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## Southern distributional limits of Meliponini bees (Hymenoptera, Apidae) in the Neotropics: taxonomic notes and distribution of *Plebeia droryana* and *P. emerinoidea* in Argentina

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### Abstract

The southern distribution of stingless bees in the Neotropics reaches the province of Buenos Aires, Argentina, up to 34°51' S in latitude, where two species of *Plebeia* are found on the west margin of the Río de La Plata: *P. emerinoidea* (Silvestri), and *P. droryana* (Friese). In this area some relicts of gallery forest occur and the climate is moderated by the large water mass of the river. The taxonomy of both species is discussed. Diagnoses, updated distribution, and illustrations of some morphological features are given for both species.

**Key words:** Stingless bees, distribution, taxonomy

### Introduction

Meliponine bees are pantropical in distribution (Michener 1990; 2007), and in the Neotropics they range from Mexico to Argentina, being absent from Chile and the xeric western Andean slopes and southern coast of Peru. These tropical bees inhabit a variety of humid forest habitats, but have extended their distribution to high elevations in Colombia, Ecuador and Peru, where they reach the limit between the Andean forests and the Páramo up to 3450 m of altitude (Nates-Parra 2001; González-B & Nates-Parra 1999), and also to some xeromorphic woodlands, such as the Chaco in Central Argentina (Roig-Alsina *et al.* 2013). The permanent nature of their colonies, and their need of food resources all year round, preclude them from colonizing temperate areas with a cold, unfavorable period (Roubik 1989). In spite of this, a few species manage to survive in marginal areas, both at the northern and southern limits of their distribution.

The northern extreme of meliponine distribution would be at 29° N latitude in México (Ayala *et al.* 2013), where *Nannotrigona perilampoides* (Cresson) occurs in the state of Sonora (Ayala 1999), although actual records for this species are only at 27° N (Búrquez 1997). At least four other species of Meliponini reach high latitudes in the Mexican states of Sinaloa and San Luis Potosí, along the Pacific and Gulf slopes respectively. The most widely distributed of these four species is *Plebeia frontalis* (Friese), which reaches the state of Nuevo León at around 25° 30' N latitude (Ayala 1999; Ayala *et al.* 2013; Ayala 2016).

The southernmost records for meliponines are found in Buenos Aires, Argentina (34° 51' S) and Montevideo, Uruguay (34° 54' S). The southernmost records in Argentina correspond to four species of *Plebeia* Schwarz (Roig-Alsina *et al.* 2013; Alvarez *et al.* 2016). Two of these species, *Plebeia molesta* (Puls) and *P. catamarcensis* (Holmberg), are characteristic of the dry woodlands of the central part of the country and reach 32°30' and 31°20' S in the provinces of San Luis and Santa Fe, respectively. Even a higher latitude is reached by two other species of *Plebeia* which are characteristic of humid forests in the northeast of the country, but extend their distribution to the province of Buenos Aires, up to 34°51' S. These species occur on the west margin of the La Plata River, in the northern part of the province of Buenos Aires. This area is characterized by the presence of gallery forests, similar

to those of tropical northeastern Argentina, but impoverished in their floristic composition (Cabrera 1971). These relicts of forest, although small, serve as refuges for tropical species that span their distributions southward taking advantage of the riverine vegetation along the Uruguay and Paraná rivers. The southernmost record for Uruguay is found in the catalog of Camargo & Pedro (2007) for *Mourella caerulea* (Friese), but we have not seen actual specimens.

The climate in northern Buenos Aires is mild, although there are frosting episodes in some years. The mean minimum temperature of the coldest month in winter (July) varies in coastal localities along the La Plata River between 5°C and 8°C, depending on the proximity to the river, which produces a tempering effect and reduces the thermic amplitude.

The purpose of this contribution is to clarify the identity of two species of *Plebeia* occurring at the southern limit of distribution of the tribe Meliponini in the Neotropics and to study their distribution in Argentina.

## Material and methods

Specimens examined herein were loaned by the following institutions and curators (in parentheses): **NHMUK**, The Natural History Museum, London, UK (D. Notton); **IBSI**, Instituto de Biología Subtropical, Puerto Iguazú, Argentina (F. Zamudio); **IFML**, Fundación Miguel Lillo, San Miguel de Tucumán, Argentina (E.C. Pérez); **MACN**, Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina and **MLP**, Museo de La Plata, La Plata, Argentina (A. Lanteri). External morphological structures were studied using a Nikon SMZ 745T stereomicroscope and photographs were taken with a Canon Power Shot® A520 digital camera; photographs of genital capsules and metasomal sterna of males were taken with a Leica DFC290 camera mounted on a stereomicroscope Leica S8APO. Digital images were assembled using CombineZM open software (Hadley 2011). For construction of the maps we used the program -GIS 7.5 (www.diva-gis.org). The female symbol (♀) in this work is used for the workers and not for the queens.

