
Common Ticks of Tennessee and Their Control



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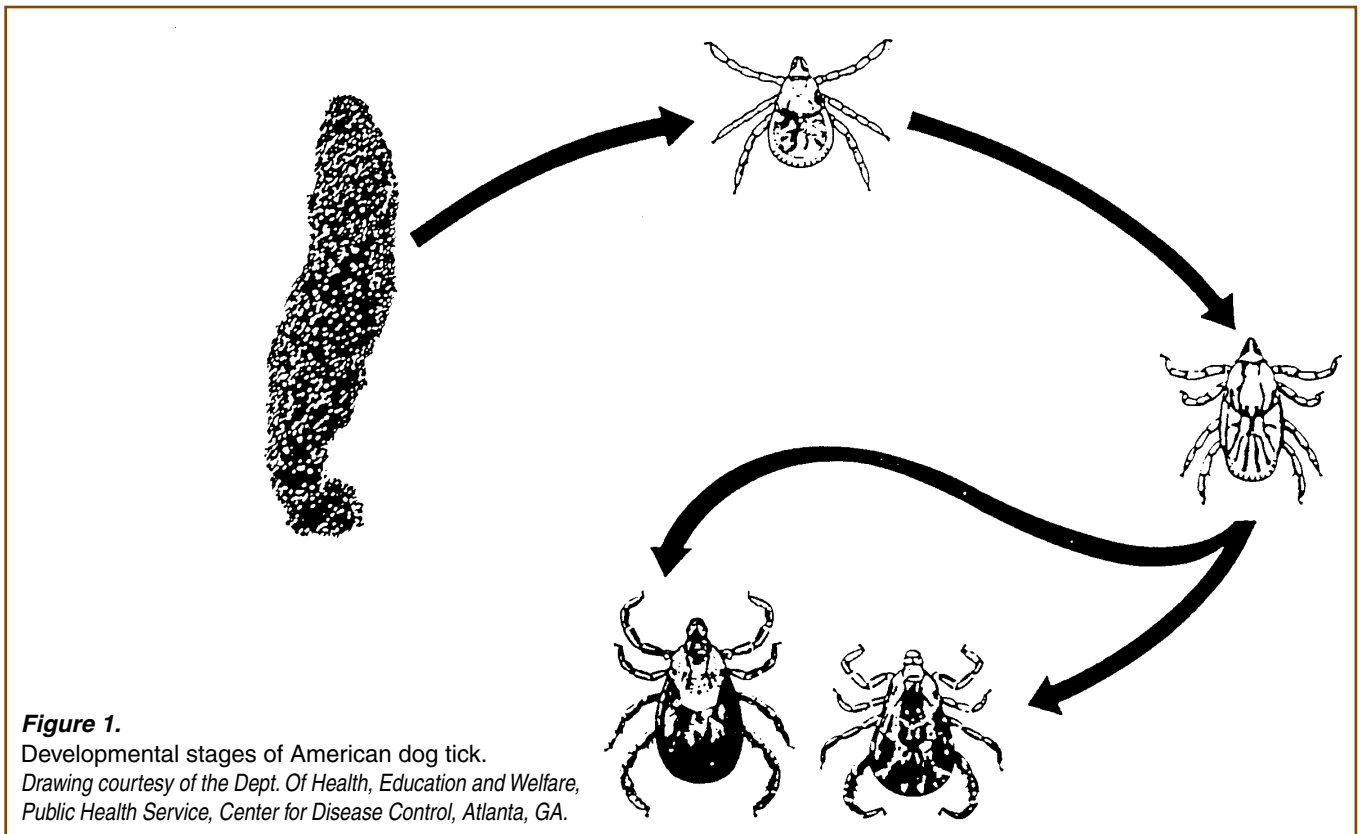
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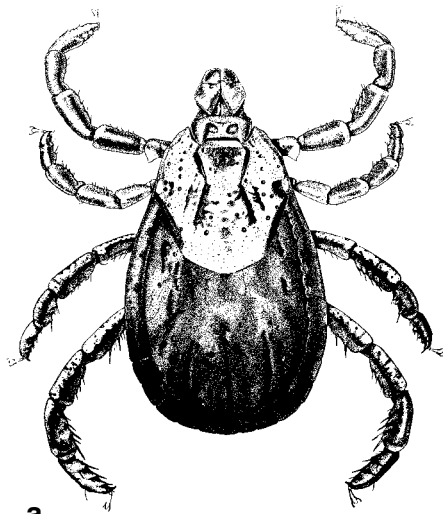
Ticks are external parasites of mammals, birds and reptiles and feed only on the blood of their hosts. They can be distinguished from insects and spiders because the head, thorax and abdomen are fused into a single, sac-like body region. They have four pairs of jointed legs and no antennae. Ticks are found walking on or attached to their hosts or in areas frequented by their hosts. These areas include woodlands, weedy or brushy

