Aroostook Band of Micmacs

MAINE MOOSE AND MICMAC YOUTH

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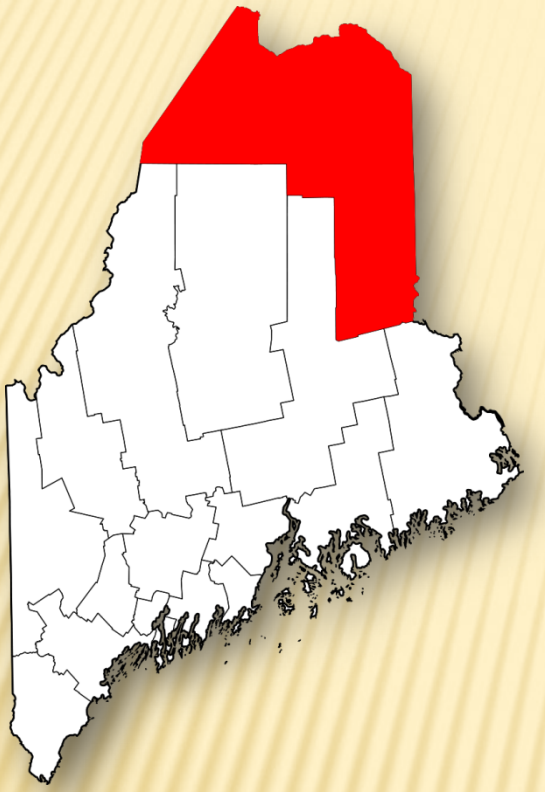
- Bureau of Indian Affairs
- Charles Lubelczyk, Vector Ecologist, Maine Medical Center Research Institute
- Michelle Kneeland, Veterinarian, Biodiversity Research Institute
- Frank Winslow, Marketing Director, IDEXX Labs
- Jason Johnston, Professor, University of Maine at Presque Isle.
- George Benson, Videographer.

The Micmac word for moose is “Ti’am”.

Micmac petroglyph showing a moose carved in a rock in Nova Scotia.

The name Moose comes from the Algonquian word “moosu” which means “Bark or Twig eater.”

Aroostook County is named for the Aroostook River which traverses the County. It is also the name of the Micmac Indians living in the county. The Aroostook River was originally named the Moosiec River which means, “River of Moose” in Algonquian. Thus, both the tribe and their location pay homage to the iconic moose.



The State of Maine currently has more moose than the rest of the 47 contiguous states combined, and Aroostook County is home to the highest density of the population in the state. The iconic animal is an important driver of tourism in the State.

Moose are very important to Native Americans, and non-Native Americans alike for many reasons, but their existence in Maine is currently threatened due to climate change – and an invasive tick known as a “Moose Tick” or “Winter Tick” (*Dermacentor albipictus).*

Female (larger) and male Moose Ticks.

“Moose” or “Winter” Ticks are one of only a few “one-host” ticks in the world – and the only one on wildlife. This means that ticks remain on the same animal throughout their life cycle.

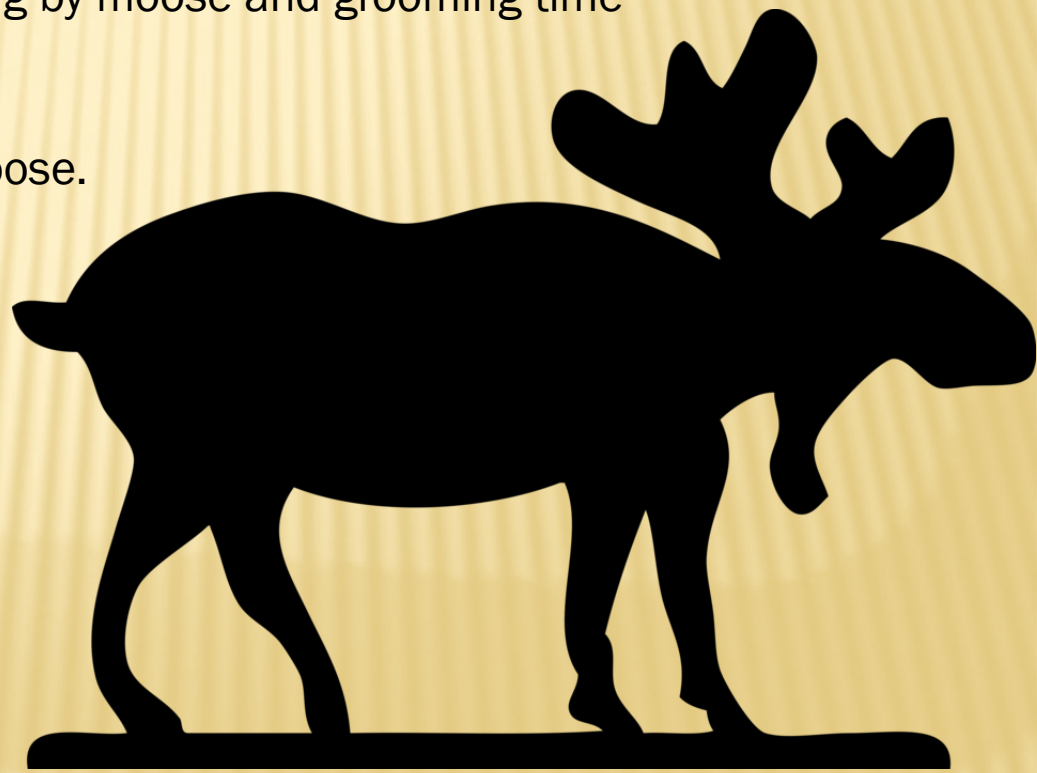
Moose ticks are known to also infest other animals, such as elk, deer, bison, and even domesticated cattle and horses. And, yes, they do bite people as well – but moose are their favorite food.

