

What's killing Minnesota moose?

Researchers launch new effort to find out

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Moose have been falling over and dying across Northeastern Minnesota at a disturbing rate in recent years, and researchers still don't know why.

But starting in a few days, researchers will put [GPS collars](#) and satellite phone transmitters on 100 adult [moose](#) to find out exactly when and where they die.

The collars will send a text message to researchers if the moose doesn't move in six hours, about twice as long as a usual moose nap. That's when rapid response teams will be dispatched to find the body and bring it to the lab for a necropsy - or, if it's too remote, do the necropsy right in the field. Moose are so big and retain heat so well that their organs begin to decompose after just 24 hours. And the longer it takes for crews to find the dead moose, the more likely predators and scavengers will find it first, eating away at key evidence.

"The message is going to come right into our smartphones. We now have an app for that," said Erika Butler, wildlife veterinarian for the Minnesota Department of Natural Resources who is heading the research. "Speed is everything on this. We've already been practicing our responses."

It's the first major study of its kind in North America, and scientists say that instant access to dead moose will allow them to figure out a question more important than when or where the moose are dying - scientists want to know why.

"It's the opposite of a Life Alert," said Lou Cornicelli, the DNR's wildlife research manager.

The \$1.2 million study, funded mostly from the state's Legacy pot of sales tax money, will include 75 cows and 25 bulls. The dark moose, which show up well against snow on the ground, will be tranquilized from helicopters in coming weeks, fitted with GPS collars and transmitters and checked for obvious [health issues](#).

Most of the work will be in Lake and Cook counties. The project has been reported before, but was it unveiled in detail Friday at the DNR's annual Roundtable meeting.

Meanwhile, another sensor will be implanted in the stomachs of 27 moose that will send a text message immediately when the moose's heart stops beating, giving researchers an even faster jump to get at the body to test blood, tissues and especially organs like the heart, liver and brain.

Then researchers will wait for their phones to buzz.

In May, DNR moose researcher Glenn DelGiudice will start another study, putting similar GPS collars on 50 newborn calves. It's also the first time in North America that anyone has tried to put collars on moose calves.

"We have a lot to learn yet about our moose population ... and we know even less about the calves than we do adults," DelGiudice said.

In all, the projects will cost about \$1.6 million over the next two years. Researchers hope they can get additional funding to push the work out to five or seven years total. Still, researchers concede that even if they find a single or combination of causes killing moose faster than they are reproducing, they may not be able to cure the problem.

"But we won't know if we don't try," Cornicelli said.

The DNR has made saving the moose among its top wildlife management issues, and just last month it added moose to its list of troubled species as a "species of concern." The state's limited fall moose hunt has been drastically scaled back in recent years and might be ended altogether in the next year or two if the population trend doesn't turn around.

Northeastern Minnesota moose numbers have crashed from about 9,000 a decade ago to roughly 4,200 in the 2012 winter survey. (The 2013 survey started last Thursday, with updated results expected in April.)

Not only are adult moose dying at an unusually high rate "at the time in their life they should be the fattest and happiest and healthiest," Butler said, but nearly three-quarters of the calves born each spring also are dying, a death rate too high to sustain the population. In many cases, dead moose are found that haven't been touched by wolves or bear.

"We really think everything points to a health problem, but we haven't been able to pinpoint anything with the data we've had up to now," Butler noted.

From Voyageurs National Park on the west to the Grand Portage Reservation on the east, and as far south as Duluth's suburbs, researchers from a half-dozen agencies are trying to discover why the Northland's moose are in decline, including both sides of the international border, with several in Quetico Provincial Park now collared and monitored.

The work is done in the winter when moose stand out against the snow and when marshes and bogs are frozen over.

he trouble in Northeastern Minnesota comes just a few years after

northwestern Minnesota's moose population crashed from 4,000 to just a few dozen in just 25 years. The phenomenon is creeping north into Ontario as well.

Research papers identify higher summertime temperatures in recent decades as an underlying issue. But that's not what's actually killing the animals. Scientists believe it's a combination of higher temperatures, parasites such as brain worm and ticks, disease and increased deer numbers.

But a higher density of wolves - more wolves in the moose range - may also be killing more young moose than 20 years ago. And a reduction in logging spurred by lower demand and shuttered mills has caused the forest to age in the past decade beyond the young aspen stands that moose thrive on.

"We're finding that moose really like to use small clearings, cuttings, as small as 20 acres or less, rather than the big openings that a lot of people had assumed they wanted," said Ron Moen, a Natural Resources Research Institute moose researcher who has used similar collars the past two winters to track where moose eat, sleep, mate and have calves.

"We've got three things going on that are limiting moose right now - adult moose are dying, calves are dying and their habitat is diminishing. That's not a good combination."

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