
School Pest Solutions



Ticks

Ticks are not insects but blood-feeding arthropods related to spiders and mites. The adult tick has eight legs where insects have six legs. Ticks can feed on a variety of animals including birds, amphibians, reptiles, and mammals (including people) and can be a carrier of many diseases, including Lyme disease and Rocky Mountain spotted fever. The primary habitats for ticks are wooded areas and the open or grassy areas at the edges of wooded areas.

On school properties, ticks are most often found on playgrounds, athletic fields, cross-country trails, paths, and school yards located in and adjacent to wooded areas, especially where deer and other wildlife hosts are abundant.



Ticks are sometimes of concern on school properties, especially those species that can transmit serious diseases to humans such as Rocky Mountain spotted fever, Lyme disease, babesiosis, ehrlichiosis, and Powassan encephalitis. Approximately 12 species are considered to be of major public health or veterinary concern. Management practices include: a) personal protective measures (such as wearing appropriate clothing, avoiding habitats associated with ticks, and judicious use of insect repellents), b) landscape modifications, and c) if necessary, limited use of pesticides as a targeted barrier treatment.

As ticks go through their life stages (egg, larva, nymph, and adult), they usually change hosts. Young ticks will attach to small animals and be dispersed by them. Nymphs and adults will climb onto grasses, herbaceous plants, and shrubs which enables them to latch onto larger hosts. Adult ticks can perch on plants for months waiting for a host to come by.

On humans, ticks migrate around the hairline, the area behind the ears, or in the armpits. It takes five to six hours for a tick to become firmly attached and up to ten days for it to become fully engorged with blood. The female needs a bloodmeal in order to lay her eggs. Ticks have been known to survive for one year without a bloodmeal.

Maine has two common types—the deer tick and the dog tick.

The Deer Tick (*Ixodes scapularis*)

Also known as the “black-legged tick”, is a small tick found almost statewide, especially central and southern Maine. It is the principal vector of *Borrelia burgdorferi*, the Lyme disease spirochete (bacterium) in the northeastern United States. Ticks must remain attached to the host for at least 24 hours in order to infect the host. The early signs of the disease usually show up as a rash at the bite site followed by flu-like symptoms. Untreated cases may lead to arthritic conditions and possible neurological problems. Medical care should be sought when a person is bitten by a deer tick or exhibits Lyme disease symptoms.



The deer tick is the main vector of Lyme disease.

For more information on deer ticks and Lyme disease, contact the Maine Center for Disease Control and Prevention (207 287-7267).

The American Dog Tick (*Dermacenter variabilis*)

Also called the wood tick, is larger than a deer tick and the unengorged female has a whitish shield on its back. This tick readily attaches itself to humans and is one of the most commonly encountered ticks in Maine. Some dog ticks outside of Maine may carry the organism that causes Rocky Mountain spotted fever, a serious disease that can be transmitted to humans. Symptoms of this disease are headache, fever, and aching muscles two to 14 days after an encounter with a tick. Two to three days after the fever starts, a rash develops on the wrists and ankles, spreading to the palms, soles, and trunk of the body. There have been no known diseases transmitted by dog ticks in Maine.



The dog tick is larger than the deer tick and is not known for spreading diseases.

Dog ticks are most likely to be found in open areas with tall grass or brush. Adults are first noticed in late April and remain abundant through June. Although numbers seem to decline sharply after that, ticks are present all summer.

Managing School Properties to Reduce Tick Problems

Landscape management practices designed to make the landscape more inhospitable to primary tick hosts may reduce a tick population. However, these practices alone will not eliminate all ticks and the risk of associated diseases. Therefore, other tick control practices must be integrated with the overall program to reduce the risk of disease. It is impractical and expensive to institute tick control measures and landscape management practices in all areas of the school grounds. Efforts should be focused on frequently used areas (playground, ball fields, area immediately surrounding the school building, etc.).

- Cut back vegetation and remove vegetative debris to reduce shade and moisture. Keep grass, weeds, and brush mowed short. Remove leaf litter and plant debris around buildings, edges of lawns, playgrounds, and ball fields. Compost or bag and remove leaf litter. Avoid use of ground cover vegetation in frequently used areas.

- Reduce cover for mice. Prune trees and shrubs. Clean up storage areas.
- Use hardscapes (pavement, stones, etc), mulches, and water-conserving landscape techniques. Maintain a three-foot wide or broader walkway of wood mulch or crushed stone to serve as a barrier between woods and lawns.
- Keep out stray dogs.
- Reduce deer habitat and install fencing as necessary.
- Move swing sets and playground area out and away from the woodland edge.

Monitoring for Ticks

Tick populations can be monitored by dragging or flagging since ticks are usually found within 18" of the ground. A tick drag, made with a 3" x 3" white cloth stapled to a dowel and weighted with a second dowel, is dragged over dry grass and brush and inspected at fixed intervals for ticks. Flagging involves brushing higher vegetation with a cloth attached to one end of a pole. Such areas include the understory in wooded areas and brush and shrubs in open areas, along edge habitats, and along property borders.

Prevention

Limiting exposure to ticks is presently the most effective method of prevention. Other prevention methods include the following.

- Wear light-colored clothing. This will allow ticks to be detected more easily.
- Wear long sleeves and long pants that are tight around the wrist, ankle, and neck. Tuck pants into socks to prevent ticks from crawling up the inside of pants' legs.
- Walk in the center of paths and avoid vegetation along path edges.
- Treat exposed areas of skin with repellents to discourage tick attachment. Repellents containing DEET (n, n-diethyl- m-toluamide) can be applied to the skin, but will last only a few hours before reapplication is necessary. Use DEET (supplied by parents and only with parental permission) with caution on children because adverse reactions have been reported. Refer to Mosquito fact sheet for more information on the use of repellents. Repellents should not be applied under clothing and should be washed off when indoors
- Adults and students should check themselves immediately after visiting a potentially tick-infested area.
- Pay close attention to hair, armpits, shoulders, waist, and inner thighs. Remove any tick found on the body.

Removal of Ticks

- Use fine-tipped tweezers to remove attached ticks. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with tweezers or consult the school nurse.
- Do not squeeze, crush, or puncture the body of the tick because its fluids may contain infectious organisms.
- Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin.
- Apply rubbing alcohol to the bite and wash hands with soap and water.

The tick may be saved for future identification should disease symptoms develop within 2-3 weeks. Place the tick in a small vial containing rubbing alcohol. Write the date of the bite on a piece of paper with a pencil and place it in the vial.

Note: Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting a tick-borne disease. These methods of tick removal should be avoided.

Also, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

Chemical Control

Restrict application of pesticides to high-risk tick habitat such as edges of lawn and woodlands. Spraying open fields and lawns is not necessary. The product must be labeled for area-wide tick control. Pesticides may only be applied on school grounds by a licensed commercial applicator.

Anyone making pesticide applications on school property must be licensed by the Board of Pesticides Control. See “Standards for Pesticide Applications and Notifications in Schools”.

Photo Credits

Gary Alpert, Bugwood.org

For More Information

Hillary Peterson
Maine School IPM Coordinator
Maine Department of Agriculture, Conservation and Forestry
28 State House Station
Augusta, ME 04333-0028
E-mail: hillary.peterson@maine.gov
Phone: 207-215-4793
Fax: 207-287-7548

Written by Kathy Murray, Ph.D.