areas, lawns, dog kennels and dog runs. Ticks frequently wait for a host on vegetation along trails and paths traveled by people or animals.

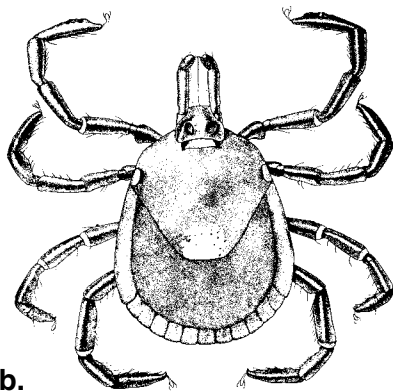
Life cycle

All of the common ticks of Tennessee have four life stages — egg, larva, nymph and adult (Figure 1). Each of the stages, other than the egg, requires a separate animal host to complete its

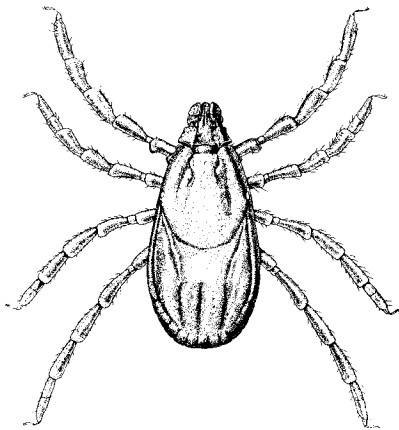




a.



b.



c.

Figure 2.

Common ticks found in recreation areas and around homes in Tennessee are (a) the American dog tick, (b) the lone star tick and (c) the brown dog tick.

Adult females are shown.

Drawings are courtesy of USDA/ARS Manual on Livestock Ticks.

development, which, all together, may be two or three years long. Each blood-engorged female leaves her host animal and lays a single mass of 3,000 to 6,000 eggs. The eggs hatch into larvae about 1/40th of an inch long with three pairs of legs. Immediately after hatching, the larvae climb onto the nearest vegetation and wait for an animal to pass by. They grasp the hair or feathers of the passing animal and attach themselves by inserting their mouthparts into the skin. They remain attached for several days and take in blood until they are greatly distended. After they are full of blood, they drop off the host and molt to the eight-legged nymph. Nymphs usually overwinter and follow the same feeding process the next year. After feeding, they drop off again and molt to adult males and females. The adults usually overwinter and emerge in the spring to find the third host. Mating occurs on this host. When the female is full of blood, she detaches and lays her eggs. Adult, engorged females can grow to more than one-half inch.

Kinds of ticks

Three kinds of ticks are frequently encountered around homes or in recreation areas in Tennessee. These are the American dog tick, lone star tick and the brown dog tick (Figure 2).

The American dog tick (*Dermacentor variabilis*) is a dark brown tick that can be identified by the randomly arranged silver streaks on the back of both the male and female. The immature stages feed primarily on rodents, rabbits, opossums, raccoons, etc., but never on humans. Adults are found on larger animals such as dogs, cattle, deer and humans. The American dog tick is the species that can transmit the Rocky Mountain Spotted Fever organism in Tennessee. Fortunately, only 3 to 5 percent of adult ticks in known Rocky Mountain Spotted Fever areas carry the organism. This tick attaches to humans most frequently in the spring and early summer. Results of a survey conducted by University of Tennessee researchers and Extension faculty indicate that American dog (Figure 3) and lone star ticks (Figure 4) are well-distributed throughout the state.

