

2017 - JCR Evaluation Form

SPECIES: Moose

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

HERD: MO545 - SNOWY RANGE

HUNT AREAS: 38, 41

PREPARED BY: WILL SCHULTZ

	<u>2012 - 2016 Average</u>	<u>2017</u>	<u>2018 Proposed</u>
Trend Count:	40	169	180
Harvest:	46	42	42
Hunters:	52	43	43
Hunter Success:	88%	98%	98 %
Active Licenses:	52	43	43
Active License Success	88%	98%	98 %
Recreation Days:	426	390	390
Days Per Animal:	9.3	9.3	9.3
Males per 100 Females:	119	93	
Juveniles per 100 Females	50	45	

Trend Based Objective (± 20%) 75 (60 - 90)

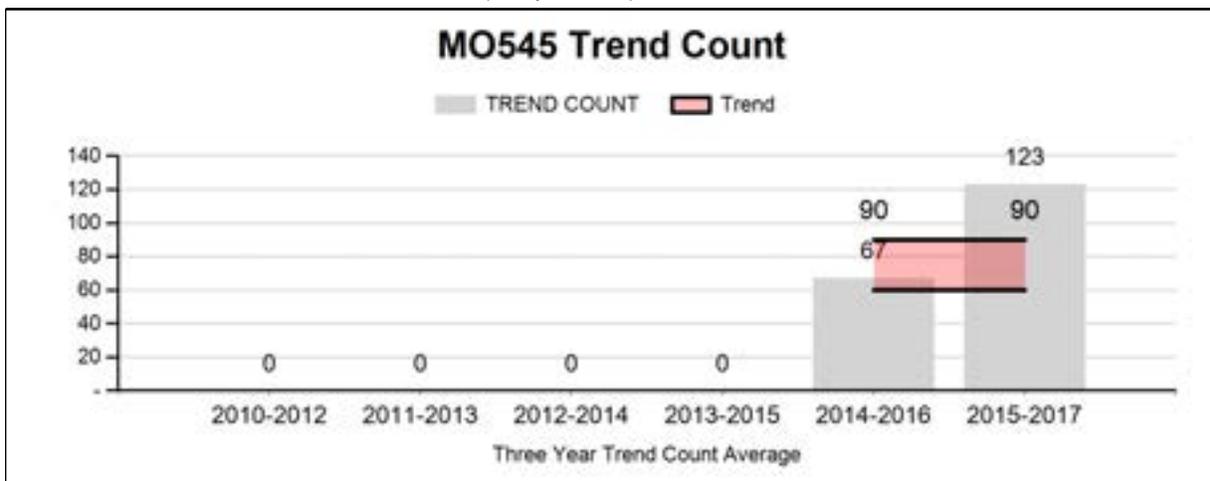
Management Strategy: Special

Percent population is above (+) or (-) objective: 125%

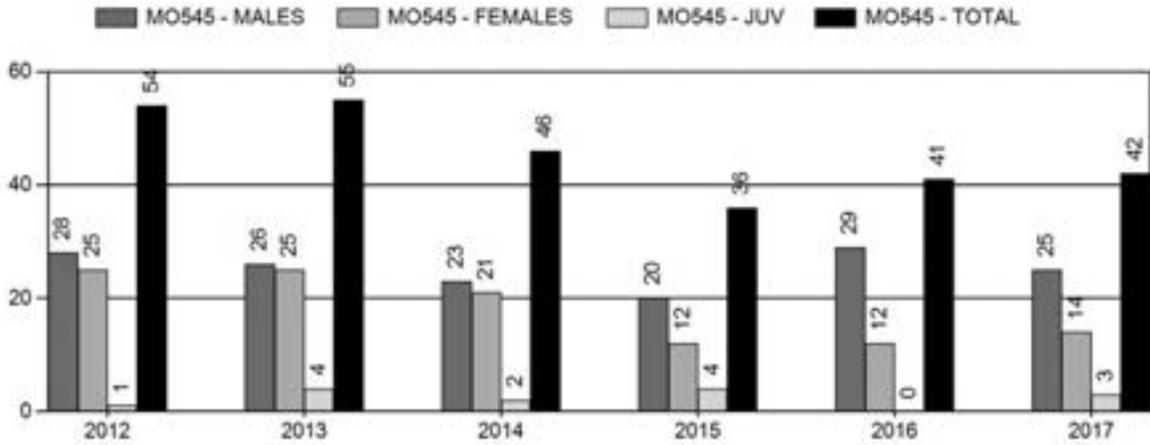
Number of years population has been + or - objective in recent trend: 2

