



RESEARCH ARTICLE - WASPS

Biodiversity of Insecta in Amazonia: Updating the geographic records of social wasps (Vespidae: Polistinae) in Acre and Rondônia States, Brazil

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Abstract

The Acre and Rondônia states in Brazil are part of the Western Amazon rainforest in Brazil, an area harboring high biodiversity and high degree of endemisms. Nevertheless, there are few studies on diversity of social wasps occurring in both states. This study presents a list of social wasps (Vespidae: Polistinae) collected using three modified *Malaise* trap models: Townes, Gressitt and Gressitt, and suspended traps in two localities in Acre and two in Rondônia states. A total of 60 species were collected, 20 of these species are new distribution records to Acre State. Meanwhile, 54 species were collected in Rondônia State, 15 of which are new collecting records. Some species are not commonly found in collections and lists of species, and some are recorded for the first or second time to Brazil or the Amazon region. Currently there are 114 species (19 genera) for Acre and 116 species (19 genera) for Rondônia. This increase may be an indication that the Polistinae richness is probably higher in the regions studied and that Acre and Rondônia may well contain a number of additional (as yet unrecorded) social wasp species. We also present an update on the geographic records of social wasps' fauna in both states.

Introduction

The Amazon rainforest is the largest biome within the Brazilian territory, covering an area of 4,196.943 Km² (Ministério do Meio Ambiente, 2018). Many areas of Brazil lack the most basic biodiversity studies, particularly in the case of invertebrates. In order to develop any effective conservation proposals, first of all, it is necessary to acquire knowledge of the species that occur in a particular area. For this reason, the thematic network 'Biodiversity of Insects in the Amazon' is the first network among researchers of the Brazilian Amazon in terms of the increase of knowledge and provision of subsidies for the conservation of Amazonian biodiversity, focusing on insects, and to disseminate this knowledge to different sectors of our society (see Somavilla et al., 2020).

The Brazilian Amazon rainforest is one of the greatest biodiversities hotspots in the world, including the greatest diversity of social wasps (Silveira, 2002; Somavilla et al., 2014a; Barbosa et al., 2016; Somavilla et al., 2020). Knowledge on

social wasps remains from some few studies carried out in forest fragments. Ducke (1904, 1907) conducted one of the first surveys of wasp fauna in the eastern region of the Brazilian Amazon, mainly in Pará State. Recently, similar works have been carried out in the Brazilian Amazon, such as in Acre State (Morato et al., 2008; Gomes et al., 2018), Amapá State (Silveira et al., 2008; Silveira et al., 2019), Amazonas State (Silveira et al., 2008; Somavilla et al., 2015; Somavilla et al., 2016; Somavilla & Oliveira, 2017; Somavilla et al., 2019; Somavilla et al., 2020), Maranhão State (Somavilla et al., 2014b), Pará State (Silveira, 2002; Silva & Silveira, 2009), Rondônia State (Gomes et al., 2020), and Roraima State (Raw, 1998; Barroso et al., 2017).

Despite the contributions of these works, Somavilla et al. (2014a) stated "there are many sample gaps in the Amazon region and distribution and occurrence studies are necessary for improving upon this prior knowledge". Furthermore, for Acre there are two works on social wasps: one in Serra do Divisor National Park (Morato et al., 2008) and another in three fragments



of the Amazon rainforest, near to the city of Rio Branco (Gomes et al., 2018), in addition to the previous records from Richards (1978) and the Taxonomic Catalog of Fauna of Brazil – CTFB (Hermes et al., 2015), reporting a sum of 94 species for this state. In Rondônia, one recent work has been published by Gomes et al. (2020) with samples from three fragments in northern Rondônia, in addition to the previous records from Richards (1978) and the Taxonomic Catalog of Fauna of Brazil – CTFB (Hermes et al., 2015), reporting 101 species for this state.

