Short Communication

Confirmation of the occurrence of *Panstrongylus rufotuberculatus* (Champion, 1899) in the state of Acre, Western Amazon

Ailse Silva de Oliveira[1], Mariane Albuquerque Lima Ribeiro[1,2], Gabriela Vieira de Souza Castro[1,2], Nilson Alves Brilhante[3], Luís Marcelo Aranha Camargo[1,4,5,6,7] and Dionatas Ulises de Oliveira Meneguetti[1,8,9,10]

[1]. Programa de Pós-Graduação Stricto Sensu em Ciência da Saúde na Amazônia Ocidental, Universidade Federal do Acre, Rio Branco, AC, Brasil.
[2]. Centro de Ciências da Saúde e do Desporte, Universidade Federal do Acre, Rio Branco, AC, Brasil.
[3]. Parque Zoototânico da Universidade Federal do Acre, Rio Branco, AC, Brasil.
[4]. Instituto de Ciências Biomédicas-5, Universidade de São Paulo, Monte Negro, RO, Brasil.
[5]. Departamento de Medicina, Faculdade São Lucas, Porto Velho, Rondônia, Brasil.
[6]. Centro de Pesquisas em Medicina Tropical, Porto Velho, RO, Brasil.
[7]. Instituto Nacional de Ciência e Tecnologia EpiAmo/Rondônia, Porto Velho, RO, Brasil.
[8]. Programa de Pós-Graduação Stricto Sensu em Ciência, Inovação e Tecnologia para a Amazônia, Universidade Federal do Acre, Rio Branco, AC, Brasil.
[9]. Colégio de Aplicação, Universidade Federal do Acre, Rio Branco, AC, Brasil.
[10]. Programa de Pós-Graduação em Biodiversidade e Biotecnologia, Rio Branco, AC, Brasil.

**Abstract:**

**Introduction:** This study aimed to confirm the occurrence of *Panstrongylus rufotuberculatus* in the state of Acre, Brazil.

**Methods:** The four specimens of *P. rufotuberculatus* were obtained from the entomological collection of the Zoobotanical Park of the Federal University of Acre (UFAC).

**Results:** Confirmation of the occurrence of this species in the state of Acre increases the number of species already registered, from nine to ten.

**Conclusions:** The necessity to develop further studies was verified, especially with the domiciliary process of *P. rufotuberculatus*, resulting in tracing prophylactic measures against the vector transmission of *Trypanosoma cruzi*.

**Keywords:** Triatominae. American trypanosomiasis. Chagas disease.

Chagas disease or American trypanosomiasis is a neglected illness and is considered one of the main endemic diseases in Latin America[1]. In Brazil, it is estimated that more than 1.9 million people are affected, causing significant social and economic impacts[2].

The vector of this disease belongs to the family Reduviidae and subfamily Triatominae, which has 18 genera and 153 species (151 recent and 2 fossil species)[3,4]. In the state of Acre (Brazilian Western Amazon), 4 genera and 10 species have been described: *Rhodnius robustus* by Stal, 1872; *R. montenegrensis* by Rosa et al., 2012; *R. pictipes* by Stal, 1872; *R. neglectus* by Lent, 1954; *R. stali* by Lent, Jurberg & Galvão, 1993; *Panstrongylus geniculatus* by Latreille, 1811; *P. megistus* by Burmeister, 1835; *P. lignarius* by Walker, 1873; *Eratyrus mucronatus* by Stal, 1859; and *Triatoma sordida* by Stål, 1859[1,5,6].

The two most important genera for the vectorial transmission of Chagas disease are *Triatoma* and *Panstrongylus* because of their potential roles in domiciliation and high parasitic rates[2,3,8]. Both genera are already described for the state of Acre[1,5], but with the occurrence of few species.

The present study aimed to confirm the occurrence of the species *P. rufotuberculatus* in the state of Acre, Brazilian Western Amazon.

