



RESEARCH ARTICLE - WASPS

Updating the geographic records of social wasps (Vespidae: Polistinae) in Roraima state

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Abstract

The Roraima state in Brazil is part of Northern Amazon, an area harboring high biodiversity and high degree of endemism. Nevertheless, there are few studies on diversity of social wasps occurring in this region. This study presents a list of social wasps (Vespidae: Polistinae) collected actively and using Malaise, Suspended and Light trap in six localities in Roraima state. A total of 85 species of 14 genera were collected. Forty-five of these species are new distribution records to Roraima state, some species are not common found in the collections and lists of species, and some are recorded for the second time to Brazil or the Amazon region. This increase may be an indication that the Polistinae richness is probably higher in the regions studied and that Roraima may well contain a number of additional (as yet unrecorded) social wasp species. More comprehensive studies are needed in order to increase the knowledge of wasp species in Roraima, contributing to increased knowledge of the diversity in Northern Brazil.

Introduction

Many areas of Brazil lack the most basic biodiversity studies, particularly in the case of invertebrates. In order to develop any effective conservation proposals, it is first of all necessary to acquire knowledge of the species that occur in a particular area (Melo et al. 2005). This taxonomic baseline is obtained by conducting biodiversity inventories.

Vespidae is a family of wasps that includes over 5.018 valid species worldwide and despite the worldwide distribution of some species they are found in high abundance in the tropical region (Pickett & Carpenter, 2010). Polistinae social wasps comprise 26 genera and 958 species (Pickett & Carpenter, 2010); the subfamily is divided in four tribes: Ropalidiini, Polistini, Myschocyttarini and Epiponini except for Ropalidiini, the other tribes are represented in Brazil (Carpenter & Marques, 2001). *Polistes* Latreille, *Mischocyttarus* de Saussure and the 19 genera of Epiponini compound the Brazilian fauna

of wasps totalizing about 300 species, in Brazil is among the richest in the world, with 321 species (Carpenter & Marques, 2001; Hermes et al., 2017).

Brazilian Amazon rainforest has one of the greatest biodiversity in world, being registered the higher diversity of social wasps in this biome - 20 genera and more than 200 species were recorded, representing about 70% of the Brazilian fauna of social wasps (Silveira, 2002; Somavilla et al., 2014; Barbosa et al., 2016).

Recently, some studies have been carried out in the Brazilian Amazon in Acre State (Morato et al., 2008), Amapá State (Silveira et al., 2008), Amazonas State (Silveira et al., 2008; Somavilla et al., 2014, Somavilla et al., 2015; Somavilla & de Oliveira, 2017), Maranhão State (Somavilla et al., 2014), Pará State (Silveira, 2002; Silva & Silveira, 2009) and Roraima State (Raw, 1998). Despite the constant effort in studies about social wasps conducted in Brazil, little is known regarding their diversity and distribution in the Amazon region.



Furthermore, for Roraima there are only one work about social wasp in Estação Ecológica de Maracá (Raw, 1998) in addition to the previous records from Richards (1978), they reporting 40 species for this state. Moreover, it is an area close to Venezuela and Guiana, regions known for presenting endemic species for different groups of organisms, but about the diversity of social wasps in this part of Amazon is very little known, generating a gap in knowledge about the species occurring in North Amazon of Brazil.

The purpose of this work was to present an updated about the geographic records of social wasps' fauna in Roraima state.

Material and Methods

Characteristic of the Roraima State

Roraima state, located in the center-north from the Amazon region, it has an area of ~224.300 km², represents 3% inserted in the field of Amazonian ecosystem and 2.6% of the Brazilian territory (Roraima, 2005). There is the largest continuous block of savannas in the Brazilian Amazon (Barbosa et al., 2005).

