

Moose Decline Across USA



[Ronald J. Campbell](#) · a day ago



Moose are the iconic big game species of the north woods. The largest subspecies is found throughout much of Canada and Alaska, while the lower 48 states have populations of three different subspecies in New England, the Upper Midwest, and Rocky Mountain states. Moose had largely been extirpated through much of their southern range by the late 1800's, but populations rebounded due to conservation efforts by wildlife managers. Within the last twenty to thirty years, limited hunting programs were established in most states with moose populations. However, in recent years managers have seen declines in moose across most of their range in the lower 48 states causing concern and spurring new research efforts and hunting restrictions. This increased focus should help managers better understand what factors are contributing to the population declines, reports the Wildlife Management Institute.

On February 6, the Minnesota Department of Natural Resources announced they were suspending their moose hunting program in the state indefinitely. The decision was made after the state's strongest population in the northeast corner of the state saw a 35 percent decline from 2012 to 2013 (4,230 to 2,760) and a 70 percent decline since 2006 (8,840 to 2,760). Just weeks earlier, the DNR had initiated an aggressive [moose mortality research project](#) to determine just what is killing the animals. The \$1.2 million project will focus on collaring 110 moose and tracking their activity. As of February 13, the agency had reported that they lost the signal for three of the collared moose – if the animals have died, the researchers may have the first opportunity to recover the carcasses and assess cause of death.

While Minnesota is reporting the most dramatic declines, other states throughout the animals' southern range are also seeing declining populations. In New Hampshire, there are now estimated to be 4,600 moose when the population was once around 7,000 animals. In the Rocky Mountain west, Montana and Wyoming have reported population declines as well and have reduced hunting tags as a result. Montana reported a 40 percent drop in available tags from 769 to 463 between 1995 and 2010. In addition, the Jackson Hole, WY moose herd is at 919 animals, about a quarter of the state's objective of 3,600 animals. Only Maine has shown a growing population of moose with a recent aerial study estimating more than 75,000 animals, mostly in the more isolated northern part of the state.

The greatest challenge for state wildlife managers is not knowing what is causing the population dips and whether they are symptoms of a longer trend. Historically, most research on moose focused on basic biology and habitat quality assessments. Hunter sampling provided information about diseases and parasites. Some population estimates centered on sampling hunters on their observations while afield, others used infrared techniques and aerial surveys. In Montana, only one of the fifteen studies that were reviewed by the state's Fish, Wildlife and Parks agency was focused on recruitment and survival and that study was conducted in Glacier National Park.

"There has definitely been a change. Something has been going on and we've seen it in the [hunter success rates](#), the amount of effort required to fill a tag and in what hunters report seeing while in the field," said Justin Gude, Wildlife Research & Technical Services Bureau Chief with Montana Fish, Wildlife and Parks. "But the one thing that is very clear is that there is not enough information – we don't have substantial evidence of a long term decline, but we need to figure out what is going on."

With the seemingly precipitous moose population declines, researchers are now scrambling to determine what's killing the animals and what changes have occurred to tip the scales against them. Winter tick infestations seem to have increased with animals carrying as many as 150,000 ticks. This causes animals to be anemic and have patchy, thinning coats when the animals rub themselves to get rid of the ticks - this leads to a lack of vigor and higher risk of death. The ticks tend to increase in quantity in years with lower snow pack levels and early snow melt.

In addition, brain worm – a common parasite in white tailed deer – will sometimes be ingested in its larval form by moose. While deer can survive the parasites, it is almost always fatal to moose. Kris Rines, New Hampshire Fish and Game's moose project leader notes that North American research suggests that areas with deer densities about 10-13 per square mile often fail to support a viable moose population. In the western US, arterial worms carried by mule deer and sometimes transmitted by horse flies to moose, have a [similar potential to kill moose](#).

Another factor seems to be habitat changes. In Maine, where moose populations are increasing, the spruce-fir forests that moose prefer are actively managed for commercial timber harvest providing plenty of forage, according to Lee Kantar, deer and moose specialist for the Maine Department of Inland Fisheries and Wildlife. These dynamic changes to the more than 3.5 million acres of privately owned timberlands in Maine's northern forests have created optimal habitat conditions for the animals.

However, in other regions, these periodic forest disturbances aren't occurring with the same regularity as in recent years limiting the amount of early successional habitat. Catastrophic fire and insect infestations in spruce forests are also negatively changing habitat dynamics where moose populations occur. In addition, moose appear to have temperature tolerances and become stressed with summer temperatures that top 60 degrees. These disease, parasite and habitat related factors have some pointing towards climate change as a key culprit in the population changes.

In the Rocky Mountains and the Upper Midwest, increasing wolf populations have led others to point the finger toward increased predation as a primary factor. [A news article](#) published in Jackson Hole, Wyoming on February 13 reports that 43 moose, including 25 cows were killed by wolves in Grand Teton National Park the winters of 2010 and 2011. Wolves killed another 13 moose in the park in the winter of 2012. But the full implications of predation from wolves, grizzly bears and mountain lions – all of which have had increases in their populations – is not known.

The number of moose in Minnesota is down roughly 60 percent from a high of 8,840 back in 2006. The Minnesota DNR is conducting a separate moose mortality research project, which also provides insight into the species' future in the state.

Some 11 percent of collared adult moose died this year, as compared to 21 percent last year, Cornicelli said. Adult mortality was slightly lower, but the number of calves that survive to their first year has also been low. "This indicates the population will likely continue to decline in the foreseeable future," he said.

