2012

Tick Surveillance and Lyme Disease Prevention Summary Report

Toronto and Region Conservation
for The Living City®

Acknowledgements

Our sincere thanks to our Regional Public Health partners:

York Region

Region of Peel

DURHAM

TORONTO

Cover photo: Adult blacklegged tick, *Ixodes scapularis.*
Photo by Scott Bauer. U.S. Department of Agriculture
http://www.ars.usda.gov/is/graphics/photos/mar98/k8002-3.htm

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Introduction

Lyme disease is an infection caused by a bacterium called *Borrelia burgdorferi* which is transmitted to humans through the bite of an infected tick. Lyme disease was first recognized in the United States in 1975, near the community of Lyme, Connecticut (Steere, 2001). The first case in Canada was reported from Quebec in 1984. In Ontario and Eastern Canada, Lyme disease is passed to humans through the bite of the blacklegged ticks (*Ixodes scapularis*). The western blacklegged ticks (*Ixodes pacificus)* are responsible for transmitting Lyme disease in British Columbia (Public Health Agency of Canada, 2012).

Figure 1 is a map showing where Lyme disease is currently known to occur in south eastern Canada and central Canada – these known areas are shown as red triangles, while areas that are suspected, but not confirmed are shown by blue triangles. In Ontario, the prevalent or "endemic" areas of Lyme disease include Long Point Provincial Park, Turkey Point Provincial Park, Rondeau Provincial Park, Point Pelee National Park, Prince Edward Point National Wildlife Area, Wainfleet Bog Conservation Area, and the St. Lawrence Islands National Park.

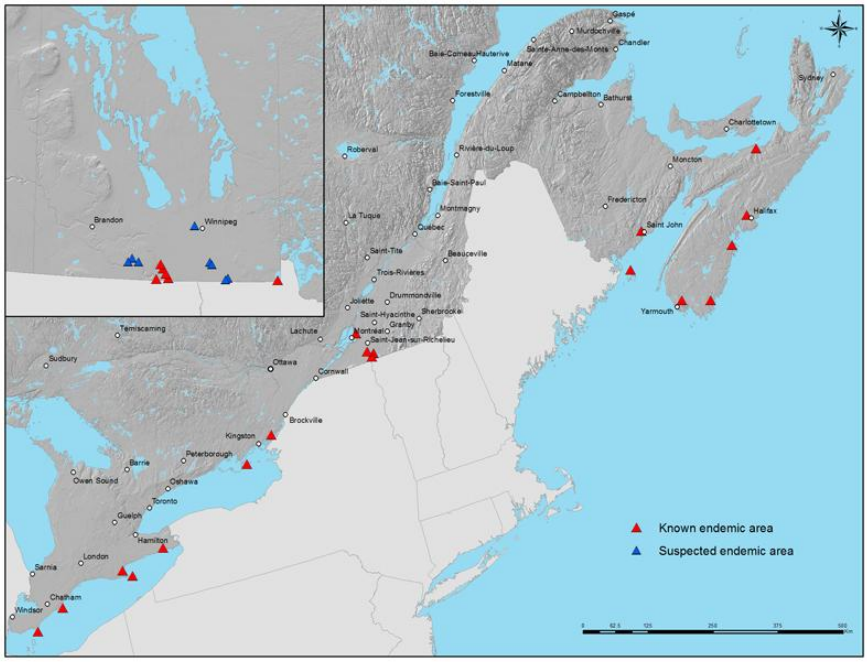

Figure 1. Map showing locations of known (red) and suspected (blue) Lyme disease endemic areas in eastern and central Canada. (Source: Public Health Agency of Canada)

As **Figure 1** has shown, an established blacklegged tick population has not been identified within the Toronto and Region Conservation Authority's (TRCA's) jurisdiction. However, since ticks can be carried by migratory birds (Ogden, 2008), there is the potential for new populations of the ticks to spread across Ontario. Therefore, one does not necessarily have to be in an endemic or high-risk area to be at risk of encountering ticks that carry the bacterium.

TRCA recognizes that there are direct implications of the increasing incidents of Lyme disease to the organization, as follows:

- TRCA's properties include large natural areas that could potentially harbour ticks; in addition, many TRCA's properties are important resting spots for migratory birds (*e.g.* Tommy Thompson Park);
- TRCA has many field staff, therefore these staff might have increased exposure to ticks, and ultimately Lyme disease;
- many visitors use and enjoy TRCA facilities such as conservation areas, field centres and resource tracts, thus their potential exposure to ticks increases; and,
- TRCA has been collaborating with Regional Public Health units to address West Nile virus and Lyme disease has now been included in our Public Health partner's vector-borne disease programs.

