



Tick
Surveillance
2018 Summary

Health, Government of Alberta

July 2019

Tick Surveillance 2018 Summary

ISBN: 978-1-4601-4551-7

ISSN: 2369-0690

© 2019 Government of Alberta

For more information about this document contact:

Analytics and Performance Reporting Branch, Alberta Health

PO Box 1360 Stn Main

Edmonton, AB T5J 2N3

Email: Health.Surveillance@gov.ab.ca

This Publication is issued under the Open Government License – Alberta
(<http://open.alberta.ca/licence>) This document is available online at:
<https://open.alberta.ca/publications/2369-0690>

Tick Surveillance 2018 Summary

Key Highlights

- The risk of acquiring Lyme disease in Alberta is low
- There is no evidence that ticks capable of transmitting the bacteria, *Borrelia burgdorferi*, which can cause Lyme disease have formed established populations in Alberta, and likely are adventitious (e.g. brought into the province on migratory birds or animals)
- In 2018, there were 3,325 specimens submitted for species determination and testing from 2,371 companion animals or people, of which 2,246 (68 per cent) specimens were submitted through the Companion Animal Program and 1,079 (32 per cent) were submitted through the Human and Environment program
- There were 3,211 specimens that were identified as ticks, and 2,076 were Alberta-acquired (no history of travel outside of Alberta in the previous two weeks)
- There were 128 Alberta-acquired ticks capable of transmitting *B. burgdorferi* identified, which accounted for:
 - 71 per cent of total ticks capable of transmitting *B. burgdorferi*
 - 6 per cent of total Alberta-acquired ticks
 - 4 per cent of total ticks
- There were 22 Alberta-acquired ticks identified that were *B. burgdorferi*-positive, which accounted for:
 - 17 per cent of Alberta-acquired ticks capable of transmitting *B. burgdorferi*
 - 1 per cent of total Alberta-acquired ticks
 - 0.7 per cent of total ticks
- The percent of Alberta-acquired *B. burgdorferi*-positive ticks out of ticks capable of transmitting *B. burgdorferi* were:
 - **Alberta:** 17 per cent (n = 22/128)
 - **Calgary Zone:** 7 per cent (n = 1/15)
 - **Central Zone:** 9 per cent (n = 2/23)
 - **Edmonton Zone:** 18 per cent (n = 10/55)
 - **North Zone:** 24 per cent (n = 7/29)
 - **South Zone:** 0 per cent (n = 0/3)
- No criteria were met to initiate active surveillance methods in 2018
- Additional data and interactive maps can be found on the [Alberta Health Interactive Health Data Application \(IHDA\)](#)

Introduction

Background

Ixodes scapularis (deer tick) and *I. pacificus* are black-legged ticks which are the primary organisms that carry and transmit *Borrelia burgdorferi*, the bacteria that can cause Lyme disease in humans. The [Alberta Tick Surveillance Program](#) is in place to determine the risk of Lyme disease in Alberta through passive and active surveillance activities. The Program is a collaborative effort between Alberta Health, Alberta Agriculture and Forestry, Alberta Health Services, Alberta Public Laboratories, and First Nations and Inuit Health Branch (FNIHB).

Passive Surveillance

Alberta has a [passive tick surveillance program](#) (Submit-a-Tick) to identify and monitor ticks capable of transmitting *B. burgdorferi* in Alberta. People can submit ticks they find on themselves or in the environment through the [Human and Environment Program](#). Veterinarians can submit ticks from pets or livestock through the [Companion Animal Program](#). The ticks are examined for species determination and tested for *B. burgdorferi* if a tick capable of transmitting *B. burgdorferi* is identified. All *Ixodes* species are tested for *B. burgdorferi* except for *I. kingi* and *I. ochotona* since there is no evidence they can transmit the bacteria. This program is based on convenience sampling of specimens submitted voluntarily, so the number of ticks in each of the five Alberta Health Services Zones do not necessarily reflect the prevalence of ticks in those areas. Multiple ticks may be submitted from one companion animal or person at the same time and are counted individually.

Active Surveillance

Active tick surveillance can use several techniques to identify established tick populations in the environment. Targeted drag-sampling in grassy/bushy areas is the most reliable method to sample emerging populations of ticks, and is used to determine the need for more intensive active surveillance techniques. If the pattern of ticks submitted through the passive surveillance program suggests there is a risk that ticks capable of transmitting *B. burgdorferi* (primarily *I. scapularis* and *I. pacificus* in North America) could become endemic in Alberta, then active surveillance, including drag sampling in a particular area, is undertaken.

