



New records of Pantophthalmidae (Diptera: Brachycera) from Northeast Brazil

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Abstract. Although Pantophthalmidae are widespread in the Neotropical Region, only three of 20 species of the family are known in the Northeast region of Brazil: *Pantophthalmus planiventris* (Wiedemann, 1821), *Pantophthalmus tabaninus* Thunberg, 1819, and *Pantophthalmus vittatus* (Wiedemann, 1828). In this paper, we record, for the first time, *Pantophthalmus comptus* Enderlein, 1912 from the state of Maranhão, in area of state covered by Amazon Forest biome, and *Pantophthalmus pictus* (Wiedemann, 1821) from the state of Pernambuco, near the coast, within the Atlantic Forest biome. These two species have been reported elsewhere from Brazil and now their distribution has expanded to the Northeast. Also, we provide images of a female specimen of *P. planiventris*, known, in the Northeast region of Brazil, from the state of Maranhão only, and of the male terminalia of *P. comptus*. This paper increases the number of known species of Pantophthalmidae from the Northeast Brazil to five species.

Keywords: distributional records; Giant flies; Neotropical Region; taxonomy; Timber flies.

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Pantophthalmidae, also known as timber flies or giant flies, are a small family of Diptera (Brachycera), sister to the clade of Xylomyiidae and Stratiomyidae. The family is restrict to the Neotropical Region (WOODLEY 1989), occurring naturally from northern Mexico to northern Argentina, absent only in Chile (VAL 1976; PAPAVERO 2009).

Flies in this family are easily recognized by their large and robust size, varying from 18 to 45 mm in body length. They can be differentiated from the large adults of Tabanidae by the absence of the scale-like elevation above the posterior spiracle and rudimentary mouthparts, and from the Stratiomyidae by an elongated discal cell and radial veins not crowded toward the anterior margin of the wing (WOODLEY 2009). Immature stages of the family pierce living or dead trees to form galleries, in which they probably feed on fresh or fermented organic matter (VAL 1976).

The Northeast region of Brazil, one of the five political division of the country, represents an area of approximately 1.5 million km², corresponding to 18.27% of the Brazilian territory, with the presence of the biomes Atlantic Forest, Amazon Forest, Cerrado, and Caatinga (ARAÚJO 2011). The Caatinga Domain is the major and most important biome of the Northeast region and includes a mosaic of thorny shrubs and seasonally dry forests, extending through an area of about 735,000 km² (LEAL *et al.* 2005). A study carried out in the Sete Cidades National Park and in the Ubajara National Park, both in the Caatinga domain, demonstrated that the biome is extremely diverse and that it has a strong endemism for the fauna of Diptera (LIMEIRA-DE-OLIVEIRA *et al.* 2017).

Although pantophthalmids are known to be widespread in the Neotropical Region, only three species of *Pantophthalmus* Thunberg, 1819, of the 20 species of the family, have been reported for the Northeast region of Brazil: *Pantophthalmus planiventris* (Wiedemann, 1821) in the state of Maranhão and *Pantophthalmus tabaninus* Thunberg, 1819 and *Pantophthalmus vittatus* (Wiedemann, 1828), both in the state of Bahia (VAL 1976; PAPAVERO 2009). These three species have a large widespread distribution, with *P. planiventris* occurring from Mexico to Northern Brazil and Bolivia (PAPAVERO 2009); *P. tabaninus* reported from Mexico to Southern Brazil and Argentina (PAPAVERO 2009; also found in dryer environments, such as in the Cerrado biome, see OLIVEIRA *et al.* 2023); and *P. vittatus* from Colombia and Trinidad and Tobago to Southern Brazil (PAPAVERO 2009).

In this contribution, we record, for the first time, *Pantophthalmus comptus* Enderlein, 1912 from the state of Maranhão and *Pantophthalmus pictus* (Wiedemann, 1821) from the state of Pernambuco, thus increasing the number of species of the family in the Northeast region of Brazil from three to five. In addition, we provide digital photographs of three out of five species found in the region, including the first images of the external morphology of *P. comptus* and its terminalia.