Moreover, it is an area close to Peru and Bolivia, regions known for presenting endemic species for different groups of organisms (Brown, 1991; Hoorn et al., 2010), but the diversity of social wasps in this part of the Amazon is poorly known, generating a gap in knowledge about the species occurring in the Western Amazon of Brazil.

In this way, a long term collection of one year was carried out within the network ‘Biodiversity of Insects in the Amazon’ and we present here the social wasps results of two different areas sampled in Acre and two in Rondônia States. Also, we present updated geographic records of social wasps’ fauna in both states.

Material and Methods

Acre State areas

The social wasps were collected in two areas in Acre State: Bujari, Experimental Farm Antimary (09°20’01” S, 68°19’17” W) and Senador Guiomard, Experimental Farm Catuaba (10°04’28” S, 67°37’00” W). The region where the two areas are located is characterized by open forest with the presence of *Gadua* bamboos (locally known as tabocais), and palm trees (Silveira, 2005). The predominant type of soil in the region is latosol and the landscape is slightly hilly (Daly & Silveira, 2008). The average annual temperature varies between 22 and 24° C. Lowest temperatures occur in August (about 12 to 14 °C) (Mesquita & Paiva, 1995; Mesquita, 1996). Average annual rainfall is 1,944 mm, varying between 1,566 and 2,425 mm. The climate is tropical wet, with well-defined hot/rainy (winter) and hot/dry (summer) seasons. The rainy period occurs from October to April and the driest period from June to August. May and September are transitional months between seasons (Duarte, 2005).

Rondônia State areas

The social wasps were collected in two areas in Rondônia State: Porto Velho, Forest Fragment of Universidade Federal de Rondônia (UNIR) (08°50’15.8” S, 63°56’17.5” W) and Itapuã do Oeste, Floresta Nacional of Jamari (09°15’36” S, 62°54’46” W).

The predominant vegetation in the region are of the dense rainforest and open rainforest types. The predominant type of soil in the region is latosol and the relief is slightly rugged with few depressions, the state is on an average of 240 m in altitude (Schlindwein et al., 2012). The average annual temperature is about 25° C. Average annual rainfall is 2,400 mm, varying between 2,200 and 2,600 mm. The climate is

tropical wet, with well-defined hot/rainy (winter) and hot/dry (summer) seasons. The rainy period occurs from November to April and the driest period from June to September. May and October are transitional months between seasons (Fernandes & Guimarães, 2002).

Wasp collection and identification

The wasps were collected in the forest fragments using three modified *Malaise* trap models: 1. Townes (1972) model 2-meter long; 2. Gressitt and Gressitt (1962) model 6-meter long with two collector vials in understory; and 3. suspended trap (Rafael & Gorayeb, 1982) model in the canopy. All of these trap models were distributed in each forest fragment and were active for twelve uninterrupted months, totaling a period of one year between July 2016 and June 2017, and every fifteen days only the collection bottles were replaced.

The Polistinae specimens were sorted and identified at the Hymenoptera Laboratory of the National Institute of Amazonian Research (INPA). The vouchers were deposited into the INPA’s Invertebrate Collection and duplicates will be sent to other collections like MNRJ (Museu Nacional do Rio de Janeiro, Brazil, Rio de Janeiro) and MZUSP (Museu de Zoologia da Universidade de São Paulo, Brazil, São Paulo), as recommended by the thematic network ‘Biodiversity of Insects in the Amazon’. Specimens were identified using the keys proposed by Richards (1978), Carpenter and Marques (2001), Carpenter (2004), Somavilla and Carpenter (2020) and were compared to previously identified species from the INPA Invertebrate Collection, and some type specimens images from the Natural History Museum (London), Muséum National d’Histoire Naturelle (Paris) and American Museum of Natural History (New York City).