Program Overview

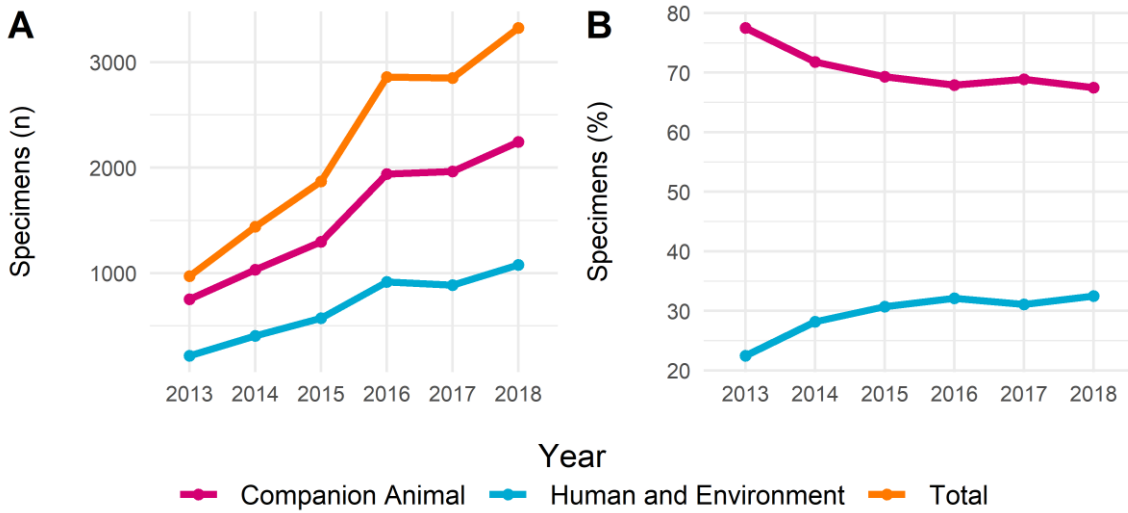


Figure 1. A) Number and B) percent of specimens submitted to the Alberta Passive Tick Surveillance Program, 2013-2018. Data includes specimens that were not ticks (e.g. spiders, ants, or bed bugs).

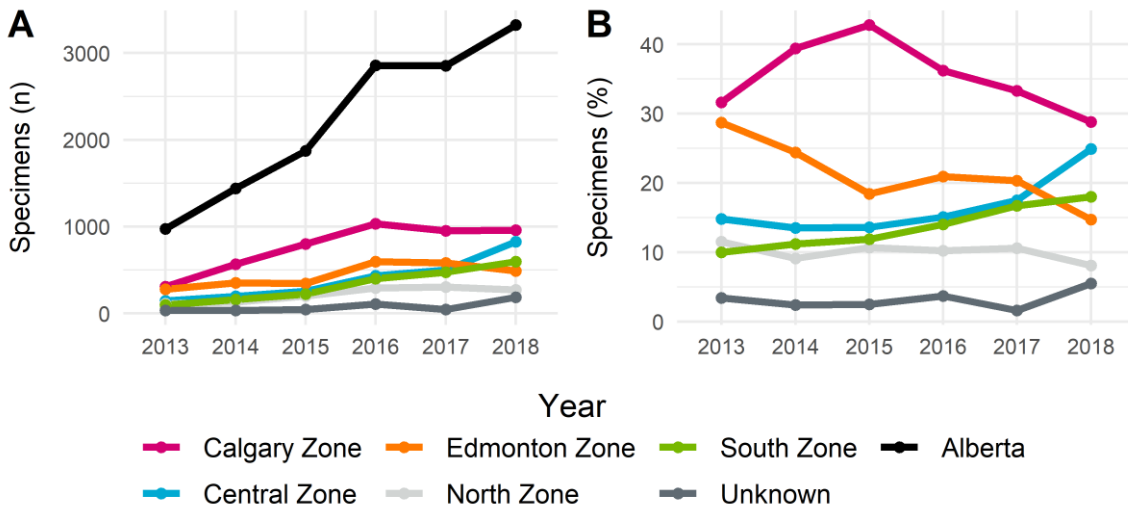


Figure 2. A) Number and B) percent of specimens submitted to the Alberta Passive Tick Surveillance Program by Zone, 2013-2018. Data includes specimens that were not ticks (e.g. spiders, ants, or bed bugs).

