

Flea and Tick Control

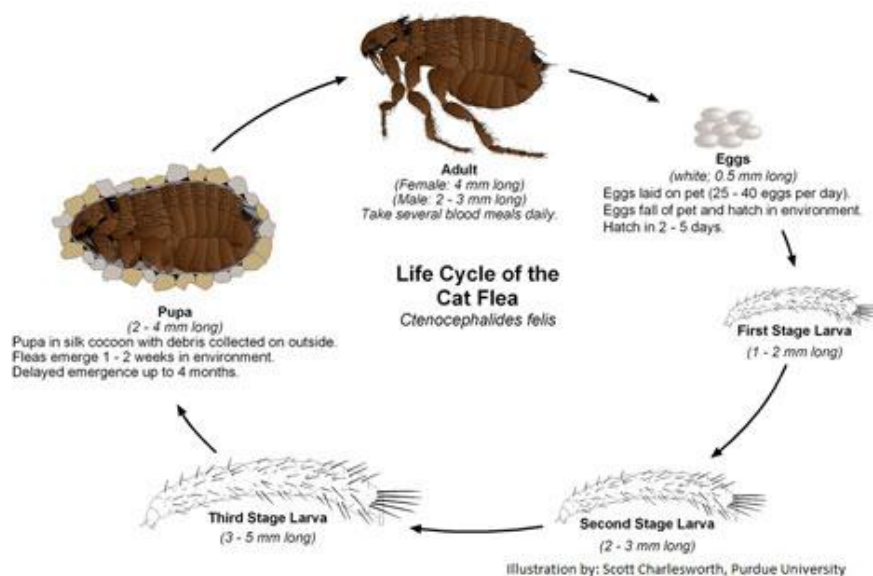
Written by: Michael F. Potter and G. Mark Beavers

Fleas



Fleas are small (1/16 inch), wingless, blood-sucking insects. Their bodies are flattened from side to side which allows them to move easily through the hairs of the host. In addition to the pain and discomfort caused by their bites, infected fleas can transmit diseases such as the plague and parasites such as the dog tapeworm. The cat flea, which feeds on cats, dogs, and some wild animals is the most common species found in Kentucky. If the host dies or is removed from the home, the adult fleas will actively seek a new host. Some of the worst problems with fleas occur when a family moves into a home that previously had pets.

Fleas undergo complete metamorphosis consisting of four stages: egg, larva, pupa, and adult. Adult cat fleas lay several hundred eggs (up to 50 per day) on the animal. The eggs soon fall off into bedding or carpeting where pet sleeps or spends most of its time. After hatching, the larvae feed and develop on organic debris, especially adult flea feces (primarily dried blood), which accumulate along with the eggs in animal resting and bedding areas.



Larvae remain hidden deep in bedding, carpet fibers, beneath furniture cushions, and in other protected areas where pets sleep or spend time. Before becoming adults, the larvae transform into pupae within a silken cocoon. Pupae remain inside the cocoon for 2 to 4 weeks, sometimes longer. The pupal stage is relatively resistant to insecticides, which is why some adult fleas are seen for an extended period, even after the home and pet are treated.

Adult cat fleas (the biting stage) spend virtually their entire life on the animal. Therefore, effective control of fleas requires treatment of the pet in conjunction with treatment of the premises.

Management

Effective flea control requires a systematic program consisting of inspection, client education, treatment of the pet, and treatment of the premises.

Prior to treatment, the pet owner should:

- Remove all toys, clothing, and stored items from floors, under beds, and in closets, in order to provide access for treatment.
- Remove pet food and water dishes, cover fish tanks, and disconnect their air pumps.
- Wash, dry clean, or destroy all pet bedding.
- Vacuum all carpets, floors, throw rugs, and upholstery, especially in areas where pets rest or sleep.