## Results

### *Plebeia droryana* (Friese)

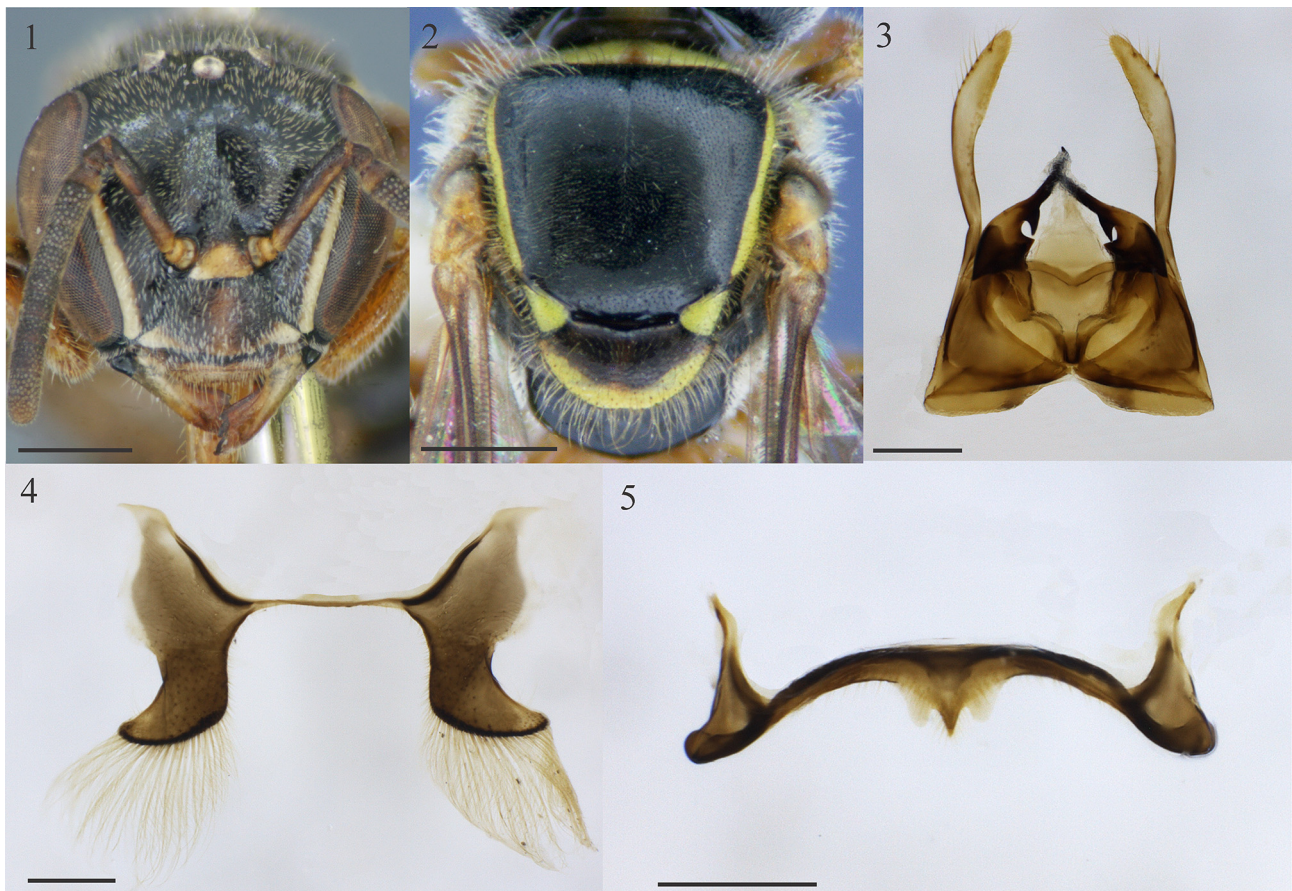
(Figs. 1–5, 15)

*Trigona droryana* Friese, 1900: 391 (Brazil: 2 workers and 2 males from Espirito Santo, and several workers from Bahia, Drory leg. Type specimens lost).

**Diagnosis.** The worker of *Plebeia droryana* is characterized by the following combination of features: the narrow paraocular yellow band, over two thirds as long as the eye (Fig. 1); the uninterrupted yellow band beginning close to the anterior margin of the scutum and continued on the axilla, and all around the posterior margin of the scutellum (Fig. 2); the longitudinal yellowish band on the middle of the clypeus; the sparse punctation of the scutum (punctures between notauli separated by 2 puncture diameters) with shiny integument between punctures; the unbranched hairs on the disk of the scutum; and the reduced malar space, 0.3 times the diameter of the third flagellomere. The male is characterized by the peculiar shape of the fifth metasomal sternum (Fig. 4), with finger-like lateral lobes twisted latero-posteriorly and bearing a brush of very long plumose setae. The genital capsule and the sixth metasomal sternum are as in figures 3 and 5.

**Comments.** We have not been able to locate any syntype of *P. droryana*, and we use the name here as it has been interpreted by J. S. Moure (specimens identified by him in collections). This species has been the subject of numerous studies of anatomy, social behavior, ecology, etc. (Camargo & Pedro 2007). The identity of the species dealt with, at least in most of these works, is illustrated by Cortopassi-Laurino (1978) in her dissertation on the males of *P. droryana*. Cortopassi-Laurino (1978, plate AB2) presents drawings of the male metasomal sterna, including the diagnostic fifth sternum. This usage is followed here. The designation of a neotype would be desirable, but we have insufficient acquaintance with the distribution and variation of the species in Brazil in order to select such a specimen. Furthermore, this is a delicate matter, taking into account the nearly nine printed columns of references for *P. droryana* in the catalog of Camargo & Pedro (2007), which deal with multiple aspects

of the biology of the species. *Plebeia droryana* is widespread in the province of Misiones and in the Yungas (including parts of the provinces of Catamarca, Jujuy, Salta and Tucumán), but it does not occur in the intervening Chaco region. Its distribution extends to the south to some localities in the northeast of the province of Buenos Aires (Fig. 15).



