

# Survey and New Distributional Records of Nocturnal Social Wasps *Apoica* (Hymenoptera, Vespidae, Epiponini) Along Madeira River, Rondônia, Brazil

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**Abstract:** Diversity of species of *Apoica* present along the portion of Madeira river in Rondônia was investigated. Five of the ten species were found, with new distributional records for *Apoica gelida* van der Vecht and *Apoica pallens* Fabricius.

**Keywords:** Amazon; distribution; diversity; Neotropical region; swarm-founding wasps.

## Levantamento e Novos Registros de Vespas Sociais Noturnas *Apoica* (Hymenoptera, Vespidae, Epiponini) ao Longo do Rio Madeira, Rondônia, Brazil

**Resumo:** Nesse trabalho investigou-se a diversidade de espécies de *Apoica* presentes ao longo do rio Madeira no estado de Rondônia. Foram encontradas cinco das dez espécies do gênero, além de novos registros de ocorrência para as espécies *Apoica gelida* van der Vecht e *Apoica pallens* Fabricius.

**Palavras chave:** Amazônia; distribuição; diversidade; região Neotropical; vespas enxameadoras.

Neotropical swarm-founding (Epiponini), are composed by social wasps which displays several complex social characteristics (NOLL 2013) especially in the foraging activities for the maintenance of colonies. The performance of foraging involves essential activities, such as the search for resources (RAVERET-RICHTER 2000) which is held during the photophase. However, *Apoica* (Epiponini) represents an exception within the tribe, performing their foraging activities during the twilight/night, different for the other 18 genera of this tribe (CARPENTER 2004). Despite having developed this unique behavior among the other Neotropical social wasps, studies about this peculiar group are still scarce in the literature.

*Apoica* is commonly distinguished from other genera of Epiponini wasps by their large ocelli and large-bodied (RICHARDS 1978; PICKETT 2003; PICKETT & WENZEL 2007). This genus presents only ten species, eight reviewed by RICHARDS (1978) (*Apoica arborea* de Saussure, *Apoica flavissima* van der Vecht, *Apoica pallens* (Fabricius), *Apoica gelida* van der Vecht, *Apoica pallida* (Olivier), *Apoica strigata* Richards, *Apoica thoracica* du Buysson, *Apoica albimacula* (Fabricius) and more recently two species were added: *Apoica ambracarina* Pickett and *Apoica ellenae* Pickett (PICKETT & WENZEL 2007). Species are widely distributed in Neotropical region, extending from Mexico to Argentina and excepting for *A. ellenae*, all other species are found in Brazil (PICKETT & WENZEL 2007; SILVA NETO & ANDENA 2011; SOMAVILLA *et al.* 2014).

In Brazilian Amazonia, 20 genera and more than 200 species of social wasps have been recorded, representing about 2/3 of the Brazilian fauna (SILVEIRA 2002). Despite of the great diversity, surveys in this region are commonly concentrated only were specialists of this group are present, leaving lacks in the list of

species of this region. The western Amazon, especially the region of Rondônia state, do not present works on this genus except in old reports (RICHARDS 1978) and presents an urgency in sampling its diversity because could have environmental changes due the current development of the region (ROSA *et al.* 2012).

The work was done in private areas in Amazon forest region along the Madeira River in a path of 100 km in the Federal road BR 364, covering the city of Jaci Paraná and the districts of Nova Mutum Paraná and Vila do Abunã, region of Jaci Paraná, Rondônia state, Brazil (Figure 1). The path was randomly divided in ten points along the river (Table 1) and four collections at each point were performed during three hours (18:00 to 21:00 h), totalizing 40 samplings and 120 h of active collecting (12 h each point). The period of collection was carried out from June 2011 to April 2012.

Wasps were collected actively with flat tip tweezers on light attraction and inserted in lethal chambers containing ethyl acetate. The light attraction method consists in two flashlights (2W – 60 Hz) each one with 30 LED inserted on a white cloth of 2 m<sup>2</sup>. For the identification of the species the keys proposed by RICHARDS (1978) and PICKETT & WENZEL (2007) were used.

Fifty-eight specimens of *Apoica* were collected, distributed in five species: *A. thoracica*, *A. pallens*, *A. flavissima*, *A. pallida* and *A. gelida*. Two species are new records for the state of Rondônia (Table 2) and, although not rare, they had never been recorded in this area (PICKETT & WENZEL 2007).