MATERIAL AND METHODS

One specimen of *P. pictus* was discovered after a photograph posted on the Facebook group "Insetos do Brasil (=Insects from Brazil)" (see Annex I). The first author contacted and invited the owner of the photographs to collaborate on the manuscript, and the specimen was sent to Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil for study and identification. Specimens of the other two studied species in this work: *P. comptus* and *P. planiventris* are housed at the (INPA), Coleção Zoológica do Maranhão (CZMA), Caxias, Maranhão, Brazil, and Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, Brazil. The specimens were identified using the key present in VAL (1976). Photographs were taken with a Leica MC170 HD digital camera attached to a Leica M165C stereomicroscope (Figures 1 and 2) at INPA and with an Olympus Stylus TG-6 Tough (TG-6) (Figure 3) at MZUSP by Daniel Dias Dornelas do Carmo. The multiple images were stacked and combined using Leica Application Suite V4.11.

RESULTS

Pantophthalmus comptus Enderlein, 1912

(Figure 1)

Pantophthalmus comptus Enderlein, 1912: 107, 117. Holotype: female (Staatlichen Naturhistorischen Sammlungen Dresden, Germany, STM, as STMD in PAPAVERO 2009). Type locality: "South America. [For nomenclatural history, see PAPAVERO (2009)].

Diagnosis. Female (see BARROS et al. 2019). Male: body mostly brownish; scutal bands not well developed, no dark spot at transverse suture level; scutum homogeneously brown, except for a weak pair of silver pruinescence over the posterior portion of the scutum medially; scutum markedly covered by medium-sized yellowish setae; scutellum dark brown on its apical half as shown in VAL (1976); pleuron dark brown; with no ventral spine on hind femur.

Material examined. BRAZIL, Maranhão, REBIO - Res. Biol. Gurupi [Reserva Biológica do Gurupi], 03°14'05"S 46°41'83"W, armadilha de Malaise, 07-15.i.2011, F. Limeira-de-Oliveira & D.W.A. Marques (1 ♀, CZMA); same data, except: 03°14'01"S 46°40'52"W, armadilha luminosa, 03-07.v.2011, M.M. Abreu & J.A. Silva, cols. (1 ♂, CZMA).

Distribution. Belize, Colombia, Guyana, Suriname, French Guiana, Peru, Brazil (states of Roraima, Amazonas, Pará, and Maranhão [new record]) (BARROS et al. 2019).

Comments. Similarly to the female, the male has wings with a yellowish base and an abdomen mostly orangish, with lateral margins dark brown with white spots (Figure 1A, B). The color intensity of the legs in the male is not as dark as in the female from Roraima (BARROS et al. 2019), but the pattern is the same, with all tarsomeres lighter, particularly the hind tarsomeres, which are nearly yellow (Figure 1A). VAL (1976) provided illustrations of the male terminalia and here, we complement her efforts with the first digital images of the male terminalia of *P. comptus* (Figure 1C-I).

Pantophthalmus pictus (Wiedemann, 1821)

(Figure 2)

Acanthomera picta Wiedemann, 1821: 61. Holotype: male, not found according to VAL (1976). Type locality: "Brazil". [For nomenclatural history, see PAPAVERO (2009)].

Diagnosis (female). Body predominantly dark, lighter in the scutum (after pinning, our specimen darkened and the scutal band pattern is not visible; for a specimen with regular

coloration, see PUJOL-LUZ & MORGADO 2018); upper frons brown; scutal medial band brown, with a thin darker stripe that extends from anterior margin to near scutellum, dorso-central bands dark brown to black, lateral bands greyish, not as much dark as dorso-central bands; tibiae bicolored, basal two-thirds yellowish and apical third dark brown; all tarsomeres yellowish; a medium-sized ventral spine on the hind femur; wing with a yellowish base.