**FIGURES 1–5.** *Plebeia droryana* (Friese). 1–2, worker; 3–5, male. 1, head in frontal view; 2, scutum and scutellum in dorsal view; 3, genital capsule in dorsal view; 4, fifth metasomal sternum; 5, sixth metasomal sternum. Scale bars 1–2: 0.5 mm; 3–5: 0.25 mm.

**Material studied:** (934♀ 55♂) ARGENTINA. **Buenos Aires:** 3♀, Capital Federal, Jardín Botánico Facultad Agronomía, 29-XII-1994, 24-I-2006, A. Roig Alsina (MACN); 1♂, San Miguel, 22-XI-2003, G. Zubarán (MACN); 1♀, Pdo. Florencio Varela, 5 Km SE Bosques, 15-XI-1997, A. Roig Alsina (MACN); 43♀, Capital Federal, Jardín Botánico Facultad Agronomía, 10-XI-2008, 27-XI-2008, G. Cilla (MACN); 2♀ 12♂, Ciudad de Buenos Aires, 18-XI-2013, L. Compagnucci (MACN). **Catamarca:** 1♀, La Viña, 9-XI-1942, Ogloblin (MLP); 1♀, Tapso, 2-XII-1942, Ogloblin (MLP). **Jujuy:** 10♀, Jujuy (MACN); 6♀, San Lorenzo, 1-X-1911, Jørgensen (MLP); 2♀, Caimancito, 9-XI-1942 (MLP); 1♀, San Salvador de Jujuy, 13-IX-2009, Meriggi-Alvarez (MLP); 10♂, El Fuerte, Depto. Santa Bárbara, (-24.266S -64.416W, 1423 m.a.s.l), 2-XII-2010, Flores (MLP); 3♂, San Lucas, Depto. Valle Grande, (-25.533S -65.083W, 1896 m.a.s.l), 16-XI-2010, Flores (MLP). **Misiones:** 1♀, Misiones, 11-X-1909, Jørgensen (MLP); 1♀, Misiones, 30-IX-1910, Jørgensen (MLP); 7♀, Misiones (MACN); 1♀, Puerto Rico, 29-III-1949 (MLP); 1♀, San Ignacio, XII-1946, J. Montes (MLP); 16♀, Loreto, 15-III-1949, 17-III-1949, Ogloblin (MLP); 6♀ 1♂, Loreto, Ogloblin (MLP); 5♀ 2♂, Loreto, III-1950, Ogloblin (MLP); 1♀, Loreto, II-1946 (MLP); 12♀, El Dorado, 9-XII-1945, Schenkel (MLP); 9♀, General Manuel Belgrano, 15-V-1949 (MLP); 9♀, San Pedro, Reserva Esmeralda, (-26.893S -53.878W, 528 m.a.s.l), 13-XII-2011, 14-XII-2011, 15-XII-2011, Alvarez-Aquino (MLP); 1♀, San Ignacio, (-27.254S -55.31W, 168 m.a.s.l), 12-XII-2011, Alvarez (MLP); 6♀, Puerto Iguazú, (-25.604S -54.586W, 178 m.a.s.l), 25-IX-2012, Alvarez (MLP); 11♀, Parque Nacional Iguazú, Dest. Apepú, (-25.563S -54.596W, 217m.a.s.l), 5-7-IX-2013, Alvarez (MLP); 14♀, Parque Nacional Iguazú, (-25.69S -54.478W, 241 m.a.s.l), 1-12-IX-2013, Ramello (MLP); 2♀, Parque Nacional Iguazú, (25.69S -54.478W, 241 m.a.s.l), 9-IX-2013, 10-IX-2013, Alvarez (MLP); 224♀, Parque Nacional Iguazú, 19-IX-2008, 23-IX-2008,

