

A GUIDE TO PREVENTION AND PROTECTION FROM TICK BITES

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Ticks can be a year-round nuisance and health hazard in Louisiana for all age groups, as well as pets and livestock. Protecting yourself from ticks is critical to preventing the acquisition of tick-borne disease. Reducing environments that are conducive to their presence, correctly identifying ticks and knowing management strategies are important from a public and personal health perspective.

Biology and Identification

Ticks are often mistaken for insects but are arachnids belonging to the order Ixodida. As part of their development, ticks undergo several life stages: a six-legged larval, one or more eight-legged nymphal and an eight-legged adult stage. Females of all species, and males of most, take blood meals at each stage. Unfed

adult ticks are roughly 2 to 6 mm in length but may become greatly enlarged after obtaining a blood meal. Blood fed ticks can reach about 10-16 mm, depending on the species and duration of feeding.

Two major families of ticks are recognized: Ixodidae (hard ticks) and Argasidae (soft ticks). Hard ticks undergo one nymphal stage and

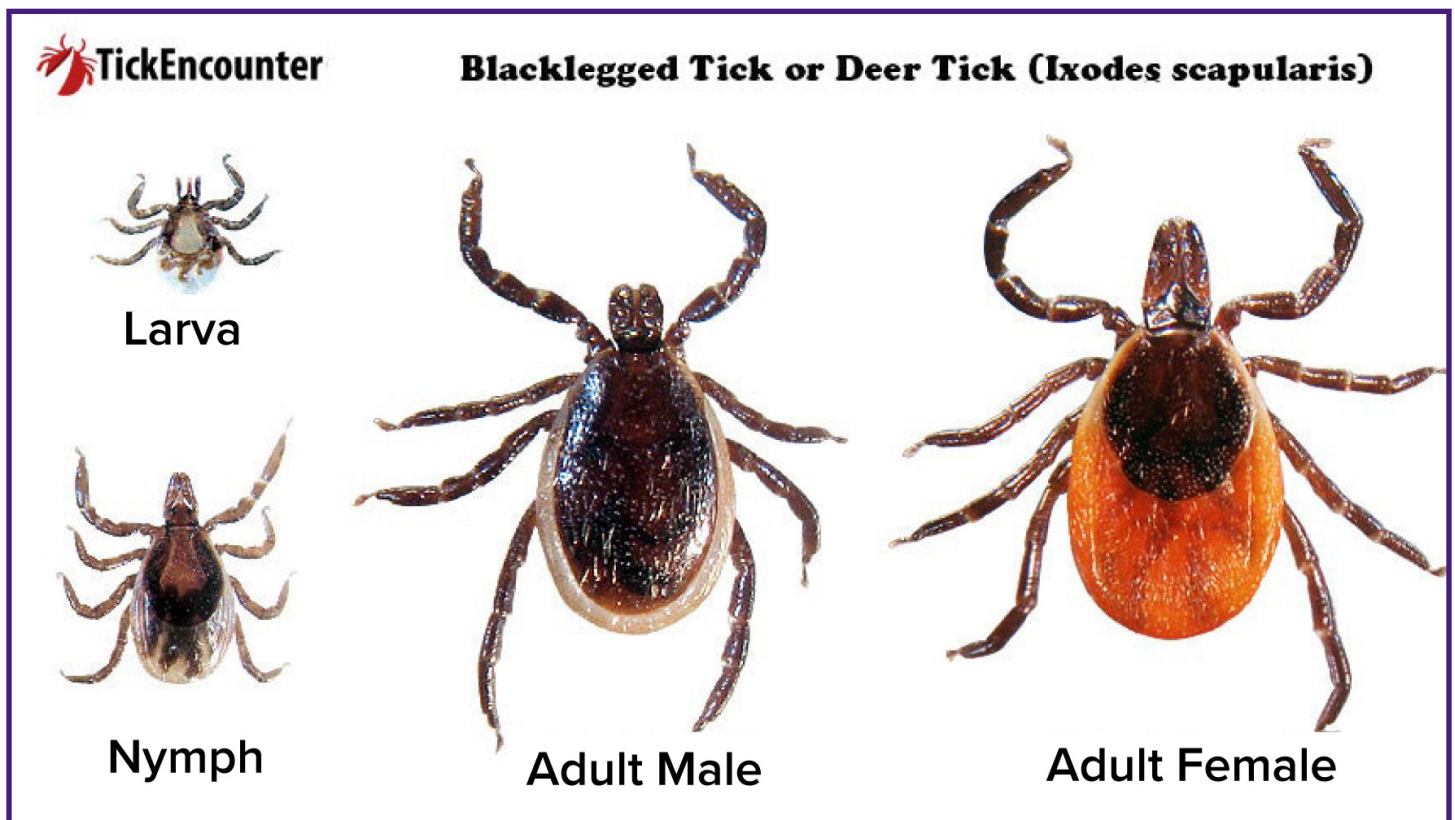


Figure 1. Life stages of the blacklegged tick (*Ixodes scapularis*). Photos by University of Rhode Island Tick Encounter Resource Center

feed once for each developmental stage (unless interrupted). Some species of hard ticks may complete their entire life cycle on a single host, but many require a new host for each stage. Soft ticks have more than one nymphal stage; up to eight. The entire lifecycle of soft ticks requires multiple hosts with female adults feeding several times. Hard ticks may be differentiated from soft ticks by the presence of a scutum, or hard shield, and a visible rostrum or beak-like structure at the front containing the mouthparts. Soft ticks lack a scutum and their mouthparts are on the underside

