, the second primary objective of a 5-year average of ≤ 12 days/animal to harvest is currently being met.

In 2015, four hunters submitted tooth samples from harvested moose for aging. Two moose were > 5 years of age (9 and 10 years old). During the past 5 years, 15 hunters have submitted tooth samples for aging. Of those, 7 moose were aged at > 5 years (5.5, 6.5, 7.5, 7.5, 9.5, 10.5, and 10.5 years). Therefore, the secondary objective of at least 40% of harvested moose being > 5 years of age is currently met, although sample sizes are low (Fig. 3).

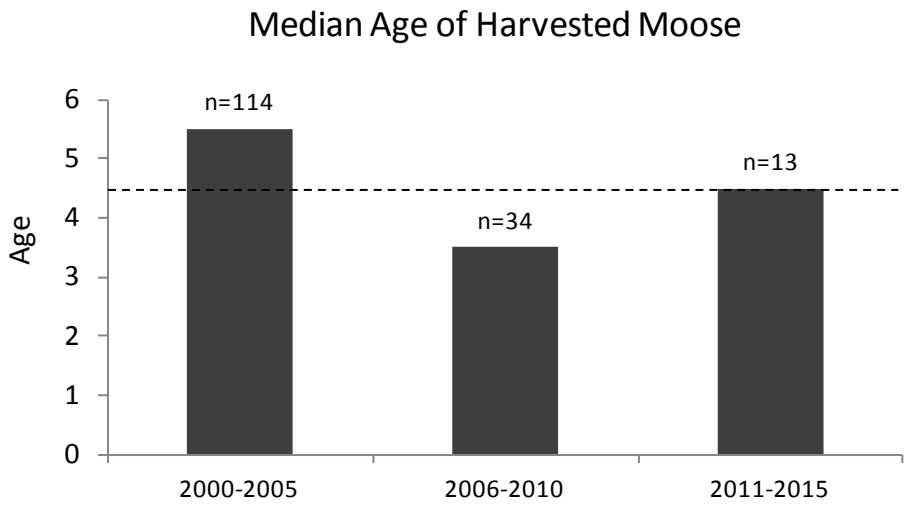


Fig. 1. Median age of harvested moose in the Targhee Herd in 5-year periods, from 2000-2015. The dashed line indicates the objective of ≥ 4.5 years old.

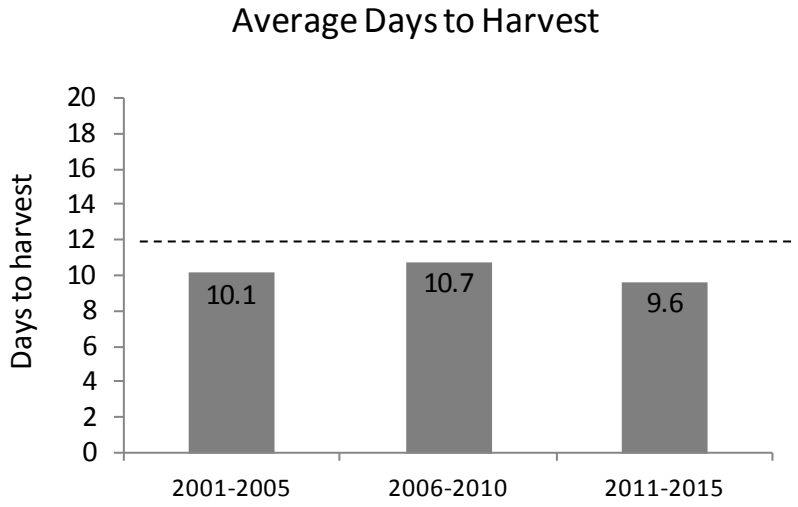


Fig. 2. Average number of days per animal harvested in the Targhee Moose Herd, from 2001-2015. The dashed line indicates the objective of ≤ 12 days per animal harvested.

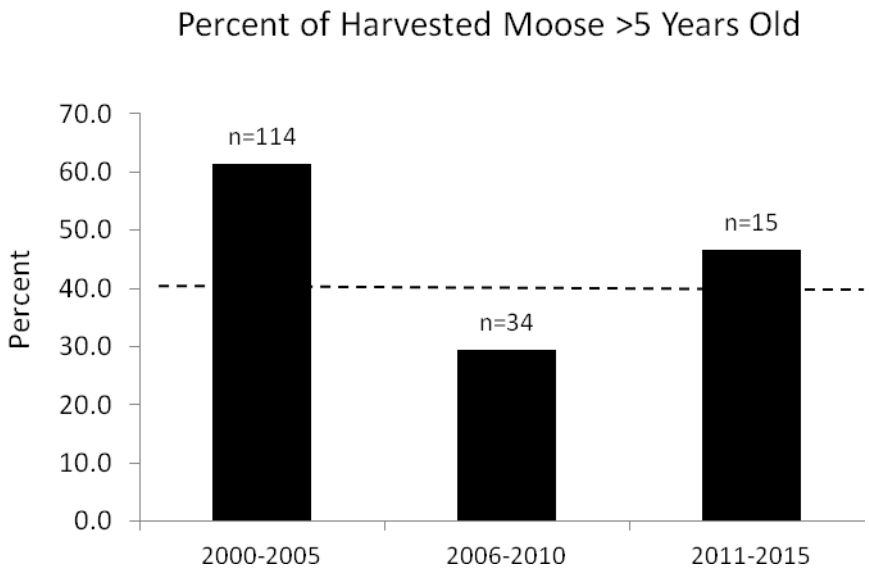


Fig. 3. Percent of harvested moose in the Targhee Moose Herd that are over 5 years old, from 2000-2015. The dashed line indicates the objective of > 40%.

