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PENSOFT

First records and distribution extensions of ericrocidine and epeoline bees (Apidae, Apinae and Nomadinae) in the Brazilian Pantanal

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Abstract

In the last check list of bee species for Mato Grosso do Sul state, neither *Ctenioschelus goryi* (Romand, 1840) nor *Mesocheira bicolor* (Fabricius, 1804) were recorded from this state. *Hopliphora velutina* (Lepeletier & Serville, 1825 and *Thalestria spinosa* (Fabricius, 1804), although reported from Mato Grosso do Sul, were not previoulsy known in the Pantanal. This paper reports the first records and extends the current distributions of these 4 species of Ericrocidini and Epeolini bees in the Brazilian Pantanal.

Key words

Mato Grosso; Mato Grosso do Sul; range extension, wetland.

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Introduction

The tribe Ericrocidini (Apidae, Apinae) are kleptoparasitic bees and Centridini (Apidae, Apinae) are reported as the main principal host group; they introduce their eggs into the closed cells of the hosts being attacked at the cell closure site or the nearby cell wall (Michener 2007). The Ericrocidini consists of 11 genera, including *Ctenioschelus, Hopliphora*, and *Mesocheira*, and occurs in the Americas, with highest diversity in the Amazon region (Silveira et al. 2002, Moure and Melo 2012). The genus *Ctenioschelus* Romand, 1840 has as its type species *Ctenioschelus goryi* (Romand, 1840), from Costa Rica, and until Thiele (2005), only *C. goryi* was described. Currently, there are no host records for *C. goryi*, but it is distributed from northern Costa Rica to northern Argentina (Thiele 2008). In Brazil, this species is mainly recorded in the Brazilian savanna biome (Silveira et al. 2002, Alves-dos-Santos 2009). *Hopliphora* Lepeletier, 1841 are large bees (16–23 mm long), with some species being faintly metallic (Michener 2007). Only *Hopliphora velutia* (Lepeletier & Serville, 1825) is known from Brazil. It is widely distributed in Brazil and in the Argentine Chaco region (Silveira et al. 2002), but little known is about its biology. Aoki et al. (2012) first reported this species in Mato Grosso do Sul, in the Amolar region. *Mesocheira bicolor* (Fabricius, 1804) appears to be the only species and is distributed throughout the tropical region of the Americas, from Paraguay to Mexico. This species is rarely recorded in inventories and little is known about their possible hosts (Silveira et al. 2002, Michener 2007).

The tribe Epeolini (Apidae, Nomadinae) is a diverse assemblage of parasitic bee species and is especially diverse in the New World, particularly in South America (Michener 2007, Rightmyer 2006). Epeolines parasitize a wide variety of distantly related bees in the families Col-

