

# LIFE CYCLE OF THE TICK

There are four stages in the tick's life cycle: egg, larvae, nymph, and adult. In order for a tick to mature into the next stage it must have a blood meal.

A tick receives a blood meal by attaching itself to an animal from several days to a week or longer. Over 90% of hard-tick species undergo a three host life cycle in which the larvae, nymph and adult each feed on a different vertebrate belonging to the same one or two to three different species. Mating can occur on or off the host.

Females of many species lay 1,000 to several thousand eggs. Tick larvae and nymphs are usually found in leaf matter and adults are usually found "questing" or waiting for an animal to brush by them.

**Ticks can not hop, jump, or fly.**

# COMMON TICK SPECIES OF BUTTE COUNTY

## Western Black-Legged Tick

*(Ixodes pacificus)* is the primary vector of Lyme disease in Butte County. It's found in areas with high humidity normally October to July. Larvae and nymphs commonly feed on lizards, birds, and mammals while adults feed on large mammals and humans. Most commonly found in the foothill and mountain areas of Butte County.



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## American Dog Tick

*(Dermacentor variabilis)* can vector Rocky Mountain spotted fever. It's usually found from May to August generally in the lower foothill and valley areas of Butte County. Larvae and nymphs generally feed on medium to large sized mammals.



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## Brown Dog Tick

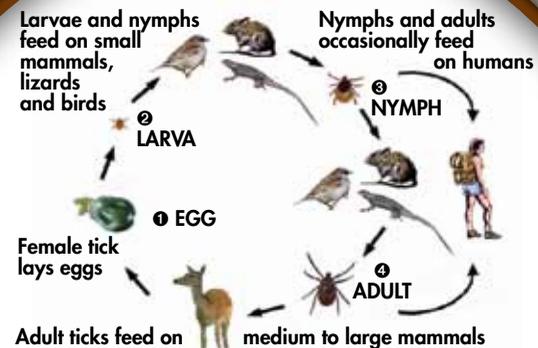
*(Rhipicephalus sanguineus)* is commonly found from June to September on the valley floor and rolling hills of Butte County. Usually larvae, nymphs, and adults feed on dogs, but can be found on other medium to large sized mammals.



## Pacific Coast Tick

*(Dermacentor occidentalis)* can vector Rocky Mountain spotted fever. It's usually found from November to July throughout Butte County. Larvae and nymphs generally feed on small to medium sized mammals while adults feed on large mammals, especially deer.

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# Butte County Mosquito & Vector Control District

Since 1948

The District covers over 1600 square miles, and includes all of Butte County, except the small areas served by the Durham and Oroville Mosquito Abatement Districts, which were formed earlier. The District also includes the Hamilton City area of Glenn County. In April of 1994, "Vector Control" was added to the District name to reflect the additional disease surveillance and information now provided.

## OUR MISSION

The mission of BCMVCD is primarily to suppress mosquito-transmitted disease and to also reduce the annoyance levels of mosquitoes and diseases associated with ticks, fleas and other vectors through environmentally compatible control practices and public education.

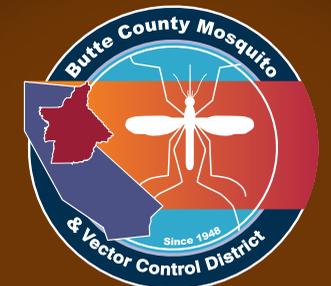


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# TICKS & TICK-BORNE ILLNESSES



# TICK-BORNE ILLNESSES

In the United States, ticks are known to transmit 14 human illnesses. The two illnesses that infect humans most often are Lyme disease and Rocky Mountain Spotted Fever (RMSF). These illnesses and others are detailed below.

## Rocky Mountain spotted fever (RMSF)

RMSF is a bacterial disease caused by a bacterium, *Rickettsia*. Transmission of the RMSF bacteria is primarily from the Pacific Coast tick. Ticks become infected when they feed on infected rodents or rabbits. RMSF bacteria are transmitted to humans by the bite of an infected tick. The symptoms of RMSF are a sudden onset of moderate to high fever 2-14 days after a tick bite. If untreated, the fever can persist for 2-3 weeks and lead to other symptoms, such as deep muscle pain, severe headaches, chills, blood-shot eyes, and a painful abdomen. Severe cases can result in death.

