



Tick Talk

Time to Get the Facts

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Before the 1980s Vermonters knew nothing of ticks and enjoyed a carefree and tick-free environment. Kids spent long afternoons outside exploring animal trails in the woods, playing in undeveloped farm fields and fishing from river banks; parents worried about fighting and scraped knees, not ticks or Lyme disease.

Times have changed. Today, Lyme disease—long a problem in neighboring states—is endemic in Vermont.

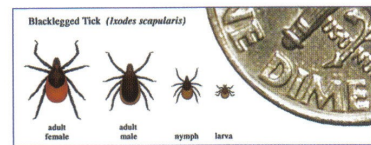
Lyme disease was first recognized in the mid-1970s in Lyme, Connecticut, when scientists noticed an increase in juvenile rheumatoid arthritis. They establish common factors among afflicted children: playing near wooded areas, tick bites, first symptoms presenting in summer, and unexplained rashes. Soon they discovered the cause: *Borrelia burgdorferi*, the bacterial agent of Lyme disease.

The black-legged tick, *Ixodes scapularis*, commonly known as a deer tick, is the only tick known to transmit Lyme disease in the eastern United States. According to the Vermont Department of Health, reported cases in Vermont began a steady increase in 2005. Cases appear throughout the state, but Lyme disease has most affected people who live in the southern regions.

Life Cycle of a Tick

In 2010, I attended a fascinating and humorous lecture about the life cycle of a tick. As I sat with furrowed brow and contorted face listening to the description, I knew it would be forever etched into my memory. Who really wants to think of themselves as a “host?” Or in other words, a “blood meal.” As unpleasant as the life cycle may be, understanding it will go a long way in helping you stay clear of Lyme disease.

A black-legged tick can live up to two years, and has three full growth stages: six-legged larva, eight-legged nymph, and eight-legged adult. During each stage it seeks a blood meal, necessary to survive and progress to the next life phase; most ticks will not find an adequate host and will die. Ticks carry Lyme disease only where it is endemic in wild rodents and other small mammals.



First Year: Larval Stage

Tick life begins under leaf litter on the forest floor in spring (March or April in Vermont) when thousands of individual eggs laid by an adult female the previous fall hatch, becoming larvae by summer. Imagine beginning life the size of the period at the end of this sentence.

Ticks can crawl and climb but *cannot jump or fly*. Although they are in the arachnid family, they cannot drop from foliage above on a line of silk like a spider.

According to the Centers for Disease Control and Prevention (CDC), ticks “find their hosts by detecting animals’ breath and body odors, or by sensing body heat, moisture, and vibrations.”

Some species set themselves up along the edges of established paths to improve their chances of finding a host. They climb short strands of grass or to the edge of a piece of foliage near the ground (up to about three feet high), and hold a position known as questing, using four hind legs to grip the foliage while extending front legs toward the path. When a potential host brushes against the tick’s outstretched legs, it swiftly climbs on board. Often a small mammal like a white-footed mouse or ground-feeding bird will be the unlucky first meal for a larva.

Some ticks roam the host’s body looking for choice and easily accessible areas with thin skin; less picky ones attach quickly. Once settled, a tick will penetrate the skin with its hypostome, a barbed, harpoon-like anchor located near its mouth. But here’s the neat part—because it doesn’t want the host to detect its presence and brush it off, it may first salivate an anesthetic on the skin where it plans to sink its mouth parts. Face contorted yet?

An undetected larva dines for a few days until fully engorged. After detaching from the host and falling to the ground, it creeps under leaf litter to molt over winter. Fortunately, the larval stage is of minimal concern to humans because ticks are born pathogen-free and feed only once.

Second Year: Nymphal Stage

In early spring, (March or April here), nymphs emerge, measuring less than 2 millimeters—smaller than a poppy seed. Nymphs are of greatest concern: so small they are hard to detect, they are most active in June and July, and may be infected.

