

## Short Communication

# First report of *Rhodnius stali* (Hemiptera, Reduviidae, Triatominae) in the State of Acre and in the Brazilian Amazon

**Dionatas Ulises de Oliveira Meneguetti**<sup>[1],[2]</sup>, **Gabriela Vieira de Souza Castro**<sup>[2]</sup>,  
**Mariane Albuquerque Lima Ribeiro Castro**<sup>[2]</sup>, **Janis Lunier de Souza**<sup>[2]</sup>,  
**Jader de Oliveira**<sup>[3],[4]</sup>, **João Aristeu da Rosa**<sup>[3],[4]</sup>  
and **Luis Marcelo Aranha Camargo**<sup>[2],[5],[6]</sup>

[1]. Colégio de Aplicação, Universidade Federal do Acre, Rio Branco, Acre, Brasil. [2]. Programa de Pós Graduação *Stricto Sensu* em Ciência da Saúde na Amazônia Ocidental, Universidade Federal do Acre, Rio Branco, Acre, Brasil. [3]. Departamento de Ciências Biológicas, Faculdade de Ciências Farmacêuticas, Universidade Estadual Paulista *Júlio de Mesquita Filho*, Araraquara, São Paulo, Brasil. [4] Programa de Pós Graduação *Stricto Sensu* em Biociências e Biotecnologia, Universidade Estadual Paulista *Júlio de Mesquita Filho*, Araraquara, São Paulo, Brasil. [5]. Instituto de Ciências Biomédicas-5, Universidade de São Paulo, Monte Negro, Rondônia, Brasil. [6]. Departamento de Medicina, Faculdade São Lucas, Porto Velho, Rondônia, Brasil.

## Abstract

**Introduction:** This paper reports, for the first time, the presence of *Rhodnius stali* in the state of Acre and in the Brazilian Amazon. **Methods:** Specimens of *R. stali* were collected by the Federal University of Acre in Rio Branco. **Results:** The number of *Triatominae* species in the State of Acre increased from five to six. This was also the first report of *R. stali* in the Brazilian Amazon. **Conclusions:** The occurrence of *R. stali* is worrisome, since this species has been found naturally infected by *Trypanosoma cruzi* and there has been evidence of its domiciliation capabilities.

**Keywords:** Triatominae. *Rhodnius stali*. Western Amazon.

Triatomines are bloodsucking insects of the subfamily *Triatominae* and family *Reduviidae*. Their importance lies in the fact that they can transmit South American Trypanosomiasis, also called Chagas disease<sup>(1)(2)</sup>, named after Carlos Chagas, who first described it in 1909<sup>(3)</sup>.

In the Amazon rainforest, there are 29 recognised species of triatomines, grouped into nine genera: *Rhodnius* [12], *Psammolestes* [1], *Triatoma* [4], *Panstrongylus* [3], *Eratyrus* [2], *Cavernicola* [2], *Alberprosenia* [2], *Belminus* [2] and *Microtriatoma* [1]<sup>(2)(4)(5)</sup>. In the Brazilian Amazon, at least 20 species of sylvatic triatomines belonging to eight genera have been identified, of which more than 10 are related to infection by the flagellate *Trypanosoma cruzi*<sup>(6)(7)</sup>. In the state of Acre, there have been reports of five triatomine species belonging to three genera, namely: *Rhodnius montenegrensis*<sup>(2)</sup>, *Rhodnius robustus*<sup>(8)</sup>, *Rhodnius pictipes*, *Panstrongylus geniculatus*<sup>(6)</sup>, and *Eratyrus mucronatus*<sup>(9)</sup>.

The present study aims to report for the first time, the presence of the species *Rhodnius stali* in the State of Acre and in the Brazilian Amazon.

In October 2015, one female of *R. stali* (**Figure 1A** and **Figure 1B**) was collected while at the Complexo Bionorte da Amazônia Ocidental, located on the Campus of *Universidade Federal do Acre* (UFAC), Brazil (Lat. 9°57'12"S, Long. 65°51'48"W). This is situated 100m from a large urban forest fragment (Zoobotânica Park of UFAC with 144 hectares), where several palm trees of the genus *Attalea* can be found. Those trees may have served as natural ecotopes for the species, since *R. stali* has been found in *Attalea phalerata* palms in the Southwestern Amazon<sup>(4)</sup>. Possibly, the specimen was attracted by the light, as it happened with another specimen, namely a male that was captured with a Centers for Disease Control and Prevention (CDC)-type trap in the Campus of UFAC.

