

TICK Identification and Prevention

Identification of Ticks:

Although ticks are commonly thought of as insects, they are actually arachnids like scorpions, spiders, and mites. Ticks are among the most efficient carriers of disease because they attach firmly when sucking blood, feed slowly, and may go unnoticed for a considerable time while feeding. Ticks take several days to complete feeding.

Ticks wait for host animals from the tips of grasses and shrubs (not from trees). When brushed by a moving animal or person, they quickly let go of the vegetation and climb onto the host. Ticks can only crawl; they cannot fly or jump. Ticks found on the scalp have usually crawled there from lower parts of the body. Some species of ticks will crawl several feet toward a host. Ticks can be active on winter days when the ground temperatures are about 45° Fahrenheit.

It is important to remember that although ticks are thought of as being a threat during the warm weather months of spring and summer, they may also be prevalent during the cool weather of the fall and have even been observed during unseasonable warm weather during the winter. Despite the time of year, if you are going to be involved in outdoor activities, precautions should be taken to avoid tick bites and tick-borne diseases.

Although at least 15 species of ticks occur in Tennessee, only a few of them are likely to be encountered by people: American dog tick, lone star tick, blacklegged (deer) tick, brown dog tick, and winter tick.

American Dog Tick (*Dermacentor variabilis*)

One of the most frequently encountered ticks is the American dog tick, also sometimes known as the wood tick. The larvae and nymphs feed on small warm-blooded animals such as mice and birds. The adult American dog tick will feed on humans and medium to large mammals such as raccoons and dogs.



Unfed males and females are reddish-brown and about 3/16-inch long. Females have a large silver-colored spot behind the head and after feeding will become 1/2-inch long or about the size of a small grape. Males have fine silver lines on the back and do not get much larger after feeding. Males are sometimes mistaken for other species of ticks because they appear so different from the female.

In Tennessee the adults are most active in April, May, and June. By September the adults are inactive and are rarely observed. The American dog tick can transmit Rocky Mountain spotted fever, tularemia, and possibly ehrlichiosis to humans.

Lone Star Tick (*Amblyomma americanum*)

The lone star tick is rarely observed in Tennessee, although it can occasionally be found within the state. Larvae, nymphs, and adults will feed on a variety of warm-blooded hosts, including people. The larva is very tiny, only a little larger than the period at the end of this sentence. The nymph, the most common stage found on people, is about pinhead-sized. Adults are about 1/8-inch long and brown. The adult female has a white spot in the middle of her back.



The lone star tick is most active from April through the end of July. Although it can transmit Rocky Mountain spotted fever, the lone star tick is not as likely to transmit the disease as the American dog tick. This tick also may transmit tularemia and ehrlichiosis to humans. The lone star tick is not believed to transmit the bacteria that causes Lyme disease (*Borrelia burgdorferi*), but it may be associated with a related bacteria species that has not been completely identified.

Blacklegged Tick, also known as the Deer Tick (*Ixodes scapularis*)

All three active stages of the blacklegged/deer tick feed on a variety of hosts including people. After the eggs hatch in the spring, the very tiny larvae feed primarily on white-footed mice or other small mammals. The following spring the larvae molt into pinhead-sized, brown nymphs that feed on mice, larger warm-blooded animals, and people. In the fall they molt into adults that feed primarily on deer, with the females laying eggs the following spring. Adults are reddish-brown and about 1/8-inch long (or about one-half the size of the more familiar female American dog tick).



These ticks are found in wooded areas along trails. The larvae and nymphs are active in the spring and early summer; adults may be active in both the spring and fall. The blacklegged/deer tick can transmit Lyme disease and possibly ehrlichiosis to humans.

Brown Dog Tick (*Rhipicephalus sanguineus*)

The brown dog tick (also known as the kennel tick) is found through most of the United States. This tick feeds on dogs, but rarely bites people. Unlike the other species of ticks, its life cycle allows it to survive and develop indoors. The brown dog tick is found primarily in kennels or homes with dogs where it may be found hiding in cracks, behind radiators, under rugs and furniture, and on draperies and walls.



The adult is reddish-brown and about 1/8-inch long and usually attaches around the ears or between the toes of a dog to feed. After feeding, a female may engorge to 1/2-inch long. She then drops off the dog and crawls into a hiding place where she may lay as many as 3,000 eggs. This tick is tropical in origin and does not survive Tennessee winters outdoors. The brown dog tick is not an important carrier of human disease.

