

# TICKS: What You Don't Know Can Hurt You

Transmitted by a tick bite, Lyme disease is a growing threat to all who play and work on golf courses.

BY JIM SKORULSKI

Lyme disease has now been reported in all the states except Hawaii. There are more ticks in more places than ever before, including golf courses! This brings an ever-increasing risk for tick-transmitted diseases.

Lyme disease, caused by the bacterium *Borrelia burgdorferi* and transmitted through the bite of infected ticks, is the most common tick-borne disease affecting humans and dogs in North America. First identified in Lyme, Conn., in 1975, this serious and debilitating infectious disease has since spread widely across the Northeastern, Mid-Atlantic, and North-Central regions of the United States as well as Canada. A rising number of Lyme disease infections have also occurred along the West Coast of the United States. Vectors most capable of transmitting Lyme disease to humans include *Ixodes scapularis* (deer tick, also known as blacklegged tick) and to a lesser extent *Ixodes pacificus* (western blacklegged tick). As these ticks expand coverage throughout North America, the public health threat from Lyme disease will continue to spread. The likelihood that you will come in contact with a deer tick or western blacklegged tick vectoring the disease while playing or working on a golf course is growing. For this reason, it is important to be aware of the disease and take a few precautionary steps that will help to keep you safe.

## TICK IDENTIFICATION

Golf courses can provide suitable habitat for a number of tick species. Blacklegged ticks, including the deer tick and western blacklegged tick, are the only known vectors for Lyme disease at this time, so identification is important. Unfortunately, deer ticks



Nymphal stage deer ticks are the size of a poppy seed. Photo courtesy of TickEncounter.

and western blacklegged ticks can resemble other tick species, and the small size of the larva and nymphs make [tick identification](#) difficult.

## THE TICK AND LYME DISEASE CYCLE

Deer tick larvae hatch from eggs in the summer. Larvae hatch from eggs free of the pathogen and only become infected after blood-feeding on a host (usually mice, small rodents, or ground birds) carrying the bacteria. Once finished feeding, the engorged larvae detach from their hosts, falling to the ground and transforming into a nymph. Larvae and nymphs that latch onto humans are very difficult to detect because they are so small, about the size of a pinhead or poppy seed. Over much of their geographical range, it is estimated that 15 to 25 percent of nymphal deer ticks are infected with the Lyme disease-causing bacterium.

The nymphal stage deer tick becomes active and begins looking

for its blood meal in late spring and summer. Nymphal western blacklegged tick activity starts sooner in late winter and early spring. Most Lyme disease infections occur during the active season of the nymphal stage, because their small size makes them difficult to notice. Like the larvae, nymphal ticks detach from their host and transform into adult males and females. Most people are surprised to learn that adult deer ticks are most active in the fall, even after frost has killed off many other types of insects. Adult deer ticks preferentially blood feed on deer and larger mammals. With deer ticks, only the female attaches and blood feeds, and 50 percent or more of adult female ticks carry the bacteria causing Lyme disease. Thankfully, adult ticks are larger and much easier to detect and remove prior to the 36 hours that is required to transmit the bacterial pathogen, so disease transmission from this stage tends to be lower. After feeding, adult female deer ticks over-

winter and lay eggs in spring. During unseasonably warm winters, such as this past winter, adult deer ticks remain active throughout the winter months.

## TICK BITES

Finding a deer tick attached to your skin does not mean you have been infected with Lyme disease! The tick must have first contracted the bacteria in order to transmit it. Secondly, even if the tick is infected, it does not immediately transmit the bacteria to the host. Research has shown that at least 24 hours of [attachment](#) is required before any bacteria are transmitted. In most cases, a tick must be attached to your body for 24 to 36 hours to spread the bacteria to your blood. On a positive note, it is estimated that approximately 50 percent of deer ticks will not transmit the bacteria until after 48 hours of attachment. Entomologists can estimate how long a tick has been attached by its size and whether or not it is infected. Carefully detach the tick using fine-pointed tweezers and save it so that it can be properly identified and even tested to determine if it is infected with the bacteria.

