

## Southern Tick-Associated Rash Illness (STARI)

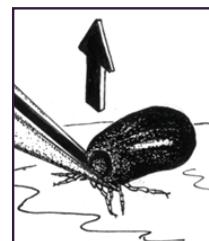
A Lyme-like rash has been noted following the bite of the lone star tick in south central and southeastern states and given the name Southern tick-associated rash illness (STARI). The rash is indistinguishable from the rash caused by Lyme disease bacterium, *Borrelia burgdorferi*. Associated symptoms include fever, headache, fatigue, muscle and joint pain. Little is known about this illness. The causal agent for STARI remains unknown. The lone star tick does not transmit *B. burgdorferi*, but may also be a vector for tularemia and spotted fever rickettsiosis (*Rickettsia rickettsii*, possibly *R. parkeri*).

## Tick Repellents & Checks

Insect (and tick) repellents applied to skin and/or clothing can provide substantial protection from tick bites. The primary ingredient in most repellents is DEET. Others for ticks include picaridin, Oil of Lemon Eucalyptus, and IR3535. For use only on clothing, products with permethrin, a pyrethroid insecticide, work by killing ticks on contact with treated clothes. Prompt removal of attached ticks will reduce the chance of infection.

## Tick Removal

To remove a tick, use thin-tipped tweezers or forceps to grasp the tick as close to the skin surface as possible. Pull the tick straight upward with steady even pressure. Disinfect the area with rubbing alcohol or another skin disinfectant; a topical antibiotic also may be applied. Save the tick for identification or testing and evidence of tick bite. If you suspect a tick-borne illness, consult your physician.



CAES/Kirby Stafford

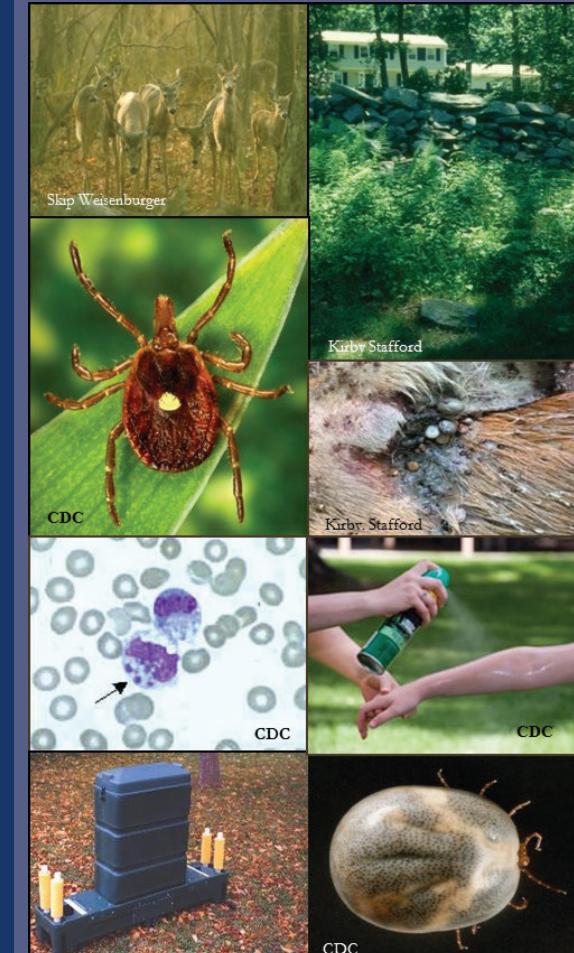
## Five Steps to Prevention

1. Wear long pants tucked in socks
2. Consider a repellent
3. Bathe, look and feel for ticks after leaving tick habitat, and remove any ticks
4. Have ticks properly identified or tested
5. Check pets and livestock for ticks, use tick control products as suggested by your veterinarian.

Further information on tick biology, exotic and invasive ticks, tick-bite prevention and environmental tick control is available in the Tick Management Handbook and tick factsheets on the CAES website.

