

Moose

2016 Moose Harvest

Season Dates and Structure

Maine moose hunters could hunt moose for six days by permit within the structure of a split season framework (September/October/November) during 2016. The September season ran from September 26 to October 1, while the October season ran from October 10 through October 15. For the seventh year, a third week of hunting was offered in the North Country (Wildlife Management Districts [WMDs] 1-4, and 19) from October 24 through October 29. The southern Maine moose hunt ran concurrently with the November deer season from October 31 to November 26 and opened for Maine residents on October 29.



Adult Bull Moose (Photo by Paul Cyr)

Moose Permits and Applicants

The annual allocation of moose permits is a function of WMD-specific management goals. Moose management goals are categorized as either recreational, compromise, or road safety. Permit levels changed in eight WMDs between 2015 and 2016, providing an overall decrease of 600 permits. This included decreased antlerless-only permits (AOPs) in WMDs 1-4 and 19 and decreased bull-only permits (BOP) in WMDs 3, 4, and 19. The number of moose permits allocated in 2016 was 2,140. Additional permits may be issued in a given year when permits are deferred one year due to permittee illness, armed service status, or similar situation.

During 2016, a total of 220 AOPs were allotted to five WMDs (1-4 and 19). The number of AOPs allocated in a given district is a reflection of a harvest level that will either grow, decline, or stabilize the district's moose population. Consequently, WMDs that can sustain only limited cow mortality are allocated relatively few AOPs. In contrast, WMDs that can support higher cow mortality and still meet management objectives, due to population size and structure, are allocated more permits. The southern Maine WMD moose hunt is a slight variation on this. Because of low moose densities in southern Maine, only AMPs are allocated. The season is extended to the length of the November deer season to increase the chances of a hunter harvesting a moose. The November time frame was chosen to honor recommendations by landowners who wanted the southern Maine moose season to open concurrently with the November firearms season for deer.

Permits were allocated to qualified applicants in a random computerized lottery. Overall, 54,893 people applied for a moose permit during 2016. This included 38,746 residents and 16,147 non-residents. Out of those applicant pools, 5% of the residents and 1.3% of the non-residents were selected for permits.

Statewide Statistics for 2016

Overall, 1,609 moose were registered during 2016 (Table 6). Since the re-institution of moose hunting in 1980, moose season timing (split seasons started in 2002) and areas open to hunting have changed several times.

Bull Harvest

The 2016 statewide harvest of 1,396 antlered bulls during the Sept/Oct seasons was 206 bulls less than the 2015 harvest (1,602). Among the antlered bulls taken in 2016 (and aged by cementum annuli 1,203), 89 (7%) were 1½ year olds (yearlings) sporting their first set of antlers, while 191 were 2½ year olds (16%), and 198 were 3½ year olds (18%). Mature bulls, 4½ to 18½ year olds, comprised 60% of the bull harvest.

On average, breeding bulls lose approximately 15% of their body mass during the rut. Because of this, and the timing of the fall harvest, bull weights reflect a decrease in body mass from September to October. Average bull weights (yearling and older) in the 2016 harvest for September were 741 pounds versus 678 pounds (i.e., dressed weights) in the October harvest (a 8.5% decline). The heaviest bull weighed in at 1,061 dressed (no digestive tract, heart, lungs, or liver) and was killed in WMD 1 during the September season (7½ years old). The largest antler spread was 64.5 inches on a 9½ year old bull with 20 legal points. Among antlered bulls examined in the harvest, 12% of the bulls sported cervicorn antlers (antlers without a defined palm) and 35% of these animals were yearlings; 20% were mature bulls (>4 years old) including the oldest at 13½ years old.

Table 6. 2016 Maine moose season registered kill by Wildlife Management District (WMD), season, and permit type. The percentage of hunters successfully harvesting a moose are given by season for each WMD.

