

The DPH Bulletin

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Outsmart mosquitoes with yard tactics

Delaware's freshwater and saltwater mosquito species can carry dangerous diseases such as Eastern Equine Encephalitis and West Nile virus. By making your yard unwelcoming to mosquitoes, you will reduce the chances of becoming ill from mosquito bites.



Aedes aegypti

Mosquitoes lay their eggs in standing water. The Centers for Disease Control and Prevention (CDC) recommends a weekly effort to empty and scrub, turn over, or throw out objects that hold water. Mosquitoes breed in birdbaths, air-conditioner trays, flowerpot saucers, toys, animal dishes, clogged gutters, and storm drains. Litter, used tires, and discarded appliances also catch rainwater.

To further [prevent mosquito bites](#), the CDC advises:

- Stay in places with air-conditioning or window and door screens.
- Wear long sleeves and pants when weather permits.
- Use insect repellent with ingredients registered by the Environmental Protection Agency (EPA) such as DEET, picaridin, or lemon or eucalyptus oils on exposed skin and/or clothing. Use Permethrin on clothing only. Follow product instructions. When using sunscreen, apply it before insect repellent. Use the EPA's insect repellent search tool: <https://www.epa.gov/insect-repellents/find-repellent-right-you>
- Mow lawns and trim vegetation regularly to reduce the places where adult mosquitoes rest. Use an outdoor insect spray made to kill mosquitoes in dark, humid areas like under patio furniture.
- Store buckets, wheelbarrows, and children's wading pools upside down. Drill holes in tire swings so water drains out.

For more information about preventing mosquitoes, visit the Delaware Mosquito Control Section at <https://dnrec.alpha.delaware.gov/fish-wildlife/mosquito-control/mosquito-borne-diseases/>.



DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Mosquito-borne diseases

West Nile virus (WNV) is the most common mosquito-borne disease in Delaware and the United States. WNV symptoms appear three to 14 days after being bitten by an infected mosquito. Symptoms are fever, headache, body aches, joint pains, vomiting, and diarrhea, sometimes with a rash. Symptoms of severe infections are high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. See your health care provider if symptoms develop.



Eastern equine encephalitis virus (EEEV) is a rare, sometimes fatal, cause of brain infections caused by the bite of infected mosquitoes. EEEV can be found in Delaware. Symptoms of infection are fever, chills, listlessness, and joint or muscle pain. In severe cases, symptoms are the sudden onset of fever, headache, vomiting, diarrhea, seizures, behavioral changes, drowsiness, and coma. EEEV can result in encephalitis (swelling of the brain) or meningitis (swelling of the membranes that surround the brain and spinal cord) and can have long-lasting health effects. Immediately see your health care provider if symptoms develop. Unvaccinated horses can die from EEEV. There is no EEEV vaccine for humans.

Zika virus is spread mostly by the bite of an infected *Aedes* species mosquito (*Ae. aegypti* and *Ae. albopictus*). Zika infection during pregnancy can cause microcephaly (small heads) and other birth defects. No local mosquito-borne Zika virus transmission was reported in the continental United States in 2018 and 2019. Those traveling outside the continental United States should review the CDC's [Zika Travel Information](#).

Prevent Lyme disease

Lyme disease, the most common tick-borne disease in Delaware, is caused by bites from the blacklegged or deer tick. It usually takes 24 to 36 hours of attachment for a tick to transmit bacteria that cause disease.



Adult female Black-legged or deer tick. CDC photo.

Lyme disease symptoms include an expanding red, “bull’s-eye” rash, fever and chills, fatigue, severe headaches, muscle and joint aches, heart palpitations, dizziness, and Bell’s palsy (when facial muscles temporarily droop on one side). There may also be severe joint pain and swelling, particularly affecting the knees;



A “bull’s-eye” rash often accompanies Lyme disease. CDC photo.

and neck stiffness due to meningitis. Untreated infections can lead to chronic joint, heart, and neurological problems. Those bitten by a tick who develop symptoms should immediately contact a physician. Oral antibiotics cure most cases.

The Division of Public Health (DPH) recommends taking these precautions:

- Apply tick repellent (containing less than 50 percent DEET for adults and less than 30 percent DEET for children) to the skin. Do not use repellents with DEET on infants younger than two months old. Use repellents with permethrin on shoes and clothing only.
- Wear light-colored clothing, long sleeves, and long pants tucked into socks.
- Avoid walking in wooded and brushy areas with high grass and leaf litter.
- Search for and remove ticks on yourself, your children, and pets after coming indoors.

For more information, visit the CDC at <https://www.cdc.gov/ticks/index.html> and DPH at dhss.delaware.gov/dhss/dph/epi/lyme.html.