Material examined. BRAZIL, Pernambuco, Camaragibe, APA - Aldeia Beberibe, 7°58'34.9"S 34°57'47.3"W, 08.iii.2021, coleta manual, R.A. Machado (1 ♀, INPA).

Distribution. Brazil (Distrito Federal and states of Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina, Rio Grande do Sul and Pernambuco [new record]), Paraguay, Argentina (PAPAVERO 2009; PUJOL-LUZ & MORGADO 2018; NOBRE et al. 2021).

DISCUSSION

Previously to this study, only three species of *Pantophthalmus* were known in the Northeast region of Brazil: *P. planiventris* (Figure 3, now with the first available photograph) in the Maracaçume River [ca 1°59'58.4"S 45°54'48.1"W], state of Maranhão, in the Amazon Forest (Figure 3D) (VAL 1976); and both *P. tabaninus* and *P. vittatus* for the state of Bahia, no other data available (VAL 1976). The number of species in the Northeast region of Brazil thus raises to five, with the addition of *P. comptus* for Maranhão, also in the Amazon Forest, and *P. pictus* for Pernambuco, reported near the coast, in the Atlantic Forest.

These five species have been reported from other biomes and states of Brazil, and other countries (PAPAVERO 2009; FACHIN 2023). In Brazil, *P. comptus* and *P. planiventris* are known from other states covered by the Amazon Forest, and *P. tabaninus* and *P. vittatus* are known from records in the Amazon Forest and Atlantic Forest. At least *P. pictus* and *P. tabaninus* are reported in the Cerrado, which is often dryer than the Amazon Forest and Atlantic Forest (PUJOL-LUZ & MORGADO 2018; OLIVEIRA et al. 2023). Pantophthalmids have been found in three of the four biomes of the within the limits of the Northeast Brazil. There is other three records of pantophthalmids from the state of Bahia, but the data are unprecise. No record of the family has been reported from the Caatinga biome (LIMEIRA-DE-OLIVEIRA et al. 2017). but it is not known whether the absence of records of Pantophthalmidae in the Caatinga is a result of the low number of collections in the biome or if the family is not adapted to the environmental conditions of this biome.

Originally, the concept of this paper came after a photograph of *P. pictus* was posted on a Facebook group. Recently, *Drosera magnifica* Rivadavia & Gonella, 2015 (GONELLA et al. 2015), a new species of a carnivorous plant, and a new species of dance fly *Chvalaea yolkamini* Jaume-Schinkel, Soares & Barros, 2020 (JAUME-SCHINKEL et al. 2020), were first discovered after their photos were uploaded on Facebook and Instagram, later collected and formally described. Newly, SKVARLA & FISHER (2023) listed 2,123 manuscripts that used photographs shared on websites, highlighting the importance of using social networks in discovering new records and species of insects.