Ticks infest moose and other hosts from September and October until April and early May. Animals are tick-free over the summer.

Moose can have literally thousands of ticks on them – up to 50 per square inch. (Samuel, 2004)

Ticks impact moose in the following ways:

- Anemia from blood loss and other physiological effects.
- Damage to and loss of the winter coat of hair, the result of moose grooming ticks.
- Reduced stores of visceral fat.
- Decreased time spent feeding by moose and grooming time increases.
- Restlessness.
- Reduced growth in young moose.
- Death.



Climate Change – with warming temperatures and less snow are allowing more Moose Ticks to survive. This has caused moose to be the number one animal listed by

the US Department of the Interior among the 9 animals already feeling the impacts of climate change (US DOI Blog 11/16/2015)

- Maine's moose population is estimated to be between 50 and 70 thousand animals.

- Moose ticks were first documented by biologists in Maine in the 1930's.

- Their impact on the moose heard has significantly increased since that time.

- A collaborative study was undertaken in 2014 between the Maine Department of Inland Fisheries and Wildlife and New Hampshire Fish and Game which allowed for radio collaring and tracking moose mortality. Since that time Vermont has also joined the study.

- The study results for Maine indicated:
  - In 2014 – Maine lost 73% of the calves (of 30 being monitored – or 22 calves) and 33% of the adult moose (of the 30 adults in the study – or 10 animals) to Moose Ticks.
  - In 2015 things were a bit better with 60% of the calves being lost and 8% of the adults dying from tick infestations (exact number of animals was not available).
  - In 2016-2017 -73 additional calves in 2 study areas, and an additional 69 adults in the 2 study areas were radio collared – for a total of 162 animals. The statistics for 2016 mortality have not yet been published. However, average statistics since the study began indicate that on average, 14% of adults succumb to the ticks, and 64% to 65% of calves succumb.
  - Recently published articles indicate that there were fewer ticks during the 2017-2018 season, however, our data indicated that there were more ticks on the animals we surveyed.
- Maine's neighboring state of New Hampshire has lost half of its moose population in the past 15 years due to the Moose tick, and population numbers continue to decline.

Some of the following images may be disturbing.

Tick infested “ghost” moose.

In October, 2016 – 5 young adults began participating in a citizen science project to collect samples of blood, tissue, hair, and ticks in northern Maine.

Here, a Maine Department of Inland Fisheries and Wildlife biologist teaches the young adults how to count ticks on the moose brought in to the tagging station.

Counting ticks and collecting samples.

Collecting a blood sample.

Performing a SNAP test on the moose blood samples at the Micmac Environmental Lab.

Spinning down moose blood samples at the University of Maine at Presque Isle laboratory.

In January 2017, the Micmac young adult participants traveled to South Portland to visit three research labs. Here, they are visiting with scientists at Maine Medical Center's Research Institute.

Visiting Maine Medical Center's Research Lab for a presentation by Chuck Lubelczyk.

Preparing material to test mosquitoes for viruses at Maine Medical Center's Research Lab.

Animal CSI on a loon with Veterinarian Michelle Kneeland at Biodiversity Research Institute.

Visiting the veterinary lab at IDEXX.

July 8, 2017 Tick “flagging”.

Tick Flagging.

Tick Flagging.