Results

A total of 114 species in 19 genera of social wasps were recorded for Acre; we identified 60 species in our samples, 40 already reported in literature and 20 as new collecting records. There are still other 54 species known from literature not sampled in this study (Richards, 1978; Morato et al., 2008; Gomes et al., 2018; Andena et al., 2019; Somavilla & Andena, 2019; IUNH, 2020) (Table 01). For Rondônia we listed the occurrence of 116 species in 19 genera; we identified 54 species in our samples, 39 already reported in literature and 15 as new records. For this state there are also 61 species from literature, not collected in this study (Richards, 1978; Gomes et al., 2020; IUNH 2020) (Table 1).

About 50% of the species belong to three genera: *Polybia* Lepeletier (35 species), *Mischocyttarus* de Saussure (21 species) and *Agelaiia* Lepeletier (18 species). The list also comprises *Polistes* Latreille (13), *Apoica* Lepeletier (09), *Brachygastra* Perty (09), *Protopolybia* Ducke (09), *Parachartergus* R. von Ihering (07), *Chartergellus* Bequaert (06), *Angiopolybia* Araujo (04), *Asteloeca* Raw (03), *Chartergus* Lepeletier (03), *Clypearia* de Saussure (03), *Metapolybia* Ducke (03), *Pseudopolybia* de

Saussure (03), *Synoeca* de Saussure (03), *Leipomeles* Möbius (02), *Charterginus* Fox (01), *Epipona* Latreille (01) and *Nectarinella* Bequaert (01). *Nectarinella* was not registered for Acre and *Asteloecca* for Rondônia. *Protonectarina* Ducke was not registered for both states, and according to da Silva et al. (2018) species of this genus occur widely in the Atlantic rainforest and arboreal Caatinga, being absent in the Amazon region.

From 60 species sampled, 20 represent new records for Acre state: *Agelaia centralis*, *Ag. flavipennis*, *Ag. ornata*, *Apoica albimacula*, *Ap. gelida*, *Ap. pallens*, *Brachygastra bilineolata*, *Chartergellus afoveatus* (first time in Brazil), *C. amazonicus*, *Leipomeles spilogastra*, *Mischocyttarus adolphus*, *Polistes canadensis*, *Polybia belemensis*, *Poly. depressa*, *Poly. ignobilis*, *Poly. micans*, *Poly. occidentalis*, *Poly. singularis*, *Synoeca chalibea* and *S. surinama*.

For Rondônia, the numbers, although smaller, are also noteworthy: from 54 species sampled, about a quarter of them (15) represent new records for Rondônia state: *Agelaia brevistigma*, *Angiopolybia pallens*, *Apoica pallens*, *Chartergellus nigerrimus*, *Leipomeles spilogastra*, *Mischocyttarus drewseni*, *Nectarinella manauara*, *Polistes carnifex*, *Poli. geminatus*, *Poli. pacificus*, *Polybia batesi*, *Poly. minarum*, *Poly. simillima*, *Poly. velutina* and *Protopolybia fuscatus*.

Discussion

For Acre State, Richards (1978) recorded the occurrence of 52 species, of which 29 were not collected in this study. Morato et al. (2008) recorded the occurrence of 20 species in Serra do Divisor National Park and Gomes et al. (2018) recorded the occurrence of 36 species in three areas and just 20 species not collected in our work. The other 20 species are recorded in our samples and are new occurrences for Acre.

For Rondônia State, only the original descriptions and species recorded by Richards (1978) were known. Recently, Gomes et al. (2020) recorded the occurrence of 72 species in three Rondônia areas. Richards (1978) and previous studies recorded the occurrence of 101 species in Rondônia, and 28 species were not collected in this study. The other 15 species are recorded in our study and are new occurrences for Rondônia.

A sampling of a large diversity of Polistinae can be attributed to more than one factor. One of them is the location of the collection areas in the Western Amazon, known for harboring great biodiversity (Brown, 1991; Hoorn et al., 2010). Another factor are the methodology and effort applied. Usually only one method is used to sample social wasps, which can limit the number of species sampled. In our study, we used a set of traps: two different *Malaise* trap models and suspended traps to collect wasps for an uninterrupted year.

