
Rhipicephalus sanguineus s.l. (Latreille, 1806) (Figs. 127–129)

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The taxonomy of the brown dog tick, *R. sanguineus* sensu lato (s.l.), is currently under discussion as there is no type and no proper description for this species (for recent detailed reviews, see Dantas-Torres and Otranto 2015; Nava et al. 2015). Genetic and cross-breeding studies revealed that ticks morphologically identified as '*R. sanguineus*' belong to at least two well-defined lineages, designated as temperate and tropical lineages (Burlini et al. 2010; Moraes-Filho et al. 2011; Nava et al. 2012), with additional operative taxonomic units being recently molecularly and morphologically identified (Dantas-Torres et al. 2013). As the type locality was defined as 'habitat in Gallia' (Latreille 1806), the temperate lineage probably represents the actual *R. sanguineus* s.l. However, until a proper redescription of the species with the definition of the neotype is available, all ticks morphologically compatible with available descriptions of '*R. sanguineus*' (e.g. Walker et al. 2000) should be referred to as *R. sanguineus* s.l. (Guglielmone et al. 2014). In this chapter, we will provide general information available for *R. sanguineus* s.l.

Life Cycle and Host Preferences

Rhipicephalus sanguineus s.l. is a three-host tick. Under laboratory conditions, the life cycle may be completed in 2–4 months, depending on factors such as temperature and host availability (Dantas-Torres et al. 2011). Unfed adult ticks can survive for more than 1 year without taking a blood meal (Dantas-Torres et al. 2012). All developmental stages

feed primarily on dogs, but eventually on other hosts, including rodents, birds and humans (for a review, see Dantas-Torres 2010).

Ecology

Rhipicephalus sanguineus s.l. is the most common tick found on dogs in urban areas around the world. This tick may also be highly prevalent in rural areas, but even in such areas, it is typically associated with dog shelters and human houses. Indeed, *R. sanguineus* s.l. is essentially a nidicolous tick found in close association with dogs. This tick is typically found in shelters and kennels where confined dogs may be highly infested. In houses with tick-infested dogs, *R. sanguineus* s.l. are usually found in the places where the dogs stay during the night, which may be a doghouse in the backyard or even inside the house. Engorged females are often found on the wall where they usually hide themselves in cracks and crevices, i.e. places where they are more protected from unsuitable weather conditions (Dantas-Torres 2010). Nonetheless, *R. sanguineus* s.l. ticks are well adapted to a range of climatic conditions. In particular, the so-called tropical lineage is usually found in regions with average mean temperatures >20 °C, whereas the temperate lineage is present in regions with average annual temperatures <20 °C (Zemtsova et al. 2016). In tropical and subtropical regions, *R. sanguineus* s.l. ticks can complete more than one generation per year (Silveira et al. 2009), whereas in temperate countries, they typically produce a single generation per year, occurring mainly from spring to autumn (Lorusso et al. 2010) and overwintering in southern Europe as adults (Ramos et al. 2014).

