

Short note

***Polistomorpha fasciata* and its host *Euglossa cordata*:
first record of the wasp for Maranhão, Brazil**

***Polistomorpha fasciata* y su huésped *Euglossa cordata*:
primer registro de la avispa para Maranhão, Brasil**

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ABSTRACT

The genus *Polistomorpha* (Hymenoptera: Leucospidae) is exclusive to the Neotropical region, comprising seven species, six of them in Brazil. *Polistomorpha fasciata* has previously been recorded in the Brazilian states of Amapá, Amazonas, Pará, and São Paulo. This study presents the first record of *P. fasciata* from Northeast Brazil, parasitizing *Euglossa cordata* within a Restinga ecosystem. Additionally, it provides an extended diagnosis and illustrations of *P. fasciata*, *E. cordata*, and its nest.

Keywords: Apinae, Chalcidoidea, parasitoids, Restinga, trap nest.

RESUMEN

El género *Polistomorpha* (Hymenoptera: Leucospidae) es exclusivo de la región neotropical, con siete especies, seis de ellas en Brasil. *Polistomorpha fasciata* se registró anteriormente en Amapá, Amazonas, Pará y São Paulo. Este estudio proporciona el primer registro de *P. fasciata* en el Noreste de Brasil, parasitando a *Euglossa cordata* en un ecosistema de Restinga. También incluye un diagnóstico ampliado e ilustraciones de *P. fasciata*, *E. cordata* y su nido.

Palabras clave: Apinae, Chalcidoidea, Nido trampa, parasitoides, Restinga.

The genus *Polistomorpha* Westwood, 1839 (Hymenoptera: Leucospidae) is exclusive to the Neotropical region. Of the seven known species, six occur in Brazil: *P. conura* Bouček, 1974, and *P. surinamensis* (Westwood, 1839) in the Amazonas state; *P. femorata* Bouček, 1974, and *P. nitidiventris* Ducke, 1906 in the Pará state; *P. sphegoides* Walker, 1862 in Amazonas and Pará states; and *P. fasciata* (Westwood, 1874) in Amapá, Amazonas, Pará and São Paulo states. The latter is the only one recorded outside the Amazon biome (Bouček, 1974; De Santis, 1980; Freiria *et al.*, 2017). Among the Brazilian *Polistomorpha* species, only three (*P. conura*, *P. fasciata*, and *P. surinamensis*,) have host records, all parasitizing bees belonging to the genus *Euglossa* Latreille, 1802 (Apidae: Euglossini) (Table 1). Here, we present the first record of *P. fasciata* from Northeast Brazil, in the Restinga ecosystem, Atlantic Forest biome. We also provide a diagnosis of *P. fasciata*, along with illustrations of the parasitoid, its host species (*E. cordata*), and the host's nest.

Both *P. fasciata* and *E. cordata* are ecologically significant: the wasp is a parasitoid of Euglossini bees, while the bee is a key pollinator for various orchid species. Therefore, this study aims to present a record of *P. fasciata* parasitizing *E. cordata* in the state of Maranhão state, in addition to providing data on the species' distribution and compiling records of other species and hosts of the wasp and bee species.

The specimens from the state of Maranhão examined in this study were obtained from a survey involving 396 wooden trap nests, following the methodology described by Serrano and Garófalo (1978). These nests were suspended in the restinga vegetation of Ilha Grande do Paulino, located within the APA Delta do Parnaíba, Tutóia, Brazil, (2.7329°S 42.1857°W; Fig. 1). The nests were distributed across 22 sites and monitored monthly by the last author from August 2017 to July 2019, totaling 24 months.

Of all the nests provided, five were occupied by *Euglossa* (*Euglossa*) *cordata* Linnaeus, 1758 (Figs. 2a, b). From one of these nests, collected in July 2018 (entrance hole 12 mm; six brood cells), five bee specimens and one female *Polistomorpha* emerged, the latter emerging 10 days before the brood of *E. cordata*.