The identification of triatomines was carried out in the Multidisciplinary Laboratory of Tropical Medicine of UFAC, Rio Branco, Acre, Brazil, based on the keys previously described by Lent *et al.*<sup>(10)</sup>. Later, the specimens were referred to the Insectarium of the Department of Biological Sciences of the Faculty of Pharmaceutical Sciences, [*Universidade Estadual Paulista Júlio de Mesquita Filho* (UNESP)], Araraquara, São Paulo, Brazil, where the identification of the specimens was confirmed, through the characteristics of the genitalia<sup>(11)</sup> and its comparison with *R. pictipes* from the same insectarium (CTA 71), collected in Belém, Pará (**Figure 1C** and **Figure 1D**;

**Corresponding author:** Dr. Dionatas Ulises de Oliveira Meneguetti.

**e-mail:** dionatas@icbusp.org

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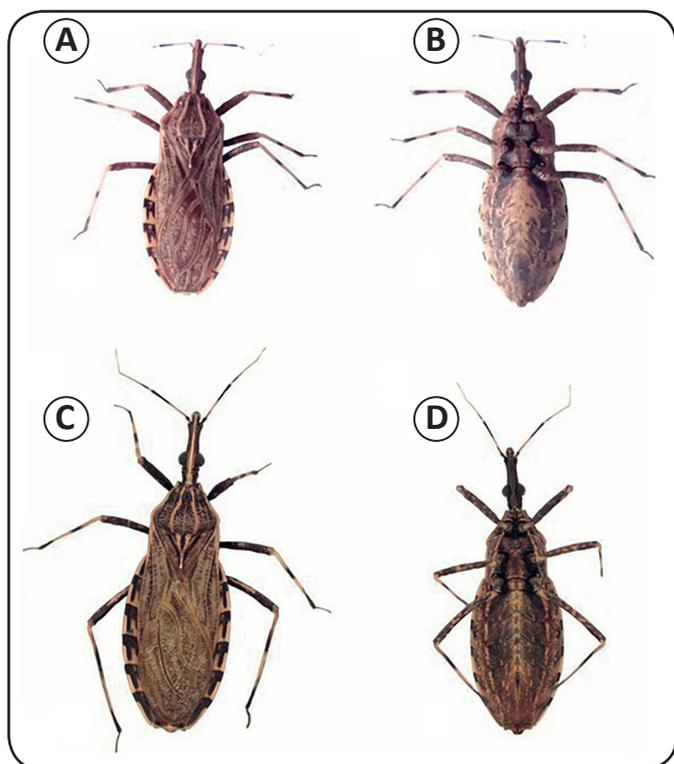


FIGURE 1 - A) Dorsal and B) Ventral views of *Rhodnius stali* specimens found in the municipality of Rio Branco, State of Acre, Brazil. C) Dorsal and D) Ventral views of *Rhodnius pictipes*.