26-IX-2008, 17-XI-2008, 18-XI-2008, 16-XII-2008, 13-II-2008, 14-II-2009, Zamudio-Collesselli-Gómez de Olivera (MLP); 250♀, Parque Nacional Iguazú, 19-IX-2008, 23-IX-2008, 26-IX-2008, 17-XI-2008, 18-XI-2008, 16-XII-2008, 13-II-2008, 14-II-2009, Zamudio-Collesselli-Gómez de Olivera (IBSI-API); 1♀, Puerto Iguazú, (-25.604S -54.586W, 178 m.a.s.l), 20-III-2013, Lucia (MLP); 1♂, Puerto Iguazú, 10-XII-2012, Zamudio (MLP); 22♀, Puerto Aguirre (=Puerto Iguazú), III-1934, Kenet-Hayward (MACN); 2♀, Parque Nacional Iguazú, 10-XI-1973, Willink-Tomsic (IFML); 21♀, Puerto Bemberg, Alto Paraná, 7-21-III-1934, K.J. Hayward (NHMUK); 3♂, Puerto Bemberg, Alto Paraná, 13-14-XII-1933, K.J. Hayward (NHMUK); 1♀, San Pedro, Reserva Esmeralda, 27-I-2004, F. Vossler (MACN); 4♀, Uruguay, IX-2005, F. Vossler (MACN); 3♀, Aristóbulo del Valle, 11-XII-1995, N. Pascual (MACN); 1♀, Loreto, II-1945, Viana (MACN); 10♀, Oberá, 4-III-2010, M. Ferreira (MACN); 2♀ 13♂, Oberá (-27.47°S -55.10°W, 340 m.a.s.l), 28-IV-2014, L. Alvarez (MLP); 5♀, Montecarlo (-26.57°S -54.74°W, 340 m.a.s.l), 29-IV-2014, L. Alvarez (MLP); 7♀, Oberá, Guaraní (-27.52°S -55.16°W), 28-IV-2014, L. Alvarez (MLP). **Salta;** 17♀, El Portezuelo, 7-XI-1935, Tosti (MLP); 1♀, Tablillas, II-1944, Duret-Martínez (MLP); 1♀, Urundel, 2-XII-1952, Ogloblin (MLP); 2♀, Finca del Rey (=Parque Nacional El Rey), 31-XI-1952, Ogloblin (MLP); 1♀ 2♂, Saucelito, 1-XII-1952, Ogloblin (MLP); 14♀, Valle Morado, (-23.507S -64.783W, 390 m.a.s.l), 14-16-XII-2012, Alvarez (MLP); 1♀, Rta. 34 Km 1552, 15-XI-2009, Meriggi-Alvarez (MLP); 1♂, Dpto. General San Martín (-22.292°S -63.84°W, 880 m.a.s.l), 21-25-VII-2011, L. Pagano (MLP); 6♀, Río Pescado 20 Km N. Orán, (369 m.a.s.l), 27-II-1964, Weyrauch (IFML); 1♀, Río Pescado ca. Orán (22°53' S 64°27' W), 11-20-VII-1970, Porter (IFML); 1♀, Urundel, 26-XI-1979, Willink-Fidalgo-Domínguez (IFML); 18♀ 1♂, Rosario de Lerma, XII-1992, A. Roiga Alsina-L. Horovitz (MACN); 1♀, Rosario de la Frontera, El Naranjo, XI-1950, R.N. Orfila (MACN). **Tucumán;** 1♂, Tacanas, San Pedro de Colalao, Arnau (MLP); 2♀, Tucumán, 24-XI-1942 (MLP); 7♀, Reserva Forestal, 18-XI-51 (MLP); 1♀, Guasapampa (=Huasa Pampa), 1-XII-1940 (MLP); 1♀, Manantiales (=Manantial), 7-XII-1942 (MLP); 12♀, Alpachiri, (-27.334S -65.741W, 611 m.a.s.l), 29-III-2012, Alvarez-Lucia-Gennari (MLP); 5♀, Rta. 365, (-27.354S -65.802W, 628 m.a.s.l), 29-III-2012, Alvarez-Lucia-Gennari (MLP); 4♀, Dique el Cadillal, 31-X-2013, Alvarez-Lucia (MLP); 6♀ 3♂, Tucumán, (430 m.a.s.l), 1-XI-1964, 10-X-1966, 10-V-1967, 18-XI-1967, 20-XII-1968, 21-XII-1969, -XII-1969, Weyrauch (IFML); 1♂, San Miguel de Tucumán, X-1947, Córdoba (IFML); 2♂, San Pedro de Colalao, II-1958, Arnau (IFML); 3♀, Parque Sierra San Javier, Horco Molle, (700 m.a.s.l), 15-I-1976, Stange (IFML); 1♀, Horco Molle, 17-18-X-1964, Haedo Rossi (IFML); 2♀, Tacanas, Depto. Trancas, 16-XII-1976, Stange (IFML); 1♀, Raco, 1-I-1974, Stange (IFML); 1♀, San Miguel de Tucumán, Stange (IFML); 3♀, El Cadillal, 4-I-1976, Stange (IFML); 3♀, San Pedro de Colalao, (-26.24°S -65.484°W 1080 m.a.s.l), 5-XI-2013, Alvarez-Lucia (MLP); 82♀ 13♂, INTA EEA Famaillá, (-27.02S -65.381W, 374 m.a.s.l), Alvarez-Lucia-Gennari (MLP); 3♀, El Cadillal, 7-XI-1993, A. Roig Alsina (MACN); 2♀, Tafi Viejo, III-1917 (MACN); 12♀, Yerba Buena, 21-XII-2010, Gennari (MACN); 16♀, Graneros, 2-X-2010, Gennari (MACN).