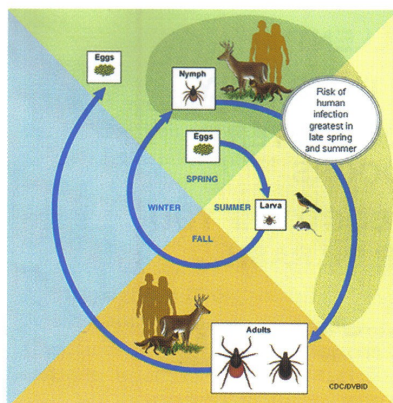
Requiring a second blood meal to survive, the search for a host begins anew. Nymphs prefer smaller mammals, but deer or humans will suffice. After a four- to five-day feast, satiated nymphs disengage, fall to the ground, and molt into adults under leaf litter.

Second Year: Adult Stage

Adult ticks emerge in fall the same year and search for hosts through late October and early November to provide the third meal. A deer with nutrient-rich blood is ideal, but humans and other large mammals are also at risk.

Successful reproduction requires the third blood meal. If a host is not found, ticks overwinter under ground cover, emerge in March or April the following year, and desperately try again.

Most successful adult females remain on the host and continue to feed while waiting for a male to arrive and mate (deep brow furrow). Once egg-laden, she releases her host, waddles to leaf litter, lays an egg mass, and (dare I say thank goodness!), dies. Males also die after reproduction. Thousands of eggs will hatch in spring and begin a new life cycle.



Hikers Weigh in on Lyme Disease

I asked a few seasoned Vermont hikers when they first became aware of ticks and Lyme disease in Vermont.

Pete Antos-Ketcham, GMC Director of Land and Facilities Management, Vermont native, father of young children:

Ticks were a non-issue when I was growing up. I never saw one and never worried about Lyme disease. As far as I was concerned that was an issue for people in the south.

I first became aware of ticks and Lyme disease when my wife was bitten by an infected tick in Quetico Provincial Park in 2001. Thankfully we caught it early and she was fine. It didn't register on my radar in Vermont until the last couple of years when GMC staff started getting ticks on them and at least one was diagnosed with Lyme disease...I am very concerned about Lyme because the only treatment is antibiotics. My children are active outdoors, and I don't want them to have to take antibiotics every year. I hope a vaccine is developed soon.

Dave Hardy, GMC Director of Trail Programs, Connecticut native, Vermont resident since 1991:

In 2011 I got my first deer tick bite during a Long Trail overnight trip in the Winooski Valley. I went to the doctor's office, and discovered they didn't know much about Lyme disease or treatment. Since then a few of our seasonal staff have been bitten and received antibiotics. Lyme disease is serious, and you should take every precaution. But still go out there and mess around in the woods as much as you can.

Matt Wels, GMC Winooski Footbridge Project Manager, spent childhood in Connecticut in the 1980s, Vermont resident since 1993:

My experience with ticks and Lyme disease began when I was a child growing up in Connecticut in the 1980s. There were a lot of ticks of all kinds, especially deer ticks. I contracted Lyme disease at the age

of eight, and it was quite severe. It took months to get rid of it. I had the bull's-eye rash, sensitivity to the sun, fatigue, and arthritis. The arthritis lasted more than a year and was quite painful.

I've only started to see ticks in Vermont in the last ten years, mostly the last five years, and I've only seen deer ticks (or any ticks at all) where it is warmer and there is a lot of oak forest. I've mostly seen them in the major, lower elevation river valleys...

Richard Windish, Former GMC President, Delaware native, Vermont resident since 1991, now in Reading:

I had no idea about Lyme disease because it did not really exist in the suburban area where I grew up. I had heard of Lyme disease since moving to New England in the early 1990s, but thought that it was something that occurred much farther south...One of my good friends contracted it here a few years ago, and it has been on my radar ever since. Having dogs has made me much more aware of it, because they pick up a lot of ticks.

Richard Andrews, GMC Treasurer and long-time volunteer, Vermont native, now in Springfield:

I grew up in Vermont in the 1950s, and I remember reading about ticks and purported methods of removal in the Boy Scout Handbook. But Scout leaders assured us there were no ticks here—they were a southern problem.