Regarding species composition, Silva and Silveira (2009), Somavilla et al. (2014a) and Somavilla et al. (2020) showed that fast inventories were efficient for sampling the most abundant species, recording three genera: *Polybia*, *Mischocyttarus* and *Agelaia*. Herein, we found the same most speciose genera, which constituted about 50% of the species

collected. Specimens of *Polybia* have a very active foraging behavior, which facilitates the collection of the specimens by interception flight traps, adding to the fact it is the genus with the largest number of species within Epiponini. *Mischocyttarus* is the genus with the higher number of species within social wasps (around 250), of which more than 120 occur in Brazil, supporting the high diversity in this study (Silveira, 2002).

Agelaia species usually form large colonies with millions of individuals (Zucchi et al., 1995), and, consequently, are more likely to be captured, and probably due to the habits of this genus that presents generalist and opportunistic species in relation to food and resource choices (Silva & Silveira, 2009; Somavilla et al., 2014a) (Silveira, 2002; Somavilla et al., 2014a; Somavilla et al., 2020).

The Amazon region has the highest diversity of Polistinae species (Richards, 1978; Carpenter & Marques, 2001; Silveira, 2002; Barbosa et al., 2016; Somavilla et al., 2020). In the Brazilian Amazon, 20 genera and more than 250 species have been recorded, which represents about two thirds of the Brazilian diversity of social wasps (Silveira, 2002; Hermes et al., 2015; Somavilla & Oliveira, 2017; Somavilla et al., 2020). Nevertheless, this impressive number surely does not yet represent the region's mega diversity, since there were only two studies carried out on Acre state (Morato et al., 2008; Gomes et al., 2018) and only one study in Rondônia state (Gomes et al., 2020). The present study presents new occurrences of 20 social wasp species for Acre and 15 new occurrences for Rondônia. Our findings extend the species distributions and increase the number of species recorded to 114 and 116 species for Acre and Rondônia, respectively.

This increase may be an indication that the richness is probably higher in the regions studied and that Acre and Rondônia may well contain a number of additional (as yet unrecorded) social wasp species. Nevertheless, large gaps still remain in the geographic distribution for many species of social wasps in Brazil, mainly in the Amazon Region, and more comprehensive studies are needed in order to increase the knowledge of wasp species in Acre and Rondônia. In a region of great diversity but also high indexes of deforestation, as Western Amazon, further studies become necessary and urgent.

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Table 1. Species of social wasps from Acre and Rondônia states, listed by Richards (1978), Morato et al. (2008), Gomes et al. (2018), Gomes et al. (2020), web catalog from Natural History Laboratory of the Ibaraki University (IUNH 2020), and in the present work. ¹ new distribution record for Acre; ² new distribution records for Rondônia; * distribution records only in the descriptions of the species. AC=Acre; RO=Rondônia; BUJ=Bujari; SEG=Senador Guiomard; IDO=Itapuã do Oeste; PVH=Porto Velho.