Roraima has the "lavrado" and open areas of the south of the state, with 43,281 km² and 17,500 km² respectively, occupying ~ 27% of the territory. The region North and northwest of Roraima cover a mountainous system with strong tectonic structural contact between the Parima and Pacaraima. That can reach 1.100 m (Serra do Tepequém) or near to 1.700 m (Serra da Mocidade) (Barbosa, 1997; Carvalho et al., 2016).

The climatic type of the region defined as Aw with well-defined dry period, but of greater intensity in the months of December to March (northeast of Roraima), Af with a high annual rainfall - > 2.000 mm (southern region) and Am with intermediate between the other climatic types, with not so defined dry period and medium annual rainfall - > 1.700 mm (mountainous system) (Barbosa, 1997).

The data were collected from five municipalities in Roraima state: Amajari - Serra do Tepequém (3°46'13"N, 61°43'57"W, 626 m); Boa Vista - Universidade Federal de Roraima (2°48'41"N, 60°41'08"W, 83 m); Caracarái - Parque Nacional Serra da Mocidade (1°42' N, 61°47'W, 1.050 m); and Parque Nacional do Viruá (1°29'23"N, 61°00'12"W, 44 m); Pacaraima (4°28'30"N, 61°09'44"W, 900 m) and Rorainópolis (00°56'46" N, 60°25'05" W, 98 m) (Fig. 01).

Sampling method and Species preservation

Were used 6-meter intercept Malaise traps (Gressitt & Gressitt, 1962), 2-meter intercept Malaise traps (Townes model) for collect wasps in understory; intercept Suspended traps (Rafael & Gorayeb, 1982) for collect wasps in canopy tree and Light traps (a white sheet attached to a white light). Additionally, guided manual collections were also performed throughout the excursion with entomological nets and active search for wasps' colonies along trails, such as margins of "igarapés" and surroundings of houses, and they were listed just to add the data.

All material collected was fixed in combustive alcohol 96% and after pinned. The identification of the specimens