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

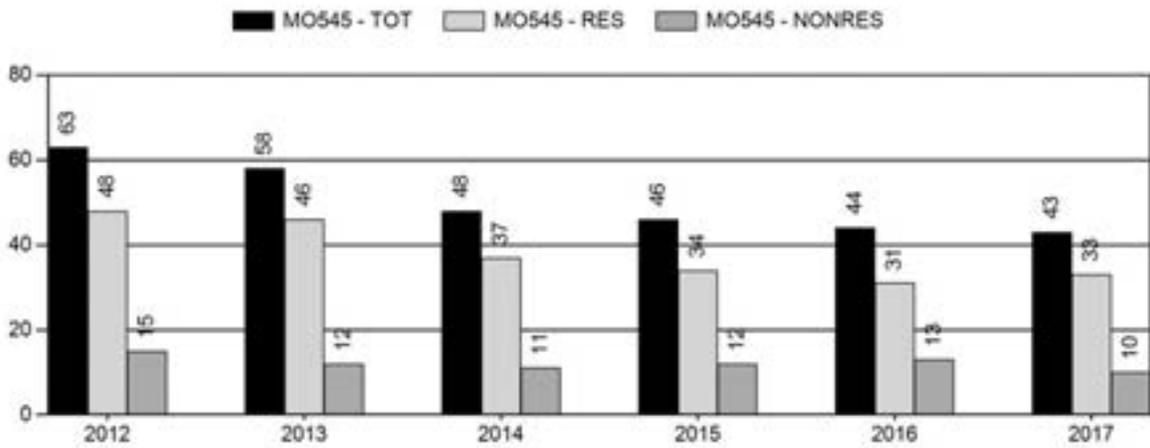
	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	NA%	NA%
Males ≥ 1 year old:	NA%	NA%
Juveniles (< 1 year old):	NA%	NA%