Landscaping tips for less ticks

- Mow lawns and remove leaf litter.
- Use plantings that do not attract deer or fence the yard to exclude deer. Adult ticks feed on deer.
- Create a three-foot or wider wood chip, mulch, or gravel barrier between the lawn and woods.

BLAST Lyme disease

Bathe or shower within two hours of coming indoors.

Look for ticks on your body and remove them. Check head and body hair, under the arms, in and around the ears, inside the belly button, and behind the knees.

Apply repellent to your body and clothes.

Safeguard your yard.

Treat your pet.

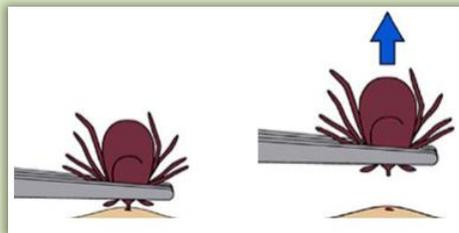
Adapted from the Ridgefield, Connecticut, BLAST Program (used with permission).

Providers: Access a free CDC course on tickborne diseases and other resources at <https://dhss.delaware.gov/dhss/dph/epi/lyme.html>.

How to properly remove a tick

Use fine-tipped tweezers to grasp the tick as close to the skin’s surface as possible.

1. Pull upward with steady, even pressure to avoid having its mouth-parts break off and remain in the skin. If this happens, try to remove the mouth-parts with tweezers.
2. After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol or soap and water.
3. Never crush a tick with your fingers. Dispose of a live tick by putting it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. Do not coat the tick with nail polish or petroleum jelly or use heat to make the tick detach.



Other ticks can cause serious illness

Delaware's second most common tick-borne disease is Rocky Mountain Spotted Fever, carried by the **American dog tick**.

Symptoms are high fever, severe headache, malaise, myalgia, edema around eyes and on the back of hands, and gastrointestinal illness. A small, flat, pink, non-itchy spotted rash initially appears on the wrists, forearms, and ankles, then spreads to the trunk and sometimes the palms and soles. If a red to purple petechiae rash develops, seek urgent medical care, as severe disease can lead to amputation, coma, and death.

A white dot or "lone star" on the backs of adult females distinguishes the **Lone Star tick**. This tick, which is found in Delaware, aggressively bites people and pets. The Lone Star and blacklegged tick carry Ehrlichiosis, a group of diseases.



Adult female Lone Star tick. CDC photo.

Symptoms are fever, chills, severe headache, muscle aches, nausea, vomiting, diarrhea, loss of appetite, confusion, and a rash of red splotches or pinpoint dots.

If antibiotic treatment is delayed, late stage ehrlichiosis can cause meningoencephalitis, (inflammation of the brain and surrounding tissue), uncontrolled bleeding, respiratory failure, and death.

Persons bitten by Lone Star ticks have reported allergic reactions associated with the consumption of red meat, called Alpha-Gal Allergy.

Asian Longhorned ticks were first reported in the U.S. in 2017 and have been found in Delaware, according to the CDC. In other countries, their bites caused serious illness in people and animals. Researchers continue to investigate this species' ability to transmit disease.

If you find an Asian Longhorned tick, carefully remove it and save it in a jar or a plastic bag containing rubbing alcohol. Watch carefully for symptoms such as fever and chills, aches and pains, and a rash. If symptoms develop, visit your provider and take the tick with you.



Adult female Asian Longhorned tick. CDC photo.

For more information, visit <https://www.cdc.gov/ticks/longhorned-tick/index.html>.



Adult female American dog tick. CDC photo.

Dogs need protection against bites from fleas, ticks, and mosquitoes

Fleas, ticks, and mosquitoes carry diseases that are harmful to pets as well as to people. When fleas and ticks ride into your house on the fur of your pets, they are putting your family at risk for Lyme disease, tapeworms, plague, and other illnesses.

The Centers for Disease Control and Prevention (CDC) recommends that dogs be given a tick preventive product after consulting with your veterinarian. A tick preventive product is medicine that a dog takes orally, or which is applied to the dog's skin. Some products kill both ticks and fleas.

Since cats are extremely sensitive to chemicals, do not apply any tick prevention products to cats without asking your veterinarian.

Check pets daily for ticks, especially after being outside. Use fine-tipped tweezers and not your fingers to carefully remove ticks. Discard by wrapping them tightly in tape or flushing them down the toilet. Clean the bite area and your hands with rubbing alcohol or soap and water.

Mosquitoes carry heartworms which can develop into foot-long worms that infest the heart and clog up major vessels in the lungs. According to the American Veterinary Medical Association (AVMA), heartworm disease is a progressive, life-threatening that is nearly 100 percent preventable with heartworm preventive products.

For more AVMA pet care tips, visit <https://www.avma.org/resources-tools/pet-owners/petcare>. Talk to your veterinarian if your dog or cat shows any signs of illness.

