

Moose migration to Arctic may signal fight to survive climate change

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A warmer planet caused by climate change is creating new diseases for moose. Photo: Wikipedia

Lee Kantar lost two moose calves this past weekend. They are just a few among many calves that did not survive their first year in the forests of Maine. Kantar, a moose biologist for the state's Department of Inland Fisheries and Wildlife, has been tracking calves for only a few years. Early death is a trend he and others can see across the animal's southern territory, stretching through the northern U.S. and Canada.

Scientists speculate that young and adult moose alike are plagued by new diseases and harmful animals. For example, brain worm and winter ticks are getting worse as the climate warms.

In Maine, at least 50 percent of the calves do not live to see their second year. In northeastern Minnesota that number is as high as 90 percent; in the northwestern part of that state the moose population has disappeared.

As Temperatures Rise, Moose Forage Farther North

Despite all this, there are signs of hope. On April 13, the scientific journal PLoS ONE published new research showing that rising temperatures and shorter winters in Alaska have increased the availability of food for foraging animals. This has ushered moose into tundra regions that were previously too harsh to explore. The migration is probably happening not only in Alaska but also in Canada and northern Russia. According to Kantar, this is a sign that moose can be maintained as a species.

It is no secret that moose have been steadily expanding northward over the past century. Native Alaskans remember the exact dates when moose first appeared in each successive village. But the reason for this massive migration was hotly debated. Ken Tape, an ecologist at the University of Alaska Fairbanks, suspected that the warming climate might be at play. "What I love about working in the Arctic ... is that it's a perfect natural laboratory for studying climate change," he says. "There's no disturbance. Everything is essentially ... in a natural balance."

If researchers see any large-scale change, there are not many factors to explain it, save for climate change. For 15 years Tape has been studying how the climate has altered vegetation in the warming Arctic by increasing the number of alder, willow and birch plants. He theorized that the same phenomenon could cause the northward migration of moose.

Tundra Shrubs Twice As Tall As In 1850

In the tundra landscape, moose have to feed on shrubs that poke above the snow. Tape speculated that this vegetation has been slowly stretching northward, ushering moose in its footsteps. To prove it, Tape and his team of researchers used a well-known relationship between shrub height and summer warmth. Higher temperatures — and longer summers — allow the shrubs to grow taller. The team then used existing temperature measurements taken since 1910 combined with a mathematical model of the climate since 1850. By combining this information, they showed that shrub height in the area has indeed doubled since that year.

The experts suggest that the moose migration, primarily along rivers and streams that flow into the Arctic Ocean for hundreds of miles, might be one of the most dramatic wildlife shifts linked to climate change. Also, the spread of shrubs is a phenomenon occurring around the Arctic. Tape suspects that moose might be moving northward across the world.

But can gains from migration overcome the losses due to disease, given how poorly moose are faring in the south? Kris Hundertmark, a researcher of wildlife genetics at U.A. Fairbanks, believes that moose will ultimately be able to survive. Seth Moore, who works as director of biology and environment in a northeastern region of Minnesota, also agrees, despite seeing his studied moose die year after year.

Moose May Displace Native Species

The study by Tape shows that 1,000-pound animals can respond well to the warming world. Yet, many researchers worry that as foreign species such as moose move northward, they are only encroaching on the tundra's existing inhabitants. "The concern is that the Arctic species are having to deal with a lot of competition from the better-adapted boreal species moving in," Tape says. In a sense, moose have now become an invasive species. It is hard to predict what the overall consequences will be for other wildlife, such as caribou, in the region.

After all, moose are dying at alarming rates in the south because new species, such as white-tailed deer — which carry the diseases like brain worm and winter ticks — are moving north and encroaching on their living environment. "These moose will spend 15 percent of their daily (energy) budget scratching and rubbing, trying to get the ticks off this time of year," Kantar says, "so there is less feeding. There are internal parasites that block nutrients from them. And then they have internal blood loss and they die. It's a horrific way."

Although deer expand at the cost of moose in the continental U.S., moose will likely expand at the cost of other species in Alaska. Tape especially worries about ptarmigan, a medium-size bird that used to be the only inhabitant of the rare shrub life available in the Arctic. As moose keep munching on their food supply, the birds' gradual disappearance will also be a loss for predators such as red fox or lynx. Tape is even concerned about how the vegetation might shift. Since moose browse willow but leave alder alone, this will have consequences on the wildlife as well.

Quiz

- 1 Based on the information in the section "Tundra Shrubs Twice As Tall As In 1850," what is one reason moose were unable to live in the far north before climate change?
- (A) The moose died of thirst when cold temperatures froze the rivers and streams that they relied on for water.
 - (B) Before climate change, the moose's fur was not thick enough to withstand the dangerously cold northern temperatures.
 - (C) The moose couldn't find shrubs hidden under the snow until warmer temperatures helped the shrubs grow taller.
 - (D) The moose starved because the plants the moose eat had all been consumed by the ptarmigans.

- 2 Based on the information in the last paragraph of the article, which of the following would be the most likely result of the moose's preference for willow over alder?
- (A) Moose might die because of a lack of food.
 - (B) Deer might die because of a lack of food.
 - (C) Other animals that eat alder might die because of a lack of food.
 - (D) Other animals that eat willow might die because of a lack of food.

- 3 Read the paragraph from the section "Moose May Displace Native Species."

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Which phrase from the paragraph provides a clue to the meaning of the word "encroaching"?

- (A) deal with
- (B) moving in
- (C) predict what
- (D) respond well to

4 Read the sentence from the section "Moose May Displace Native Species."

Tape is even concerned about how the vegetation might shift.

Based on the information in the article, which of the following is an example of "vegetation"?

- (A) ticks
- (B) moose
- (C) willows
- (D) ptarmigans

Answer Key

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