Cornell University
Cooperative Extension
Monroe County

2449 St Paul Blvd
Rochester, NY 14617
p. 585.753.2550
f. 585.753.2560
http://monroe.cce.cornell.edu

RECOMMENDATIONS FOR CONTROL OF TICKS IN NEW YORK STATE

Only ticks belonging to the family *ixodidae* ("hard ticks") are considered here because of their importance to public health. Because ticks are blood-sucking arthropods, they have a high potential for transmitting pathogens to humans and animals. Tick-associated diseases that have been described in the northern eastern United States include Lyme disease, Rocky Mountain spotted fever, babesiosis, and tick-borne viral encephalitis. An ascending flaccid paralysis, associated with the feeding activity of ticks, may also occur.

GENERAL CONSIDERATIONS:

Human and animal contact with ticks can take place during a variety of outdoor activities and in several different types of habitats. Those at risk include campers, hikers, hunters, and other outdoor enthusiasts, as well as farmers, surveyors, and others who regularly work outdoors near or within areas where tick populations are high. Children may also be infested because of their playing habits. Dogs that frequently transport engorged ticks to vacant lots, yards, and houses also increase humans to exposure.

Progressive urbanization into previously wooded habitats exposes large suburban populations to many tick species. Deer ticks (which transmit Lyme disease) and their primary hosts, the whitefooted mouse and the white-tailed deer, survive best in the areas where vegetation is diverse and in transition.

Ticks are particularly injurious to humans and animals because all developmental stages (larva, nymph, and adult) require blood as a nutritive source. The blood meal is obtained by piercing the skin with specialized mouthparts injecting an anti-coagulant, which contains the pathogen, and withdrawing blood and tissue fluids. During the completion of a life cycle depending on the tick species, a relatively wide variety of animals may be parasitized. In general, following a blood meal, an engorged female drops off the host to complete digestion and develop a large clutch of eggs, which are then deposited in a single mass. The females die soon thereafter. Each egg undergoes embryonation and a six-legged larva (sometimes referred to as a "seed" tick) emerges. Larvae begin seeking a host ("questing") by climbing up low grasses, shrubs, or other vegetation to make contact with a suitable host as it brushes against the infested vegetation.

Ticks are positively geotactic and, therefore, climb upward. In many cases, the nape of the neck and scalp may serve as points of attachment following a tick's upward migration along the clothes of in individual. This finding has led to the erroneous conclusion that ticks drop out of trees onto humans and immediately attach to the head.

Following engorgement, the larval tick detaches its mouthparts, drops from the host, and following a defined time period, molts to the eight-legged nymphal stage. The nymph then parasitizes a second host, feeds to repletion, drops to the ground, and molts to an adult. Mating then ensues on or off a host, either before or after blood feeding, depending on the tick species.

The period of time required for completing the life cycle depends on such factors as temperature, seasonality, and availability of a host. Individuals interested in further information concerning the bionomics of the fifteen or so species occurring in New York may consult the specialized literature.

METHODS OF CONTROL:
Ticks may be controlled or abated through a variety of ways, depending on the particular situation in which ticks are encountered. Methods of protection from tick attack or control of ticks follow under the headings:

- Protecting yourself
- Protecting pets
- Control in dwellings
- Control outdoors, in campgrounds, and on hiking trails

PROTECTING YOURSELF:
Ticks do not actively pursue hosts, but wait in "ambush" on vegetation. When hosts brush up against the vegetation, the ticks cling to the host and begin searching for a feeding site. Dressing properly and being generally aware of infesting areas and the seasonality of tick activity can provide a high degree of protection from ticks.

Where possible, wooded and pasture areas having potentially high tick populations should be avoided during the warmer months of the year. Walk in the center of woodland paths to minimize contract with ticks.

Wear boots or high-topped shoes into which trousers are firmly tucked, or tuck pants into socks.
Clothing made of tightly woven fabric is helpful in preventing clinging by questing ticks. Wearing light-colored clothing makes it easier to spot ticks.

Apply registered repellents in conjunction with protective clothing. Repellents containing 30% concentration of Deet (diethyl-metatoulamide) applied to exposed skin, socks, and lower portions of trousers serve effectively to prevent tick attachment. Some individuals may be sensitive to Deet; see your medical doctor if you have questions. Do not apply repellent directly to skin that is irritated, cut, or abraded. Avoid reapplying to treated skin, wash treated skin with soap and water after use and between uses.

Thoroughly and systematically search clothing for crawling ticks at least once a day (every 24 hours).
Carefully examine all areas of the body for ticks, especially when you return home or stop for the day.

If a tick is found, remove it by using a pair of tweezers carefully placed as close to the point of attachment as possible. Pull the tick gently and steadily away from the skin to dislodge the inserted mouthparts. Take care to avoid crushing the tick during removal, making sure that both fingers and the bite wound are not contaminated. Save the tick in rubbing alcohol in case your doctor would like to see it. Wash the hands and site of attachment thoroughly.

PROTECTING PETS:
Dogs and cats that are allowed to roam in wooded areas, fields, and thickets often become infested with ticks. Periodically search such animals; remove attached and engorged ticks, using the method described above.

