

## Scientific Note

**Two new records of Triatominae (Hemiptera: Reduviidae) from Roraima state, Brazil**

Dos nuevos registros de Triatominae (Hemiptera: Reduviidae) en el estado de Roraima, Brasil

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**Abstract.** Adult triatomines were collected with a luminous trap and by hand in June and November 2016 in the Mucajai and São João da Baliza counties, in Center-Southern and Southern Roraima, Brazil. *Eratyrus mucronatus* Stål, 1859 and *Rhodnius montenegrensis* Rosa et al. 2012 are recorded for the first time in the Roraima state. The finding of *E. mucronatus* and *R. montenegrensis* in that area has expanded their known geographical distribution within Brazil and increased the number of records of triatomine species in Roraima state from 4 to 6.

**Key words:** Chagas disease, *Eratyrus mucronatus*, *Rhodnius montenegrensis*.

**Resumen.** Triatominos adultos fueron recolectados con una trampa luminosa y manualmente en junio y noviembre de 2016 en los estados de Mucajai y São João da Baliza, en el centro-sur y sur de Roraima, Brasil. Se registran por primera vez *Eratyrus mucronatus* Stål, 1859 y *Rhodnius montenegrensis* Rosa et al. 2012, en el estado de Roraima. El hallazgo de estas especies amplía la distribución geográfica conocida hasta ahora en Brasil e incrementa de 4 a 6 el número de registros de especies de triatominos en este estado.

**Palabras clave:** Enfermedad de Chagas, *Eratyrus mucronatus*, *Rhodnius montenegrensis*.

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Triatominae is a subfamily of hematophagous insects, widely distributed in the Americas and important from a public health viewpoint for being vectors of *Trypanosoma cruzi* Chagas, 1909, which is the etiologic agent of the human trypanosomiasis known as Chagas disease (Otálora-Luna et al. 2015; Sandoval et al. 2010; Coura and Dias 2009).

Currently, Triatominae includes 154 species, of which 67 have been found in Brazil (Dorn et al. 2018; Lima-Cordón et al. 2019; Nascimento et al. 2019; Oliveira et al. 2018; Poinar 2019). Although around 20 species of Triatominae (Coura and Junqueira 2015; Galvão 2014; Galvão et al. 2003; Rosa et al. 2012), have been recorded in the North region of the country, only four of them *Panstrongylus geniculatus* (Latreille, 1811), *Triatoma maculata* (Erichson, 1848), *Rhodnius pictipes* Stål, 1972 and *Rhodnius robustus* Larrousse, 1927 have

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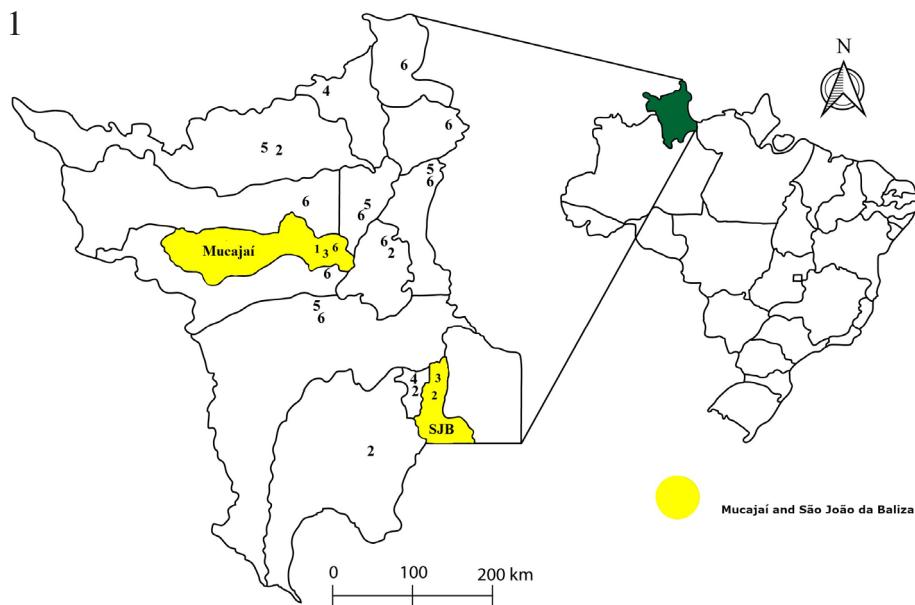
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been registered in the state of Roraima, which suggests that triatomine species have been undersampled there (Luitgards-Moura *et al.* 2005; Ricardo-Silva *et al.* 2016).