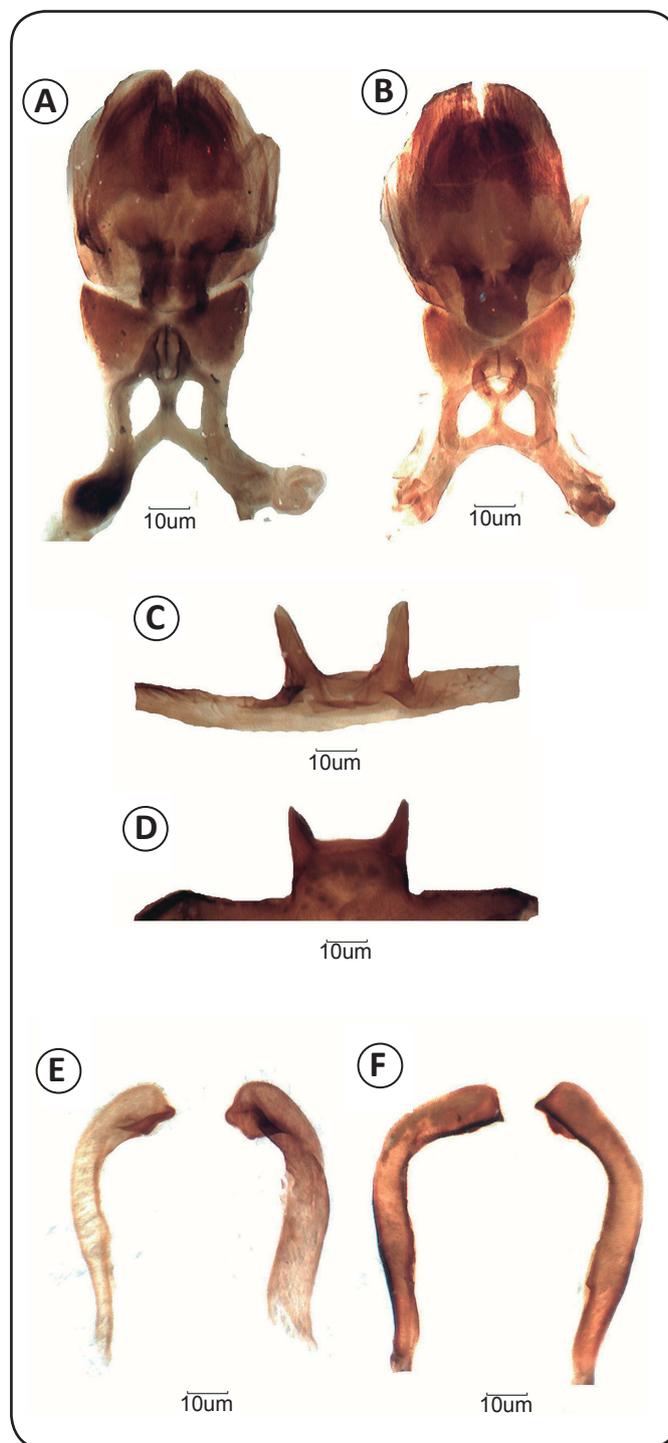


FIGURE 2 - A) Phallus dorsal views of *Rhodnius stali*. B) Phallus dorsal views of *Rhodnius pictipes*. C) Median process of the pygophore of *Rhodnius stali*. D) Median process of the pygophore of *Rhodnius pictipes*. E) Parameres dorsal views of *Rhodnius stali*. F) Parameres dorsal views of *Rhodnius pictipes*.

Figure 2A, Figure 2B, Figure 2C, Figure 2D, Figure 2E and Figure 2F). Additionally, the specimens were similar to the description provided by Lent *et al.*<sup>(10)</sup>.

*Rhodnius stali* (Figure 1) has a length of 16.5 to 17mm, speckled yellowish brown color, usually with small blemishes. It has an elongated head with the anteocular region of up to 2.5 times longer than the post-ocular; the corium is brown, irregularly covered with black marks. It shows yellowish, black-speckled legs, thighs, trochanter, and especially femurs. Its tibia presents two black annulations, one at the base of the middle third and the other at the apex<sup>(12)</sup>. Feces from the specimens were diluted in saline solution, prepared on microscope slides, and then examined with an optical microscope (640× magnification). The two specimens collected in this study were naturally infected with trypanosomatids. Thus, further studies are needed in order to confirm the species of trypanosomatids and to better understand the ecological context and host-parasite relationships of *R. stali* in this region.

The presence of one more triatomine species in the State of Acre increases the total number of occurring species from five<sup>(2)</sup> to six. This was expected because the map of *R. stali* presented by Carcavallo *et al.*<sup>(13)</sup> shows that this species was likely to occur in Acre and also in Rondônia. This was also the first report of *R. stali* in the Brazilian Amazon, since this species had only been reported in the State of Mato Grosso do Sul<sup>(6)(10)</sup> (Figure 3).

The occurrence of *R. stali* is worrisome, since it has been found naturally infected by *Trypanosoma cruzi* and there has

been evidence of its domiciliation capabilities. Furthermore, it is probably the vector responsible for Chagas disease seropositivity that was observed in the indigenous population of Alto Beni, La Paz, Bolivia<sup>(14)(15)</sup>.