This report provides a summary of what TRCA has done to address the recommendations presented during Authority meeting #5/12 (June 22, 2012) and also provides an overview of the various Regional Public Health partners' Lyme disease prevention programs, which include investigation and reporting of the disease, passive and active tick surveillance and education to increase public awareness.

Information provided in this report was adapted from sources including: Public Health Agency of Canada, Public Health Ontario, Ontario Ministry of Health and Long-term Care, and Centers for Disease Control and Prevention (USA). Regional data provided in this report were acquired through personal communication with the vector-borne disease coordinators from our Regional Public Health partners.

Investigation and reporting

Several studies (Ogden, 2006; Barker, 2000) have suggested that the incidence of Lyme disease in Canada is increasing, and in 2010, Lyme disease became a nationally reportable disease (Public Health Agency of Canada, 2012). This means that all healthcare professionals should report cases of Lyme disease to the Public Health Agency of Canada via their provincial public health system. The Agency also surveys the provinces and territories to assess the number of national cases and the distribution of Lyme disease in Canada.

TRCA's Regional Public Health partners investigate every report of Lyme disease received. The standard investigation includes confirming the diagnosis, collecting demographic data, determining location of exposure and investigating possible links among cases. This has been accomplished by completing the Ministry of Health and Long-Term Care Lyme Disease Human Case Investigation Report.

The following summarizes the 2012 occurrences of Lyme disease reported by each of TRCA's Regional Health partners:

York Region

In 2012, two confirmed positive Lyme disease human cases were reported In York Region; however, these were travel-related cases (Kimberly Gray, personal communication, December 14, 2012).

Peel Region

In 2012, eight human cases of Lyme disease were reported in Peel Region. Two cases were acquired locally. This was the first year that Lyme disease was locally acquired in Peel Region. One case resided in Caledon and one was from Mississauga. (Paul Proctor, personal communication, January 2, 2013).

Durham Region

In 2012, two confirmed human Lyme disease reported and one more case is under investigation (Toni Moran, personal communication, December 14, 2012).

City of Toronto

Toronto Public Health investigated 22 confirmed and probable Lyme disease cases in 2012. All of these cases reported travelling to Lyme disease endemic areas within or outside of Ontario (Omar Ozaldin, personal communication, December 19, 2012).

Passive Tick Surveillance

Passive tick surveillance involves looking for and testing ticks found on humans (and domestic animals in some regions) that are submitted voluntarily by the public and healthcare professionals. This method can help identify areas where ticks are suspected of being establishing. Tick specimens collected are shipped to the provincial Central Public Health Laboratory (CPHL) for species identification. Any blacklegged ticks identified are to be sent to the Public Health Agency of Canada's (PHAC's) National Microbiology Laboratory for Lyme disease testing.

The following summarizes the passive tick surveillance activities carried out by each of TRCA's Regional Health partners in 2012:

York Region

In 2012, 16 ticks were submitted and 3 specimens were identified as blacklegged ticks. Two blacklegged ticks are associated with travel to endemic areas. One blacklegged tick was locally acquired and is considered to be an adventitious tick (tick found sporadically, both temporally and spatially). No blacklegged ticks collected through passive surveillance tested positive for the *Borrelia burgdorferi*. (Kimberly Gray, personal communication, February 27, 2013).

Peel Region

In 2012, Peel Public Health received 20 ticks from the public. Five blacklegged ticks were identified and one was found locally, the rest were identified as *Dermacentor variabilis* (dog ticks). Specimens associated with human contact were submitted to the Central Public Health Laboratory (CPHL) in Toronto for species confirmation. The five ticks identified as blacklegged ticks were sent to the Public Health Agency of Canada's (PHAC) National Microbiology Laboratory in Winnipeg for Lyme disease testing. Peel Region has received two lab reports from PHAC indicating that two ticks were positive for *Borrelia burgdorferi*, the other three ticks were negative. The ticks that tested positive were from New York state and Prince Edward County in eastern Ontario. (Paul Proctor, personal communication, January 2, 2013).

Durham Region

Durham Region Health Department received 23 ticks from the public, 8 of which were identified as blacklegged ticks. None of these specimens were tested positive for *Borrelia burgdorferi* (Toni Moran, personal communication, December 14, 2012).

City of Toronto

Five blacklegged ticks were submitted for testing in 2012, and only one tested positive for *Borrelia burgdorferi*. (Omar Ozaldin, personal communication, December 19, 2012)

Active Tick Surveillance

To conduct active tick surveillance (also known as tick dragging), a team of staff drag strips of white cloth, mounted on poles behind them through habitats that are suspected of harbouring ticks (**Photo 1 and 2**). Tick dragging is considered the most effective method of harvesting wild ticks. Only the blacklegged ticks, *Ixodes scapularis*, were targeted. The results of the surveillance help determine the need for enhanced surveillance, and increased public education.

