

2017 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2017 - 5/31/2018

HERD: MO101 - TARGHEE

HUNT AREAS: 16, 37

PREPARED BY: ALYSON
COURTEMANCH

	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Population:	N/A	N/A	N/A
Harvest:	5	3	5
Hunters:	5	5	5
Hunter Success:	100%	60%	100%
Active Licenses:	5	5	5
Active License Success:	100%	60%	100%
Recreation Days:	31	38	30
Days Per Animal:	6.2	12.7	6

Limited Opportunity Objective:

5-year median age of > 4.5 years for harvested moose

5-year average of <= 12 days/animal to harvest

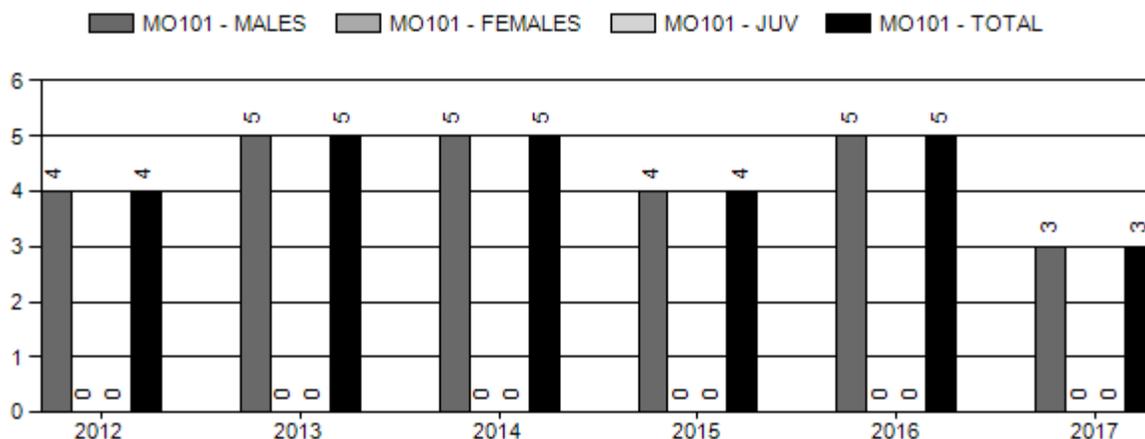
Secondary Objective:

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

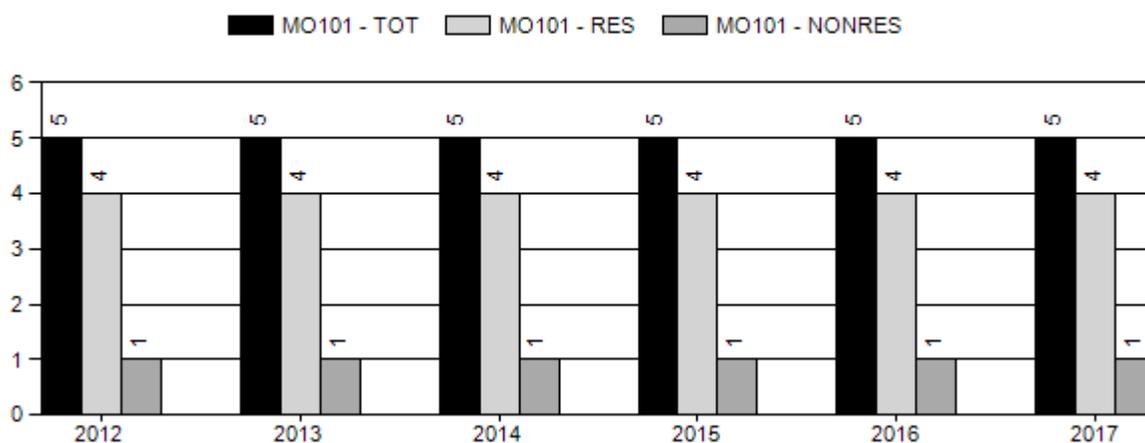
Management Strategy:

