

Contributions to the wild bee fauna in Argentina (Hymenoptera: Anthophila)

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Abstract. Argentina is the country with the second highest number of bee species in the Neotropics after Brazil. Fifteen new records of wild bees belonging to genera of the families Apidae, Andrenidae, Colletidae, Halictidae, and Megachilidae are presented. Species of genera *Callonychium* Brèthes (Andrenidae), *Gaesischia* Michener, LaBerge & Moure, *Melitoma* Lepageletier & Serville, *Trichocerapis* Cockerell (Apidae), *Hylaeus* Fabricius (Colletidae), *Habralictus* Moure, *Megalopta* Smith, *Neocorynura* Schrottky, *Pseudaugochlora* Michener, *Rhectomia* Moure, *Thectochlora* Moure (Halictidae), and *Bothranthidium* Moure (Megachilidae) are recorded for the first time for Argentina. Whereas the genera *Trichocerapis*, *Megalopta*, *Rhectomia*, and *Bothranthidium* are cited for the first time in the country.

Keywords. Apiformes; Andrenidae; Apidae; Colletidae; Halictidae; Megachilidae.

INTRODUCTION

There are over 20,400 described bee species, and this natural group is one of the largest within Hymenoptera (Engel *et al.*, 2020). Argentina has the second-highest number of bee species in the Neotropics after Brazil (Freitas *et al.*, 2009). This is mainly due to the great diversity of environments, including areas with significant diversity and endemism of bees, such as xeric regions and high-altitude grasslands, subtropical and temperate forests, and steppes subdivided into 15 continental ecoregions (Burkart *et al.*, 1999; Michener, 2007). In 2008, around 1,100 bee species were recorded in Argentina, grouped in 230 genera and five families (Roig-Alsina, 2008a). In the last 15 years, five studies have addressed the species present in Argentina. Three compilations of bees from the families Apidae, Andrenidae, and Megachilidae were published in 2008 (Roig-Alsina, 2008b; Ruz *et al.*, 2008; Durante *et al.*, 2008, respectively), later Compagnucci (2014) and Dalmazzo *et al.* (2014)

have published compilations for the two remaining families present in this country (Halictidae and Colletidae, respectively). However, in the last few years many systematic studies (see Appendix) of bees of Argentina have been published, describing a total of 110 new species increasing the number by 10 %. Thus, the current number of bee species registered for Argentina would be close to 1,210. Nevertheless, our knowledge of this bee fauna and of the real number of species present in Argentina is quite far from being fully understood. Numerous taxonomic groups still require a thorough revision, in which not only new species will be recorded and described for the country, but also many others will become synonyms. In the current land-use changes, the bee species face a complicated situation as increase in the area of cultivated land (*e.g.*, pastures, cereals, forests), the crop homogenization (few crops in large areas), the low availability of semi-natural habitats, and the increased distance (*i.e.*, low connectivity) of the remaining areas against their survival (Tor-

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retta *et al.*, 2023). Therefore, in the current context of declining wild bee populations (Parreño *et al.*, 2022), having reliable and updated information about the diversity and distribution of bee fauna is a fundamental resource for conservation for implementing conservation strategies. The aim of the present study is to report new records of bee genera and species in order to contribute to the overall knowledge of the wild bee fauna of Argentina.

MATERIAL AND METHODS

Most of the material studied was obtained during field trips made by the authors and/or colleagues in several localities in the northeast of Argentina, specifically in the provinces of Corrientes, Entre Ríos and Misiones. Since the specimens were captured for different studies and sampling campaigns, diverse techniques were used; wild bees were actively collected with entomological nets while foraged by resources in flowers, or passively, using different types of traps: pan trap, Van Somer bait trap, and traps with baits target euglossine males (see comments and material examined for each species). Furthermore, we performed a search in the Entomological Collection of the Museo de la Plata, which resulted in the discovery of old unpublished records and new localities for some species. External structures were observed by direct observation under a stereo microscope (Nikon SMZ 745T). Whenever there were males, the genital capsule and the last metasomal sterna were dissected and cleared with a potassium hydroxide solution to ensure accurate identification and subsequent comparisons. The photographs were taken with a Canon T6 digital camera using a 60 mm Oshiro Macro lens. Finally, digital images were assembled using Helicon Focus 6.7.1 software. Label data of each specimen were transcribed literally, with bars "/" indicating all the information present on different labels. Morphological terminology follows that of Michener (2007) and abbreviations used in the text are S and T for metasomal sterna and metasomal terga, respectively. All specimens studied are deposited in the entomological collection of Museo de Ciencias Naturales de La Plata (MLP). The georeferenced map was created using different tools from the QGIS 3.16 software (QGIS Development Team, 2023). Additionally, a layer was designed utilizing as a base the Ecoregions of Argentina (Burkart *et al.*, 1999).

