



COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

Blacklegged tick *Ixodes scapularis*
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The blacklegged tick (*Ixodes scapularis*), also called the deer tick, is the main vector of Lyme disease (LD) in the northeastern US. While Lyme disease is established in the northeast, few cases have been reported in southern states and LD is not considered to be endemic here. However, it is important to be aware of possible increases in populations of this tick and to report findings in Kentucky.

The blacklegged tick has been found in at several locations in eastern Kentucky (Clay, Jackson, Knox, and McCreary counties) over the past few years, and most recently in Lee Co. Until this time, only a few single specimens had been collected. Two adults were found on people working in and around a wooded area in Lee County in December 2011. A visit to the Lee County site demonstrated that the species is relatively common there and can be picked up while walking along deer trails. In addition, an engorged specimen was taken from a dog in late January 2012. All have been adults, which are active from November through April. Our common ticks, the American dog tick and lone star tick, are not active then.

These findings may be an anomaly but health officials just reported a significant jump in submission of blacklegged ticks in Ohio over the past two years. Reasons for an increase in an area could be due to favorable weather, increases in hosts for immature stages, or movement of white-tailed deer, which are the main host of the adult stage of this tick. Given the potential public health impact of the species, it is important to be alert for it.

Recently, an extensive study of the blacklegged tick and Lyme disease was completed in Tennessee. Most of the information given below came from: Rosen, ME 2009. Investigating the maintenance of the Lyme disease pathogen, *Borrelia burgdorferi*, and its vector, *Ixodes scapularis*, in Tennessee Masters Thesis – Univ. Tennessee. Many of the statements about this tick and Lyme disease in Tennessee are probably appropriate for Kentucky, too.

Lyme disease status in Tennessee (Kentucky)

Researchers doubt that Lyme disease is established in Tennessee for several possible reasons:

- 1) The black legged tick is not abundant enough to maintain the pathogen
- 2) The tick's seasonal life cycle in the south is different from the north so the Lyme disease transmission cycle is disrupted
- 3) Skinks and lizards are the preferred host of an immature stage (nymph) of this tick in the south and they are not suitable hosts for the Lyme disease bacterium. In the north, nymphs mostly feed on small mammals which can support the pathogen

The nymphal stage of the blacklegged tick is believed to be the one plays a significant role in LD transmission to humans where the disease is a problem. There have been no known collections of nymphs from humans in Kentucky.



The risk of acquiring Lyme disease in Tennessee (and Kentucky) is very low because this tick is present at low levels and rarely bites humans. Adult blacklegged ticks that do bite humans are very unlikely to be carrying the Lyme disease pathogen. However, a dramatic increase in tick numbers increases the chances for human contact and bites.

Black legged ticks and deer

Deer, Lyme disease, and blacklegged ticks form a complex story. Deer are dead-end hosts for the Lyme disease pathogen; it will not multiply in them. An individual deer may have small amounts of the Lyme bacterium in its body after being fed upon by an infected tick but it cannot infect another animal and no deer hunter has acquired the disease while dressing a deer. Cooking or smoking the meat would kill the organism.

Deer do play a major role in the population dynamics of the blacklegged tick because adult females mate on the animal and get the blood meal needed to produce a batch of eggs. Deer also spread the ticks as they move about in an area. (<http://www.michigan.gov/emergingdiseases/0,4579,7-186-25890-75872--,00.html>)

Identifying the adult blacklegged tick



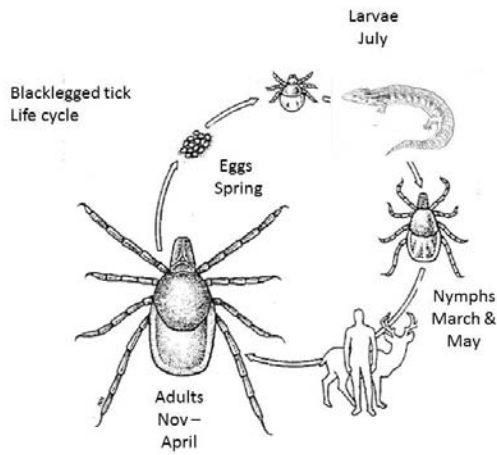
This adult female (left) is about 3/8" long with long distinct mouthparts similar to the lone star tick. A dark shield covers only part of its reddish-brown back; the entire back of the male is covered. The female lone star tick has a distinct white spot at the back of its shield.



Ticks in the genus *Ixodes* have a distinct arch around the anal opening, which is found near the end of the underside of the abdomen. The V points to a portion of the arch which can be seen going over the circular anal opening. Neither the lone star tick nor the American dog tick has this arch so it is a good recognition character.

Do not hesitate to send any ticks in for identification. Specimens representing new county records will be forwarded to the National Veterinary Services Laboratory in Ames, IA so the information can be entered in their database.

Life cycle of the blacklegged tick in Tennessee (Kentucky)



The blacklegged tick is a three-host tick. The life cycle may take 2 years. Males and females seek and attach to large mammals (dogs, deer, humans) from November through April. Females mate and feed for 5 to 7 days to engorge with blood. When full, they will drop from the host to produce and deposit a mass of 1,000 or more eggs on the ground.

A 6-legged larva hatches from the egg in the spring and waits for a passing host, usually a lizard or skink. It will spend 3 to 5 days taking a blood meal, then drop off and molt to the nymphal stage.

Nymphs are inactive on the ground for the rest of the year. They will wait for a small animal host, attach and feed again. After this second meal, they will detach and drop to the ground to digest their meal and molt to the adult stage.

Adults follow the same steps, except it will be a large animal host. Males feed very little. Females die after laying their eggs.