WMD	Season	Permit Type	Number of Permits	2016 Registrations		WMD	Season	Permit Type	Number of Permits	2016 Registrations		
				Kill	Success Rates					Kill	Success Rates	
1	Sept.	BOP	150	127	85%	15	Nov.	AMP-B		3		
	Oct.	BOP	125	100	80%			AMP-C		2		
	2 nd Oct.	AOP	50	47	94%			WMD Subtotals	25	5	20%	
2	Sept.	BOP	100	86	86%	16	Nov.	AMP-B		6		
	Oct.	BOP	100	73	73%			AMP-C		1		
	2 nd Oct.	AOP	50	44	88%			WMD Subtotals	20	7	35%	
3	Sept.	BOP	75	71	95%	17	Oct.	BOP	20	6	30%	
	Oct.	BOP	60	58	97%			WMD Subtotals	20	6	30%	
	2 nd Oct.	AOP	50	46	92%			WMD Subtotals*	40	22	55%	
4	Sept.	BOP	125	103	82%	18	Oct.	BOP	40	22	55%	
	Oct.	BOP	75	56	75%			WMD Subtotals*	45	30	67%	
	2 nd Oct.	AOP	50	40	80%			Oct.	BOP	30	22	73%
5	Sept.	BOP	100	93	93%	19	2 nd Oct.	AOP	20	16	80%	
	Oct.	BOP	25	25	100%			WMD Subtotals*	95	68	72%	
	2 nd Oct.	AOP	50	40	80%			Nov.	AMP-B		0	
6	Sept.	BOP	100	86	86%	22		AMP-C		0		
	Oct.	BOP	25	25	100%			WMD Subtotals	0	0	0%	
	2 nd Oct.	AOP	50	40	80%			Nov.	AMP-B		0	
7	Sept.	BOP	100	86	86%	23		AMP-C		2		
	Oct.	BOP	25	22	88%			WMD Subtotals	25	2	8%	
	2 nd Oct.	AOP	50	40	80%			Nov.	AMP-B		3	
8	Sept.	BOP	100	86	86%	25		AMP-C		2		
	Oct.	BOP	25	22	88%			WMD Subtotals	25	5	20%	
	2 nd Oct.	AOP	50	40	80%			Nov.	AMP-B		0	
9	Sept.	BOP	100	93	93%	26		AMP-C		1		
	Oct.	BOP	25	25	100%			WMD Subtotals	10	1	10%	
	2 nd Oct.	AOP	50	40	80%			Oct.	BOP	10	4	40%
10	Sept.	BOP	100	86	86%	27		WMD Subtotals	10	4	40%	
	Oct.	BOP	25	22	88%			Oct.	BOP	20	14	70%
	2 nd Oct.	AOP	50	40	80%			WMD Subtotals	20	14	70%	
11	Sept.	BOP	100	86	86%	OVERALL WMD TOTALS						
	Oct.	BOP	25	22	88%	2,140	1,609	75%				
	2 nd Oct.	AOP	50	40	80%							
12	Sept.	BOP	100	86	86%	BOP = Bull Only Permit – The holder may kill one male moose of any age.						
	Oct.	BOP	25	22	88%	AOP = Antlerless Only Permit – The holder may kill a cow, a calf, or a bull with antlers shorter than its ears.						
	2 nd Oct.	AOP	50	40	80%	AMP = Any Moose Permit - The holder may kill any moose.						
13	Sept.	BOP	100	86	86%	*Does not include additions to total permit allocation through deferment, hunt of a lifetime, and auction.						
	Oct.	BOP	25	22	88%							
	2 nd Oct.	AOP	50	40	80%							
14	Sept.	BOP	100	86	86%							
	Oct.	BOP	25	22	88%							
	2 nd Oct.	AOP	50	40	80%							

Antlerless Harvest

The 2016 statewide harvest of adult (yearling and older) cows decreased from the 2015 harvest (156 vs. 335, respectively). Fewer antlerless-only permits were issued in 2016 in response to approaching publicly-derived population objectives in some management districts, with the bulk of the decrease occurring in WMD 4. This reduction in permits resulted in the decrease in the antlerless-only harvest. In addition to the 156 adult cows that were harvested, 15 calves (5 males and 10 females) were harvested for a total harvest of 172 antlerless moose for the 2016 season. This decrease included the antlerless moose taken as part of the 105 AMPs issued within the southern zones. The antlerless moose harvest in the southern zones was comprised of 12 bulls and 8 adult cows.