Herd Unit Issues

Spreadsheet models developed for this moose herd do not appear to adequately simulate observed trends. This population is very difficult to survey and manage through harvest due to its interstate nature. Post-season classification surveys are not flown in this herd due to budget constraints. However, moose were opportunistically recorded during an aerial survey of the Targhee bighorn sheep herd in March 2015. Two cows, 2 calves, 5 bulls, and 1 unclassified adult were observed. Winter ranges are primarily low elevation mountain shrub and aspen communities and riparian willow and spruce/fir communities. On more severe winters, moose may move west along riparian corridors towards the Teton River in Idaho. Many of the mountain shrub and aspen communities along the state line are old and decadent. Serviceberry, chokecherry, and mountain mahogany are often over 10 feet tall, above the browse zone for moose. Harvest was as high as 70 moose in 1990 and 1991. License quotas were then decreased as harvest statistics and public comments indicated the population was decreasing. The license quota has been 5 antlered moose in recent years.

Weather

Spring and summer 2015 produced consistent moisture, leading to good forage production. Fall was relatively mild with no significant snowfall until mid-December. By early February, low elevation slopes were beginning to melt out. At the time of the mid-winter survey, winter precipitation was reported at 91% of normal in the Snake River Basin. Please refer to the following web sites for specific weather station data.
http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/snowprec.html and
http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html

Habitat

There are no permanent vegetation transects in moose winter ranges for the Targhee Herd. Several habitat improvement projects are being planned in this herd unit, including the Hill Creek Prescribed Burn, which is scheduled for completion in 2016. In addition, a habitat treatment in Teton Canyon is currently in the planning stages to improve mountain shrub and aspen communities for moose and other big game. The WGFD is assisting Caribou-Targhee National Forest (CTNF) with vegetation monitoring in aspen stands pre and post-treatment. Please refer to the 2015 Annual Report Strategic Habitat Plan Accomplishments for Jackson Region habitat improvement project summaries (https://wgfd.wyo.gov/Habitat/Habitat-Plans/Strategic-Habitat-Plan-Annual-Reports).

Field Data

There were no field data collected in the Targhee Herd Unit during the 2015 biological year.

Harvest Data

To offset observed population declines, antlerless harvest was eliminated from the Targhee moose herd in 2006 and the two hunt areas were combined in 2011. In spite of these changes the moose population did not increase significantly. Data from the 2015 harvest survey indicate that 4 hunters harvested 5 bulls. Harvest success has been consistently high for past 5 years (>80%). The average number of days to harvest was higher in 2015 at 13.5 days compared to 2014 at 4.0 days and 2013 at 4.8 days, however sample size is low. In 2015, hunters harvested a 9.5 year-old and a 10.5 year-old moose, indicating that older age classes are present in the population. In 2015, average antler width of harvested moose was 43.3 inches (max=46 inches).