of their bodies. Across the United States, more than 80 described species of ticks are present. In Louisiana, five species of hard ticks are of public health concern due to their ability to vector diseases to humans: *Amblyomma americanum* (Lone Star tick), *Amblyomma maculatum* (Gulf Coast tick), *Dermacentor variabilis* (American dog or wood tick), *Ixodes scapularis* (blacklegged or deer tick) and *Rhipicephalus sanguineus* (brown dog tick). Soft ticks are more of a concern for veterinary diseases.

Table 1. Common tick species in the southeastern United States with identifying features and typical environmental habitats.

Species	Description	Environmental Habitat
Lone Star tick (<i>Amblyomma americanu</i>)	Reddish brown bodies; females possess a silver-white, star-shaped spot at the center of scutum; males possess white streaks or spots along the margins of scutum	Wooded areas, thick underbrush and transitional areas between forests and grasslands
Gulf Coast tick (<i>Amblyomma maculatum</i>)	Red bodies with white, ornate markings across scutum and entire body in females	Grasslands and coastal uplands
American dog tick (<i>Dermacentor variabilis</i>)	Reddish-brown bodies with white markings on scutum	Wooded areas, shrublands, grasslands, urban areas with groundcover
Blacklegged or deer tick (<i>Ixodes scapularis</i>)	Reddish-brown bodies with dark, plain scutum	Forest floors, shrublands, grasslands
Brown dog tick (<i>Rhipicephalus sanguineu</i>)	Elongated reddish-brown bodies with dark plain scutum	Yards, human and dog-populated environments



Lone Star tick (*Amblyomma americanum*). Photo by Mat Pound, U.S. Department of Agriculture Agricultural Research Service, Bugwood.org



Gulf Coast tick (*Amblyomma maculatum*). Photo by Mat Pound, U.S. Department of Agriculture Agricultural Research Service, Bugwood.org



American dog tick (*Dermacentor variabilis*). Photo by Gary Alpert, Harvard University, Bugwood.org



Brown dog tick (*Rhipicephalus sanguineus*). Photo by Mat Pound, U.S. Department of Agriculture Agricultural Research Service, Bugwood.org