Ironically, given the intensity of my concern, I have never had a tick attached, and I have seldom seen ticks in the field. I have never had Lyme disease, but I know, have met or have heard of quite a few people who have had the disease, some of them very severely. A surprising number of people I have met who have had Lyme disease believe they were bitten by a tick literally in their own back yards, when mowing grass, cutting brush or otherwise going about their chores. But others were definitely bitten when hiking.



Prevention Measures

Ticks are a nuisance and Lyme disease a potential health threat, but there are many preventative measures to minimize risk:

- Carry a credit card-size tick identification card (provided by the state for free upon request) and fine-tipped tweezers or a tick remover (free or cheap from a veterinarian).
- Wear light colored clothing so ticks are easier to spot.
- Wear gaiters or leggings (treat them with tick repellent or permethrin), or tuck pants into socks to prevent ticks from reaching the skin.
- Spray repellents containing DEET on socks, pants and shirt cuffs, and hiking boots (avoiding contact with skin).
- Treat boots, socks, pants, pack, and the outer tent floor with permethrin. (Permethrin repels ticks and kills them on contact; do not apply it to skin.)
- Know tick habitat: lower-elevation forests and areas with high grass, bushy vegetation and leaf litter.
- Avoid brushing against vegetation.
- Examine your entire body for ticks as soon as possible after trekking, especially under arms, in and around ears, around waist, groin area, and in areas with body hair.
- Check your smaller hiking companions (children and pets) thoroughly and regularly.
- Check hiking and camping gear for crawling ticks and recheck at home. Ticks can hitch a ride and attach themselves later.
- Shower or bathe as soon as possible to help remove crawling ticks, ideally less than two hours after outdoor activity.
- Tumble dry clothing on high heat for about an hour, then wash and dry. Ticks can't survive hot conditions for long.

Early Detection and Treatment

Not all deer ticks are infected but if you are bitten by one that is you may begin to see signs and feel symptoms of Lyme disease. Symptoms can appear within three to thirty days, but typically within two weeks.

Early symptoms may include *Erythema migrans* (EM), a red, circular expanding rash, commonly known as bull's-eye rash. Other symptoms are fatigue, chills, fever, muscle and joint pain, headache and swollen lymph nodes.

Not everyone gets a rash, so watch for flu-like symptoms. If it's summer, you've visited an area afflicted with Lyme disease and you feel run down, see a doctor.

A two- to four-week regimen of antibiotics can effectively treat Lyme disease if begun early. See CDC website: www.cdc.gov/lyme/postLDS/index.html.

Tick Removal

You have the best chance of avoiding Lyme disease if you remove an infected tick within twenty-four to thirty-six hours.

- Use fine-tipped tweezers or a tick remover to grab the tick's head, as close to the skin as possible.

- Gently and steadily pull the tick straight up and out of your skin.
- Clean the bite area with an antiseptic.
- Wash your hands with soap and water or alcohol-based sanitizer.
- Note the date and location of the tick bite.
- Watch for early symptoms over the next few weeks.

Canine Hiking Partners

Even after vaccination dogs are susceptible to Lyme disease and hiking with dogs multiplies your exposure to ticks. Pet owners should regularly check them after outside activity. Dogs can carry ticks into your car and home. For more information about pets and Lyme disease visit the CDC website, www.cdc.gov/lyme/prev/on_pets.html.

Learn More

The state of Vermont is launching a Lyme disease awareness campaign. There will be a public presentation and discussion at GMC on Thursday, July 17, at 7:00 P.M.


Online Resources

Vermont Department of Health: healthvermont.gov

Centers for Disease Control and Prevention: www.cdc.gov/lyme

University of Rhode Island: tickencounter.org

Watch for posters at trailheads: GMC will post the notice below at trailheads this summer, beginning with lower elevation sites.



PREVENT LYME DISEASE!

- WEAR REPELLENT
- CHECK FOR TICKS DAILY
- SHOWER SOON AFTER BEING OUTDOORS
- CALL YOUR DOCTOR IF YOU GET A FEVER OR RASH



For more information:
www.cdc.gov