*Vacuuming removes many eggs, larvae, and pupae
(photo: brighterimagecarpet.com)*

Vacuuming removes many of the eggs, larvae, and pupae developing within the home. It also stimulates pre-adult fleas to emerge sooner from their insecticide-resistant cocoons, thus hastening their contact with insecticide residues in the carpet. By raising the nap of the carpet, vacuuming improves the insecticide's penetration down to the base of the carpet fibers where the developing fleas live. Vacuuming should be thorough, especially in rooms or areas where pets rest or sleep. **After vacuuming, the vacuum bag should be sealed in a garbage bag and discarded in an outdoor trash container.**

Treating the Home

Once fleas become established in a home, insecticides are almost always needed to control them. Always read and follow label directions on the insecticide container. Other than the person performing the application, people and pets should be out of the house during treatment. People and pets should also remain off treated surfaces until the spray has dried. Drying may take several hours, depending on carpet type, ventilation, and method of application. Opening windows and running the fan or air conditioner after treatment will speed up drying and minimize odor.

Indoor Flea Kit



Many flea control products are available for home treatment. **The most effective formulations contain both an adulticide effective against the biting adult stage, and an insect growth regulator (IGR) to provide long-term suppression of the eggs, larvae, and pupae.** Most homeowners will find aerosol formulations easier to apply than liquids. It is essential that the application be thorough and include all likely areas of flea development. **Carpets, throw rugs, under and behind beds and furniture, and beneath cushions on which pets sleep should all be treated. Pay particular attention to areas where pets spend time or sleep, as these will be the areas where most flea eggs, larvae, and pupae will be concentrated.** Hardwood and tile floors generally do not require treatment, but should be thoroughly vacuumed and mopped.

Pet owners should expect to see some fleas for 2 weeks or longer following treatment. Provided all infested areas were treated initially, these “survivors” are probably newly emerged adults, which have not yet succumbed to the insecticide. Instead of re-treating the premises immediately, they should continue to vacuum. As noted earlier, vacuuming stimulates the insecticide-resistant pupae to hatch, bringing the newly emerged adults into contact with the insecticide sooner. If adult fleas continue to be seen beyond 2-4 weeks, retreatment of the premises (and pet) may be necessary.

Treating the Pet

The pet should be treated, preferably on the same day as the house. Adult fleas spend virtually their entire life on the animal—not in the carpet. Untreated pets will continue to be bothered by fleas. They may also transport fleas in from outdoors, eventually overcoming the effectiveness of the insecticide applied inside the home.

Pets can be treated either by a veterinarian or the pet owner. A variety of on-animal formulations are available that may be prescribed by veterinarians. Some contain an insect growth regulator (IGR) to prevent eggs from hatching. Although the collar contains no adulticide, it prevents flea eggs from hatching for several months. For optimum results, the collar should be placed on the pet before flea season begins (April-May). Similar results can be obtained with a tablet formulation that is administered orally to pets once a month as a tablet. When a female flea bites a treated animal, the flea ingests the active ingredient, which then passes into her eggs and prevents them from hatching. Like Flea Egg Collar, **pet owners should ideally begin using the tablets before flea season begins. Doing so will greatly reduce the chances of developing a serious flea problem later in the summer.**



Spot Treatment for Flea Control

Pet owners should always read the pesticide label. Certain products can be used only on dogs, and some list specific treatment procedures for puppies and kittens. **Do not treat pets with the same products used to treat carpeting or the yard. It is essential that pets be kept off treated carpets and surfaces until the spray has completely dried.** De-fleaing the pet is an essential step in ridding a home of fleas; however, pet owners must also treat the pet's environment (the home). Having the pet dipped or using a flea collar will not, in itself, eliminate fleas in an infested home.