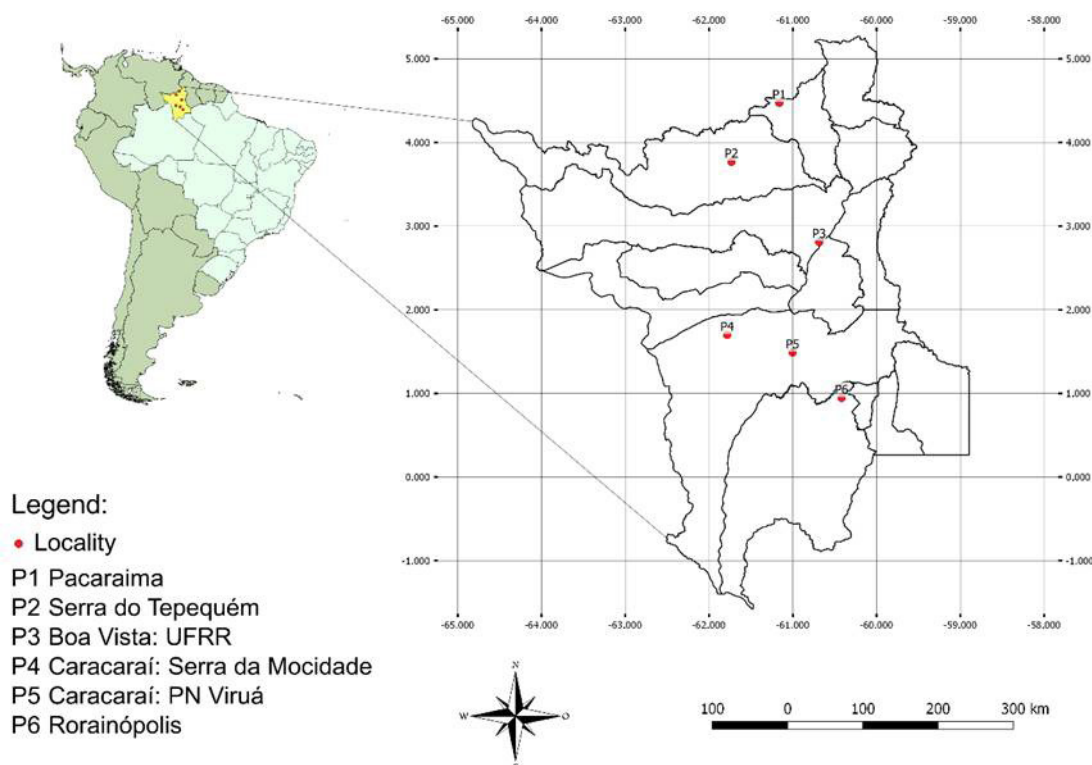


Fig 1. Map with five municipalities and six localities in Roraima state: Amajari (Serra do Tepequém), Boa Vista (Universidade Federal de Roraima), Caracarái (Parque Nacional do Viruá and Parque Nacional Serra da Mocidade), Pacaraima and Rorainópolis.

followed the keys proposed by Richards (1978) and Carpenter (2004). Voucher specimens were deposited at the Entomological Laboratory of Universidade Federal de Roraima (UFRR) and Zoological Collection of Invertebrates at the Instituto Nacional de Pesquisas da Amazônia (INPA) in Manaus, Brazil.

Results

In this work, we listed the occurrence of 85 species of social wasps for Roraima state in 14 genera; we identified 77 species in our collects and add other eight species from literature, did not collected in this study (Richards, 1978; Raw, 1998) (Tab. 01). More than 60% of the collected species belong to three genera: *Polybia* Lepeletier (25 species), *Mischocyttarus* de Saussure (14 species) and *Agelaia* Lepeletier (13 species).

In the *Polistes* genera nine species and two subspecies were collected, *Apoica* Lepeletier (six species), *Protopolybia* Ducke (five species), *Brachygastra* Perty (three species), *Angiopolybia* Araujo, *Metapolybia* Ducke and *Synoeca* de Saussure (two species) and *Chartergus* Lepeletier, *Leipomeles* Moebius, *Parachartergus* R. von Ihering and *Pseudopolybia* de Saussure one species, complete the list. From 85 species sampled, around half of them (n=45) represent new records for Roraima state, which are indicated (*) in table 01.

Most of the species were captured actively with entomological net, 57 species. However, some species were captured by indirect capture methods such as intercept Malaise trap (n=41), intercept Suspended trap (n=07) and Light trap (n=08) (Table 01).

Discussion

Data collected and presented here aggregate information on the diversity of social wasps in the North Amazon, contributing to the elucidation of the gap of knowledge for this region. From 85 species sampled, 45 represent new records for Roraima state: *Agelaia centralis*, *Ag. constructor*, *Ag. flavipennis*, *Ag. hamiltoni*, *Ag. lobipleura*, *Ag. myrmecophila*, *Angiopolybia paraensis*, *Apoica albimaculata*, *Ap. pallens*, *Ap. strigata*, *Brachygastra bilineolata*, *Leipomeles spilogastra*, *Metapolybia cingulata*, *Mischocyttarus cerberus*, *M. collaris*, *M. flavicans*, *M. lecointei*, *M. smithii*, *M. tomentosus*, *Parachartergus fraternus*, *Polistes carnifex*, *P. deceptor*, *P. pacificus*, *P. subsericeus*, *P. testaceicolor*, *Polybia bicyttarella*, *Po. bifasciata*, *Po. bistriata*, *Po. chrysothorax*, *Po. gorytoides*, *Po. incerta*, *Po. jurinei*, *Po. lugubris*, *Po. micans*, *Po. minarum*, *Po. platycephala*, *Po. signata*, *Po. singularis*, *Po. spinifex*, *Po. striata*, *Po. tinctipennis*, *Protopolybia acutiscutis*, *Pr. chartergoides*, *Pr. emortualis* and *Pr. rugulosa*.

