BC Centre for Disease Control
Provincial Health Services Authority

Provincial Health Services Authority

Lyme Disease in Humans and Tick Surveillance in British Columbia

2025 Update

Key Messages

The number of locally acquired Lyme disease cases and the prevalence of *Borrelia burgdorferi* in submitted ticks remain low in British Columbia.

In 2024:

- 17 confirmed Lyme disease cases were reported; however, only 3 cases appear to have been acquired locally based on available exposure information.
- 0.1% of *Ixodes* spp. ticks submitted to the British Columbia Centre for Disease Control Public Health Laboratory tested positive for *B. burgdorferi*, the causative agent of Lyme disease.
- Most tick submissions to the eTick platform were identified as *Dermacentor* spp. (57%) or *Ixodes pacificus* (37%).

Background

In the context of climate change, the need for timely surveillance data of local tick populations and the diseases they carry has become increasingly important for the purposes of risk assessment and management. The British Columbia Centre for Disease Control (BCCDC) operates an integrated surveillance program that consists of monitoring human cases of Lyme disease and conducting surveillance of local tick populations for the presence of *Borrelia burgdorferi*.

This report provides an update on human cases of Lyme disease reported to the BCCDC, *B. burgdorferi*-positive *Ixodes* spp. tick submissions to the BCCDC Public Health Laboratory (PHL), and tick submissions from residents of British Columbia (BC) to eTick for the year 2024.

Human Cases of Lyme Disease in British Columbia

The total number of reported human Lyme disease cases decreased in 2024 compared to the previous year, and has remained relatively stable over the past ten years. The number of locally acquired cases of Lyme disease remains low.

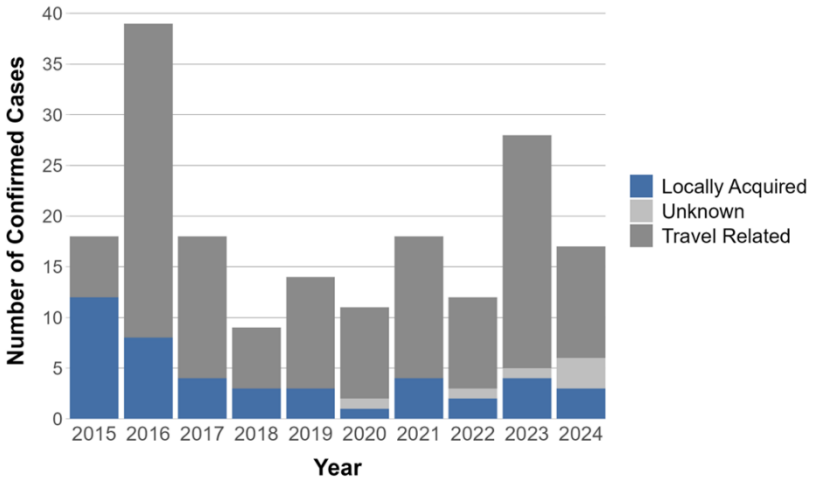

Figure 1. Confirmed Lyme disease cases in BC by likely location of acquisition, 2015-2024.

A total of 17 confirmed human Lyme disease cases were reported in BC in 2024, a decrease compared to last year but similar to what was observed in years prior. Only 3 of these cases are thought to have acquired Lyme disease within BC based on available exposure information, which is consistent with what has been observed over the past 10 years. Three of the 17 cases did not have sufficient exposure information for the location of acquisition to be assessed.

Tick Surveillance

The proportion of *Ixodes* spp. ticks that were positive for *B. burgdorferi* in 2024 remained low (0.1%).

The BCCDC PHL conducts identification and pathogen testing of ticks removed from humans and animals submitted by physicians and veterinarians, respectively. In 2024, a total of 753 *Ixodes* spp. ticks were submitted to the BCCDC PHL and pathogen tested for *B. burgdorferi*, the causative agent of Lyme disease. One *Ixodes* spp. tick tested positive for *B.*

