

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Moose
Region: 3
Hunting District: 334
Year: 2018

- 1. Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.). REMEMBER THIS STEP IS TO BE ACCOMPLISHED BY THE INITIAL ENTRY INTO THE DATABASE—SO FOLKS CAN START THIS NARRATIVE WITH #2 BELOW.**

Increase the antlered bull license quota (334-50) from 5 to 6 and increase the 334-50 quota range from 1 - 5 to 1 - 10. The 334-50 license quota has been set at 5 since 1984 (Table 1).

- 2. What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The objective of this recommended change is to provide additional moose harvest opportunity that survey data indicates is sustainable from a population perspective and increase future harvest management flexibility.

- 3. How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

Success will be determined through: 1) annual monitoring of license holder harvest success through hunter-harvest phone surveys; 2) annual monitoring of population and recruitment trend through aerial trend surveys during the winter season; 3) bi-annual monitoring of bull: cow ratio through data collected during aerial pronghorn trend surveys; and 4) continued collaboration with the Red Rocks Wildlife Refuge staff regarding hunter use of the refuge.

- 4. What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

There is no structured management plan or objective for moose in HD 334. The management goals are to: 1) maximize hunter harvest opportunity while maintaining a well distributed and self-sustaining population; 2) Use hunter-harvest of antlered and antlerless moose to maintain the population within the biological capacity of their habitat; and 3) maintain a diversity of antlered bull age class.

From 1972 through 1979, Hunting District 334 moose harvest was managed through either-sex licenses, ranging from 6 to 15 available. During those years, an average of five (range = 2 – 7) antlered bulls were harvested annually. Beginning in 1980, harvest management shifted to antlered and antlerless-only licenses, with an antlered bull license quota of three. That quota remained three until 1984, when it was increased to five. From 1980 through 1983, an average of three (range = 2 – 3) antlered bulls were harvested annually. Since 1984, an average of five (range = 3 – 5) antlered bulls were harvested annually. The 1984 through 2017 average antlered bull harvest success is 91%. The 2008 through 2017 average antlered bull harvest success is 96%.

Population trend monitoring of moose within Hunting District 334 initiated following the 1949 hunting season. Initial observations showed a wintering population of approximately 50 moose. Between 1950 and the mid-1960s, the observed population trended down to a low of approximately 20 wintering moose. Since the mid-1960s, the observed wintering population has shown periodic fluctuation, but a general long-term positive trend to a high count of 161 wintering moose in 2017 (Figure 1).

Recruitment, expressed as the number of calves observed per 100 adults, trend monitoring initiated in the mid-1960s. Between the mid-1960s and the early 1990s, the average observed calf: 100 adults ratio was 39 (N = 18, 90% CI = ± 3.5). During that same period, the average observed number of wintering moose was 60 (N = 18, 90% CI = ± 7.1). Since the early 1990s, the average observed calf: 100 adults ratio was 28 (N = 19, 90% CI = ± 1.9). During that same period, the average observed number of wintering moose was 112 (N = 19, 90% CI = ± 8.0) (Figure 2). These data show that as the population has increased, average recruitment has decreased by 28%. In particular, there was a noticeable drop in recruitment starting about the time the population consistently exceeding 100 observed wintering moose (Figure 1).

Suppressed recruitment could be the product of several independent or combined sources. Common causes include cows producing fewer calves or calves surviving the first several months of life at a lower rate. Suppressed production is often associated cows being nutritionally stressed, because of poor or limited habitat, disease, parasites, or a combination of all. Limited resource availability is often caused by too many moose competing for available resources for too long, reduced resource availability because of plant succession to climax state, increased inter-specific competition, or a combination of all. Poor calf survival is often associated with predation, difficult weather conditions, disease, or parasites.

Monitoring data suggests that the observed reduced recruitment is the product of reduced calf production resulting from limited resource availability. Monitoring data from the general area suggests that calf survival to one year old is annually greater than 70%, and the observed decline in recruitment initiated 10 years prior to wolf establishment and 20 years prior to grizzly bear establishment in the area.

Looking forward, increased harvest of antlered and antlerless moose may be necessary to reduce the population to within carrying capacity, or habitat enhancement efforts will need to be implemented to increase the amount of resources available to moose, or both; to prevent long-term habitat retrogression and subsequent population decline.

5. Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).

The district is mostly public lands administered by the United States Fish and Wildlife Service, the Bureau of Land Management, the United States Forest Service, and the Montana Department of Natural Resources and Conservation. Hunter access to moose is very good across the district. Much of the harvest occurs on a portion of the Red Rocks National Wildlife Refuge, where moose concentrate year around. Because of this, hunter concentration needs to be considered when making harvest management decisions.

Succession of Douglass fir forests has replaced much of the historic aspen-dominated forests across the general area, resulting in less browse available to moose during the late summer through winter seasons. Over the past decade, wildfire and aspen enhancement efforts on the Red Rocks Refuge and on United States Forest Service lands have begun reversing this trend to the benefit of moose. Maintaining or increasing the current moose population in the future will likely require continued aspen restoration efforts by land management agencies.