The lone star tick (*Amblyomma americanum*) is a reddish brown tick that is slightly smaller than the American dog tick. These ticks have long, large snouts and both sexes have pale markings on the backs. The adult female has a conspicuous white

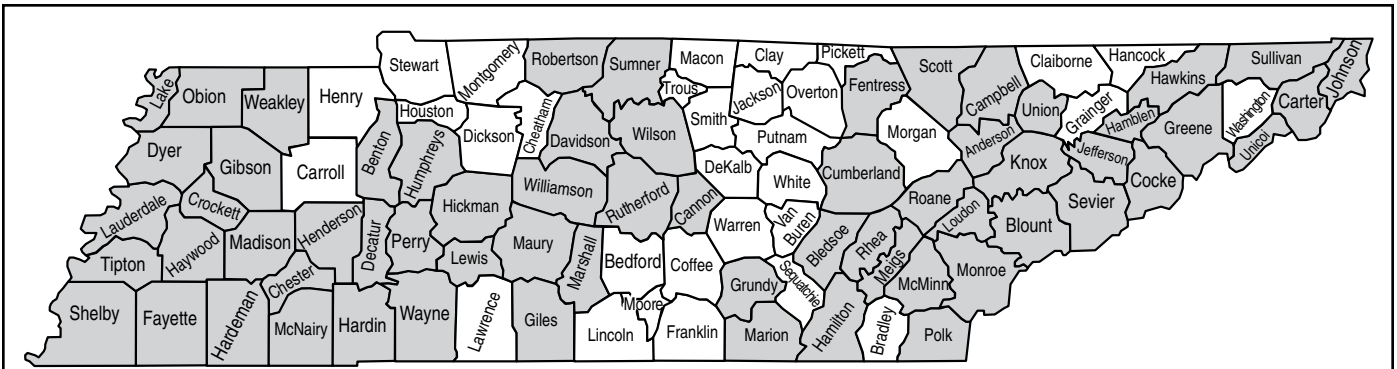


Figure 3. Shaded counties indicate where the American dog tick, *Dermacentor variabilis*, was found during a survey conducted in 1996 and 1997 by UT Extension in conjunction with the UT Entomology and Plant Pathology department. American dog ticks may still be present in unshaded counties, but were not detected in the samples the public brought to Extension agents.

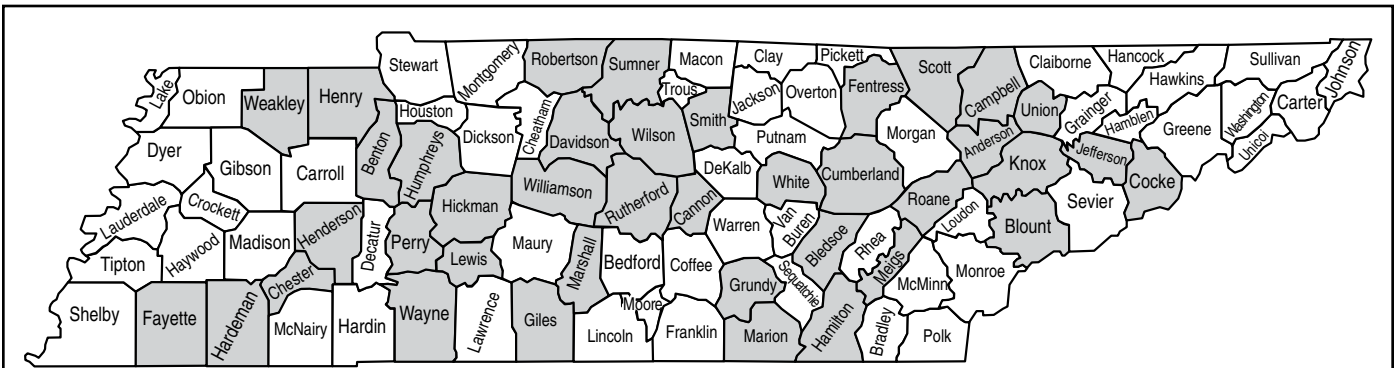


Figure 4. Shaded counties indicate where the lone star tick, *Amblyomma americanum*, was found during a survey conducted in 1996 and 1997 by UT Extension in conjunction with the UT Entomology and Plant Pathology department. Lone star ticks may still be present in unshaded counties, but were not detected in the samples the public brought to Extension agents.

spot on the middle of her back that gives this species its common name. Unlike the American dog tick, all stages of this species will attack people readily. Adults and nymphs are present and searching for hosts as soon as the weather becomes warm in the spring. They decrease in numbers as the summer progresses and are less frequently encountered after early September. The larvae, known as seed ticks, are encountered in masses on vegetation and may result in hundreds of individual bites on one person. Wounds left by attachment of all stages result in discolored itchy spots that may take two weeks to heal. Larval masses are encountered from late July until a killing frost in the fall, but most frequently in August and September. Only those individuals that

find a host and feed successfully will pass on to the next stage.

