



## Tick-Borne Disease

Some ticks can carry bacteria and viruses that can cause disease in humans and animals including: babesiosis, Colorado tick fever, ehrlichiosis, Lyme disease, Powassan virus, Rocky Mountain spotted fever, tularemia, and typhus. Reducing exposure to ticks is the most effective prevention method for tick-borne diseases.

### General Tick-Borne Disease Infor-

#### *Geographic Distribution and Seasonality*

Ticks are found across the US, mostly in wooded, bushy, and grassy areas. Cases of tick-borne disease are most common during warmer months (April to September), when ticks are most active.

#### *Hosts and Transmission*

Ticks feed on a variety of animals including: deer, dogs, rodents (such as mice), birds, and reptiles. Disease is transmitted from the bite of an infected tick. Ticks, which can attach to any part of the body, are generally found on humans in hard-to-see spots such as the scalp, groin, and under the arms. Rodents are the most common reservoir for tick-borne diseases. Nymphal ticks are responsible for most human tick-borne illnesses in the United States and need to be attached for many hours to transmit diseases such as Lyme.

#### *Signs and Symptoms*

Human symptoms of tick-borne illness usually appear 1 to 2 weeks after the tick bite and include:

- Fever and chills
- Headache and muscle aches
- Rash

#### *Prevention and Control*

Reducing exposure to ticks is the best prevention method, especially in warmer months, when ticks are most active. To help prevent tick-borne illness:

- Hike in the center of trails
- Avoid wooded and bushy areas with high grass and leaf litter
- Wear insect repellent containing DEET or other EPA approved repellent
- Treat clothing and gear with products containing permethrin
- Carefully inspect your body, clothing, and pets for ticks after recreating
- Bathe within two hours to wash ticks off your skin before they bite

#### *Testing and Treatment*

Antibiotics are effective in treating bacterial tick-borne illnesses and should be used if an infection is diagnosed. *Tips for Finding and Removing Ticks*

- Bathe as soon as possible to wash off and easily find ticks
- Conduct a full-body check for ticks
  - Use a mirror
  - Parents should check their children for ticks
- Examine your gear and your pets
- Tumble clothes in a dryer on high heat for an hour

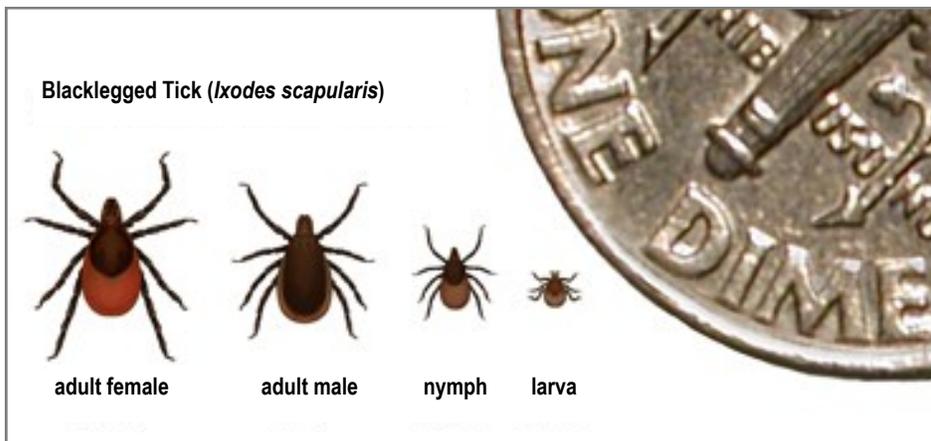


## OneHealth

### One Health and Tick-Borne Disease

Scientists have linked land cover changes to increased spread of tick-borne disease. Decreases in the diversity of wildlife in an area have also been linked to increases in some diseases, such as Lyme disease.

By protecting natural environments and processes, we can protect ourselves from illness – this is One Health in action.



Relative sizes of the Blacklegged tick at different stages of its life.

CREDIT : CDC

## Tick-Borne Diseases

### *Babesiosis*

Babesiosis occurs mainly in the Northeast US and can infect both humans and animals.

The disease is caused by parasites in black-legged ticks or deer ticks (*Ixodes scapularis*) that infect red blood cells, causing flu-like symptoms and anemia in some people and no visible signs of infection in others.