If pets are heavily infested, ticks can be controlled by using dusts or sprays. Shampoos are also available for both dogs and cats. **Check with your veterinarian for the latest products available for tick repellents and prevention.**

CONTROL IN DWELLINGS:
Engorged ticks may be brought indoors by humans, dogs, or cats, leading to infestation of homes, kennels, and animal hospitals. The brown dog tick (*Rhipicephalus sanguineus)* can complete its entire life cycle in a domestic setting, using dogs as a primary host. For this reason, this species can become an important nuisance in houses, apartments, kennels, and veterinary facilities. Eggs may be laid in cracks and crevices, upholstered furniture, and under carpeting. Larval and nymphal ticks may then conceal themselves in those locations as well as behind light switches and picture frames.

For proper chemical control of brown dog ticks in kennels and veterinary facilities, certain areas (e.g., the cracks in kennel floors and walls, roofs, and ceilings of porches) should receive special attention. Cat kennels and sleeping quarters, dog kennels, runs, and yards can be treated effectively with products obtained from veterinarians.

If homes or apartments are infested, treat cracks and crevices with household formulations of permethrin, pyrethrins or tetramethrin plus other ingredients. Check labels carefully before using on rugs or carpets. Some products can cause damage. Foggers labeled for ticks indoors can be useful for space spraying domestic dwellings.

CONTROL OUTDOORS, IN CAMPGROUNDS, AND ON HIKING TRAILS:
Outdoor activities often bring campers, picnickers, hikers, bird-watchers, and others in close proximity to tick-infested areas. To establish “tick-free zones” in recreational areas (tick contact may be greatly reduced but not eliminated), it is possible in intermix simple cultural practices with pesticide use to drastically reduce sites of tick contact. To do so, low-lying vegetation, shrubs, and grasses surrounding campgrounds or backyards should be close cropped or mowed to discourage tick movement and questing. Certain formulations of carbaryl, cyfluthrin, deltamethrin or permethrin are registered for control of ticks. Follow label directions for applying to vegetation and paths.

Researchers have found evidence that in areas where the deer tick (vector of Lyme disease) is endemic, it may be present in home lawns. Workers have shown that by using registered pesticides at the proper time, tick contact may be greatly reduced. Spraying does not guarantee that ticks will not be present. Self-protection should always be practiced by dressing appropriately, using repellents when in potentially tick-infested areas, and checking daily for the presence of ticks, removing them if found.

Control should be aimed at the nymphal stage, which is the most likely stage to transmit the disease to humans. One application of a pesticide should be made at nymphal population peak.

Studies on residential properties show that deer ticks are more likely to be found in certain habitats. Deer ticks require high humidity; therefore, they seek out habitats that offer this condition. Heavily shaded, damp (but not flooded) areas covered with leaf litter are ideal. Sites where host animal activity is concentrated are also important. Deer ticks, therefore, are often found in woodlots or wooded areas between yards, along edge habitats, and especially in unmaintained borders. High-risk areas are also found along rock walls, woodpiles, or brushpiles.

All stages are rare on maintained lawn, and deer ticks are rarely found in open, sunny areas. Landscapes may be managed to manipulate wildlife activity patterns, to lower the humidity in habitats where ticks are likely to be found, and to push back the "danger zone" where tick exposure is likely to occur by manipulating edging and mulching borders.

Where possible, keep deer away by reducing deer habitat or fencing them out. Studies show that immature ticks are most abundant in areas where deer are abundant.

Mice, the principal reservoir host of the spirochete, and other small mammals can be kept away by reducing cover and thereby having more open areas in the lawn, along walls, and along borders so that mice are less likely to find cover. If possible, eliminate wooded brush-covered habitat or fence it off so people and pets do not have ready access to it. Vegetative screens between properties may harbor all types of animal activity and therefore provide a potential habitat for ticks. Pruning off the lower branches of a vegetative screen will help reduce habitat but still will provide a screen. Using a light mulch, one to two inches deep, or bare soil around shrubbery also helps reduce habitat. When mowing along edge habitat, direct the mower discharge into shrubbery rather than onto the lawn. Clean up storage areas, woodpiles, and junk piles. If you feed birds, position the bird feeders away from rodent habitat, clean up loose seed, and stop feeding by April and do not resume again until after larval tick activity has decreased in October or November. Removing leaf litter and planting grass under shade trees will help reduce tick abundance.

Restrict children's activities to managed areas, those less likely to harbor ticks. If necessary, fence off areas for children to play in. Keep pets either entirely inside or entirely outside during tick season. Use pet products to reduce

tick exposure (check with your veterinarian). Adjust your habits regarding pets; for example, keep them out of human living or sleeping areas, or both. Groom and make a tick check of animals after each possible tick exposure.

Get into the habit of checking people for ticks right after ending outdoor activities. In infested areas it may be best to remove clothes before entering the living area and seal them in a plastic bag until they are laundered or put into a clothes dryer. Ticks cannot survive a 20-minute tumble in dry heat, in a clothes dryer. Discovery and prompt removal (within 24 hours) of attached ticks can minimize the risk of infection. The longer you wait to remove an attached tick, the more you increase the chances of infection.

Commercial treatment of residential premises for tick control must be done by certified applicators. Category 3A (Ornamentals and Turf) commercial applicators may apply or supervise the application of pesticides to outdoor premises for tick control.

Based on the Cornell Cooperative Extension factsheet: "Deer Tick: Detection & Management" Prepared 1993 by Carolyn Klass, Senior Extension Associate, Dept. of Entomology, Cornell University

Reviewed 7/00, 9/04, 12/05, Revised 4/17 LB