Richards (1978) recorded the occurrence of 18 species in Roraima state, and four species of this study *Agelaia multipicta* (Haliday, 1836), *Brachygastra smithii* (de Saussure, 1854), *Polistes billardieri* Fabricius, 1804 and *Polistes brevifissus*

Richards, 1978 were not collected in this present study. Raw (1998) recorded the occurrence of 36 species in Ilha de Maracá-Roraima state and just four species not collected in our work: *Mischocyttarus alboniger* Richards, 1978, *Mischocyttarus carbonarius* (de Saussure, 1854), *Mischocyttarus prominulus* Richards, 1941 and *Polybia dimorpha* Richards 1978 species not collected in our work. Most species are widely distributed in the Amazon, except for some species of *Mischocyttarus* and *Polybia*. The other 77 species are recorded in our collects.

However, some species are not common found in the collections and lists of species for the region. This is the case of species such as *A. flavipennis*, *A. hamiltoni*, *A. lobipleura*, *L. spilogastra*, *Po. bicyttarella*, *Po. bifasciata*, *Po. gorytoides*, *Po. incerta*, *Po. lugubris*, *Po. roraimae*, *Po. signata*, *Po. spinifex*, *Pr. acutiscutis* and *Pr. emortualis* which they have rarely been collected, and some even being recorded for the second time to Brazil or the Amazon region.

The subspecies *Polistes carnifex carnifex* and *P. carnifex rufipennis*, *P. versicolor versicolor* and *P. versicolor kaieteurensis*, *Polybia gorytoides sculpturata* and *Polybia occidentalis occidentalis* have been identified as subspecies, since they are morphologically different, and as variations have a more restricted distribution, already being registered for Venezuela, some now for the Roraima state.

Two species were incorrectly cited for the Roraima State. Richards (1978) present incorrect information about *P. gorytoides sculpturata*, this species is not indicated in the examined material, but it is indicated in identification key for Roraima state. Raw (1998) cited the occurrence of *Ap. pallens* for the Roraima State according Richards (1978), but this species was not record in the original work. The two species were confirmed in this work and considered as new occurrences.

This study corroborates the results of Silva and Silveira (2009) and Somavilla et al. (2014), who considered active search the most efficient method for collecting social wasps, mainly close to the forest ground and in the understory; in this study, we collected 59 species in active search in Roraima state. But the addition of different collection methods is an important tool for sampling of the richness of social wasps in an area, as in general the species have a varied foraging behavior. For example, 41 species were collected using intercept Malaise trap, demonstrating the efficiency of this method for this taxon. Additionally, seven species were collected using intercept Suspended trap and eight species were collected using Light trap, *Apoica* mainly. These last two techniques are not used in collections.

Amazon region has the highest diversity of Polistinae (Richards, 1978; Carpenter & Marques, 2001; Barbosa et al., 2016). In Brazilian Amazon 20 genera and more than 200 species have been recorded, which represents about 2/3 of the Brazilian fauna (Silveira, 2002), with 125 species recorded only for the state of Amazonas (Barbosa et al., 2016). Nevertheless, this impressive number surely does not yet represent the region's mega diversity, since there were

only four studies carried out on this state (Barbosa et al., 2016). This statement becomes clear when we see the state of Roraima: with reports of Richards (1978) and Raw (1998) work 40 species. This study presents new occurrences of 45 social wasp species in Roraima. Our findings extend the species distributions and increase the number of species recorded in Roraima to 85 and more two subspecies for *Polistes*.

This increase may be an indication that the richness is probably higher in the regions studied and that Roraima may well contain a number of additional (as yet unrecorded) social wasp species. More comprehensive studies are needed in order to increase the knowledge of wasp species in Roraima,

contributing to increased knowledge of the diversity in North Brazil.

Acknowledgements

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Table 01. Species from Roraima state, listed for Richards (1978), Raw (1998) and in present work with six localities: Amajari: Serra do Tepequém; Boa Vista campus; Caracará: Serra da Mocidade; Caracará: Parque Nacional Viruá-National Park; Pacaraima and Rorainópolis in BR174 close city, with different collected methods: Active with entomological nets; intercept Malaise trap (2 and 6 meters); intercept Suspended trap and Light trap. Note: the method line is the same for each locality.