Wildlife, especially rodents such as mice and shrews, can be infected with babesiosis and infect ticks but show no signs of disease.

### *Colorado tick fever*

Colorado tick fever is a viral tick-borne disease occurring in mountainous regions of the western US at elevations 4,000 to 10,000 feet.

The disease is not life-threatening in humans and wildlife are not known to show any signs of infection.

### *Ehrlichiosis*

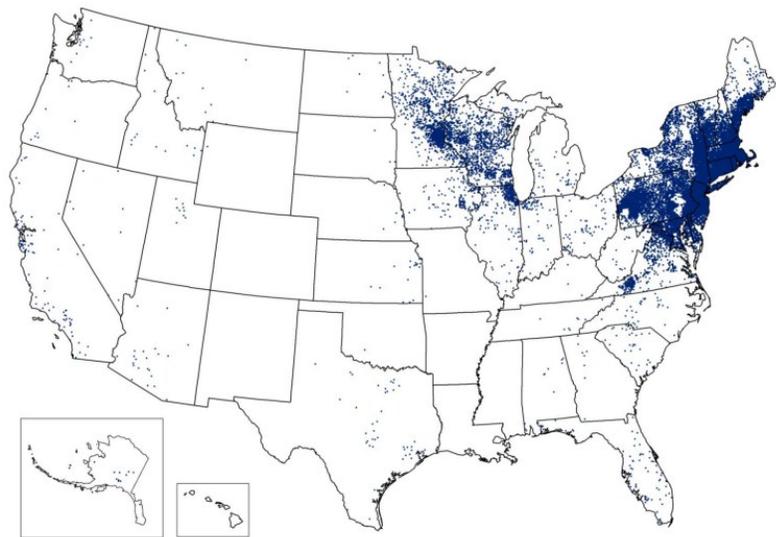
Ehrlichiosis describes several bacterial diseases that affect animals and humans.

The disease is primarily transmitted by the bite of an infected lone-star tick (*Amblyomma americanum*) and occurs mostly in the southeastern and south-central US.

Animals may also experience clinical symptoms such as fever, anorexia, dramatic weight loss, anemia, swelling of tissues, and/or bleeding.



Black-legged tick (*Ixodes scapularis*)



Map of human Lyme disease cases in the United States, 2013.

### *Lyme disease*

Lyme disease is the most common tick-borne disease in the US, occurring mostly in northeastern and north-central states.

The disease is transmitted to humans by the bite of infected black-legged tick or deer tick (*Ixodes scapularis*) and western black-legged tick (*Ixodes pacificus*).

In addition to flu-like symptoms, infected humans with the disease may also develop a red expanding circular rash, body aches, or swollen lymph nodes. Some may develop joint pain that can last for years after infection.

The white-footed mouse is the primary reservoir for the disease and shows no signs of illness when infected.

### *Powassan Virus*

Powassan Virus is a rare but serious illness transmitted by black-legged ticks and other ticks of small rodents. The disease can progress from flu-like symptoms to encephalitis and is occasionally fatal. Cases have occurred in the Northeastern and upper Midwestern states. Cases occur primarily in the late spring, early summer, and mid-fall.

There are two different strains of Powassan virus; one is associated with the white-footed mouse and one is associated with woodchucks and their ticks.

### *Rocky Mountain spotted fever*

Rocky Mountain spotted fever (RMSF) often causes flu-like symptoms and a characteristic rash that gives this disease its name. RMSF can be fatal in humans if not treated. Cases have been reported throughout most of the lower 48 states in the US.

RMSF is transmitted by the: American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*Dermacentor andersoni*), and Brown dog tick (*Rhipicephalus sanguineus*). Dogs are also very susceptible.

### *Tularemia*

Tularemia is found throughout the US and is often caused by the bite of an infected tick or insect, such as a tick or deerfly.

Animals such as rabbits, beavers, muskrats, and other small rodents are particularly susceptible to the bacterium and can experience large die-offs when the population become infected. Infected humans may show flu-like symptoms and also diarrhea, joint pain, and dry cough. Tularemia symptoms in animals include fever, lethargy, incoordination, and sudden death.

## More Information

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