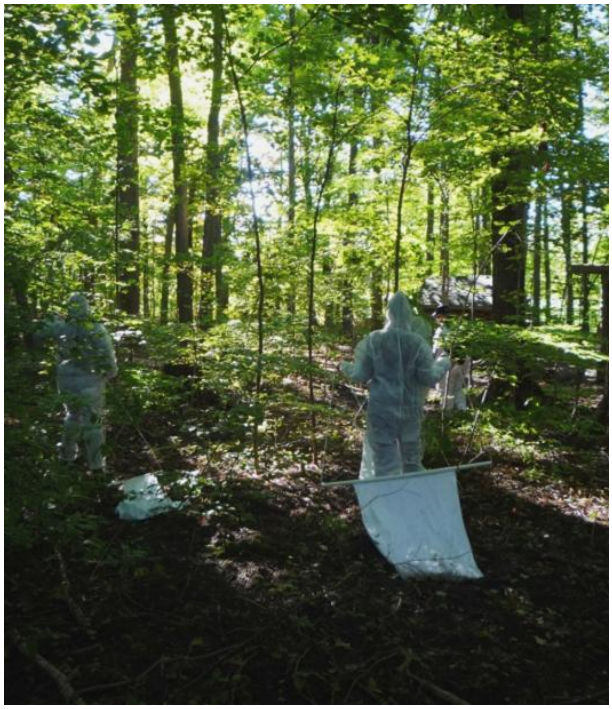

Photo1 and 2. Active Tick Surveillance in Bruce's Mill (conducted by York Region Public Health) – September 2012.

The following summarizes the active tick surveillance activities carried out by each of TRCA's Regional Health partners in 2012:

York Region

York Region Public Health conducted active tick surveillance in summer and fall of 2012. No ticks were found at any of the 12 locations. **Table 1** summarized the active tick surveillance activity in 2012 (Kimberly Gray, personal communication, December 14, 2012). .

Table 1. York Region Active Tick Surveillance Activity summary - 2012

	Surveillance location	Ticks found
Summer Active Tick Surveillance June-July	Boyd Conservation Area	0
	Kortright Conservation Area	0
	Lambert Wilson Park	0
	Sibbald Point Provincial Park	0
	Kleinburg Ravine	0
	Dr. McLean District Park	0
Fall Active Tick Surveillance September	Bruce's Mill CA	0
	Hollidge Forest Tract	0
	Thorton Bales CA	0
	Holland Landing CA/Anchor Park	0
	Kleinburg Ravine	0
	Dr. McLean District Park	0
	Mabel Davis Conservation Area	0
	Mill Pond	0
Total		0

Peel Region

Peel Public Health conducted active tick surveillance in two areas where there was suspected tick exposure. These surveillance activities did not identify any additional ticks (Paul Proctor, personal communication, January 2, 2013).

Durham Region

Durham Region Public Health conducted active tick surveillance in June, along the Whitby Lakeshore and in a ravine area in Whitby. No ticks have been found as the results of active surveillance in Durham Region (Toni Moran, personal communication, December 14, 2012).

City of Toronto

The City of Toronto did not conduct any active tick surveillance in 2012 (Omar Ozaldin, personal communication, December 19, 2012).

Education to increase public awareness

In 2012, Regional Public Health increased public education and risk communication activities on Lyme disease. The activities included posting posters in parks and conservation areas, increasing media coverage on Lyme disease relative issues, and providing information on Lyme disease on websites.
Please refer to APPENDIX A – D for examples of the information provided by our Regional Public Health partners.

Vaccines for Lyme disease

According to the Centers for Disease Control and Prevention website, the vaccine for Lyme disease for humans is no longer available. The vaccine was discontinued by the manufacturer in 2002, citing low demand. People who were previously vaccinated with the Lyme disease vaccine are no longer protected, as protection was not long lasting. There are vaccines available for dogs but no vaccine available for cats (CDC, 2012). Some veterinary professionals believe that the Lyme vaccine for dogs is controversial and unnecessary when tick prevention is practiced (Tremayne, 2010).