Taxon	Richards (1978)	Morato et al. (2008)	Gomes et al. (2018)	Gomes et al. (2020)	IUNH web catalog (2020)	Present work, Locality collected
<i>Agelaia acreana</i> Silveira & Carpenter, 1996					AC	
<i>Agelaia angulata</i> (Fabricius, 1804)	AC, RO	AC	AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Agelaia baezae</i> (Richards, 1943)			AC			
<i>Agelaia brevistigma</i> (Richards, 1978) ²			AC			RO: PVH
<i>Agelaia cajennensis</i> (Fabricius, 1798)	AC			RO	AC	AC: SEG
<i>Agelaia centralis</i> (Cameron, 1907) ¹				RO		AC: BUJ, SEG; RO: IDO
<i>Agelaia flavipennis</i> (Ducke, 1905) ¹	RO				RO	AC: SEG
<i>Agelaia fulvofasciata</i> (DeGeer, 1773)	AC, RO	AC	AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Agelaia hamiltoni</i> (Richards, 1978)	AC, RO			RO	AC, RO	AC: SEG
<i>Agelaia lobipleura</i> (Richards, 1978)		AC		RO		
<i>Agelaia melanopyga</i> Cooper, 2000				RO		
<i>Agelaia myrmecophila</i> (Ducke, 1905)		AC	AC	RO		RO: PVH
<i>Agelaia ornata</i> (Ducke, 1905) ¹				RO		AC: BUJ, SEG; RO: IDO, PVH
<i>Agelaia pallidiventris</i> (Richards, 1978)				RO		
<i>Agelaia pallipes</i> (Olivier, 1792)	AC		AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Agelaia pleuralis</i> Cooper, 2000			AC			AC: SEG
<i>Agelaia testacea</i> (Fabricius, 1804)	AC, RO		AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Agelaia timida</i> Cooper, 2000				RO		RO: IDO
<i>Angiopolybia pallens</i> (Lepelletier, 1836) ²	AC	AC			AC	AC: BUJ, SEG; RO: IDO
<i>Angiopolybia paraensis</i> (Spinola, 1851)	AC, RO	AC		RO	AC, RO	AC: SEG; RO: IDO
<i>Angiopolybia obidensis</i> (Ducke, 1904)			AC			
<i>Angiopolybia zischkai</i> Richard, 1978			AC	RO		
<i>Apoica albimacula</i> (Fabricius, 1804) ¹						AC: BUJ
<i>Apoica ambracarina</i> Pickett, 2003					AC	
<i>Apoica arborea</i> de Saussure, 1854	AC, RO				AC, RO	RO: PVH
<i>Apoica flavissima</i> van der Vecht, 1972	AC, RO				AC, RO	
<i>Apoica gelida</i> van der Vecht, 1972 ¹				RO		AC: BUJ
<i>Apoica pallens</i> (Fabricius, 1804) ^{1,2}						AC: BUJ, SEG; RO: IDO, PVH
<i>Apoica pallida</i> (Olivier, 1792)	AC, RO				AC, RO	AC: BUJ, SEG; RO: PVH
<i>Apoica strigata</i> Richards, 1978	AC				AC	AC: BUJ
<i>Apoica thoracica</i> du Buysson, 1906	AC, RO				AC, RO	AC: SEG, RO: IDO, PVH
<i>Asteloeca lutea</i> Carpenter, 2004					AC	
<i>Asteloeca traili</i> (Cameron, 1906)	AC				AC	
<i>Asteloeca ujhelyii</i> (Ducke, 1909)					AC	AC: BUJ
<i>Brachygastra albula</i> Richard, 1978	RO	AC		RO	RO	