Four specimens of *P. rufotuberculatus* were found in the entomological collection of the Zoobotanical Park of the Federal University of Acre (UFAC). These were collected since 1994.
from açaí trees (*Euterpe oleracea*) at the Catuaba Experimental Reserve (10° 09'03"S, 67° 44'09"W) belonging to UFAC located in the municipality of Senador Guiomard, 27.2 km from Rio Branco, the capital of the state of Acre.

The triatomines were sent to the Laboratory of Tropical Medicine (LABMEDT) of the UFAC, where the species were identified based on the morphological characteristics described by Lent & Wygodzinsky\(^8\), Jurberg et al\(^2\), and Galvão\(^7\).

Three of the four triatomines were decayed and dried, and only one was intact. As such, no positivity test for trypanosomatids was performed to preserve the specimen.

The identification confirmed the occurrence of *Panstrongylus rufotuberculatus* (Figure 1) in the state of Acre. The present study used the terminology confirmation, since this species was previously quoted for Acre in an abstract published in the annals of the 64th Annual Meeting of the Brazilian Society for the Advancement of Science (SBPC) in 2014\(^9\). However, the abstract did not include a photograph of the specimen, and this report is not considered in scientific papers.

*P. rufotuberculatus* (Figure 1) shows a body with golden bristles on the dorsal surface; anterior pronotum lobe with reddish tubers; scutellum process that is rounded, conical, or truncated at the edge; segments of the connexival with a dark mark in the center; and light-green front wings\(^2\).

Confirmation of the occurrence of the species *P. rufotuberculatus* in the state of Acre was already foreseen by Galvão\(^7\). The present registry increased the geographic distribution of the species in Brazil to four states: Acre, Amazonas, Mato Grosso, and Pará, all belonging to the Brazilian Amazon (Figure 2). In addition to Brazil, *P. rufotuberculatus* has been found in Argentina, Bolivia, Colombia, Costa Rica, Ecuador, French Guiana, Mexico, Panama, Peru, and Venezuela\(^4\) (Figure 2).

The species *P. rufotuberculatus* has been shown to be able to infest human dwellings (incursion and domiciliation) and in peridomestic areas. It also can be naturally infected with *Trypanosoma cruzi*\(^4\), and this situation has already been described in Colombia\(^10\), Venezuela\(^11\), Argentina\(^12\), Costa Rica\(^13\), Peru\(^14\), and Ecuador\(^15\).

The occurrence of this triatomine in the state of Acre increases the number of species described for the state from
ten to eleven, demanding the development of further studies in order to expand our knowledge about their feeding habits, infection by *T. cruzi*, and its domiciliation, making it possible to appraise and establish prophylactic measures against the vectorial transmission of *T. cruzi*.

**Ethical considerations**

The specimens were collected with permission from the Brazilian Institute of Environment and Renewable Natural Resources [Instituto brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA)], permanent license Nr. 52260-1.

**Acknowledgments:** Fundação de Amparo à Pesquisa do Estado do Acre (FAPAC). Pró-Reitoria de Pesquisa e Pós-Graduação da Universidade Federal do Acre (UFAC). Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ).

**Conflict of Interest:** The authors declare that there is no conflict of interest.

**Financial Support:** Programa Pesquisa Para o SUS: Gestão Compartilhada em Saúde (PPSUS) 002/2016 - Fundação de Amparo à Pesquisa do Estado do Acre (FAPAC). Chamada Universal MCTI/CNPQ N° 01/2016.