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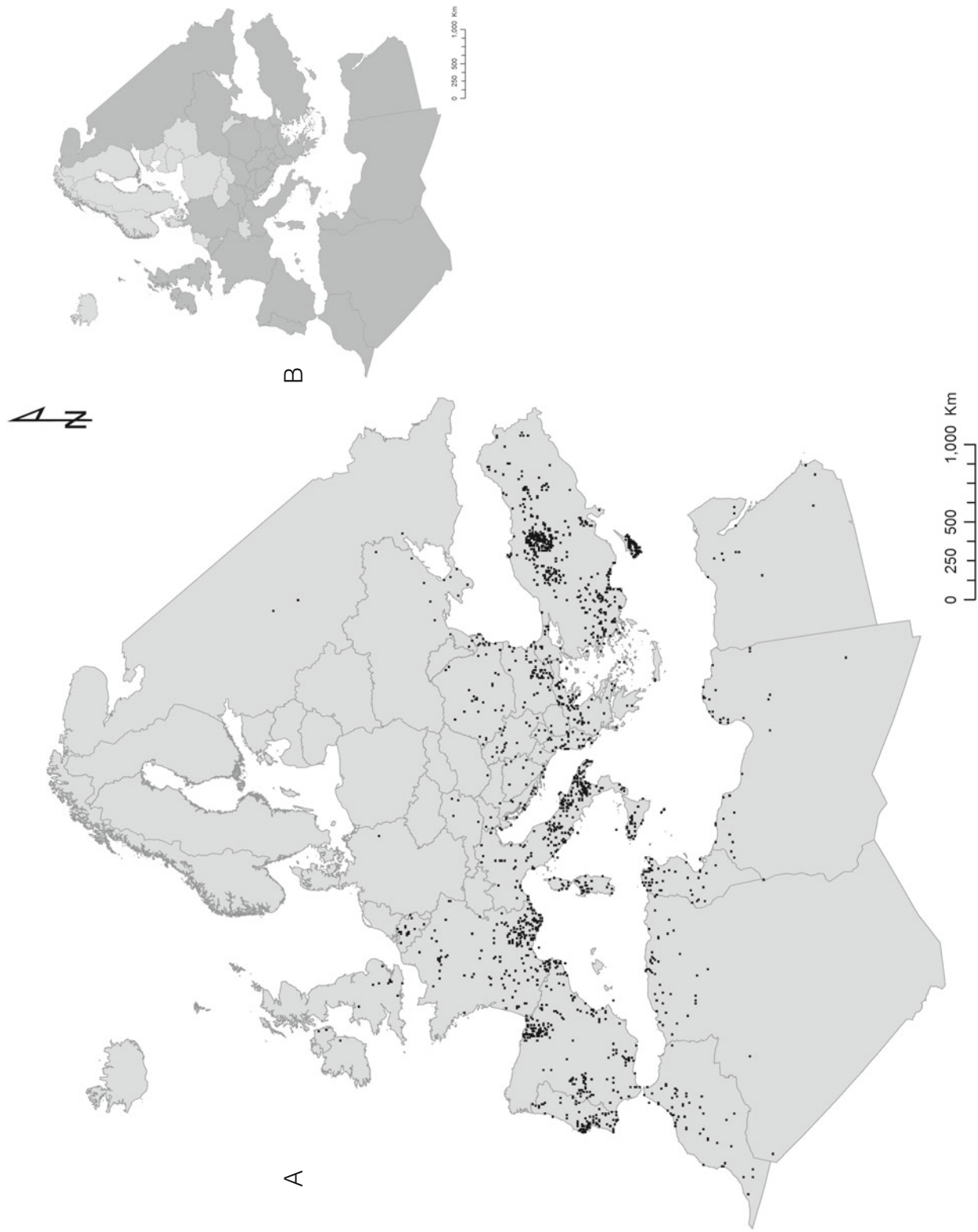


Fig. 127 **A** Distribution of *R. sanguineus* s.l. in Europe and Northern Africa (10×10 km grid presence with black dots). **B** Countries where the species has been reported are marked in dark grey

