

Life cycle of the brown dog tick, *Rhipicephalus sanguineus*

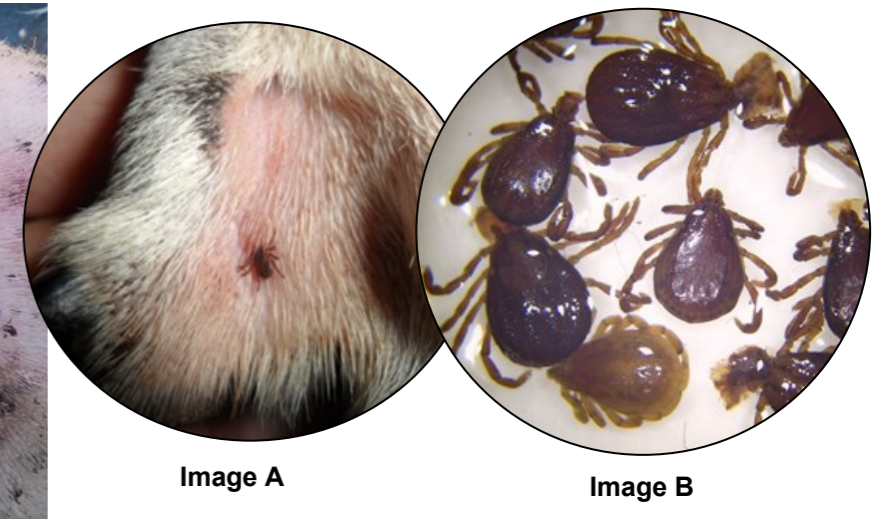
The brown dog tick, *Rhipicephalus sanguineus*, is the most widespread tick in the world and a well-recognized disease vector. It is a three-host tick - the parasitic life stages feeds once on an animal, preferably a dog, and then drops off to moult to the next stage, or in the case of the adult, to lay eggs. Although highly endophilic, *Rh. sanguineus* is also able to survive in outdoor environments, where structures such as limestone walls are available. Although primarily parasites of dogs, many other domestic and wild animals can serve as hosts. If introduced from endemic areas, through for example pet travel or importation from Europe, this species can establish itself here in heated quarantine kennels and domestic settings



1. *Rhipicephalus sanguineus* adults are reddish black/brown ticks, with stubby mouthparts and approx. 3-4.5mm in size when unfed. This species is mainly a 'hunting' tick - rather than waiting to sense a passing host, it will actively seek out the dog and then attach to take a blood meal. Following initial attachment the female releases pheromones which attract the male and he transfers a sperm packet to inseminate the female.



2. This dog from southern France had a massive infestation, the extent of which became evident when the fur was clipped (left above). Here, ticks had attached almost everywhere, but it is usually the head, particularly on ears, interdigital spaces, back, inguinal region, and axilla which are among their preferred attachment sites. Images A and B show, respectively, the tick attached to the inside ear, and a group of *Rh sanguineus* removed from the body region of this dog, with skin attached to their mouthparts. Adult females remain attached for approx. one week; males remain for longer periods.



8. **Nymphs** feed on a dog or possibly another host species, drop off the host and moult to the adult stage, thus completing the life cycle which, under optimal conditions, may take only 60 days and several generations can follow.



7. After a few days, larvae feed on a dog or possibly a small mammal, drop off the host and moult to a nymph.



6. Egg hatching is preceded by an incubation period that ranges from 6 days to some weeks. The above image shows newly hatched larvae (approx. 1.0 mm in size) and empty egg shells (arrow).

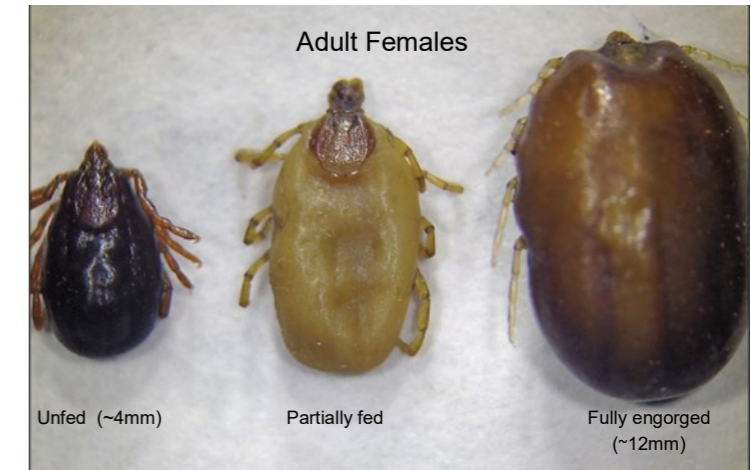
A DISEASE VECTOR:

This tick is a vector of a number of serious pathogens of dogs including *Babesia canis vogeli* and *Ehrlichia canis*, and also transmits agents of zoonotic diseases, for example *Rickettsia conorii* (Mediterranean Spotted fever) and *Rickettsia rickettsii* (Rocky Mountain spotted fever) in some regions of the USA.

Babesia canis vogeli in a red blood cell



5. After a pre-oviposition period, the tick deposits on average of 1500-4000 eggs. The oviposition period can last for several weeks. Eggs are deposited in hidden places, away from arthropod predators.



3. The image on the right shows how the size increases and the shape of the body changes as it swells with blood. When feeding is complete, the engorged female detaches from the host and drops to the ground.



4. The engorged female crawls to hidden places, such as cracks and crevices in walls, or between rocks.