

New records of *Ixodes paranaensis* (Acari: Ixodidae) from Minas Gerais, southeastern Brazil

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Abstract

Ixodes paranaensis is a little-known tick species recently described from specimens collected in Quatro Barras, State of Paraná, southern Brazil. The present report describes the collection of three males and three females of *I. paranaensis* from a quartzite cave (Gruta dos Fugitivos) in the municipality of Santa Rita de Ibitipoca, State of Minas Gerais, southeastern Brazil. This new record extends the known distribution of *I. paranaensis* and clarifies our knowledge of the male, which was originally described from a single deformed specimen.

Key words: *Ixodes paranaensis*, Ixodidae, new record, distribution, Brazil

Introduction

The genus *Ixodes* Latreille currently comprises approximately 242 species (Nava *et al.* 2009). In Brazil, this genus is represented by eight species: *Ixodes amarali* Fonseca; *Ixodes aragaoi* Fonseca; *Ixodes auritulus* Neumann; *Ixodes fuscipes* Koch; *Ixodes loricatus* Neumann; *Ixodes luciae* Sénevet; *Ixodes paranaensis* Barros-Battesti, Arzua, Pichorim and Keirans; and *Ixodes schulzei* Aragão and Fonseca (Barros-Battesti & Knysak 1999; Dantas-Torres *et al.* 2009; Onofrio *et al.* 2009). A ninth species, tentatively named *Ixodes serrafreirei* Amorim, Gazeta, Bossi and Linhares, was recently proposed based on the nymphal stage (Amorim *et al.* 2003) but was inadequately described and is therefore regarded as a *nomen nudum* (Nava *et al.* 2009; Guglielmone *et al.* 2009).

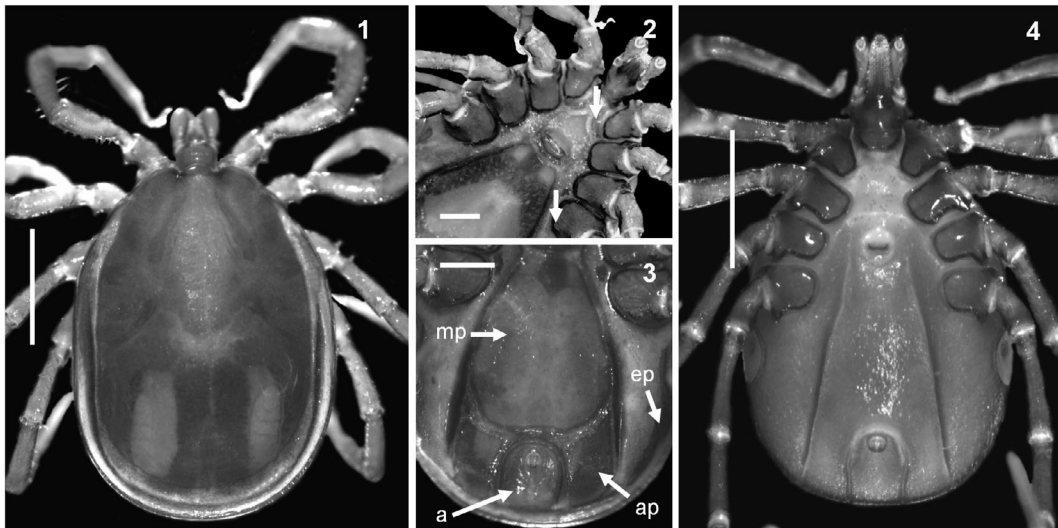
Ixodes paranaensis was recently described from specimens collected on Biscutate Swifts, *Streptoprocne biscutata* (Sclater) (Apodiformes: Apodidae), trapped in the municipality of Quatro Barras, State of Paraná, southern Brazil (Barros-Battesti *et al.* 2003). This little-known tick has also been collected from the White-collared Swift, *Streptoprocne zonaris* (Shaw), in Ponta Grossa, Paraná (Arzua *et al.* 2005). The only known male of *I. paranaensis* is the allotype, which is deformed posteroventrally (Barros-Battesti *et al.* 2003). Herein, we report for the first time the presence of *I. paranaensis* in the State of Minas Gerais, southeastern Brazil. Additionally, we provide photomicrographs of the female and of a normal male.

Materials and methods

On 16 June 2005, free-living ticks were collected in a quartzite cave (Gruta dos Fugitivos) located within the Parque Estadual do Ibitipoca, municipality of Santa Rita de Ibitipoca (21° 67' 54'' S, 43° 87' 70'' W), State of Minas Gerais, southeastern Brazil. This cave is situated at 1590 m, within the limits of the Atlantic rainforest biome. It is approximately 720 m long and consists of a main vadose conduit (enclosing a small stream) and lateral extensions. Ticks were collected manually, preserved in vials of 70% alcohol, and identified using the illustrated key of Onofrio *et al.* (2009) and the original species description (Barros-Battesti *et al.* 2003). Pictures were taken with a stereomicroscope (Leica S8 APO, Leica Microsystems GmbH, Wetzlar, Germany). Voucher specimens have been deposited in the National Tick Collection of the University of São Paulo (accession number: CNC-1254).

Results and discussion

Three males (Figs. 1–3) and three females (Fig. 4) of *I. paranaensis* were collected. Morphologically, *I. paranaensis* resembles *I. auritulus*, but males of the former species can be differentiated by the presence of well-defined jugular plates and a short internal spur on coxa IV (Fig. 2). Females of *I. paranaensis* can be distinguished by their oval porose areas, which are close together, and by the absence of internal spurs on coxae II–IV (Fig. 4).



FIGURES 1–4. *Ixodes paranaensis*: 1. Male, dorsal view (bar = 1000 μ m). 2. Male, ventral view, jugular plates and internal spur on coxa IV arrowed (bar = 300 μ m). 3. Male, ventral view, median plate (mp), epimeral plate (ep), anal plate (a) and adanal plate arrowed (ap) (bar = 300 μ m). 4. Female, ventral view (bar = 1000 μ m).

All of our *I. paranaensis* specimens were unengorged and were found crawling upward on the walls of the cave. Interestingly, Parque Estadual do Ibitipoca is a known breeding site for *S. biscutata* (Sick 1997), suggesting that this bird is the probable host of *I. paranaensis* in Minas Gerais, as it is in southern Brazil. Based on our field observations, *I. paranaensis* appears to be a nidicolous tick, capable of colonizing nests on rocks and inside caves inhabited by *S. biscutata*.

The present report extends the known distribution of *I. paranaensis*, recording its presence for the first time in a cave in southeastern Brazil. Future investigations will likely show that the range of this tick also includes northeastern Brazil, since its hosts (*S. biscutata* and *S. zonaris*) are widespread in this country (Sick 1997). The tick fauna of Brazilian caves is little known (Pinto-da-Rocha 1994), and recent studies have led to the discovery of new species (Estrada-Peña *et al.* 2004; Labruna *et al.* 2008). Further research on ticks from these habitats is expected to generate new data that will impact our understanding of tick ecology, host relationships, and zoogeography.

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