Taxon	Richards (1978)	Raw (1998)	Present work Locality collected	Method
<i>Agelaia angulata</i> (Fabricius, 1804)	X	X	Amajari: Serra do Tepequém Caracará: Serra da Mocidade	Malaise Active
<i>Agelaia cajenensis</i> (Fabricius, 1798)		X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade	Active, Malaise Malaise Active
<i>Agelaia centralis</i> (Cameron, 1907)*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá	Active, Malaise Malaise
<i>Agelaia constructor</i> (de Saussure, 1854)*			Rorainópolis	Active
<i>Agelaia flavipennis</i> (Ducke, 1905)*			Amajari: Serra do Tepequém	Malaise, Suspended
<i>Agelaia fulvofasciata</i> (DeGeer, 1773)	X	X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade Pacaraima	Malaise, Suspended Malaise Active Active
<i>Agelaia hamiltoni</i> (Richards, 1978)*			Caracará: Parque Nacional Viruá	Malaise
<i>Agelaia lobipleura</i> (Richards, 1978)*			Amajari: Serra do Tepequém	Active
<i>Agelaia multipicta</i> (Haliday, 1836)	X	X	-	-
<i>Agelaia myrmecophila</i> (Ducke, 1905)*			Caracará: Parque Nacional Viruá	Malaise
<i>Agelaia ornata</i> (Ducke, 1905)		X	Amajari: Serra do Tepequém Caracará: Serra da Mocidade	Active, Malaise Active
<i>Agelaia pallipes</i> (Olivier, 1791)	X		Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade Rorainópolis	Malaise Active Active
<i>Agelaia testacea</i> (Fabricius, 1804)	X	X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade	Active, Malaise, Suspended Malaise Active
<i>Angiopolybia pallens</i> (Lepelletier, 1836)		X	Amajari: Serra do Tepequém Caracará: Serra da Mocidade	Active, Malaise Active
<i>Angiopolybia paraensis</i> (Spinola, 1851)*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade	Malaise Active Active
<i>Apoica albimacula</i> (Fabricius, 1804)*			Caracará: Serra da Mocidade	Light
<i>Apoica flavissima</i> van der Vecht, 1972		X	Caracará: Serra da Mocidade	Light
<i>Apoica pallens</i> (Fabricius, 1804)*			Amajari: Serra do Tepequém Caracará: Serra da Mocidade Rorainópolis	Active, Malaise Light Malaise
<i>Apoica pallida</i> Olivier, 1791	X	X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade Pacaraima Rorainópolis	Light Light, Malaise Light Light Active, Light