Along with moose falling prey to wolves and bears, researchers also have pointed to several other causes that might explain the rapid decline in Minnesota. Brain worm, a parasite carried by deer, has expanded into moose territory.

Studies also have connected winter moose deaths to a warming climate. The huge animals are particularly sensitive to heat, and when it's hot in the summer, they tend to lie in cool damp places and pant instead of eating, which stops them from putting on enough fat to get through the winter.

Another factor could be winter ticks, which attach themselves in late fall, then feast on the moose throughout the winter. Large infestations, which can reach as many as 50,000 bugs on a single animal, can kill a moose.



Above excerpts taken from: The **Minneapolis Star Tribune**, The **Minnesota Department of Natural Resources (DNR)** and The ***Outdoor News Bulletin***

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[Ed White](#) · a day ago

A few years ago my family and I took a trip to Moosehead lake in Maine and had the great fortune of seeing 9 different moose in the wild. These animals are awesome, large, impressive, and it was truly a wonderful experience to see and photograph them. I'm glad to hear there are

studies underway to find out why their numbers are declining. I'd like future generations to also have the ability to see Moose out in the wild



[Robert Bullis](#) · [19 hours ago](#)

Moose are highly adapted for cold and deep snows and deer are not. We are no longer getting those type of winters in MN consistently. The deer herd has taken over the moose range. Also with the warming climate and recent storm damage in northern MN the forest browse is changing to more species that the moose can not use. Wolves and moose have always lived together to blame them is a century's Old wives tale.

[Andrew Parsons](#) · [16 minutes ago](#)

The moose decline is world-wide. Here, in boreal Canada, they are struggling with liver-flukes, and in other countries they are having issues with brain-worms. It sadden me that in the lower 48 they are dealing with winter-ticks.

Unfortunately, white-tailed deer are much hardier than their cousins, and that sort of create a problems since they can be a disease vectors.



[Ed Hanna](#) · [5 minutes ago](#)

Hi Ronald: A timely issue with direct relevance to this course. A couple of ideas for consideration.

Here in Ontario, we too have a declining moose herd particularly in NW Ontario. Conversely in the warmer south central Ontario, the moose herd is slightly expanding. Not sure how this is consistent with the suggestion that climate change is the culprit. If only it were that simple.

Moose managers have introduced a series of draconian measures to curtail moose hunting; albeit, not complete closure as in MN and elsewhere. I have been actively questioning the wisdom of the proposed changes for a number of reasons.

It is far from clear that mortality associated with hunting is the primary factor driving the decline. My expectation is that many factors are at play; some of which are more important than that associated with the harvest by non-Native hunters. For example, some recent changes in Ontario that have the potential for major impacts on the moose population include:

- a change in habitat management practices to favour caribou rather than moose; indeed, the goal is to reduce moose populations significantly in some areas,
- an increase in the unregulated Native harvest as a result of a rapidly expanding Native population and recent court decisions in favour of year-round unconstrained Native fishing and hunting rights, and
- significant changes to hunting regulations for black bear and wolves resulting in expanding populations of both species.

These factors are in addition to those that you and others have noted. Unfortunately, these three factors are "politically sensitive/incorrect" and are rarely mentioned by wildlife managers, at least in terms of their regulation. Instead, all of the focus has been on reducing the non-Native hunter harvest.

I provided in another thread, an energetic analysis of the meat intake requirements of a single wolf expressed as the number of deer (i.e., 27-28 deer annually are needed to meet the energetic demands of a wolf). In the case of moose, the number is 6-7 moose per year per wolf. A relatively small increase in the wolf population (e.g. in the range of 1000 animals) would equate to the total annual harvest by non-Native hunters. (Note a wolf population increase of this magnitude in a province the size of Ontario is practically undetectable.) Add in a significantly expanding bear population (due also to reduced hunter harvest) that targets calves and the impact of these increased mortality rates from expanding predator populations is easy to see.

I am not trying to lay "blame" on any of these factors. Instead, I am trying to point out that failure to incorporate these rapidly increasing mortality factors in moose population forecasts inevitably leads to unreliable results.

The other obvious observation that arises from this situation is that moose managers have available to them, a great many management alternatives from which to choose and choosing the best one is far from straightforward or intuitively obvious. For example, reducing moose mortality could be achieved through all sorts of combinations of management actions.

Unfortunately here in Ontario, this obvious reality is ignored. Moose managers have provided only one management alternative, namely to curtail the non-Native moose harvest drastically (<http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTI0MzI5&statusId=MTg3MTU...>).

The public has not been presented with a thorough and science-based assessment of the full range of available management alternatives. Instead, the public has been given a "take it or leave it" option with no systematic and rigorous forecast of what the short and long term impacts of their proposal will be on the moose population.

Perhaps even more importantly, no systematic and rigorous forecast has been presented showing what the short and long-term impacts will be on the moose hunter population. In my view, a strong possibility exists that the proposed changes will result in a decimation of the non-Native moose hunter population and it is far from clear that the moose hunter population will ever recover from this impact. Unfortunately, few wildlife managers have training in socioeconomics and tend to overlook entirely the human dimension side of management.

Bringing this discussion back to this course, some may see why I have been repeatedly testing the Land Ethic in terms of its practical application in land management decisions. I could use the Land Ethic to argue for or against just about every imaginable policy option to address the declining moose populations in Ontario and likely most other jurisdictions. If so, it is not clear to me its utility for resolving these types of difficult land management decisions that involve so many trade-offs, uncertainties and interests.