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Taxon	Richards (1978)	Morato et al. (2008)	Gomes et al. (2018)	Gomes et al. (2020)	IUNH web catalog (2020)	Present work, Locality collected
<i>Brachygastra augusti</i> (de Saussure, 1854)	AC		AC	RO	AC	RO: PVH
<i>Brachygastra bilineolata</i> Spinola, 1841 ¹				RO	RO	AC: BUJ, RO: IDO
<i>Brachygastra cooperi</i> (Richards, 1978)				RO		
<i>Brachygastra lecheguana</i> (Latreille, 1824)		AC		RO	RO	AC: SEG; RO: PVH
<i>Brachygastra moebiana</i> (de Saussure, 1867)	AC	AC			RO	AC: SEG
<i>Brachygastra propodealis</i> Bequaert, 1943			AC		RO	
<i>Brachygastra scutellaris</i> (Fabricius, 1804)	AC, RO			RO	AC, RO	AC: BUJ, RO: IDO
<i>Brachygastra smithii</i> (de Saussure, 1854)	AC				AC	
<i>Chartergellus afoveatus</i> Cooper, 1993 ¹						AC: SEG
<i>Chartergellus amazonicus</i> Richard, 1978 ¹				RO		AC: SEG
<i>Chartergellus communis</i> Richards, 1978				RO		
<i>Chartergellus flavoscutellatus</i> Somavilla, 2019 *						AC: BUJ, SEG
<i>Chartergellus nigerrimus</i> Richards, 1978 ²	AC				AC	RO: PVH
<i>Chartergellus zonatus</i> (Spinola, 1851)				RO		
<i>Charterginus fulvus</i> Fox, 1898			AC	RO		AC: BUJ; RO: PVH
<i>Chartergus artifex</i> (Christ, 1791)					AC, RO	AC: BUJ, SEG
<i>Chartergus globiventris</i> de Saussure, 1854				RO		
<i>Chartergus metanotalis</i> Richards, 1978	AC				AC	
<i>Clypearia duckei</i> Richards, 1978	AC				AC	
<i>Clypearia nigrior</i> Richards, 1978	AC				AC	AC: BUJ
<i>Clypearia sulcata</i> (de Saussure, 1854)	AC, RO				AC, RO	
<i>Epipona tatua</i> (Cuvier, 1797)	AC, RO				AC, RO	RO: IDO
<i>Leipomeles dorsata</i> (Fabricius, 1804)			AC	RO		AC: BUJ, SEG; RO: IDO
<i>Leipomeles spilogastra</i> (Cameron, 1912) ^{1,2}						AC: SEG; RO: IDO
<i>Metapolybia acincta</i> Richards, 1978					RO	
<i>Metapolybia cingulata</i> (Fabricius, 1804)	AC				AC	
<i>Metapolybia fraudator</i> Carpenter and Andena, 2019 *						
<i>Mischocyttarus acreanus</i> Silveira, 2006					AC	
<i>Mischocyttarus adolphi</i> Zikán, 1949 ¹						AC: BUJ
<i>Mischocyttarus alfkenii</i> (Ducke, 1904)	AC				AC	
<i>Mischocyttarus artifex</i> Ducke, 1914		AC				
<i>Mischocyttarus carbonarius</i> (de Saussure, 1854)			AC			AC: BUJ
<i>Mischocyttarus drewseni</i> de Saussure, 1857 ²						RO: IDO
<i>Mischocyttarus duckei</i> (du Buysson, 1908)		AC				
<i>Mischocyttarus flavicans</i> (Fabricius, 1804)			AC	RO		RO: IDO
<i>Mischocyttarus gomesi</i> Silveira, 2013				RO		
<i>Mischocyttarus heliconius</i> Richards, 1941		AC				
<i>Mischocyttarus imitator</i> (Ducke, 1904)					RO	
<i>Mischocyttarus interruptus</i> Richards, 1978				RO		
<i>Mischocyttarus labiatus</i> (Fabricius, 1804)		AC	AC	RO		AC: SEG; RO: PVH
<i>Mischocyttarus lecointei</i> (Ducke, 1904)				RO		