The parasitoid was identified using available keys (Bouček, 1974; Hanson, 2006), the original description (Westwood, 1874), and by comparison with type specimens. The label information was transcribed as follows: Double quotation marks (“ ”) enclose the data from each label; backslash symbol (\) indicates line break; two slashes (//) indicate information on the back of the label. Geographical distribution records were taken from the labels and the literature (Bouček, 1974; De Santis, 1980; Freiria *et al.*, 2017). New occurrence records are indicated by an asterisk (*) in the “distribution” section.

Color pictures of *P. fasciata* and *E. cordata* were taken using a LEICA DFC295 digital camera attached to a stereomicroscope and stacked with Zerene Stacker software

(v.1.04 build). Scanning electron photomicrographs were obtained using a TESCAN VEGA3 SEM in low vacuum mode at the Electron Microscopy Center of the Universidade Federal do Paraná. All figures were prepared using Adobe Photoshop (version 11.0), and maps were created in the QGIS program, version 3.34.

Specimens examined in this study are deposited in the following institutions: LEACOL – Coleção de Abelhas do Laboratório de Estudos sobre Abelhas, Universidade Federal do Maranhão, São Luís, Brazil; NHMUK – Natural History Museum, London, UK; OUMNH – Oxford University Museum of Natural History, Oxford, UK; UFMG - Centro de Coleções Taxonômicas da UFMG, Belo Horizonte, Brazil; ZSJRP – Coleção de Hymenoptera do Departamento de Zoologia do Instituto de Biociências, Letras e Ciências Exatas – UNESP, São José do Rio Preto, São Paulo, Brazil.

***Polistomorpha* Westwood, 1839**

***Polistomorpha fasciata* Westwood, 1874**

Polistomorpha fasciata Westwood 1874: 134. Holotype female. Brazil, Amazonas (OUMNH, examined by photographs). Designed by Bouček 1974.

Polistomorpha nigromaculata Cameron 1904: 96. Lectotype male. Panamá (NHMUK, examined by photographs). Synonymized by Bouček 1974.

Extended diagnosis: *Polistomorpha fasciata* is recognized by its predominantly yellow head and thorax (Figs. 3a, b, c), with brown antennae (Figs. 3a, c, d) and a black triangular macula between the inner eye margin and posterior ocelli (Figs. 3b, f); light brown areas and a triangle centrally on pronotum (Figs. 3b, f); three longitudinal black maculae on mesoscutum (Figs. 3b, f); dark brown band on the anterior margin and longitudinally in the midline on mesoscutellum; dorsellum quadrangular, with a dark brown transverse band (Fig. 3b); propodeum with two dark longitudinal bands. Metasomal tergites one and two brownish yellow, the rest darkened; three anterior sternites partially yellowish darkened, the rest darkened (Figs. 3a, g). Femures yellowish. Fore wing densely covered with dark pilosity (Figs. 3a-b). Body covered with fine and small pilosity (Figs. 3a; 4a, c). Antenna with nine flagellomeres (Fig. 3a). Body sculpture predominantly foveate (Figs. 3-4). Head: clypeus rounded apically; maxillary palp with two articles and an elongated bristle (Fig. 4b); mandible with two teeth; POL (= 40) 2.6× OL (= 15); occipital carina complete. Hind coxa about twice as long as mid coxa, with a tooth medially on the posterior margin (Figs. 3a, 4c-d). Hind femur with 7-8 teeth, the basal one 2-4× longer than the others (Figs. 3a; 4c, e) Tarsal claws with a row of teeth.

Material examined: Holotype: “Amazonas\ Bates\ (1986)” “HOLOTYPE O.U.M.” “*Polistomorpha\ fasciata* Westwi” “HOLOTYPE\ *Polistomorpha\ fasciata* Westwood 1874\ Boucek det. 1974” “*Polistomorpha\ surinamensis*