All Ticks Submitted

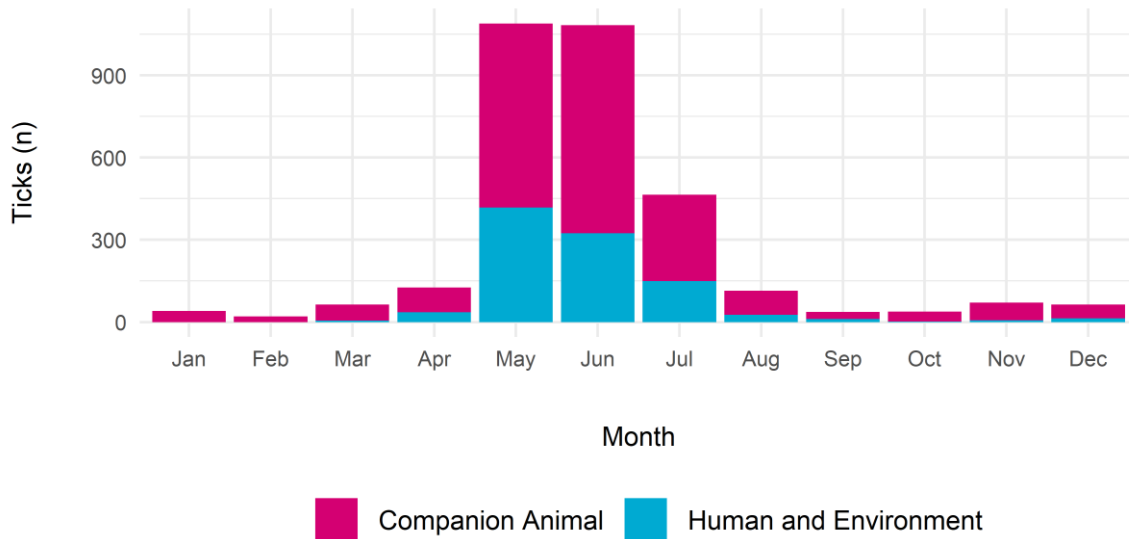


Figure 3. Ticks submitted to the Alberta Passive Tick Surveillance Program by month, 2018

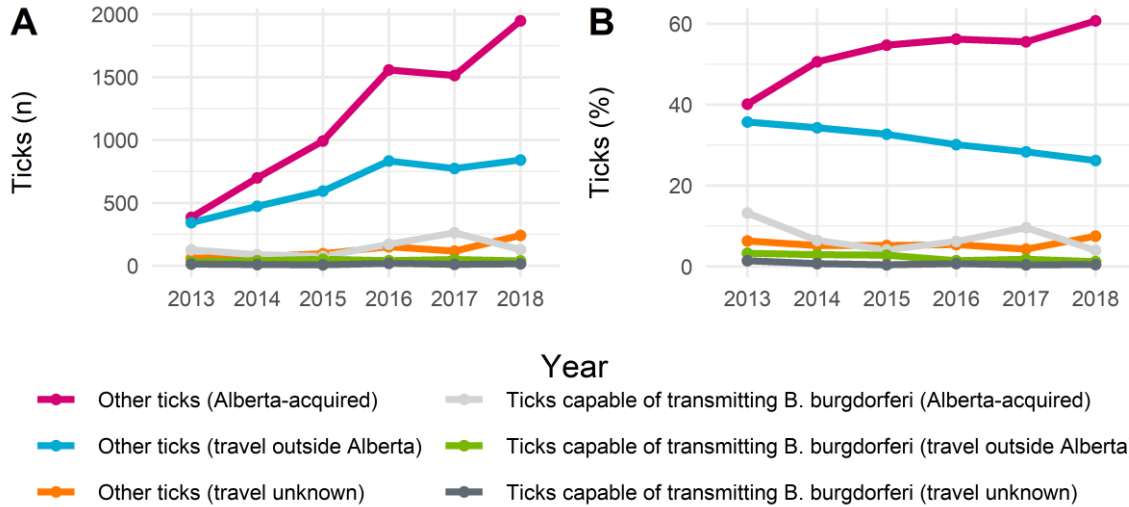


Figure 4. A) Number and B) percent of ticks submitted to the Alberta Passive Tick Surveillance Program by tick category and probable location of acquisition, 2013-2018

