



Tick surveillance 2020 summary

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Tick Surveillance 2020 Summary

Key Highlights

- Due to the COVID-19 pandemic response, ticks were not accepted through the human/environment program starting in the summer of 2020
- The risk of acquiring Lyme disease in Alberta remains 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 2020, there were 1,849 specimens submitted for species determination and testing from 1,170 companion animals or people, of which 1,847 (99.9 per cent) specimens were submitted through the Companion Animal Program and 2 (0.1 per cent) were submitted through the Human and Environment program
- There were 1,808 specimens that were identified as ticks, and 1,182 were Alberta-acquired (no history of travel outside of Alberta in the previous two weeks)
- There were 84 Alberta-acquired ticks capable of transmitting *B. burgdorferi* identified, which accounted for:
 - 71 per cent of total ticks capable of transmitting *B. burgdorferi*
 - 7 per cent of total Alberta-acquired ticks
 - 5 per cent of total ticks
- There were 13 Alberta-acquired ticks identified that were *B. burgdorferi*-positive, which accounted for:
 - 15 per cent of Alberta-acquired ticks capable of transmitting *B. burgdorferi*
 - 1.1 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:** 15 per cent (n = 13/84)
 - **Calgary Zone:** 29 per cent (n = 2/7)
 - **Central Zone:** 29 per cent (n = 2/7)
 - **Edmonton Zone:** 10 per cent (n = 6/58)
 - **North Zone:** 17 per cent (n = 1/6)
 - **South Zone:** 40 per cent (n = 2/5)
- No criteria were met to initiate active surveillance methods in 2020
- 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. In 2020, the program was 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 could submit ticks they find on themselves or in the environment through the [Human and Environment Program](#). However, due to the COVID-19 pandemic response, ticks were not accepted through this program starting in the summer of 2020. Veterinarians could submit ticks from pets or livestock through the [Companion Animal Program](#) and were able to continue to submit up to the end of 2020. The specimens are assessed to determine if they are ticks. Identified 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. ochotonae* 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

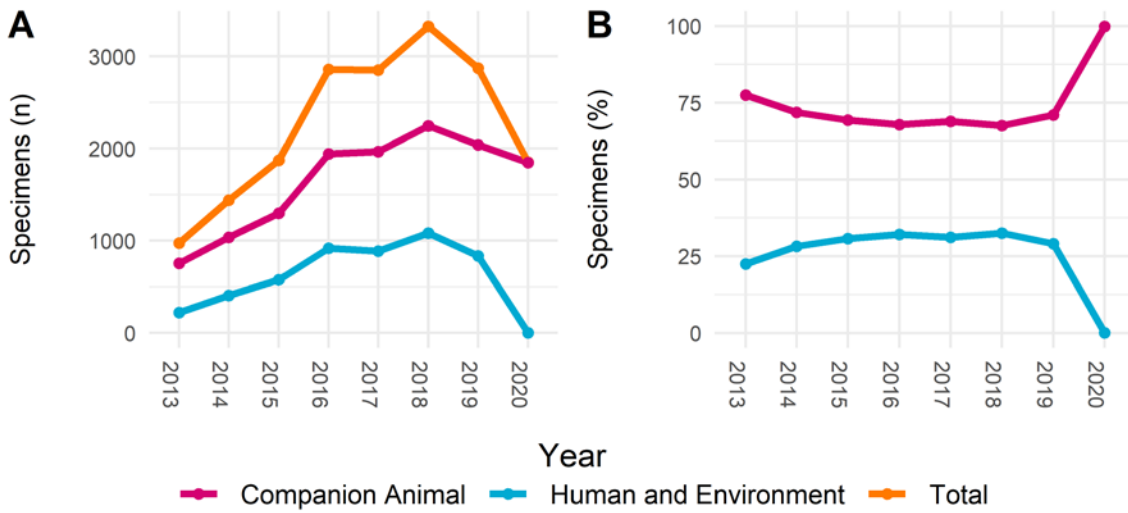


Figure 1. A) Number and B) percent of specimens submitted to the Alberta Passive Tick Surveillance Program, 2013-2020. Data includes specimens that were not ticks (e.g. spiders, ants, or bed bugs).