Special

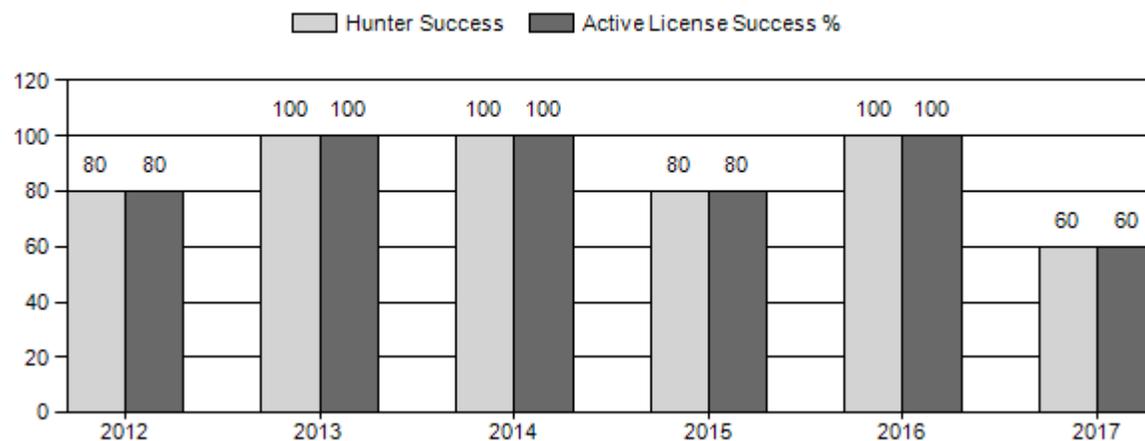
Harvest



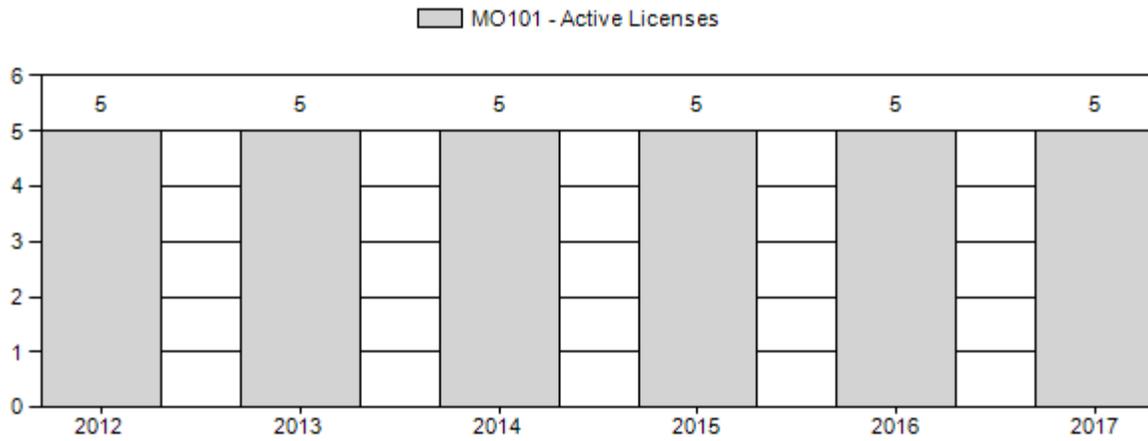
Number of Active Licenses



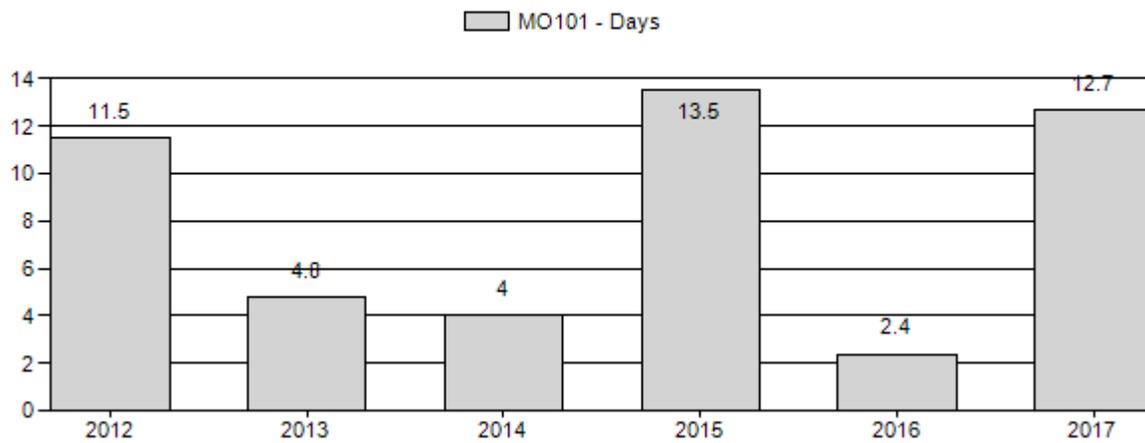
Harvest Success



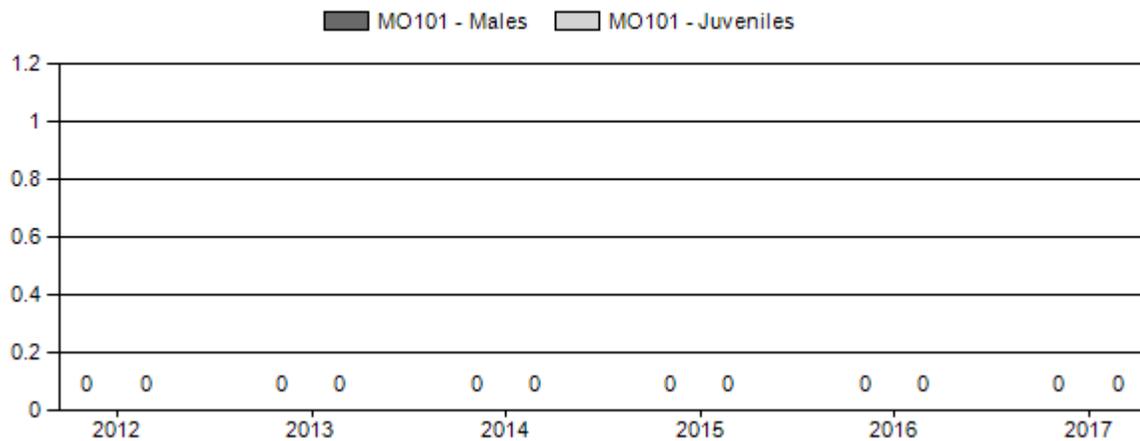
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



**2018 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

Population Objective Type: Limited Opportunity

Median Age Objective: 5-year median age of ≥ 4.5 years for harvested moose

Hunter Effort Objective: 5-year average of ≤ 12 days/animal harvested

Secondary Average Age Objective: 5-year average of 40% of harvested moose > 5 years old

Management Strategy: Special

Most Recent 5-Year Running Median Age: 4.5 years

Most Recent 5-Year Running Average Hunter Effort: 7.5 days

Most Recent 5-Year Running Average Age Objective, % > 5 Years: 47%

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, difficult sightability due to forested habitats, 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).

Median Age Objective - *currently met*

In 2017, the median age of harvested moose was 6.5 years ($n = 3$ samples, range = 3.5-7.5 years old). The median age of harvested moose for the past 5 years is 4.5 years old ($n = 15$ samples). Therefore, the first primary objective of a 5-year median age of ≥ 4.5 years for harvested moose is currently being met.

Hunter Effort Objective – *currently met*

In 2017, the average number of days per animal to harvest was 12.7. The 5-year average of number of days per animal to harvest is 7.5 days. Therefore, the second primary objective of a 5-year average of ≤ 12 days/animal to harvest is currently being met.

Secondary Average Age Objective – *currently met*

In 2017, three hunters submitted tooth samples from harvested moose for aging. Two moose were > 5 years of age (6 and 7 years old) and one moose was < 5 years of age (3 years old). During the past 5 years, 15 hunters have submitted tooth samples for aging. Of those, 7 moose were aged at > 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.

Herd Unit Issues

Spreadsheet models developed for this moose herd do not appear to adequately simulate observed trends, which is why managers proposed changing this herd's objective to Limited Opportunity. 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 and sightability issues in forested habitats. 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 toward 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 2017 produced average moisture. The area received unusually early and deep snow at higher elevations in September and October. This may have affected moose hunter success in the Targhee Herd due to difficult access to the backcountry. Higher elevations in the mountains had snowpack at or above average this winter, however, the winter was exceptionally mild at lower elevations in the valleys around Jackson Hole. The winter snowpack was reported at 119% of average in the Snake River Basin in late February. 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 2018. 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 2017 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 2017 biological year.