Treating the Yard

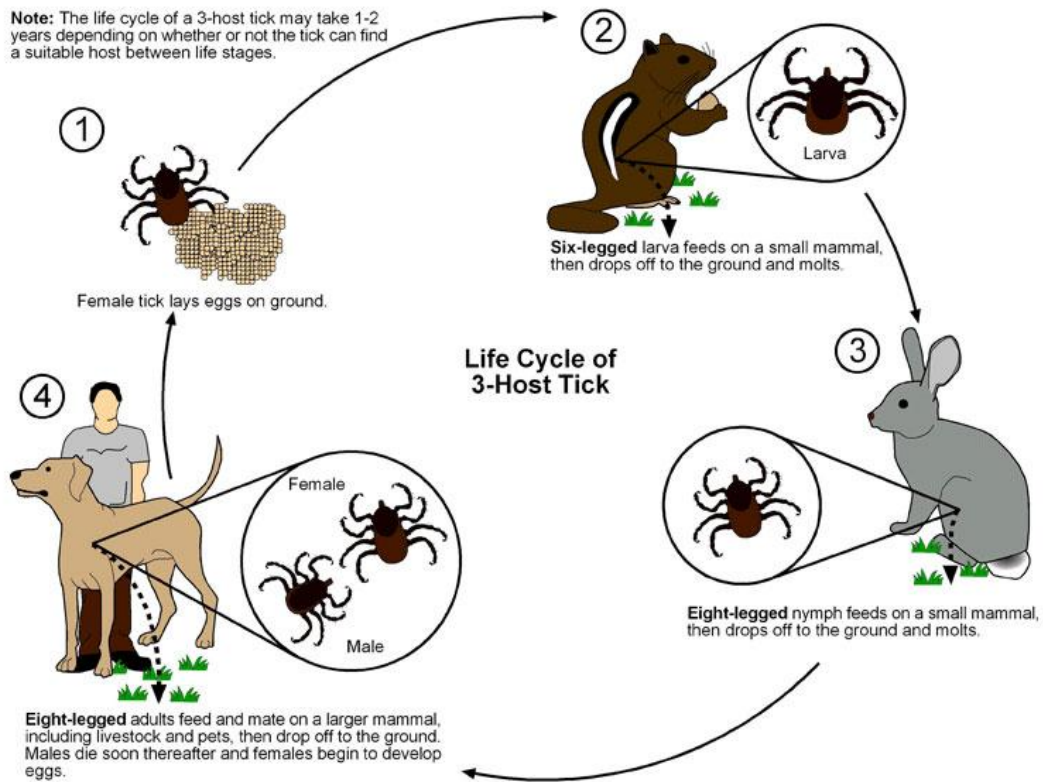
Most flea problems in Kentucky can be eliminated by treating the pet and inside the home. **In cases where pets spend most of their time outdoors, it may also be necessary to treat the yard.** Outdoor flea treatment should focus on areas where pets rest, sleep, and run, such as doghouse and kennel areas, under decks, along fences, and next to the foundation. It is seldom necessary to treat the entire yard or open areas exposed to full sun. Some can be applied with a hose-end or pump-up sprayer. Long-term suppression of fleas infesting kennels or outdoor areas can be enhanced with formulations containing a light-stable insect growth regulator (IGR).

Ticks



Ticks are 8-legged bloodsucking arthropods that are more closely related to mites and spiders than to insects. The species of human health concern in Kentucky are commonly found in woodland, mixed shrub, and overgrown areas where they feed on a variety of small, medium, and large animals and humans. In addition to taking blood meals, some ticks are able to transfer pathogens from infected to uninfected hosts.

Development of a tick from egg to adult generally takes about a year. Ticks have four life stages: egg, larva, nymph, and adult. The three active stages feed on the blood of mammals, birds, reptiles, or amphibians, depending on the species of tick. **The common ticks in Kentucky feed on three different hosts to complete their development.** They are on a host for only a few days at a time to feed, most of their life is spent on the ground digesting their blood meal and molting to the next life stage. Since they cannot jump or fly, the larvae, nymphs, and adults climb onto tall grass, weeds, or brush to wait for a suitable host to pass. Initial contact with humans is usually made on the foot, ankle, or lower leg. Once aboard, they crawl upward until constricted by skin folds or tight clothing, often attaching behind the knee, waist, armpit, or base of the scalp. Ticks are especially common along overgrown borders and paths, since these areas are frequented by passing hosts. **Ticks are seldom found in open areas or sunny, mowed yards.**

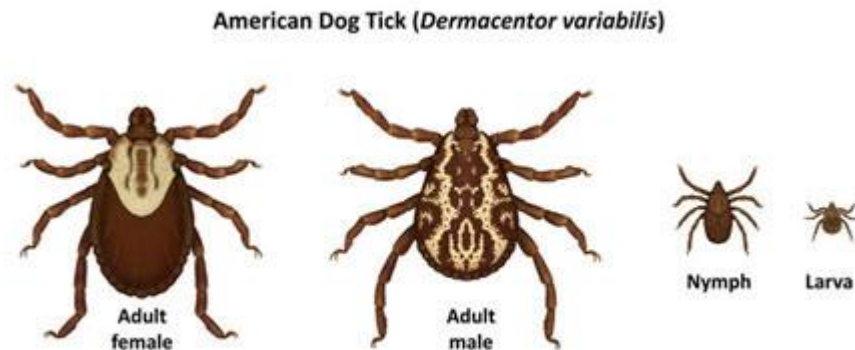


Life cycle of the American dog tick - a 3 host tick (photo: Purdue University)

