

# Winter Ticks Continue to Impact Moose Population

By Lee Kantar

Since 2014, the Maine Department of Inland Fisheries and Wildlife has been conducting research on adult female moose and calf survival. Using GPS collars, the department documents seasonal movements and annual mortality rates and investigate causes of death within 24–48 hours of a mortality. For the past seven years, moose dynamics (how and why population size and structure changes over time) have been studied in western Maine, Wildlife Management District (WMD) 8. In 2016, a second study area was created in northern Maine, WMD 2. Through out the span of this work, it has been determined that the winter tick (*Dermacentor albipictus*) was and continues to be the primary driver of overwinter mortality in juvenile moose (less than one year old), and depressed reproductive rates of cows.

The winter tick is a completely different species than the blacklegged (deer) and dog tick. It spends almost its entire life cycle on the back of one organism from late summer to adult drop-off in late spring and feeds three times on the same, unwilling host, typically the moose. Moose appear not to recognize that winter tick larvae are climbing on them until the tick's nymphal stage in early winter –at that point moose start to realize they have an unwelcome pest on their backs. Ultimately, tens of thousands of these ticks overwinter on the moose. Smaller moose (typically calves) entering winter with little fat reserves and high tick loads may ultimately succumb to the feasting of these tiny predators. Winter ticks cause massive blood loss during this time, resulting in anemia, restlessness, distraction, and hair loss. Moose spend more time grooming than feeding/ruminating and waste away any fat and muscle over the wintertime.

The study has also revealed that the difference in survival rates between overwintering calves in northern Maine compared to rates in western Maine was nearly double. Northern Maine has longer winters, earlier snowfall, and lower winter tick infestations, resulting in higher survival of overwintering calves. The last year of the adult cow and calf study in WMD 2 and 8 was 2020 so the study moved into a new phase adding GPS monitoring collars to eight month-old calves in WMD 4.

Divided into two management subunits, one part of WMD 4 maintains status quo moose hunting permit



Photo: D. Vilasuso

A calf wearing a GPS collar which is used to monitor its seasonal movement and mortality.

levels and the other part has received an increase in antlerless permits to reduce moose densities. Studies in other northern states and Canadian provinces tells us that densely packed populations have a strong tendency to spread and acquire disease and parasites more than a low-density population. This is likely what is driving winter tick-moose dynamic in parts of the northeast. The current focus is now on lowering moose densities in the western side of WMD 4 to attempt to break the cycle and reduce the impact of winter ticks on juvenile moose.

Several elements will be measured to study how density reduction impacts winter tick abundance. These include winter tick counts, aerial surveys of moose density and composition, as well as GPS collaring of eight month-old calves in January to examine their mortality rates. Starting in January 2020, the mortality rate was 38%, increasing to 59% in 2021. This past year, a spike in winter tick numbers led to an 87% juvenile mortality rate.

Overall, the northeast has been experiencing an unprecedented series of winter tick infestations. Natural resource agencies and universities are looking at ways to control winter ticks at a level that could alleviate impacts to moose. But, options for tick management in Maine are few: moose primarily range across hard-to-access, privately owned commercial forestlands and winter ticks operate at a challenging time of year in the North Woods. However, the expectation is to gain insight from the moose reduction effort and see if it moderates the threat of the winter tick.

Lee Kantar is Maine Department of Inland Fisheries Wildlife Moose Project Leader. Email: [Lee.Kantar@maine.gov](mailto:Lee.Kantar@maine.gov)