Harvest Data

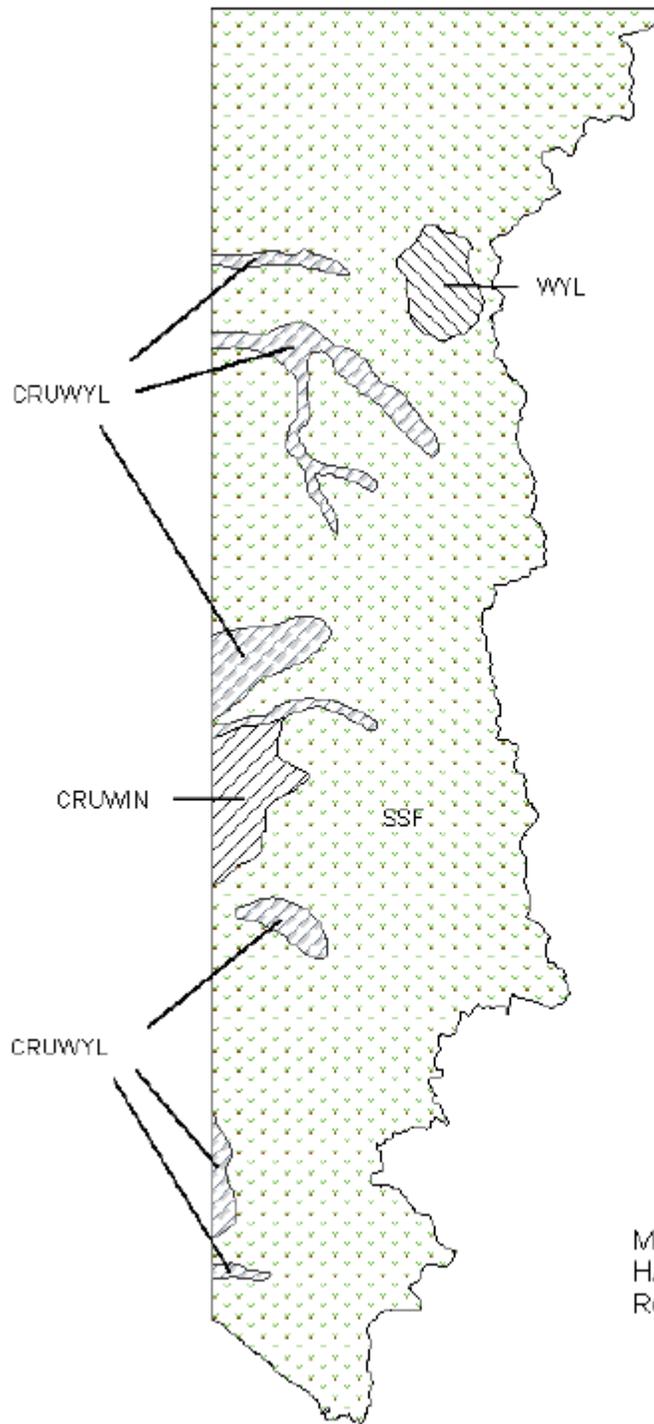
To offset observed population declines, antlerless harvest was eliminated from the Targhee moose herd in 2006 and the two hunt areas were combined in 2011. In spite of these changes the moose population did not increase significantly. Data from the 2017 harvest survey indicate that 5 hunters harvested 3 bulls (60% success), which is lower than normal. Harvest success has been consistently high in recent years (>80%), with the exception of 2017. Early snowfall at high elevations in September and October may have affected moose hunter success by making backcountry access more difficult. The average number of days to harvest in 2017 was 12.7. Days to harvest was also high in 2015 at 13.5 days but decreased in 2016 to 2.4 days. Average days to harvest each year can fluctuate based on hunter effort and selectivity. In 2017, three hunters submitted tooth samples from 3.5, 6.5, and 7.5 year-old moose. Although the sample size is low, these ages indicate that older age classes are present in the population.

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 in a significant way to hunting season changes and it is likely that numerous factors are influencing recruitment and survival of moose including long-term drought, warming climate, parasites, disease, and predation. Managers plan to maintain limited hunting opportunity west of the Teton Range. The herd unit continues to offer high quality antlered moose hunting, and hunter success and effort from the past few years suggest this population may be increasing. Managers did not increase licenses in 2018 but 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

