



# RESEARCH FACTS

RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

## Beef Science Cluster



## Understanding risk factors of anaplasmosis transmission

Project Title:

Geographic variation in abundance and genetics of the anaplasmosis vectors *Dermacentor andersoni* and *Dermacentor variabilis*

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### Background

Anaplasmosis is a cattle disease caused by the blood-borne pathogen *Anaplasma marginale*, and is transmitted in North America by the Rocky Mountain wood tick (*Dermacentor andersoni*) and the American dog tick (*Dermacentor variabilis*). In Canada, *D. andersoni* occurs from western Saskatchewan to central British Columbia. *D. variabilis* occurs from Saskatchewan east, and appears to be undergoing a range expansion relative to historic records. There is little information on some of the most critical factors that determine the risk of anaplasmosis transmission.

### Objectives

The objective of this study is to gather information on the distribution, abundance, and genetic diversity of these ticks in British Columbia, Alberta, Saskatchewan and Manitoba.

### What they did

Over 200 sites from Western BC to the Manitoba-Ontario border were sampled for ticks in April through July in 2014, 2015 and 2016. Environmental conditions, such as vegetation, soil, temperature, and precipitation were recorded for each location. Information on which ticks were found where was compared to similar benchmarks from the 1960's to see if the habitat of these ticks was changing.

## What they Learned

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The Rocky Mountain wood tick hasn't moved far over the past half century. It was found in all three years in 20% of the BC sites, 32% of the Alberta sites and 17% of the Saskatchewan sites. It was never found in Manitoba. Tick density was slightly higher in Alberta than in BC or Saskatchewan and was fairly consistent from year to year. It wasn't found north of a line drawn through Dundurn, SK and Didsbury, AB, and wasn't found east of Foam Lake, SK. It was most likely to occur where average fall and winter temperatures were between -2 and -5°C, and where springs were moist, and summers were dry.

The American dog tick has expanded its range by at least 350 km to the north and 300 km to the west since the 1960's. It was found all three years in 81% of the Manitoba and 70% of the Saskatchewan sites. Tick density was similar between Saskatchewan and Manitoba in all years. It was rarely found west of Lloydminster, occurring at only a few locations in Alberta and BC in 2016 and wasn't found north of Nipawin, SK. It was most common where fall and winter temperatures averaged -6 to -10°C, and where spring precipitation levels were between 155 to 164 mm.

## What it means

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The Rocky Mountain wood tick and American dog tick aren't geographically isolated anymore. Their ranges overlap by more than 300 km in southern Saskatchewan. These ticks share the same hosts throughout their lifecycles, so the fact that their ranges overlap may increase the risk that bloodborne diseases may spread further or faster than they could have before.

Understanding the geographic range and the environmental conditions that ticks prefer helps to assess the risk of tick infestations in a particular year or region, and helps producers decide whether altered grazing management practices or the use of a permethrin or pyrethrin product for parasite control is something to discuss with your veterinarian.

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