Blacklegged or deer tick (*Ixodes scapularis*). Photo by Mat Pound, U.S. Department of Agriculture Agricultural Research Service, Bugwood.org



Engorged blacklegged or deer tick (*Ixodes scapularis*). Photo by Scott Bauer, U.S. Department of Agriculture Agricultural Research Service, Bugwood.org

Risk to Humans

The greatest risk that ticks present to humans is their capacity to act as biological vectors for disease. While feeding, acquired pathogens can be transmitted via saliva during feeding. A prolonged attachment (more than 36 hours) to the host is required for the transmission of most pathogens, but some may require less time. Pathogens are often acquired through feeding on other infected hosts from previous developmental stages (transstadial transmission). Pathogens may also be acquired from mother to offspring (transovarial transmission). Tick-borne illnesses such as alpha-gal syndrome (AGS), anaplasmosis, babesiosis, ehrlichiosis, Lyme disease, Powassan disease, *Rickettsia parkeri* rickettsiosis, Rocky Mountain spotted fever (RMSF) and tularemia,

are all present in the United States, but prevalence varies by region. In Louisiana, confirmed cases of tick-borne diseases are rare. Although Lyme disease is the most commonly arthropod vectored disease nationally, cases in Louisiana are extremely low in comparison to regions where it is endemic. RMSF is the disease of most concern in the state. This is due to the increase of probable cases, prevalence of its primary vectors, American dog ticks and brown dog ticks, and the severity of the illness. In addition to ticks' ability to vector diseases to humans, they may also trigger allergic reactions, skin infections and chronic illnesses in certain cases. In recent years, AGS has become a concern in the region, sometimes causing meat or dairy allergies in people. If you suspect you have a tick-borne illness, seek medical assistance from your primary care physician.