2017 - JCR Evaluation Form

SPECIES: Moose

PERIOD: 6/1/2017 - 5/31/2018

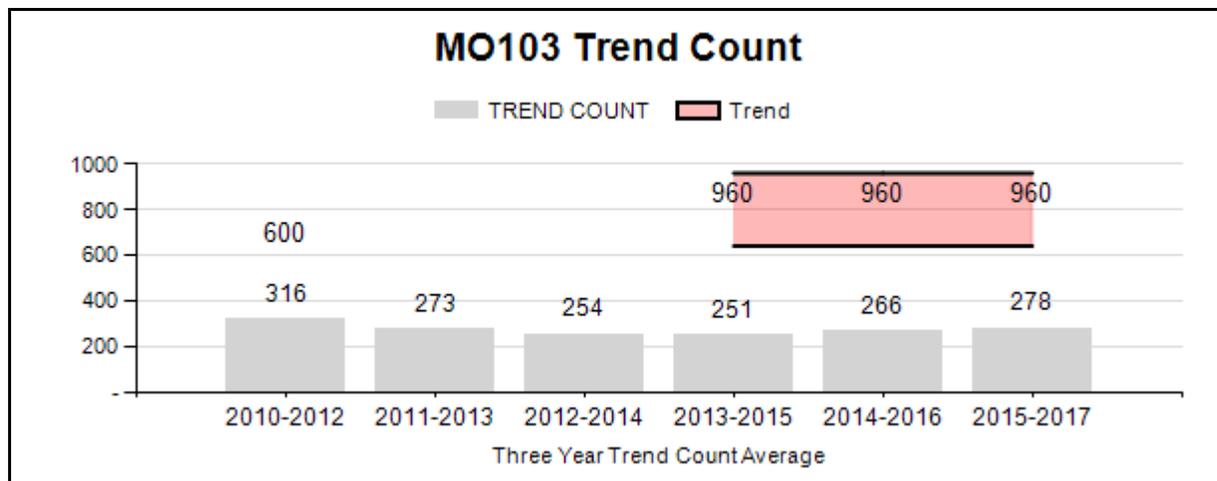
HERD: MO103 - JACKSON

HUNT AREAS: 7, 14-15, 17-19, 28, 32

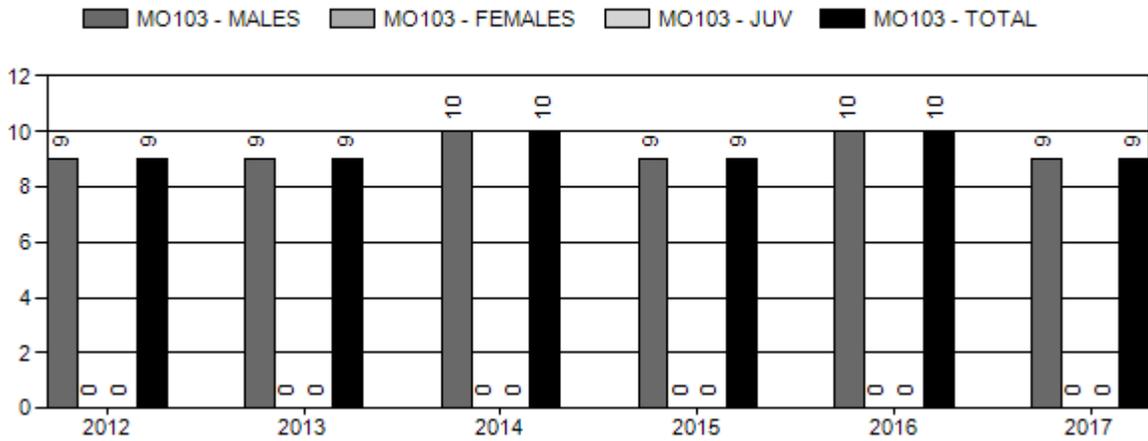
PREPARED BY: ALYSON COURTEMANCH

	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Trend Count:	264	276	350
Harvest:	9	9	10
Hunters:	10	10	10
Hunter Success:	90%	90%	100%
Active Licenses:	10	10	10
Active License Success	90%	90%	100%
Recreation Days:	63	69	70
Days Per Animal:	7	7.7	7
Males per 100 Females:	85	90	
Juveniles per 100 Females	39	38	

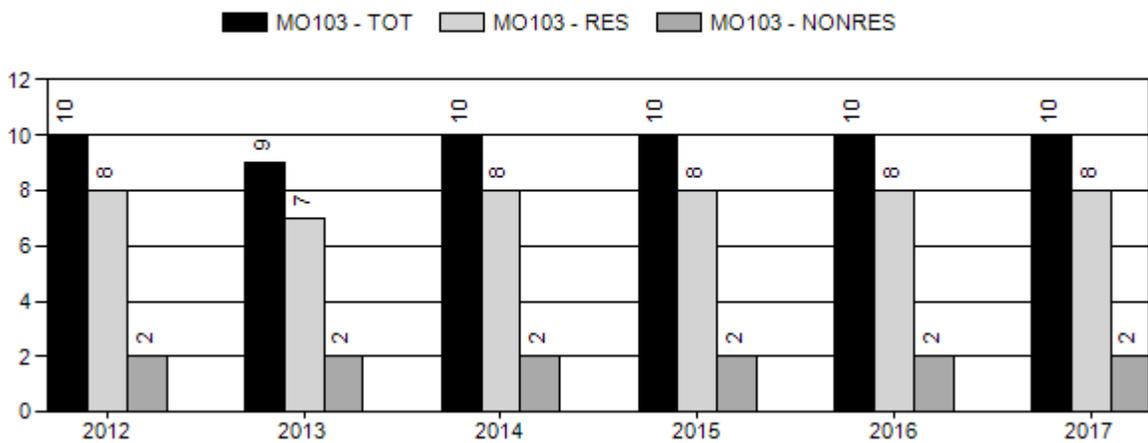
Trend Based Objective ($\pm 20\%$)	800 (640 - 960)
Management Strategy:	Special
Percent population is above (+) or (-) objective:	-65.5%
Number of years population has been + or - objective in recent trend:	0



