National Pest Alert

Ticks and Tick-Borne Diseases

Ticks and tick-borne diseases (TBD) pose a major public health concern nationally. Eleven of the seventeen tick-borne diseases in the U.S. are known to infect humans. Lyme disease accounts for over 90% of all reported human vector-borne disease, with an estimated 300,000 cases annually. TBDs are most often spread by the bite of ticks.

Tick Life Cycle

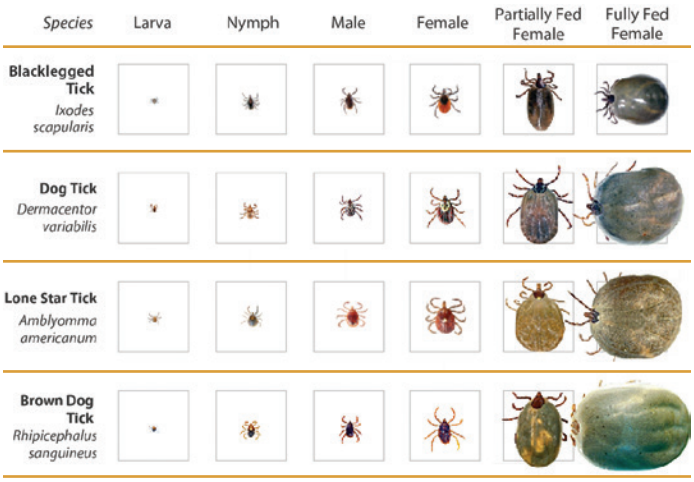
Most tick life cycles include four stages: egg, six-legged larva, eight-legged nymph and adult. Each life stage varies in size and color for each tick species. Ticks need a blood meal at every life stage after hatching to survive and grow. Ticks can feed on mammals, birds, reptiles, and amphibians. Most ticks prefer a different host animal at each life stage. Ticks are most active in the spring, summer and fall, however, the adults of some species are active in the winter.

The Spread of Disease

Most ticks wait passively on vegetation for host animals to move by. If a host passes by close enough, the tick will latch on. Ticks spread germs that cause disease through the process of feeding:

- Once the tick finds a feeding spot, it grasps the skin and cuts into the surface.
- The tick inserts its feeding tube to suck blood slowly for several days. If the host animal has a TBD, the tick will ingest the germs with the blood.
- Large amounts of saliva from the tick enters the skin of the host animal during the feeding process. If the tick is carrying germs that will cause a TBD, the germs may be passed on to the host animal in the tick's saliva.
- Usually, ticks have to be feeding for several hours before any infections are spread to the host. This timeframe varies by tick species and the type of germ. An infectious dose of the Lyme disease germ can be passed on usually after 24 hours whereas the Rocky Mountain spotted fever germ can be spread as soon as 4–6 hours and Powassan encephalitis virus can be passed on in as little as fifteen minutes after tick attachment.
- After feeding, most ticks will drop off and prepare for the next life stage. At its next feeding, a tick that picked up germs in a blood meal can then spread disease to a new host.

Tick Life Cycle



TickEncounter Resource Center, www.tickencounter.org/tick_identification

Tick-borne Disease Symptoms

Many TBDs share symptoms. The most common symptoms of tick-related illnesses are:

- Fever/chills
- Severe headache
- Muscle and joint pain
- Nausea
- Cognitive defects
- Sleep disturbances
- Rash

Tick-borne Disease Prevention

Ticks dry out in heat and thrive in damp, humid environments. Yard care practices including removing leaf litter and mowing the lawn can help reduce tick habitat. Keeping children's play areas away from wooded edges, and moving to areas with short grass and sunshine reduce the chances of a tick encounter.

Personal protection strategies to reduce the chances of coming in contact with ticks include avoiding

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USDA United States Department of Agriculture

National Institute of Food and Agriculture

tick-dense areas, wearing permethrin-treated clothing and applying tick repellent. Insect repellents containing DEET or picaridin can be sprayed on skin, but wearing tick repellent clothing is most effective. A dryer on high heat can kill lingering ticks on clothing in 5–10 minutes.

The best strategy to reduce the number of people who get TBDs is to perform daily tick checks and remove a tick before it has the chance to spread disease-causing germs.

Tick Removal

Pointy tweezers are best for removing ticks by grabbing the tick as close to the skin as possible and pulling upwards with a slow, steady motion. On-line resources like **TickSpotters** are available for tick identification and risk assessment. **TickReport.com** can be used for tick testing to determine if the tick is infected.

Species, Location and Related Disease

American Dog Tick

LOCATION: East of the Rocky Mountains and in limited areas on the Pacific Coast

SPREADS: Tularemia and Rocky Mountain spotted fever

Blacklegged tick

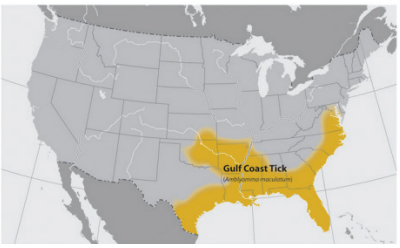
LOCATION: Northeastern and upper Midwestern U.S.

SPREADS: Lyme disease, anaplasmosis, babesiosis and Powassan disease

Brown dog tick

LOCATION: Worldwide

SPREADS: Rocky Mountain spotted fever (in southwestern U.S.)



Gulf Coast tick

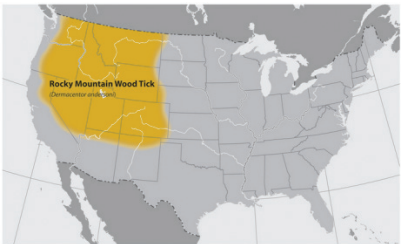
LOCATION: Coastal U.S. along the Atlantic Coast and Gulf of Mexico

SPREADS: *Rickettsia parkeri rickettsiosis*

Lone star tick

LOCATION: Southeastern and eastern U.S.

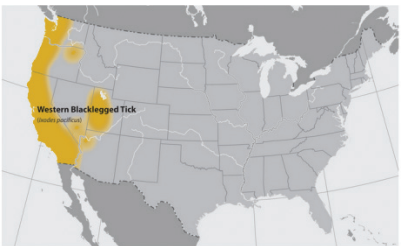
SPREADS: Ehrlichiosis, tularemia and STARI



Rocky Mountain wood tick

LOCATION: Rocky Mountain states and southwestern Canada

SPREADS: Rocky Mountain spotted fever, Colorado tick fever and tularemia



Western blacklegged tick

LOCATION: Pacific coast of the U.S.

SPREADS: Anaplasmosis and Lyme disease

For more information on ticks, TBDs, tick control recommendations and state resources visit our Web site at: **www.ncipmc.org/action/alerts/**

Or through: **cdc.gov/ticks/index.html** | **tickencounter.org/** | **tickencounter.org/tickspotters** | **mainelyticks.com/index.html** | **lymediseaseassociation.org/** | **epa.gov/insect-repellents**

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Photo Credits

CDC Tick Distribution Maps: Centers for Disease Control and Prevention cdc.gov/ticks/geographic_distribution.html

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