RESULTS

We identified 15 species of bees not previously reported for Argentina, belonging to 12 genera and five families. Four of these 12 genera are cited for the first time in this country. The family that contained the largest number of new records was Halictidae, with seven species, followed by Apidae and Colletidae with three species each, and Andrenidae and Megachilidae with only one record respectively. For each of the species, we commented on systematic and biological aspects.

Family Andrenidae Tribe Calliopsini Genus *Callonychium* Brèthes

Callonychium is a South American genus of small black-and-yellow colored bees, occurring in Argentina, Brazil, Chile, and Paraguay (Gonzalez & Engel, 2016; Ruz *et al.*, 2008). It is divided into two subgenera: in *Callonychium* s. str. the axillae are acute and yellow, while species of *Paranychium* Toro have axilla rounded, depressed and black. Species of *Callonychium* s. str. are not revised and there are additional forms not yet described (Michener, 2007).

Callonychium (Callonychium) petuniaie Cure & Wittmann, 1990 (Figs. 1A-C and 5)

Material examined (3♀♀, 4♂♂): 2♀♀, 1♂, Argentina, Misiones, Rta. 94 (ca. Azara), 28°04'25.1"S, 55°41'19.9"O, 05/XII/2017, S/ *Calibrachoa* sp., Col. Alvarez & Ramello. 1♂, Argentina, Entre Ríos, Concordia, 11-III-2020, Col. P. Cavigliasso. 1♀, Argentina, Entre Ríos, Concordia, 18-II-2020, Col. P. Cavigliasso. 2♀♀, Argentina, Entre Ríos, Pueblo Liebig, 14-II-1997, 07-III-1997, Col. L. Caire.

Distribution: Brazil: Paraná, Rio Grande do Sul, Santa Catarina (Moure, 2007). Argentina: Entre Ríos and Misiones.

New records.

Remarks: Males of this species can be easily distinguished from the other species of the genus by the S3 somewhat excavated and with a medial subterminal carina (Fig. 1B) and T7 with two ventral projections (Fig. 1C) (Cure & Wittmann, 1990). *Callonychium petuniaie* was reported as an oligolectic bee species on three species of the solanaceous genus *Petunia* s. l. (*Calibrachoa ovalifolia* (Miers) Stehmann & Semir, *Calibrachoa excellens* (R.E. Fr.) Wijsman, and *Petunia integrifolia* (Hook.) Schinz & Thell.) (Cure & Wittmann, 1990) and reproductive strategies were reported by Wittmann *et al.* (1990). This is the sixth species of the genus reported in Argentina (Gonzalez & Engel, 2016).

Family Apidae Tribe Euphorini Genus *Melitoma* Lepelletier & Serville

Melitoma comprises 11 species that are distributed from the United States to Argentina, with higher diversity in South America (Moure, 2007; Schaller & Roig-Alsina, 2019). Two species groups (*ameghinoi* and *segmentaria*) can be recognized within the genus (Roig-Alsina, 1999). Species of *Melitoma* are oligolectic on species of the genus *Ipomoea* (Convolvulaceae), and possibly some species of Malvaceae (Oliveira & Engel, 2015; Schaller & Roig-Alsina, 2019).

