

Ixodes ricinus

European Castor Bean Tick,
Castor Bean Tick, Sheep Tick

Last Updated: September 2009



the Center for
Food Security
& Public Health

IOWA STATE UNIVERSITY®

College of Veterinary Medicine
Iowa State University
Ames, Iowa 50011
Phone: 515.294.7189
Fax: 515.294.8259
cfsph@iastate.edu
www.cfsph.iastate.edu



INSTITUTE FOR
INTERNATIONAL
COOPERATION IN
ANIMAL BIOLOGICS

an OIE Collaborating Center

Iowa State University
College of Veterinary Medicine
www.cfsph.iastate.edu/IICAB/



Importance

Ixodes ricinus is a hard tick that infests livestock, deer, dogs and a wide variety of other species including humans. This tick has long mouthparts that can make its bites painful and annoying; the bites can also become secondarily infected by bacteria. Feeding by large numbers of ticks may result in anemia. *I. ricinus* can also transmit a number of pathogens including *Babesia divergens* (babesiosis), louping ill virus, tick-borne encephalitis virus, *Borrelia burgdorferi* (Lyme disease) and *Anaplasma phagocytophila* (tick-borne fever of ruminants, human granulocytic anaplasmosis).

Species Affected

I. ricinus can be found on a wide variety of hosts, particularly mammals and birds but also reptiles. The adult ticks feed mainly on large mammals such as cattle, sheep and deer, the larvae feed on small mammals (especially rodents), birds and reptiles, and the nymphs parasitize small- and medium-sized vertebrates.

Geographic Distribution

I. ricinus 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 the vegetation is dense and rainfall is abundant. This tick is endemic in most of Europe (with the exception of the Mediterranean region, which has a warm, dry climate). It also occurs as far south as the Caspian Sea and northern Iran, as well as in northern Africa.

Life Cycle

I. ricinus is a three-host tick. The larvae, nymphs and adults tend to feed on animals of different sizes. *I. ricinus* ticks are often found around the mouth, ears and eyelids of sheep, dogs and cats, and around the udder and axillary region of cattle. The ticks can be found on the host for several days while they feed, then drop to the ground to develop to the next stage.

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. When it is not seeking a host, *I. ricinus* can be found at the base of vegetation, where the relative humidity is higher.

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. Ticks in this genus are sexually dimorphic: the stigmatic (spiracular) plates are oval in males, but circular in females. The ventral surface of the male has seven non-projecting, armor like plates. Adult *I. ricinus* are red-brown, but the female ticks are light gray when engorged. 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. In this species, a spur is found 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 *Ixodes ricinus* species complex, such as *I. pacificus* and *I. scapularis*, are endemic in this region.

Recommended actions if *Ixodes ricinus* is suspected

Notification of authorities

Known or suspected *I. ricinus* infestations should be reported immediately to state or federal authorities.

Federal: Area Veterinarians in Charge (AVIC):
http://www.aphis.usda.gov/animal_health/area_offices/
State Veterinarians:
<http://www.aphis.usda.gov/vs/sregs/official.html>

Control Measures

Acaricides can eliminate these ticks from the animal, but do not prevent reinfestation. Three-host ticks spend at least 90% of their life cycle in the environment rather than on the host animal; ticks must be controlled in the environment to prevent their spread.

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 (photographs) from the University of Edinburgh
<http://www.nhc.ed.ac.uk/index.php?page=24.25.119>
- Tick Identification Key. *Ixodes*.
http://webpages.lincoln.ac.uk/fruedisueli/FR-webpages/parasitology/Ticks/TIK/tick-key/ixodes_adult.htm
- United States Animal Health Association. Foreign Animal Diseases
<http://www.usaha.org/pubs/fad.pdf>
- World Organization for Animal Health (OIE)
<http://www.oie.int>
- OIE Terrestrial Animal Health Code
http://www.oie.int/eng/normes/mcode/A_summry.htm

References

- Beugnet F, Marié JL Emerging arthropod-borne diseases of companion animals in Europe. *Vet Parasitol.* 2009;163(4):298-305.
- Gray JS. Biology of *Ixodes* species ticks in relation to tick-borne zoonoses. *Wien Klin Wochenschr.* 2002;114(13-14):473-8.
- Gray JS, Kahl O. In: Ticks as vectors of zoonotic pathogens in Europe. Halliday RB, Walter DE, Proctor HC, Norton RA, Colloff MJ, editors. *Acarology: Proceedings of the 10th International Congress.* Melbourne: CSIRO Publishing; 2001. p. 547-51.
- Kahn CM, Line S, editors. The Merck veterinary manual [online]. Whitehouse Station, NJ: Merck and Co; 2006. *Ixodes* spp. Available at: <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/72112.htm>. Accessed 27 Sept 2009.

- Little S. Arthropod livestock pests and disease vectors. In: *Foreign animal diseases.* 7th edition. Boca Raton, FL: United States Animal Health Association; 2008. p. 125-35.
- Merial. Disease information [online]. Merial; 2001. Available at: <http://nz.merial.com/farmers/sheep/disease/haema.html>. * Accessed 3 December 2001.
- New South Wales Department of Agriculture (Agriculture NSW). Identification of the paralysis tick *I. holocyclus* and related ticks. Agriculture NSW; 2001 Feb. Available at: <http://members.ozemail.com.au/~norbertf/identification.htm>. * Accessed 29 November 2001.
- Wall R, Shearer D. *Veterinary entomology: Arthropod ectoparasites of veterinary importance.* London: Chapman & Hall; 1997. *Ixodes*; p. 117–20.

*Link defunct as of 2009