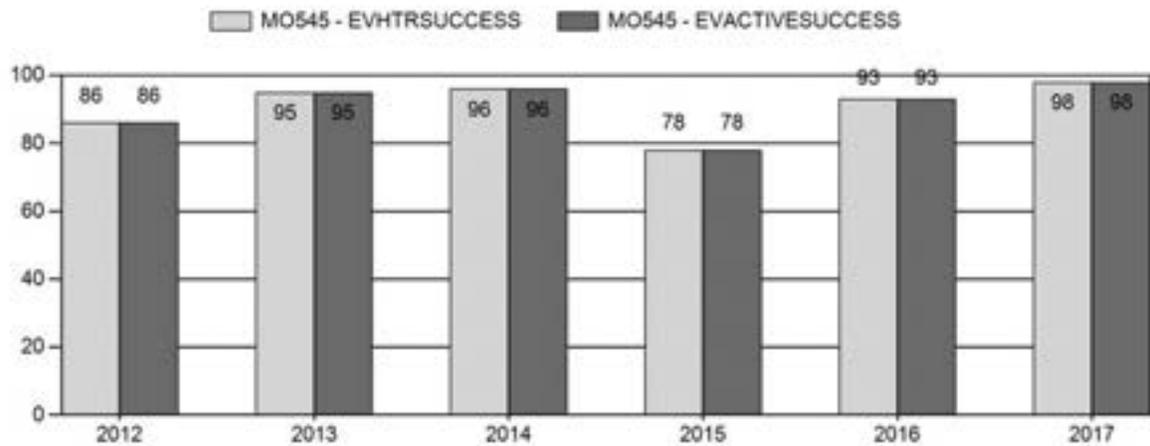
Harvest



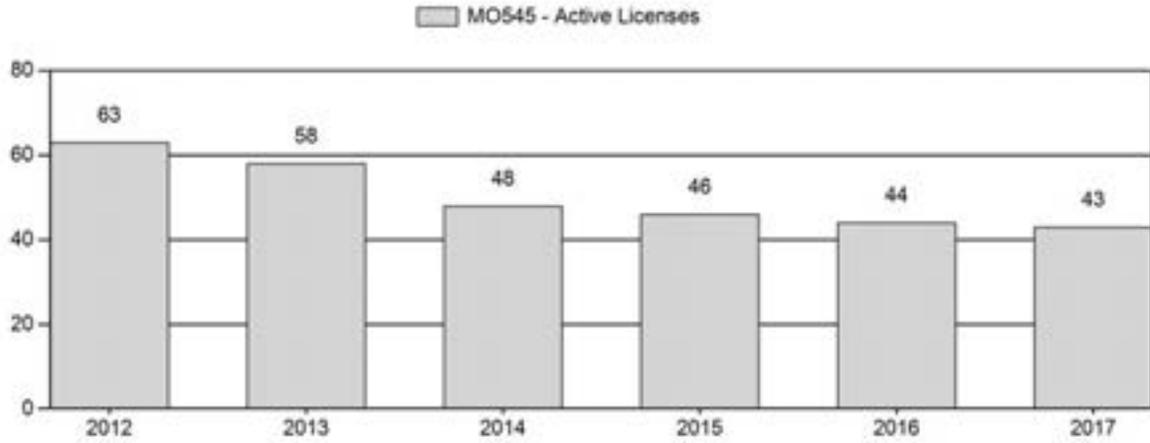
Number of Active Licenses



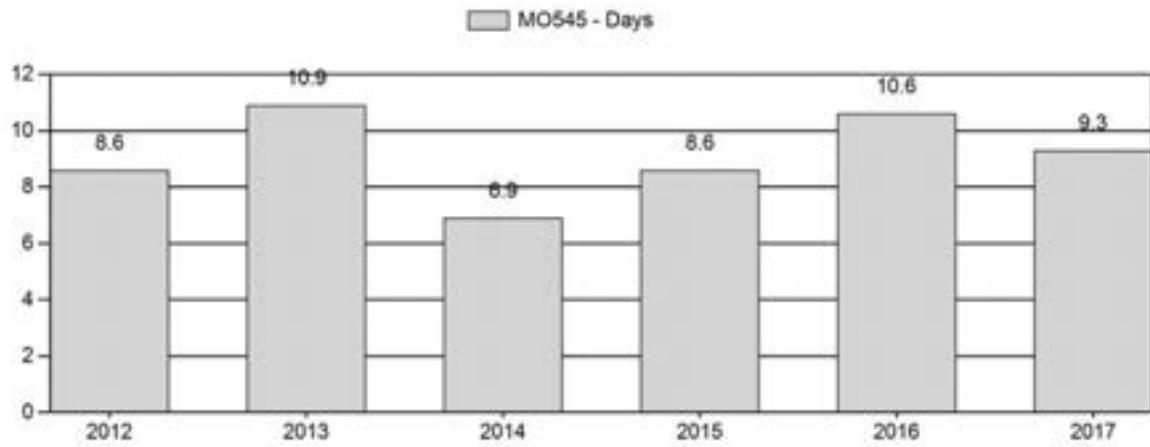
Harvest Success



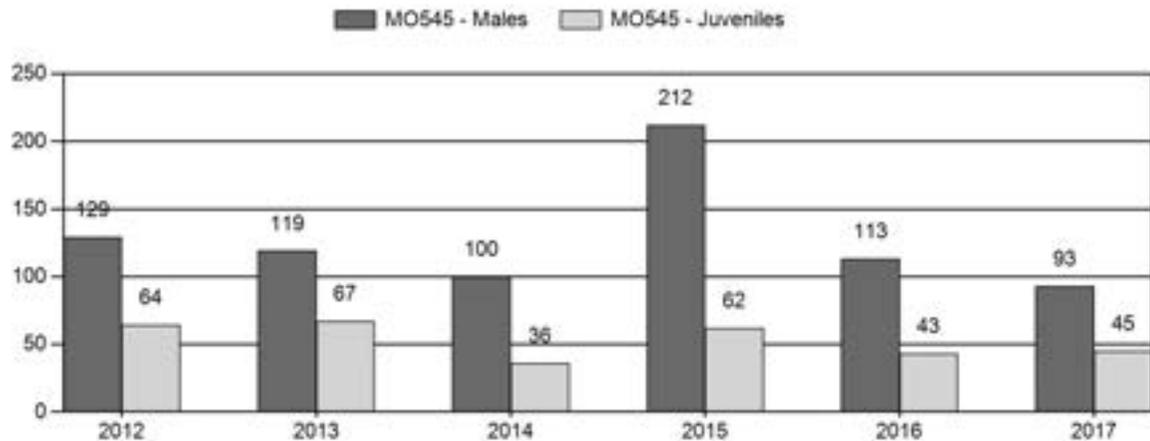
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2012 - 2017 Postseason Classification Summary

for Moose Herd MO545 - SNOWY RANGE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2012	0	4	14	18	44%	14	34%	9	22%	41	0	29	100	129	± 0	64	± 0	28
2013	0	5	27	32	42%	27	35%	18	23%	77	0	19	100	119	± 0	67	± 0	31
2014	266	2	20	22	42%	22	42%	8	15%	52	254	9	91	100	± 35	36	± 17	18
2015	0	0	17	17	57%	8	27%	5	17%	30	246	0	212	212	± 0	62	± 0	20
2016	0	9	77	86	44%	76	39%	33	17%	195	0	12	101	113	± 0	43	± 0	20
2017	0	17	49	66	39%	71	42%	32	19%	169	0	24	69	93	± 0	45	± 0	23

**2018 HUNTING SEASON RECOMMENDATIONS
SNOWY RANGE MOOSE (MO545)**

Hunt Area	Type	Season Dates		Quota	License	Limitations
		Opens	Closes			
38, 41	1	Oct. 1	Nov. 14	20	Limited quota	Any moose, except cow moose with calf at side
	4	Oct. 1	Nov. 14	20	Limited quota	Antlerless moose, except cow moose with calf at side
	Archery	Sep. 1	Sep. 30			Refer to license type and limitations in Section 3 of Chapter 8

Hunt Area	License Type	Quota change from 2017
Herd Unit Total		None

Management Evaluation

Current Management Objective: Mid-Winter Trend Count of 75 Moose

Secondary Management Objectives:

- a) 3-yr. average of ≥ 4 years of age median for harvested bulls.
- b) 3-yr. average of $\geq 40\%$ of bulls in harvest = ≥ 5 years of age.
- c) Maintain sustainable communities of willow species preferred by moose

Management Strategy: Special

2017 Mid-Winter Trend Count: 169 Moose

Moose in the Snowy Range herd unit are managed toward a mid-winter trend count of 75 moose. A moose population model has not been developed for this herd unit. The herd is managed under a special management strategy. The management objective was last reviewed in 2016 and changed from a postseason population objective of 100 moose to the mid-winter trend count of 75 moose.