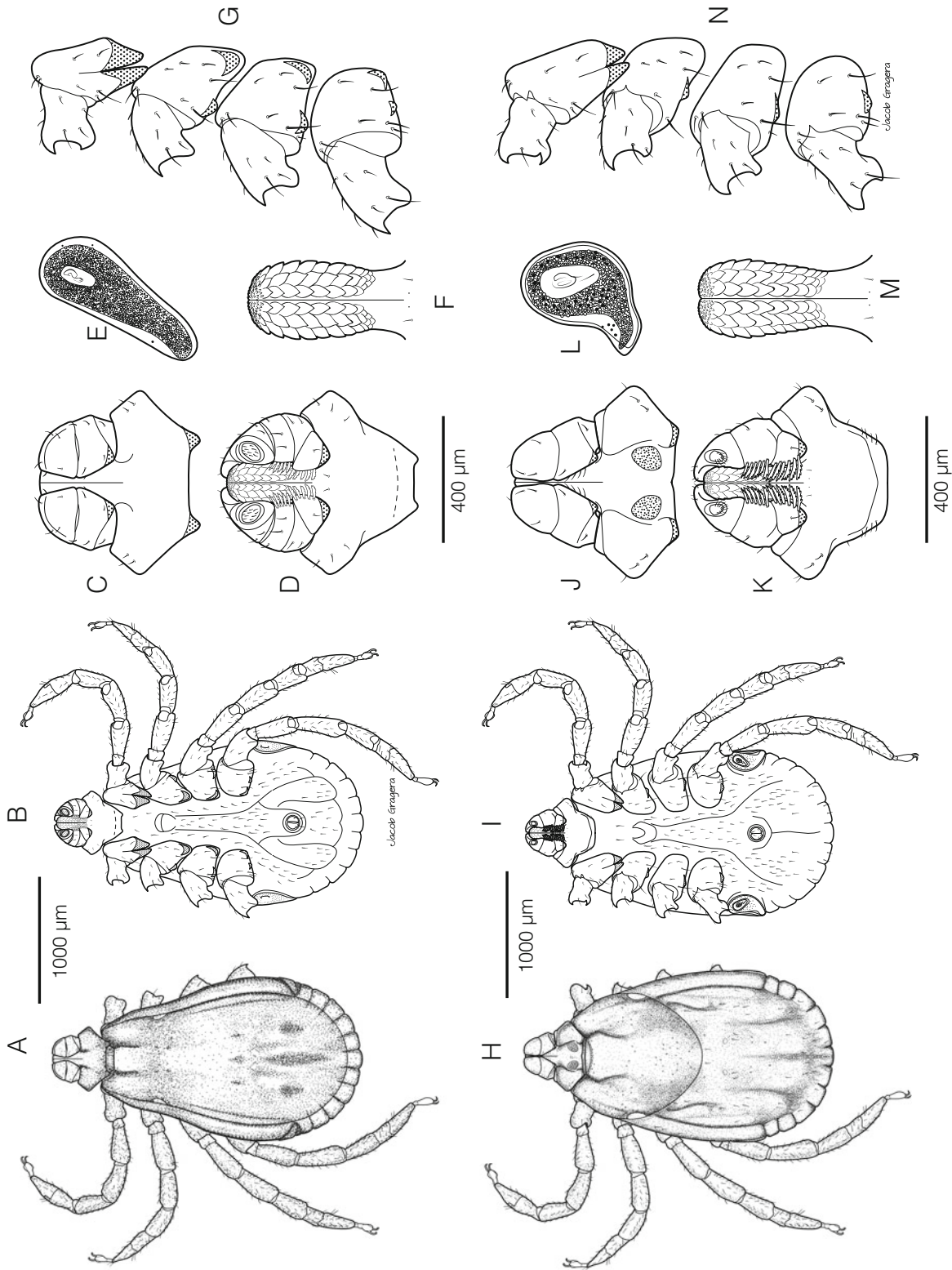


Fig. 128 A–G The male of *R. sanguineus* s.l. A Dorsal, B ventral, C capitulum, dorsal, D capitulum, ventral, E spiracular plate, F hypostome, G coxae and trochanters I–IV. H–N The female of *R. sanguineus* s.l. H Dorsal, I ventral, J capitulum, dorsal, K capitulum, ventral, L hypostome, M spiracular plate, N coxae and trochanters I–IV. Illustrations from specimens collected in kennels in Portugal, Spain, France and Italy