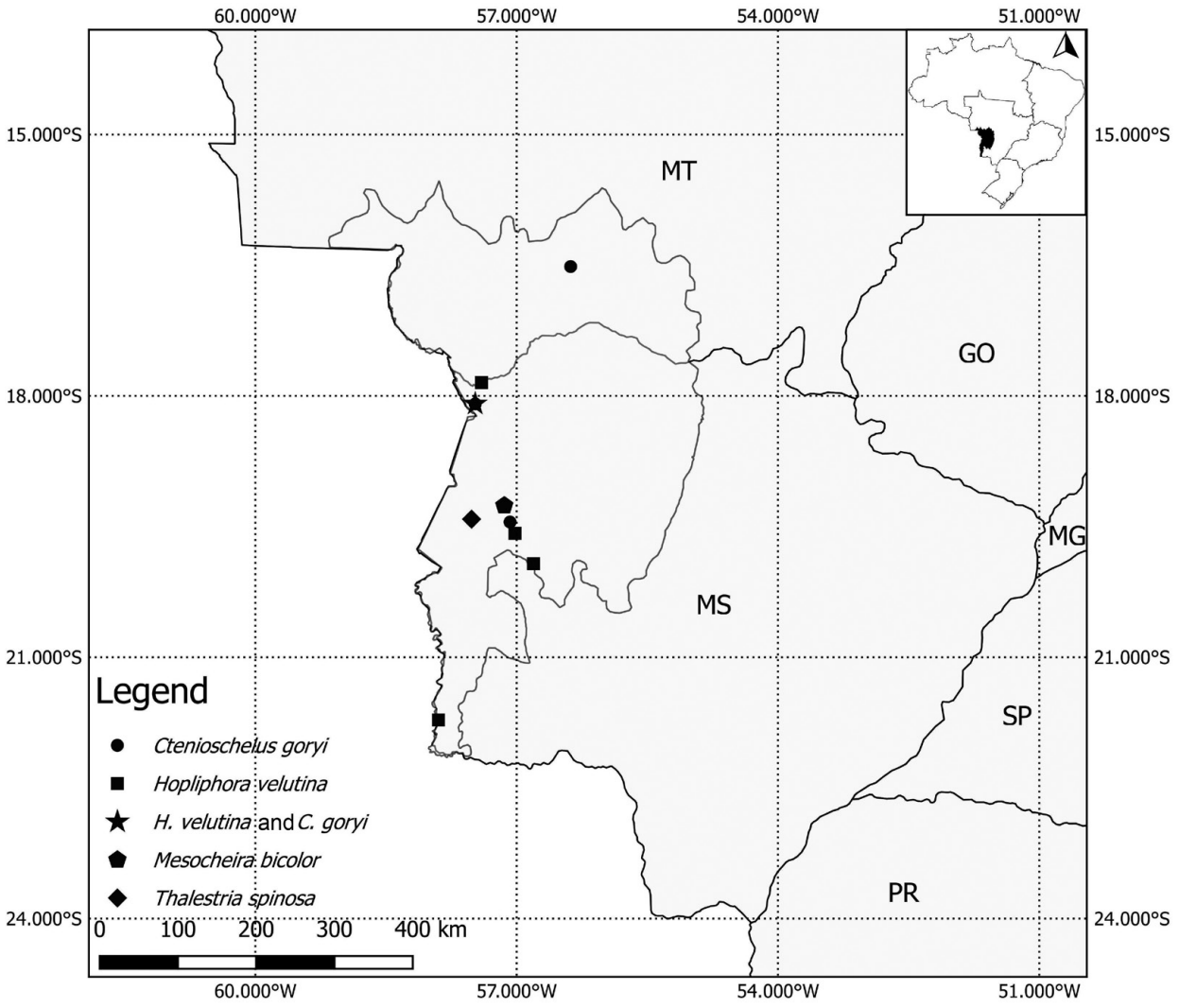

Figure 1. Sampled area and geographic records of *Ctenioschelus goryi* (Romand, 1840), *Hopliphora velutina* (Lepeletier & Serville, 1825), *Mesocheira bicolor* (Fabricius, 1804) and *Thalestria spinosa* (Fabricius, 1804) in the Brazilian Pantanal of Mato Grosso and Mato Grosso do Sul (MS) states, Brazil. Surrounding States: PR: Paraná, SP: São Paulo, MG: Minas Gerais, GO: Goiás. Geodetic datum: WGS84.

letidae, Andrenidae, Halictidae, and Apidae (Emphorini, Eucerini, and Anthophorini) (Rozen 2001). *Thalestria spinosa* (Fabricius, 1804) has been recognized as the only species in Brazil and is a parasite of the nests of *Oxaea* (Apidae, Andreninae). It has a wide distribution from Costa Rica to Argentina and is present over all of Brazil (Silveira et al. 2002, Moure and Melo 2012).

This paper presents a new record of *Ctenioschelus goryi* in Mato Grosso and Mato Grosso do Sul, a new record of *Mesocheira bicolor* in Mato Grosso do Sul, and extends the range distribution of *Hopliphora velutia* and *Thalestria spinosa* with new records in the Brazilian Pantanal.

Methods

At approximately 150,000 km^2, the Pantanal is the world's largest floodplain and an important ecosystem for the conservation of biodiveristy (Harris et al. 2005, Zedler and Kercher 2005, Keddy 2010, Alho and Sabino 2011). However, this is an area where little is known about the bee fauna. The climate of the region is tropical subhumid, with dry winters and rainy summers, and the average annual precipitation varies between 800 and 1500 mm (Zavattini 2004).

Data collection was carried out in the Brazilian Pantanal during November 2015 and March 2016. All specimens were collected through active search using an entomological net. Approximately 50 h were spent at each sample site. All specimens were preserved in 70% alcohol. This research project was carried out under collection authorization permission from MMA and ICMBio (n: 48939-3 issued in 11/05/2015).