TRCA's role in addressing Lyme Disease

TRCA recognizes that there are direct implications of the increasing incidents of Lyme disease to the organization. A communication was taken to Authority Meeting #5/12 (June 22, 2012), and the following recommendations were adopted:

"THAT Toronto and Region Conservation Authority (TRCA) staff be directed to regularly incorporate updated information on Lyme disease and blacklegged ticks (Ixodes scapularis) into the TRCA Employee Health and Safety training and Visitor information systems;

THAT staff be directed to make information on Lyme disease and blacklegged ticks available at all field centres, conservation areas and other TRCA facilities in order to increase the awareness of visitors;

THAT staff continue to liaise with the regional public health units in the regions of Peel, Durham and York, and the City of Toronto to receive up-to-date information on this issue and share surveillance data regarding Lyme disease and blacklegged ticks;

AND FURTHER THAT TRCA staff be directed to explore the possibility and feasibility of identifying ticks found on TRCA properties, and to submit any blacklegged ticks found to the Zoonotic Diseases and Special Pathogens National Microbiology Laboratory."

The following summarizes the actions taken related to each of the approved recommendations:

Incorporating up-to-date information

In May 2012, TRCA's Human Resources and Safety Supervisor incorporated the Lyme disease information into a Safety Bulletin to remind our staff to protect themselves while working in the field. In July, an email was sent to the Management Team stating that a report was taken to the Authority that outlined the issue of Lyme disease and TRCA's proposed approach in dealing with this issue. In October, the results of the active tick surveillance were sent to the management team via emails.

In the summer of 2012, TRCA staff posted Lyme disease related educational materials in field centres, conservation areas and TRCA offices in order to increase the awareness of our staff and visitors.

Collaborating with Regional Public Health Units

TRCA staff participated in several active tick surveillance activities conducted by York Region Public Health on TRCA properties, and will collaborate with Regional Public Health Departments in surveying the occurrence of tick populations in the future. TRCA has continued to liaise with the various Regional Health Departments on the issue of West Nile virus, and this communication has now extended to include Lyme disease and ticks. Staff requested educational materials from several Health Departments for use at TRCA facilities.

Passive tick surveillance on TRCA properties

No ticks were submitted for identification in 2012. All field staff should be reminded to check themselves for ticks after working in the fields. All the ticks found attached to staff should be submitted to the responsible Ecology staff for identification in 2013.

Moving forward

Due to climate change, it is possible that the blacklegged tick populations could expand their current ranges. Therefore, TRCA will continue to incorporate Lyme disease and blacklegged tick related issues into TRCA's Health and Safety information to remind our staff to protect themselves against tick bites. TRCA will participate in active tick surveillance conducted by Regional Public Health units on TRCA properties in 2013. TRCA will also continue to examine ticks submitted by staff, and forward the specimens and all the information collected to respective Public Health Units. Information related to Lyme disease including this report will be made available on TRCA's website. Posters and educational materials will be posted in TRCA's field centres, conservation areas and offices in order to increase the awareness of our staff and visitors. The costs associate with tick surveillance and tick identification will be covered by TRCA's West Nile virus mosquito surveillance program.

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APPENDIX A - York Region

Lyme Disease Fact Sheet

What is Lyme disease?

Lyme disease is an illness caused by the *Borrelia burgdorferi* bacteria that is spread through the bite of an infected blacklegged tick (deer tick).

What are ticks?

Ticks are small bugs, the size of a sesame seed, which feed off the blood of animals and humans. They can be found on tall grasses and bushes and can attach themselves to people or animals.

Ticks do not fly and move quite slowly.

Most tick bites are painless. Not all ticks are infected with the *Borrelia burgdorferi* bacteria, so not all tick bites will spread Lyme disease.

Image (right) shows ticks at various stages of feeding.

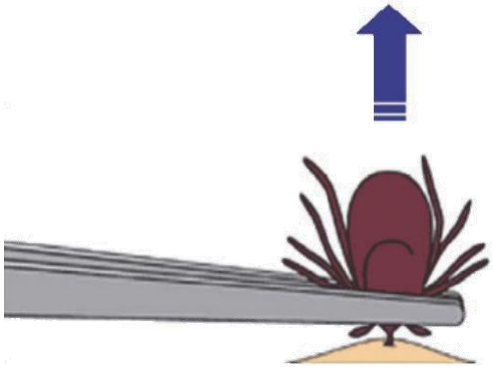
Public Health Agency of Canada

How do you get Lyme disease?

Lyme disease is spread through the bite of an infected tick. Ticks feed slowly and will attach themselves for 24-72 hours. They are most likely to spread infection after being attached for 24 hours or more. Lyme disease does not spread from human to human.

How do I remove a tick?

- Remove it by grasping the tick with a set of tweezers as close to the skin and pull it straight out, gently but firmly
- Do not squeeze the tick as this may cause the infection to be introduced into your body
- Do not put anything on the tick or try to burn it off
- Disinfect the infected area with rubbing alcohol
- Place the tick in a moistened paper towel and place in a screw top container such as a pill bottle (do not use glass containers)
- Store the container in a refrigerator or freezer until the tick can be submitted for testing



York Region

How do I submit a tick for testing?

