

# *Ixodes ricinus*

European Castor Bean Tick,  
Castor Bean Tick,  
Sheep Tick

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IOWA STATE UNIVERSITY  
College of Veterinary Medicine



## Importance

*Ixodes ricinus* is a hard tick that infests livestock, dogs and a wide variety of other domesticated and wild vertebrates, including humans. It has long mouthparts that can make its bites painful and annoying. The bites can become secondarily infected by bacteria, and feeding by large numbers of ticks may result in anemia. *I. ricinus* can transmit a number of animal and/or human pathogens, such as *Babesia divergens* (babesiosis), louping ill virus, tick-borne encephalitis virus, *Borrelia burgdorferi* (Lyme disease) and *Anaplasma phagocytophila* (tick-borne fever of ruminants; equine, canine or human granulocytic anaplasmosis).

## Species Affected

*I. ricinus* has low host specificity and can be found on a wide variety of vertebrates. Its hosts include mammals ranging from rodents and shrews to large ungulates, as well as birds and reptiles (lizards, snakes). Nevertheless, it might have a certain degree of host preference, based on studies such as an examination of its feeding preferences on wild rodents in the laboratory.

## Geographic Distribution

*I. ricinus* usually occurs in cool, relatively humid, shrubby or wooded areas. In addition to deciduous and mixed forests, it can be found in more open areas when vegetation is dense and rainfall is abundant. This tick is endemic in most of Europe, but it is scarce or absent in many parts of the Mediterranean, where the climate is warm and dry. It has also been detected in areas of northern Africa and the Middle East. Small numbers of questing ticks were recently found in parts of Iceland, but it is not yet clear whether or not the species is established there or imported periodically on migrating birds.

## Life Cycle

*I. ricinus*, a three-host tick, can be found on the host for several days while it feeds, before dropping to the ground to develop to the next stage. Adult *I. ricinus* feed mainly on large mammals such as cattle, sheep and deer. Larvae and nymphs often occur on smaller mammals, birds and reptiles, but may also be found on larger species, including deer and sheep. *I. ricinus* ticks are often located around the mouth, ears and eyelids of sheep, dogs and cats, and around the udder and axillary region of cattle. When not seeking a host, they are typically found at the base of vegetation, where the relative humidity is higher.

The life cycle of *I. ricinus* usually takes two to four years to complete. Its feeding generally peaks in spring and early summer, with a second active season in autumn in some areas.

## Identification

*I. ricinus* is a member of the family Ixodidae (hard ticks). Hard ticks have a dorsal shield (scutum) and their mouthparts (capitulum) protrude forward when they are seen from above.

*Ixodes* spp. ticks have no eyes, and the palpi are longer than wide. They are not ornate and have no festoons. The anal groove is distinct and surrounds the anus anteriorly. Adult *I. ricinus* are red-brown, but the female ticks are light gray when engorged. Ticks in this genus are sexually dimorphic: the stigmatic (spiracular) plates are oval in males, but circular in females, and the ventral surface of the male has seven non-projecting, armor-like plates. Before feeding, the males are approximately 2.5-3 mm long and the females 3-4 mm long. When they are engorged, the females can be as long as 1 cm. *I. ricinus* has a spur on the posterior internal angle of the coxa of the first pair of legs; this spur overlaps the coxa of the second pair of legs. The tarsi are moderately long and tapering.

Tick identification to the species level can be difficult, and ticks should be submitted to an expert for identification. Although *I. ricinus* is not found in North America, other members of the *I. ricinus* species complex, such as *I. pacificus* and *I. scapularis*, are endemic in this region.

## Control

### Disease reporting

Veterinarians who encounter or suspect the presence of an exotic tick should follow their national and/or local guidelines for disease reporting. In the U.S., state or federal authorities must be notified immediately.

### Prevention

Measures used to exclude exotic ticks from a country include pre-export inspections to certify that animals are free of ectoparasites, quarantines upon entry, and treatment with acaricides. Three-host ticks, which spend at least 90% of their life cycle in the environment, can be very difficult or impossible to eradicate once they have become established in an area.

In endemic regions, acaricides can eliminate *I. ricinus* from an animal but do not prevent reinfestation. Indiscriminate use of acaricides can lead to the development of acaricide resistance in ticks, and may also have other adverse effects, including incidental effects on other arthropods. Landscape management (e.g., mowing, brush removal) may reduce *I. ricinus* numbers in sites such as parks and playgrounds, as these ticks do not survive well in open areas with limited vegetation and low humidity. Individual measures for tick control include the use of repellents and physical removal.

## Public Health

All stages of *I. ricinus* will feed on humans, and their bite can be painful. This tick can also transmit several diseases that affect humans, including tick-borne encephalitis and Lyme disease.

## Internet Resources

[Hard Ticks from the University of Edinburgh](#) (photographs)

[University of Bristol. Tick Identification Key](#) (for ticks of veterinary importance).

[World Organization for Animal Health \(WOAH\)](#)

[WOAH Terrestrial Animal Health Code](#)

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