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Taxon	Richards (1978)	Morato et al. (2008)	Gomes et al. (2018)	Gomes et al. (2020)	IUNH web catalog (2020)	Present work, Locality collected
<i>Mischocyttarus metathoracicus</i> (de Saussure, 1854)			AC			
<i>Mischocyttarus prominulus</i> Richards, 1941			AC			
<i>Mischocyttarus rotundicollis</i> (Cameron, 1912)					RO	
<i>Mischocyttarus socialis</i> (de Saussure, 1854)	AC					
<i>Mischocyttarus surinamensis</i> (de Saussure, 1854)	AC		AC		AC, RO	AC: SEG
<i>Mischocyttarus synoecus</i> Richards, 1940			AC			
<i>Mischocyttarus tomentosus</i> Zikán, 1935	AC, RO			RO	AC, RO	RO: PVH
<i>Nectarinella manauara</i> Silveira & Nazareno Jr. 2016 ²						RO: IDO
<i>Parachartergus colobopterus</i> (Lichtenstein, 1796)	RO				RO	
<i>Parachartergus flavofasciatus</i> (Cameron, 1906)			AC	RO		AC: SEG; RO: IDO
<i>Parachartergus fraternus</i> (Gribodo, 1892)				RO		
<i>Parachartergus lenkoi</i> Richards, 1978				RO		RO: IDO
<i>Parachartergus pseudoapicalis</i> Willink, 1959				RO		
<i>Parachartergus smithii</i> (de Saussure, 1854)				RO		RO: PVH
<i>Parachartergus weyrauchi</i> Willink, 1959	AC				AC, RO	
<i>Polistes bicolor</i> Lepeletier, 1836	AC				AC	
<i>Polistes canadensis</i> (Linnaeus, 1758) ¹				RO		AC: SEG; RO: IDO
<i>Polistes carnifex</i> (Fabricius, 1775) ²						RO: PVH
<i>Polistes deceptor</i> Schulz, 1905			AC			
<i>Polistes geminatus</i> Fox, 1898 ²						RO: PVH
<i>Polistes erythrocephalus</i> Latreille, 1813	AC				AC	
<i>Polistes lanio</i> (Fabricius, 1775)	AC, RO				AC	
<i>Polistes occipitalis</i> Ducke, 1904				RO		
<i>Polistes pacificus</i> Fabricius, 1804 ²			AC			AC: SEG; RO: IDO
<i>Polistes rufiventris</i> Ducke, 1904	RO				RO	
<i>Polistes testaceicolor</i> Bequaert, 1937	AC, RO				AC	RO: IDO
<i>Polistes torresae</i> Silveira, 1996					RO	
<i>Polistes versicolor</i> (Olivier, 1792)	AC				AC	
<i>Polybia affinis</i> du Buysson, 1908	RO				RO	
<i>Polybia batesi</i> Richards, 1978 ²						RO: IDO
<i>Polybia belemensis</i> Richards, 1970 ¹						AC: SEG
<i>Polybia bifasciata</i> de Saussure, 1854	AC			RO	AC	
<i>Polybia bistrata</i> (Fabricius, 1804)	AC, RO			RO	AC, RO	
<i>Polybia catillifex</i> Möbius, 1856		AC	AC	RO		
<i>Polybia depressa</i> (Ducke, 1905) ¹				RO		AC: BUJ
<i>Polybia diguetana</i> Buysson, 1905				RO		
<i>Polybia dimidiata</i> (Olivier, 1792)	RO		AC	RO	RO	AC: BUJ
<i>Polybia dimorpha</i> Richards, 1978		AC				AC: SEG
<i>Polybia eberhardae</i> Cooper, 1993			AC	RO		
<i>Polybia emaciata</i> Lucas, 1879	AC, RO	AC		RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Polybia furnaria</i> von Ihering, 1904	AC, RO				AC, RO	

Table 1. Species of social wasps from Acre and Rondônia states, listed by Richards (1978), Morato et al. (2008), Gomes et al. (2018), Gomes et al. (2020), web catalog from Natural History Laboratory of the Ibaraki University (IUNH 2020), and in the present work. ¹ new distribution record for Acre; ² new distribution records for Rondônia; * distribution records only in the descriptions of the species. AC=Acre; RO=Rondônia; BUJ=Bujari; SEG=Senador Guimard; IDO=Itapuã do Oeste; PVH=Porto Velho. (Continuation)