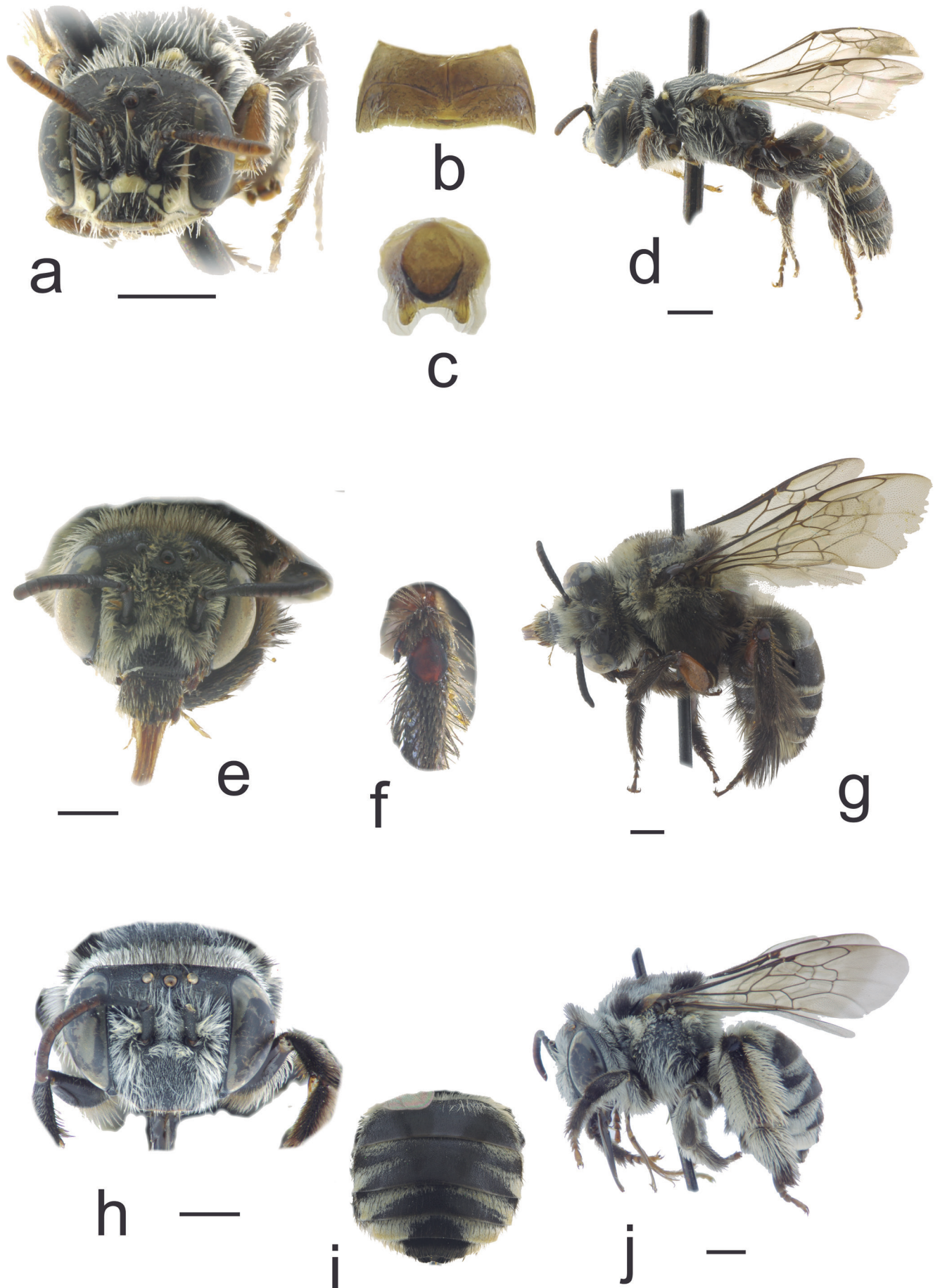


Figure 1. (A-D) *Callonychium (Callonychium) petuniaie* Cure & Wittmann male. (E-G) *Melitoma danunciae* Oliveira & Engel female. (H-J) *Gaesischia (Gaesischia) nigra* Moure female. A, E, H = head in frontal view. B, G, J = lateral view. B, C = S3 and T7. f = basitral plate. i = metasoma in dorsal view. Scale bars: 1 mm.

***Melitoma danunciae* Oliveira & Engel, 2015**
(Figs. 1E-G and 5)

Material examined (1♀, 2♂♂): 1♀, Argentina, Formosa, afueras de Formosa Capital, 07/1/2019, S/ *Ipomoea carnea*, Col. L. Alvarez, A. Avalos & J.P. Torretta. 1♂, Argentina, Corrientes, San Miguel, pan trap (-27.9932, -57.5816), 03/1/2022, Col. M. Aguirre. 1♂, Argentina, Corrientes, San Miguel, Koe Mimbi, pan trap azul (-27.9928, -57.5808), 03/1/2022, Col. M. Aguirre.

