

# Record of Pompilidae (Hymenoptera, Pompiloidea) in a deciduous forest in Minas Gerais, Brazil

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## Abstract

There is little information about the Pompilidae fauna in Brazil's Deciduous Forests and no reports about how this taxon manifests itself in the Mata Seca State Park (PEMS), which is considered one of the most important for the protection of this forest in Brazil. This work was carried out to record the occurrence of Pompilidae in the Deciduous Forest of the PEMS. The records were occasionally taken in the PEMS during 24 days in 2021. A total of 16 individuals of two genera, four species, and three morphospecies of Pompilidae were collected. The *Pepsis albocincta* Smith, 1855; *Pepsis apicata* Taschenberg, 1869; *Pepsis decorata* Perty, 1833; and *Entypus taschenbergii* (Dalla Torre, 1897) species are new to Brazil's dry forest, which reaffirms the importance of the PEMS in ensuring the protection of biological diversity in the Deciduous Forests of Brazil.

**Keywords:** Diversity. *Entypus*. *Pepsis*. Survey.

## Introduction

Pompilidae is a family of mostly solitary wasps and belongs to the Pompiloidea superfamily (PILGRIM et al., 2008), which encompasses about 5,000 species described worldwide (HUBER, 2017), with 946 species of 63 genera recorded in the Neotropical region (FERNÁNDEZ et al., 2022). These insects have a parasitoid habit (PITTS; WASBAUER; VON DOHLEN, 2006): females hunt and oviposit into spiders, which are the only food for the larvae (WAICHERT et al., 2015). This justifies the species' popular name: spider-hunting wasps.

In Brazil, there are currently 340 recorded Pompilidae species (SANTOS; WAICHERT, 2023), but the true number is probably higher, since descriptions of new neotropical species are frequent (LOPEZ et al., 2021; RAPOZA; WAICHERT, 2022). There is a lack of information on the occurrence of Pompilidae species in Deciduous Forests (AUKO; SILVESTRE, 2013). These regions, also called dry forests,

are phytophysiognomies characterized by the deciduality of more than 50% of plants during the dry season, which begins in April and extends until September or October (PENNINGTON; LEWIS; RATTER, 2006; BELÉM; OLIVEIRA; VELOSO, 2021).

This ecosystem loses original areas every year due to illegal deforestation (mainly due to livestock activities), which puts biodiversity at imminent risk and also affects the Mata Seca State Park (BELÉM; CARVALHO, 2013; ROCHA; LEITE; ESPÍRITO-SANTO, 2020). This Conservation Unit (CU) covers an area that is extremely relevant for Brazil, since it houses the largest Deciduous Seasonal Forest in the state of Minas Gerais (BELÉM; CARVALHO, 2013), reinforcing the importance of studies exploring the species richness of this ecosystem.

There are no records of Pompilidae in the Deciduous Forest of the Mata Seca State Park, therefore, this work aims to record the occurrence of Pompilidae in the deciduous forest of this CU.

## Material and methods

This study was developed in the PEMS (Manga and Itacarambi municipalities), located between the coordinates 14°48'0" S – 43°56'42" W and 14°54'0" S – 44°1'48" W (Figure 1), in the north of Minas Gerais (southeastern Brazil), with an area of 15,360.07 hectares, in a region of transition from the *Cerrado* to the *Caatinga* (PRADO, 2005; BELÉM; CARVALHO, 2013).

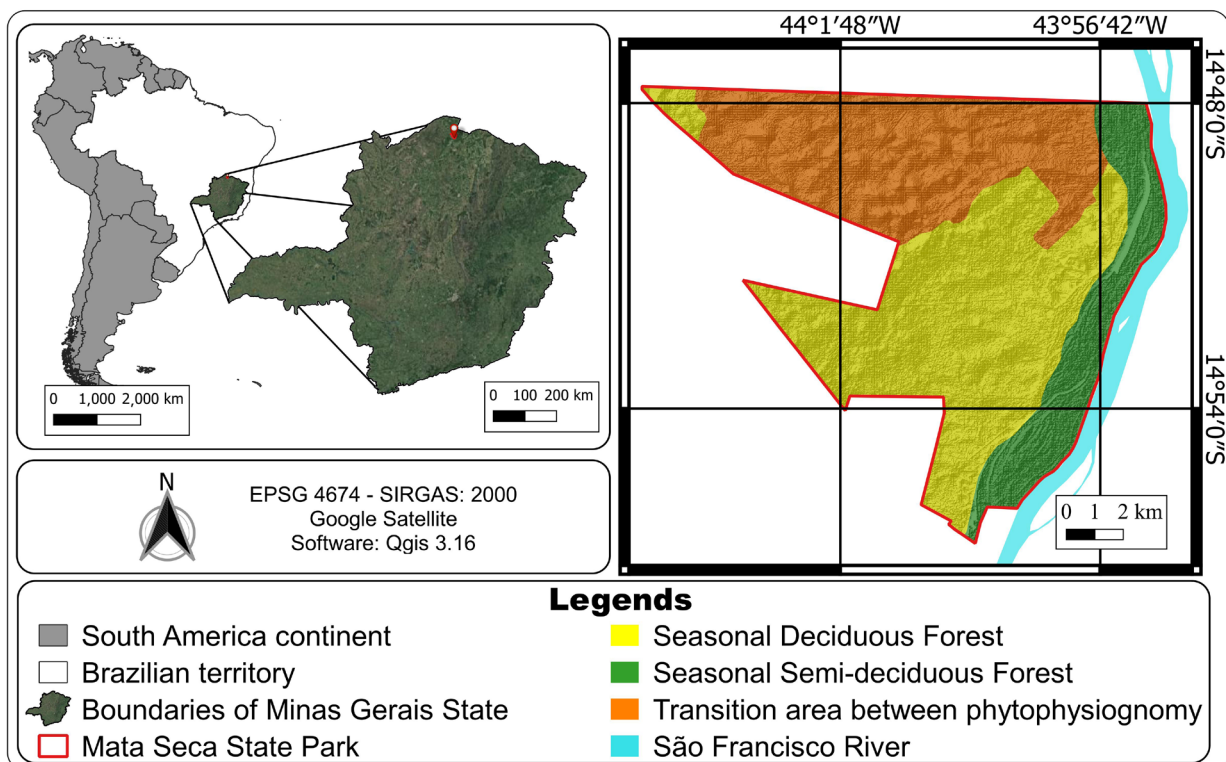
Pompilidae was occasionally collected, during the inventory of other insect taxa, in which the active search method was used. Wasps were captured in flight or on the ground with the aid of insect nets, while moving through pre-existing trails inside the forest, rocky outcrops and near watercourses. The active search took place over 24 days, six hours a day, in four field campaigns, each with six continuous days of collection, in February, May, July and November 2021. The field expeditions were carried out under the