Over the past three years, increased moose-human conflict has been reported within the refuge headquarters known and Lakeview. Additional or more site-specific harvest of moose may be needed to address this issue if it becomes chronic.

6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

Feedback for this proposal was solicited through the Sheridan area wildlife biologist's interested persons email list on April 2, 2018. This list is comprised of approximately 120 hunters, non-hunters, MFWP enforcement staff, sportsmen's group representatives, non-government organization representatives, landowners, county commissioners, and state representatives. Feedback again solicited through the Centennial Valley Association's April newsletter. To date, no public comment regarding the proposed recommendation has been received. The proposal was also directly vetted with the Red Rocks National Wildlife Refuge Manager, Bill West. Mr. West was supportive of the recommendation to add one antlered moose harvest opportunity. He agrees that the increased harvest of antlered bull moose is sustainable but would like to see incremental increases in harvests opportunity so that possible hunter-crowding on the refuge can be monitored and proactively managed.

Submitted by: Dean Waltee Date: May 5, 2018

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

Table 1. Hunting District 334 antlered moose license quotas and harvest, 1972 through 2017.

Year	Licenses Issued	Licenses Used	Harvest Total	Harvest Success
1972	10 (either-sex)	9	5	56
1973	10 (either-sex)	10	4	40
1974	10 (either-sex)	10	3	30
1975	10 (either-sex)	10	7	70
1976	15 (either-sex)	15	5	33
1977	10 (either-sex)	10	4	40
1978	10 (either-sex)	10	6	60
1979	6 (either-sex)	6	2	33
1980	3	3	2	67
1981	3	3	3	100
1982	Na	Na	Na	Na
1983	3	3	3	100
1984	5	5	5	100
1985	5	5	5	100
1986	5	5	5	100
1987	5	4	3	75
1988	5	4	4	100
1989	5	5	5	100
1990	5	5	5	100
1991	5	5	4	80
1992	5	5	5	100
1993	5	5	5	100
1994	5	5	4	80
1995	5	5	5	100
1996	5	5	5	100
1997	5	5	5	100
1998	5	5	5	100
1999	5	5	3	60
2000	5	5	5	100
2001	5	5	5	100
2002	5	5	5	100
2003	5	5	5	100
2004	5	5	5	100
2005	5	5	4	80
2006	5	5	5	100
2007	5	5	5	100
2008	5	5	5	100
2009	5	5	5	100
2010	5	5	5	100
2011	5	5	4	80
2012	5	5	5	100
2013	5	5	4	80
2014	5	5	5	100
2015	5	5	5	100
2016	5	5	5	100
2017	5	5	5	100
LTA				91%
10-year Average				96%