The brown dog tick (*Rhipicephalus sanguineus*) is uniformly dark reddish-brown, similar in appearance to the American dog tick, but smaller and without any light-colored markings on the back. This tick is known to attack dogs and other animals, but rarely humans. It is usually found inside buildings where dogs live, such as houses, dog kennels and runs. It may sometimes be found on porches, in backyards or other sheltered places frequented by dogs. It is usually found in the spring and summer months.

Disease organisms transmitted by ticks in Tennessee

Rocky Mountain Spotted Fever is caused by a rickettsia that is the most common tick-transmitted disease agent present in Tennessee. One hundred and thirty-six cases were reported in Tennessee in 2005. Rocky Mountain Spotted Fever is characterized by fever, headaches, muscle aches, malaise and a rash that starts on the hands and feet. *Dermacentor variabilis* is the vector in Tennessee.

Human Monocytic Ehrlichiosis, or HME, is a new disease agent that is probably transmitted by the lone star tick. Sixteen cases were reported in Tennessee in 2005. HME has many of the same symptoms as Rocky Mountain Spotted Fever, but usually not the spots or rash.

Lyme Disease is caused by a spirochete that is transmitted by *Ixodes scapularis*, a tick that is rarely encountered in Tennessee. Lyme Disease is most often encountered in the New England states, the upper Midwest, Mid-Atlantic states and California.

Southern tick-associated rash illness, or STARI, symptoms include an expanding, bulls-eye rash similar to that of Lyme disease and occurs following the bite of a Lone star tick. The causative agent is not known. Symptoms may also include fatigue, fever, headache, and muscle and joint pain. Thus far, no chronic, arthritic or neurological symptoms have been attributed to the disease. For up-to-date information on tick-borne diseases, see the Centers for Disease Control and Prevention at www.cdc.gov.

Removal of ticks

The only effective way to remove a tick attached to a person is with a pair of tweezers. Grasp the head region of the tick as close to the skin as possible. Apply firm, steady pressure to remove the embedded mouthparts. Treat as you would any other type of skin wound. Do not crush the removed ticks with either fingers or thumbnails. Do not attempt to remove ticks with nail polish, alcohol or lighted cigarettes.

Be sure to inform your physician of any tick-bite history in the event of illness within one month of a known tick bite.

The only practical way to avoid contracting a disease from ticks is to avoid the tick or to remove the tick as soon as possible.

People living in or visiting in tick-infested areas, such as uncut fields and brushy and other overgrown areas, should inspect themselves, their children and their pets for ticks once or twice a day. Special attention should be given to the hairy parts of the human body as well as areas where clothing fits snugly. The sooner a tick is removed, the smaller the chances for transmitting a disease-causing organism.

Control

Overall, a tick control program should include avoidance of infested areas, application of repellent before entering environments that harbor ticks, inspection for ticks, modification of the environment so it is less conducive to tick survival, and if necessary, application of pesticides to pets and areas frequented by pets.

Severe infestations should be treated by a pest control professional.

Protecting people: Repellents containing ingredients such as DEET or permethrin (Permanone) applied according to the label instructions to boots, shoes and pants before venturing outdoors will provide some protection. Pants should be tucked into socks or boots to prevent ticks from crawling under the pants and up the leg. DEET may also be applied to skin, but may cause allergic reactions. Avoid eyes, nose, lips, cuts and scratches and other sensitive areas when using repellents and always apply the repellent according to the label. If repellents are to be used on young children, use products containing up to 30 percent DEET. Use DEET only on children older than 2 months. If an allergic reaction is suspected from a repellent, wash the area with soap and water and seek medical attention. Additional information on repellents can be found at www.cdc.gov.