To identify specimens to genera, the key by Silveira et al. (2002) was used. Thiele (2008) and Rightmyer (2006) were used for identifications to species.

Results

Ctenioschelus goryi (Romand, 1840)
Figure 2

New records (Fig. 1). Mato Grosso do Sul. Sesc Baía das Pedras Park, municipality of Poconé, 16°30′20″ S,

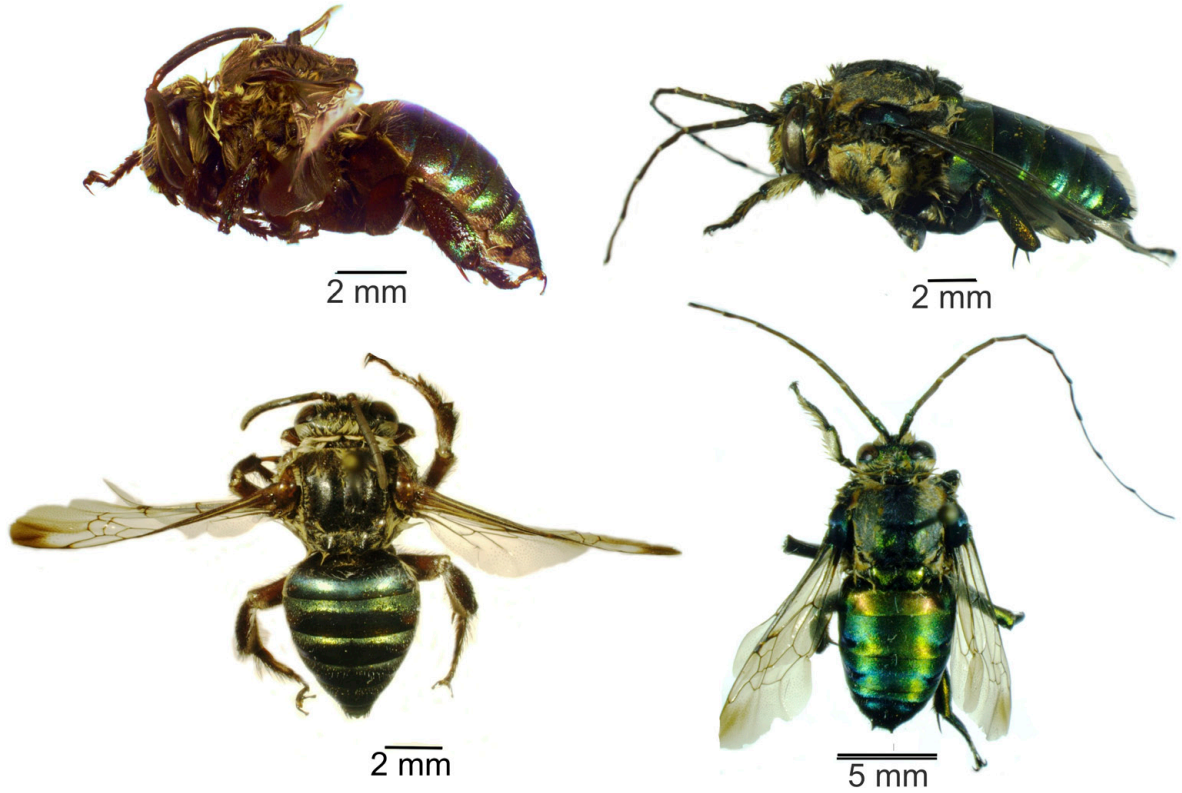

Figure 2. Female (left) and male (right) of *Ctenioschelus goryi* (Romand, 1840) collected at municipality of Poconé, 16°30′20″ S, 056°24′25″ W (♀) and Corumbá, 19°24′54″ S, 057°30′59″ W (♂) in the Brazilan Pantanal (♂ ZUFMSHYM00334, ♀ ZUFMSHYM00335).