### *Plebeia emerinoidea* (Silvestri)

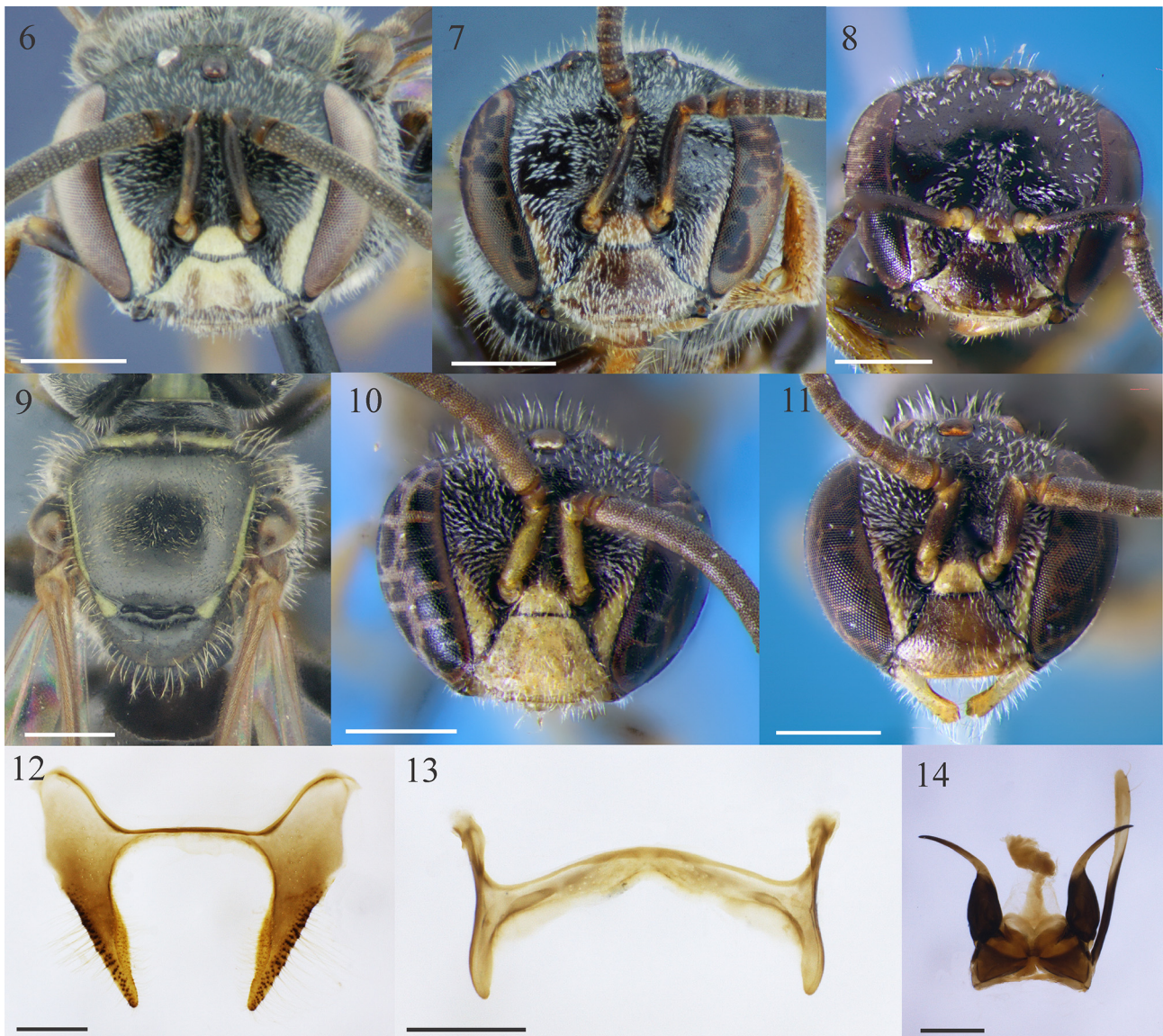
(Figs. 6–14, 16)

*Trigona emerinoidea* Silvestri, 1902: 160–162, figs. 19, 26–28 (Lectotype worker, Santa Ana, Misiones [Argentina], Silvestri leg., Portici. Examined). Camargo & Moure, 1988: 307, figs. 22 and 23 (lectotype designation).

*Plebeia nigriceps*: Moure, 1962: 8 (specimen from S. Anna, Villa Rica, Paraguay, not *Trigona nigriceps* Friese, misidentification). Camargo & Moure, 1988: 307 (misidentification). Camargo & Pedro, 2007: 465 (specimens from Buenos Aires, misidentification).

*Plebeia emerinoidea*: Alvarez *et al.*, 2016: 72, 73.

**Diagnosis.** The worker of *Plebeia emerinoidea* is characterized by the following combination of features: paraocular yellow band reaching at most two thirds of the eye length; the clypeus more or less yellow (see variation below) but always with an apical dark band (Figs. 6–8); the yellow band on the scutum narrow, beginning usually at the anterior level of the tegula; the yellow band on the posterior margin of the scutellum usually interrupted medially (Fig. 9); the sparse punctation of the scutum (punctures between notauli separated by 2 puncture diameters) with shiny integument between punctures; the plumose, branched hairs on the disk of the scutum; and the reduced malar space, 0.4 times the diameter of the third flagellomere. The male is characterized by the shape of the fifth metasomal sternum (Fig. 12), with long, triangular lateral lobes directed posteriorly and bearing very long setae on the outer margin. The sixth metasomal sternum and the genital capsule are as in figures 13 and 14.