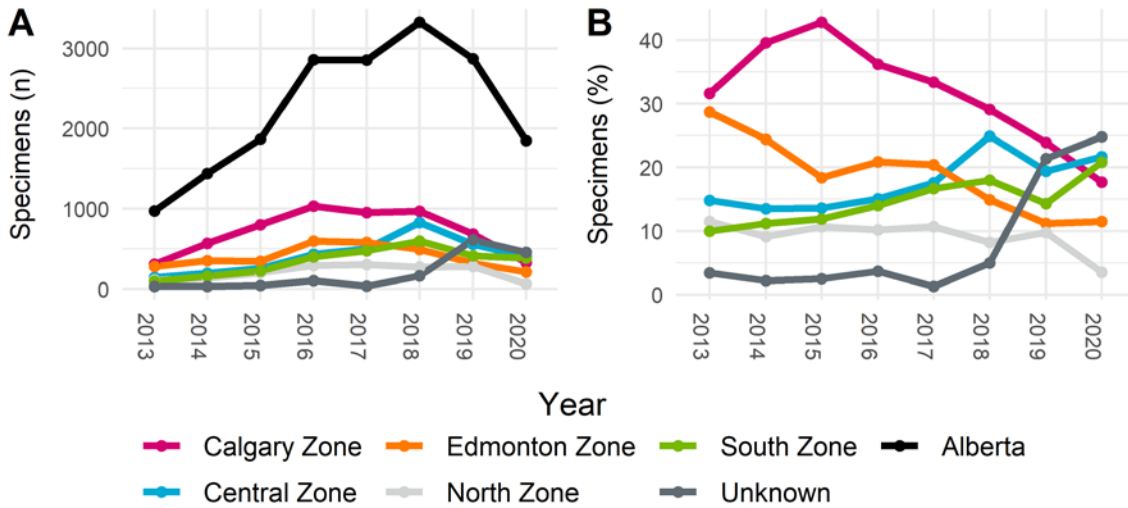


Figure 2. A) Number and B) percent of specimens submitted to the Alberta Passive Tick Surveillance Program by Zone, 2013-2020. Data includes specimens that were not ticks (e.g. spiders, ants, or bed bugs). Note: As of 2019, Zone is no longer entered for non-*Ixodes* ticks where the host traveled outside of Alberta for the companion animal program.