**REFERENCES**

1. Ribeiro Castro MAL, de Souza Castro GV, de Souza JL, de Souza CR, Ramos LJ, Oliveira J, et al. First report of *Panstrongylus megistus* (Hemiptera, Reduviidae, Triatominae) in the State of Acre and Rondônia, Amazon, Brazil. Acta Trop. 2018;182:158-60.
2. Jurberg J, Rodrigues JMS, Moreira FFF, Dale C, Cordeiro IRS, Lamas Jr VD, et al. Atlas iconográfico dos triatomíneos do Brasil (vetores da doença de Chagas). Rio de Janeiro: Fundação Oswaldo Cruz; 2014. 58p.
3. Oliveira J, Alevi KCC. Taxonomic status of *Panstrongylus herreri* Wygodzinsky, 1948 and the number of Chagas disease vectors. Rev Soc Bras Med Trop. 2017;50(3):434-5.
4. de Oliveira J, Ayala JM, Justi SA, da Rosa JA, Galvão C. Description of a new species of *Nesotriatoma Usinger*, 1944 from Cuba and revalidation of synonymy between *Nesotriatoma bruneri* (Usinger, 1944) and *N. flavida* (Usinger, 1911) (Hemiptera, Reduviidae, Triatominae). J Vector Ecol. 2018;43(1):148-57.
5. Ramos LJ, Castro GVS, Souza JL, Oliveira J, Rosa JA, Camargo LMA, et al. First report of *Rhodnius neglectus* (Hemiptera, Reduviidae, Triatominae) from the State of Acre Brazil, and the Brazilian Western Amazon, Region. Rev Soc Bras Med Trop. 2018;51(2):212-4.
6. Terassini FA, Stefanello C, Camargo LMA, Meneguetti DUO. First report of *Panstrongylus lignonarius*, Walker, 1873 (Hemiptera, Reduviidae, Triatominae), in the State of Rondônia, Brazil. Rev Soc Bras Med Trop. 2017;50(4):547-9.
7. Galvão C. Vetores da doença de Chagas no Brasil. Curitiba: Sociedade Brasileira de Zoologia; 2014. 289p.
8. Lent H, Wygodzinsky PW. Revision of the Triatomíneos (Hemiptera, Reduviidae), and their significance as vectors of Chagas’ disease. Bull Am Mus Nat Hist. 1979;163(3):127-520.
9. Silva JV, Brilhante NA. Triatomíneos (Hemiptera, Heteroptera, Reduviidae) de Ocorrência em Rio Branco Estado do Acre Brasil. *In: Anais da 64ª Reunião Anual da Sociedade Brasileira par o Progresso da Ciências*; 2014.
10. Wolff M, Castillo D. Domiciliation Trend of *Panstrongylus rufotuberculatus* in Colombia. Mem Inst Oswaldo Cruz. 2002;97(3):297-300.
11. Reyes-Lugo M, Díaz-Bello Z, Abate T, Avilán A. Stridulatory sound emission of *Panstrongylus rufotuberculatus* Champion, 1899, (Hemiptera: Reduviidae: Triatominae). Braz J Biol. 2006;66(2a):443-6.
12. Salomon OD, Ripoll CM, Rivetti E, Carcavallo RU. Presence of *Panstrongylus rufotuberculatus* (Champion,1899) (Hemiptera: Reduviidae: Triatominae) in Argentina. Mem Inst Oswaldo Cruz. 1999;94(3):285-8.
13. Zeledón R, Ugalde JA, Paniagua LA. Entomological and ecological aspects of six silvatic species of Triatomines (Hemiptera, Reduviidae) from the collection of the National Biodiversity Institute of Costa Rica, Central America. Mem Inst Oswaldo Cruz. 2001;96(6):757-64.
14. Torres DB, Cabrera R. Geographical distribution and intra-domiciliary capture of sylvatic triatomines in La Convención Province, Cusco, Peru. Rev Inst Med Trop São Paulo. 2010;52(3):157-60.
15. Grijalva MJ, Villacís AG, Moncayo AL, Ocaña-Mayorga S, Yumiseva CA, Baus EG. Distribution of triatome species in domestic and peri-domestic environments in central coastal Ecuador. PLoS Negl Trop Dis. 2017;11(10):e0005970.

[OPEN ACCESS](https://creativecommons.org/licenses/by/4.0/)