**FIGURES 6–14.** *Plebeia emerinooides* (Silvestri). 6–9, worker; 10–14, male. 6–8, head of worker in frontal view; 6, specimen from El Soberbio, Misiones; 7, specimen from Pueblo Liebig, Entre Ríos; 8, specimen from San Isidro, Buenos Aires; 9, scutum and scutellum in dorsal view; 10 and 11, head of male in frontal view; 10, specimen from Posadas, Misiones; 11, specimen from San Isidro, Buenos Aires; 12, fifth metasomal sternum; 13, sixth metasomal sternum; 14, genital capsule in dorsal view. Scale bars 6–11: 0.5 mm; 12–14: 0.25 mm.

**Comments.** This species has been referred to as "*nigriceps*" in some recent contributions and catalogs (Camargo & Moure 1988; Camargo & Pedro 2007), where the name *emerinooides* has been considered a junior synonym. We contend that this synonymy of *emerinooides* under *nigriceps* Friese is unfounded.

Filippo Silvestri collected numerous Meliponini and studied the nests of many of them during his journey to northern Argentina, Paraguay, and Brazil in 1900. Later he published a report of his observations (Silvestri 1902), including the description of three new species, *Trigona emerinooides* from S. Ana, Misiones among them.

Camargo & Moure (1988) studied the specimens collected by Silvestri, which are preserved in Portici, Italy. They identified a series of 17 workers and one male as the type series of *Trigona emerinooides* Silvestri, and designated a worker as the lectotype. The series was labeled "Miri, S. Ana," and "*Trigona* sp.? bei *emerina*, 1900, Friese det." Silvestri (1902) stated that the specimens that he was describing as *T. emerinooides* came from Santa Ana, Misiones, where he studied a nest of this species. Camargo & Moure (1988, p. 293) erroneously attribute the locality Santa Ana to a place in Paraguay. Camargo & Pedro (2007) also cite "Santa Ana, Paraguay" as the type locality. Silvestri (1902), in his contribution on the Meliponini, does not clearly state the country for most of the

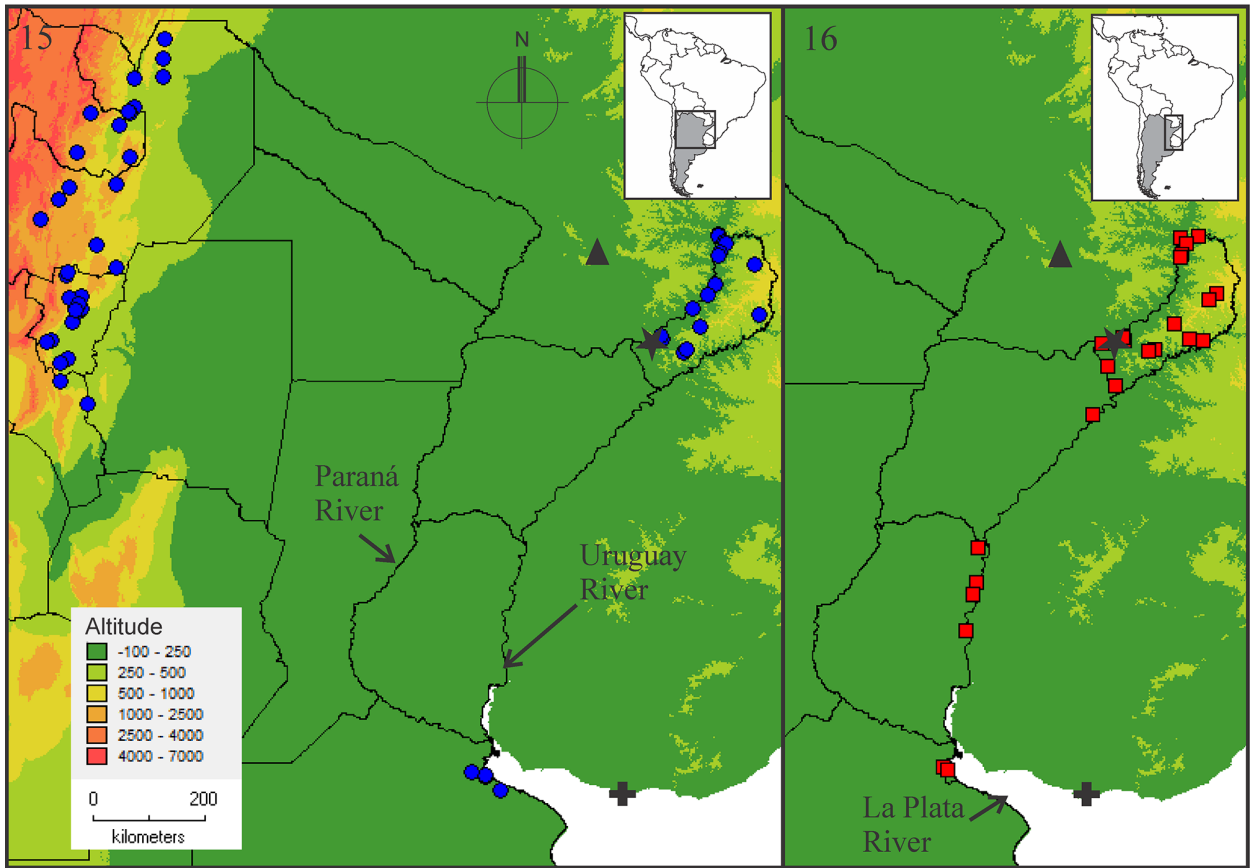
localities that he mentions, and this is the case for "Santa Ana, Misiones." This brief mention of the type locality may be seen as confusing, because there are both a department of Misiones in Paraguay and a province of Misiones in Argentina, regions that already had these names by 1900. But, in a further contribution on termites, Silvestri (1903, p. 5) lists by country all the localities that he surveyed in South America, including also the dates of visit. From this list it is clear that the type locality of *T. emerinoidea* is Santa Ana, province of Misiones, Argentina (Fig. 16), and that the specimens were collected between June and July of 1900.