In Southern Roraima, *R. pictipes* and *R. robustus* were found in the peridomicile and extradomicile (Luitgards-Moura *et al.* 2005) in association with maripa palms (*Attalea maripa* (Aubl.) Mart.), whereas in Northern Roraima *P. geniculatus* and *T. maculata* were found both in the intradomicile and peridomicile, especially in henhouses (Luitgards-Moura *et al.* 2005). *T. maculata* was also found in the domiciles of an old residential complex in the urban area of Boa Vista, associated with pigeon nests (Ricardo-Silva *et al.* 2016).

In this regard, this work aims to record the occurrence of *Eratyrus mucronatus* Stål, 1859 and *Rhodnius montenegrensis* Rosa *et al.* 2012 in the state of Roraima.

*Eratyrus mucronatus* was collected in June 2016 inside a dwelling in Mucajáí. *R. montenegrensis* was captured both in Mucajáí and São João da Baliza, in September and November 2016. In Mucajáí, specimens of *R. montenegrensis* were captured in a forest environment using a Pennsylvania light trap; in São João da Baliza the specimens were captured manually with the aid of tweezers inside dwellings. Some specimens were also captured in the extradomicile after being attracted to a light pole. The specimens were captured in June and November 2016 in the cities of Mucajáí and São João da Baliza, in the center-south and south regions of Roraima, respectively (Fig. 1).



**Figure 1.** Points of occurrence of Triatominae in the state of Roraima. (1) *Eratyrus mucronatus* (new record), (2) *Panstrongylus geniculatus*, (3) *Rhodnius montenegrensis* (new record), (4) *R. pictipes*, (5) *R. robustus*, (6) *Triatoma maculata*. State of Roraima marked with green; yellow markings: new points of occurrence.

The vegetation in Mucajáí basically consists of dense tropical rainforests of low and medium altitude, except in the far northeast of the city, where sparse grass and scattered shrubs dominate the landscape, a vegetation similar to "Cerrado" and locally known as *lavrado* ('ploughed land'). The city has a tropical monsoon climate with temperatures varying between 20 °C and 35 °C. The rainy season takes place between mid-April and the beginning of August. The vegetation and climate in the city of São João da Baliza are typical of Amazonian region: tropical rainforests and tropical monsoon climate with temperatures ranging from 28 °C to 38 °C and high rainfall levels, the annual average being 1,500 mm.

A sample of the specimens identified as *E. mucronatus* and *R. montenegrensis* was preserved in 70% alcohol and sent to the laboratory of the Faculty of Pharmaceutical Sciences of the São Paulo State University (Unesp) for confirmation of the species. Photographs were taken with a FUJI Fine Pix S-4000 digital camera attached to an Olympus SZ61 stereo microscope. All the research material was dry preserved or preserved in 70% alcohol (in the case of *R. montenegrensis*) and kept in the laboratory of the Roraima State Nucleus of Entomology (NEE). The map was made by the program QGIS software 3.10.2.