Modifying the environment: Nonchemical methods for reducing tick problems include mowing the lawn and controlling weeds. These actions provide three advantages: (1) lowers the moisture in the grass microclimate and allows sunlight to penetrate, which tends to cause ticks to dry out; (2) discourages rodents (which may serve as hosts) from nesting; and (3) because there is less plant matter, less pesticide may be needed if a treatment is necessary.

Removing debris, wood piles or clutter from around the house also discourages rodents from nesting. Repair entry points into the house to discourage possible tick hosts from entering. Cracks and crevices, both indoors and out, can be sealed to reduce hiding places for the tick. Inspect and clean pets and their bedding frequently. If bedding is infested, it should be cleaned or destroyed.

Pets: Pets can be treated either by a veterinarian or the pet owner. A variety of formulations for pets are available from veterinarians. Cats and some breeds of dogs are sensitive to insecticides. Be aware that kittens, puppies and lactating or pregnant females are not always listed on the pesticide label. Always read the pesticide label before using any product to ensure your pet is not excluded. It is a good idea to check with a veterinarian before deciding on a pet treatment.

Products containing fipronil (Frontline) are available from veterinarians to kill ticks on pets. Some are applied as a spot on the pet between the shoulder blades or as a spray. Permethrin sprays and spot-ons also have good activity against ticks.

Collars containing amitraz (Preventic[®] Tick Collar) are another option for tick control on dogs. Insecticides are impregnated into the collar and are spread throughout the pet's hair by grooming. Check the label for the prescribed treatment time. Prolonged use of a tick collar can cause dermatitis under the collar, so check this area for rashes. Discontinue use of a collar if a rash occurs.

The number of on-animal, over-the-counter insect control products has increased tremendously in the past few years. Products containing pyrethrin, permethrin and others are available in sprays, and spot-ons. Most of these products are also labeled to treat the dogs' resting areas.

Outdoors: Insecticides should be applied only when ticks are present. In the spring, survey suspected areas by dragging a 3-foot by 3-foot white flannel cloth along the ground. If ticks are found, use a single insecticide application in late April or May to effectively control nymphal and adult lone star ticks and adult American dog ticks. Survey again in August or September for newly-hatched lone star seed ticks and apply an insecticide to appropriate areas.

Where tick populations are high, outdoor areas that may need treatment include vegetation along

borders, areas between woods and lawn, around ornamental plantings, fence lines, etc. Make sure the plants to be treated are listed on the label to prevent plant injury. Ticks avoid direct sunlight, so treating the entire lawn is not usually needed. Insecticides used for tick control include bifenthrin, cyfluthrin, lambda-cyhalothrin, fluvalinate, permethrin and others. Areas that dogs frequent should also be treated. Products labeled for outdoor use are not usually labeled for treating pets! See the **Pet** section for products that can be used on pets.

Indoors: Tick control is seldom needed indoors in Tennessee because the most common species, the American dog tick and the lone star tick, are seldom found indoors. Indoor treatment is needed if the pet is infested with brown dog ticks, although this is relatively rare. Brown dog ticks will feed on the pet and drop off to molt in the many cracks and crevices available in the home. These ticks are difficult to control because they can survive several months without another blood meal. If brown dog ticks are found, frequently inspect and remove ticks from pets. Vacuum rugs, floor, furniture, baseboards and behind furniture. Insecticides should be applied to cracks and crevices, such as along baseboards and molding, around door and window frames, underneath furniture, beneath the edges of carpeting, behind loose wallpaper and in other tight spots. Professionals can treat these cracks and crevices with dusts containing silica gel or pyrethroids. Spot treatment or crack and crevice treatment can be made with sprays of bifenthrin, cyfluthrin, lambda-cyhalothrin, permethrin and others.

Because these ticks tend to crawl up walls, treat up high as well as low. Concentrate on areas where the pet rests. Dust or spray cracks and crevices in crawl spaces if pets have access to this site. Retreatment may be necessary as eggs and immatures hatch and emerge from hiding places.

For specific pesticide suggestions, see UT Extension PB1690 Insect and Plant Disease Control Manual at <http://eppserver.ag.utk.edu/redbook/sections/structural.htm>

CAUTION: Carpets can be discolored by insecticides

Before applying any product to a carpet, check the carpet manufacturer's warranty and care and maintenance information. Spot test a small portion before treating the entire carpet.

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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