

Protect yourself

Tips for preventing tick bites

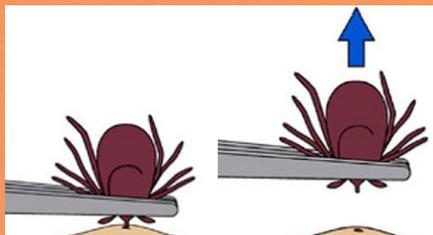
-  Avoid tick habitats; these include wooded and bushy areas with high grass and leaf litter. Walk in the center of hiking trails and pathways.
-  Shower as soon as you can after being outdoors.
-  Conduct a full-body tick check, using a mirror, if you have been in a potential tick habitat. If you are a parent, check your children closely. Some areas where ticks may go unnoticed include under the arms, around the ears, behind the knees, around the waist, and in the hair.
-  Examine gear and pets. Ticks may hitch a ride back with them and bite a person later on.
-  Tumble clothing in the dryer on high heat for an hour. This will kill any remaining ticks.

Pets can also get sick from tick bites. In particular, dogs are susceptible to Lyme disease and other illnesses. Talk with your vet about using an appropriate preventative. Take care not to apply inappropriate pesticides to or around cats; they are extremely sensitive to some.

Removing an attached tick

Grip the tick as close to the skin's surface as possible with fine-tipped tweezers. Pull up with steady, even pressure. Remove the mouthparts with tweezers if they break off. Cleanse the wound and your fingers thoroughly with rubbing alcohol or soap.

DO NOT burn the tick, cover it with petroleum jelly, or paint it with nail polish. These will only stress the tick out, and will not help in removal.



Repellents & Clothing

Using repellents that contain between 20-30% DEET on exposed skin and clothing may repel ticks.

Permethrin containing products will kill ticks on contact. These products are NOT made for applying to skin. They are for pre-treating clothing and gear, including boots, pants, socks, and tents. Pre-treated clothing can also be purchased.

Ticks do not jump from trees. They hitch a ride from tall grass or leaf litter and must crawl their way up.

Keeping this in mind, wearing long sleeves, long pants, and tucking pant legs into socks may prevent ticks from being able to gain access to your skin.

Many tick-borne infections have common symptoms, including fever, chills, aches and pains, and rashes. If you experience these after being bitten, visit your doctor immediately.



A tick hunting for a host will hold its forelegs out and grab onto passing animals. This behavior is called "questing".



Close-up of tick mouthparts. Note the backward facing barbs in the middle; these keep the tick lodged under the skin.

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Tick mouthparts: Australian pest and disease image library
Tick ID chart: CDC
Adult dog ticks: Jim Occi, AFPMB
Engorged female: James Gathany, CDC
Adult female deer tick: James Gathany, CDC
Deer tick stages: Jim Occi, AFPMB
Erythema migrans: James Gathany, CDC

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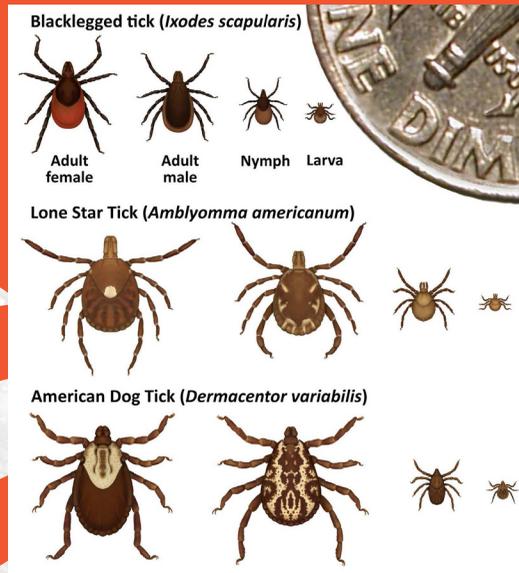
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On the cover: The Lone Star tick is one of the most plentiful ticks in the county (photo courtesy of James Gathany, CDC).

A guide to
**Ticks &
Tick-borne
Diseases**
of Prince William County

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Tick Identification Guide



Adult dog ticks; male (left), female (right)

There are four species of ticks in PWC that bite humans.

The Gulf Coast tick is a recent find and its abundance is still being mapped out. It is a known vector of American tick bite fever.