Alberta-acquired Ticks Capable of Transmitting *Borrelia burgdorferi*

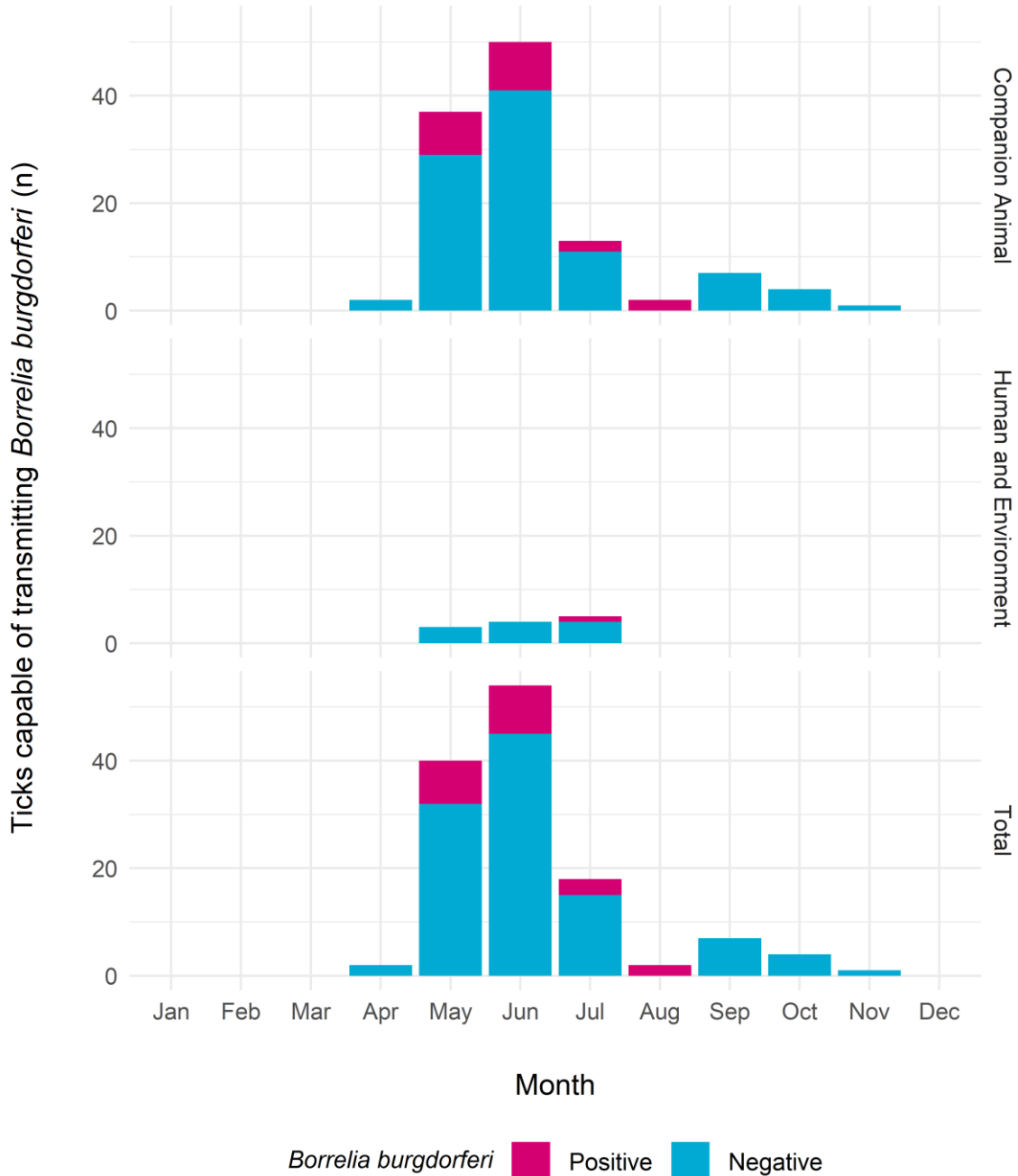


Figure 5. Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by month and *B. burgdorferi*-positivity, 2018