All Ticks Submitted

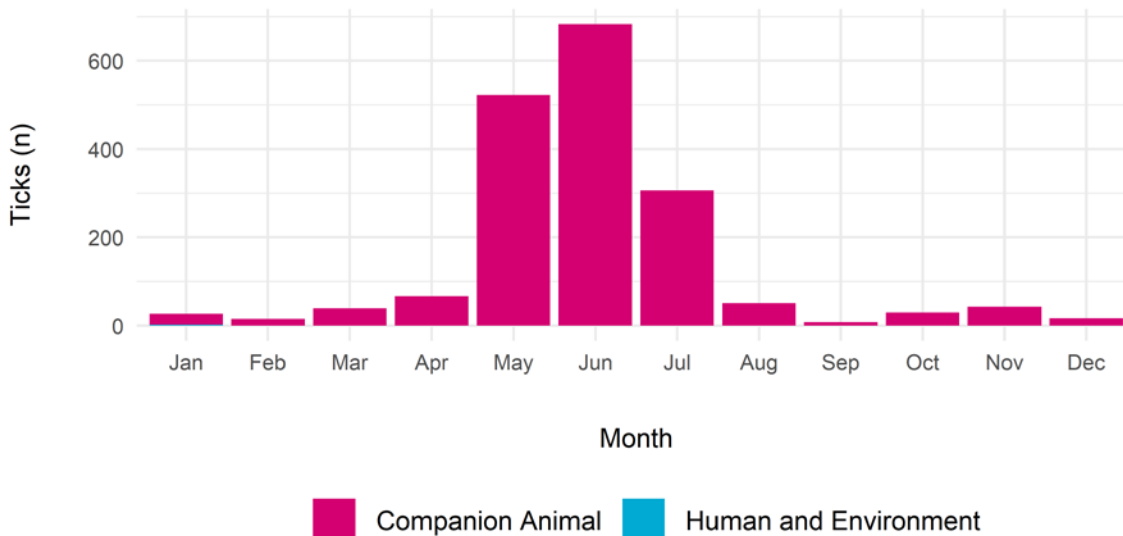


Figure 3. Ticks submitted to the Alberta Passive Tick Surveillance Program by month, 2020

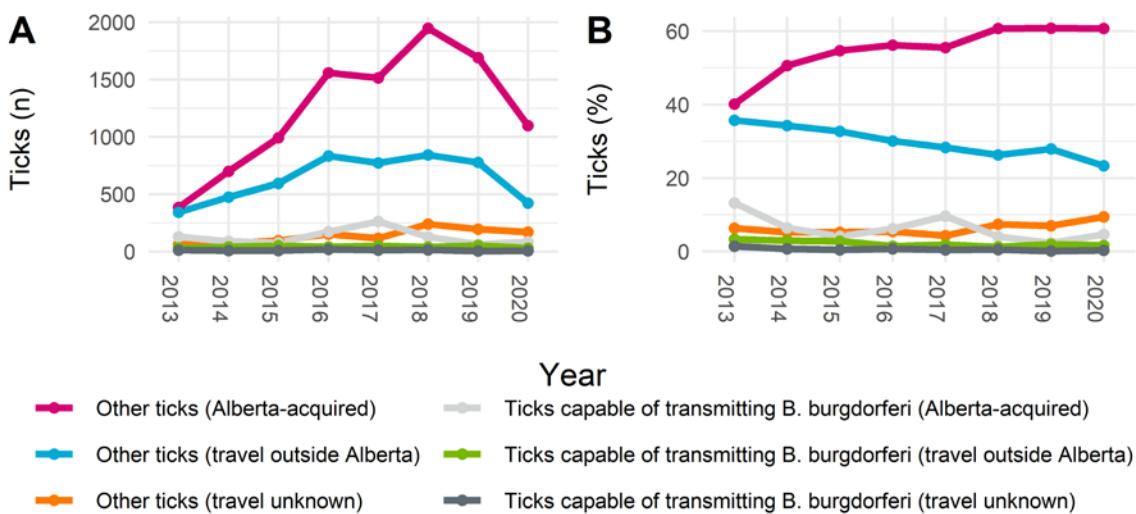


Figure 4. A) Number and B) percent of ticks submitted to the Alberta Passive Tick Surveillance Program by tick category and probable location of acquisition, 2013-2020