Common Ticks in Kentucky

Common ticks affecting humans in Kentucky are the American dog tick (*Dermacentor variabilis*) and the lone star tick (*Amblyomma americanum*). Both readily feed on humans and pets. Another species, the blacklegged tick (*Ixodes scapularis*), is becoming increasingly common.

American Dog Tick



(photo: CDC drawing)

The **American dog tick occurs throughout the state**. Males and females are reddish brown with silvery white markings. Females with a relatively large silver area behind the head grow from about 3/16 long to about 1/2 inch long after feeding. Males have fine silver lines on the back. The larvae and nymphs of this 3-host tick feed primarily small mammals, especially white-footed mice and voles. Adults feed on larger hosts such as medium to large wild mammals, livestock, humans, and especially dogs. Adult ticks may remain attached for 10 to 12 days.

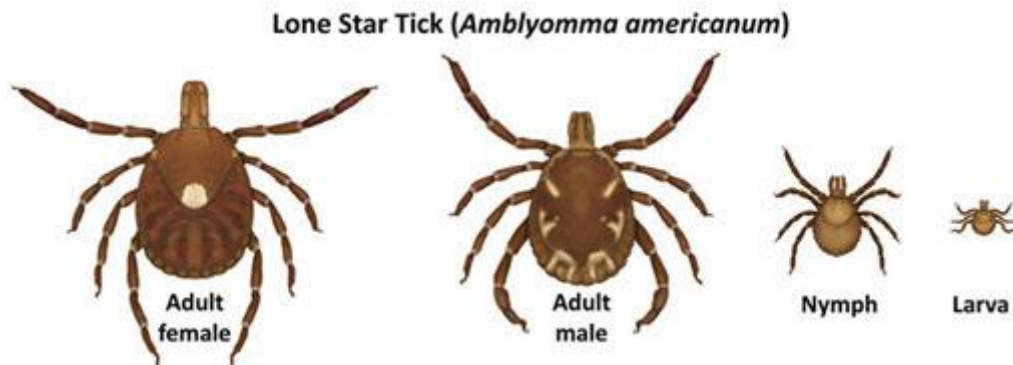
Overwintering adults seek blood meals from mid-April through late May. During this time, they remain low on vegetation, especially along animal runs, trails, roadsides, and forest boundaries surrounding old fields or other clearings. Few ticks can survive in large sunny, open areas with little shade or in wet lowlands.

The American dog tick is the most important vector of Rocky Mountain spotted fever in the US; it is a vector of tularemia, and also can be responsible for cases of tick paralysis. It does not transmit Lyme disease.



After a large blood meal, this female American dog tick dropped to the ground and laid a mass of more than 1,000 eggs
(photo: University of Nebraska)

Lone Star Tick



All stages of the lone star tick will feed on humans, including the tiny larva or "seed tick" (photo: CDC drawing)

All stages of the lone star tick attack animals and humans. Adults and immature stages can be recognized by their distinctly long mouthparts. Males and females are reddish brown. The **female has a distinct white spot on her back**; males have pale white lacy markings.

This 3-host tick feeds on many animal species. Raccoons, striped skunks, and Virginia opossums are important hosts for immature lone star ticks. Areas that support large deer herds usually have significant tick populations.