Herd Unit Issues

The Snowy Range herd unit stretches across southern Wyoming, along the Colorado border, from Baggs to Cheyenne. Moose are found year-round in areas on Pole Mountain, Sierra Madre Mountains, and most notably, the Snowy Range Mountains. These moose descended from moose transplanted in Colorado and historically were not native to this area. Challenges for managing moose in this herd unit include a rapidly changing forest ecosystem, high infestation rates for parasites, and human conflict/safety. Limited population monitoring for moose has been an issue in this herd unit in the past.

Weather

Temperature and precipitation data was obtained for the National Oceanic and Atmospheric Administration (NOAA) climatic Division 10 (Upper Platte), <https://www.ncdc.noaa.gov/cag/> to illustrate weather conditions thus far, during bio-year 2017 (Figures 1 and 2). These figures also include data from January - May of bio-year 2016 to describe the weather conditions immediately preceding bio-year 2017. Monthly mean temperatures in the winter months of bio-year 2016 and 2017 were slightly warmer than the 50-year monthly means but otherwise temperatures were similar to the 50-year monthly means. The summer of bio-year 2017 was drier than the 50-year average. Otherwise, relatively favorable weather conditions were experienced in Division 10 throughout the remainder of bio-year 2017.

Figure 1. January 2017 - January 2018 mean monthly temperatures and 50-year monthly means for NOAA climatic Division 10, Wyoming.

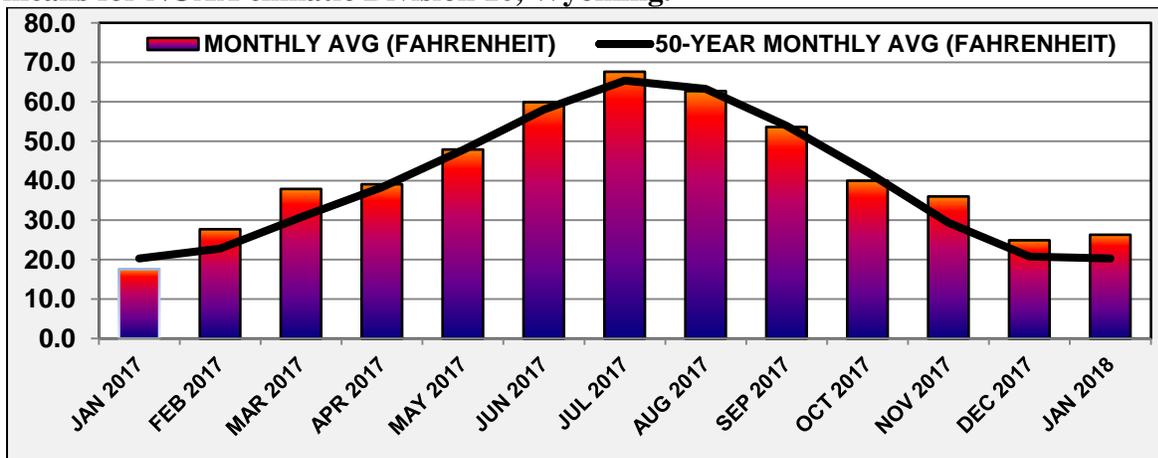
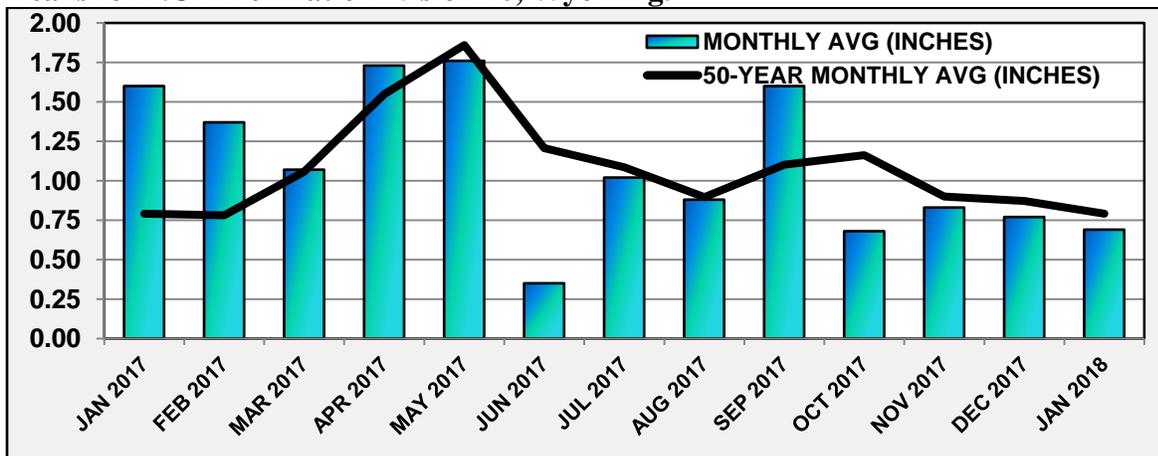


Figure 2. January 2017 - January 2018 mean monthly precipitation and 50-year monthly means for NOAA climatic Division 10, Wyoming.