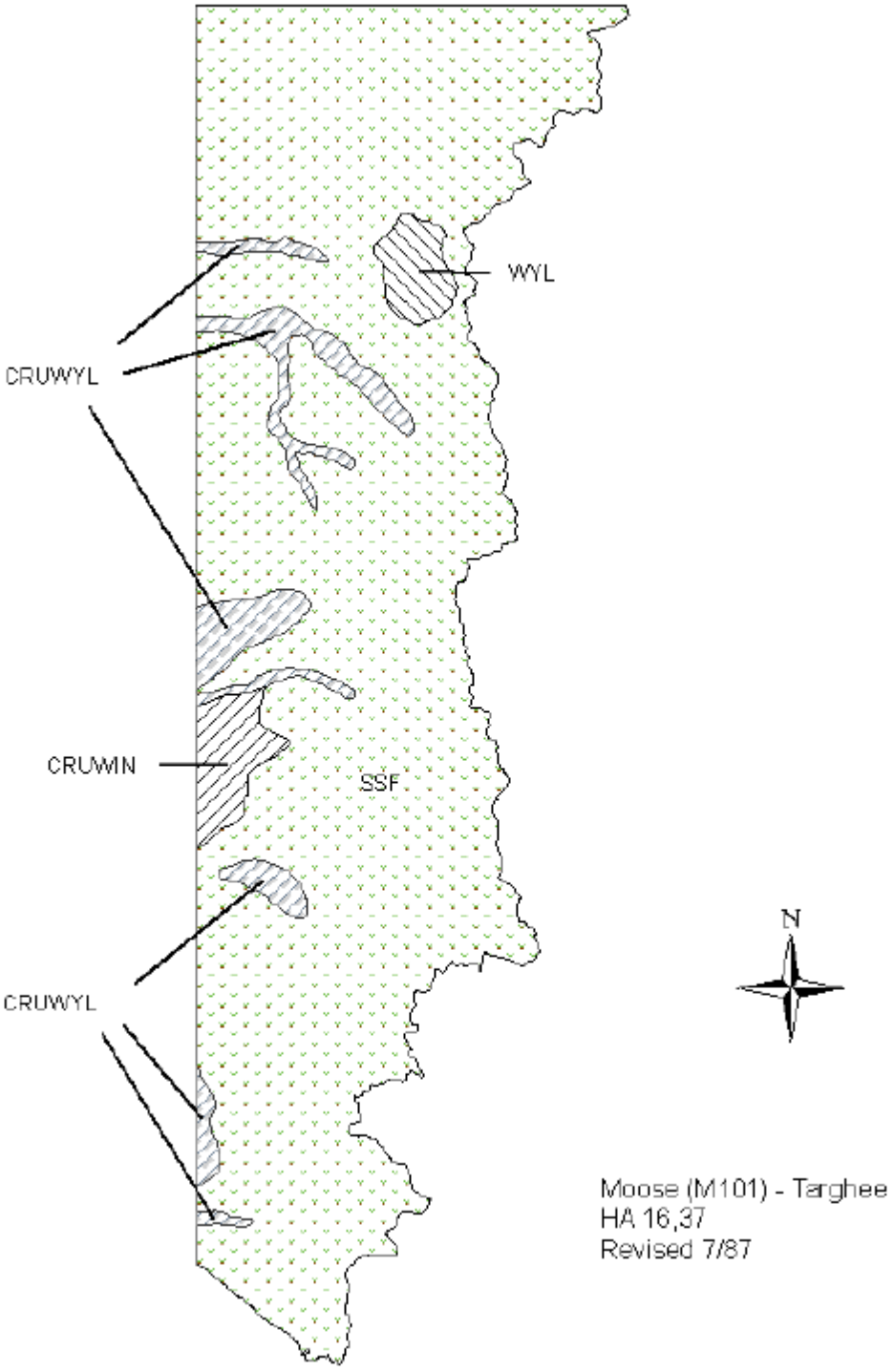
Population

Due to budget constraints, there have been no mid-winter surveys in the Targhee herd since 2009. Based on the 2009 survey this population is likely 150-200 moose. Similar to the Jackson moose herd this population appeared to decline during the early 2000s.

Management Summary

Due to the “interstate” nature of this population, managing this herd is difficult. Moose along the state line spend summer and early fall in Wyoming and winter along drainages in the foothills of the Teton Range. The population has not responded to hunting season changes and it is likely that numerous factors are influencing recruitment and survival of moose in this population, including long-term drought, warming climate, parasites, disease, and predation. Managers plan to maintain limited hunting opportunity west of the Teton Range. Hunter success

and effort from the last few years suggest this population may be increasing. Managers are not proposing an increase to licenses in 2016 and will continue to monitor average age and harvest statistics. Additional effort to contact hunters and increase tooth sample returns will be made. The WGFD continues to work closely with CTNF to develop habitat improvement projects for moose and other big game species.



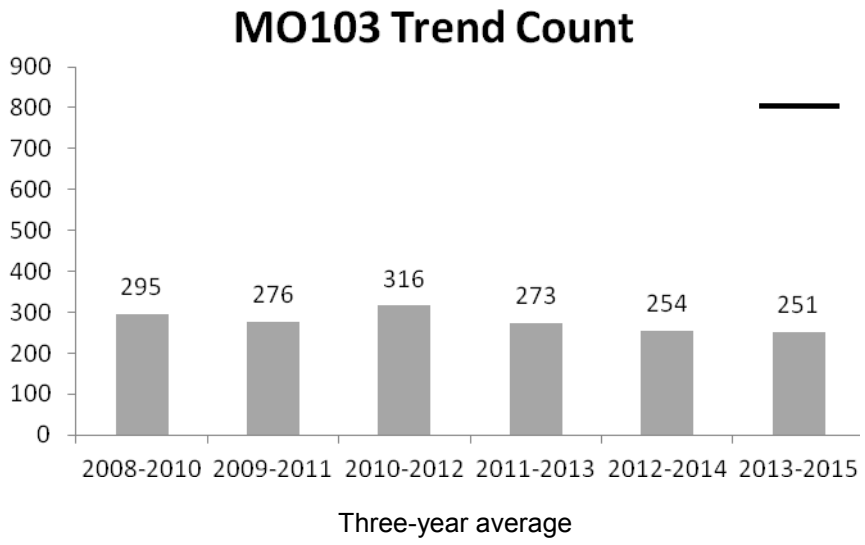
Moose (M101) - Targhee
HA 16,37
Revised 7/87

2015 - JCR Evaluation Form

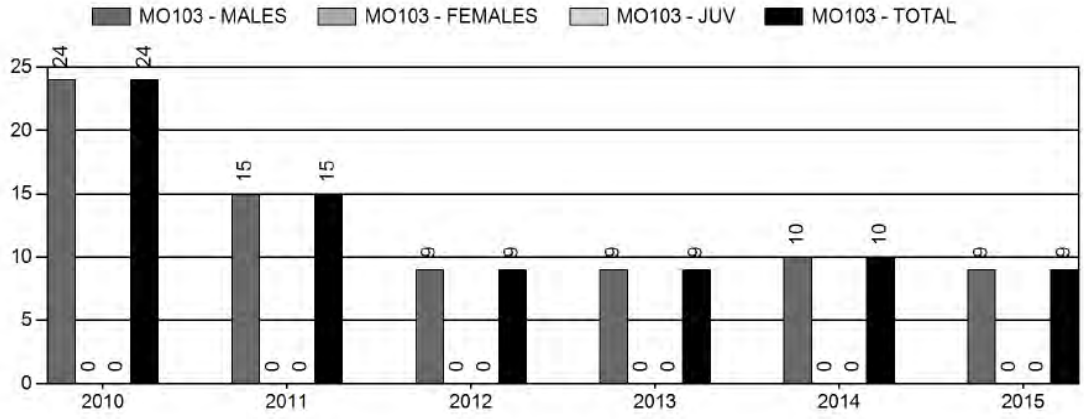
SPECIES: Moose
PERIOD: 6/1/2015 - 5/31/2016
HERD: MO103 - JACKSON
HUNT AREAS: 7, 14-15, 17-19, 28, 32
PREPARED BY: ALYSON COURTEMANCH