Diagnosing Lyme disease can be difficult. Fever-like symptoms, muscle and joint aches, headaches, tiredness and a bulls-eye rash are all early symptoms of the disease. Experiencing the symptoms and a known exposure to a deer tick are pretty good indicators that you may have Lyme disease. However, deer ticks carry other infections that also cause summertime flu-like symptoms, including the agents that cause babesiosis and anaplasmosis. Your doctor can complete a blood test to further confirm whether any of these tick-borne agents are the cause of your symptoms. Lyme disease can have more serious consequences if it is left undiagnosed or is not treated early. Excellent [medical information](#) regarding the disease is available from a number of sources.

## PREVENTION

The best means of prevention is to avoid being bitten by ticks. Unfortunately, because deer ticks and western blacklegged ticks can be active and infectious during several life stages,

there is human risk throughout the golf season! The likelihood of picking up a tick in fairways or other closely cut areas is remote. But for those who occasionally visit or work in the wooded edge habitats and tall grass areas, greater vigilance is required. Remember, ticks will normally latch onto the lower portions of the human body and move upward. Wearing light-colored clothing and tucking pants into your socks will help keep ticks off your skin and easier to detect. It's not the fashion statement most golfers want to make, but it is effective against ticks. Fortunately, tick prevention can be as easy as wearing tick-repellent clothing, including treated shoes and socks. In this way, tick-safe golfing is as easy as getting dressed each morning. Repellents containing at least 20 percent DEET can be applied to the legs and other bare skin areas and may deter ticks for a short time. For better prevention, however, permethrin-based repellents are available to pre-treat clothes. Treat shoes, socks, and pants with the product to keep ticks off your body. Permethrin has low toxicity to humans but is lethal to ticks and other insects. One company, Insect Shield in Greensboro, N.C., commercially treats clothing with permethrin, and these clothes are available from a number of outdoor clothing manufacturers. Commercially treated tick repellent clothing provides protection from ticks and other insects for up to 70 washings.

## MANAGING DEER TICKS

Golf courses provide large areas of suitable habitat for deer ticks and the hosts they feed upon. The deer tick is partial to woodland environments as well as edge habitat areas where there is some shade and moisture. Along with other tick species, they can also be found in tall grass rough areas. A selective insecticide application targeting larva and nymphs along the edge of woodland areas as well as tall grass roughs that are in play can suppress tick populations and reduce the likelihood of golfers or staff being exposed to the disease. The most effective programs call for one or two applications of a pyrethroid, permethrin, or carbaryl insecticide to high-risk areas in mid to

late May and again in June. For best timing, keep in mind regional differences exist. There are also products and baits used to combat deer ticks through rodent hosts. Damminix Tick Tubes use permethrin-treated cotton balls, which are utilized mainly by mice to create nests. The company claims that ticks are killed as they feed on the mice or come in direct contact with the cotton. Furthermore, a biological control product, in this case a fungal pathogen, is currently being field tested for controlling ticks. With development already underway, it is hoped that it will come to market in 2014.

Deer ticks and the debilitating Lyme disease they transmit should be taken seriously by all golfers and anyone who works on golf courses. While there are more ticks in more places than ever before, the risk of contracting Lyme disease can be reduced simply by being aware of the ticks' presence and through a little precaution with clothing and repellents when venturing into the areas that likely contain ticks.

## INFORMATION AND LINKS FOR LYME DISEASE AND TICK BITE PROTECTION

[Top Ten Things Everyone Should Know About Ticks](#)

American Lyme Disease Foundation  
<http://www.aldf.com>

Center for Disease Control <http://www.cdc.gov/lyme/>

Tick Management Handbook Kirby C. Stafford, CT Agricultural Experiment Station <http://www.ct.gov/caes/lib/caes/documents/publications/bulletins/b1010.pdf>

University of Rhode Island TickEncounter Resource Center  
<http://www.tickencounter.org>

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