Winter Tick (*Dermacentor albipictus*)

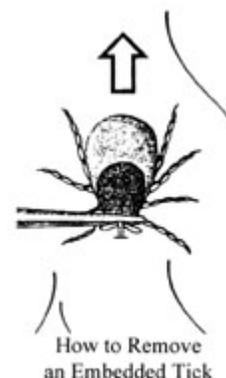
The winter tick is a species that feeds on large mammals like deer, cattle, and horses. Unlike the hard ticks mentioned above, the winter tick attaches to the host as a larva and remains attached throughout its life. Consequently, this tick is rarely encountered by campers or hikers. Hunters may, however, find the winter tick in large numbers on deer carcasses. Although the winter tick may carry diseases of large wild mammals, it is not known to transmit disease to humans.



Preventing Tick Bites and Disease:

The best way to protect yourself against tick-borne illness is to avoid tick bites. This includes avoiding known tick-infested areas. If you live in, visit, or work in wooded areas or areas with tall grass and weeds, however, consider these precautions to help prevent tick bites and decrease the risk of disease:

- Wear protective clothing (e.g., long-sleeved shirts, long trousers, boots or sturdy shoes, a head covering). Ticks are easier to detect on light-colored clothing. Tuck trouser cuffs in socks. Tape the area where pants and socks meet so ticks cannot crawl under clothing.
- Apply insect repellent containing 10 to 30 percent DEET primarily to clothes. Apply sparingly to exposed skin. Do not spray directly to the face; spray the repellent onto hands and then apply to face. Avoid sensitive areas like the eyes, mouth, and nasal membranes. Be sure to wash treated skin after coming indoors. Use repellents containing permethrin to treat clothes (especially pants, socks, and shoes) but not skin. Always follow label directions; do not misuse or overuse repellents.
- Walk in the center of trails so weeds do not brush against you. In work areas individuals who sit on the ground or disturb leaf litter on the forest floor may encounter ticks.
- Check yourself and coworkers every two to three hours for ticks. Most ticks seldom attach quickly and rarely transmit disease organisms until they have been attached for four or more hours. If your pets spend time outdoors, check them for ticks, too.
- If ticks are crawling on the outside of your clothes, they can be removed with masking or cellophane tape. A ring of tape can be made around the hand by leaving the sticky side out and attaching the two ends. Ticks will stick to the tape that can then be folded over and placed in the trash.
- Remove any tick promptly. The mouthparts of a tick are barbed and may remain embedded and lead to infection at the bite site if not removed promptly. Do not burn the tick with a match or cover it with petroleum jelly or nail polish. Do not use your bare hands to remove the tick because tick secretions may carry disease. The best way to remove a tick is to grasp it firmly with tweezers as close to the skin as possible and gently, but firmly, pull it straight out. Do not twist or jerk



the tick. If tweezers are not available, grasp the tick with a piece of tissue or cloth or whatever else can be used as a barrier between your fingers and the tick. Ticks can be safely disposed of by placing them in a container of soapy water or alcohol, sticking them to tape, or flushing them down the toilet.

- Wash the bite area and your hands thoroughly with soap and water and apply an antiseptic to the bite site.
- If you have an unexplained illness with fever, contact ORNL Medical. Be sure to tell the physician if you have been outdoors in areas where ticks might be present or traveled to areas where tick-borne diseases are common.

Tick-Borne Diseases:

Tick-borne, or rickettsial, diseases first cause flu-like symptoms that can be treated with antibiotics if caught early. Untreated, they may cause serious health problems, including death in rare cases. Three bacterial illnesses often transmitted by ticks include:

- Rocky Mountain spotted fever
- Lyme disease
- Ehrlichiosis

Rocky Mountain spotted fever is the most severe and most frequently reported rickettsial illness in the United States. The disease is caused by *Rickettsia rickettsii*, a species of bacteria that is spread to humans by ixodid (i.e., hard) ticks. Initial signs and symptoms of the disease include sudden onset of fever, headache, and muscle pain, followed by development of a rash. The disease can be difficult to diagnose in the early stages, and without prompt and appropriate treatment it can be fatal.



Lyme disease is caused by bacteria that are transmitted to humans by the bite of infected deer ticks. There are approximately 20,000 Lyme disease infections in the United States each year. Symptoms include a characteristic “bull's-eye” rash and flu-like symptoms (e.g., fever, malaise, fatigue, headache, muscle aches, joint aches). Lyme disease may have long-term severe, chronic, and disabling effects.



The Lyme disease pathogen has yet to be isolated in ticks in Tennessee. There is, however, some anecdotal information in the area regarding sicknesses from tick bites that display similar symptoms to Lyme disease. The University of Tennessee is currently conducting an ongoing study to look for this pathogen, but results to date are inconclusive.

Ehrlichiosis is caused by bacteria transmitted by certain species of ticks. Symptoms generally include fever, headache, malaise, and muscle aches. Other signs and symptoms may include nausea, vomiting, diarrhea, cough, joint pains, confusion, and occasionally a rash, particularly in children. Ehrlichiosis can be a severe illness, especially if untreated, and as many as half of all patients require hospitalization. It can be fatal.

(March 2009)