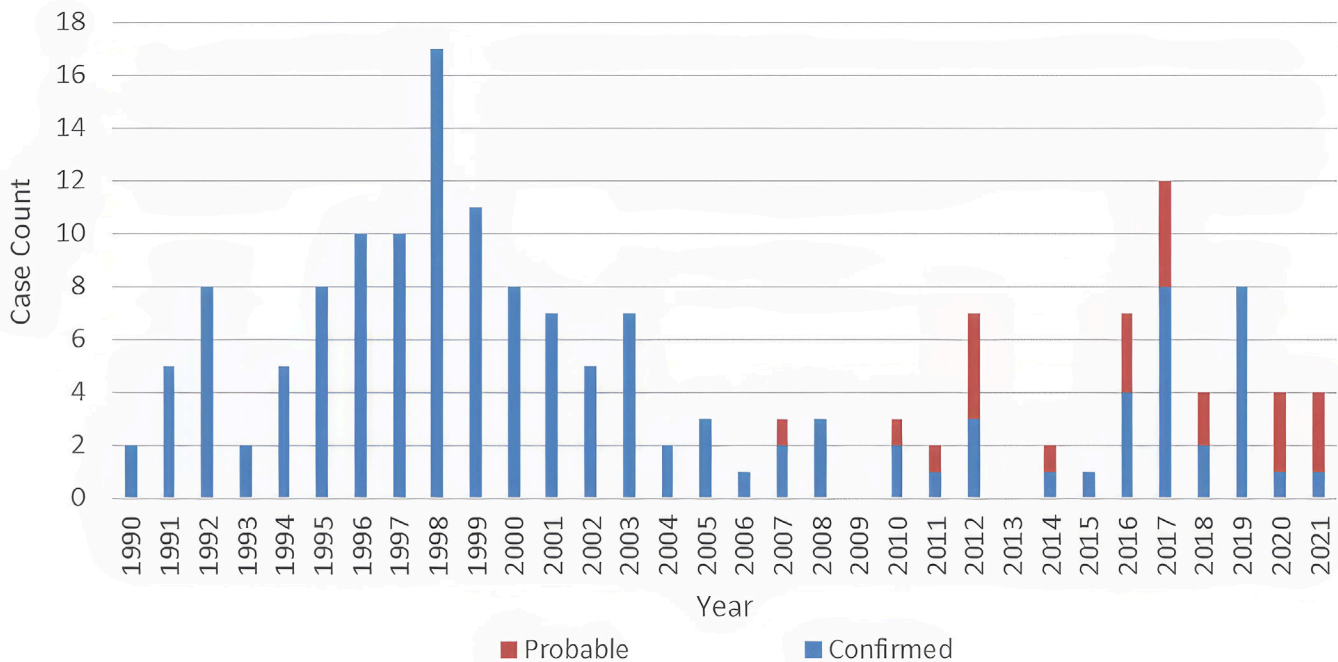


Figure 2. Lyme disease reported cases in Louisiana (1990-2021). Graph by the Louisiana Department of Health

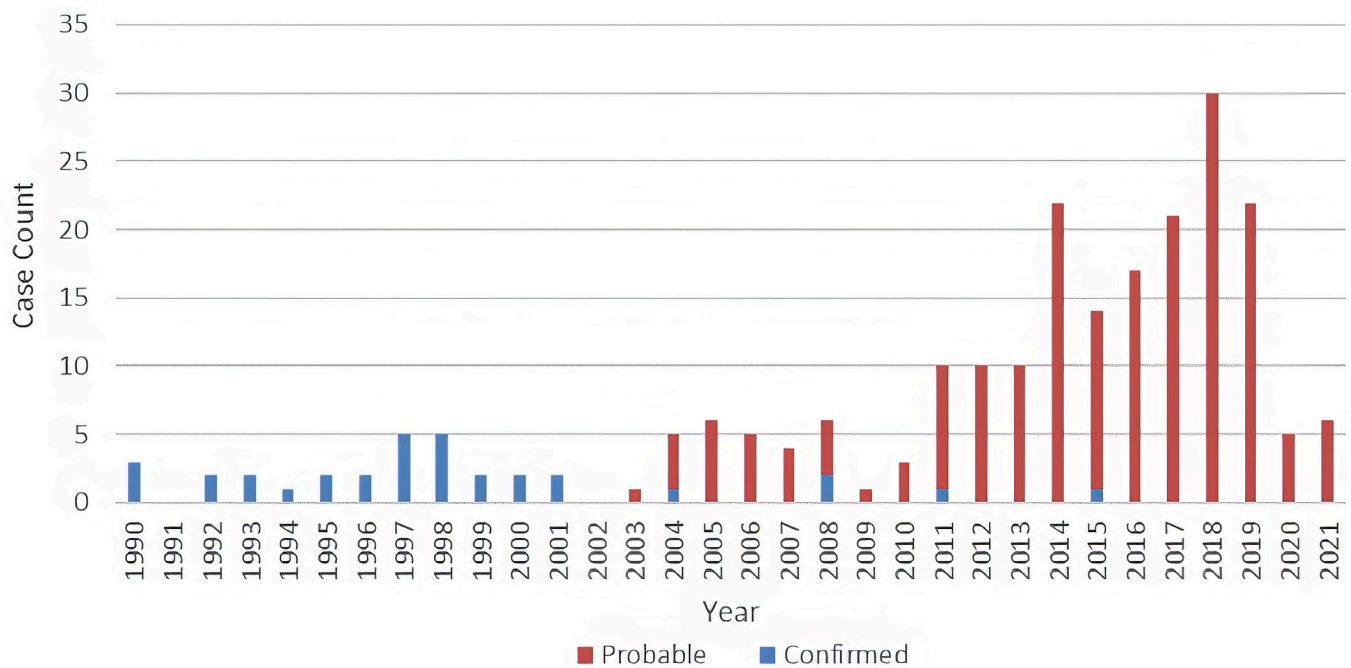


Figure 3. RMSF reported cases in Louisiana (1990-2021). Graph by the Louisiana Department of Health

Table 2. Tick-borne diseases of the southeastern United States, their primary vector(s) and characteristic symptoms.

