

Source: Minnesota DNR <http://www.dnr.state.mn.us/moose/adult.html#deaths>

# Adult moose mortality project

## Complexities abound



Minnesota moose are some tough critters but research is showing that complex factors are combining to make their survival more and more precarious.

Just how tough are moose? And how complex can the situation become for the largest member of the deer family? Consider Moose 192, a 12-year old cow that DNR researchers collared in 2015 and died in April along a Superior National Forest road not too far west of Finland.

Twelve years is a relatively old age for a moose yet she was healthy enough to become fertile, be bred and carry a healthy male fetus to term.

That's an accomplishment for a healthy moose but Moose 192 did this while suffering from three serious health problems:

- A winter tick infestation causing major hair loss and anemia from blood loss
- A liver fluke infection, one of the worst encountered so far in the study, that weakens moose and predisposes them to other illness

- The presence of brainworm, severe infections of which cause circling, weakness in the hindquarters, inability to stand, turning of the neck and head to one side, lethargy, apparent blindness, loss of fear and rapid eye movement.

Despite these conditions, the cow settled down in late April to give birth. While calving, which made her extremely vulnerable, wolves attacked and inflicted massive injuries to her head and rump.

Moose 192 fought off her attackers though and, with her bull calf still in the birth canal, wandered about 1,000 yards north and laid down in a watery ditch along the roadside, tucking her front legs underneath. She likely drew her last breaths when under water as she and her unborn calf died.

The mortality study will consider Moose 192's official cause of death to be wolf kill. But facts gathered from the GPS collar and results of the necropsy show that this moose endured serious health conditions. Calving – not sickness – made her vulnerable to a wolf attack. But it's likely that health conditions eventually would have killed her.



## Moose study deaths

Date	Animal	Cause
<a href="#">May 11, 2016</a>	Moose 192, a 12-year-old cow collared in 2015	Wolf kill
<a href="#">April 28, 2016</a>	Moose 21, a nine-year-old bull collared in 2013	Winter ticks
<a href="#">January 7, 2016</a>	Moose 205, a six-year-old bull collared in	Liver flukes

## Anecdotal moose deaths

Click rows for details

Date	Animal	Cause
June 15, 2016	Adult female	Vehicle
June 9, 2016	Adult female	Vehicle
June 7, 2016	Adult male	Vehicle
April 20, 2016	Adult female	Vehicle
March 19, 2016	Adult male	Sickness
February 5, 2016	Male calf	Brainworm

## Survival rate

The annual adult moose survival rate for 2016, the fourth year of the study, is 95 percent so far. Annual survival rates in previous years were:

- 85 percent in 2015
- 88 percent in 2014
- 81 percent in 2013

The chart below provides an overview of all moose deaths in the study to date. Clicking an individual chart will display that chart's complete detail.

### Causes of adult moose mortalities

February 2013 - June 2016 (n=49)