056°24′25″ W, 125 m above sea level (a.s.l.), leg. R. Aranda, 8–11 Nov. 2015 (ZUFMSHYM00335, 1 ♀ specimen). Private Reserve of Natural Heritage Engenheiro Eliezer Batista, municipality of Corumbá, 17°50′47″ S, 057°24′14″ W, 105 m a.s.l., leg. R. Aranda, 7–10 Dec. 2015 (1 ♀ specimen, not vouchered). Pantanal Field Station of the Federal University of Mato Grosso do Sul and surroundings, on the right bank of the Miranda River between the Miranda and Abobral regions of the Pantanal, municipality of Corumbá, 19°34′35″ S, 057°01′07″ W, 91 m a.s.l., leg. R. Aranda, 13–15 Jan. 2016 (ZUFMSHYM00334, 1 ♂ specimen).

Remarks. *Ctenioschelus* spp. can be distinguished by their generally exposed scutellum tubers, and very long male antennae with the flagellum surpassing the apex of the metasoma. *Ctenioschelus goryi* was identified by the following combination of characteristics: blue-green with violet reflection in metasoma; female frons with violet iridescence, mesoscutum with strong violet iridescence; dorsal surface of mesoscutellar tubercles convex; male flagellomeres 7–10 and conspicuously clavate; mesoscutum and often first 3 metasomal terga with strong violet iridescence.

Hopliphora velutia (Lepeletier & Serville, 1825)
Figure 3

New records. Mato Grosso do Sul. National Park of Pantanal Matogrossense, municipality of Poconé, 17°50′46″ S, 057°24′09″ W, 71 mm a.s.l., leg. R. Aranda, 7–10 Dec. 2015 (2 ♀ specimens, not vouchered). Private Reserve of Natural Heritage Engenheiro Eliezer Batista, municipality of Corumbá, 17°50′47″ S, 057°24′14″ W, 105 m a.s.l., leg. R. Aranda, 4–6 Dec. 2015 (2 ♀ specimens, not vouchered). Fazenda Arara Azul, municipality of Corumbá, 19°20′56″ S, 057°00′60″ W, 90 m a.s.l., leg. Aranda, R. col, between 19–22 Jan. 2016 (ZUFMSHYM00336, 1 ♀ specimen). Fazenda Bela Vista, municipality of Miranda, 19°55′38″ S, 056°48′37″ W, 110 m a.s.l., leg. R. Aranda, 2–5 Feb. 2016 (1 ♀ specimen, not vouchered). Hotel Camalote, municipality of Porto Murtinho, 21°43′09″ S, 057°53′47″ W, 78 m a.s.l., leg. R. Aranda, 25–28 Feb. 2016 (4 ♀ specimens, not vouchered). (Figure 1).

Remarks. The species was recorded in a region characterized by mountain ranges on the western border of the Pantanal, reaching altitudes up to 300 m, open areas with flooded fields, and "capões" (vegetation islands) and riparian forest of Miranda River, Paraguay River and Chaco vegetation.

Hoplihora velutia is distinguished by the absence of metallic hairs, the protuberant and bidentate pre-apical carina, and the third submarginal cell measured along its half length that is at least as large as the second submarginal cell.

Mesocheira bicolor (Fabricius, 1804)
Figure 4

New records (Figure 1). Mato Grosso do Sul. Pantanal Park road, at approximately km 53, Porto da Manga region, municipality of Corumbá 19°15′30″ S, 057°08′28″