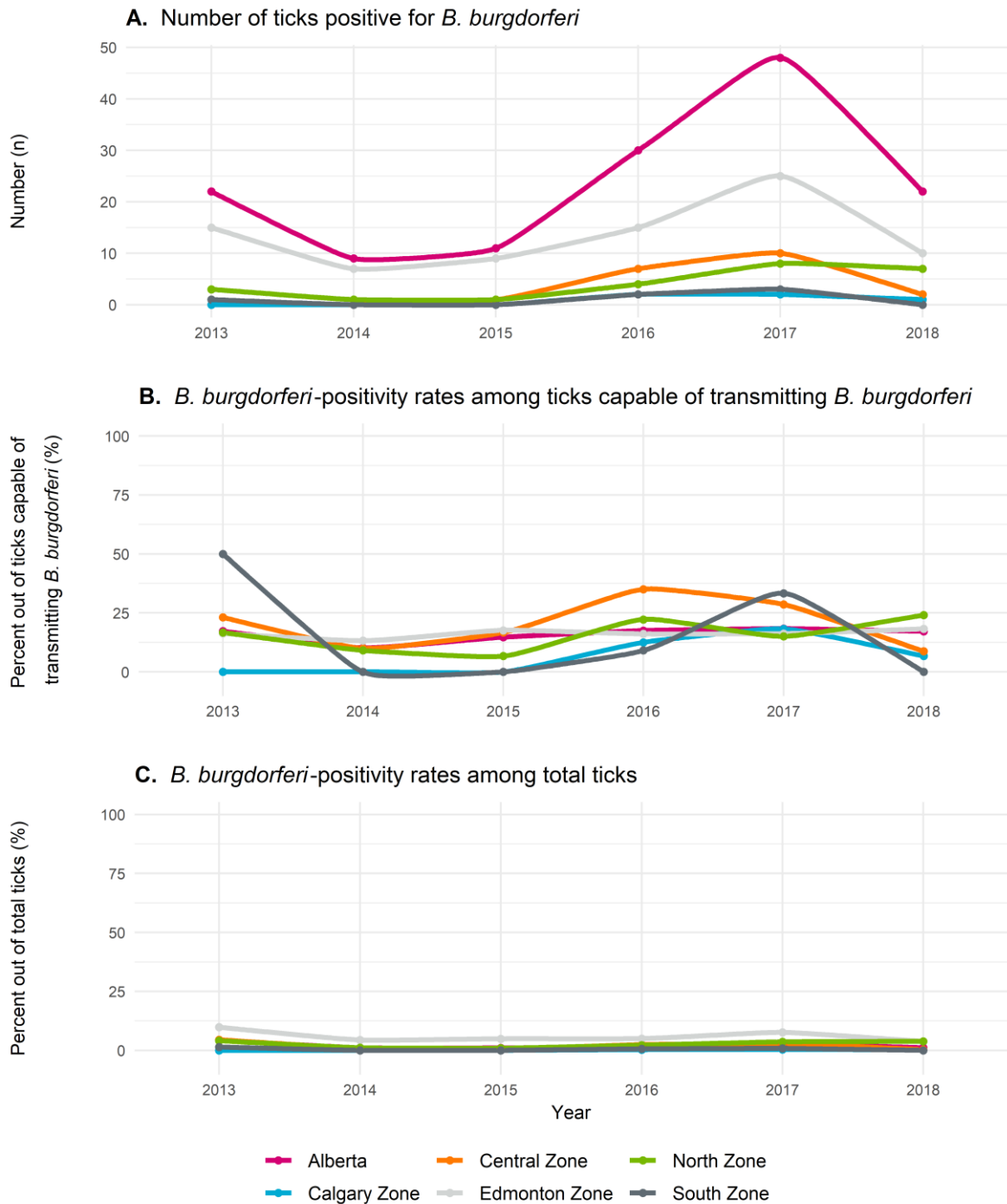


Figure 6. Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by zone, 2013-2018. A) Number, B) *B. burgdorferi*-positivity out of total Alberta-acquired ticks capable of transmitting *B. burgdorferi* and C) *B. burgdorferi*-positivity out of total Alberta-acquired ticks.