	2010 - 2014 Average	2015	2016 Proposed
Trend Count:	295	228	300
Harvest:	13	9	10
Hunters:	15	10	10
Hunter Success:	87%	90%	100%
Active Licenses:	15	10	10
Active License Success	87%	90%	100%
Recreation Days:	101	67	70
Days Per Animal:	7.8	7.4	7
Males per 100 Females:	79	74	
Juveniles per 100 Females	29	45	

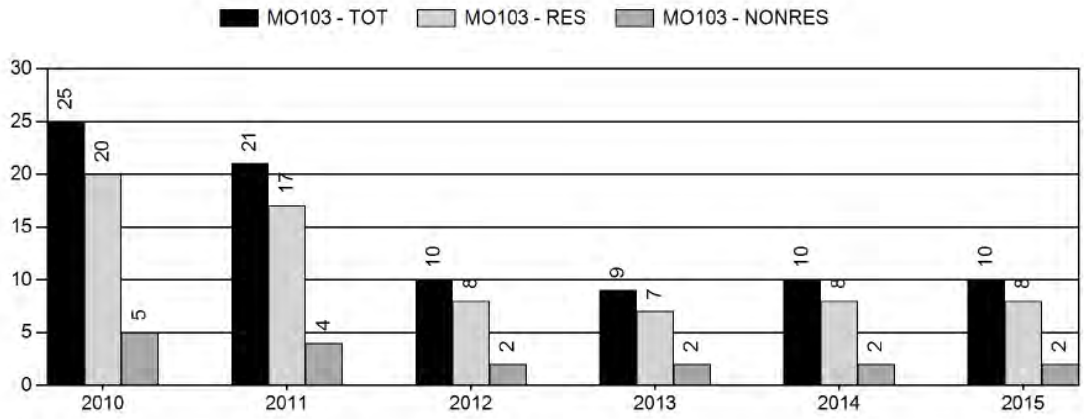
Trend Based Objective (± 20%)	800 (640 - 960)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-71.5%
Number of years population has been + or - objective in recent trend:	20