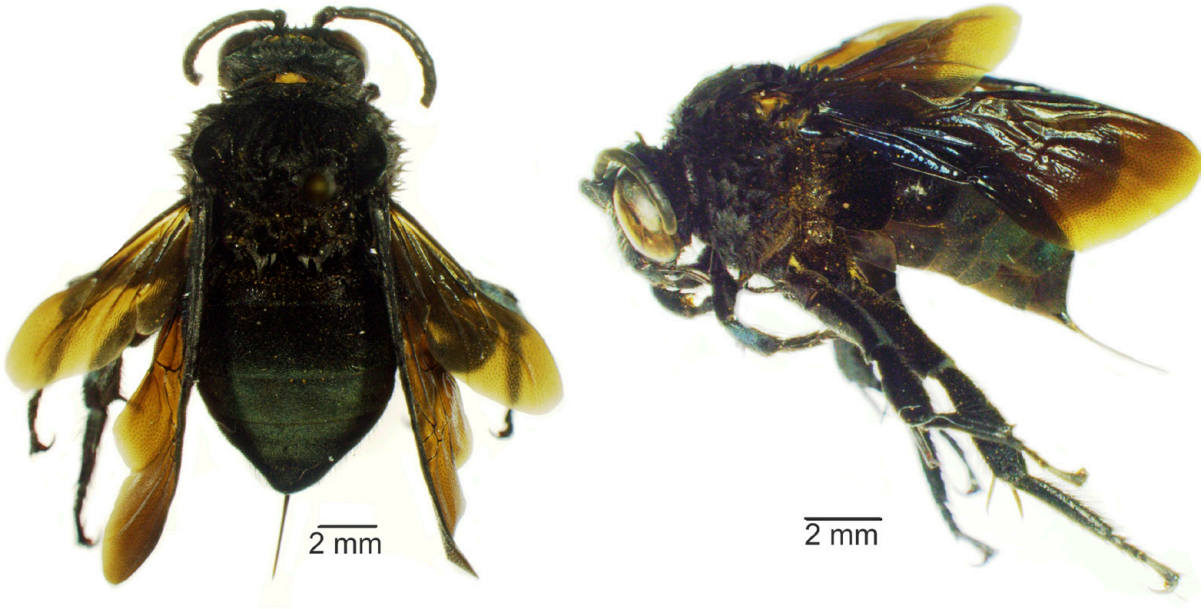

Figure 3. Female *Hopliphora velutina* (Lepeletier & Serville, 1825) collected at municipality of Corumbá, 19°24′54″ S, 057°30′59″ W in the Brazilan Pantanal (ZUFMSHYM00336).

Figure 4. Female *Mesocheira bicolor* (Fabricius, 1804) collected at municipality of Corumbá, 19°24′54″ S, 057°30′59″ W, in the Brazilan Pantanal (ZUFMSHYM00337).

W, 85 m a.s.l., leg. R. Aranda, 17–19 Jan. 2016 (ZUFMSHYM00337, 1 ♀ specimen) (Fig. 4).

Remarks. The new record came from floodplain area with receding and temporary lagoons near the right bank of the Paraguay River and having a predominance of undergrowth and palm trees (*Copernicia australis*).

Mesocheira bicolor was distinguished by its scutellum with 2 flattened, backward directed processes, with broadly curved apices. The genus seems to present a single species (Silveira et al. 2002).

Thalestria spinosa (Fabricius, 1804)
Figure 5

New records (Fig. 1). Mato Grosso do Sul. Municipality of Corumbá, 19°24′54″ S, 057°30′59″ W, 86 m a.s.l., leg. R. Aranda, 7–9 Dec. 2015 (ZUFMSHYM00339, 1 ♀ specimen).

Results. This species was recorded in an area of small rural settlements in a region that is characterized by Brazilian Savanna forest type.

Thalestria spinosa is distinguished by the bright metallic blue and green scales on the body. The pterostigma is relatively small. The preoccipital carina is well below the ocelli on the posterior surface of the head. The 2 plate-like integumental structures meet at an angle along an impressed line on the vertex behind the median ocellus. The eyes are relatively large.