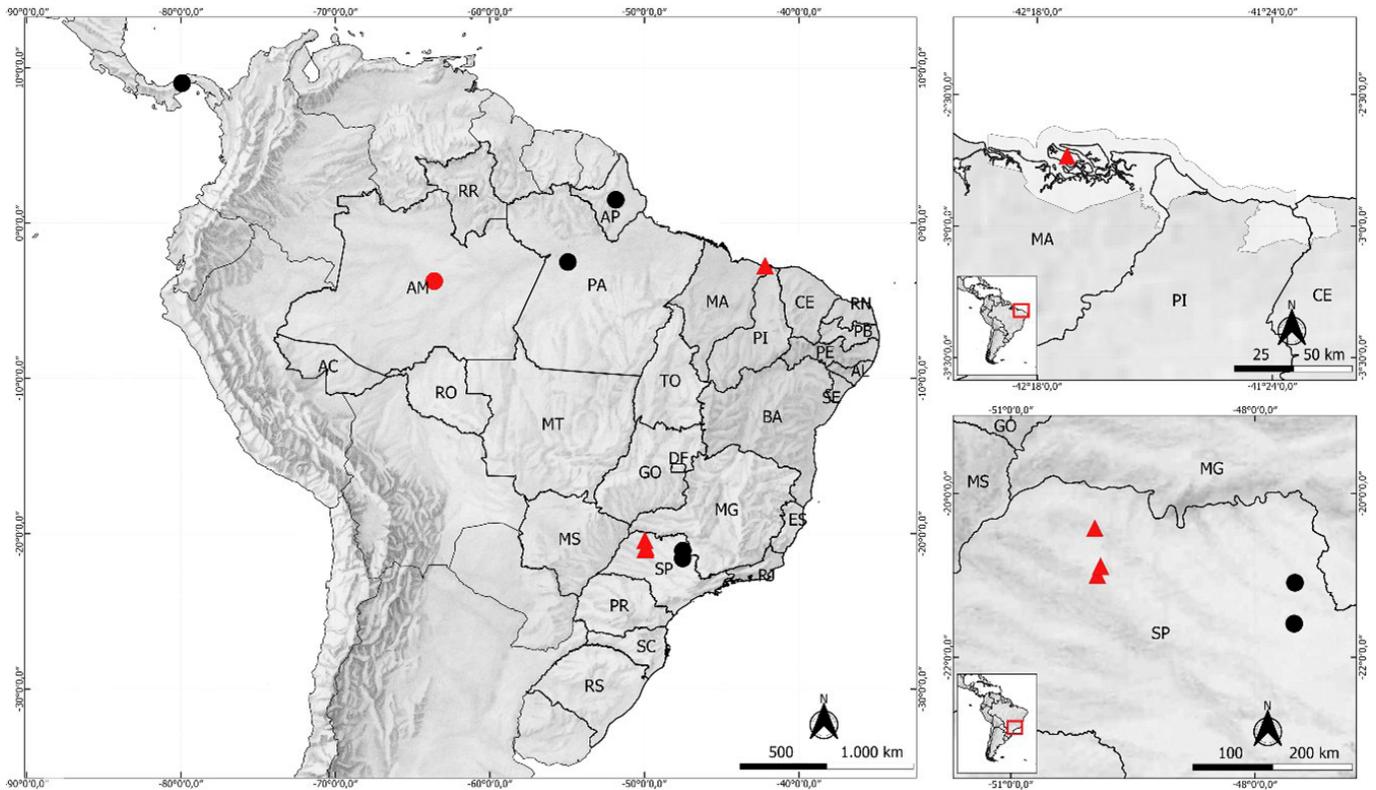


Figure 1. Occurrence of *Polistomorpha fasciata*. a) Limit of Brazilian federative units, with emphasis on the northeast region and adjacent countries; red circle indicates the locality of the holotype, black circles indicate literature records, and red triangles represent new records. b) APA Delta do Parnaíba, with details of Ilha Grande do Paulino, Tutoia-MA. C. Locations of new records for the state of São Paulo, Brazil.