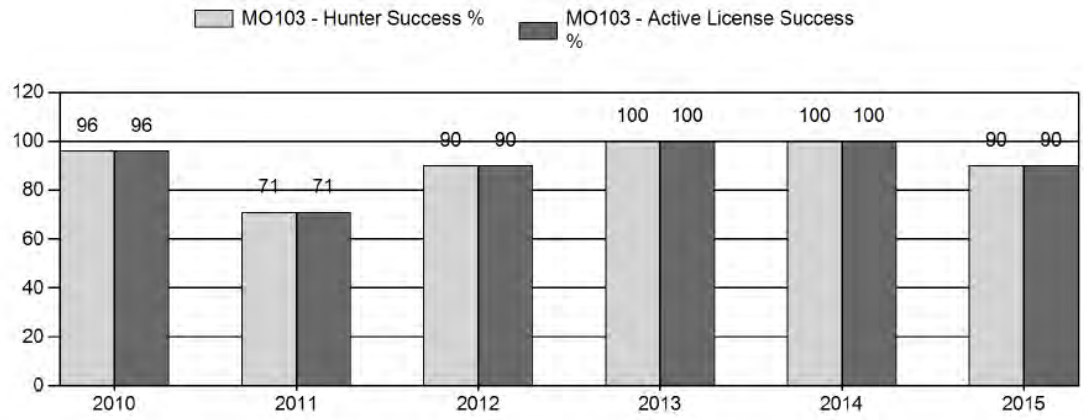
Harvest



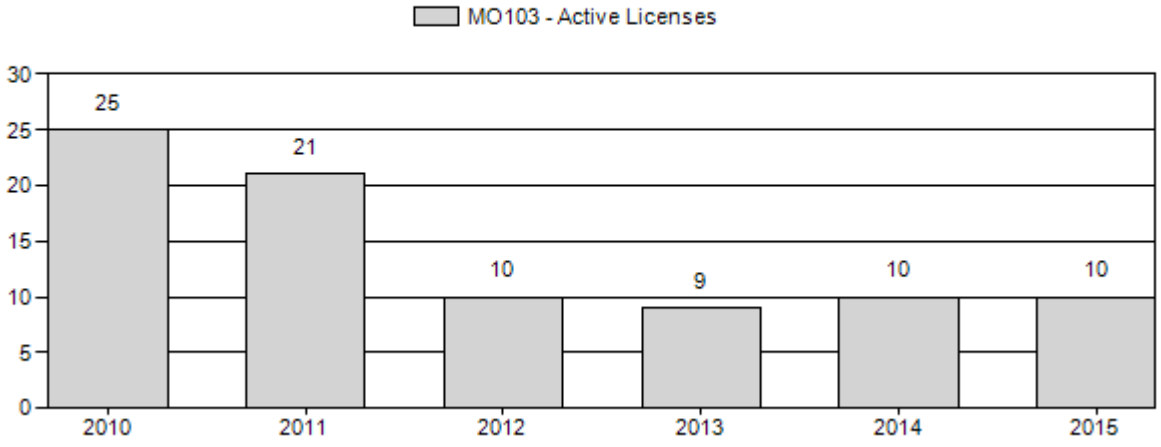
Number of Hunters



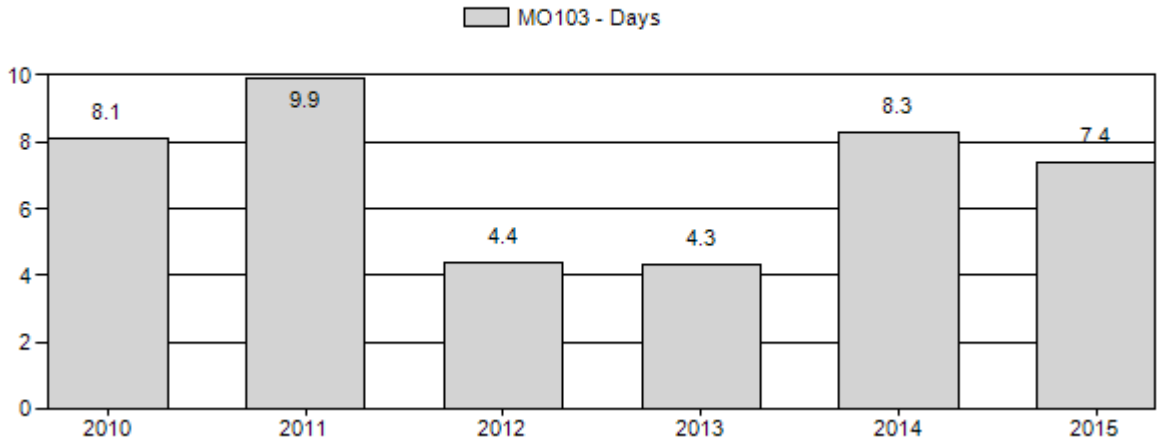
Harvest Success



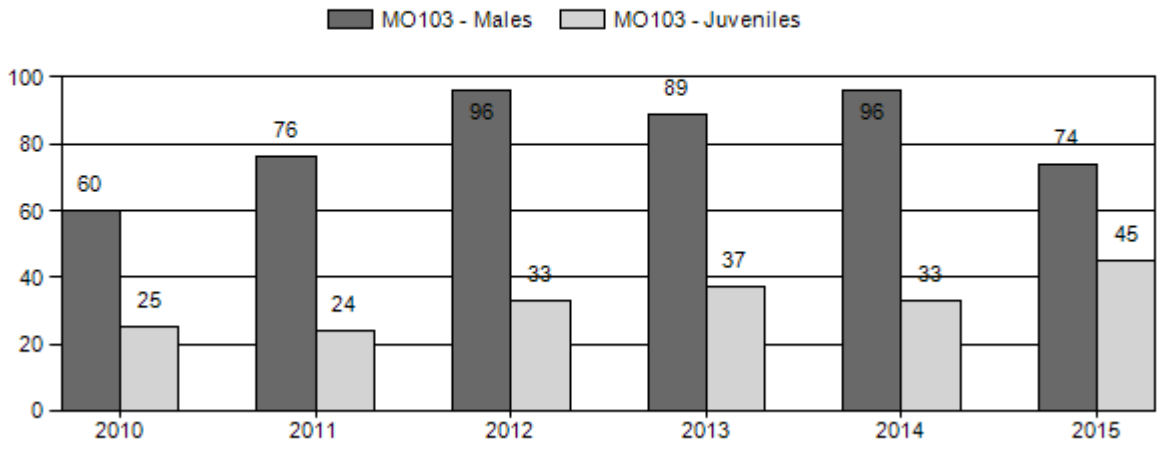
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Moose Herd MO103 - JACKSON

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2010	919	0	0	134	32%	224	54%	55	13%	413	459	0	0	60	± 0	25	± 0	15
2011	896	0	0	113	38%	149	50%	36	12%	298	389	0	0	76	± 10	24	± 5	14
2012	500	0	0	99	42%	103	44%	34	14%	236	389	0	0	96	± 13	33	± 6	17
2013	500	0	112	112	39%	126	44%	46	16%	284	416	0	89	89	± 10	37	± 5	19
2014	450	0	101	101	42%	105	44%	35	15%	241	389	0	96	96	± 12	33	± 6	17
2015	450	0	77	77	34%	104	46%	47	21%	228	395	0	74	74	± 0	45	± 0	26

2016 HUNTING SEASONS
JACKSON MOOSE HERD (MO103)

Hunt Area	Type	Dates of Seasons		Quota	License	Limitations
		Opens	Closes			
7, 14, 15, 19, 32						CLOSED
17, 28	1	Sep. 15	Oct. 31	5	Limited quota	Antlered moose
18	1	Oct. 1	Oct. 31	5	Limited quota	Antlered moose

Special Archery Seasons

Hunt Area	Dates of Seasons	
	Opens	Closes
17, 28	Sep. 1	Sep. 14
18	Sep. 1	Sep. 30

Management Evaluation

Mid-Winter Trend Count Objective: 800
Secondary Objectives:

1. Maintain a 5-year running average of at least 40% of male harvest ≥ 5 years of age, and
2. Maintain a 3-year median age of ≥ 4.5 years old for harvested moose.