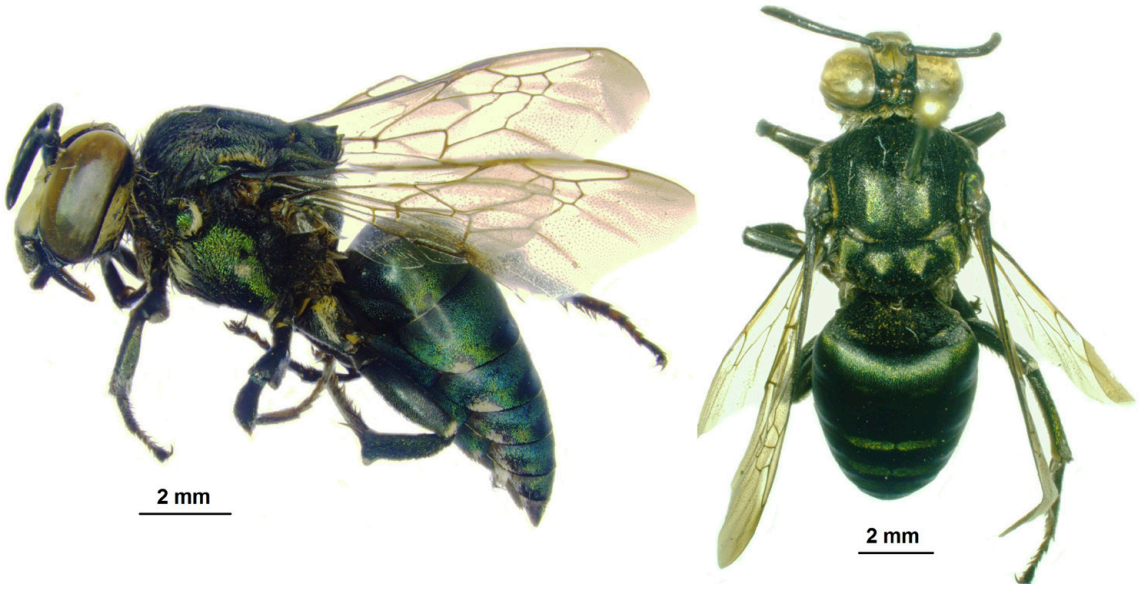

Figure 5. Female *Thalestria spinosa* (Fabricius, 1804) collected in the municipality of Corumbá, 19°24′54″ S, 057°30′59″ W, in the Brazilan Pantanal (ZUFMSHYM00339).

Discussion

Ctenioschelus goryi is the only species recognized in Brazil, where it has been recorded from the states of Bahia, Espírito Santo, Minas Gerais, Pará, Paraíba, Paraná, Rio de Janeiro, Rio Grande do Sul, and São Paulo (Silveira et al. 2002). The new record is the first from Mato Grosso do Sul, because in the last inventory of bees of this state, Lima and Silvestre (2017) did not report *C. goryi* from Mato Grosso do Sul. This species seemingly occurs in Brazilian states within the Cerrado biome (Silveira 2002, Alves-dos-Santos 2009) and is reported more frequently in dry forests in Costa Rica (Thiele 2005). Apparently this species has a wide distribution, but because it is not representative in inventories and zoological collections, its actual geographical distribution is largely unknown. The new record of *C. goryi* in the Pantanal extends this species' occurrence to this biome.

Currently, *Hopliphora velutina* is the only species of its genus in Brazil, where it occurs in Mato Grosso, Minas Gerais, Pará, Paraná, Rio Grande do Sul, Goiás, Santa Catarina, and São Paulo (Silveira et al. 2002, Moure and Melo 2012). In the last inventory of bees of Mato Grosso do Sul, Lima and Silvestre (2017) did not report *H. velutina*. However, Aoki et al. (2012) reported it from the Amolar region in the Brazilian Pantanal (Fig. 1B, sample point 2) during an inventory in Eliezer Batista Private Reserve of Natural Heritage, but because no material was deposited in the state collection, this species went unreported by Lima and Silvestre (2017). Aoki et al. (2012) observed *H. velutina* visiting only 1 plant species, *Melochia pyramidata* (Malvales, Malvaceae). Because this species is unrepresented in inventories and zoological collections it is difficult to determine its actual geographical distribution. The new record of *H. velutina* extends the occurrence of this species in the Brazilian Pantanal.

Mesocheira bicolor is the only described species. It is distributed throughout the tropical region of the Americas, from Mexico to Paraguay, and in Brazil, it occurs in Bahia, Minas Gerais, and São Paulo (Silveira et al. 2002). In the last inventory of bees of Mato Grosso do Sul, Lima and Silvestre (2017) did not report *M. bicolor*. Apparently this species has a wide distribution and may also occur in Goiás since it occurs in states, such as Bahia, to the northwest.

Thalestria spinosa is the only described species in its genus. It is a parasite of nests of *Oxaea* (Apidae, Andreninae) and is widely distributed from Costa Rica to Argentina. It may occur over the entire territory of Brazil (Silveira et al. 2002). This species is currently known from Dourados, southern Mato Grosso do Sul (Henrique et al 2006, Lima and Silvestre 2017) and the Aporé-Sucuriú Complex, northern Mato Grosso do Sul (Aoki and Sigrist 2006), as well as in the south-central region of this state (Polatto et al. 2014). All records are from areas of Cerrado or Cerrado–Atlantic forest transitions. This new record extends the distribution of this species to the Pantanal.

The shortage of taxonomists specializing in bees in the 2 Brazilian states in which this study was conducted certainly contributes to the lack of occurrence records for the four species reported here. The new records extend the current distribution of 4 bee species of the tribes Ericrocidini and Epeolini and contributes to our understanding of bee diversity in the Brazilian Pantanal.

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