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TICKS ATTACKING HUMANS AND PETS

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Most Texans, at one time or another, will experience the aggravation of tick bites. Knowledge of ticks and their habitats, as well as methods of tick control, can help you avoid this problem.

Ticks are parasites of warm-blooded animals. Their bites are not only annoying, but can be painful, causing localized skin inflammation and infection and possible introduction of disease-causing microorganisms into host animals.

Ticks are not insects, but are closely related to mites, spiders and scorpions. Adult ticks have eight legs, while adult insects have only six. Also, the tick's body is fused into a single region, instead of having the head, thoracic and abdominal regions typical of insects.

Ticks are grouped into two families: 1) the "hard ticks" (*Ixodidae*), which have a hard, smooth skin and an apparent head; and 2) the "soft ticks" (*Argasidae*), which have a tough, leathery, pitted skin and no distinguishable head. Although both groups contain species that attack humans and animals, some hard ticks are more of a problem in Texas and will be discussed in greater detail.

Life Cycle

Ticks have four developmental stages — egg, six-legged larva, eight-legged nymph and adult (Fig. 1). Hard ticks usually mate on the host animal. The female then drops to the ground and deposits from 3,000 to 6,000 eggs, which hatch into larvae or "seed ticks." Larvae climb nearby vegetation where they collect in large numbers while waiting for small rodents or other vertebrates to pass within reach. After a blood meal on the host, the engorged larvae drop to the ground, shed their skins (molt) and

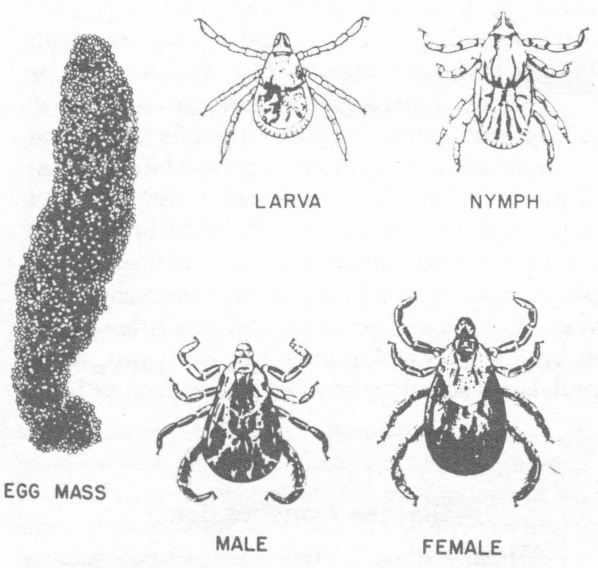


Figure 1. Typical developmental stages for ticks of primary importance in Texas.

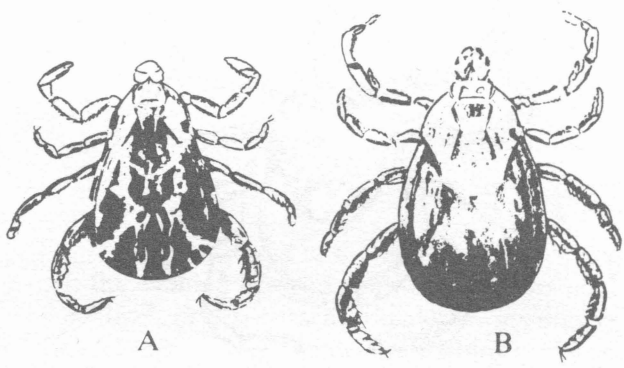


Figure 2. Male (A) and female (B) American dog ticks

emerge as nymphs. The nymphs locate a host, engorge themselves with blood, drop to the ground, molt and become adults. Adult ticks seek host animals and, after engorgement, mate.

Male hard ticks usually mate with one or more females and then die, although some may live for several months. Females die soon after depositing their eggs. The life cycle requires from about 2 months to more than 2 years, depending on the species.

This life cycle is characteristic of the tick species which commonly infest humans and pets in Texas. However, some species feed on only one host during the life cycle.