Management Strategy: Special
2015 Mid-Winter Trend Count: 228
3-Year Mid-Winter Trend Average (2013-2015): 251

The mid-winter trend count objective for the Jackson Moose Herd is 800 moose. The management strategy is special and the objective and management strategy were last revised in

2015. The herd objective was publicly reviewed in 2015 and changed to a mid-winter trend count objective of 800 moose. The 2015 current trend count is 228 moose and the 3-year average is 251 moose. The first of the secondary objectives is currently not being met. The average percent male harvest ≥ 5 years of age from 2011-2015 was 36.8% (n=33). The average from 2006-2010 was 35.6% (n=133). The second of the secondary objectives is currently being met. The 3-year median age for harvested moose is 4.5 years (n=20) for 2013-2015. The median age from 2010-2012 was 3.5 years (n=27). In general, managers would like to see the average age of harvested moose increase in the herd unit.

Herd Unit Issues

This population is 80% below its postseason management objective. Native moose populations naturally expanded and colonized the Jackson area in the late 19th century. The species' arrival was followed by a classic exponential population increase, peaking at approximately 3,000-5,000 animals (depending on modeling techniques). For many years, the Jackson Herd served as a source for moose transplants in multiple states and supported nearly 500 hunting licenses. However, the population underwent a dramatic population crash beginning in the early 1990s. Despite drastic reductions in hunting licenses, the population has failed to recover and continues to decline. Research on moose in the northern portion of the herd unit indicated that a number of factors are influencing this population (Houston 1968, Berger 2004, Becker 2008, Vartanian 2011). Similar to other moose herds throughout the western United States and New England, the Jackson Herd is impacted by a combination of factors, including long-term drought, severe wildfires, a warming climate, predation, parasites, and disease. Moose in the Jackson Herd are exposed to predation by several large carnivore species. Large scale wildfires during the late 1980s and more recently have influenced summer moose habitat. Parasites such as carotid artery worm and winter ticks, as well as re-colonization by large carnivores pose additional challenges. In spite of hunting season closures and a reduction in the number of licenses, this population has not responded to management changes.

Weather

Spring and summer 2015 produced consistent moisture, leading to good forage production. Fall was relatively mild with no significant snowfall until mid-December. By early February, low elevation slopes were beginning to melt out. The relatively shallow snow depths in winter 2015/2016 result in reduced energy expenditure for moose, but consistent daytime temperatures of 30 and 40 degrees in February cause heat stress for moose. At the time of the mid-winter survey, winter precipitation was reported at 91% of normal in the Snake River Basin. Please refer to the following web sites for specific weather station data.
http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/snowprec.html and
http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html

Habitat

Browsing pressure varies greatly between winter ranges, but on average, about 25% of willow leaders were browsed in winter 2012/2013. Winter ranges were not monitored in winter 2013/2014 or 2014/2015. Live-dead indices are generally positive, indicating that browsing pressure is not preventing willows from reaching their natural height. Monitoring indicates that moose winter ranges are slowly improving north of Jackson. Summer habitat has been modified by several large-scale wildfires in recent years, greatly reducing thermal cover for moose.

The Wyoming Game and Fish Department (WGFD) and Bridger-Teton National Forest (BTNF) initiated a project to monitor the short-term and long-term nutritional changes in moose forage species after wildfire at different severities. This project will track the nutritional content over 10 years of key forage species that burned at several fire severities during the Red Rock Fire in the Gros Ventre in 2011. Also, a current study by a doctoral student at the Wyoming Cooperative Research Unit (Brett Jesmer) is further investigating relationships between habitat condition and moose population performance statewide, including the Jackson herd. Please refer to the 2015 Strategic Habitat Plan Annual Report for Jackson Region habitat improvement project summaries (https://wgfd.wyo.gov/Habitat/Habitat-Plans/Strategic-Habitat-Plan-Annual-Reports).

Field Data

In February 2016, classification surveys were flown over low elevation winter ranges. We observed 228 moose this year. This count is down from 241 observed in 2014 and 284 in 2013. However, a significant portion of winter range in the Gros Ventre was not surveyed this year, which usually supports approximately 30 moose. The calf ratio increased this year to 45 calves:100 cows, which is higher than the 2014 ratio (33:100) and 2013 ratio (37:100). This ratio has been slowly improving since 2008 when a ratio of 15:100 was observed. Notably, calf ratios improved in the Buffalo Valley/Spread Creek area (46 calves:100 cows) where they have been low for years. The overall bull ratio also remained high this year at 74:100.

Sixteen calf/cow pairs were observed in the Gros Ventre, with a calf:cow ratio of 48:100. Sixteen calf/cow pairs were observed in the Buffalo Valley and Spread Creek. Bull ratios continue to be high in the Gros Ventre where open hunt areas are located with 110 bulls:100 cows.