Habitat

Positive trends in habitat conditions were generally observed in bio-year 2017 due to adequate amounts of spring precipitation being received in this herd unit. No willow browse monitoring was conducted in bio-year 2017.

Field Data

We conducted our second annual mid-winter trend count for this herd unit in January of 2018. We again preselected several areas to systematically search for moose and spent approximately 13 hours of helicopter flight time conducting the survey (Figure 3). We observed 169 moose and were able to classify all of these moose by sex and age. Several of the moose were actually observed between the preselected search areas but we included them in our trend count sample as future surveys are likely to produce similar observations. The results from the classifications produced ratios were 93 bulls/100 cows and 45 calves/100 cows.

Harvest Data

A total of 24 bulls were harvested by 20 Type 1 licensed hunters, 3 nonresidents with Wyoming Governor's licenses, and the 2017 Wyoming Super Trifecta Tag winner for a harvest success rate of 100%. Type 4 license holders harvested 14 cows, 3 calves, and 1 illegal yearling bull, for a harvest success rate of 90%.

The Snowy Range herd unit has a reputation for producing trophy quality bulls, and this continued again in 2017. Median age for tooth samples (n=10) from harvested bulls remained at 5-years of age in 2017 (Figure 4). The 3-year running average for median age of harvested bulls increased slightly to 5.0 years of age (Figure 5). The proportion of bulls in the harvest which were 5-years or older decreased to 53% (Figure 6). Overall, the bull harvest continued to be within the Department's parameters for "prime-age bulls" (Thomas 2008).

The tooth age samples (n=10) for antlerless moose in the 2017 harvest included 2 male and 1 female calves (Figure 7). The proportion (40%) of antlerless harvest ≤ 2 years in age was 38% lower than the 2016 proportion.

Figure 3. Moose observations and flight track (flight track missing for Big Creek, Savage Run Wilderness, and Platte River Wilderness) from the mid-winter trend count in the Snowy Range moose herd unit, Wyoming.