Disease	Primary Vector(s)	Symptoms
Alpha-gal syndrome (AGS)	<i>Amblyomma americanum</i> (Lone Star tick)	Allergy-like symptoms after consuming meat or dairy products
Anaplasmosis	<i>Ixodes scapularis</i> (blacklegged or deer tick)	Flu-like symptoms (fever, headache, muscle pains)
Babesiosis	<i>Ixodes scapularis</i> (blacklegged or deer tick)	Flu-like symptoms (cough, fatigue, fever, headache)

Disease	Primary Vector(s)	Symptoms
Ehrlichiosis	<i>Amblyomma americanum</i> (Lone Star tick) <i>Ixodes scapularis</i> (blacklegged or deer tick)	Chills, fever, headache, nausea and rash
Lyme	<i>Ixodes scapularis</i> (blacklegged or deer tick)	Arthritis, facial paralysis, irregular heartbeat and rash
Powassan	<i>Ixodes scapularis</i> (blacklegged or deer tick)	Fever, headache, vomiting and weakness
Rickettsia parkeri rickettsiosis	<i>Amblyomma maculatum</i> (Gulf Coast tick)	Eschar (dark, crusty sore at the site of the tick bite), fever, headache, muscle pain and rash
Rocky Mountain spotted fever (RMSF)	<i>Dermacentor variabilis</i> (American dog tick) and <i>Rhipicephalus sanguineus</i> (brown dog tick)	Fever, rash (small, flat, pink discolored skin spots)
Tularemia	<i>Amblyomma americanum</i> (Lone Star tick) and <i>Dermacentor variabilis</i> (American dog tick)	Chest pains, cough, fever, skin ulcers and swelling of lymph glands

Protection and Management Strategies

The most effective strategy for preventing tick bites is to avoid areas where ticks are commonly found. Ticks are frequently encountered in wooded or brush environments with tall grass and leaf litter where wildlife also occurs. Pets that spend time in these areas may bring back ticks, such as *Rhipicephalus sanguineus* (brown dog tick), that can survive indoors for extended periods. Around the home, keeping lawns trimmed and free of brush, leaf litter, weeds,

as well as maintaining a buffer between yards and wooded areas, can reduce suitable tick habitat. Installing fences can exclude wildlife from entering and depositing ticks in the yard. Red imported fire ants can greatly impact the presence of ticks as a natural biological control agent. When exposure to such areas is unavoidable, individuals should wear long-sleeved shirts and long pants treated with permethrin, or apply an Environmental Protection Agency-registered insect repellent containing active ingredients such as DEET. Clothes that were worn

should be washed in warm water and detergent as a precaution. Additional protective measures include tucking pant legs into socks and shirts into pants to limit access points for ticks. Staying on the center of trails helps minimize contact with vegetation where ticks may be present.

After spending time in tick-prone environments, it is essential to thoroughly inspect clothing and personal belongings for ticks. While a person may not have a tick on their body, they may be hitching on clothing or shoes. Wearing light-colored clothing can make detection of ticks easier. Special attention should be given to common attachment sites, including under the arms, behind the knees, between the legs, in and

around the ears, inside the belly button, around the waist and within the hair. If a tick is found attached, remove it promptly using fine-tipped tweezers by grasping the tick as close to the skin's surface as possible and pulling upward with steady, even pressure. After removal, clean the bite site with soap and water or alcohol and dispose of the tick in a sealed container, alcohol or wrapped in tape. Ticks should not be killed with heat when attached to a host as this may harm the host and rupture the tick's gut contents to an open wound. Other substances, like petroleum jelly or nail polish, should also not be used to detach the tick, as these methods may also increase the risk of pathogen transmission.

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