Moose densities in the Willow Flat/Oxbow Bend Area have declined from an average of 4 moose per km^2 in 2000 to 0.16 moose per km^2 in 2010 and 2012. No moose were observed in the Willow Flats area during the February 2016 classification flight. The density of moose has also declined on winter ranges in the Buffalo Valley area. Houston (1968) documented winter moose densities as high as 50 moose per square mile. In recent years, the highest densities observed are 12-17 moose per square mile.

Harvest Data

During the 2015 season, 10 hunters harvested 9 bull moose in the Jackson Herd in Hunt Areas 17/28 and 18 in the Gros Ventre drainage. During 2015, hunter success remained high at 90% and hunter effort was 7.4 days per animal compared to 8.3 days in 2014 and 4.3 days in 2013. Four hunters from Area 17/28 and three hunters from Area 18 submitted tooth samples and antler widths from harvested moose. Moose harvested from Area 17/28 were 3, 4, 6, and 6 years old and moose harvested from Area 18 were all 4 years old. Average antler width from Area 17/28 was 45.2 inches (max=59 inches) and average from Area 18 was 41.8 inches (max=45.5 inches).

Secondary objectives for the Jackson Herd Unit are to, 1) maintain a 5-year running average of at least 40% of male harvest ≥ 5 years of age, and 2) maintain a 3-year median age of ≥ 4.5 years old for harvested moose. The first of the secondary objectives is currently not being met (Fig. 1). The average percent male harvest ≥ 5 years of age from 2011-2015 was 36.8% (n=33). The average from 2006-2010 was 35.6% (n=133). The second of the secondary objectives is currently being met (Fig. 2). The 3-year median age for harvested moose is 4.5 years (n=20) for 2013-2015. The median age from 2010-2012 was 3.5 years (n=27). In general, managers would like to see the average age of harvested moose increase in the herd unit.

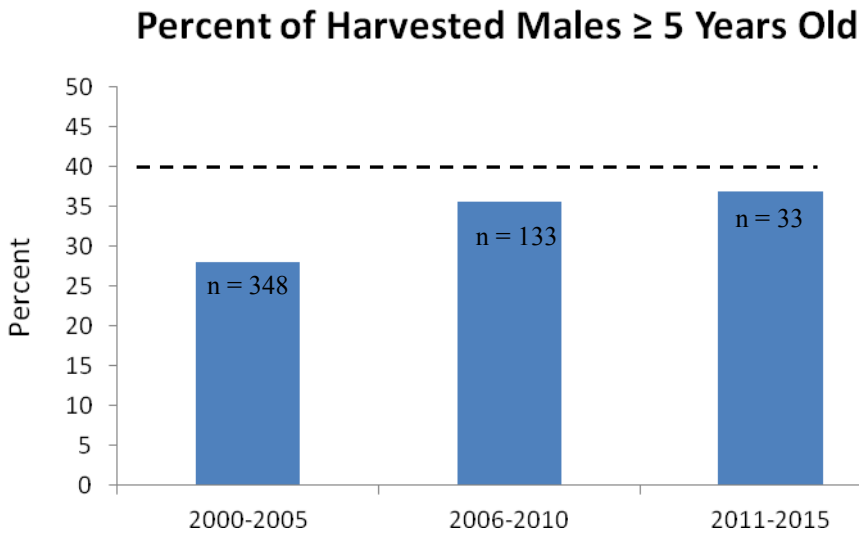


Fig. 1. Average percent of harvested males in the Jackson Herd Unit over 5 years old, in 5-year periods from 2000-2015. The dashed line indicates the objective of ≥ 40%.

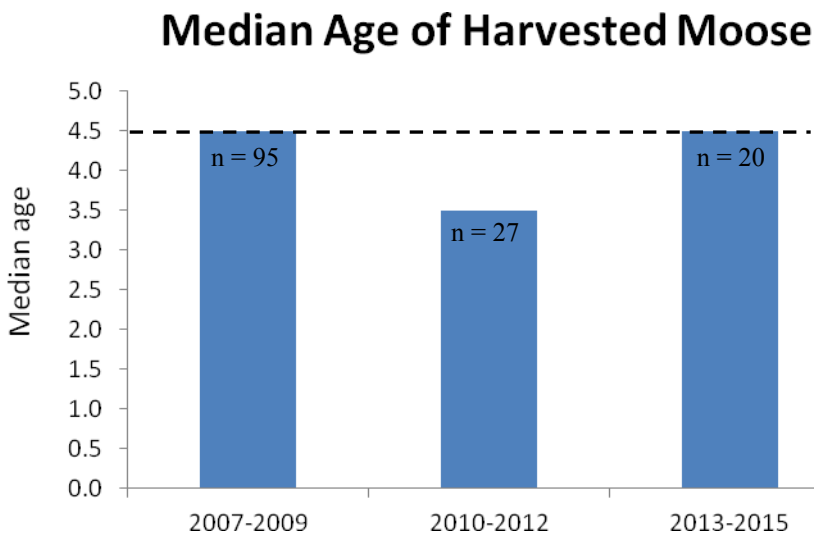


Fig. 2. Median ages of harvested moose in the Jackson Herd Unit, in 3-year periods from 2007-2015. The dashed line indicates the objective of ≥ 4.5 years.