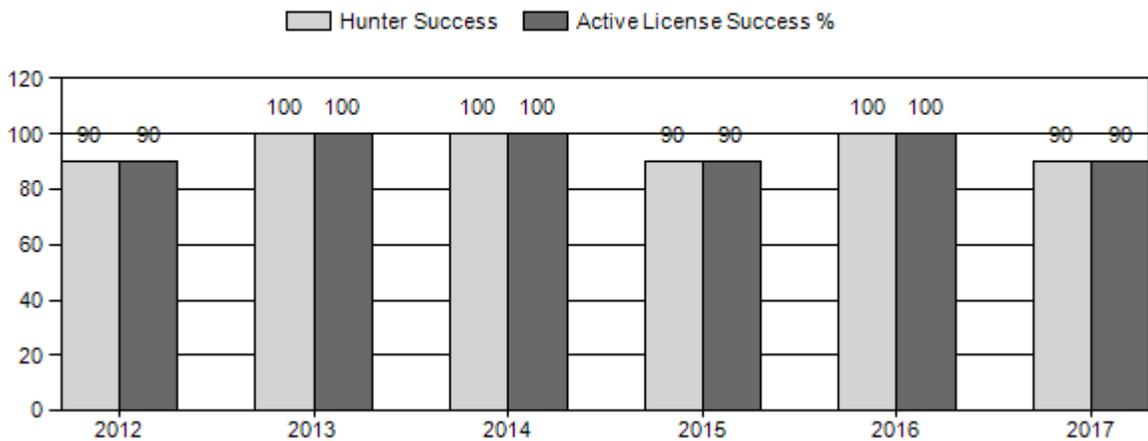
Harvest



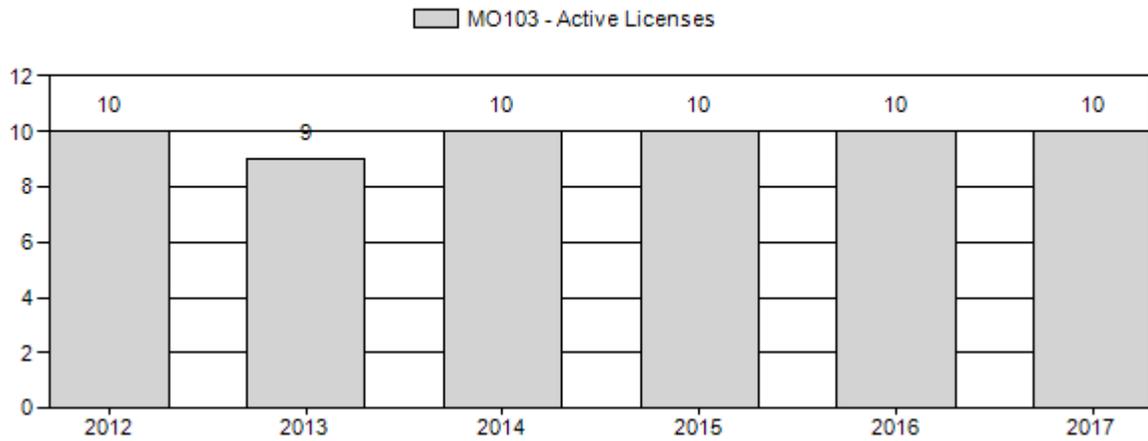
Number of Active Licenses



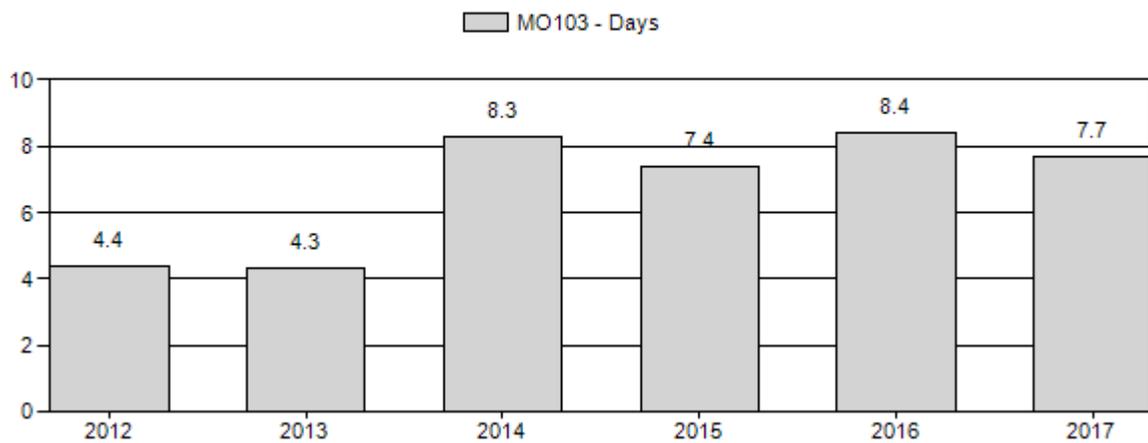
Harvest Success



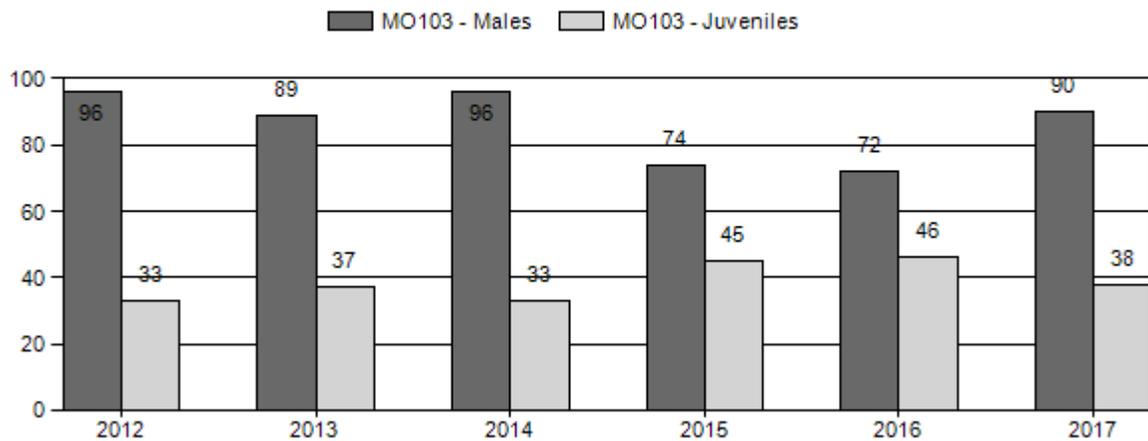
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary for Moose Herd MO103 - JACKSON																		
Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%			Yng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	231	0	77	77	34%	104	46%	47	21%	228	395	0	74	74	± 0	45	± 0	26
2016	346	0	108	108	33%	149	46%	69	21%	326	280	0	72	72	± 0	46	± 0	27
2017	276	0	100	100	40%	111	44%	42	17%	253	250	0	90	90	± 0	38	± 0	20

2018 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 ±20% (640-960)

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

2017 Mid-Winter Trend Count: 276

3-Year Mid-Winter Trend Average (2015-2017): 278

Evaluation: Below objective

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 2017 current trend count is 276 moose and the 3-year average is 278 moose, which is well below the objective.

The first of the secondary management objectives is currently being met. The average percent male harvest ≥ 5 years of age from 2013-2017 was 40.5% (n = 34 samples). The second of the secondary objectives is currently being met. The 3-year median age for harvested moose is 4.5 years (n=21 samples) for 2015-2017. In general, managers would like to see the average age of harvested moose increase in the herd unit.

Herd Unit Issues

This population is 65% below its mid-winter trend count objective of 800 moose. 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 has stagnated at low numbers. 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, habitat conversion from wildfires, warming temperature trends, 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. Despite hunting season closures and a large reduction in the number of licenses, overall population numbers have not responded. In recent years, calf ratios have shown a promising upward trend. Ratios were as low as 15 calves:100 cows in 2008 but were 45:100, 46:100, and 38:100 in 2015, 2016, and 2017, respectively. Even if calf recruitment is improving, overall population numbers will take longer to increase.

Weather