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Taxon	Richards (1978)	Raw (1998)	Present work Locality collected	Method
<i>Apoica strigata</i> Richards, 1978*			Caracará: Serra da Mocidade	Light
			Amajari: Serra do Tepequém	Light
<i>Apoica thoracica</i> du Buysson, 1906		X	Caracará: Parque Nacional Viruá	Light
			Pacaraima	Light
			Rorainópolis	Light
<i>Brachygastra bilineolata</i> Spinola, 1841*			Boa Vista – Campus	Active
<i>Brachygastra lecheguana</i> (Latreille, 1824)	X		Caracará: Serra da Mocidade	Active
			Rorainópolis	Active
<i>Brachygastra smithii</i> (de Saussure, 1854)	X	X	-	-
<i>Chartergus artifex</i> (Christ, 1791)		X	Rorainópolis	Active
<i>Leipomeles spilogastra</i> (Cameron, 1912)*			Amajari: Serra do Tepequém	Active
<i>Metapolybia cingulata</i> (Fabricius, 1804)*			Rorainópolis	Active
<i>Metapolybia unilineata</i> (R. von Ihering, 1904)		X	Amajari: Serra do Tepequém	Active
			Rorainópolis	Active
<i>Mischocyttarus alboniger</i> Richards, 1978		X	-	-
<i>Mischocyttarus carbonarius</i> (de Saussure, 1854)		X	-	-
<i>Mischocyttarus cerberus</i> Ducke, 1918*			Amajari: Serra do Tepequém	Malaise
<i>Mischocyttarus collaris</i> Ducke, 1904*			Rorainópolis	Active
<i>Mischocyttarus flavicans</i> (Fabricius, 1804)*			Caracará: Serra da Mocidade	Active
<i>Mischocyttarus injucundus</i> (de Saussure, 1854)		X	Rorainópolis	Active
<i>Mischocyttarus labiatus</i> (Fabricius, 1804)		X	Amajari: Serra do Tepequém Rorainópolis	Malaise Active
<i>Mischocyttarus lecointei</i> Ducke, 1904*			Caracará: Serra da Mocidade	Active
<i>Mischocyttarus maracaensis</i> Raw, 1999		X	Amajari: Serra do Tepequém	Active
<i>Mischocyttarus metathoracicus</i> de Saussure, 1854		X	Amajari: Serra do Tepequém	Malaise
<i>Mischocyttarus prominulus</i> Richards, 1941		X	-	-
<i>Mischocyttarus smithii</i> de Saussure, 1853*			Caracará: Serra da Mocidade	Active
<i>Mischocyttarus surinamensis</i> de Saussure, 1854		X	Amajari: Serra do Tepequém	Malaise
<i>Mischocyttarus tomentosus</i> Zikán, 1935*			Amajari: Serra do Tepequém	Malaise
<i>Parachartergus fraternus</i> (Gribodo, 1892)*			Amajari: Serra do Tepequém Rorainópolis	Malaise Active
<i>Polistes billardieri</i> Fabricius, 1804	X		-	-
<i>Polistes brevifissus</i> Richards, 1978	X	X	-	-
<i>Polistes canadensis</i> (Linnaeus, 1758)	X		Amajari: Serra do Tepequém Pacaraima Rorainópolis	Active, Light Active Active
<i>Polistes carnifex carnifex</i> (Fabricius, 1775)*			Pacaraima	Active
<i>Polistes carnifex rufipennis</i> Latreille, 1817*			Caracará	Active
<i>Polistes deceptor</i> Schulz, 1905*			Amajari: Serra do Tepequém Pacaraima	Malaise Active
<i>Polistes pacificus</i> Fabricius, 1804*			Rorainópolis	Active
<i>Polistes subsericeus</i> de Saussure, 1854*			Rorainópolis	Active
<i>Polistes testaceicolor</i> Bequaert, 1937*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá	Malaise Malaise
<i>Polistes versicolor kaieteurensis</i> Bequaert, 1934	X		Caracará: Parque Nacional Viruá	Active
<i>Polistes versicolor versicolor</i> (Olivier, 1792)	X	X	Amajari: Serra do Tepequém	Active
<i>Polybia belemensis</i> Richards, 1970	X		Amajari: Serra do Tepequém	Malaise
<i>Polybia bicyttarella</i> Richards, 1951*			Rorainópolis	Active

