Amblyomma cajennense and Amblyomma dubitatum in
capybaras run over on highways in Santa Catarina State, Brazil

Amblyomma cajennense e Amblyomma dubitatum
em capivaras atropeladas em rodovias de Santa Catarina, Brasil

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Abstract

Hydrochoerus hydrochaeris serves as a host for a number of tick species that play an important role as vectors of emergent zoonotic diseases. This is the first report of the occurrence of Amblyomma cajennense adults and Amblyomma dubitatum nymphs retrieved from capybaras run over on two highways in the state of Santa Catarina, southern Brazil.

Key words: Ticks, ixodidae, biology, morphology, nymphs

Resumo

Hydrochoerus hydrochaeris serve de hospedeiro para várias espécies de carrapatos, os quais exercem papel importante como vetores de agentes zoonóticos emergentes. Este artigo relata pela primeira vez a ocorrência de carrapatos adultos Amblyomma cajennense e ninfas de Amblyomma dubitatum parasitando capivaras resgatadas sem vida, provenientes de atropelamento em duas rodovias no Planalto Catarinense, região sul do Brasil.

Palavras-chaves: carrapato, Ixodidae, morfologia, ninfas

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Three dead capybaras (*Hydrochoerus hydrochaeris*) were picked up from two highways in the state of Santa Catarina, southern Brazil, after being run over. They are: (i) an adult female found in Nov. 2010 on highway SC 438, km35, in Painel (27°55'30'' S and 50°6'12'' W); (ii) an adult male picked up in Mar. 2011 on highway BR 282, in Lages (27°48'S and 50°20'W) and (iii) an adult female found in Painel, km9, in December 2012. The three animals were necropsied at the Laboratory of Parasitology of the Center for Agricultural and Veterinary Sciences of Universidade do Estado de Santa Catarina (CAV- UDESC). Ixodidae ectoparasites were found in the carcasses of the animals. The ticks were retrieved from different parts of the body, especially from the abdominal region, with a pair of tweezers, preserved in 70% alcohol, and identified under a stereomicroscope, according to Onofrio *et al.* (2006). The ixodid ticks were photographed and placed in the animal collection of the Laboratory of Parasitology of Universidade do Planalto Catarinense (UNIPLAC). Fifteen *A. dubitatum* Neumann, 1899 nymphs were obtained from animal 1. The nymphs were oval-shaped, with anal groove posterior to the anus, and had 11 festoons without chitinous tubercles. The shield was punctate (a), but not ornate; they had a long and deep cervical groove extending into the final third of the shield; the spiracular plate was ring-shaped with dorsal extension; the base of the capitulum was slightly hexagonal and much broader than long; coxa I had two pointed spurs, the external one being slightly longer than the internal one (b); coxae II and IV had a small triangular spur (Figure 1).

Fourteen adult male *A. cajennense* Fabricius, 1787 ticks were found in capybaras 2 and 3, i.e., four ticks in capybara 2 and 10 in capybara 3. They were identified by their phenotypic characteristics (Figure 2). The male has a distinct groove (c) limiting all festoons posteriorly; coxa I has two unequal spurs (d) and coxa IV has a spur longer than the article.

The distribution of *A. dubitatum* is limited to southern areas of South America, mainly Uruguay, Argentina, Paraguay, Bolivia, and Brazil. In Brazil, it has been found in the southern, southeastern and central western regions (Vieira *et al.*, 2004; Guglielmone *et al.*, 2003). A study on the hosts and genetic divergence of *A. dubitatum* in Brazil revealed that this tick is more prevalent in biomes such the Pampa, Cerrado, Atlantic Forest, and Araucaria Forest, but there are reports for the Marajó Island (state of Pará) and some regions of the Pantanal. The genetic divergence among ticks from Argentina, Brazil and Uruguay, identified according to morphological features, was small, and these genetic variations are common at the intraspecific level for neotropical species of the genus *Amblyomma* (Nava *et al.*, 2010). Although the immature and adult stages have high specificity for capybara, larvae and nymphs can naturally infect the Brazilian wildlife (e.g., tapirs, bats, and cattle), humans (Guimarães *et al.*, 2001; Barros-Battesti *et al.*, 2006; Labruna *et al.*, 2007), as well as dogs, cats, and skunks (Horta *et al.*, 2007).

*Amblyomma cajennense* is the most important tick species in Brazil and the major ixodid implied in the transmission and maintenance of *Rickettsia rickettsii* (Wolbach, 1919) leading to
successive generations of the infected invertebrate, thus being a true reservoir for this bacterium. In addition to causing spotted fever, an extremely fatal zoonotic disease that affects humans in Brazil (Toledo et al., 2008), this tick can be associated with *R. africae* and *R. parkeri*. Although it is potentially pathogenic to human beings, the risk of being infected by this microorganism in Brazil remains unknown (Labruna, 2004). This tick has low parasite specificity and a wide geographical distribution. In Brazil, the species is somewhat abundant in all states of the southern and central western regions, and the distribution is smaller in the other regions due to low temperatures and to the type of vegetable cover, as the tick population is associated with the presence of dirty pastures and woods (Vieira et al., 2004).

Aragão (1936) and Evans et al. (2000) state that capybaras, tapirs, and horses are the major primary hosts for *A. cajennense*, increasing the tick fauna in their habitat. *A. cajennense* was reported as a parasite of capybaras in the Pantanal region, state of Mato Grosso (Ito et al., 2004), and in Londrina (Toledo et al., 2008) state of Paraná. *Amblyomma dubitatum* was detected in capybaras in Londrina (Toledo et al., 2008), as well as in the states of Espírito Santo, Mato Grosso do Sul, São Paulo and Rio Grande do Sul (Nava et al., 2010). Knowledge about these ectoparasite species is important because they can participate in the enzootic cycle of pathogens in the natural environment, infecting mainly wild animals, which end up as important vectors of emergent zoonotic diseases. With respect to their life cycle, ixodids have three hosts and the immature ticks feed on smaller animals, such as birds and rodents, whereas adults reproduce in medium-sized and large animals (Oliver Jr., 1989). The immature stages of neotropical ticks are poorly known and, in many cases, have not been described (Sanches et al., 2009), thus hindering the reports of human infection by tick larvae and nymphs (Labruna et al., 2004).

This is the first report of capybaras infected by *Amblyomma cajennense* and *Amblyomma dubitatum* of the state of Santa Catarina, southern Brazil.

**Acknowledgments**

We would like to thank Dr. Darci Moraes Barros-Battesti for helping us with the confirmation of the tick *Amblyomma dubitatum*.

**References**


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http://dx.doi.org/10.4322/rbpv.01803003


Submitted on November 04, 2012

Accepted on July 29, 2013