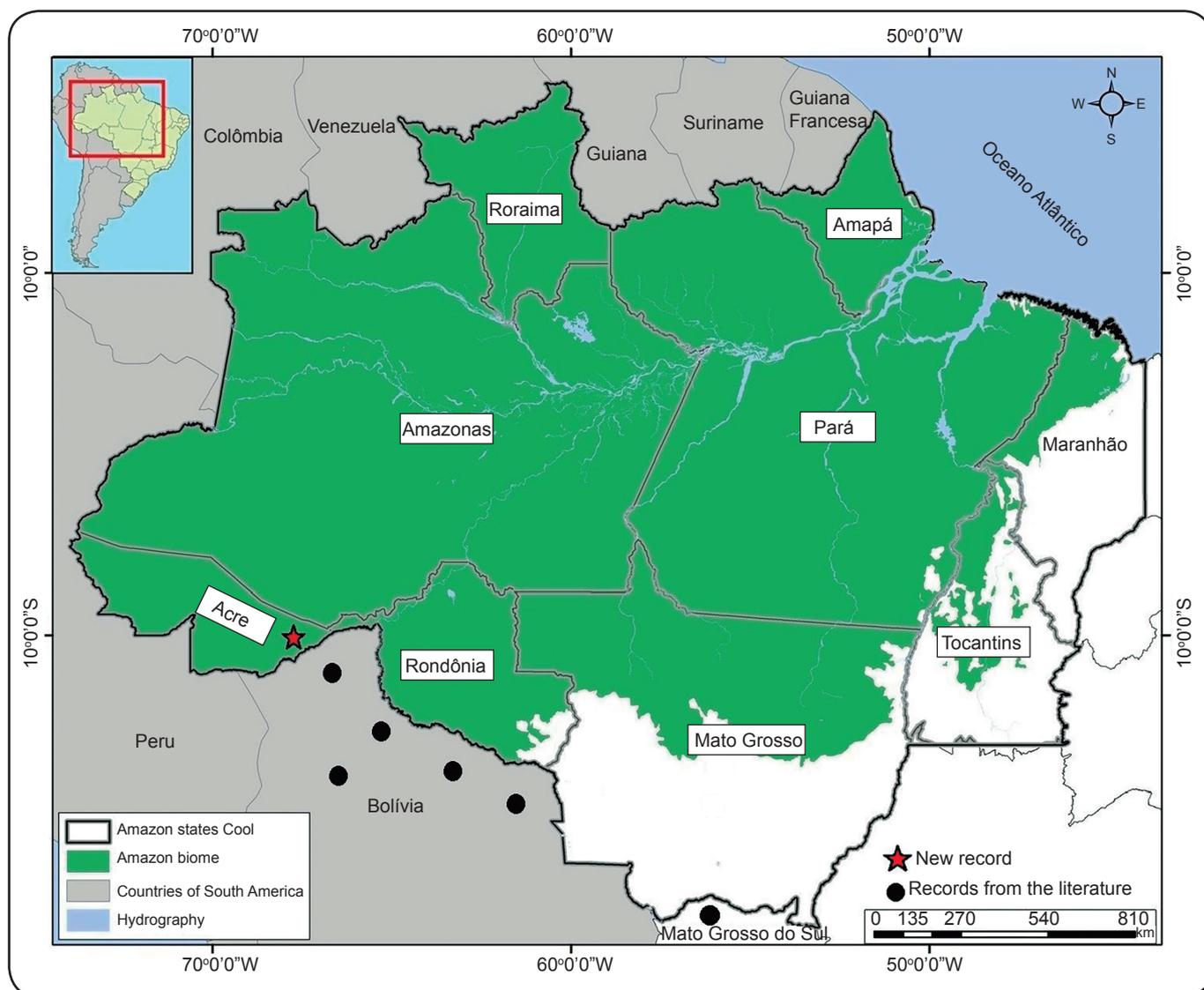


FIGURE 3 - Distribution of *Rhodnius stali*. The black circles indicates the previous known locality of *Rhodnius stali*<sup>(6) (11) (15)</sup>, the red star indicates the new record of *Rhodnius stali* in Rio Branco, in the State of Acre.

## ETHICAL CONSIDERATIONS

The specimens were collected with permission from the [Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA)], permanent license Nr. 52260-1.

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### Conflict of interest

The authors declare that there is no conflict of interest.

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