collection licenses SISBio 76140-1 and IEF-MG 038/2020. All biological material collected was placed in 70% alcohol, transported to the Zoology Laboratory of the Federal Institute of Education, Science and Technology of the South of Minas, Inconfidentes Campus, and mounted on insect pins. Subsequently, the specimens were sent to and deposited in the Entomological Collection of the University of Brasília (UnB), to be identified by Prof. Dr. Cecilia Waichert. For *Pepsis* Fabricius species, dichotomous keys were used (VARDY, 2000, 2002, 2005). The identification of *Entypus* Dahlbom, however, was aided by the studies of Day (1974) and Roig-Alsina (1981).

## Results and discussion

Sixteen individuals of two genera, four species, and three morphospecies of Pepsinae were collected.

**Figure 1.** Location and vegetation types of the Mata Seca State Park.



**Source:** Prepared by the authors (Software Qgis 3.16) (2023).

**Table 1.** Subfamily, species, sex and quantity of Pompilidae collected in the Mata Seca State Park, northern Minas Gerais, southeastern Brazil.

Subfamily	Species	Sex and quantity
Pepsinae	<i>Entypus taschenbergii</i> (Dalla Torre)	1 ♀
	<i>Pepsis albocincta</i> Smith	1 ♀
	<i>Pepsis apicata</i> Taschenberg	2 ♂
	<i>Pepsis decorata</i> Perty	5 ♀ and 2 ♂
	<i>Pepsis</i> sp1.	1 ♂
	<i>Pepsis</i> sp2.	1 ♂
	<i>Pepsis</i> sp3.	1 ♀ and 2 ♂

All species recorded belong to the Pepsinae subfamily and mostly to the *Pepsis* genus, which can be explained by the body size of the species of this taxon: they are large (> 2 cm) and easier to be visualized and captured with insect nets (RICHARD, 2018). In addition, this subfamily is the most diverse in the Neotropical region, presenting 30 genera and 259 species. The *Pepsis* Fabricius genus is the most diverse, with 136 species (FERNÁNDEZ et al., 2022).

There is only one study on Pompilidae diversity in Brazil's Deciduous Forests (AUKO; SILVESTRE, 2013), and in it, most specimens were identified only at the genus level. All species collected in this study had already been registered in Brazil, but this is the first time they have been recorded in a Brazilian Deciduous Forest. The *Pepsis albocincta* Smith, 1855 species has been

recorded in the central and southern regions of South America, with some occurrences reported in the Brazilian Amazon (VARDY, 2000); *Pepsis apicata* Taschenberg, 1869, is widely distributed in Brazil, from the Amazon to the southeast, and has also been recorded in Paraguay and Argentina (VARDY, 2000); *Pepsis decorata* Perty, 1833 (Figure 2), can be found from the center to the north of South America, in hot and dry environments, and is also widely distributed in Brazil (VARDY, 2000).

The *Entypus* Dahlbom, 1843 genus has the second highest diversity of Pepsinae species in the Neotropical region, presenting 38 species (FERNÁNDEZ et al., 2022). *Entypus taschenbergii* (Dalla Torre, 1897) can be found in Mexico, in the Dominican Republic, and throughout South America (ROIG-ALSINA, 1981).

**Figure 2.** *Pepsis decorata* collected in the Mata Seca State Park, Minas Gerais, Brazil.

**Source:** Jacques, G.C., 2021.

## Conclusion

This study recorded the unprecedented occurrence of four species, *Pepsis albocincta*, *P. apicata*, *P. decorata*, and *Entypus taschenbergii*, in the Deciduous Forest, which lacks diversity studies, especially those centered on Pompilidae. Thus, this article contributes to the understanding of the endemism and biogeographic patterns of these forests and reaffirms the importance of the PEMS in ensuring the protection of biological diversity in Brazil's deciduous forests.

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