First report of *Rhodnius montenegrensis* (Hemiptera, Reduviidae, Triatominae) in the State of Acre, Brazil

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ABSTRACT

**Introduction**: This paper reports, for the first time, the presence of *Rhodnius montenegrensis* in the State of Acre, Brazil. **Methods**: Two female *R. montenegrensis* were collected in a dwelling in the rural area of Rio Branco, Acre, Brazil. **Results**: The occurrence of this species was confirmed, and the number of Triatominae species in the State of Acre increased from four to five. **Conclusions**: Further studies should be performed to reach a clearer understanding of the ecology of this arthropod, its possible role in transmitting Chagas’ disease and rangeliosis, and its current geographical distribution in the region.

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

Triatomines, also known as conenose bugs, kissing bugs, or assassin bugs, are insects found throughout the Americas, distributed from the Southern part of the United States of America to Southern Argentina[1]. These insects are of great importance to public health as they are involved in transmission of South American trypanosomiasis, also called Chagas’ disease[2] in honor of Carlos Chagas who first described this disease in 1909[3],[4].

In Brazil, there are eight genera of Triatominae: *Alberprosenia*, *Belminus*, *Cavernicola*, *Eratyrus*, *Microtriatoma*, *Paranstrongylus*, *Psammolestes*, *Rhodnius*, and *Triatoma*[5],[6]. In the State of Acre, researchers have reported the occurrence of four species of triatomines, namely, *Rhodnius robustus*[7], *Rhodnius pictipes*, *Panstrongylus geniculatus*[8], and *Eratyrus mucronatus*[9]. However, some *R. robustus* specimens collected in Acre may have been erroneously described by some researchers[7] because of similarities with *Rhodnius montenegrensis*, which had not previously been shown to exist in this region.

*Rhodnius montenegrensis* was first described in 2012 from specimens collected in the municipality of Monte Negro, Rondônia, Brazil. These insects were initially identified as *Rhodnius robustus*; however, subsequent studies showed that *R. montenegrensis* was a new species distinct from *R. robustus*[10],[11].

In this study, we report, for the first time, the presence of *R. montenegrensis* in the State of Acre, Brazil.

Two female of *R. montenegrensis* were collected in a dwelling in the rural area of Rio Branco, Acre, Brazil (09°54′12.24″S, 67°50′11.00″W) on September 2014, with no characteristics of domiciliation on the site (Figure 1). The specimens were found in a dormitory built in masonry lined with wood without the occurrence of cracks, 200m from a forest fragment. Several palm trees of the *Attalea* genera were located close to the dwelling; these trees may have acted as natural ecotopes for the species. It is believed that the insects may have been attracted by the light from the residence. The species *R. montenegrensis* has been described as occurring in palms of genus *Attalea*[10] and *Orbignya*[11], similar to other species of the genus *Rhodnius*[2],[12], demonstrating the ecological importance of palm trees for these triatomines.

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 No. 10080-2].

The identification of triatomines was conducted in the Laboratory of Biological Sciences of the Federal University of Acre (UFAC), Rio Branco, Acre, Brazil, based on criteria previously described by Rosa et al[11]. Feces from the specimens were diluted in saline solution, prepared on microscope...
FIGURE 1 - Distribution of *Rhodnius montenegrensis* in Brazilian Amazonia. The black circles indicate the previously known distributions of *Rhodnius montenegrensis* in Rondônia\(^{(10,11)}\), and the red star indicates the new record of *Rhodnius montenegrensis* in Rio Branco, State of Acre, Brazil. RR: Roraima; AP: Amapá; AM: Amazonas; PA: Pará; MA: Maranhão; AC: Acre; RO: Rondônia; MT: Mato Grosso.

*Rhodnius montenegrensis* (Figure 2) showed some morphological differences from *R. robustus*, as follows. First, the head length of *R. montenegrensis* was significantly larger. Additionally, the anterior wings exhibited well-demarcated veins, notably the Sc veins, with a yellow tonality. *R. montenegrensis* also exhibited yellow legs, and the overall color of the insect was yellow, with the exception of a black stripe on the posterior tibial portion at the tarsus limit. The mesosternum exhibited two lateral stripes and one central stripe, delimiting two dark areas. The metasternum featured two yellow stripes between the medial coxa, delimiting a dark area in the center. On the abdomen, yellow spots interposed with dark spots were observed lengthwise over the ventral abdomen. Respiratory spiracles at the ventral abdomen are yellow for *R. robustus*, differing from those of *R. montenegrensis*, which are darker\(^{(11)}\).

The two specimens collected in this study were naturally infected with trypanosomatids. Thus, further studies are needed to confirm the species in order to better understand the ecological context and host-parasite relationships of triatomines in this region.

The presence of this additional triatomine species in the State of Acre increases the number of species from four to five, demonstrating that the biodiversity of these vectors may have been underestimated. Surrounding areas, such as Bolivia and the Brazilians States of Amazonas and Rondônia, have 16, 10, and 6 different species, respectively\(^{(5,8,11,12,13)}\). Therefore, further studies are needed to determine the triatomine fauna and their distributions throughout the state, particularly for species of the genus *Rhodnius*, which facilitate autochthonous transmission of American trypanosomiasis\(^{(8)}\) and are vectors of *Trypanosoma rangeli*, which is responsible for the occurrence of more than 2,700 human cases of rangeliosis\(^{(10)}\), with cases in the States of Amazonas and Bahia, Brazil\(^{(14,15)}\).
CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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**FIGURE 2** - A) Dorsal and B) Ventral views of *Rhodnius montenegrensis* individuals found in the municipality of Rio Branco, State of Acre, Brazil. C) Dorsal and D) Ventral views of *Rhodnius robustus*. 