macho West\ E. F. Rocha det. 1955” “TYPE Hym: 700\
Polistomorpha fasciata\ Westwood\ HOPE DEPT. OXFORD
(OUMNH). **Lectotype** (*P. nigromaculata*): “LECTO\TYPE//
Bouček \” “1972” “TYPE” “Cameron Coll.\ 1904-313”
“*Polistomorpha nigromaculata*\ Ccim. Hipe\ Panama” “B.M.
TYPE\ HYM.\ 5.106” “NHMUK 01444370” (NHMUK).
Additional Material. [6♀]: **Brazil, Maranhão:** 1♀, “Brasil,
MA, Tutóia, APA,\ Delta Parnaíba, Ilha\ Grande do
Paulino,\ 2.7329°S 42.1857°W,\ 23.xi.2017, n. armadilha\
0,8×15cm, H. C, Barros” (LEACOL); **São Paulo:** 2♀, “União
Paulista, SP, Brasil, 8/x/2007 Noll col. Malaise”(UFMG);
1♀, “Votuporanga, SP, Brasil, 13/vii/2007 Noll col.
Malaise” (ZSJRP); 1♀: “Planalto, SP, Brasil, 08/x/2007 Noll
col. Malaise” (ZSJRP); 1♀, “União Paulista, SP, Brasil, 21/
ix/2007 Noll col. Malaise” (ZSJRP).

Hosts. *Euglossa* (*Euglossa*) *cordata* (Fig. 3); *Euglossa* (*Euglossa*)
townsendi Cockerell, 1904; *Euglossa* (*Glossura*) *ignita* Smith,
1874.

Distribution. Brazil: dele: and add (Amapá, Amazonas,
Maranhão*, Pará and São Paulo and Panamá (Fig. 1).

Occurrence in Brazilian Biomes: Amazônia, Cerrado and
Mata Atlântica (Fig. 1).

There are few records of *P. fasciata* restricted to North and
Southeast Brazil (Freiria *et al.* 2017; Perioto and Lara 2024),
mostly from trap nests (Table 1). In contrast, *E. cordata* (Fig.

2a) was recorded from all regions of Brazil (Oliveira *et al.*,
2024). The wide distribution of the host suggests that *P.*
fasciata potentially has a much wider distribution in Brazil.
The new records presented are an important addition to the
parasitoid knowledge, not only marking its first record in
Northeast Brazil but also in the unique Restinga ecosystem.
In addition to the new record, the illustrations of the
parasitoid, host, and nest provided here will facilitate future
identifications. The Restinga is one of the most threatened
ecosystems in coastal Brazil. Their degradation compromises
plant diversity and, consequently, the availability of nesting
sites for associated bees and wasps. This finding alone
underscores the need to preserve these habitats. Moreover,
the records presented here also reinforce the idea that the
diversity of this ecosystem is still greatly underestimated,
and its preservation is essential so that this diversity does
not become extinct before it is even known.

AUTHORS PARTICIPATION

A.L.M: Conceptualization, methodology, illustrations
and writing;

A.R.L: Methodology and writing;

H.C.B: Visualization, conceptualization, methodology,
illustrations, maps and writing.

