

## PERSONAL PROTECTION

The best protection from ticks is to avoid coming into contact with them, so if possible avoid wooded and bushy areas with high grass and leaf litter. Be aware of your surroundings. Take these precautions:

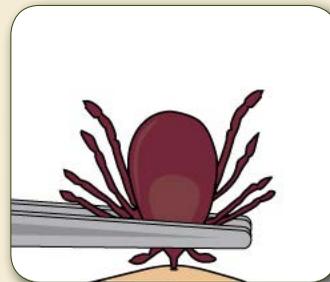
- Stay in the middle of groomed trails and avoid the grass at the trail's edge.
- Wear long pants and long sleeves.
- Use tick repellent that contains 20% to 30% DEET, according to label instructions.
- Wear light colored clothing to easily see ticks on you.
- Tuck pants into socks and shirt into pants.
- Use tick repellents that contain DEET, according to label.
- Check yourself often in known tick areas and do a full body tick check upon return from a tick infested area. Check all family members and pets. Check around ears, hair, waistline, under arms and other warm areas ticks prefer to bite.
- Bathe or shower within 2 hours after coming indoors from a tick infested area.
- Examine gear and clothing for ticks. Tumble dry clothes in high heat for one hour to kill any ticks.



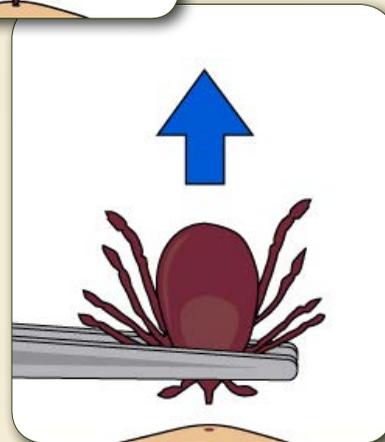
Photo credit: CDC

## PROPER REMOVAL

- Using tweezers, grasp the tick's mouthparts as close to the skin as possible.
- Gently pull the tick straight out with steady pressure.
- DO NOT twist or jerk the tick, or try to remove by burning or applying Vaseline, kerosene or other substances.
- Mouth parts may need medical assistance to be removed.
- Apply an antiseptic to the bite area after removing the tick.
- Wash your hands with soap and water.
- Save the tick for identification. Contact your local Vector Control District for tick identification.



**GRASP TICK'S MOUTHPARTS WITH TWEEZERS**



**GENTLY PULL TICK STRAIGHT OUT**

Photo credit: CDC

## San Joaquin County Mosquito & Vector Control District

*Protection Through Prevention since 1945*

San Joaquin County Mosquito and Vector Control District is an independent special district governed by a board of trustees.

The District covers over 1,400 square miles including seven cities and all unincorporated areas. District operations are based on a concept that utilizes several different approaches to vector control. The District uses state-of-the-art, environmentally sound techniques as a sustainable approach to managing public health pests and vectors, by combining biological, chemical, legal, natural and physical control tactics in a way that minimizes economic, health and environmental risks.

San Joaquin County Mosquito and Vector Control District continues to protect public health through preventive techniques, as well as providing surveillance for potentially new invasive mosquitoes and exotic diseases they may carry.

### SERVICES PROVIDED

for San Joaquin County Residents (cities and rural areas)

#### Mosquitoes

Inspection  
& Control

#### Mosquitofish

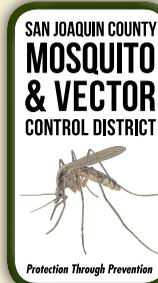
For Residential  
& Agricultural Sites

#### Ticks

Inspection, Identification  
& Education

#### Public Education

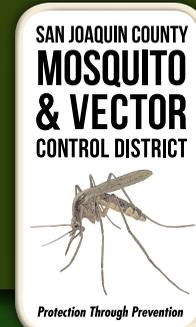
Literature, Presentations,  
Website, News & Spray Alerts



209.982.4675  
1.800.300.4675  
7759 S. Airport Way  
Stockton, CA 95206

District Hours  
Monday-Friday  
7a.m. to 3:30p.m.  
[www.sjmosquito.org](http://www.sjmosquito.org)

Visit our website for  
more information



## ABOUT TICKS AND TICK-BORNE DISEASES

Cover photo by: James Gathany



[www.sjmosquito.org](http://www.sjmosquito.org)

## GENERAL INFORMATION

Ticks are blood-sucking arthropods. The major families of ticks include the *Ixodidae* or hard ticks, which have thick outer shells made of chitin, and *Argasidae* or soft ticks, which have a membranous outer surface. Soft ticks typically live in crevices and emerge briefly to feed, while hard ticks will attach themselves to the skin of a host for long periods of time.