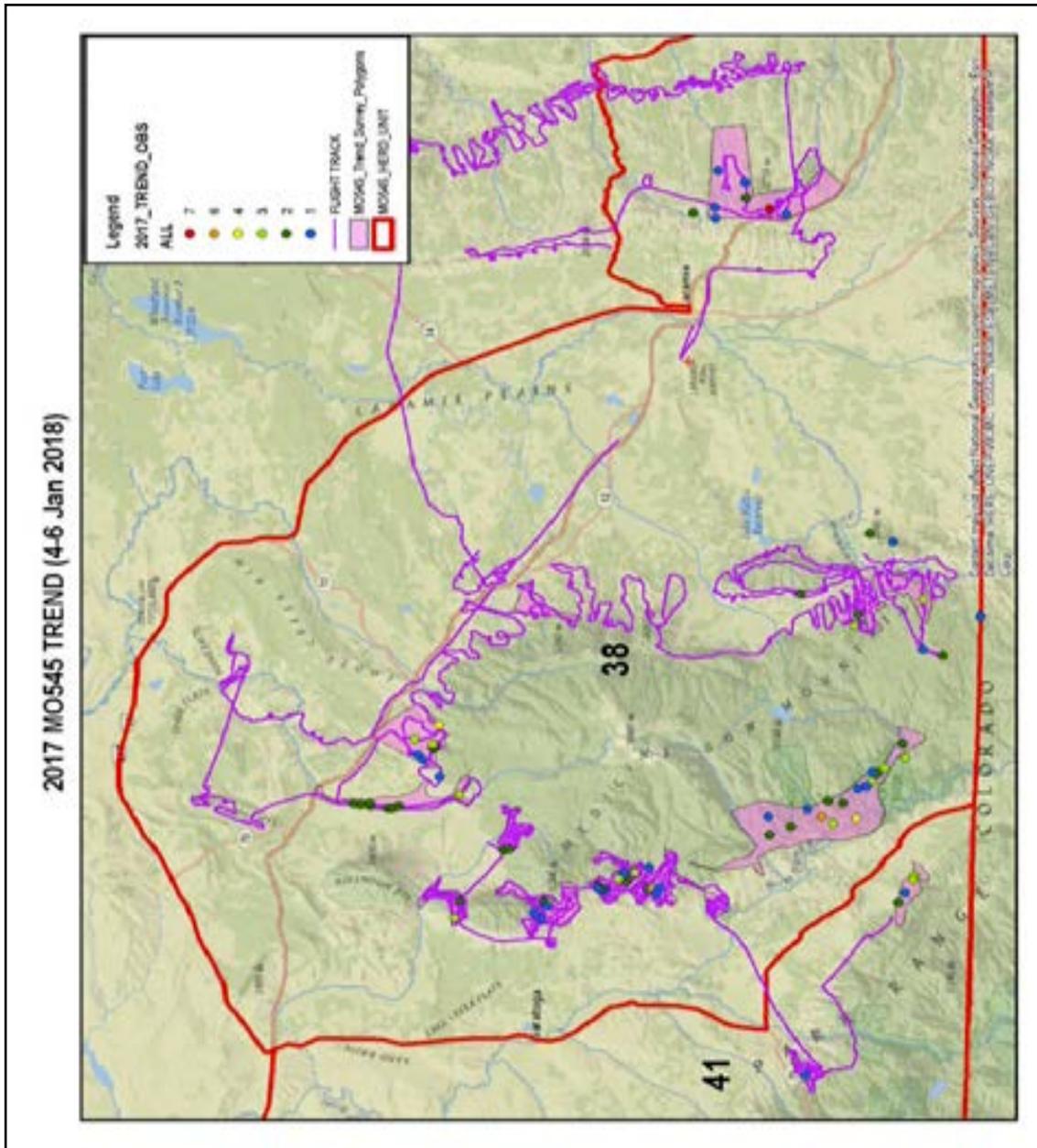


Figure 4. Median age of bulls harvested for the Snowy Range moose herd unit, from lab aged teeth (n=10) in 2017, Wyoming.

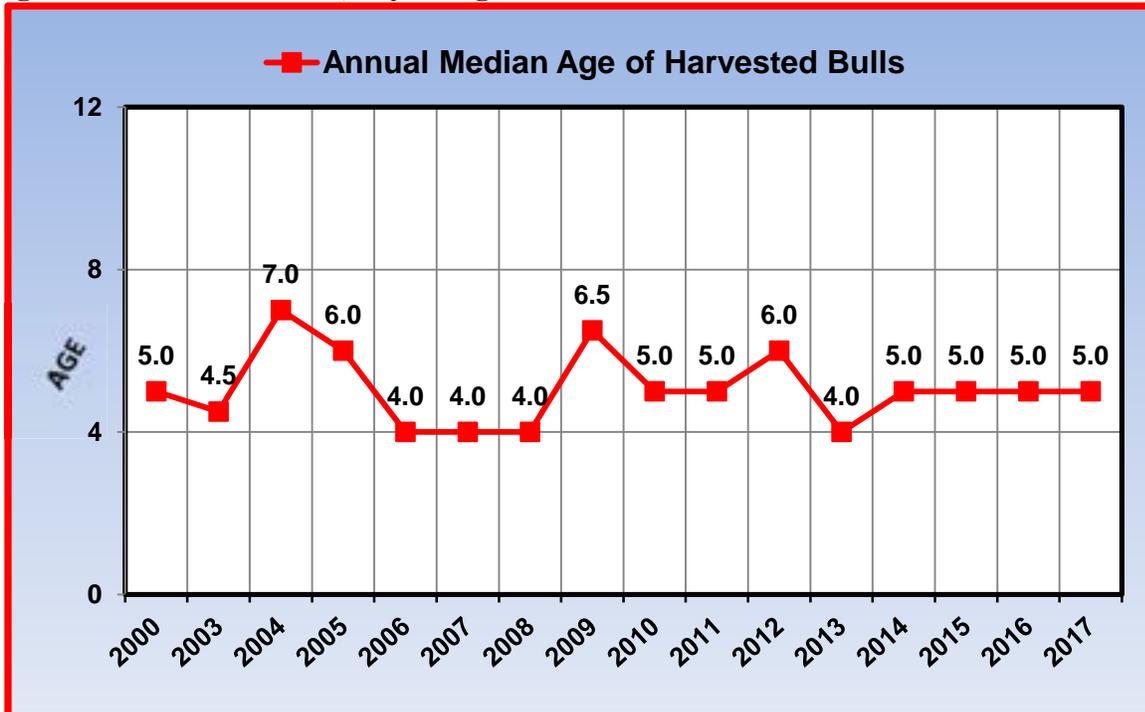


Figure 5. Average (3-year running) median age of bulls harvested for the Snowy Range moose herd unit, from lab aged teeth (n=10) in 2017, Wyoming.