The American Dog Tick

Scientific name: *Dermacentor variabilis*

Description: Large brown and cream/grey colored ticks. Very similar in appearance to the Gulf Coast tick.

Behavior and feeding habits: The preferred hosts are dogs, but immature larvae and nymphs will feed on smaller mammals, and adults will readily attack other large animals, including people. They often preferentially attach near the hairline.

What can it transmit? Dog ticks can transmit Rocky Mountain spotted fever, tularemia, and are the ticks most commonly known to induce tick paralysis (caused by a neurotoxin rather than a microbe). Tick paralysis can also occur in canines. It is a rare condition, causing acute paralysis, but the paralysis is typically reversed 24 hours after removing the tick.

Tick Biology

Ticks have a complex, 2-3 year lifecycle. Most species go through four stages of development: egg, six-legged larva, eight-legged nymph, and adult. After hatching, they require a bloodmeal at every stage to survive. Different species of ticks exhibit preferences for different hosts. They find their hosts by detecting breath, body odor, heat and moisture.

Once they find a host, ticks will cut into the skin, anchor themselves, and feed for several days. Adult females will take a final bloodmeal and engorge with blood. After mating, they will use the blood for egg development, lay a large number of eggs and die.

Because they feed on blood, often that of several different animals, ticks can be very good disease vectors. A **vector** is an organism that transmits pathogens from one species to another. A **reservoir** is an organism that passively acts as a long-term host for a pathogen. Disease transmission depends on population dynamics of both vector and reservoir.

Disease transmission is most likely in the spring and summer, when ticks are most actively looking for hosts. Larval ticks can be picked up in great numbers, but they typically do not transmit disease. Infection is generally not passed from female to egg.



Adult female Lone Star tick



Fully engorged adult female

The Lone Star Tick

Scientific name: *Amblyomma americanum*

What is it? Most abundant tick in Prince William County and the culprit behind most tick bites.

Description: Large, reddish-brown, round ticks. Females have a distinctive white spot in the middle of their back, hence the name.

Behavior and feeding habits: Will feed on many animals, including dogs and cats. All three life stages feed readily on people. These ticks can be very aggressive and fast moving in their pursuit of a bloodmeal.

What can it transmit? Lone Star ticks can transmit ehrlichiosis, tularemia, and STARI (Southern Tick Associated Rash Illness). In addition, the bite of this tick may cause Alpha-gal syndrome, an allergic reaction to eating mammalian meat (beef, pork, venison, etc.)

The Deer Tick

Scientific name: *Ixodes scapularis* (also commonly known as the blacklegged tick).

Description: Oblong with dark legs. Females have a reddish abdomen; nymphs and males are dark.

Behavior: Tend to bite in inconspicuous areas, especially on the lower half of the body, making detection difficult. Nymphs are very small (<2mm).

What does it feed on? White-footed mice and other small rodents, white-tailed deer (preferred host).

What can it transmit? Lyme disease, babesiosis, and anaplasmosis. These diseases can be co-transmitted with each other, complicating diagnoses. Deer ticks do not frequently bite humans, but a high percentage of the ticks are infected with one or more pathogens, making transmission more likely.

Lyme Disease FAQ

What is Lyme Disease? Lyme disease is an infection transmitted by the deer tick (and some other *Ixodes* ticks), which can lead to serious, long-term neurological, cardiovascular, and joint problems if left untreated.

How is it transmitted? Tick larvae or nymphs feed on infected white-footed mice (one reservoir for the bacteria), and become infected. They can then bite people and transmit the bacterial infection. Nymphs are most likely to transmit Lyme disease due to their small size and elusive nature. The tick must be attached 36-48 hours to transmit the pathogen.

How is it treated? Lyme disease is caused by the bacterium *Borrelia burgdorferi*, and can thus be treated with a course of antibiotics. If caught early, the infection responds completely to antibiotics. Long-standing infections are very difficult to treat.

What are the symptoms? Initial symptoms include fever, headache, fatigue, and a characteristic bulls-eye skin rash called erythema migrans. The rash is present in only 70-80% of cases. Later complications can include arthritis, neuropathy, and encephalomyelitis.



Adult female deer tick



All stages of deer tick development, from egg to adult



Bulls-eye rash (erythema migrans)