

Noteworthy records of *Ixodes schulzei* (Acari: Ixodidae) on rodents from the State of Parana, southern Brazil

Relatos de *Ixodes schulzei* (Acari: Ixodidae) em roedores do Estado do Paraná, sul do Brasil

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Abstract

Ixodes schulzei Aragão & Fonseca is an endemic tick to Brazil and has already been reported in the northern (State of Rondonia), southeastern (States of Minas Gerais, Rio de Janeiro and São Paulo) and southern (State of Santa Catarina) regions, always found in association with the water rat *Nectomys squamipes* (Brandt). This communication records the first occurrence of this tick species in the State of Parana, southern region of Brazil, and it constitutes its first report on *Akodon montensis* (Thomas) and *Oryzomys russatus* (Wagner) hosts.

Keywords: *Ixodes schulzei*, new host records, distribution, *Akodon montensis*, *Oryzomys russatus*, Brazil.

Resumo

Ixodes schulzei Aragão & Fonseca é um carrapato endêmico do Brasil e já foi relatado nas regiões Norte (estado de Rondônia), Sudeste (estados de Minas Gerais, Rio de Janeiro e São Paulo) e Sul (estado de Santa Catarina), tendo sido encontrado sempre em associação com o rato d'água *Nectomys squamipes* (Brandt). Esta comunicação registra a primeira ocorrência dessa espécie de carrapato no estado do Paraná, região Sul do Brasil e constitui o primeiro relato de *Akodon montensis* (Thomas) e *Oryzomys russatus* (Wagner) como hospedeiros.

Palavras-chave: *Ixodes schulzei*, novos registros de hospedeiros, distribuição, *Akodon montensis*, *Oryzomys russatus*, Brasil.

The genus *Ixodes* Latreille, 1796 is represented by approximately 243 species (GUGLIELMONE et al., 2010). In Brazil, eight species are currently known: *Ixodes amarali* Fonseca, 1935; *Ixodes aragaoi* Fonseca, 1935; *Ixodes auritulus* Neumann, 1904; *Ixodes fuscipes* Koch, 1844; *Ixodes loricatus* Neumann, 1899; *Ixodes luciae* Sénevet, 1940; *Ixodes paranaensis* Barros-Battesti, Arzua, Pichorim and Keirans, 2003; and *Ixodes schulzei* Aragão and Fonseca, 1951 (ONOFRIO et al., 2009; DANTAS-TORRES et al., 2009). A ninth species named *Ixodes serrafreirei* Amorim, Gazeta, Bossi and Linhares, 2003 was proposed based on the nymphal stage (AMORIM et al., 2003), but due to lack of proper description *I. serrafreirei* has been regarded as a *nomen nudum* (VENZAL et al., 2008; GUGLIELMONE et al., 2009).

All *Ixodes* species are restricted to wild hosts, primarily mammals, but two are exclusively found in birds (LABRUNA et al., 2003; ONOFRIO et al., 2006). Among these species, three are only known from females: *I. amarali*, *I. fuscipes* and *I. schulzei* (BARROS-BATTESTI et al., 2007). The latest species is endemic to Brazil and it has been found always in association with the water rat *Nectomys squamipes* (Brandt). Previous studies of life cycle under laboratory conditions suggest that *I. schulzei* could be a parthenogenetic species, since only female ticks were obtained from engorged nymphs (LABRUNA et al., 2003).

Barros-Battesti et al. (2007) described the immature stages and redescribed the female of *I. schulzei*. This species has been reported from the states of Minas Gerais, Rio de Janeiro, São Paulo (southeastern), Santa Catarina (southern) and Rondonia (northern) (LABRUNA et al., 2003; ARZUA et al., 2005). This communication records the first occurrence of this tick species in State of Parana, southern region of Brazil, and it constitutes its