It is recommended that you submit the tick to your local public health unit or your doctor. The tick will be identified and only blacklegged ticks will be further tested for Lyme disease. Ticks are accepted at the following York Region Community and Health Services office locations:

Markham
4261 Highway 7 East
Suite B6-9
Unionville, ON

Richmond Hill
50 High Tech Road
2nd floor
Richmond Hill, ON

Newmarket
465 Davis Drive,
Suite 240
Newmarket, ON

What are the signs and symptoms of Lyme disease?

Early symptoms of Lyme disease can appear from 3 to 30 days after a tick bite occurs. Lyme disease is described in three stages. Not all individuals will display symptoms at each stage.


CDC

Stage one:
The first sign of infection is often a circular rash at the site of the bite that often looks like a "bull's eye". Other symptoms may include fatigue, chills, fever, headache, muscle and joint pain, and swollen lymph nodes. If left untreated, the disease develops to the second stage.

Stage two:
Symptoms in the second stage may last several months and can include migraines, weakness, skin rashes, painful or stiff joints, abnormal heartbeat and extreme fatigue.

Stage three:
If the disease continues to progress, the third stage can include chronic arthritis and neurological symptoms including headaches, dizziness, numbness and paralysis. The third stage can occur months or years after the tick bite. Deaths from Lyme disease are rare.
If you experience any signs or symptoms of Lyme disease or suspect you have been bitten by an infected tick, see your doctor as soon as possible.

(Adapted from the Public Health Agency of Canada's Lyme Disease Fact Sheet)

How is Lyme disease treated?

Lyme disease can be treated with several antibiotics. Beginning treatment in the early stages of the disease is critical for full recovery. Lyme disease can develop into chronic illness that can be difficult to treat if it is not recognized in the early stages.

Where are infected ticks found in Ontario?

In Ontario, blacklegged ticks are more commonly found in areas along the north shores of Lake Erie, Lake Ontario and the St. Lawrence River. Ticks are active in early spring when the weather is warm, until the end of fall. They are also active in winter in areas with no snow and mild temperatures (4°C and above).

For more information on Lyme disease or to speak to a Public Health Inspector, please contact York Region *Health Connection* at **1-800-361-5653 TTY 1-866-252-9933**
www.york.ca

York Region

The risk for exposure is highest in regions where the ticks infected with the Lyme disease are known to be established. Locations with established blacklegged tick populations include:

- Long Point Provincial Park (Haldimand-Norfolk)
- Turkey Point Provincial Park (Haldimand-Norfolk)
- Rondeau Provincial Park (Chatham-Kent)
- Point Pelee National Park (Windsor-Essex)
- Prince Edward Point National Wildlife Area (Hastings-Prince Edward)
- Wainfleet Bog Conservation Area (Niagara)
- St. Lawrence Islands National Park Area (Thousand Islands)

While the risk is low, it is possible to be infected with Lyme disease from the bite of an infected blacklegged tick almost anywhere in Ontario. Currently, surveillance indicates the blacklegged tick is not established in York Region.

How can I protect myself from Lyme disease?

It is important to protect yourself each time you are in an area where infected ticks have been found. When
traveling to areas with infected ticks, follow these simple tips to protect
yourself:

- Wear long pants and long sleeved tops that are light coloured to help spot ticks
- Wear closed footwear and tuck your pants into your socks
- Use an insect repellent containing DEET and apply according to manufacturer's directions
- Search your body for ticks
- Remove attached ticks from your body as quickly as possible
- Pay special attention to the following body areas:

- groin
- scalp
- underarm areas
- back

Protect yourself while traveling

When traveling, keep in mind that ticks that carry Lyme disease can be found in the temperate forested areas of North America, Europe and Asia.

For more information on ticks and Lyme disease in Canada:
http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/lyme-eng.php

For more information on ticks and Lyme disease in the United States, visit: www.cdc.gov

For more information on ticks and Lyme disease in Europe,visit: http://ecdc.europa.eu

Can pets get Lyme disease?

Dogs and cats can get Lyme disease and can bring infected ticks into your home. However, they cannot
transmit the disease to humans. It is important to check your pet
regularly for ticks.

APPENDIX B – Peel Region

Lyme Disease at-a-Glance

Lyme disease:

- Is a bacterial illness that is spread to people and animals through tick bites.
- Was first identified in 1975 in Lyme, Connecticut.
- Can affect your joints, heart and nervous system.
- Happens in phases.
- Is treated with antibiotics.