This confusion on the locality Santa Ana is connected to a misinterpretation of *T. nigriceps* Friese. Camargo & Moure (1988, p. 309) suggest that Friese (1901) based *Trigona nigriceps* on specimens collected by Silvestri. There is no basis for this supposition because Friese (1901) clearly states that the two syntypes of *T. nigriceps* came from Villarica, Paraguay, collected by Burgdorf (without indication of date) (Fig. 16). In the same paragraph, Camargo & Moure (1988) then discuss a specimen preserved at the Museu de Zoologia in São Paulo (MZSP #96041 with printed label "Villarica, Paraguay, 1900," overwritten by hand "S. Anna") identified by Friese as *T. nigriceps*, as being possibly one of the two specimens used by Friese in the original description of *T. nigriceps*. They indicate that the São Paulo's specimen is identical to those of the type series of *T. emerinoidea*. This specimen had already been studied by Moure (1962, p. 8), who acknowledged that even though it was identified by Friese himself as *T. nigriceps*, it does not agree with Friese's description, that clearly states that the two syntypes of *T. nigriceps* had the face entirely black, with the labrum and mandibles reddish. Contrasting with Friese's original specimens, the specimen in the Museum of São Paulo bears yellow marks on the clypeus, supraclypeal area, paraocular areas, mandibles, and labrum. Hence, the São Paulo specimen cannot be considered a syntype of *T. nigriceps*, albeit identified by Friese with this name. Thus, its agreement with the type series of *emerinoidea* does not support the synonymy proposed by Camargo & Moure (1988).

We have not been able to locate the original specimens of *T. nigriceps* Friese, which seem to be lost. A better study of the local fauna of the Villarica area in Paraguay will help to solve the identity of *T. nigriceps*. In Argentina, Friese's description would fit the color pattern of *Plebeia molesta* (Puls), although the size stated by Friese (3.5 mm long) is rather small for *P. molesta*, which ranges between 3.8 and 4.5 mm in length. We have not seen any specimens of *P. emerinoidea* with the face entirely black and with reddish labrum and mandibles. On the other hand, we have studied specimens of *P. emerinoidea* from Villarica (43 workers and 15 males, Villarica, Paraguay, 3-II-1946, 8-IV-1947, F. Schade, MLP) and these specimens have a pattern of extensive yellow markings (as in Fig. 6) similar to that described by Silvestri and illustrated by Camargo & Moure (1988, figures 22 and 24). We consider *T. nigriceps* Friese as a species *incertae sedis* until more information is gathered.

The pale maculations of *P. emerinoidea* vary in extent within and among populations from Argentina. In specimens from the northern province of Misiones the maculations are usually well-developed (Fig. 6), whereas they are reduced in specimens from southern provinces, such as Entre Ríos and Buenos Aires (Figs. 7 and 8). In a series of 55 workers from the same nest (Campo Ramón, Oberá, Misiones) the coloration of the clypeus varies from entirely yellow except for the apical dark band (as in the lectotype, figured by Camargo & Moure 1988) to yellow with a paramedian brown stripe or median spot, or with a brown center margined above and laterally by yellow. This darkening of the center of the clypeus is more pronounced in some specimens from Buenos Aires, in which most of the clypeus is nearly entirely dark brown with a lateral triangular yellow spot at each lower corner (as Fig. 8). The paraocular yellow band is always present, but its width varies, being usually less developed in specimens from Entre Ríos and Buenos Aires than in specimens from Misiones. The yellow spot on the supraclypeal area is always present and distinct. This reduction of the yellow color on the face also occurs in males. Specimens from the southern end of the distribution have the clypeus and the under surface of the scape with extended brown areas (Fig. 11). Nevertheless, the sternal and genitalic structures of males from Buenos Aires and Misiones are identical. The pale maculations in the mesosoma vary even among specimens from the same nest. In the series of workers from Campo Ramón, Misiones, the pale band on the posterior margin of the scutellum is usually briefly interrupted medially, but in some specimens it is uninterrupted and in others it is reduced to two yellow spots.

Therefore, we conclude that there is no basis for claiming that *P. emerinoidea* is a junior synonym of *T. nigriceps* and consequently we maintain here that *P. emerinoidea* is the valid name of the species. This species of *Plebeia* is widespread in the province of Misiones in Argentina, and is also known from several localities in the provinces of Corrientes and Entre Ríos along the Uruguay River, reaching to the south the northern portion of the province of Buenos Aires (Fig. 16).