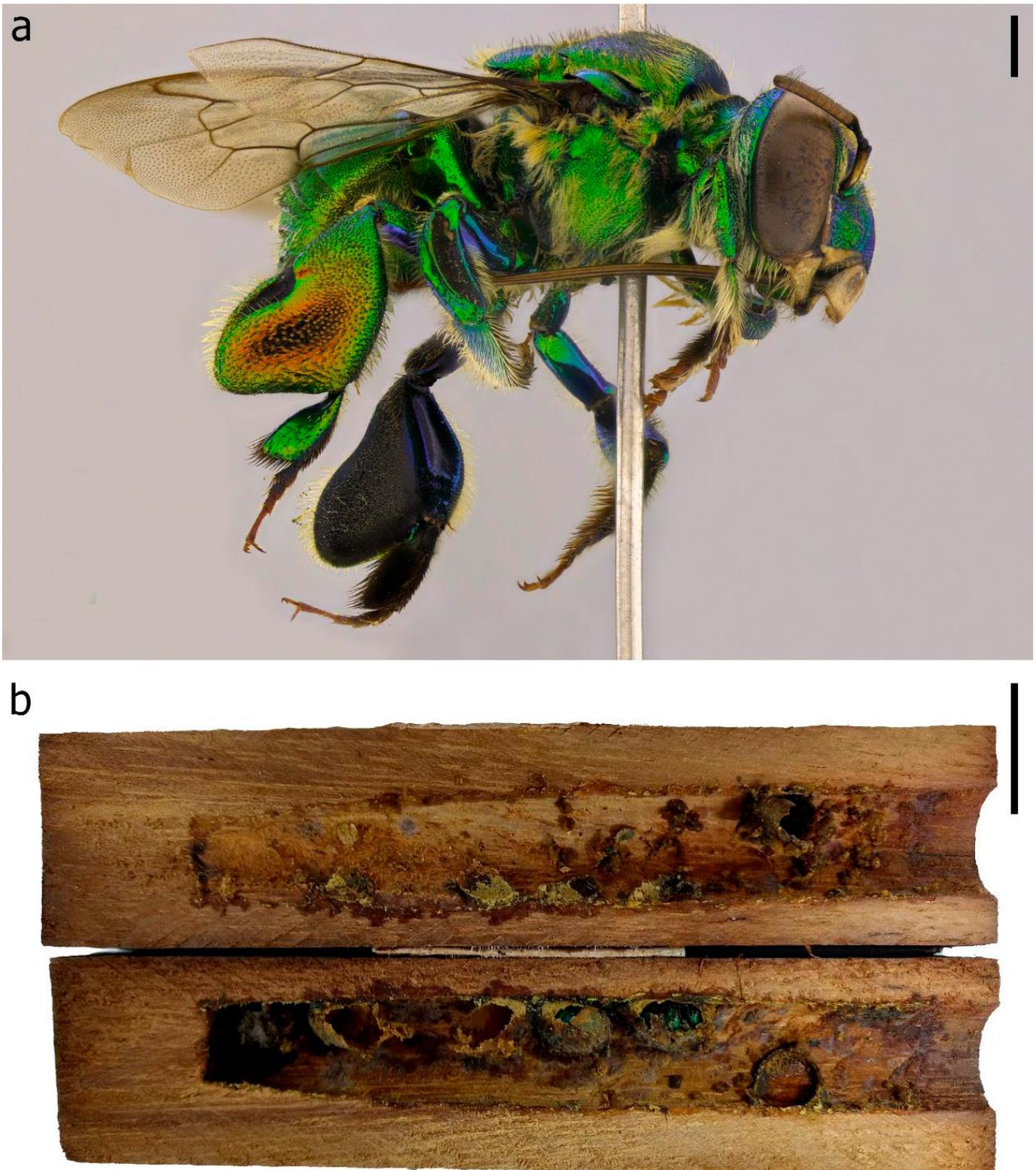


Figure 2. *Euglossa cordata*. a) Female habitus, lateral view; b) nest. Scale bar. a = 1.0mm and b = 15.0mm.