Spring and summer 2017 produced average moisture. The area received unusually early and deep snow at higher elevations in September and October. Higher elevations in the mountains had snowpack at or above average this winter, however, the winter was exceptionally mild at lower elevations in the valleys around Jackson Hole. At the time of the mid-winter survey in February 2018, winter snowpack was reported at 119% of average 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

Recent vegetation monitoring indicates that moose winter ranges are slowly improving north of Jackson after decades of over-browsing in the 1980s and 1990s. Summer habitat has been modified by several large-scale wildfires in recent years, greatly reducing thermal cover for

moose. The lightning-caused Berry Fire started in northern Grand Teton National Park in July 2016 and burned 20,825 acres in the Berry Creek, Owl Creek, Flagg Ranch, and western Teton Wilderness areas. 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 2017 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 2018, classification surveys were flown over low elevation moose winter ranges. We observed 276 moose this year. This total is similar to totals observed since 2012, with the exception of a higher count of 330 moose in February 2017 due to deep snow conditions that congregated moose in willow riparian areas and increased sightability. The calf ratio this year was 38 calves:100 cows, which is slightly lower than the 2016 ratio (46:100) and 2015 ratio (45:100), but still signals good calf survival. This ratio has been slowly improving since 2008 when a ratio of 15:100 was observed. The overall bull ratio also remained high this year at 90:100.

Moose densities in the Willow Flat/Oxbow Bend Area have declined from an average of 4 moose per km² in 2000 to 0.16 moose per km² in 2010 and 2012. Moose were observed during the February 2018 survey in the Willow Flats area for the first time in many years, which is a promising sign.

Harvest Data

During the 2017 season, 10 hunters harvested 9 bull moose in the Jackson Herd in Hunt Areas 17/28 and 18 in the Gros Ventre drainage. During 2017, hunter success remained high at 90% and hunter effort was 7.7 days per animal. Eight hunters submitted tooth samples and antler widths from harvested moose. Moose harvested from Area 17/28 were 3, 4, 8, and 10 years old and moose harvested from Area 18 were 2, 3, 5, and 8 years old.