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Taxon	Richards (1978)	Raw (1998)	Present work Locality collected	Method
<i>Polybia bifasciata</i> de Saussure, 1854*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade	Malaise Malaise Active
<i>Polybia bistriata</i> (Fabricius, 1804)*			Amajari: Serra do Tepequém Rorainópolis	Malaise Active
<i>Polybia chrysothorax</i> (Lichtenstein, 1796)*			Amajari: Serra do Tepequém Rorainópolis	Active Active
<i>Polybia dimidiata</i> (Olivier, 1791)	X	X	Amajari: Serra do Tepequém Rorainópolis	Malaise Active
<i>Polybia dimorpha</i> Richards, 1978		X	-	-
<i>Polybia gorytoides sculpturata</i> Ducke, 1904*			Caracará: Parque Nacional Viruá	Malaise
<i>Polybia ignobilis</i> (Haliday, 1836)	X	X	Boa Vista	Active
<i>Polybia incerta</i> Ducke, 1907*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá	Malaise Malaise
<i>Polybia jurinei</i> de Saussure, 1854*			Caracará: Serra da Mocidade Rorainópolis	Active Active
<i>Polybia liliacea</i> (Fabricius, 1804)		X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Pacaraima	Active, Malaise Active, Malaise, Light Active
<i>Polybia lugubris</i> (Curtis, 1844)*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade	Malaise Malaise Active
<i>Polybia micans</i> Ducke, 1904*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá	Active, Malaise Malaise
<i>Polybia minarum</i> Ducke, 1906*			Amajari: Serra do Tepequém Caracará: Serra da Mocidade	Suspended Active
<i>Polybia occidentalis occidentalis</i> (Olivier, 1792)	X	X	Amajari: Serra do Tepequém Boa Vista Caracará: Parque Nacional Viruá Pacaraima Rorainópolis	Active Active Active Active Active
<i>Polybia platycephala</i> Richards, 1951*			Amajari: Serra do Tepequém Caracará: Serra da Mocidade Rorainópolis	Malaise Active Active
<i>Polybia rejecta</i> (Fabricius, 1798)		X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Caracará: Serra da Mocidade Pacaraima Rorainópolis	Active, Malaise, Suspended Active, Malaise Active Active Active
<i>Polybia roraimae</i> Raw, 1999		X	Amajari: Serra do Tepequém	Malaise
<i>Polybia sericea</i> (Olivier, 1792)	X	X	Amajari: Serra do Tepequém Boa Vista Caracará: Parque Nacional Viruá	Active Active Active
<i>Polybia signata</i> Ducke, 1905*			Caracará: Serra da Mocidade	Active
<i>Polybia singularis</i> Ducke, 1909*			Caracará: Parque Nacional Viruá	Malaise
<i>Polybia spinifex</i> Richards, 1978*			Amajari: Serra do Tepequém	Suspended
<i>Polybia striata</i> (Fabricius, 1787)*			Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Rorainópolis	Malaise Active Active
<i>Polybia tinctipennis</i> Fox, 1898*			Amajari: Serra do Tepequém	Malaise
<i>Protopolybia acutiscutis</i> (Cameron, 1906)*			Rorainópolis	Active

Table 01. Species from Roraima state, listed for Richards (1978), Raw (1998) and in present work with six localities: Amajari: Serra do Tepequém; Boa Vista campus; Caracará: Serra da Mocidade; Caracará: Parque Nacional Viruá-National Park; Pacaraima and Rorainópolis in BR174 close city, with different collected methods: Active with entomological nets; intercept Malaise trap (2 and 6 meters); intercept Suspended trap and Light trap. Note: the method line is the same for each locality. (Continuation)

Taxon	Richards (1978)	Raw (1998)	Present work Locality collected	Method
<i>Protopolybia chartergoides</i> (Gribodo, 1892)*			Rorainópolis	Active
<i>Protopolybia emortualis</i> de Saussure, 1855*			Caracará: Parque Nacional Viruá	Malaise
<i>Protopolybia exigua</i> (de Saussure, 1854)	X	X	Amajari: Serra do Tepequém	Active, Malaise
<i>Protopolybia rugulosa</i> Ducke, 1905*			Rorainópolis	Active
<i>Pseudopolybia vespiceps</i> (de Saussure, 1863)		X	Caracará: Parque Nacional Viruá	Active
<i>Synoeca surinama</i> (Linnaeus, 1767)		X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá Rorainópolis	Active, Malaise, Suspended Active, Malaise Active
<i>Synoeca virginea</i> (Fabricius, 1804)		X	Amajari: Serra do Tepequém Caracará: Parque Nacional Viruá	Active Active, Malaise

* New record from Roraima state.

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