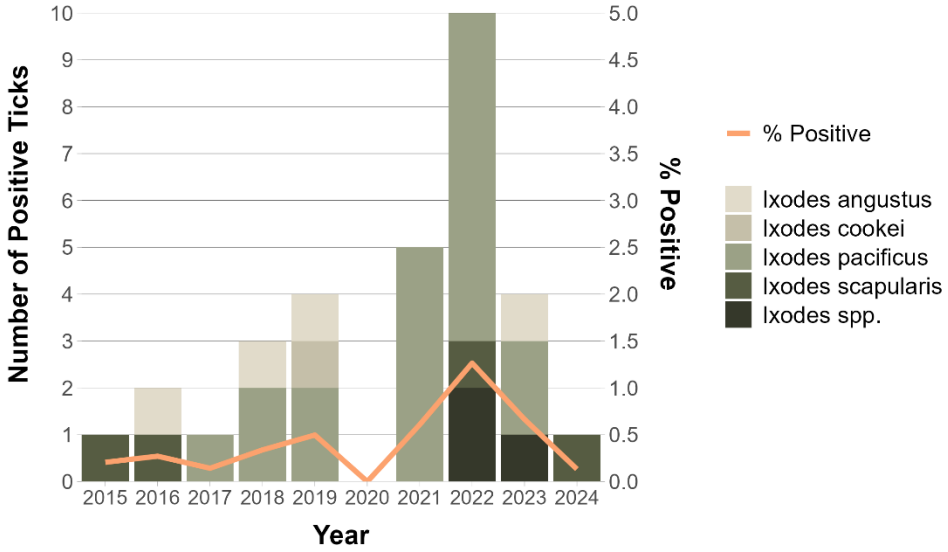

Figure 2. *B. burgdorferi*-positive *Ixodes* spp. tick submissions, 2015-2024.

burgdorferi (0.1%) in 2024, which is a decrease from the previous two years, but comparable to what was observed between 2015 and 2017 (Figure 2).

B. burgdorferi-positive ticks submitted between 2015-2024 were identified as belonging to the following species: *Ixodes pacificus* (19 ticks), *Ixodes angustus* (4 ticks), *Ixodes scapularis* (4 ticks), and *Ixodes cookei* (one tick). Three positive *Ixodes* spp. ticks were unable to be further identified to the species level. Most of the 31 *B. burgdorferi*-positive tick submissions received over the past ten years were found on humans (27 ticks), although some positive ticks were also collected from dogs (4 ticks). The one positive tick detected in 2024 was identified as *Ixodes scapularis* and it was collected from an individual who reported travel outside of BC.

Tick Diversity

Ixodes spp. tick submissions to eTick were mainly from the southern coastal region of the province and *Dermacentor* spp. tick submissions were mainly from the southern interior. However, the distributions of *Ixodes* spp. and *Dermacentor* spp. tick submissions were not limited to these regions.

eTick is a public platform for image-based tick identification. In 2024 there were 1321 valid tick submissions to eTick from BC without reported out-of-province travel. Most submissions were identified as *Dermacentor* spp. ticks (57%) followed by *I. pacificus* (37%), *I. angustus* (3%), *Ixodes spinipalpis* (2%), and *Ixodes auritulus* (0.9%). Single submissions identified respectively as *Ixodes kingi*, *Otobius megnini*, *Rhipicephalus sanguineus*, and *Haemaphysalis leporispalustris* were also received (Table 1).

Table 1. BC eTick Submissions without reported out-of-province travel, 2024.

Species	Submissions
Dermacentor spp.	751
Ixodes pacificus	489
Ixodes angustus	34
Ixodes spinipalpis	31
Ixodes auritulus	12
Ixodes kingi	1
Otobius megnini	1
Rhipicephalus sanguineus	1
Haemaphysalis leporispalustris	1

Ixodes spp. tick submissions came mostly from the southern coastal region of the province, but specimens were also submitted from more northern parts of the province including Prince George and Haida Gwaii. Conversely, *Dermacentor* spp. tick submissions tended to originate from the southern interior region (Figure 3) but were submitted from as far north as Fort Nelson.

A tick species is considered to be established in an area if all three feeding stages (larva, nymph, and adult) are found on resident animals or free in the environment for two or more consecutive years.