Alberta-acquired Ticks Capable of Transmitting *Borrelia burgdorferi*

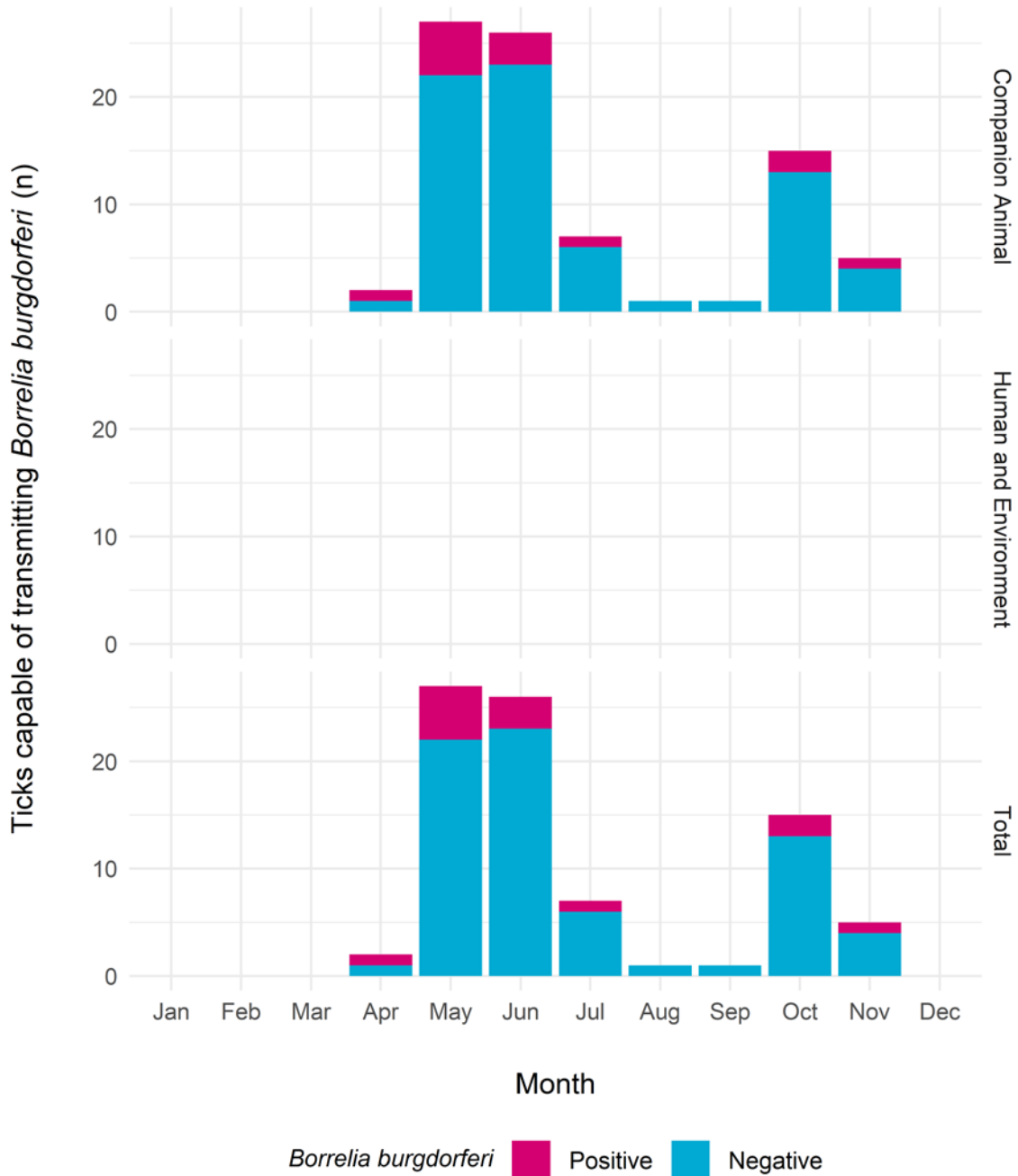


Figure 5. Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by month and *B. burgdorferi*-positivity, 2020