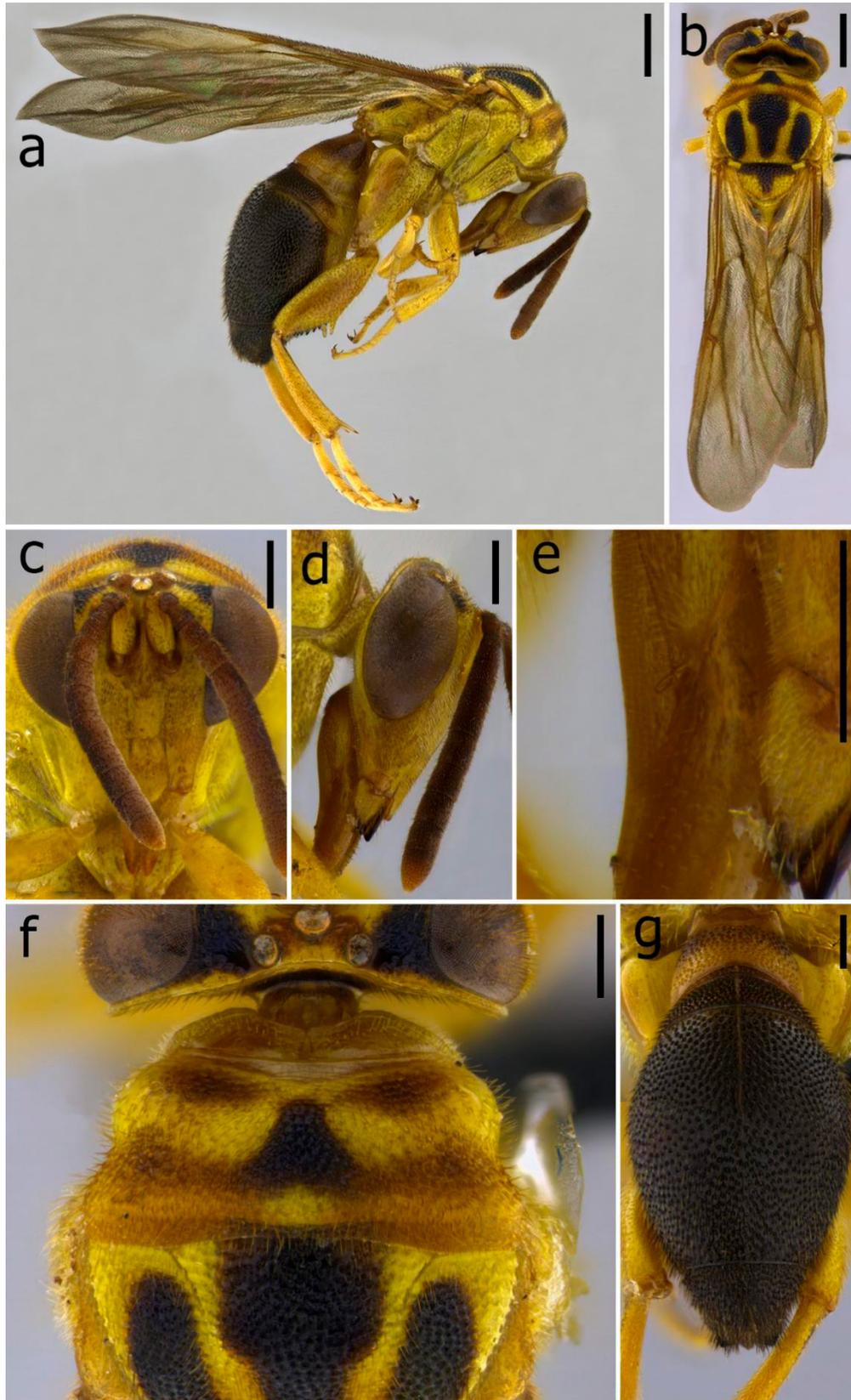


Figure 3. Female of *Polistomorpha fasciata* from Maranhão, Brazil. a) Habitus, lateral view; b) Habitus, dorsal view; c) Head, frontal view; d) Head, lateral view; e) Details of palpomeres; f) Part of head, pronotum, and part of mesoscutum, dorsal view; g) Metasoma, dorsal view. Scale bar: a, b, f = 1.0mm; c, d, e, g = 0.5mm.

