

SCIENTIFIC NOTE

Occurrence of *Ornithodoros brasiliensis* Aragão (Acari: Argasidae) in São Francisco de Paula, RS, Southern Brazil

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Abstract

There have been no reports of the endemic *Ornithodoros brasiliensis* (Aragão) in Rio Grande do Sul, southern Brazil, since the 1950s. In January 2007, 21 *O. brasiliensis* ticks were collected in a rural area named “Cruzinha” in the municipality of São Francisco de Paula, RS, and another population was sampled later that year (October) in Vargem do Cedro, another rural area of São Francisco de Paula, following reports of human parasitism by ticks. The reappearance of this tick is a reason for concern in terms of public health.

The knowledge on biology, hosts, systematic and geographical distribution of tick species is essential for the establishment of guidelines that can be used for their control and management of the diseases they vector.

In the last published valid Argasidae list of the world, Horak *et al* (2002) notified the occurrence of 183 species divided in four genera (*Argas*, *Carios*, *Ornithodoros* and *Otobius*), and recorded the existence of 38 tick species belonging to the *Ornithodoros* genus. However, the proposition of inclusion of several species initially classified as *Ornithodoros* in the genus *Carios*, still remains in discussion (Venzal *et al* 2006, Labruna & Venzal 2009).

Four species of *Ornithodoros* were recorded from Brazil, *O. talaje* (Guérin-Méneville), *O. rostratus* Aragão, *O. brasiliensis* Aragão and *O. nattereri* Warburton (Aragão 1936). *Ornithodoros brasiliensis* was originally identified in São Francisco de Paula, RS, southern Brazil (29° 20' 00"S; 48° 30' 21" W, 912 m, annual average of temperature = 14.4°C). It was distinguished from *O. rostratus* by the shape of the idiosoma and by the

organization of the tarsus, characteristics later described and illustrated by Aragão (1931). The species *O. turicata* registered by Barbará & Dios (1918) in Argentina, was incorrect because the specimens were in fact *O. rostratus* (Guglielmone *et al* 2003)

Both species *O. rostratus* and *O. brasiliensis* are known colloquially as “ground tick” due to the habits of these species of living buried into sand or soft land near the main host inhabitations (rodents, pigs, *Conepatus* sp., *Tayassus* sp.), cellars, stables and even primitive human habitations (Evans *et al* 2000).

Ticks (n = 21) also known in the region as “bicho mouro” were collected from soil in the locality of Cruzinha, a rural area of São Francisco de Paula, RS, and sent by Elvio Castilhos, a veterinarian from the animal health local service to the Instituto de Pesquisas Veterinárias Desidério Finamor (IPVDF), for identification. People reported being bitten by these ticks suffered local pain, constant irritation, erythema and edema in the bitten area with slow healing of the bite lesion. In a visit to one of the houses where human infestation was initially notified, a

close relation with domestic animals (dogs, cats and even pigs) was observed.

From the first batches of 21 ticks, 19 adults were allowed to feed on a hamster in January, 30th, 2007. Feeding time lasted from 27 to 40 min for the majority of the ticks. However, one specimen remained fixed for 1:40h approximately. The tegument became dark during the feeding process and most ticks increased in size and weight from half to approximately three times their initial weight. Near to the end of the feeding process, they usually secreted a clear liquid known as the coxal liquid which was collected and stored at -20°C. This seems to be a normal behavior of this species according to previous records. After dropping off from the hamster, they were placed in Petri dishes, inside a box with moist sand and kept at a room temperature (20-25°C). Hamster blood was examined for spirochete-like organisms and the results were negative.

In October 18, 2007, a visit to São Francisco de Paula was made to Vargem do Cedro, a rural area where complaints about human parasitism by the ground tick had been reported. In one of the properties the owner reported that he suffered several bites in the abdominal area with intensive reactions, fever, and discomfort, requiring medical attention at a general hospital. He was treated with parenteral serum and antibiotics, improving his health condition after the third day of treatment. His wife (MNMH) reported that she was also infested and showed an ancient healing, according to her, from "bicho-mouro" bites (Fig 1). They spoke about a pet that died after refusing to leave the infested area, underneath the house. The dog was severely attacked by ticks, mainly in the abdominal area, and died in a few minutes after been removed from the area.



Fig 1 Lesions on a human leg due to a reaction of parasitism by *Ornithodoros brasiliensis*, 18 days after tick bite.

The environment was protected from sunlight, with high humidity, a great amount of soft soil and was surrounded by debris. Inspection of the local area by sieving the soil yielded the collection of adult ticks. Approximately 300 ticks were collected and taken to the laboratory for identification and to establish a colony. Hamster where ticks were allowed to feed did not show any hemoparasites in blood samples stained by Giemsa until 30 days after infestation.

The occurrence of this tick species is a reason for concern, and the risk of infestations in other areas must be considered.

References

- Aragão HB (1931) Notas sobre os *Ornithodoros brasiliensis*, *rostratus* e *turicata*. Mem Inst Oswaldo Cruz 25: 227-231.
- Aragão HB (1936) Ixodidas brasileiros e de alguns países limitrophes. Mem Inst Oswaldo Cruz 31: 759-843.
- Barbará B, Dios RL (1918) Contribución al estudio de la sistemática y biología de los ixodidae de la Republica Argentina y de algunos países vecinos. Rev Inst Bact Dep Nac Hyg 1: 285-322.
- Evans DE, Martins JR, Guglielmone AA (2000) A review of the ticks (Acari, Ixodida) of Brazil, their hosts and geographic distribution. 1. The state of Rio Grande do Sul, southern Brazil. Mem Inst Oswaldo Cruz 95: 453-470.
- Guglielmone AA, Estrada-Peña A, Keirans JE, Robbins RG (2003) Ticks (Acari: Ixodida) of the Neotropical zoogeographic region. Atalanta, Houten, 173p.
- Horak IG, Camicas JL, Keirans JE (2002) The Argasidae, Ixodidae and Nuttalliellidae (Acari: Ixodida): a world list of valid tick names. Exp Appl Acarol 28: 27-54.
- Labruna MB, Venzal JM (2009) *Carios fonsecai* sp. nov. (Acari: Argasidae) a bat tick from the central-western region of Brazil. Acta Parasitol 54: 355-363.
- Venzal JM, Onofrio VC, Barros-Battesti DM, Arzua M (2006) Família Argasidae: características gerais, comentários e chaves para gêneros e espécies, p.13-27. In Barros-Battesti DM, Arzua M, Bechara GH (eds) Carrapatos de importância médico-veterinária da Região Neotropical: um guia ilustrado para identificação de espécie. São Paulo, Vox/ICTTD-Butantan, São Paulo, 223p.