

Ticked Off

Lesson Overview

During this lesson, students will learn how to determine best practices to prevent tick bites during hiking trips, understand the consequences of contracting tickborne illnesses, and understand guidelines for hiking safely and leaving no trace.

Overall and Specific Expectations

- PPL 10: 1, 1.5; A3, A3.1
- PPL 20: 1, 1.5; A3, A3.1
- PPL 30: 1, 1.5; A3, A3.1
- PPL 40: 1, 1.5; A3, A3.1

Learning Goals

- I can behave responsibly and apply appropriate safety rules and procedures that maximize my safety and that of others during outdoor activities.
- I can think critically to analyze situations, evaluate my choices and make safe decisions in a variety of situations.

Materials

- Information from or access to a public health website about known cases of Lyme disease and the presence of ticks in areas in which you plan to hike
- Maps of local hiking trails
- Printed handouts of ticks (found online or provided by the local Public Health office)
- **Student Resource: Ticked Off - Exit Card**

Ontario Physical Activity Safety Standards in Education

Activities

- **Backpacking/Hiking (Backcountry)**
- **Backpacking/Hiking (Local)**

Tools and Resources

- **Concussions**
- **Disability-Centred Safety**
- **First Aid Plan and First Aid Emergency Response**
- **Outside Activity Providers**

Other

Risk Management

Assessment for Learning

At the beginning of the lesson, work with students to co-create criteria for assessing knowledge and skills needed to apply safety rules and procedures during outdoor education activities. For example, success criteria might include: I understand ways to reduce the risk of tick bites while I am out hiking.

After the activity, review the co-created criteria with students, and then have them complete their *Student Resource: Ticked Off - Exit Card*.

Collect and review the *Student Resources: Ticked Off - Exit Card*. Use the co-created criteria to evaluate student learning and offer feedback. If needed, provide feedback to individual students or the entire group, to clarify or reinforce their understanding of safety with respect to ticks, and answer any remaining questions.

Minds On

Ontarians are fortunate to have an abundance of wilderness that provides everyone with ample opportunity to enjoy the outdoors. However, ticks and Lyme disease need to be considered when planning outside activities, especially in areas that are wooded or have tall grasses, bushes, and shrubs.

Lyme disease is spread to humans through the bite of infected blacklegged ticks (also known as deer ticks) and health officials are seeing an increase in the number of cases in the province.

“We’ve seen a marked increase in the number of confirmed cases of Lyme disease in Ontario, particularly in the last year,” says Dr. David Williams, Ontario’s Chief Medical Officer of Health. “This is partly due to an increase and expansion of blacklegged tick populations to new areas of the province.”

(Minds On: Ontario Parks, 2026)

Action

An Overview of Ticks

Common names: black-legged tick, deer tick **Scientific name:** *Ixodes scapularis* **Type:** Invertebrate **Diet:** Carnivore **Average life span in the wild:** 2 years **Size:** 0.078 to 0.137 inches

(Information about ticks: National Geographic, 2019, Deer Tick)

Life Cycle and Feeding

“Deer ticks live about two years and go through four life phases: egg, larva, nymph, and adult. They feed exclusively on animal blood and eat only three times during their lives:

- once to molt from larva to nymph;
- once to molt from nymph to adult; and
- once as adults to lay eggs.

The bacteria that causes Lyme disease is transmitted from an infected host at any of these feedings, but transmits it only during the second or third. They must remain attached for at least 24 hours for the bacteria to transmit.

Larvae are miniscule, no bigger than the period at the end of this sentence, and feed only on birds or mice. Nymphs are about as big as a poppy seed, but, like adults, will seek larger hosts, including deer, dogs, and humans. Adult females mate on or off a host then feed for several days, swelling to twice their normal size. Once engorged, they drop off, lay their eggs amid the leaves, and die.”

(Information about the life cycle and feeding: National Geographic, 2019, Deer Tick)

Tick Habitats

Share some tick habits and tick bite protection tips with students.

Many people believe that ticks are found only in woods. However, they can also be found in many places such as:

- Wooded areas
- Where woods and grassy areas meet
- In tall shrubs, bushes, and grasses
- Under leaves
- In cut grass or sports fields (in small numbers)
- Under groundcover plants in yards

- Around rock or wood walls where mice and other small mammals live

Methods for Preventing Tick Bites and Lyme Disease

The most effective way to prevent Lyme disease is to prevent being bitten by ticks. Here are tips on how to prevent tick bites:

- Wear light-coloured clothing. This discourages ticks from attaching to you, and it makes them easier to spot if they do get on you.
- Wear long pants, a long-sleeved shirt, and close-toed shoes. Tuck your shirt into your pants. You can also tuck your pant legs into your socks.
- Use an insect repellent containing DEET or icaridin (follow manufacturer's instructions) on your clothes and any exposed skin.
- Stay on pathways or in the middle of trails.
- Check your clothing and body at least once a day for ticks. Pay particular attention to the groin, navel, armpits, scalp, behind the knees, and behind the ears.
- Use a mirror to examine the back of your body, or ask someone else to do so.
- Take a shower as soon as you can after being outdoors. This allows you to more easily find and wash off any ticks crawling on you.
- Put outdoor clothing in the dryer for 60 minutes on high heat before washing them. This kills any ticks, which are often difficult to see and thrive in wet environments.

What to Do if You Find a Tick on You or Someone Else

- Use fine-tipped tweezers to grab the tick as close to the skin as possible.
- Slowly pull on the tick with even pressure, in one smooth motion, so that the mouth is removed and the body isn't crushed.
- Wash the area with soap and warm water.
- Put the tick in a sealed plastic bag or a container with a lid.
- Bring the tick to your local [Health Unit](#) office to have it identified.

- Consult with a healthcare provider within the next 24 hours.

What NOT to Do:

- Do not grab, squeeze, or pop the tick around its swollen abdomen.
- Do not use a match, heat, or chemical products to try to remove a tick.
- Do not twist the tick when pulling it out.

Areas at Risk of Lyme disease in Ontario

Black-legged ticks are not the only cause of Lyme disease, although Lyme disease due to black-legged ticks is becoming more prevalent, with increasing cases in several areas of Ontario.

Infected ticks are found in areas such as, but not exclusive to, the Simcoe-Muskoka district, York region, and Eastern Ontario as well as Hamilton and parts of Northwestern Ontario.

Consolidation

Before going on a local trip, have students identify the areas on the trail that are likely tick habitat. Have students consider strategies to prevent potential harm in these kinds of terrain: for example, stay on the marked trail, tuck pant legs into socks, wear insect repellent containing DEET, etc.

Have students practice tick prevention techniques during the local hike, and make tick checks a part of every post-hike program and debrief.

Have students complete their *Student Resource: Ticked Off - Exit Card*.

Notes to Teachers

Review the Public Health Ontario's Ontario Lyme Disease Map 2019: Estimated Risk Areas with the class.

For more information on health concerns about ticks and Lyme disease in your region, contact your local Public Health office.

Remember to check school board policies and procedures applicable to any outdoor education activity.

References

- National Geographic. (2019). [Deer Tick](#).
- Ontario Parks. (2026). [How to protect yourself from ticks](#).