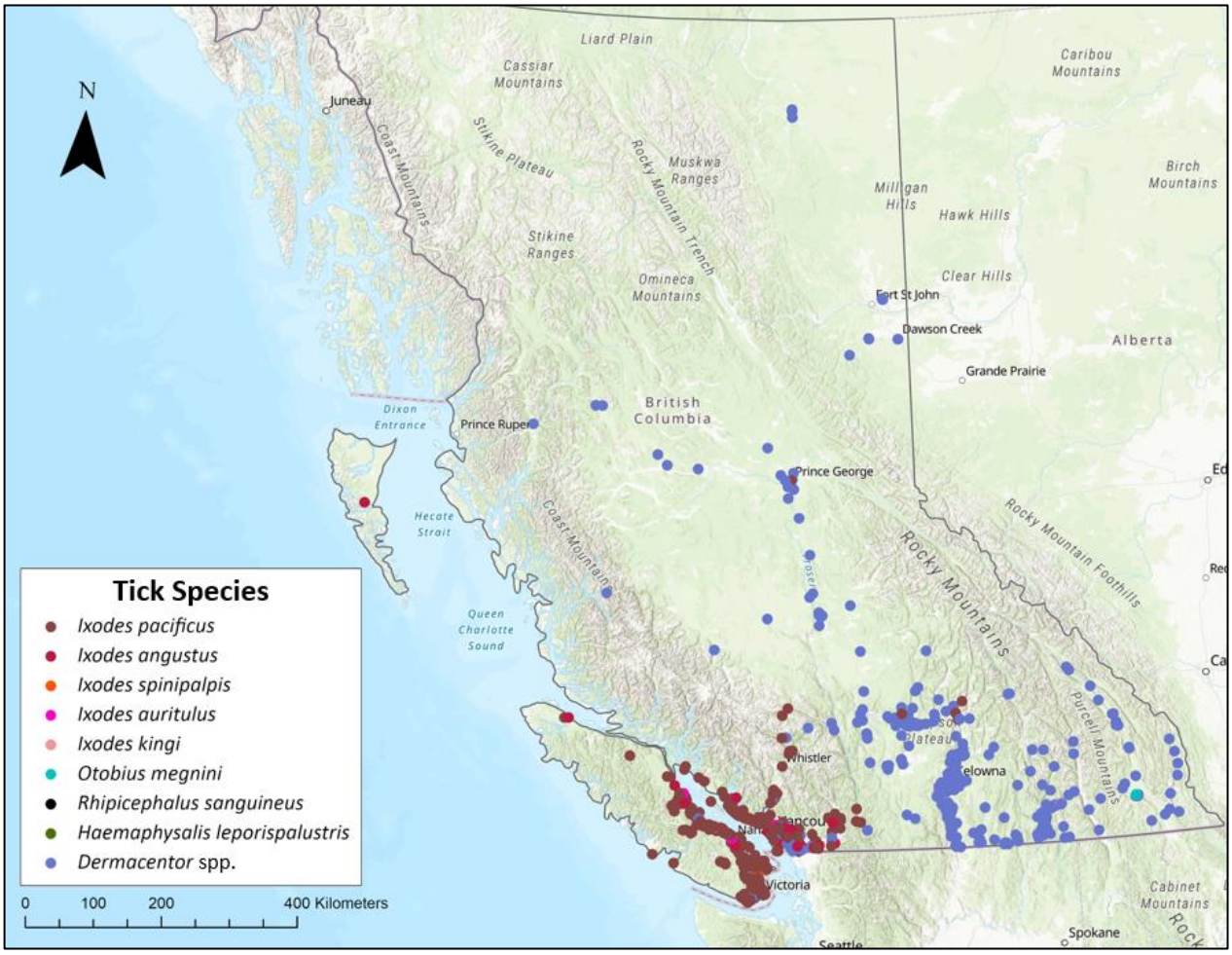

Figure 3. Map of valid tick submissions to eTick without reported out-of-province travel, 2024.

Ticks on Migratory Birds

From March to October 2024, BCCDC collaborated with Vancouver Island University's bird banding station at Buttertubs West Marsh in Nanaimo and the eTick program to collect, identify, and test ticks found on migratory birds.

A total of 30 ticks were found on 15 captured birds, with the number of ticks per bird ranging from 1-4 (Table 1). These 15 birds were identified as belonging to 9 distinct species that are known to spend time on the ground or in low-lying foliage while nesting or foraging.

Bird Species:	Wilson's Warbler (n = 2)		Fox Sparrow (n = 1)	Lincoln's Sparrow (n = 4)				Common Yellowthroat (n = 1)	House Wren (n = 1)	Oregon Junco (n = 1)	Orange-crowned Warbler (n = 2)		Hermit Thrush (n = 1)	Golden-crowned Sparrow (n = 2)	
Number of ticks per bird:	3	1	1	3	4	2	1	1	2	1	1	1	3	2	4

Table 1. Number of ticks collected off birds captured at Buttertubs West Marsh, Nanaimo, British Columbia, by bird species, Mar. 28, 2024-Oct. 29, 2024.