Distribution: Brazil: Bahia (Oliveira & Engel, 2015). Argentina: Corrientes and Formosa. **New records.**

Remarks: *Melitoma danunciae* is included in the *segmentaria* species group and was generally misidentified as *Melitoma segmentaria* (Fabricius, 1804), from which it can be easily differentiated by the white pubescence of the head (Fig. 1E), the female basitibial plate rounded apically (Fig. 1F), and male S7, S8 and genitalia (Oliveira & Engel, 2015).

Tribe Eucerini

Genus *Gaesischia* Michener, LaBerge & Moure

The genus *Gaesischia* has an unstable and complex taxonomic history. According to Urban (1968) this genus would include three subgenus, however other proposed systems comprise the inclusion of four (Urban *et al.*, 2007) or six subgenera (Michener, 2007). The species of typical subgenus were revised by Urban (1968), and an actualized key was posteriorly published by Urban (1989b).

***Gaesischia (Gaesischia) nigra* Moure, 1968**
(Figs. 1H-J and 5)

Material examined (1♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, Estación Garganta, 24/1/2018, Col. Alvarez, Avalos & Almada.

Distribution: Brazil: Espírito Santo, Minas Gerais, Paraná, Rio Grande do Sul, Rio de Janeiro, São Paulo. Paraguay (Urban, 1968, 1989a). Argentina: Misiones. **New record.**

Remarks: Of the other Argentine species of genus, *G. nigra* is easily distinguished by the abundant black pubescence on the mesosoma and metasoma (Fig. 1I, J) and the reduced spine of the fore coxa (Urban, 1968).

Genus *Trichocerapis* Cockerell

Males of *Trichocerapis* are very distinctive, they have the eighth to tenth flagellomeres filiform and the eleventh one broad, flat and black, while females are characterized by the short apical spine on the fore coxa and the clypeus with two distinct carinae diverging below (Fig. 2A) (Urban, 1989b; Michener, 2007). The genus

Trichocerapis includes four South American species, which were treated by Urban (1989b), who provides a key to differentiate the species.

***Trichocerapis mirabilis* (Smith, 1865)**
(Figs. 2A, B and 5)

Material examined (1♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, 18/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Limite, Red Mañana, T3-M1 //.

Distribution: Brazil: Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo. Paraguay (Urban, 1989b). Argentina: Misiones. **New record.**

Remarks: This is the first record of genus and species from Argentina. The female of *T. mirabilis* can be recognized by the yellow-fulvous pubescence of the mesoscutum and scutellum, and the hind basitarsus without a tuft of white setae (Fig. 2B) (Urban, 1989b).

Family Colletidae

Tribe Hylaeini

Genus *Hylaeus* Fabricius

Hylaeus is a worldwide genus, with 46 subgenera, and more than 600 species described (Michener, 2007). Only four species (one of them exotic) are cited for Argentina (Compagnucci, 2014). In South America, almost 80 species were described, however, the genus is not revised, therefore many species are still undescribed for the region. Even, some native species were not attributed to any subgenus of those currently constituted (Compagnucci, 2014); while the exotic species *Hylaeus punctatus* (Brullé, 1832), native of Mediterranean area of Palearctic Region, belong to subgenus *Spatulariella* Popov (Roig-Alsina, 2006).

***Hylaeus bertonii* (Schrottky, 1907)**
(Figs. 2C, D and 5)

Material examined (16♀♀): 1♀, Argentina, Misiones, 01-09-1909, Col. Joergensen. 1♀, Argentina, Misiones, Santa María, -/X/1946, Col. Viana. 1♀, Argentina, Misiones, M. Belgrano, 26/II/1949. 3♀♀, Argentina, Misiones, Caragatay, -/I/1960, Col. Ronderos, Trotta. 1♀, Argentina, Misiones, -/I/1982, Col. Ronderos, Trotta. 2♀♀, Argentina, Misiones, Parque Nacional Iguazú, 17/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van Somer - Pescado, T1-E2 // . 1♀, Argentina, Misiones, Parque Nacional Iguazú, 18/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Limite, Van-Pesc., T1-E1 // . 1♀, Argentina, Misiones, Parque Nacional Iguazú, 19/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Acceso, Van Somer - Fruta T2-E1 // . 2♀♀, Argentina, Misiones, Parque Nacional Iguazú, 16/XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van Somer