Common Species in Texas

The term "wood ticks" is applied to several species of hard ticks so similar in appearance and habits that it is difficult to distinguish one from another. In Texas, the most common of these are

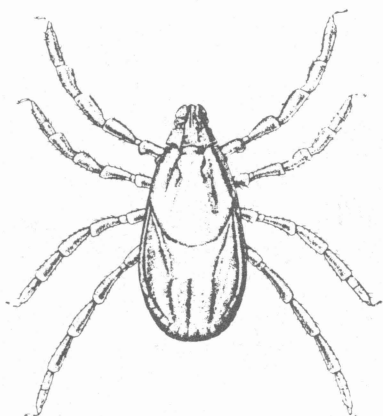


Figure 3. Female brown dog tick

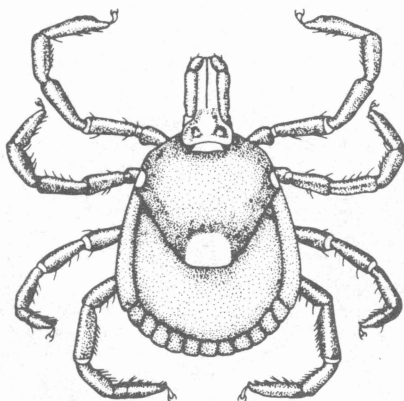


Figure 4. Female lone star tick

the American dog tick (*Dermacentor variabilis*), the brown dog tick (*Rhipicephalus sanguineus*) and the lone star tick (*Amblyomma americanum*).

Adult American dog ticks are chestnut brown with white spots or streaks on their backs (Fig. 2). Unfed adults are about 1/8-inch long. Engorged females become slate gray and may expand to a length of 1/2 inch. Larvae and nymphs feed mostly on small rodents, while adults feed on dogs, cattle, humans and other animals. These ticks are widely distributed over the eastern two-thirds of Texas, but are most abundant in coastal and other humid areas. They are attracted by the scent of animals, so are most often encountered near roads, paths, trails and recreational areas. Although present the year round, American dog ticks are usually most numerous in the spring.

Adult brown dog ticks are reddish-brown (Fig. 3). Unfed adults are 1/8- to 3/16-inch long, and engorged females are about 1/2-inch long. They feed almost exclusively on dogs, where they attach to the ears and between the toes. They rarely attack man or other animals. Although widely distributed in Texas, these ticks prefer areas near human habitation or dog kennels. Inside the home, the ticks hide behind baseboards, window casings, window curtains, ceiling and picture moldings, bookcases and cabinets, as well as inside upholstered furniture and under the edges of rugs. Outdoors, they hide near building foundations, in crevices between porch floorings and sidings and beneath porches.

Adult lone star ticks are various shades of brown or tan (Fig. 4). Females have a single silvery-white spot on their backs and males have scattered white spots. Unfed adults are about 1/8-inch long, but after feeding, females may be 1/2-inch long. Larvae and nymphs parasitize small wild animals, birds and rodents, while adults feed on larger animals. All three stages will bite humans. These ticks live in wooded and brushy areas of Texas, and are most numerous in underbrush along creeks and river bottoms and near animal resting places. Lone star ticks are present throughout the year, but peak adult and nymphal populations occur in April or May and again in July or August, while peak larval activity is reached in mid-June or July.

Disease Transmission

When feeding, the tick makes a small incision in the skin of the host and inserts barbed piercing mouthparts to remove the blood. Most species

cause little or no pain to their hosts at the time of feeding, but some, such as the lone star tick, cause a painful wound.

Many disorders and diseases can be traced to tick bites, including: 1) *dermatosis*, or inflammation, itching and swelling at the site of the bite; 2) *envenomization*, or inoculation of toxic fluids; and 3) *exsanguination*, or anemia resulting from the loss of large amounts of blood because of a severe tick infestation.

Ticks can transmit diseases by infecting hosts with microorganisms carried on their mouthparts or in salivary fluids. American dog ticks are carriers of Rocky Mountain spotted fever and tularemia (rabbit fever), and can cause tick paralysis. Lone star ticks can transmit Rocky Mountain spotted fever, tularemia and Bullis fever. Brown dog ticks carry diseases to humans and animals in Africa and the Mediterranean region, but are not known to transmit human disease in the U.S.

Tick Removal

Because tick movements and bites are seldom felt, careful and frequent examination for ticks on the body and clothing is imperative. Early removal is important since many disease organisms are not transferred until the tick has fed 2 to 8 hours. Always remove the tick with its mouthparts intact. Hasty removal of an attached tick can break off the mouthparts. Mouthparts left in the skin can transmit disease organisms or cause secondary infections. To relax tick mouthparts for easy removal, touch the tick with a hot needle or a few drops of camphor, alcohol, turpentine, kerosene or chloroform. Sometimes the best method is to grasp the tick firmly with tweezers or fingers and remove it with a slow, steady pull. Always treat the wound with a germicidal agent.