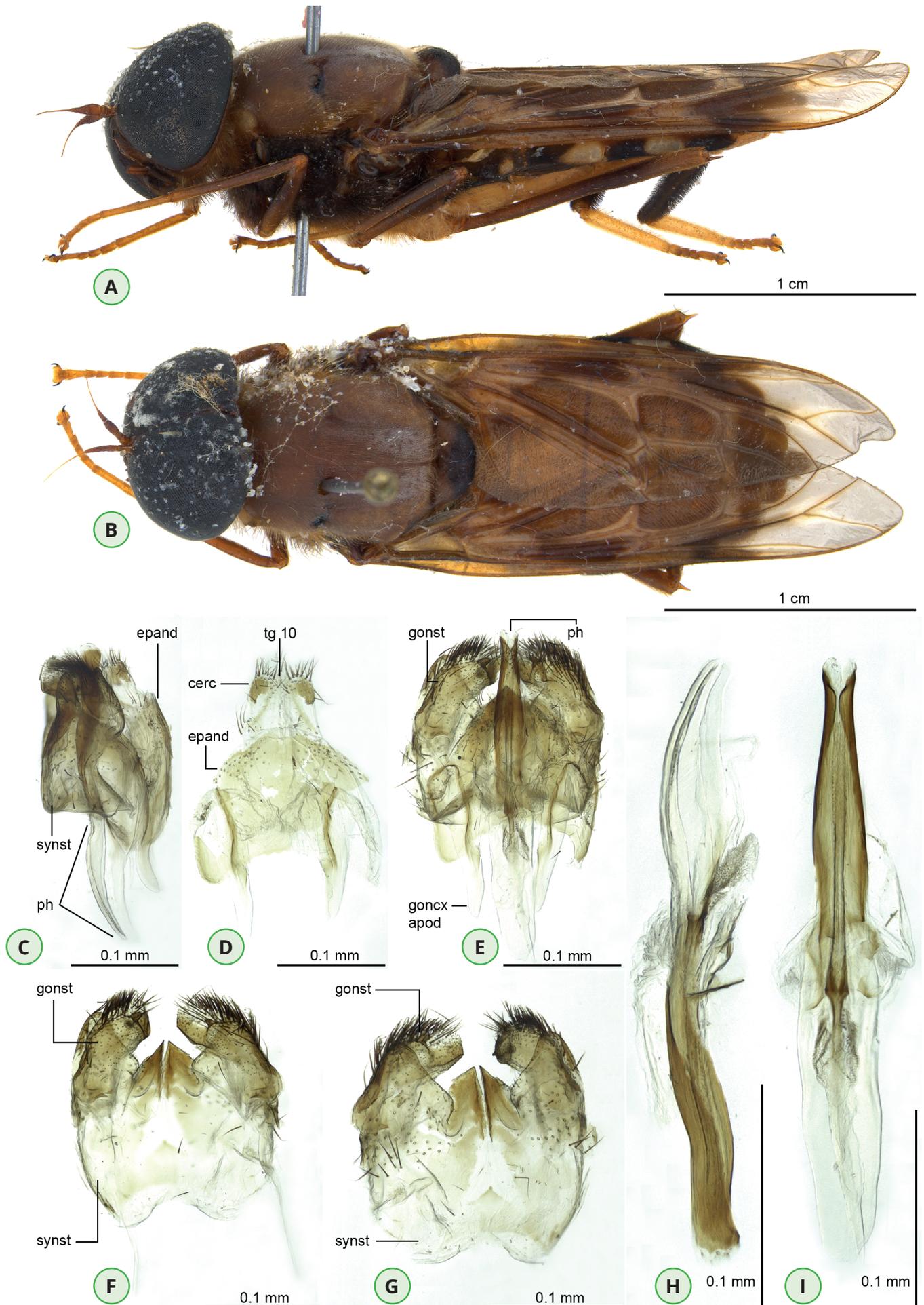


Figure 1. *Pantophthalmus comptus* Enderlein, 1912, male: **(A)** Dorsal habitus. **(B)** Lateral habitus. **(C)** Genitalia with phallus, epandrium, tergite 10, and cerci, lateral view. **(D)** Epandrium, tergite 10, and cerci, dorsal view. **(E)** Genitalia with phallus, dorsal view. **(F), (G)** Genitalia without phallus, dorsal and ventral views respectively. **(H), (I)** Phallus, lateral and dorsal views respectively. Abbreviations: cerc, cercus; epand, epandrium; goncx apod, gonocoxal apodeme; gonst, gonostylus; ph, phallus; synst, systemite; tg, tergite.