### Habitat

Ticks do not fly, jump, or fall out of trees! They are usually found in grassy areas, in brush, or in a wooded area. They wait on the tips of vegetation for a human or animal host to pass by. As the host brushes against it, the tick makes contact, moves to a suitable location, and begins the feeding process.

### Behavior

Contrary to popular belief, ticks DO NOT embed their heads in skin. Ticks are equipped with mouthparts adapted to penetrate and hold fast in the skin of its host. Additionally, they secrete a cement-like material that helps them stay attached to their host.

### Life Cycle

Ticks go through a four stage life cycle including egg, larva, nymph and adult. Both males and females in the last three stages require a blood meal. The smallest stage to bite is the larva stage, which can be difficult to

see. Tick larva is the size of a pin head or poppy seed and can carry disease.



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## TICK SPECIES FOUND IN OUR AREA

### Western Black-Legged Tick

Photo by James Gathany



*Ixodes pacificus*.

This tick is usually found in areas with high humidity from October to July. The female can produce up to 3000 eggs at one time. Larvae and nymphs commonly feed on lizards, birds, and mammals while adults feed on large mammals and humans.

### Brown Dog Tick

Photo by James Gathany



*Rhipicephalus sanguineus*.

This tick is usually found in dog kennels and homes year round. The female can produce up to 4000 eggs at one time. Larvae, nymphs and adults feed on dogs but are occasionally found on goats, cats and humans.

### Pacific Coast Tick

Photo by Jared Dever



*Dermacentor occidentalis*.

This tick is usually found in areas with high humidity from November to June. The female can produce up to 4500 eggs at one time. Larvae and nymphs feed on small rodents while adults feed on large mammals, especially deer.

### American Dog Tick

Photo by Jared Dever



*Dermacentor variabilis*.

This tick is usually found from May to August. The female can produce up to 6500 eggs at one time. Larvae, nymphs and adults feed on larger mammals, especially dogs.

## TICK-BORNE DISEASES

Ticks carry various pathogens that can cause diseases in humans and animals including: Lyme disease, Rocky Mountain spotted fever, babesiosis, tularemia, ehrlichiosis, anaplasmosis, and relapsing fever.

Tick-borne diseases are rare in San Joaquin County. Inform your physician immediately if you develop any symptoms after finding a tick attached to your skin or being in an

area where ticks are known to occur. The tick that transmits the bacteria that causes Lyme disease are more commonly found in coastal, foothill and mountain areas.

**For more detailed information on ticks and tick-borne diseases, visit the U.S. Centers for Disease Control and Prevention (CDC) or the California Department of Public Health (CDPH) websites.**

### Lyme Disease

Lyme disease is a bacterial infection. Prompt removal of the tick will reduce risk of disease transmission. The bacteria that causes Lyme disease is called *Borrelia burgdorferi*. Transmission is primarily by the Western black-legged tick. Early symptoms of Lyme disease may include head and muscle aches, sore throat, nausea, fever, stiff neck or fatigue. About 70% to 80% of those infected develop a rash (Erythema migrans or EM) at the bite site, which sometimes resembles a “bull’s eye.” The EM rash may appear on any area of the body within 3 to 30 days after a tick bite. Later symptoms may involve numbness or tingling of the limbs, joint swelling and pain, memory loss, and/or mood swings.

### Rocky Mountain Spotted Fever

Rocky Mountain spotted fever is a potentially fatal disease caused by bacterium *Rickettsia rickettsii*. Transmission is by the American dog tick and Pacific Coast tick. Typical symptoms include: fever, headache, abdominal pain, vomiting, and muscle pain. A rash may also develop, but is often absent in the first few days, and in some patients, never develops. Quick treatment is important.

### Babesiosis

Babesiosis is a malaria-like infection caused by a protozoan that parasitizes red blood cells. Transmission is primarily by the Western black legged tick. Babesiosis often causes flu-like symptoms (fever, chills, fatigue) and a breakdown of red blood cells.

### Ehrlichiosis

Ehrlichiosis is caused by a microorganism called *Ehrlichia*. Transmission is primarily by the brown dog tick. Ehrlichiosis often causes flu-like symptoms (fever, chills, fatigue) with possibility for anemia, lung infection, decrease in platelets or elevated liver enzymes.



EM Rash photo credit: CDC