**New records.** *Eratyrus mucronatus*. Brazil. 1 adult male, city of Mucajaí, Vicinal Cachoeirinha, 2°19'47,4"N / 60°50'50,7"W, 03/06/2016, Santos, F.M. col. (NEE) (CEJMSB 859). *Rhodnius montenegrensis*. Brazil. 1 adult male, city of São João da Baliza, Vicinal 21, km 3, Recanto do Cajueiro, 2°29'05,98"N / 59°29'30,76"W, 16/11/2016, Santos, F.M. col. (NEE). 2 adult females, city of São João da Baliza, Vicinal 21, km 3, Recanto do Cajueiro, 2°29'05,98"N / 59°29'30,76"W, 16/11/2016, Santos, F.M. col. (NEE). 2 adult females, city of São João da Baliza, Vicinal Tamandaré I, 2°28'51,62" N; 60°55'33,82" W, 18/09/2015, Gama Neto, J.L. col. (NEE) (CEJMSB 860).

The species were identified based on the identification key proposed by Galvão (2014) and, when necessary, by checking their original description (Rosa *et al.* 2012).

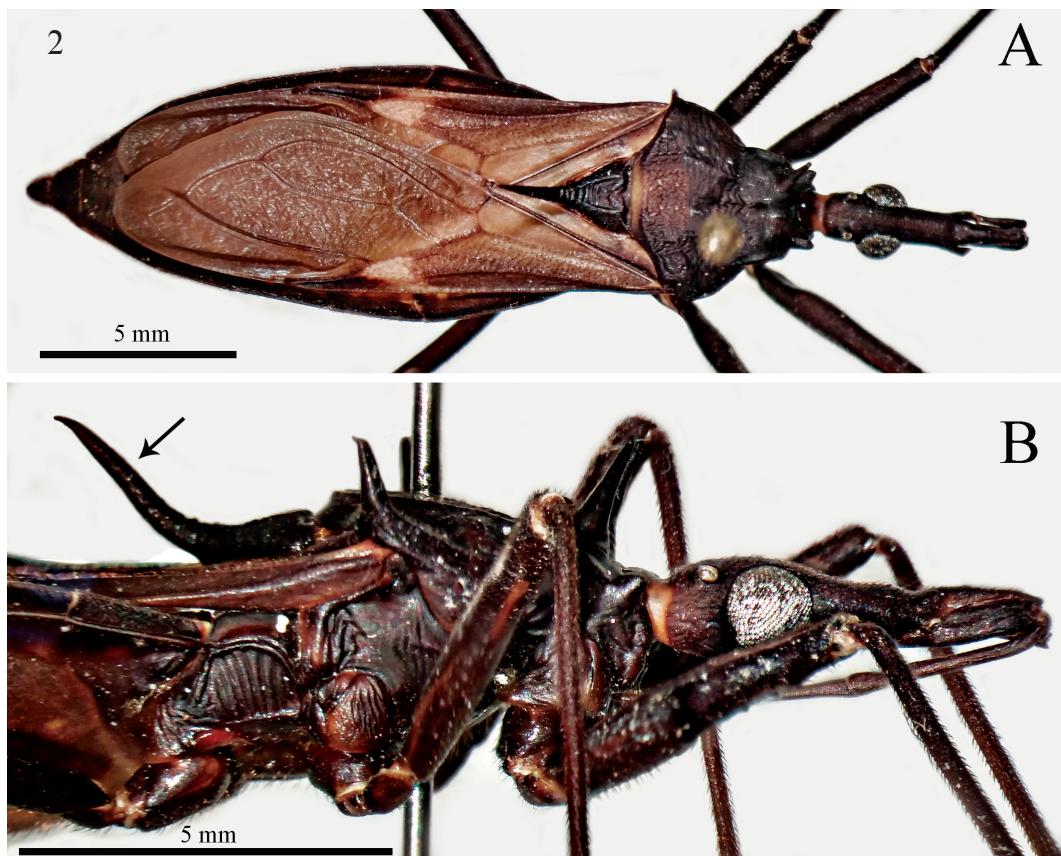
## Discussion

The genus *Eratyrus* contains two species, *E. cuspidatus* and *E. mucronatus*, both being characterized by having the first segment of the rostrum very long when adults, ending at halfway the distance between the antenniferous tubercle and the anterior border of the eye; the scutellum having an oblique apical process with the shape of a pointed thorn, as lengthy as or lengthier than the main body of the scutellum (Galvão 2014; Páez-Rondón *et al.* 2019).