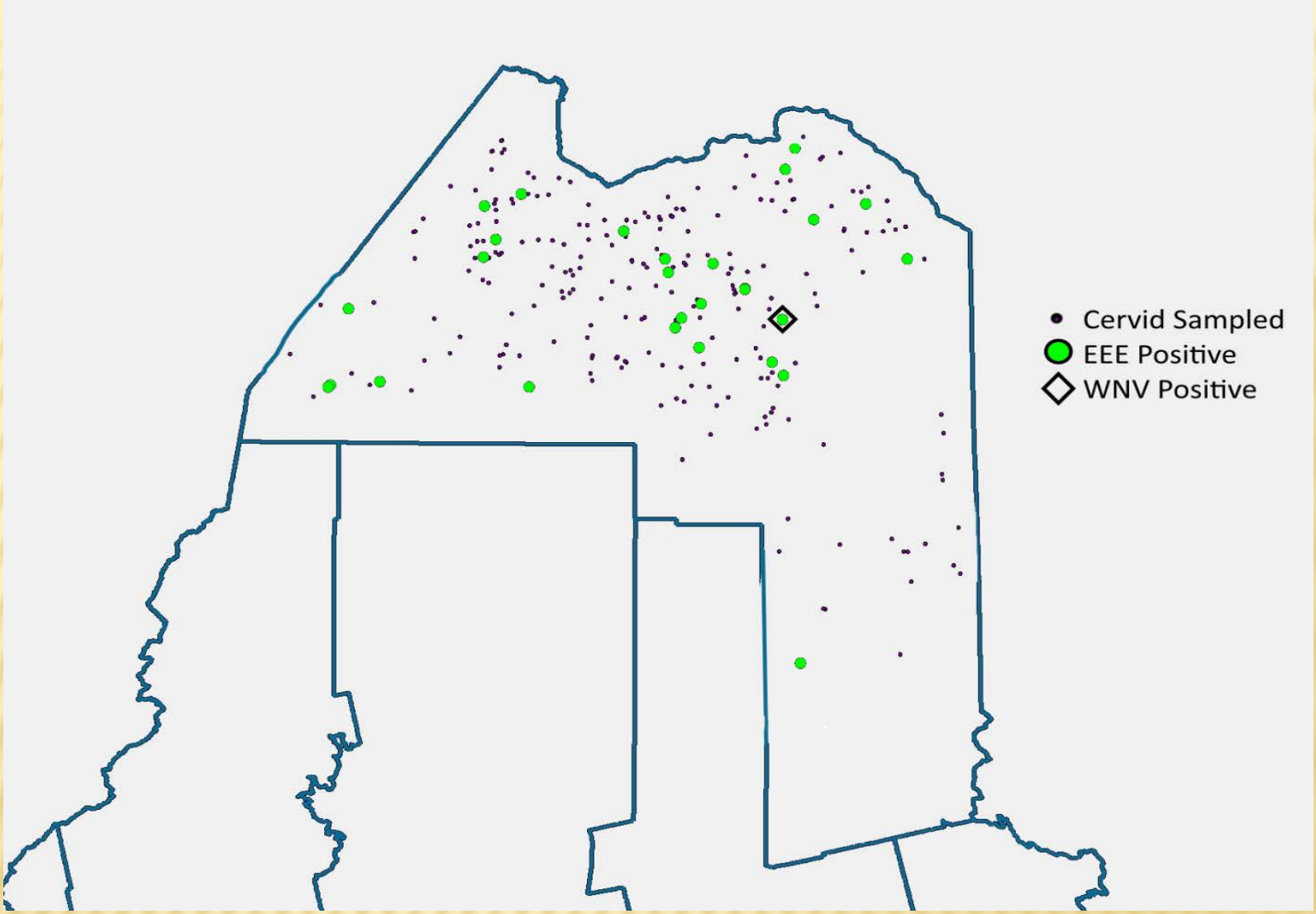
October 2017 sampling.

What we have learned so far:

- We were able to collect samples from 27 moose in the fall of 2016.
  - Of those:
    - 2 tested positive for Lyme Disease
    - 2 tested positive for Equine Encephalitis
    - 1 tested positive for Heartworm
- In the fall of 2017, we were able to sample 13 moose.
  - Of those:
    - None tested positive for Lyme Disease
    - We do not yet have the results for Equine Encephalitis

- An Aroostook County study from 2010 by the University of Maine at Fork Kent has shown that 11% of the 125 moose sampled from throughout the entire northern Maine area test positive for Equine Encephalitis.

- At this time, no one knows what impacts Lyme Disease and Equine Encephalitis have on moose.



Cervid (moose and deer) samples tested for both WNV and EEE in Aroostook County, ME.

Map courtesy of Charles Lubelczyk

Questions?