Lyme disease is a ***vector-borne disease***.
A vector-borne disease spreads to humans or animals through insects called ***vectors***.

Signs and symptoms

Lyme disease symptoms happen in 3 stages; however, not all people infected will have symptoms of each stage.

Stage 1

Erythema migrans, the rash characteristic of Lyme disease

The first sign of a Lyme disease infection is usually a circular rash called *erythema migrans* (EM). EM happens in about 70-80% of people infected with Lyme disease. It appears at the site of the tick bite 3 days to 1 month after a person is bitten.
If you have Lyme disease, you might also have or feel:

- fatigue
- chills
- a fever
- a headache
- muscle and joint pain
- swollen lymph nodes

Stage 2

If the infection isn't treated, the second stage of the disease can last for several months.
During this stage you might have or feel:

- nervous system disorders
- multiple skin rashes
- arthritis and arthritic symptoms
- heart palpitations (a pounding or racing heart, or like your heart is skipping)
- severe fatigue and general weakness

Stage 3

If the infection continues to go untreated, the third stage of the disease can last months to even years. Chronic arthritis and neurological symptoms can both be signs of stage 3 Lyme disease.

If you're experiencing any of these symptoms and think you might have Lyme disease, book an appointment with your doctor.

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* Adapted from the Public Health Agency of Canada's Lyme Disease Fact Sheet

Cause

A bacterium called *Borrelia burgdorferi* causes Lyme disease.

Black-legged Tick (*Ixodes scapularis*)

The Lyme disease bacterium, *Borrelia burgdorferi* can be carried in mice, squirrels, birds and other small animals. The bacterium spreads to ticks when the ticks feed on these infected animals. Lyme disease is spread to people by these ticks when they bite the skin and start to feed on the host's blood, which lets the bacterium infect the body.
In Ontario, the black-legged tick (*Ixodes scapularis*) spreads Lyme disease to people and other animals. The black-legged tick is also known as the deer tick.
Lyme disease can infect animals we live in close contact with, such as dogs and cats. However, most of these animals don't show symptoms and are diagnosed through routine blood tests.

Who is at risk

Where you live, work or travel can affect your chances of getting Lyme disease.

Those living or working in wooded, grassy areas

Ticks thrive in wooded areas, leaf litter and in long grass. People who spend time in areas where there are infected ticks are most at risk.

Risk areas in Ontario

Borrelia burgdorferi has been found in black-legged ticks in these Ontario regions:

- The north shore of Lake Erie including Long Point
- Rondeau Provincial Park
- Turkey Point
- St. Lawrence Islands National Park
- While these areas in Ontario are considered the highest risk for Lyme disease, changes to our climate - such as warmer seasons - could lead to more black-legged ticks in other parts of the province.

Travellers

Lyme disease is found in temperate forested regions of Europe and Asia and in the northeastern, north central and Pacific coastal regions of North America.
If you're planning a trip within North America:

- Check the established tick populations in Canada to find out which Canadian regions are at greater risk for Lyme disease.

- Download the Centre for Disease Control (CDC) "Lyme Disease: A Public Information Guide" (PDF 5MB) to learn more about reported cases of Lyme disease in the United States and in which areas infections are most likely to happen.

If you are planning on travelling to areas that are considered high risk for infected ticks, you should take the following precautions:

- Frequently apply insect repellent to skin and clothing.
- After you spend time outdoors, check your skin and your children's skin (body and scalp) carefully for ticks.
- Promptly remove any attached ticks.
- Wear long-sleeved shirts that fit tightly around the wrist and long-legged pants tucked into socks or shoes.
- Wear light coloured clothing to make ticks easier to spot.

Women who are pregnant

Although rare, Lyme disease can cause a woman to miscarry or deliver a stillborn child. So pregnant women should especially avoid tick bites.

Treatment

Death caused by Lyme disease is rare. However, undiagnosed Lyme disease can develop into chronic symptoms and conditions that can be hard to treat.
Lyme disease is treated more easily if it is diagnosed early. Several antibiotics are available to fight Lyme disease. Most cases can be cured over 2-4 weeks of treatment with doxycycline, amoxicillin, or ceftriaxone.
People with certain heart, brain or nervous system ailments might need intravenous treatment with penicillin or ceftriaxone.

Later stage treatment

People who are diagnosed in the later stages of the disease can have persistent or recurrent symptoms and might need to be on antibiotics longer than people diagnosed in the early stages.
Sometimes the first round of treatment doesn't work (treatment failure), so a person infected with Lyme disease needs to be re-treated. Treatment failure happens more often to people in the later stages of a Lyme disease infection.