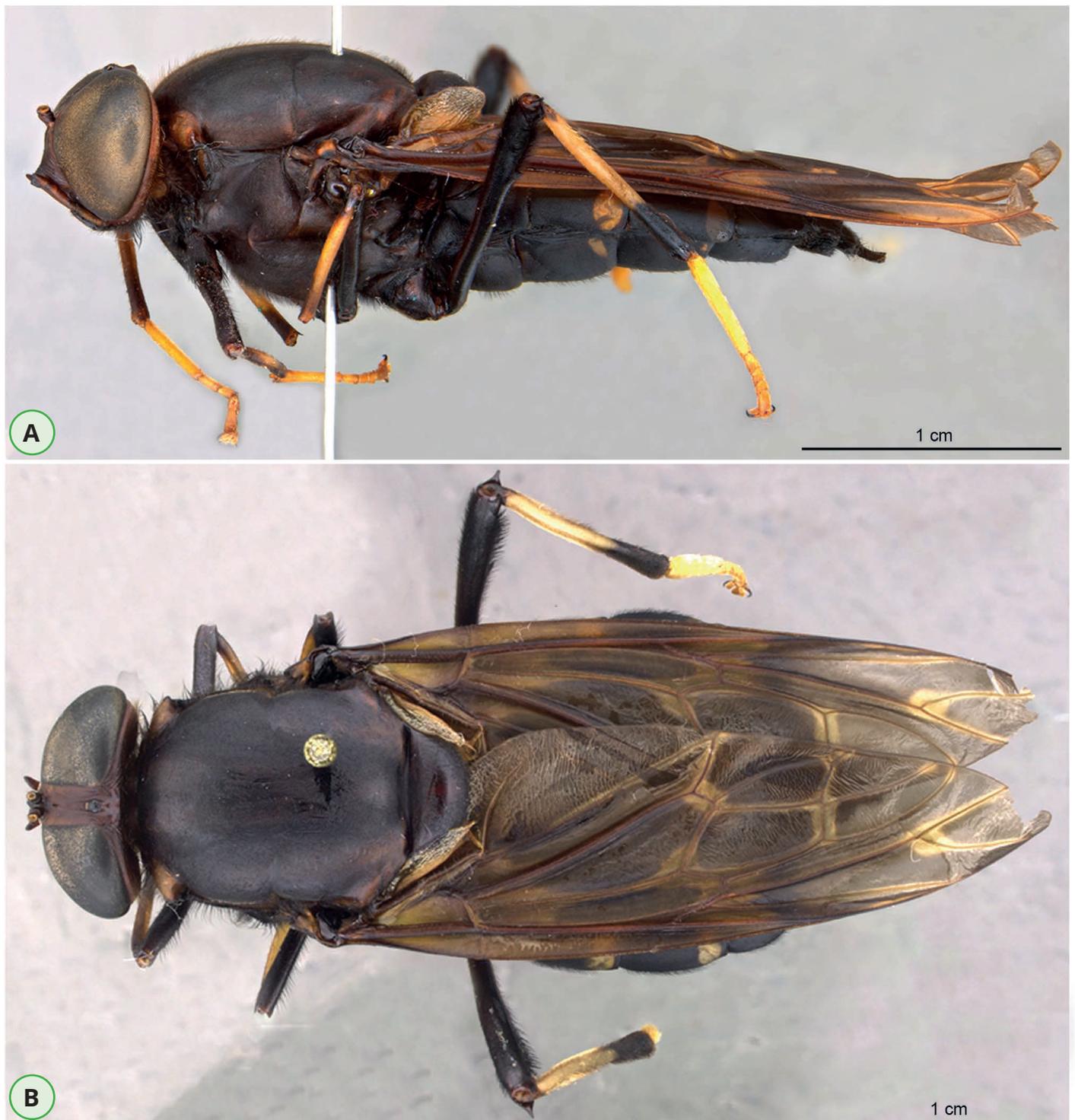


Figure 2. *Pantophthalmus pictus* (Wiedemann, 1821), female: (A) Lateral habitus. (B) Dorsal habitus.



Figure 3. *Pantophthalmus planiventris* (Wiedemann, 1821), female: (A) Dorsal habitus. (B) Lateral habitus. (C) Head, anterior view. (D) Labels.