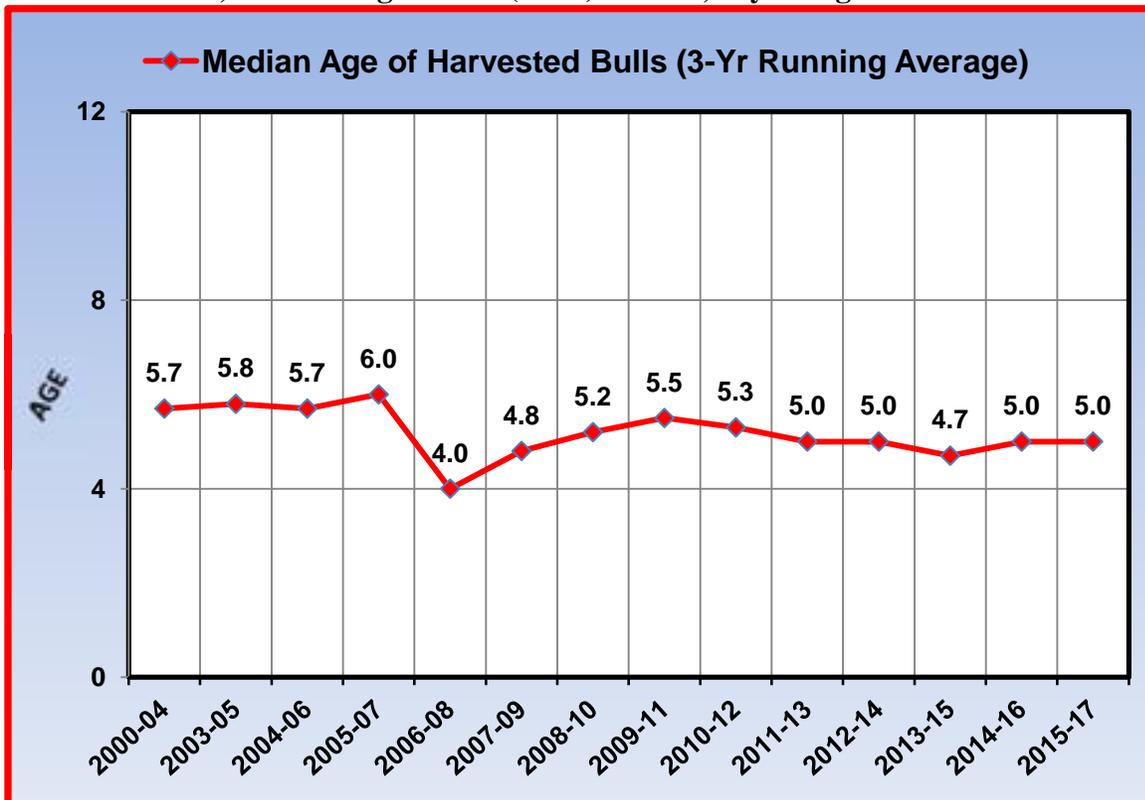


Figure 6 Annual percentages of the bull harvest \geq 5-years in age from Snowy Range Moose Herd Unit, from lab aged teeth (n=10) in 2017, Wyoming.

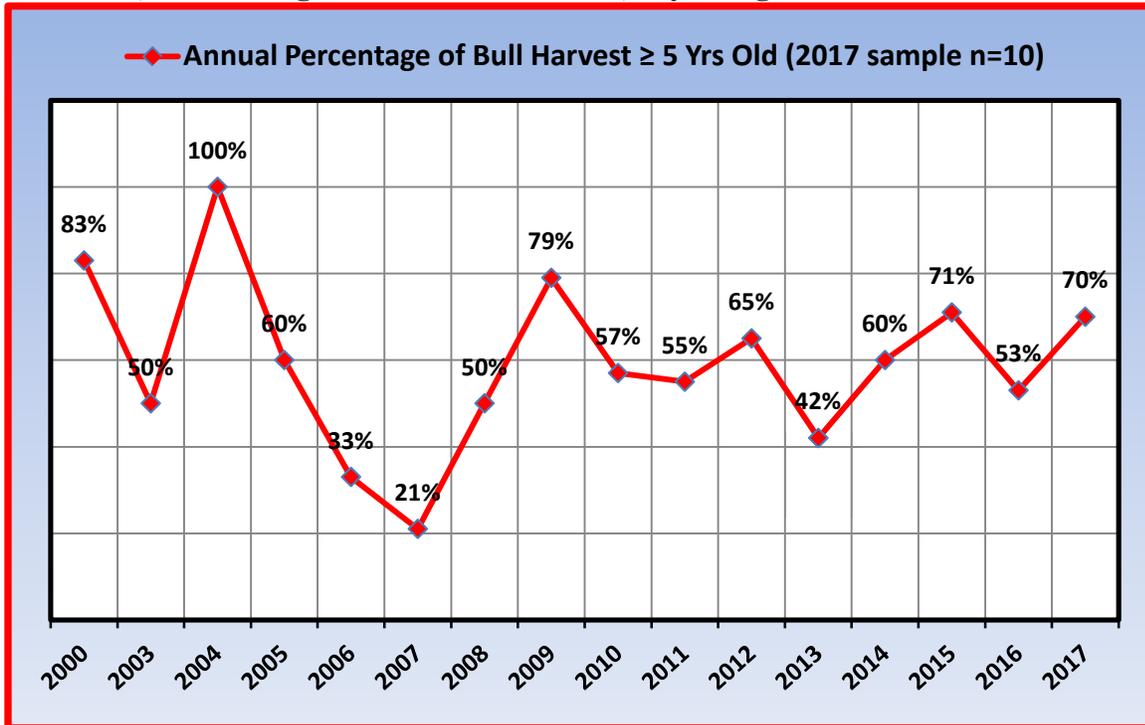
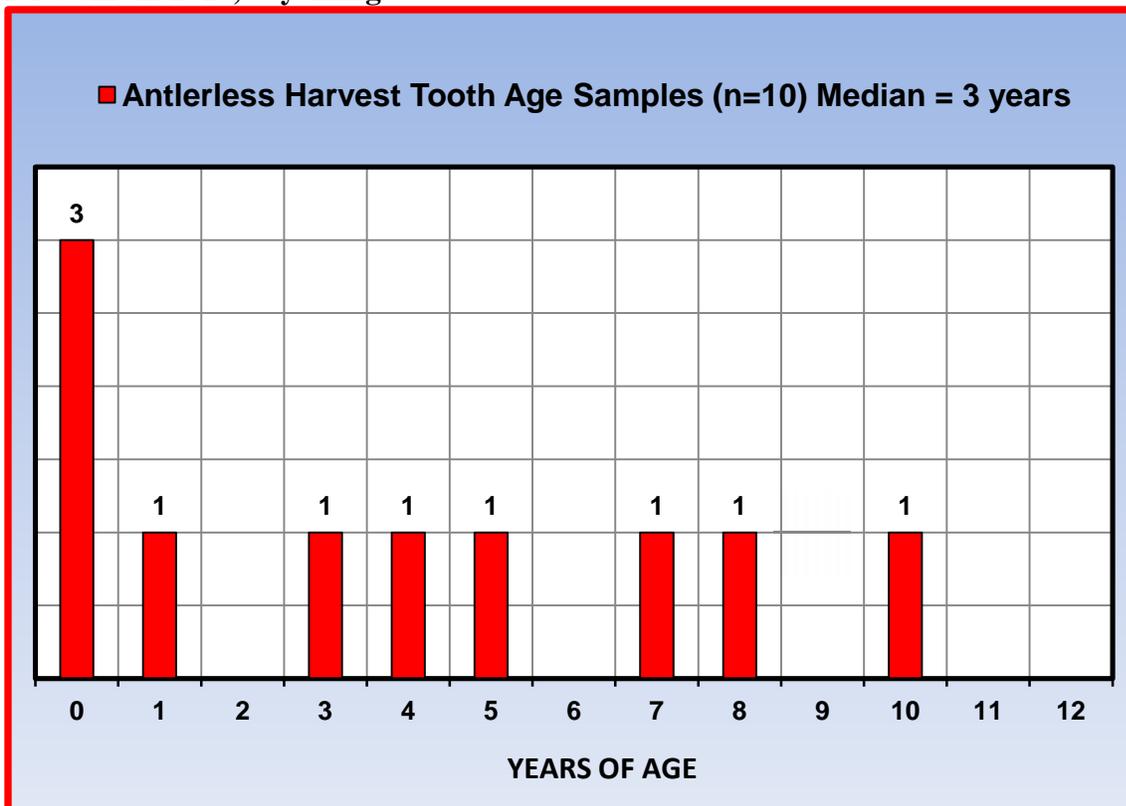