Taxon	Richards (1978)	Morato et al. (2008)	Gomes et al. (2018)	Gomes et al. (2020)	IUNH web catalog (2020)	Present work, Locality collected
<i>Polybia gorytoides</i> Fox, 1898			AC	RO		AC: BUJ, SEG; RO: IDO, PVH
<i>Polybia ignobilis</i> (Haliday, 1836) ¹	RO				RO	AC: SEG
<i>Polybia jurinei</i> de Saussure, 1854	AC, RO		AC	RO	AC, RO	AC: BUJ; RO: PVH
<i>Polybia juruana</i> von Ihering, 1904	AC				AC	AC: BUJ
<i>Polybia liliacea</i> (Fabricius, 1804)	AC, RO		AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Polybia micans</i> Ducke, 1904 ¹				RO		AC: BUJ, SEG; RO: IDO
<i>Polybia minarum</i> Ducke, 1906 ²						RO: IDO
<i>Polybia occidentalis</i> (Olivier, 1792) ¹	RO				RO	AC: BUJ, SEG; RO: IDO
<i>Polybia parvulina</i> Richards, 1970				RO		
<i>Polybia platycephala</i> Richards, 1951	AC			RO	AC, RO	
<i>Polybia procellosa dubitata</i> Ducke, 1910				RO		
<i>Polybia quadricincta</i> de Saussure, 1854	AC			RO	AC, RO	
<i>Polybia rejecta</i> (Fabricius, 1798)	AC, RO	AC	AC	RO	AC, RO	AC: BUJ, SEG; RO: IDO, PVH
<i>Polybia rufitarsis</i> Ducke, 1904			AC	RO		AC: BUJ, SEG; RO: IDO
<i>Polybia scrobalis</i> Richards, 1970	AC, RO			RO	AC, RO	
<i>Polybia sericea</i> (Olivier, 1792)	RO			RO	RO	RO: IDO
<i>Polybia simillima</i> Smith, 1862 ²			AC			AC: SEG; RO: IDO
<i>Polybia singularis</i> Ducke, 1909 ¹	RO			RO	RO	AC: BUJ, SEG
<i>Polybia spinifex</i> Richards, 1978					RO	
<i>Polybia striata</i> (Fabricius, 1787)	AC, RO		AC	RO	AC, RO	
<i>Polybia tinctipennis</i> Fox 1898		AC		RO		
<i>Polybia velutina</i> Ducke, 1907 ²	AC				AC	AC: SEG; RO: IDO
<i>Protopolybia acutiscutis</i> (Cameron, 1906)				RO	RO	
<i>Protopolybia alvarengai</i> Richards, 1978	RO				RO	
<i>Protopolybia amarella</i> Bequaert, 1944	AC				AC	
<i>Protopolybia chartergoides</i> (Gribodo, 1892)	AC, RO	AC		RO	AC, RO	AC: SEG; RO: IDO
<i>Protopolybia emortalis</i> (de Saussure, 1855)					AC	
<i>Protopolybia exigua</i> (de Saussure, 1854)	AC				AC	
<i>Protopolybia fuscatus</i> (Fox, 1898) ²						RO: IDO
<i>Protopolybia minutissima</i> (Spinola, 1851)	RO				RO	
<i>Protopolybia rotundata</i> Ducke, 1910				RO		
<i>Pseudopolybia compressa</i> (de Saussure, 1854)				RO		
<i>Pseudopolybia difficilis</i> (Ducke, 1905)					RO	
<i>Pseudopolybia vespiceps</i> (de Saussure, 1863)			AC	RO	RO	AC: BUJ; RO: PVH
<i>Synoeca chalibea</i> de Saussure, 1852 ¹				RO		AC: SEG
<i>Synoeca surinama</i> (Linnaeus, 1767) ¹	RO			RO	RO	AC: SEG
<i>Synoeca virginea</i> (Fabricius, 1804)	AC	AC	AC	RO	AC, RO	AC: SEG; RO: IDO, PVH

Authors' Contribution

A Somavilla - species identification, formal analysis and writing

RNM Morais Júnior - species identification, formal analysis and writing

PCS Barroso - species identification, formal analysis and writing

ML Oliveira - Investigation, project administration, funding acquisition and writing

JA Rafael - Investigation, project administration, funding acquisition and writing

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