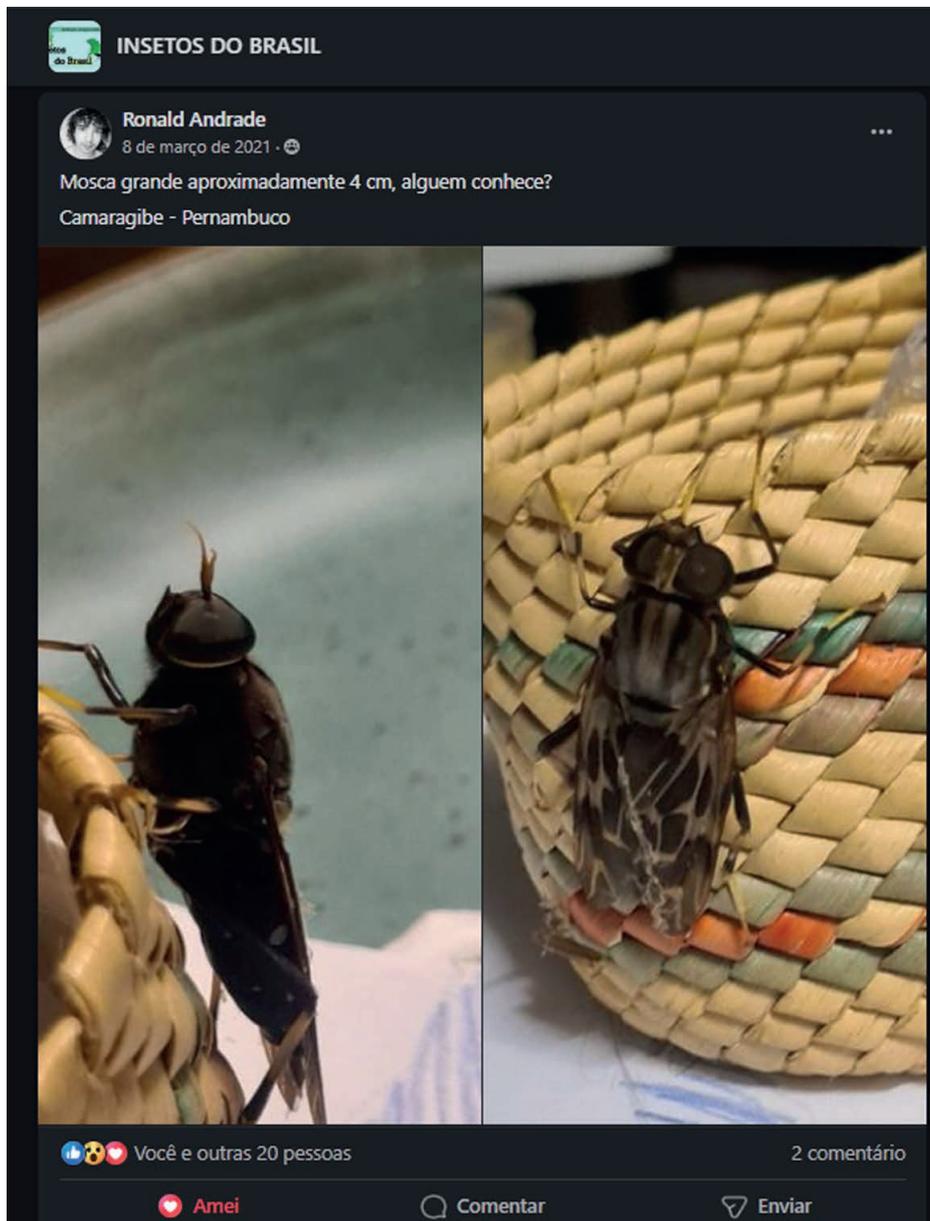
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Annex I. Original post on Facebook group Insects from Brazil.