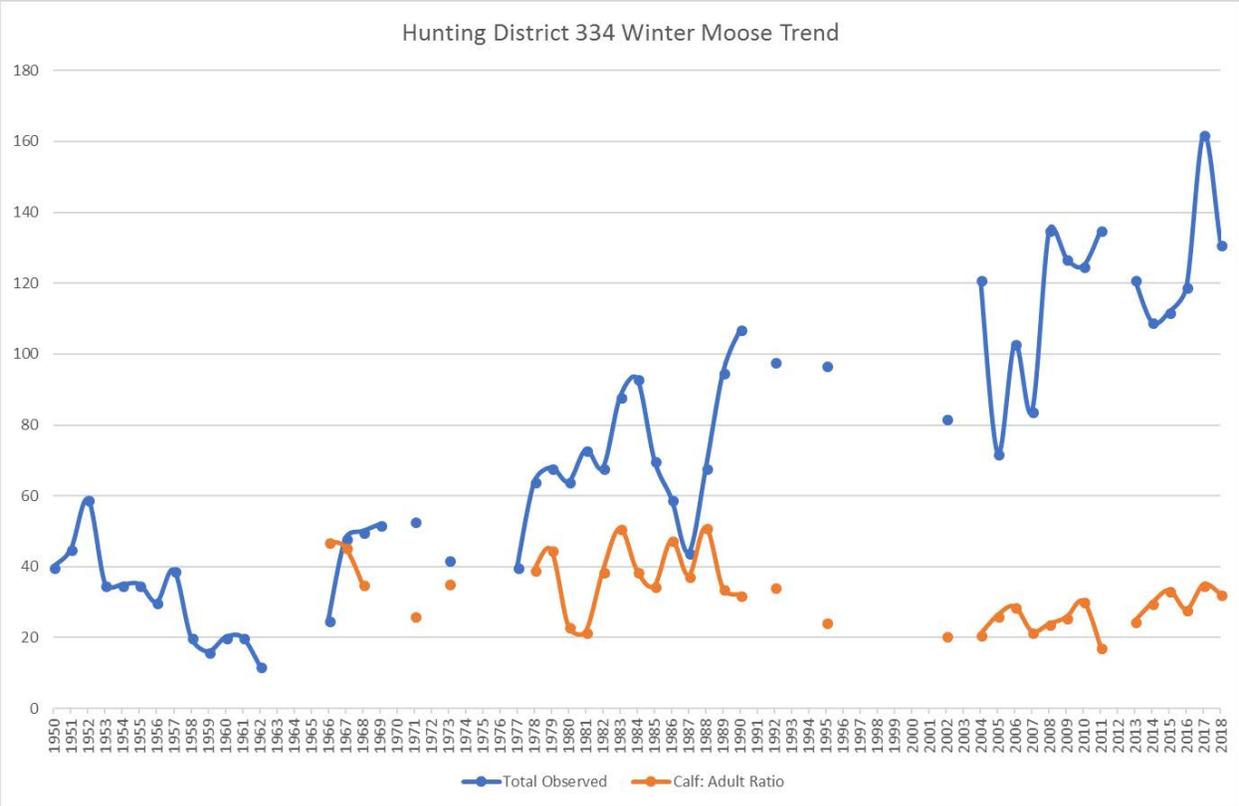


Figure 1. Hunting District 334 moose population and recruitment trend, 1950 through 2018.

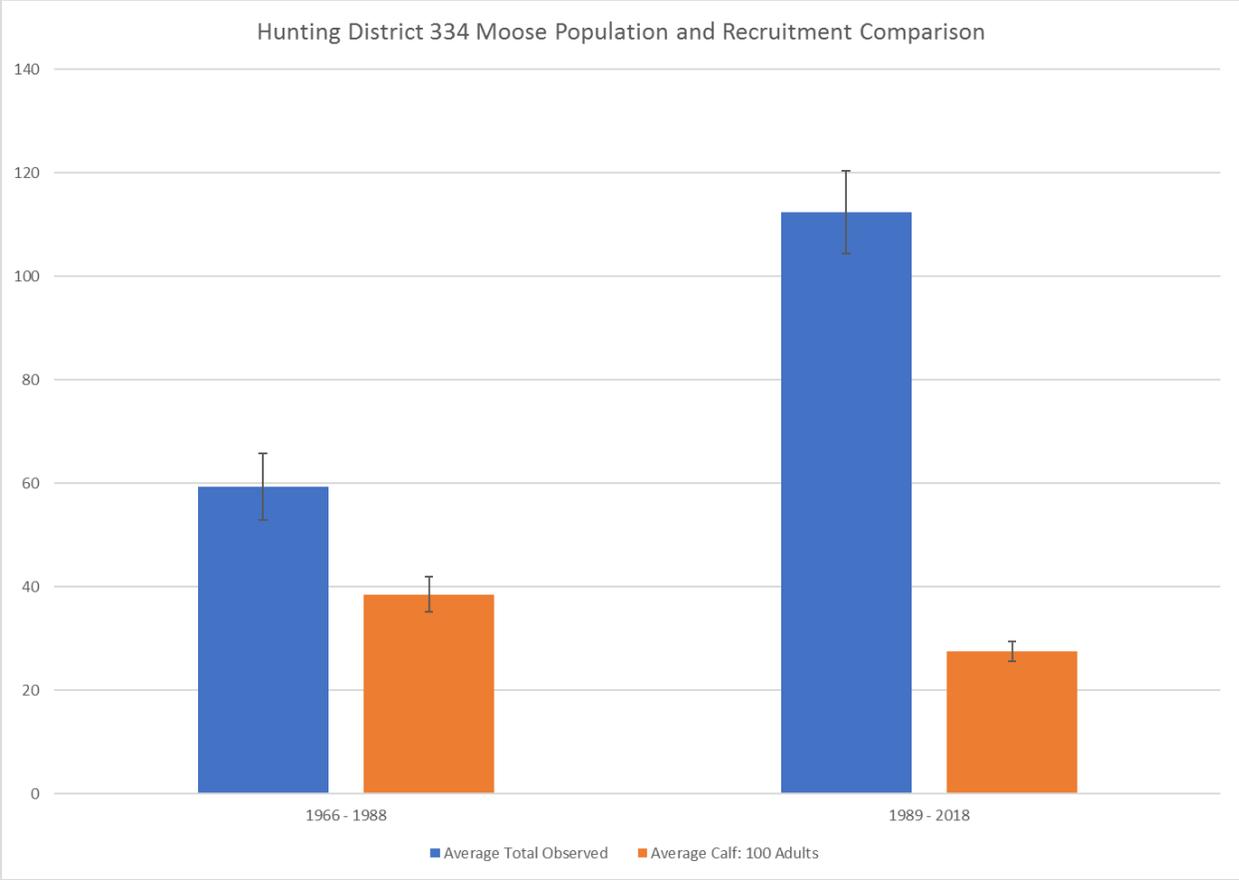


Figure 2. Hunting District 334 long-term recruitment comparison.