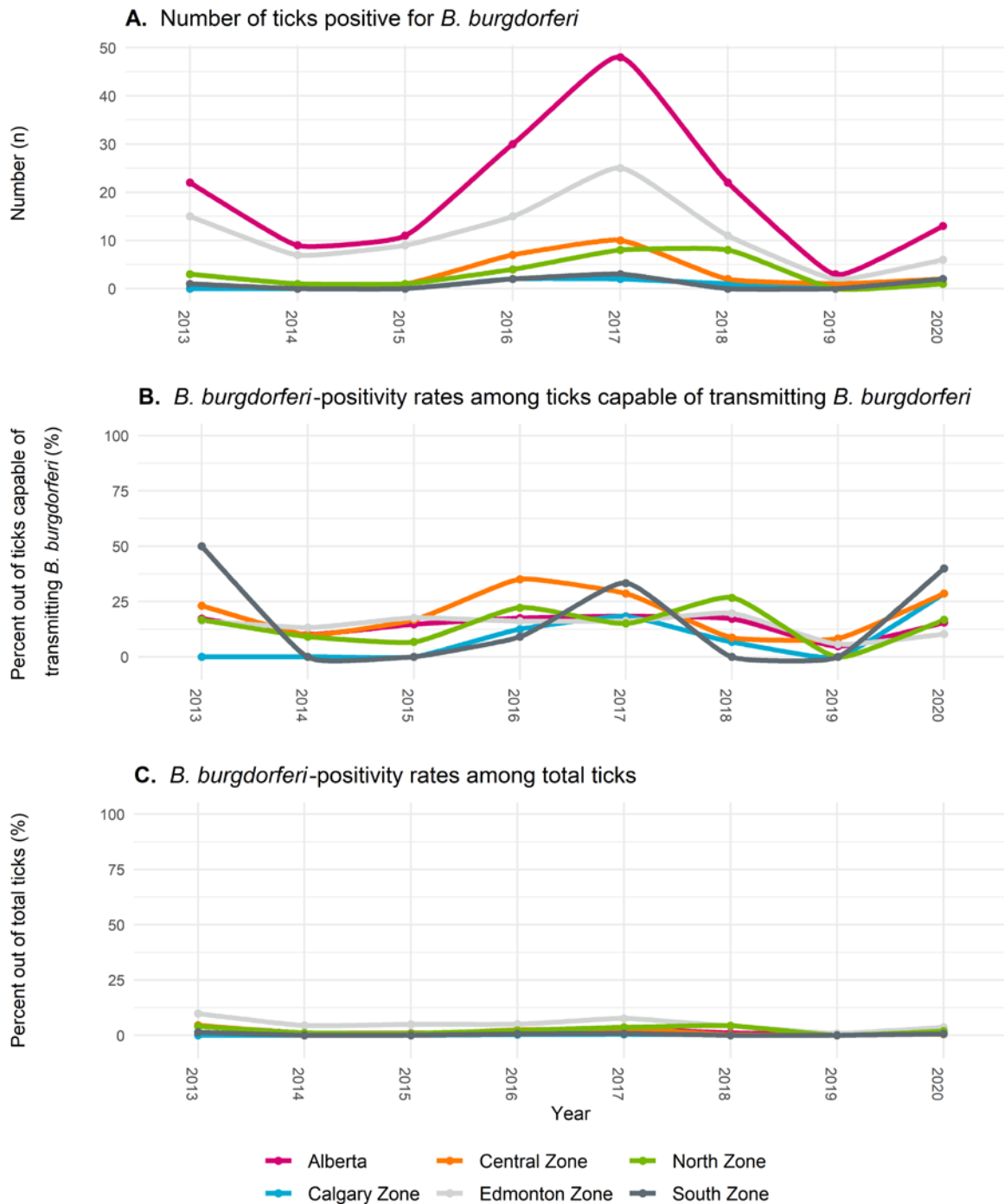


Figure 6. Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by zone, 2013-2020. A) Number, B) *B. burgdorferi*-positivity out of total Alberta-acquired ticks capable of transmitting *B. burgdorferi* and C) *B. burgdorferi*-positivity out of total Alberta-acquired ticks.