Figure 7. Age class distribution for antlerless moose harvested from Snowy Range moose herd unit in 2016, Wyoming.



Population

A population model has not been developed for this herd unit. A moose abundance survey was completed in the Snowy Range herd unit in March 2015, resulting in an abundance estimate of 266 ± 56 (90% *CI*) moose. These results provided managers with the first plausible abundance estimate for moose wintering in the Snowy Range herd unit.

Since bio-year 2016 we have been conducting mid-winter trend counts to monitor moose in this herd unit. We initially set the trend count objective at 75 moose. However, based on the results from the first two annual surveys, 201 moose and 169 moose respectively, this initial objective was too low to meaningfully correlate with current moose numbers observed during the trend flight. We will reevaluate this management objective in 2021.

Management Summary

In 2018, Type 1 and Type 4 license numbers remained at 20 licenses each as they have for the last two years. Hunting season lengths also remained the same.

Current Herd Specific Studies

A current study initiated in fall 2014 by the Wyoming Cooperative Fish and Wildlife Research Unit and the Wyoming Game and Fish Department presents an excellent opportunity to examine the relationship between moose habitat use and seral changes brought about by bark beetles. By making use of an existing GPS dataset collected prior to extensive beetle damage and comparing it to a new GPS dataset, and examining current individual movement strategies in beetle-killed forests. This project should be finalized later in 2018.

Another moose research project was initiated by the Wyoming Cooperative Fish and Wildlife Research Unit and the Wyoming Game and Fish Department in the Snowy Range herd unit during the spring of 2017. The objectives for this latest research project are as follows:

- Assess survival and cause-specific mortality of adult female moose.
- Evaluate patterns of habitat use of female moose as a function of habitat conditions, with specific reference towards understanding balance between thermal refuge and forage acquisition.
- Conduct annual surveys for recruitment; evaluate seasonal patterns of adult survival; continued monitoring of willow production/browsing; and measuring indices of nutritional condition of harvested animals via kidney collection.
- Assessment of riparian communities, and the effects of snow compaction by recreational snowmobiling.
- Establish an Integrated Population Model for moose in Wyoming.

Literature Cited

Thomas, T. P. 2008. Moose Population Management Recommendations. Wyoming Game and Fish Department, Cheyenne. 17 pp.

Bibliography of Herd Specific Studies

Baigas, P. E. 2008. Winter Habitat selection, winter diet, and seasonal distribution mapping of Shiras moose (*Alces alces shirasi*) in southeastern Wyoming. M.S. Thesis, Univ. Wyoming, Laramie, Wyoming. USA. 220 pp.

Wyoming Game and Fish Department [WGFD]. 2000. Snowy Range – Sierra Madre Moose Herd Management Plan. Wyoming Game and Fish Department, Laramie. USA. 15 pp.

Moose (M545) -- Snowy Range/Sierra Madre
HA 38, 41
Revised 6/2004