Secondary objectives for the Jackson Herd Unit are to, 1) maintain a 5-year running average of at least 40% of male harvest \geq 5 years of age, and 2) maintain a 3-year median age of \geq 4.5 years old for harvested moose. The first of the secondary management objectives is currently being met. The average percent male harvest \geq 5 years of age from 2013-2017 was 40.5% (n = 34 samples). The second of the secondary objectives is currently being met. The 3-year median age for harvested moose is 4.5 years (n=21 samples) for 2015-2017. In general, managers would like to see the average age of harvested moose increase in the herd unit.

Population

Past POP II model 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 sightability 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 has not recovered. 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 2018 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 2018.

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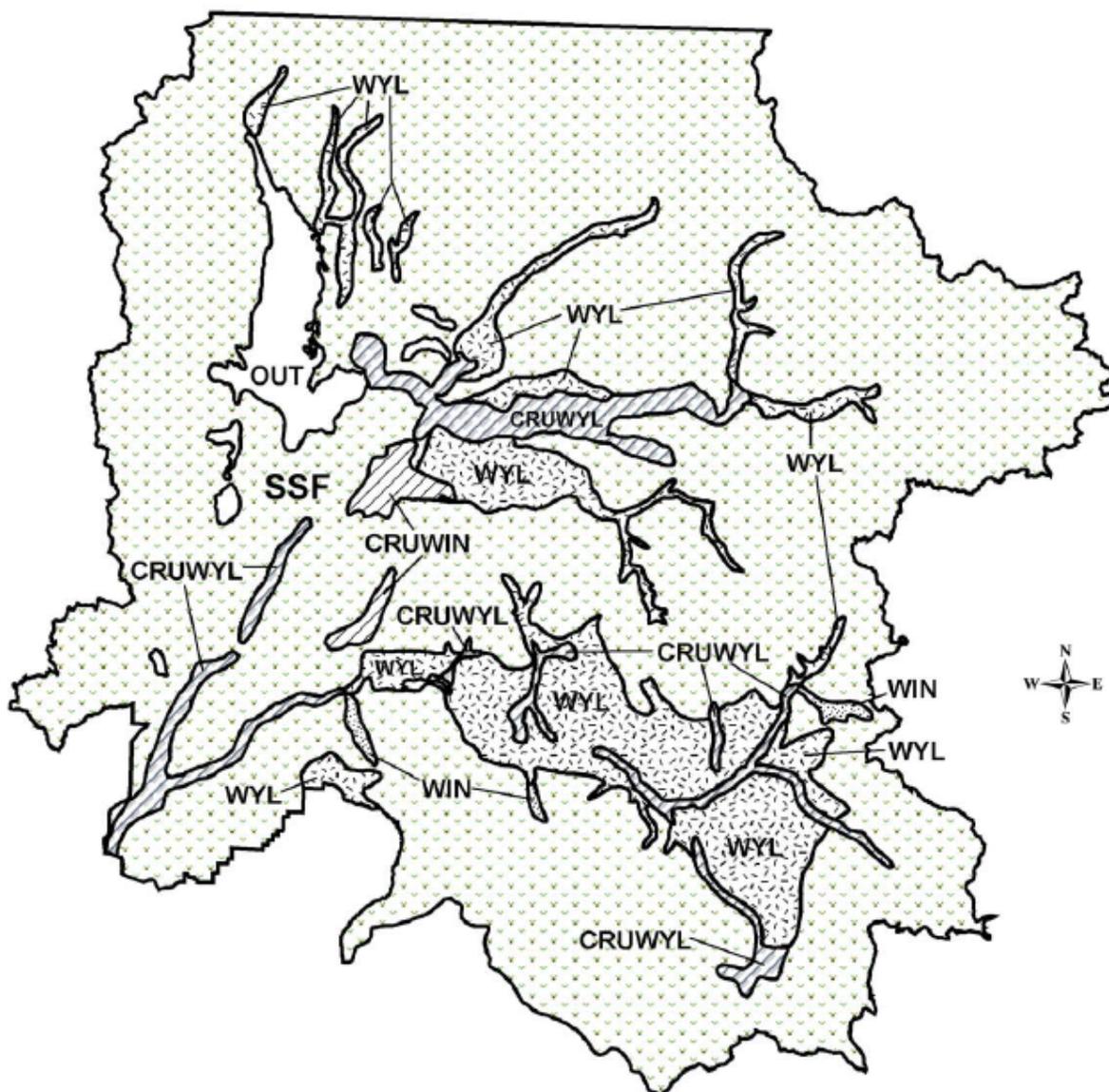
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Moose (M103) -- Jackson
HA 7, 14, 15, 17-19, 28, 32
Revised 11/1994