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*Adapted from the Public Health Agency of Canada's Lyme Disease Fact Sheet

Prevention

Protecting yourself

Avoid tick bites

People who live or work in high risk areas should apply insect repellent to their skin and clothing.
Travelers to areas where infected ticks are commonly found should try to avoid areas where ticks live.
If you can't avoid exposure to tick habitats you can reduce the risk of infection by checking regularly for ticks and removing any attached ticks immediately.
If infected ticks are in the area, wear long-sleeved shirts that fit tightly around the wrist and long-legged pants tucked into socks or shoes or boots. Light-coloured clothing makes it easier to see if ticks land on your clothing.

Tick bites: what to do if you're bitten

The longer an infected tick is attached to your skin, the more likely you'll become infected with Lyme disease.
Infected ticks don't usually spread the bacterium during the first 24 hours. Since tick bites don't hurt, you might not even know you've been bitten.
If you get bitten by a tick:

- Remove the tick immediately with tweezers. Grab the tick as close to the skin as possible. Gently pull the tick straight out until the tick releases its hold on your skin.
- Don't squeeze the tick. Be careful not to twist, crush, or turn the tick while removing it because this might separate the head from the body which will make laboratory identification difficult.
- Use soap and water to clean the spot where you were bitten. You can also disinfect the area with rubbing alcohol or use antibiotic ointment.
- Wash your hands.
- It isn't unusual to have more than one tick attached, so check your body.
- Put the live tick in a small container with a tight fitting lid. Place a cotton ball dampened with water in the container to keep the tick alive. Only live ticks can be tested for infection.
- Contact your doctor or Peel Public Health (if you reside in the Region of Peel) to see if you should have the tick tested.
- See your family doctor if you develop any symptoms of Lyme disease.

Lyme disease vaccine

While there is no vaccine for Lyme disease for people, there is a Lyme disease vaccine for dogs. A veterinarian can advise you about vaccinating your dog against Lyme disease.

Actions Peel Region is taking against Lyme disease

The Region of Peel is monitoring the tick population in Peel annually as part of our Vector Borne Disease Prevention Plan (PDF 132KB, 33 pages).
Right now there isn't an established black-legged tick population in Peel.

Types of tick monitoring

There are 2 types of tick monitoring: active and passive. Active monitoring means collecting ticks in their natural habitat, while passive monitoring means studying ticks brought to Peel Public Health offices by Peel residents.
Peel Public Health is doing passive tick monitoring in Peel. If passive monitoring shows an increase of ticks in a certain area, then we will start active monitoring.

Identifying ticks

Tick specimens collected through either passive or active monitoring will be shipped to and identified by the provincial Central Public Health Laboratory (CPHL). The CPHL will send the identified ticks to the Public Health Agency of Canada's National Microbiology Laboratory for Lyme disease testing.
Only the black-legged tick, *Ixodes scapularis,* will be tested for Lyme disease.

APPENDIX C – Durham Region

Information on Lyme Disease

What is Lyme Disease?

Lyme disease is caused by a bacterial infection that can affect humans and animals. The bacteria is transmitted to humans via the bite of an infected tick.

What is a tick?

Download (PDF)

- Ticks are similar to mites. They are very tiny - roughly the size of a sesame seed - and they feed on blood.
- Ticks can not jump or fly. They crawl slowly on the ground and will eventually climb onto a tall blade of grass or a bush to wait to attach themselves to a person or animal passing by.
- There are many different types of ticks and only a few are capable of carrying the bacteria which causes Lyme disease.
- In Ontario, the tick that is known to transmit Lyme disease is Ixodes scapularis, also known as the “black-legged tick” or “deer tick”

What are the symptoms of Lyme Disease?

Early symptoms of Lyme disease may include:

- A circular, red “bull’s eye” rash which spreads out from the tick bite and/or
- General symptoms such as fatigue, fever or chills, headache, muscle or joint pain and swollen lymph nodes

If left untreated, Lyme disease may have long-term effects on the joints, heart and/or nervous system.

The Bug Guy is here to help you Target Lyme Disease

Ticks that carry Lyme Disease are in Ontario, and you need to know how to stay safe and not get bit. Take some good advice from the Bug Guy, Curtis Russell, PHD.

- **Watch the Video**
- **Video Transcript**

Resources

- Let's Target Lyme Disease Pamphlet (PDF)
-
- **Banner Bug Display**

  Display unit and associated resources are available upon request for community events. To make a request please call the Environmental Helpline at 905-723-3818 or 1-888-777-9613 ext. 2188.