Moose Reproductive Data

Antlerless permits during the second October season, in WMDs 1-4 and 19, allowed us to collect reproductive data critical to assessing and monitoring moose population health and growth. In 2016, hunters removed and brought in 67 sets of moose ovaries for examination by biological staff. A cow's body weight and condition have a bearing on her potential to become pregnant and on the number of offspring she will produce. Pregnancy rates of cow moose with age and weight data was similar to 2015 at 92%. Typically, moose do not become pregnant until 2½ years old. Of the cow moose examined this year, 0% of yearlings and 92% of the mature cows (2½+ years) were pregnant.

Corpora lutea are identifiable structures within the ovaries that provide an indication of ovulation and potential pregnancy rates. Overall, there were 1.08 corpora lutea / cow for cows older than 3½ years. While this is an improvement from 2015 by 0.17, it remains an indication that moose in the northern portion of the state have relatively low reproductive rates (number of calves being born to a cow). A cow's reproductive rate is highly influenced by its nutritional plane. A cow's nutritional plane can be affected by the amount of available food in its environment or by diseases and parasites, such as the winter tick. We anticipate that additional sampling of female moose will provide a clearer picture of this relationship across northern Maine, as well as regionally.

Hunter Participation, Residency, and Success Rate

In 2016, 1,935 residents and 205 non-residents won permits to hunt moose. Most non-residents were successful in their hunt (84% success rate). Out-of-state hunters came from 35 states (as far away as Alaska/Hawaii). The majority (19%) of out-of-state hunters came up from Pennsylvania. Resident success rates were 74% and, when combined with the outstanding success by out-of-staters, the total success rate was 75% statewide. The higher success rate of out-of-state hunters, as compared to residents, may be attributed to the higher proportion of out-of-state hunters using registered Maine Guides for their hunt. Success rates over the last 10 years have been around 80%. Conditions for September and November were seasonable; however, multiple days in September and October were, yet again, unseasonably warm.

Changes for the 2017 Moose Season

In 2017, there will be four separate moose hunting periods in Maine. The September season will run from September 25 to September 30 in WMDs 1-6, 11 and 19; the October season will run from October 9 through October 14 and include WMDs 1-14, 17-19, 27, and 28. In WMDs 15 and 16, the season will coincide with November's deer season, which runs from October 30 through November 25. Opening day for Mainers will be on Saturday, October 28. Lastly, WMDs 1-4 and 19 will have an additional moose hunt in October from October 23 through October 28. In total, Maine's moose hunt will offer 2,080 permits for 2017.

Comprehensive Moose Management in Maine

Beginning in the winter of 2010-11, MDIFW began conducting aerial surveys to estimate moose abundance and composition (bull, cow, and calf) across the core range of moose in Maine (roughly a line from Grafton Notch to Calais). Aerial survey data, reproductive data from female moose (ovaries), and age data from moose teeth (removed at registration stations) is providing biologists with a more complete picture of Maine's moose population (i.e., size and composition) than ever before. Biologists and regulators (e.g., MDIFW Advisory Council) use these data to set moose permit levels to meet publicly-derived management goals. Moose viewing and moose hunting are two primary goals for moose that are equally weighed for management purposes.

Moose Adult Cow and Calf Survival Study

The size of Maine's moose population is not static and will fluctuate over time in response to many factors, including birth rates of calves and the survival of adults. In the winter of 2014 in western Maine (WMD 8), the Department began an adult female and calf survival study to monitor their survival rates over a minimum of five years and more closely examine sources of mortality. In 2016, a second study area in northern Maine (WMD 2) was added. Since 2014, we have captured 286 moose and fitted them with GPS collars. These collars enable us to track



Adult Cow Moose (Photo by Paul Cyr)

moose locations and movement over time, as well as receive text/email messages if the moose dies. We collect detailed health information from each moose that includes an assessment of blood parameters, parasite loads, body condition, and winter tick loads. Adult cows are observed each spring and summer to determine reproduction and survival of calves. This information is providing researchers with an in-depth and unprecedented look at moose health and the impact of parasites on survival and reproduction. This winter, an additional 70 calves will be fitted with GPS collars as part of this ongoing research. The study is in cooperation and collaboration with the University of New Hampshire, New Hampshire Fish and Game, and the University of Maine-Animal Health Lab.