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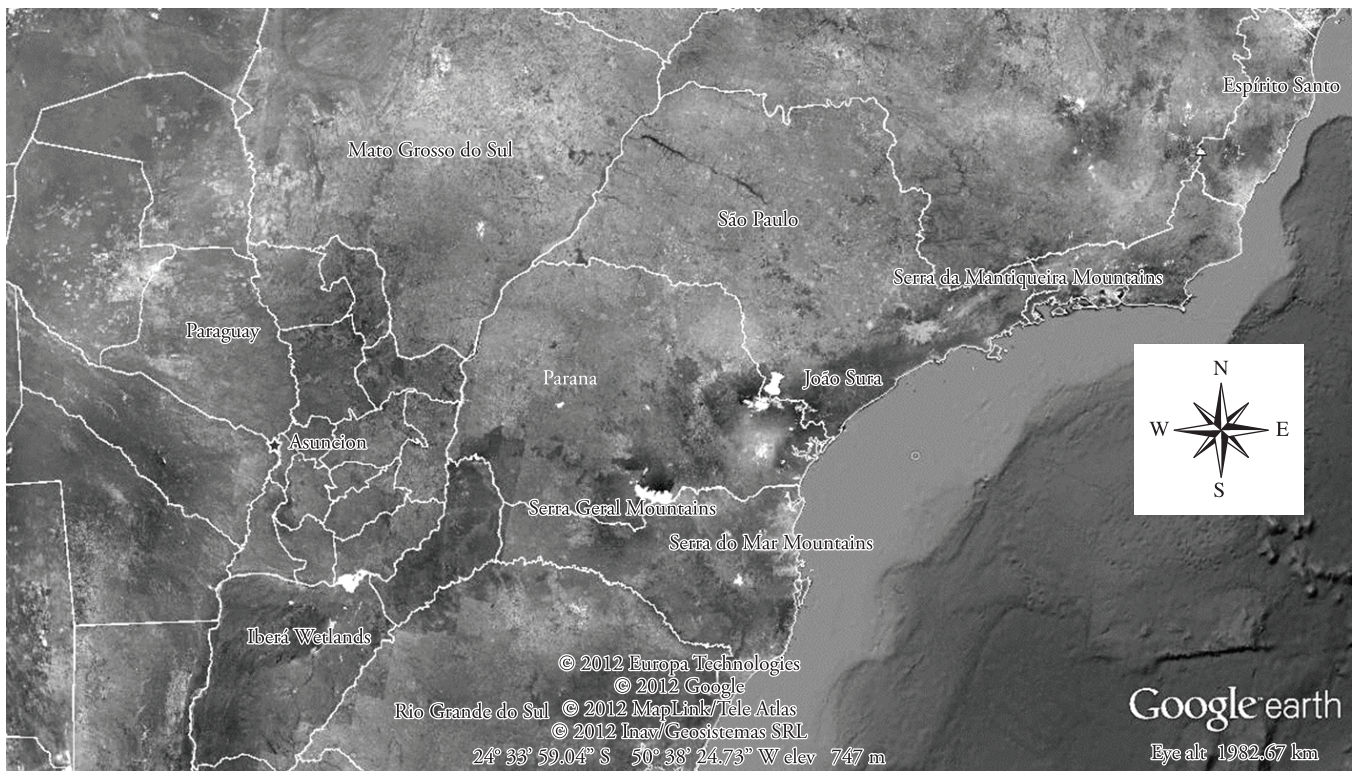


Figure 1. Map of the Brazilian south region showing the locality where *Ixodes schulzei* was collected.

first report on *Akodon montensis* (Thomas) and *Oryzomys russatus* (Wagner) hosts.

A total of 184 small wild mammals were collected during the development of the CNPq No. 478950/2004-7 project between March 2004 and August 2007. Marsupials were represented by five specimens of three species, while rodents were represented by 179 specimens of 10 species, included in three tribus (Akodontini, Oryzomyini and Sigmodontini). The study area is located in Joao Sura (24° 42' 47" S and 49° 08' 34" W), municipality of Adrianópolis, State of Paraná, southern Brazil (Figure 1). The rodent *A. montensis* was the most frequently trapped species followed by *O. russatus* and *N. squamipes*. On this latest rodent, 52 immature ticks of the species *I. schulzei* were collected. Two nymphs of this tick species were also found on *O. russatus*; they were preserved in alcohol and deposited at the Acari Collection from "Instituto Butantan" under the number IBSP 09130. In June 2009, we returned to the same area to make new collects of rodents. During 5 days, a total of 14 specimens of *Akodon* were trapped, but no *N. squamipes* was collected. Unexpectedly, two larvae and one nymph of *I. schulzei* were collected on *A. montensis*. The identification of the latter host was based on cytogenetic data ($2n = 24$ e $2n = 24 + 1B$) according to Christoff (2007).

The nymph died after collection and it was then immersed in alcohol. Larvae were taken to the laboratory, fed on *Calomys callosus* Rengger, and maintained in BOD incubator at 27 °C and 95% RH; the same was done with the two emerged nymphs. On September 14, 2009, the engorged nymphs molted to females that were deposited at the Acari Collection under the number IBSP10336. Females were identified through illustrated keys (ONOFRIO et al., 2009).

Studies about the lifecycle of this species are in progress. In other field collection in the same area, from the 15th to the 18th of May 2010, two specimens of *A. montensis* were found parasitized with two and three larvae of *I. schulzei*, respectively. Larvae molted to nymphs in the laboratory, but died later and were also deposited in the Acari Collection (IBSP 10406, 10407).

The present scientific communication increases the known distribution of *I. schulzei*, recording for the first time the presence of this tick species in the State of Paraná and on new hosts, *A. montensis* and *O. russatus*.

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