**FIGURES 15–16.** Occurrence maps of *Plebeia droryana* and *P. emerinoidea* in Argentina. Blue circles, *P. droryana*. Red squares, *P. emerinoidea*. Star, Santa Ana, type locality of *P. emerinoidea*. Triangle, Villarica, type locality of *Trigona nigriceps* Friese. Cross, Montevideo, Uruguay, southernmost record of *Mourella caerulea*.

**Material studied:** (597♀ 38♂) ARGENTINA. **Buenos Aires;** 6♀, Canal San Fernando, 29-X-1945, 14-XI-1945, Ogloblin (MLP); 3♀, San Isidro, Reserva Ribera Norte, 20-I-2009, R. González-Vaquero (MACN); 6♀ 1♂, San Isidro, Refugio Ribera Norte, 28-I-2005, A. Roig Alsina (MACN); 12♀, San Isidro, XI-1982, Genise (MACN). **Corrientes;** 1♀, Santo Tomé (-28.55S -56.073W, 72 m.a.s.l), 23-IX-2012, Alvarez (MLP). **Entre Ríos;** 15♀ 28♂, Pueblo Liebig, II-1996, 16-II-1998, L.M. Caire (MLP); 6♀, Chajarí, 24-III-2010, Alvarez-Lucia (MLP); 2♀, Concordia, -II-1991, Hazeldine (MACN); 2♀, Liebig, 19-XII-2004, A. Roig-Alsina (MACN); 1♀, Concordia, Daguerre (28562) (MACN); 2♀, Concordia, Pque. San Carlos, (-31.368915 -57.997303), R. GonzálezV. (MACN); 29♀, R. Uruguay n.e. Concordia, 12-13-I-1980, C. & M. Vardy (NHMUK). **Misiones;** 13♀, Misiones, 4-II-1909, 27-IX-1909, 11-X-1909, 19-III-1910, Jørgensen (MLP); 2♀, Loreto, Ogloblin (MLP); 6♀, Loreto, IV-1933, Ogloblin (MLP); 8♀, San Pedro, Pque. P. Araucaria (-26.63S -54.104W, 545 m.a.s.l), 15-XII-2011, Alvarez (MLP); 3♀, El Soberbio (-27.297S -54.194W, 143 m.a.s.l), 15-XII-2011, Alvarez (MLP); 2♀, Puerto Iguazú (-25.604S -54.586W, 178 m.a.s.l), 27-IX-2012, Alvarez (MLP); 7♀, San Pedro, Pque. P. Cruce Caballero (-26.52S -53.987W, 607 m.a.s.l), 19-II-2012, G. Dellapé-D. Barrasso (MLP); 4♀, Pindapoy, 10-29-I-1959, Raimondo (MLP); 11♀, Parque Nacional Iguazú, (-25.69S -54.478W, 241 m.a.s.l), 1-12-IX-2013, Ramello (MLP); 4♀, Parque Nacional Iguazú, (-25.69S -54.478W, 241 m.a.s.l), 9-IX-2013, Alvarez (MLP); 40♀ 6♂, Parque Nacional Iguazú, Dest. Apepú, (-25.563S -54.596W, 217 m.a.s.l), 5-7-IX-2013, Alvarez (MLP); 123♀, Parque Nacional Iguazú, 19-IX-2008, 23-IX-2008, 26-IX-2008, 17-XI-2008, 18-XI-2008, 16-XII-2008, 13-II-2008, 14-II-2009, Zamudio-Collesselli-Gómez de Olivera (MLP); 180♀, Parque Nacional Iguazú, 19-IX-2008, 23-IX-2008, 26-IX-2008, 17-XI-2008, 18-XI-2008, 16-XII-2008, 13-II-2008, 14-II-2009, Zamudio-Collesselli-Gómez de Olivera (IBSI-Api); 3♀, San Ignacio, 4-5-IV-1974, C. & M. Vardy (NHMUK); 11♀, Puerto Bemberg, Alto Paraná, 13-14-XII-1933, 7-21-III-1934, K.J. Hayward (NHMUK); 1♀, Parque Nacional Iguazú, Hostería Hoppe c. 140m. Malaise trap, 10-11-IV-1974, C. & M. Vardy (NHMUK); 2♀, Dos de Mayo c. 500m, 7-IV-1974, C. & M. Vardy (NHMUK); 8♀, Misiones (MACN); 9♀, San Pedro, 16-XI-1973, Willink-Tomsic (IFML); 7♀, Misiones (MACN); 3♀, Puerto

Aguirre (=Puerto Iguazú), III-1934, K. Hayward (MACN); 3♀, Depto. San Javier, Puerto Londero, IX-1947, Viana (MACN); 2♀, Depto. Apóstoles, 4 Km S Azara, F. Vossler (MACN); 3♀, Urugua-í, IX-2005, F. Vossler (MACN); 3♂, Posadas, Barrio Laurel, 10-XII-1993, A. Tricio (MACN); 55♀, Oberá, Campo Ramón, Nido en chacra de Holl, 18-X-2010 (MACN); 1♀, Oberá, Campo Ramón, 28-IV-14, Alvarez (MLP).

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