This work is supported by volunteer assistance, the federal Pittman-Robertson program, and state revenues from sales of hunting licenses.

-- Lee Kantar

Black Bear

Maine's black bear, an iconic symbol of Maine's forests, is one of Maine's wildlife success stories. Once relegated to no more than a nuisance, the black bear has risen in stature to one of Maine's most prized animals. Today, the expansive forest of northern, eastern, and western Maine supports one of the largest black bear populations in the Lower 48 States (Figure 2).

Maine's bear population is valued not only by hunters, but also others who enjoy watching wildlife and appreciate Maine's wildlife diversity. Unfortunately, when conflicts with people and bears occur, their value can diminish. MDIFW strives to balance biological and social needs by making management decisions based upon science gathered from monitoring Maine's bear population, bear harvest, and conflicts. Maine's black bear population is closely studied by Department biologists through one of the most extensive, longest running biological studies in the U.S. Over the last 40 years, Department biologists have captured and tracked over 3,000 bears to determine their health and condition, estimate how many cubs are born each year, and determine annual cause-specific mortality rates.

Since 2005, Maine's bear population has been increasing. Hunting is the Department's primary tool for managing this thriving bear population. To maintain bear populations at a healthy and socially-acceptable level, a variety of traditional hunting methods are offered in Maine. These include hunting with dogs, still-hunting/stalking, hunting with bait, and trapping. Hunters can also take a bear while hunting deer. Over 90% of the bears killed each year by hunters or trappers are taken with the aid of bait or dogs. Still-hunting/stalking accounts for less than 10% of the harvest. Even with these ample hunting opportunities, the odds that a hunter or trapper will take a bear remain challenging. Only 26% of hunters using bait or dogs and less than 20% of the trappers actually harvest a black bear. Hunters that use still-hunting or stalking techniques to harvest black bears have the lowest success rates (<3%), due, in large part, to Maine's dense forests.

Since 2005, the number of bears harvested each year has been below levels needed to stabilize the growth of the bear population. As a result, Maine's black bear population has increased from 23,000 black bears in 2004 to ~36,000 in 2015. Despite a large bear population, the number of conflicts between humans and black bears in Maine is lower than other northeastern states, averaging about 500 complaints each year. This relatively low level of conflicts between bears and people is attributed, in part, to bears being more common where human densities are lowest. However, if Maine's bear population continues to grow, conflicts could rise as bears move into areas with higher human densities.

Maine's black bears are highly valued by outdoor enthusiasts and the general public. The Department understands that a healthy, well managed bear population provides opportunities for everyone to enjoy black bears without causing conflicts in backyards and neighborhoods to increase. With public input, biologists set management goals through the Department's strategic planning

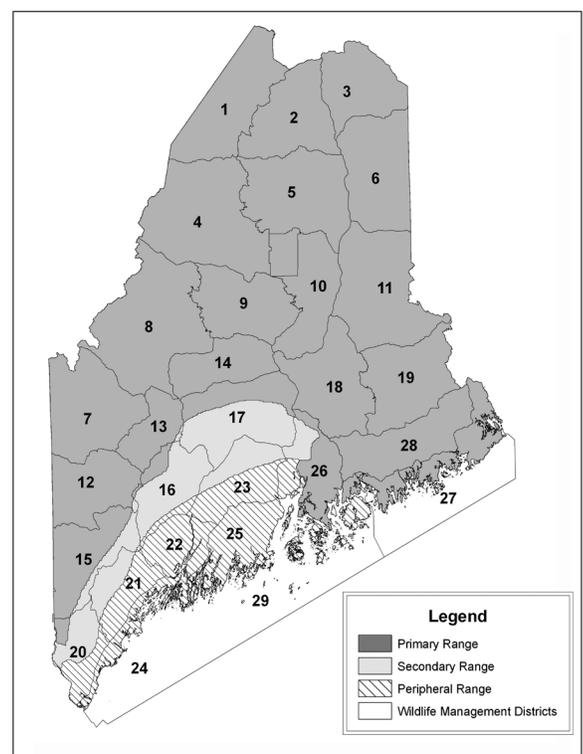


Figure 2. Maine black bear range.