*Eratyrus mucronatus* (Fig. 2) is primarily sylvatic (Monte *et al.* 2014) and widely distributed in Central and South Americas, with records of occurrence in Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guatemala, Guyana, Panama, Peru, Suriname, Trinidad and Tobago, Venezuela; always east of the Andes and never in altitudes above 700 m (Carcavallo *et al.* 1998, 2003).

In Brazil, *E. mucronatus* occurs in tropical rainforests in the states of Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Pará, Rondônia and Tocantins, and is found in palm trees, rocks and tree hollows (Galvão *et al.* 2003; Meneguetti *et al.* 2011; Obara *et al.* 2015; Rebêlo *et al.* 1998). Since it has been found naturally infected with *T. cruzi* (Depickère *et al.* 2012; Galvão 2014; Guhl 2007; Noireau *et al.* 1995; Rojas *et al.* 2008; Torres and Cabrera 2010) and is strongly attracted to artificial light sources, occasionally invading houses (Páez-Rondón *et al.* 2019; Monte *et al.* 2014; Morocoima *et al.* 2010; Rangel-Avendaño *et al.* 2011; Soto Vivas *et al.* 2001), it can be regarded as a candidate vector of *T. cruzi* to humans. Therefore, it is important to have its occurrence updated and to identify the localities where this species has been found inside dwellings (Obara *et al.* 2015).

*Rhodnius montenegrensis* is also primarily sylvatic and was found in palm trees of the genera *Attalea* and *Orbignya* (Rosa *et al.* 2012) in the Brazilian states of Acre and Rondônia (Meneguetti *et al.* 2015; Rosa *et al.* 2012). Only recently it was found in Roraima, but the hypothesis that the previous specimens collected were erroneously identified as *R. robustus* can not be ruled out because adults of these two species are very similar, except that *R. montenegrensis* has yellow legs with a black stripe on the posterior portion of the tibia, ventral portion of the abdomen with yellow stains interspersed with dark ones, and dark respiratory spiracles (Fig. 3), whereas *R. robustus* has brown legs without any black stripe on the tibia, ventral portion of the abdomen without yellow stains interspersed with dark ones, and respiratory spiracles surrounded by yellow (Rosa *et al.* 2012).



**Figure 2.** *Eratyrus mucronatus*. A) Dorsal habitus, B) Thorax and head, lateral view; the arrow points to the process of scutellum, clearly facing upwards.

Females of *R. montenegrensis* have already been captured in a dwelling in the rural area of the city of Rio Branco, Acre, possibly attracted by light (Meneguetti *et al.* 2015), similarly to what happened with some specimens collected in this work. The two females captured in Acre were naturally infected by trypanosomatids, and more studies are necessary to provide a better understanding of the role of this species in the transmission of *T. cruzi* to humans.

In the Apolo region, Bolivia, its domiciliation has already been demonstrated, particularly in the peridomicile, being infected with *T. cruzi* (Depickère *et al.* 2012). In Manaus, its intrusion without domicile has already been observed (Castro *et al.* 2010), but it is usually found in home environments (Depickère *et al.* 2012; Obara *et al.* 2013). It has already been collected casually in a forest reserve in the state of Rondônia, and through light traps, without positivity for *T. cruzi* (Meneguetti *et al.* 2011). Some studies suggest that *E. mucronatus* can adapt quickly to stable artificial ecotopes, when their natural habitats are destroyed by anthropic actions (Otálora-Luna *et al.* 2015), showing its potential as a wild vector of Chagas disease, even though considered by some researchers as a wild species of little epidemiological importance (Cuba *et al.* 2002; Lent and Wygodzinsky 1979).

Now that *E. mucronatus* and *R. montenegrensis* were found in Roraima, there are six Triatominae species recorded for the state. Nevertheless, further research probably can lead to other species being found there.



Figure 3. *Rhodnius montenegrensis*. Habitus: A) Dorsal; B) Ventral.

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