It is important to present all species collected in these collection points even those already described in the revisions of PICKETT & WENZEL (2007) because these areas has been constant

Table 1. Collecting points with its respective geographical coordinates (in degrees) along Madeira River in Rondônia state, Brazil.

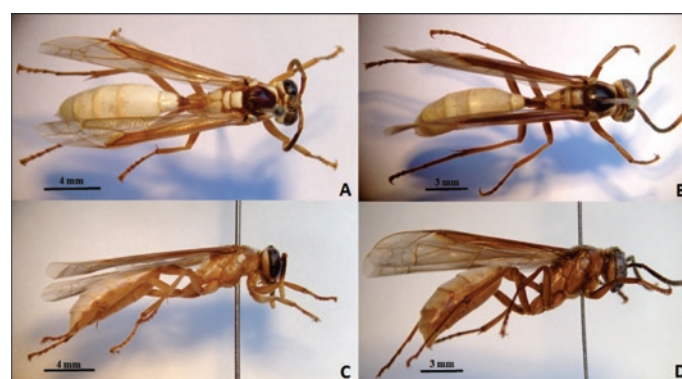
Collection points	Geographical Coordinates	
	Latitude	Longitude
P01	S 09°15'37.7"	W 64°36'28.9"
P02	S 09°14'12.4"	W 64°38'31.4"
P03	S 09°19'26.6"	W 64°42'37.9"
P04	S 09°21'25"	W 64°49'48"
P05	S 09°35'16.5"	W 64°53'40"
P06	S 09°34'30.38"	W 65°00'50.79"
P07	S 09°35'08"	W 65°09'33"
P08	S 09°35'35.5"	W 65°22'33.6"
P09	S 09°39'36.33"	W 65°25'36.08"
P10	S 09°41'54.2"	W 65°21'59.6"

Table 2. Species, abundance and new records (\*) of *Apoica* collected with light trap in each collection point (P01 to P10) along Madeira River, Rondônia, Brazil.

Species	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	Abundance
<i>A. pallida</i>	–	–	8	12	–	2	9	–	–	–	31
* <i>A. pallens</i>	–	–	7	11	–	–	1	–	–	–	19
<i>A. thoracica</i>	–	–	4	–	–	–	–	–	–	–	4
<i>A. flavissima</i>	–	–	–	–	–	–	–	3	–	–	3
* <i>A. gelida</i>	–	–	1	–	–	–	–	–	–	–	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>23</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>58</b>



Figure 1. Satellite image of the region of Jaci Paraná, Rondônia state. Collecting points along Madeira River are represented by the white arrows (P01 to P10). Maps on the right shows above, the Rondônia state (gray) and below, the Jaci Paraná region (black star) (Gomes, B., modified from GoogleEarth 2013).

Figure 2. Dorsal (A) and lateral (C) view of the nocturnal social wasp *Apoica gelida* and dorsal (B) and lateral (D) view of *Apoica pallens* collected along Madeira River in Rondônia state, Brazil (Gomes, B.).

environment changes due the development of the region. The changes in this region could change many ecological aspects of these areas. Many species could have reduced their populations as well as the diversity of this genus, making difficult the future encounter of these species.

The distribution of *A. gelida* (Figure 2, A and C) comprises Colombia, French Guiana, Guyana, Peru, Suriname, Trinidad and Venezuela. In Brazil, it was described in the states of Amazonas, Distrito Federal, Goiás, Mato Grosso, Minas Gerais, Pará, Rio de Janeiro (RICHARD 1978; PICKETT & WENZEL 2007) and our record in Rondônia.

The distribution of *A. pallens* (Figure 2, B and D) comprises Argentina, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Venezuela. In Brazil: Amapá, Amazonas, Distrito Federal, Goiás, Maranhão, Mato Grosso, Minas Gerais, Pará, Paraná, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, São Paulo (RICHARD 1978;

PICKETT & WENZEL 2007; SOMAVILLA *et al.* 2014) and our record to Rondônia.

Probably this region has other new records as well new species of social wasps. This fact reinforces the importance of research about the biodiversity of this group especially in Amazon, once majority of the diversity of social wasps is found in this region. Moreover, the data generated by those surveys comprise one of the most important information used to make decisions about the management of natural areas (SILVEIRA *et al.* 2010). We hope that this note will stimulate more research in social wasps on western Amazon.

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