Banner Bug Display

Related Links

- Health Canada
- Ontario Ministry of Health & Long-term Care - General Information on Lyme Disease
- Ontario Ministry of Health & Long-term Care - Let's Target Lyme
- Public Health Agency of Canada - Lyme Disease Fact Sheet
- Public Health Ontario
- U.S. Center for Disease Control (CDC) - Learn About Lyme Disease

APPENDIX D – City of Toronto

Lyme Disease

July 2012

What is Lyme disease?

Lyme disease is an illness caused by the bacteria Borrelia burgdoferi (B. burgdoferi). In the last five years an average of 20 people per year, infected with Lyme disease, were reported to Toronto Public Health. Almost all of these people acquired the disease outside the City of Toronto.

How do people get Lyme disease?

To get Lyme disease, a person must be bitten by a black-legged tick (or deer tick) Ixodes scapularis that is infected with the B. burgdoferi bacteria. **The tick needs to be attached to your body for greater than 24 hours** in order for the tick to pass on the bacteria. The ticks are small (3-5mm) and people often do not realize that they have been bitten. Lyme disease is not spread from one person to another.

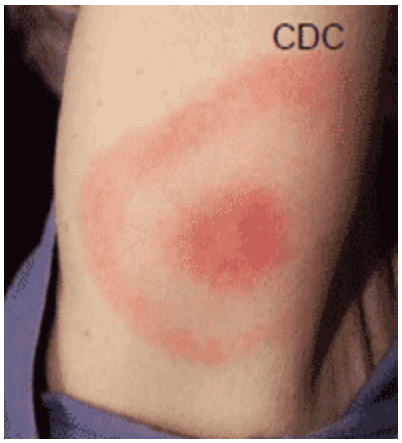
Where can I be exposed to an infected tick?

In Ontario, the greatest risk areas for coming in contact with infected black-legged ticks are:

- Long Point Provincial Park
- Point Pelee National Park
- Prince Edward Point National Wildlife Area
- St. Lawrence National Park
- Rondeau Provincial Park
- Turkey Point Provincial Park
- Wainfleet Bog Conservation Area

The black-legged tick also feeds on birds and other animals which can carry the ticks to other areas in the province. Therefore it is possible to be infected with Lyme disease anywhere in Ontario. Manitoba, Quebec, New Brunswick and Nova Scotia all have populations of blacklegged ticks.

In the U.S., tick populations mainly occur in the midwest and northeastern regions. The western blacklegged tick (Ixodes pacificus) lives along the Pacific Coast and is the main vector of Lyme disease in British Columbia.



What are the symptoms of Lyme disease?

Symptoms usually begin 3 days to 4 weeks after a bite, and include:

- Fever and chills
- Headache
- Muscle and joint pains
- Fatigue
- Stiff neck
- Circular rash (also known as a bull's eye rash). This rash occurs in 70 to 80% of people who get Lyme disease.

When there is no rash it can be difficult to diagnose Lyme disease as the symptoms mimic many other illnesses. If left untreated, Lyme disease can lead to further disease with symptoms including migraines, weakness, multiple skin rashes, painful or stiff joints, cardiac abnormalities and extreme fatigue. If the illness continues untreated it can affect the central nervous system, brain or heart.

How do I know if I have Lyme disease?

The doctor will perform a clinical assessment and take a detailed history of possible tick exposure. Blood work can also be done to test for Lyme disease but should not be the sole factor in determining if someone has the disease.

Is there treatment for Lyme disease?

Yes, there are antibiotics available for treatment if your doctor diagnoses Lyme disease.

How do I remove a tick and what do I do with it?

If you find a tick on yourself, remove it with fine-tipped tweezers. Do not squeeze or try to burn it off. Grab the tick as close to your skin as possible. Pull the tick away from your skin gently but firmly. Place the tick in a jar or bottle and take it to your health care provider or call Toronto Public Health.

Ticks that are sent to Toronto Public Health can be tested to determine that the tick is the black-legged tick and can be further tested to see if the tick carries the B. burgdoferi bacteria.

Can Lyme disease be prevented?

There is no vaccine available in Canada to prevent Lyme disease. However,there are many things you can do to prevent being bitten by a tick:

- Wear light coloured clothing so you can easily spot ticks.
- Wear long sleeves and long pants; tuck your pants into your socks.
- Avoid shrubs or grassy areas (ticks are usually found low to the ground).
- Use bug repellent containing DEET. Please follow manufacturer's instructions.
- Perform a daily careful self-inspection for attached ticks, especially after being in tick-infested areas. Do not forget to check children and pets.

Where can I get more information?

For more information about Lyme disease call Toronto Public Health at 416-338-7600, TTY 416-392-0658.

Related Links

- Ministry of Health and Long-Term Care - Publications - Lyme Disease
- Ministry of Health and Long-Term Care - Lyme Disease Educational Materials