Tick Surveys

Sometimes information is needed about tick infestation in a given area — the presence or absence of ticks, tick density or tick species. To obtain this information, ticks can be removed from host animals in the area. Clues often can be obtained by studying past and current land uses. For example, if the land was once in agricultural production but has since been abandoned it probably supports a heavy population of field mice, and, consequently, may be a tick-infested area. Immature ticks inhabit "mousy areas," while adults are abundant along trails

traveled by humans and large animals. For a more complete survey a small, square piece of white flannel cloth can be dragged slowly over low vegetation beside trails and roads. Waiting ticks will attach themselves to the cloth, and can then be studied to determine the species and degree of infestation.

Protection from Ticks

Some degree of protection against ticks can be obtained by keeping clothing buttoned, shirt tails inside trousers and trouser legs inside tops of socks. Do not sit on the ground or on logs in brushy areas.

Persons who must be in areas suspected of supporting infestations should examine their clothing, body and hair at least twice daily so that ticks can be removed promptly.

Brush along trails should be cleared or burned and weeds and grass in recreation areas should be cut. In residential areas, closely cut and well-kept lawns help control both ticks and their small rodent hosts.

Repellents such as diethyl-m-toluamide, dimethyl phthalate, dimethyl carbate or ethyl hexanediol will protect exposed skin, but will not stop ticks from crawling under clothing to reach untreated portions of the body. Applying these materials to the entire body might prevent tick bites for awhile, but such extensive treatments often are impractical and can be hazardous to health. For these reasons, clothing treatments usually are preferable to skin treatments. Formulas for preparing clothing treatments include:

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| 1) 1 oz. benzyl benzoate
3 pints water | 2) 1 oz. benzyl benzoate
3 pints dry-cleaning fluid |
| 3) 5 oz. diethyl-m-toluamide
3 pints water
2 tbsp. naphtha soap
(not detergent) | 4) 5 oz. diethyl-m-toluamide
3 pints dry-cleaning fluid |

Saturate clothing in the mixture. Then wring out the clothing by hand and hang outdoors until completely dry. Treatments should provide protection for about a week unless the clothing gets wet. Wash and re-treat clothing weekly. Do not treat undergarments, rayon or nylon fabrics.

Tick Control

If a tick infestation occurs, treat the home, yard and pets at the same time. Examine dogs and cats frequently for ticks. Control light infestations on dogs and cats more than 4 weeks old with weekly applications of dusts containing 5 percent carbaryl (Sevin®). Rub the dust to the skin and apply to the animal's sleeping quarters. Continue treatments for as long as needed. Heavy infestations on pets should be handled by a veterinarian.

Light infestations in buildings usually can be controlled with a household spray containing 0.5 percent diazinon. Also, a spray containing 0.5 percent chlorpyrifos (Dursban®) is registered for controlling brown dog ticks. Apply the insecticides only as light, spot treatments to areas where ticks are found or suspected to be hiding. **DO NOT USE THESE CHEMICALS FOR TREATING PETS.** Treatment around baseboards, window and door casings, wall cracks and in pet sleeping quarters is usually necessary. To control severe infestations in the home, remove the pet from the house and make repeated applications of insecticides at 2- to 4-week intervals. Other insecticides besides those listed are approved for tick control in buildings. Select a spray that does not have an objectionable odor and will not stain paints, wallpaper, tile or rugs.

Tick control in home lawns and other vegetated areas usually can be obtained with sprays or dusts containing diazinon or carbaryl. Use 5 percent carbaryl dust at the rate of 2.5 to 5 pounds per 5,000 square feet of area. If a spray is used, mix 1 quart of 25 percent diazinon emulsifiable concentrate in 96

gallons of water (2 tablespoons per 3 gallons) and apply 24 gallons of spray per 1,000 square feet of area. Give particular attention to spray applications around building foundations and along roadsides, animal trails and paths used by people.

Insecticide Precautions

The Federal Environmental Pesticide Control Act of 1972 (Public Law 92-516) prohibits the application of any pesticide in a manner inconsistent with its labeling. This means that a pesticide cannot be used unless it is registered for the specific pest on the specific host plant or animal, as indicated on the product label. Consequently, some chemicals formerly used by homeowners and pesticide applicators are now prohibited.

The status of insecticide label clearances is subject to change, and changes may have occurred since this publication was printed. County Extension agents and Extension entomologists are notified as these changes occur.

The insecticide USER always is responsible for the effects of pesticide residues on his own premises, as well as problems caused by drift from his property to that of others. Always read and follow carefully all instructions on the product label.

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