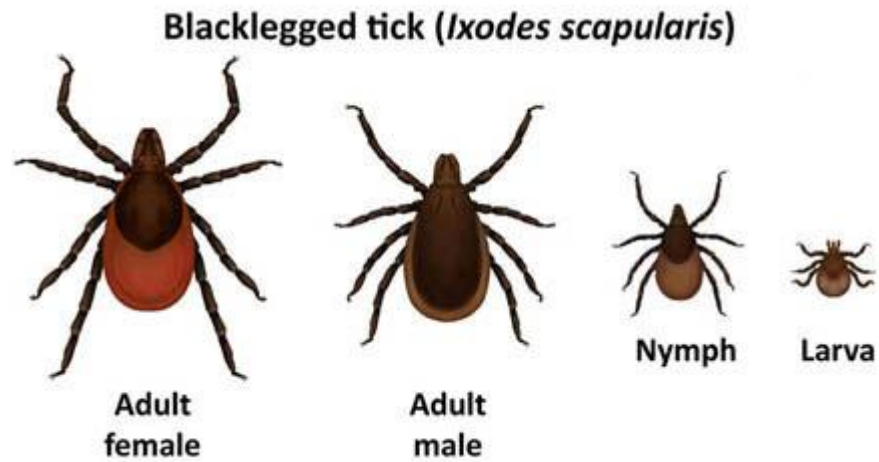


Painful bites from many lone star seed ticks

Nymph and adult lone star ticks become active as early as March, attaching to feed for 3 to 5 days before dropping off to molt. Peak numbers feed during May and June. Adults are found more frequently on medium to large animals including humans, dogs, and deer. Larvae (seed ticks) are active in July and August. Hundreds to thousands from a single egg mass climb onto vegetation to wait for passing hosts. The larvae normally feed for 2 to 3 days, then drop from the host to digest the blood meal and molt to the nymphal stage.

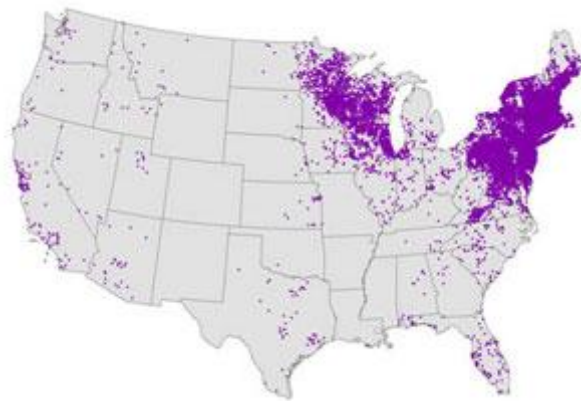
These ticks are most numerous in shaded areas with enough ground cover for small animal hosts and occasional large animals. Engorged ticks tend to drop off when their host is inactive and crawl to humid, shaded or protected sites. This species is a serious pest of humans and domestic animals. The bites result in intense itching which can last for 2 to 3 weeks. **The lone star tick is not a vector of Lyme disease but can carry human ehrlichiosis and is associated with red meat allergy.**

Blacklegged Tick



(photo: CDC drawing)

The blacklegged tick (*Ixodes scapularis*) is being found more frequently in Kentucky. Unlike other Kentucky ticks, **adult males and females are active from October to April**. Females have long mouthparts, orange red bodies, and a dark plate over part of their backs. Males, which do not feed, have a dark plate over their backs. The larvae and nymphs of this 3-host tick live in moist leaf litter near the edge of woods.



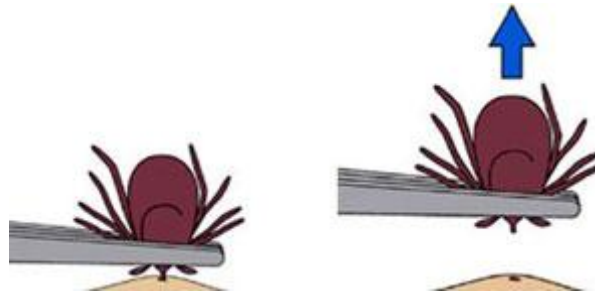
Reported cases of Lyme disease - 2013 (CDC map)

The **blacklegged tick is the main vector of Lyme disease in the north east and north central states**. While this tick occurs across the southern US, the incidence of Lyme disease in this region is very low.

How to Remove an Attached Tick

An infected tick usually has to attach and feed for several hours before it can transmit a disease organism to its host. It is important to check regularly for ticks and remove them immediately to reduce the chance of becoming infected with diseases like erlichiosis or spotted fever.

Use fine-tipped tweezers to grasp the tick as close to the skin's surface as possible. Pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouthparts with tweezers. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.



After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol, an iodine scrub, or soap and water.

Dispose of a live tick by submersing it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. Never crush a tick with your fingers.