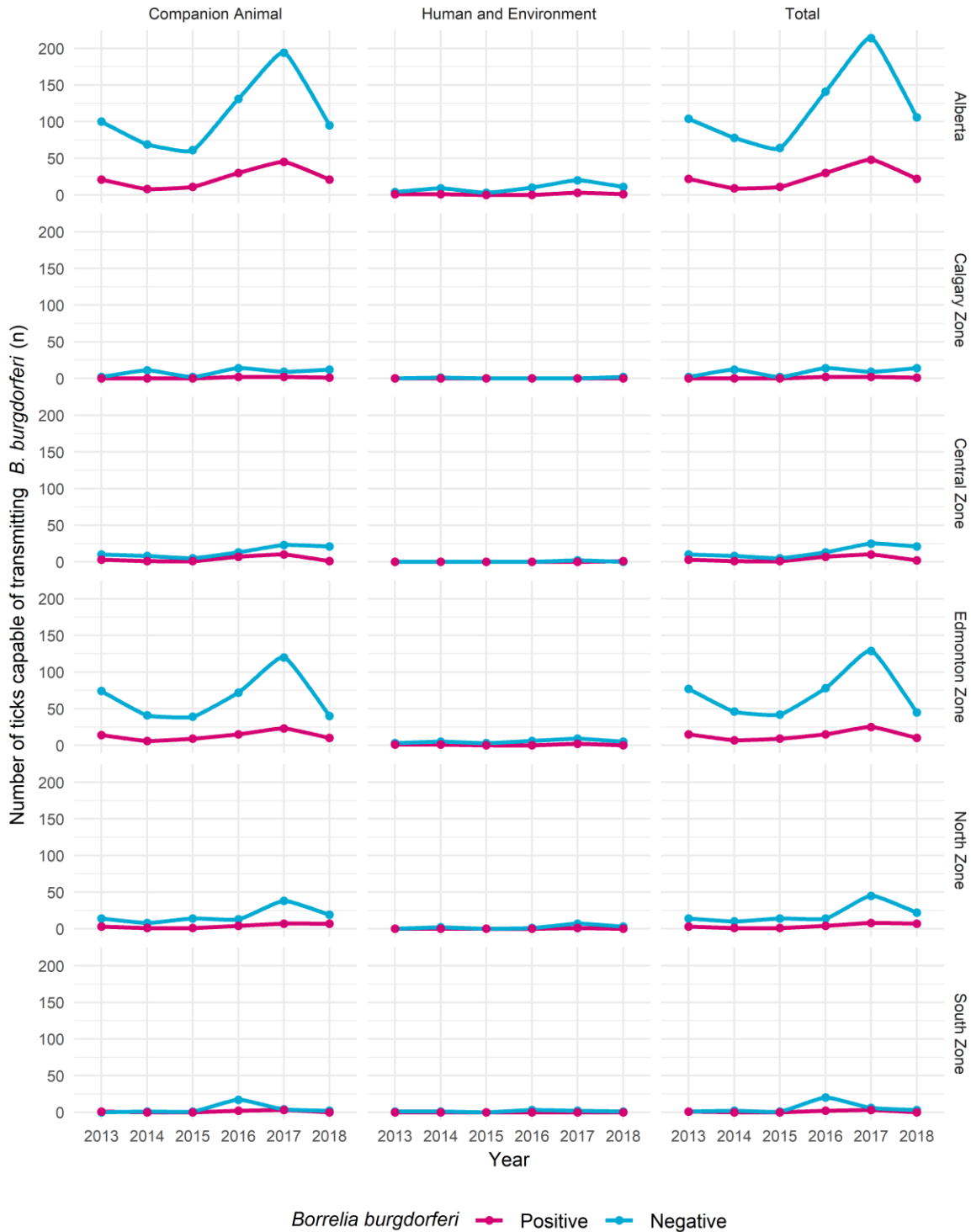


Figure 7. Number of Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by Zone and *B. burgdorferi*-positivity, 2013-2018

Data Notes

- Each tick is counted individually, but multiple ticks may be submitted from one host or person at a time
- Submission is voluntary, so the number and proportion of ticks are not a measure of prevalence at the geographic level. Multiple ticks from one host are counted individually and may affect the interpretation of geographic data
- Alberta-acquired is used to define ticks where the probable location of acquisition was within Alberta. It includes ticks where the submitter has indicated no history of travel or travel only within Alberta in the previous two weeks.
- Geographic assignment is based on most likely zone of acquisition, if available, or the postal code of residence or work of the submitter
- Ticks capable of transmitting *B. burgdorferi* include all *Ixodes spp.* except for *I. kingi* and *I. ochotonae*. *I. kingi* and *I. ochotonae* are not tested for *B. burgdorferi* since there is no evidence that they can transmit the bacteria which can cause Lyme disease
- An increase in specimens or ticks submitted may reflect increased awareness about the program rather than increased ticks in Alberta

Acknowledgments

We would like to thank all those who submitted ticks to the program and the veterinary clinics that participated.

Further Resources

- Lyme Disease and Tick Surveillance in [Alberta](#) and [Canada](#)
- [Surveillance of Ticks on Companion Animals in Alberta](#)
- Alberta Tick Surveillance [Definitions](#)
- [Alberta Health Interactive Health Data Application \(IHDA\)](#)