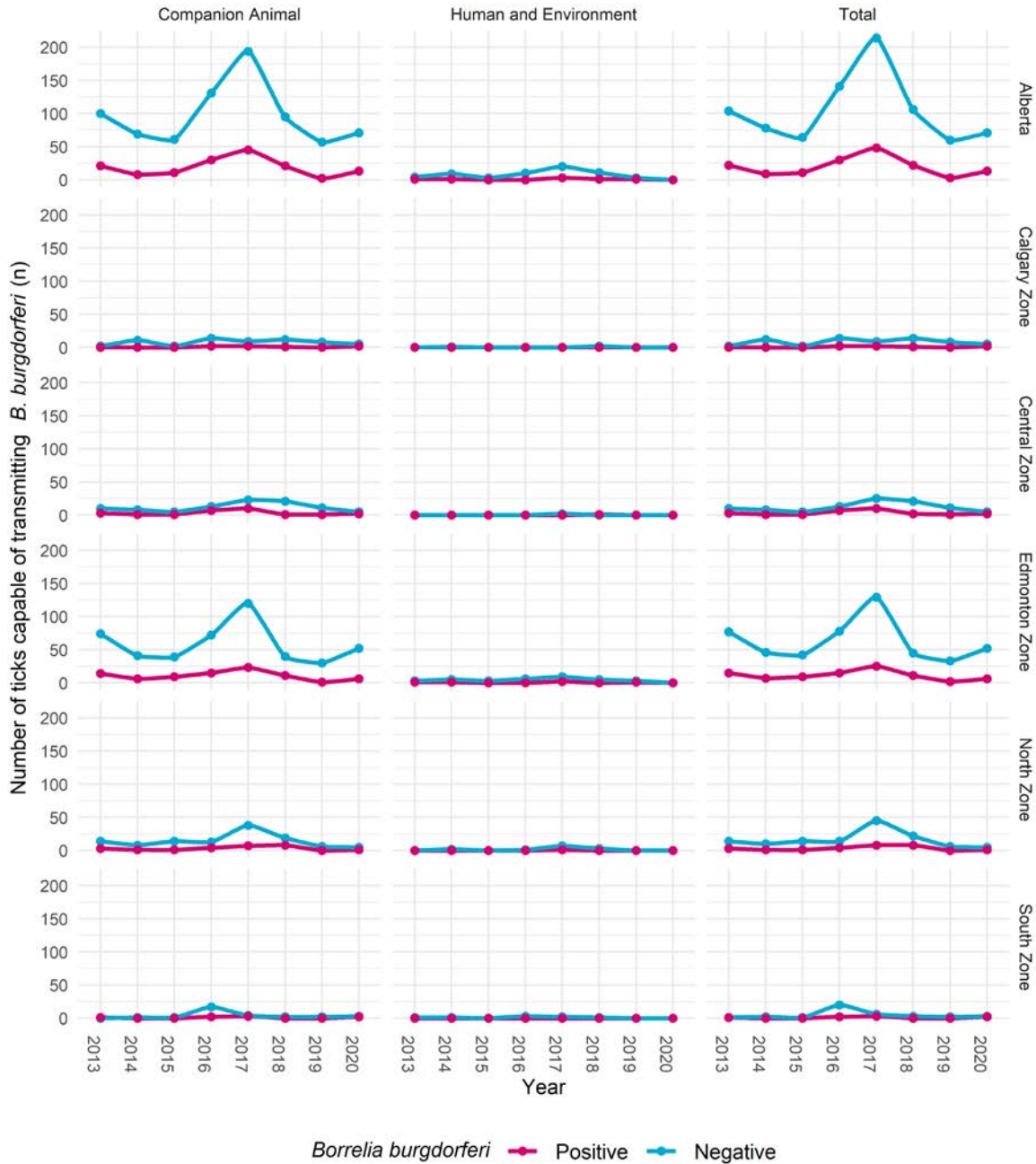


Figure 7. Number of Alberta-acquired ticks capable of transmitting *Borrelia burgdorferi* submitted to the Alberta Passive Tick Surveillance Program by Zone and *B. burgdorferi*-positivity, 2013-2020

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
- As of 2019, Zone is no longer entered for non-*Ixodes* ticks where the host traveled outside of Alberta for the companion animal program.

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](#)
- [Alberta Health Interactive Health Data Application \(IHDA\)](#)