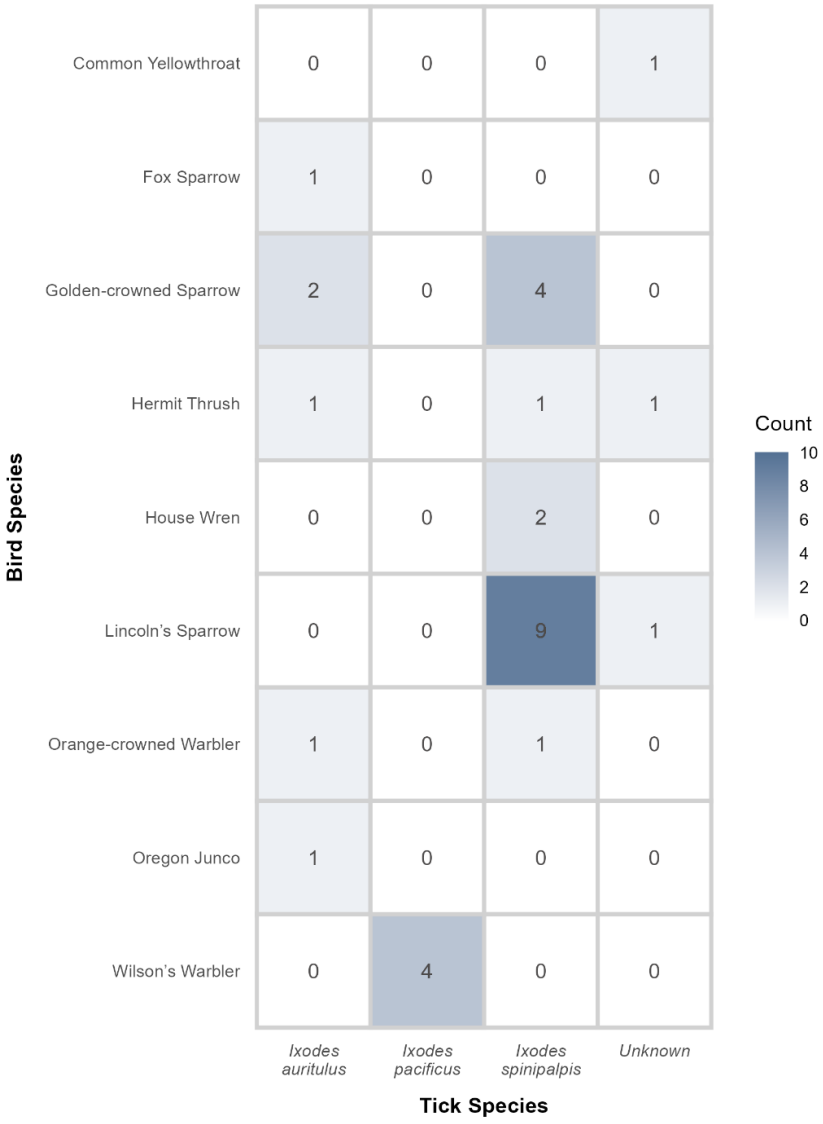

Figure 4. Ticks collected from migratory birds at Buttertubs West Marsh, Nanaimo, British Columbia, by bird species and tick species, Mar. 28, 2024-Oct. 29, 2024.

- Collected ticks were identified as *I. spinipalpis* (17 ticks), *I. auritulus* (6 ticks), or *I. pacificus* (4 ticks) (Figure 4). While migratory birds may facilitate range expansion of tick species, all three species collected here are already well-documented in BC. Three additional ticks were unable to be identified to the genus or species level.
- Most ticks collected were larvae (25 ticks), although a few nymphal ticks were also collected (5 ticks).
- *I. pacificus* ticks were exclusively found on Wilson's Warblers.
- *Ixodes spinipalpis* was the most commonly collected tick species from birds, notably from Lincoln's Sparrows.
- 23 of the 30 ticks were tested for *B. burgdorferi*, *Anaplasma* spp., *Ehrlichia* spp., *Babesia microti*, and *Rickettsia rickettsii* but none were positive.

Summary

The number of locally acquired Lyme disease cases and the prevalence of *B. burgdorferi* in submitted ticks remain low in BC. *Ixodes* spp. ticks were most commonly encountered in the south coastal region of the province while *Dermacentor* spp. ticks were most commonly encountered in the southern interior.

While the risk of acquiring Lyme disease in BC is low, it is important to take measures to prevent tick bites when spending time outdoors and to promptly remove attached ticks if encountered. Continued monitoring of local tick populations in addition to human cases of Lyme disease are crucial for detecting the spread of Lyme disease and the emergence of other tick-borne diseases throughout the province.

Additional Resources

- A citizen science surveillance toolkit for collecting ticks on birds provides resources on how bird banding stations can set up a similar tick surveillance program at their banding station.
- The BCCDC website provides additional information on tick-borne diseases in BC and historical reports, in addition to information on preventing tick bites and what to do if you find a tick.
- The TickTOOL platform provides additional tips for how to incorporate preventive behaviours while still enjoying the outdoors.
- The eTick website provides more information on the eTick program and how to submit photos of ticks for identification.