Do not squeeze or crush the tick's body, it may force disease organisms into the wound. Petroleum jelly, hot matches, and other "folk" methods of removal should be avoided.

Itching can be relieved by applying topical ointments such as those containing hydrocortisone. **Keep the tick. Place it in a container with alcohol for at least three weeks. Should any disease-related symptoms appear, the identity of the tick may help the physician with a diagnosis.** The Entomology Department at the University of Kentucky will identify ticks at no charge. Specimens should be accompanied by the date and county from which the tick was collected.

Avoiding Tick Bites

Here are things you can do to avoid tick bites:

- Avoid walking through brushy areas with tall grass especially from April through July.
- Walk in the center of trails to avoid brushing up against vegetation where ticks might be waiting.
- Wear light-colored clothing and long pants tucked into boots or socks. Ticks will be easier to spot, and it will be more difficult for them to attach to your skin.
- Consider applying insect (tick) repellent to shoes, cuffs, socks, and pant legs. Products containing diethyl toluamide (DEET) or permethrin are most effective, but be sure to read and follow directions for use on the container.
- Regularly inspect family and pets carefully after they have been in tick-infested areas. Promptly remove any ticks.
- Showering or bathing may help to remove ticks that have not yet attached.

Tick Control on Pets

Free-roaming pets are much more likely to become infested than are pets that are confined. Fencing yards prevents pets from picking up ticks from surrounding areas. Fencing also discourages dogs and other large animals from introducing ticks onto the property. **Ticks on pets can be controlled using sprays, dips, dusts, and insecticide-impregnated collars.** Pet owners should be advised to consult with their veterinarian for appropriate products to use on their pet.

Pet pens and runs also can be sprayed to control ticks that may be present in those areas. Products labeled for tick control outdoors are usually labeled for use in these areas as well. Do not contaminate food or water.

Tick Control in Landscapes

Ticks are sometimes a problem in yards, especially when pets are kept outdoors. **Ticks also can be a serious problem in parks, camps, picnic sites, and other recreational areas.** A good way to determine if ticks are present is to drag a 3-ft x 3-ft white flannel cloth through suspected areas. Ticks will attach and be visible against the white background. **Tick populations can be reduced in these areas by mowing and trimming lawns and other vegetation, thus creating a less favorable habitat for ticks and their wild hosts. Wood, brush piles, and other accumulated debris should also be removed.**

Insecticide sprays are most effective when directed into areas where ticks and their animal hosts are likely to frequent. Pay particular attention to borders and fences between wooded or brushy areas and the lawn, around ornamental plantings, beside foot paths, and the dog house. A single application during late April or May is often all that is required, although treatment may need to be repeated in June.

The ground and vegetation up to a height of about three feet should be thoroughly wetted with the insecticide. The insecticide should be applied according to label instructions. Children and pets should be kept off treated areas until the vegetation is completely dry. Treating the entire lawn is of little benefit since ticks avoid direct sunlight and normally will not infest areas that are well maintained.

Controlling Ticks Indoors

Tick control indoors is seldom required in Kentucky. This is because the American dog tick and lone star tick are rarely found indoors except on the pet. **Indoor treatment is necessary only for the brown dog tick,** which is relatively rare in Kentucky. Controlling this tick is difficult because of its many possible hiding places inside the home. After feeding, brown dog ticks drop off the dog and conceal themselves in cracks and crevices, where they can survive without another blood meal for several months.

Management of the brown dog tick in homes requires frequent inspection and removal of ticks from pets. Pet bedding should be laundered, and rugs, floors, and furniture should be routinely vacuumed, especially along baseboards and under and behind furniture.

Insecticides are almost always required to kill ticks hidden in protected areas. Treatment should focus on cracks and crevices along baseboards and molding, around door and window frames, underneath furniture, beneath the edges of carpeting, behind loose wallpaper, and in similar areas where ticks might conceal themselves. Pay particular attention to areas where the dog spends time. Ticks tend to crawl up walls and other vertical surfaces, so it will be necessary to treat cracks and crevices up high as well as low.

Homeowners should be reminded to follow label directions and always keep children and pets off treated surfaces until the spray has dried. Because the eggs and immatures may take several weeks to hatch or molt, retreatment may be necessary to eliminate all ticks emerging from hidden areas.