Population

POP II simulations likely overestimated moose numbers in the Jackson population. Spreadsheet models developed for this herd also do not appear to adequately simulate observed trends. Based on the observability of marked animals during recent research projects it is likely there are fewer than 500 animals in this population. Although the population remains low, aerial survey data from recent postseason classifications indicate a high number of bull moose and an improving calf:cow ratio. However, the low number of cows in the population suggests that any present or future recovery will be slow.

Management Summary

To offset observed population declines, antlerless moose hunting was eliminated in the Teton Wilderness in 2001 and in the Gros Ventre drainage in 2004. Antlered moose hunting seasons were closed in the Teton Wilderness in 2011 (Areas 7, 14, 15 and 32), and Areas 17 and 28 were combined into one unit beginning in the 2012 season. Despite these changes the moose population north of Jackson continued to decline through 2015. Although calf:cow ratios have improved in recent years, overall numbers of moose remain low. Even with current calf:cow ratios, any population recovery will be slow due to the low numbers of cow moose.

Conservative hunting seasons are again planned for 2016 with 10 licenses offered for the Gros Ventre drainage. The herd will continue to be closely monitored in future years to evaluate whether additional hunting opportunities can be provided. The high bull:cow ratios indicate that some harvest is sustainable at this time and complete closure to moose hunting in the Jackson Herd is not warranted for 2016.

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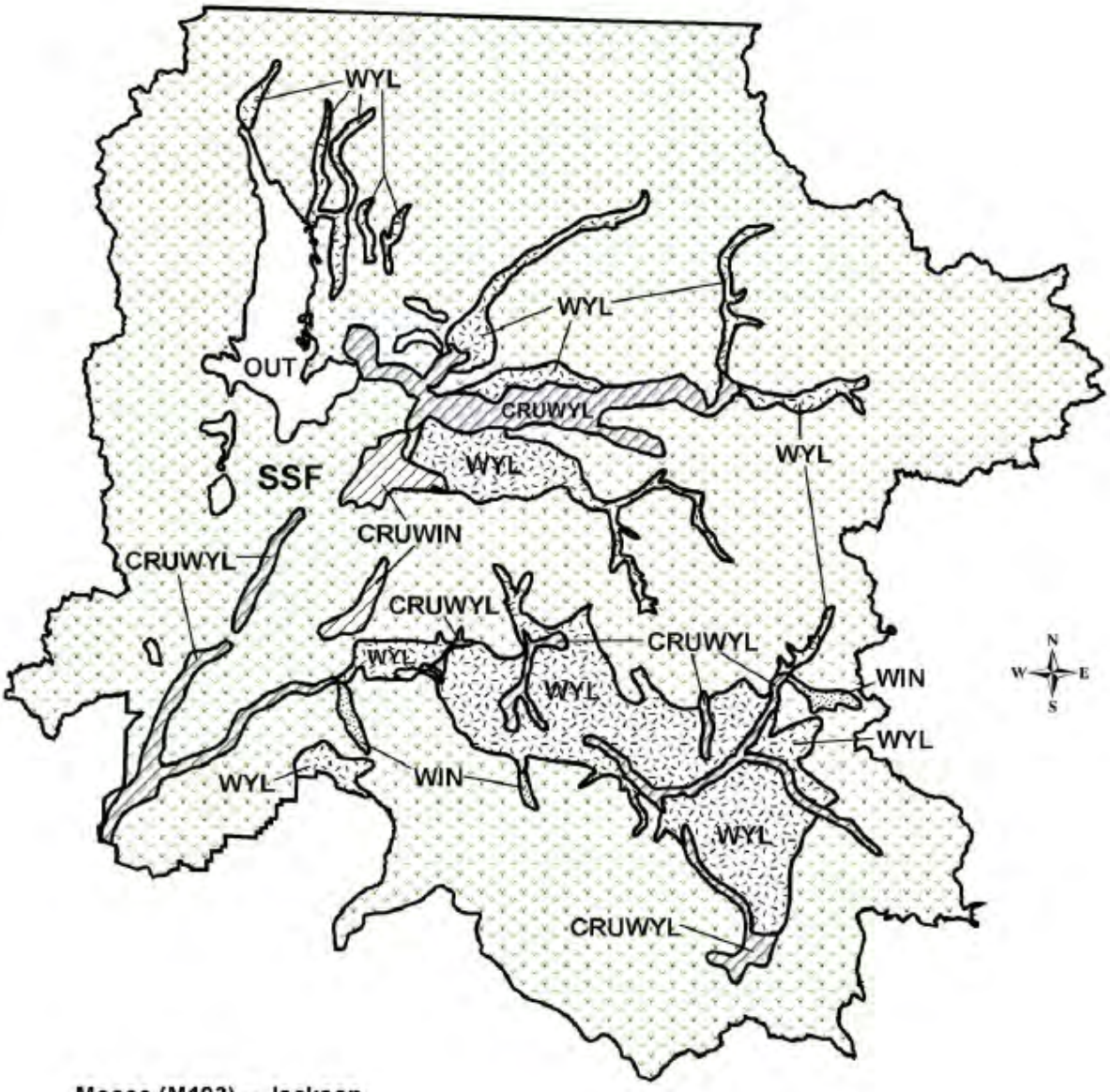

Moose (M103) -- Jackson
HA 7, 14, 15, 17-19, 28, 32
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