## Tick Paralysis

Tick paralysis is caused by the bite of an American dog tick. Normal function of nerves and muscles stop when the feeding tick releases a chemical in its saliva. The condition often occurs in children less than eight-years old, but anyone bitten by ticks are at risk. Early symptoms are weakness in the limbs usually 2-7 days after a tick bite. If left untreated, patients may be unable to use their arms and legs and may lose the ability to speak or even breathe. Tick paralysis can be fatal in about ten percent of untreated patients. In most cases, simply removing the attached tick(s) will remedy the symptoms.

## Babesiosis

Babesiosis is caused by a protozoan called *Babesia* that parasitizes red blood cells. Symptoms of babesiosis vary. Most people infected never feel ill nor show signs or symptoms. In cases where symptoms have been observed patients have shown flu-like symptoms such as fever, fatigue, sweats, and muscle aches usually 1-4 weeks after a tick bite. People with weakened immune systems are at most risk for a severe case of babesiosis.

## Ehrlichiosis

Ehrlichiosis is caused by extremely small bacteria called monocytes that invade white blood cells. This tick-borne disease is not common in California. Transmission can occur from the bite of a brown dog tick. Most people infected never feel ill nor show signs or symptoms. When symptoms occur, they resemble flu-like symptoms with fever, headache, fatigue, muscle aches, and nausea. This tick-borne disease is rarely fatal.

## Lyme Disease

Lyme disease is an infectious disease caused by a bacterium known as a *Borrelia burgdorferi*. People get Lyme disease when a tick infected with the Lyme disease bacterium attaches and feeds on them. In California, the tick that is responsible for spreading the Lyme disease bacterium is the Western Black-legged tick (*Ixodes pacificus*).

The early stages of the disease can include a red, expanding skin rash (called erythema migrans or EM), chills and fever, headache, swollen lymph nodes, muscle and joint pain, weakness of some muscles in the face, and heart irregularities. If left untreated, arthritis or nervous system signs can develop in some Lyme disease patients. Arthritis is most likely to appear as bouts of pain and swelling, usually in one or more large joints, especially the knees. Nervous system abnormalities can include numbness, tingling, or pain in the arms and legs, or difficulties in memory and the ability to concentrate. Lyme disease can be successfully treated with antibiotics, especially in the early stages. The potential for long-term complications increases if the disease goes untreated.

## Symptoms of Lyme Disease

Early signs of Lyme disease may include a bullseye rash (60-80% of the time) as well as flu like symptoms; fever, aches and/or fatigue. Possible complications of the heart and/or nervous system may also occur as well as joint pain. Acute symptoms include chronic arthritis of large joints (usually knees), memory loss, encephalitis, and behavioral changes. If treated early with antibiotics, Lyme disease can often be cured.

# PREVENTING TICK-BORNE ILLNESSES

When outdoors, the best way to avoid getting a tick-borne illness is to ensure that you don't get bitten by a tick. Here are some ways that you can protect yourself from getting a tick bite.

- Wear light colored clothing so that a tick can easily be seen if it gets on you.
- Wear long-sleeved shirts and tuck your pants into your socks.
- Apply a tick repellent to your exposed skin. Use products that contain DEET.
- Apply a tick repellent to your clothing. Use products that contain the insecticide permethrin.
- Walk in the center of trails. Avoid brushy, grassy areas, and off the trail hikes.
- Thoroughly check yourself, your children, and pets after visiting an area that possibly had ticks.
- Control ticks on animals by using products recommended by your veterinarian.



Example of a bullseye rash.

# TICK REMOVAL

Female ticks need a blood meal to lay their eggs. They will occasionally feed on humans if the opportunity presents itself. If the tick has the bacteria that causes a tick-borne illness, it is during feeding that the bacteria that cause the disease are transmitted.

If you are bitten by a tick it is important that you remove the tick within 24 hours to reduce the risk of contracting a tick-borne illness.

## To remove a tick

- Grasp the tick with tweezers or tissue (never with bare hands) as close to the skin as possible.
- Gently pull the tick directly away from the skin. Do not twist, burn with a cigarette, apply kerosene, vaseline, or any other irritant to the tick!
- Apply antiseptic to the bite area after removing the tick. Wash your hands with soap and water.

If the tick cannot be removed, or part of it is left in the skin, consult your physician.