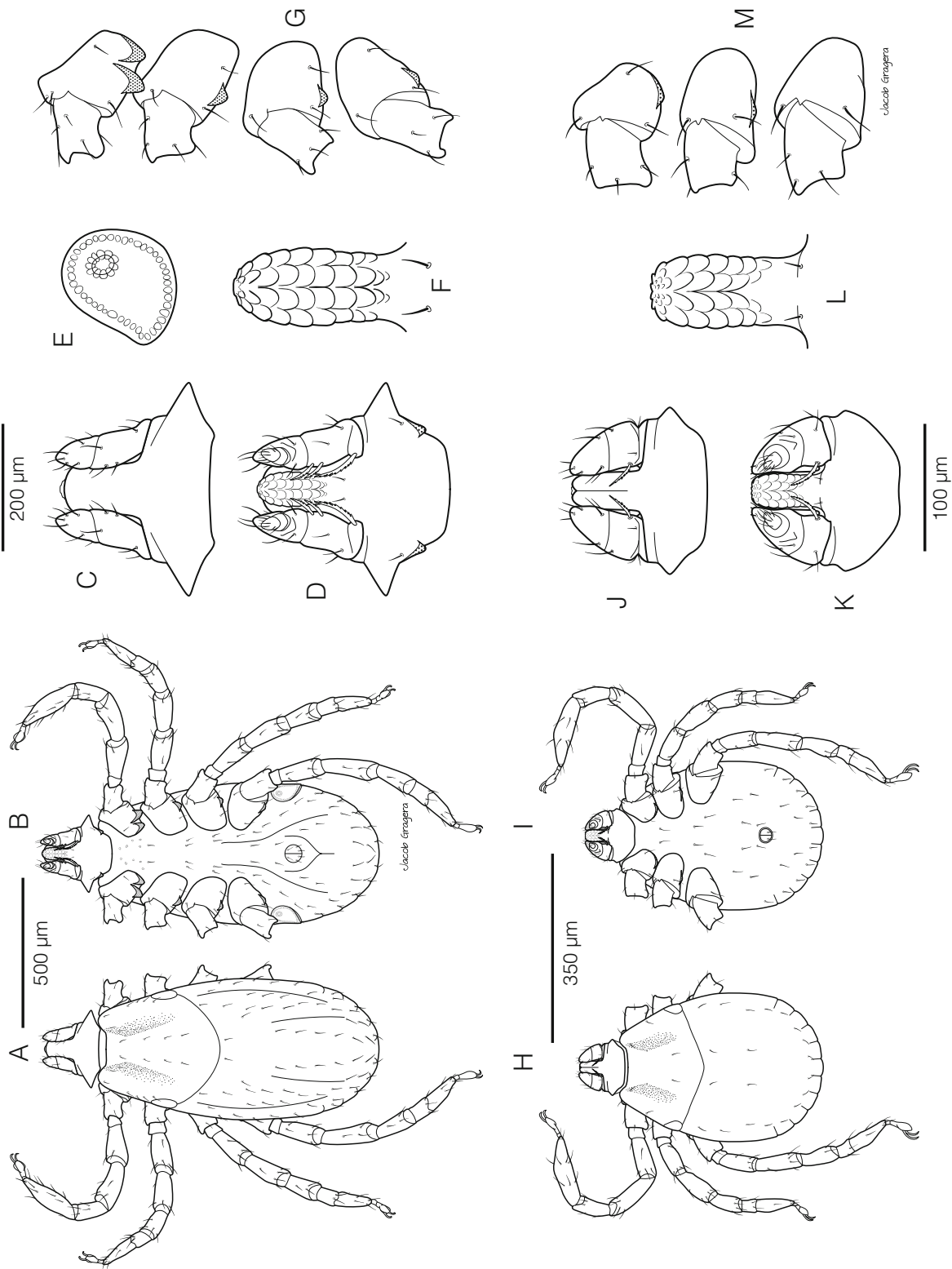


Fig. 129 A–F The nymph of *R. sanguineus* s.l. A Dorsal, B ventral, C capitulum, dorsal, D capitulum, ventral, E spiracular plate, F hypostome, G coxae and trochanters I–IV. H–M The larva of *R. sanguineus* s.l. H Dorsal, I ventral, J capitulum, dorsal, K capitulum, ventral, L hypostome, M coxae and trochanters I–III. Illustrations from a colony of ticks collected in southern France

Distribution

Rhipicephalus sanguineus s.l. has a cosmopolitan distribution, occurring mainly in the tropical and subtropical zones but also in temperate regions. Sporadic findings of brown dog ticks in northern countries (e.g. the UK, Hansford et al. 2014) have been published, but there is limited evidence indicating that these ticks could establish themselves permanently in such cold regions. The limits of its distribution range are thought to be from latitude 20°N to below 30°S for the temperate lineage (Burlini et al. 2010).

Vectorial Capacity and Pathogen Burden

Laboratory and field studies have implicated *R. sanguineus* s.l. in the transmission of numerous pathogens, including *Babesia vogeli*, *Ehrlichia canis*, *Hepatozoon canis*, *Rickettsia conorii* and *Rickettsia rickettsii*, among others (for complete review, see Dantas-Torres 2008). Different lineages of *R. sanguineus* s.l. appear to have different vector competences for certain pathogens, including *E. canis* (Moraes-Filho et al. 2015).

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