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## The Lone Star Tick Exotic Ticks and Tick-Borne Disease



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# Lone Star Tick Associated Diseases and Prevention

## Lone Star Tick *Amblyomma americanum*

The lone star tick is the most common human biting tick in the southeastern United States representing > 90% of all tick bites. Established on Long Island, NY in the 1990s, the tick is abundant on Prudence Island, RI, and it is becoming established in Connecticut, and on parts of Cape Cod and the adjacent islands in MA.



Female  
Lone Star Tick



Male  
Lone Star Tick

Female ticks have a conspicuous spot on the end of the scutum. Male ticks have faint white markings at the edge of the body. Nymphs are more circular in shape than *I. scapularis* nymphs and reddish in tint. All stages are active during the summer months. Adults are more active in the spring and early summer, while nymphs are active from April through the summer. Larvae are most abundant in the late summer and early fall.

Increasing submissions of this tick by the public to the CAES Tick Testing Laboratory, survival of adult lone star ticks in Connecticut and Maine in overwintering studies, and the discovery of an established, reproducing population of lone star ticks on an island in Norwalk, CT in June 2017 means *A. americanum* is increasingly relevant to Connecticut and New England.

## Lone Star Tick Associated Diseases and Prevention

### Exotic Ticks

Non-native ticks are brought into the United States by human travelers returning from abroad and on animals imported through an active international trade. Many of the ticks from these hosts can carry human pathogens or are potential vectors of pathogens of our wildlife and domestic livestock. There are a number of bacterial and rickettsial pathogens and encephalitis and hemorrhagic fever viruses carried by ticks in Europe, Asia, Africa and Australia. For example, travelers have returned to Connecticut with species of *Amblyomma*, *Rhipicephalus*, and *Hyalomma* ticks and a few diagnosed with Mediterranean spotted fever. Tick bite prevention measures should be taken by travelers to potentially tick infested areas abroad.

A new exotic tick, the Asian longhorned tick, *Haemaphysalis longicornis*, is now established in the United States. First detected on a sheep in New Jersey in 2017, it is spreading along the eastern seaboard and has been found in CT. It is native to East Asia and an important livestock pest in Australia and New Zealand. The preferred hosts of the adult tick are cattle, horses, sheep, and goats, but also pets and wildlife. It will feed on humans and may be capable of transmitting human disease causing *Borrelia*, *Babesia*, *Anaplasma*, and *Ehrlichia* species, and Powassan virus in the U.S.



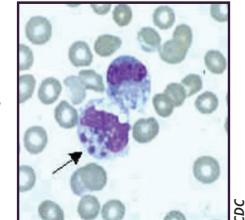
The smaller of the two ticks on the left, is a nymph. The larger tick is an adult female. Males are rare. This tick can reproduce asexually.

## Lone Star Tick Associated Diseases and Prevention

### The Tick-Borne Diseases

#### Ehrlichiosis

Human ehrlichiosis associated with the lone star tick is caused by *Ehrlichia chaffeensis* (human monocytic ehrlichiosis or HME), and *E. ewingii*, the agent of granulocytic ehrlichiosis in dogs.



*E. chaffeensis*  
in white blood cell

Clinical symptoms are non-specific and viral-like appearing a few days to a couple of weeks after the tick bite. They can range from mild to severe and may include fever, headache, chills, muscle aches, nausea, vomiting, and malaise. Subclinical cases may be relatively common. Patients usually develop leucopenia (lower white blood cell count) and elevated liver enzymes. Diagnosis is based on the observation of the pathogen in the white blood cell in stained blood smears, PCR assays, or on serological tests.

#### Red Meat Allergy

An allergy to red meat can be caused by the bite of the lone star tick. A delayed anaphylaxis to red meat in individuals that previously consumed meat without difficulty appears due to sensitization to galactose-a-1,3-galactose (alpha-gal), a sugar carbohydrate found in beef, lamb and pork, but not humans. After a tick bite, people may develop antibodies to alpha-gal and can have an allergic reaction upon subsequently eating red meat. The reaction typically occurs 4-8 hours after consuming the meat and may consist of itching, burning hives, swelling of the throat, and anaphylactic shock.