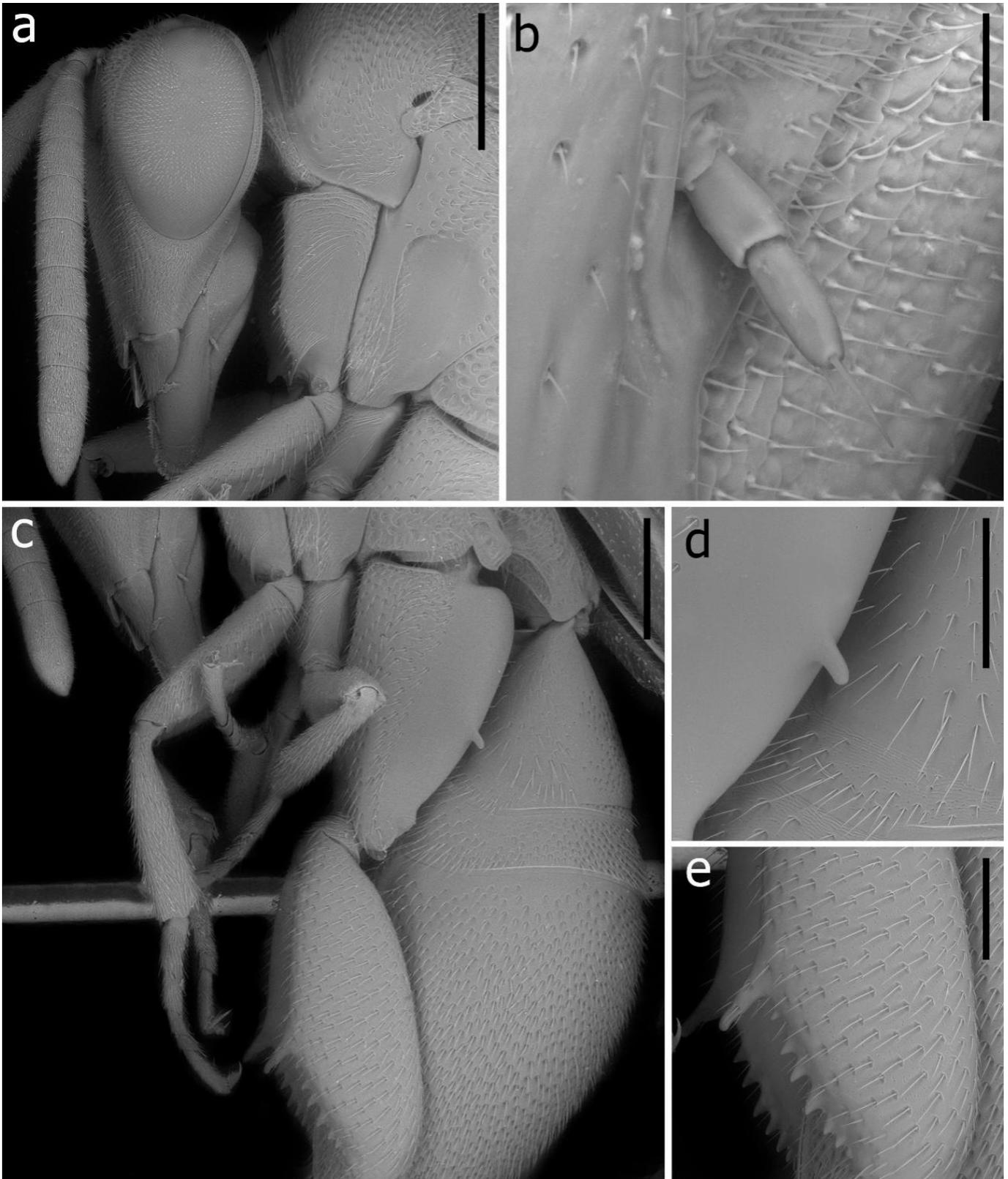


Figure 4. Electro-micrographs of *Polistomorpha fasciata*. a) Head and part of mesosoma, lateral view; b) Details of maxillar palpomeres; c) Metasoma and posterior coxa and femur, lateral view; d) Detail of posterior coxa tooth; e) detail of posterior femur teeth. Scale bar. a, c = 1000 μ m; b = 50 μ m; d, e = 500 μ m.

Table 1. Records of *Polistomorpha* (Hymenoptera, Leucospidae) species and hosts bees from Neotropical region.

<i>Polistomorpha</i> species	Hosts	Distribution	Reference
	<i>Euglossa</i> (<i>Euglossa</i>) <i>townsendi</i>		
	<i>Euglossa</i> sp.	São Paulo, Brazil	Ferreira et al., 2017
<i>P. fasciata</i>	<i>Euglossa</i> (<i>Euglossa</i>) <i>cordata</i>	Maranhão, Brazil	New records
	<i>Euglossa</i> (<i>Glossura</i>) <i>ignita</i>		
	<i>Euglossa</i> sp.	Panamá, Brazil	Grissell, 2007; Hanson, 2006
<i>P. surinamensis</i>	<i>Euglossa</i> (<i>Glossura</i>) <i>ignita</i>	Costa Rica	Dodson, C. H. (1966); Roberts and Dodson (1967)
<i>P. conura</i>	<i>Euglossa</i> sp.	Costa Rica	Grissell 2007

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CONFLICT OF INTEREST

The authors declared that they have no conflict of interest.

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