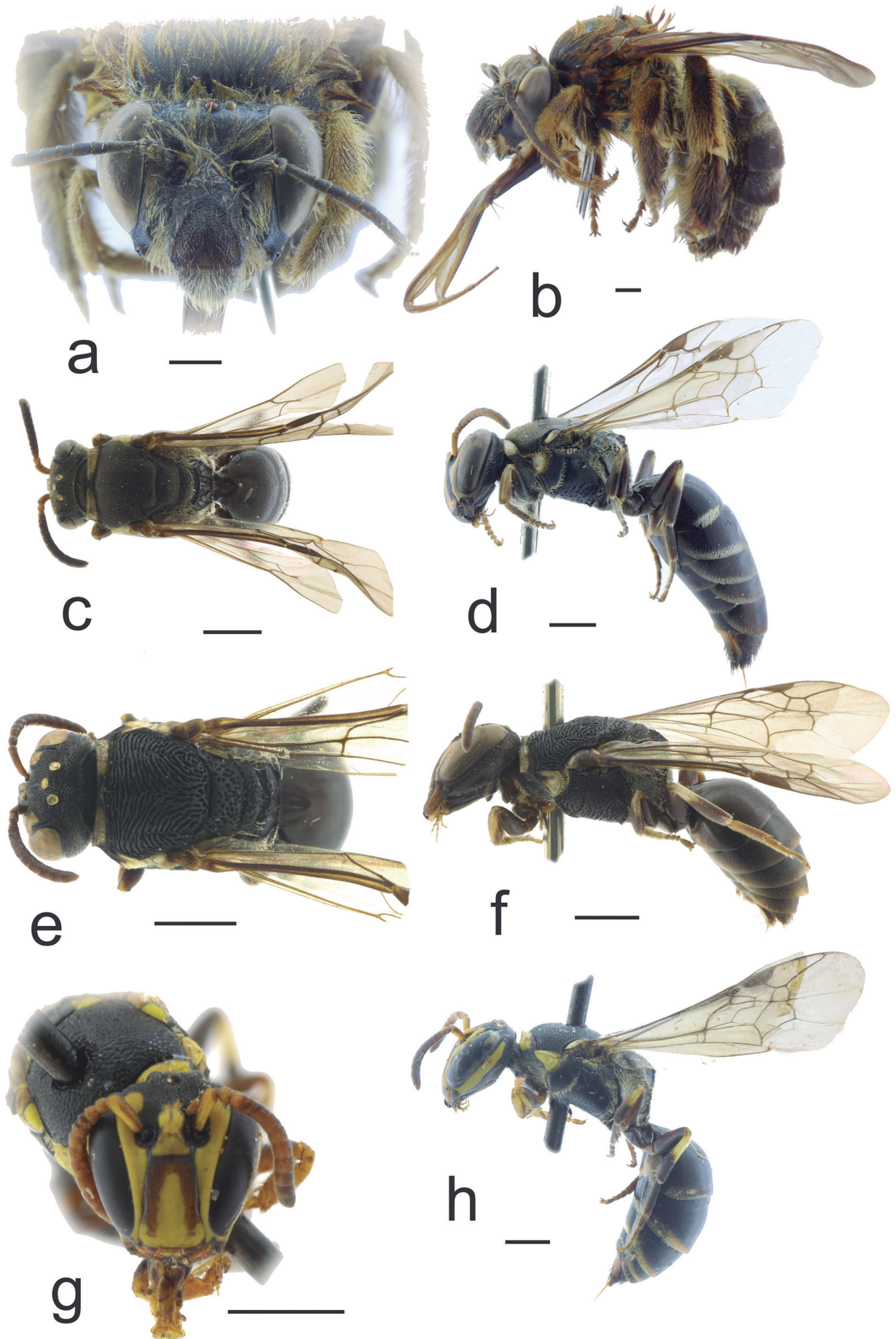


Figure 2. (A, B) *Trichocera mirabilis* (Smith) female. (C, D) *Hylaes bertonii* (Schrottky) female. (E, F) *Hy. paradoxus* (Schrottky) female. (G, H) *Hy. polybiaformis* (Schrottky) female. A, G = head in frontal view. B, D, F, H = lateral view. C, E = mesoscutum in dorsal view. Scale bars: 1 mm.

– Pescado T1-E2 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, 28/I/2009, Col. Zamudio, Colleselli & Gómez de Oliveira // Acceso, Van Somer – Fruta T1-E1 // 1♀, Argentina, Misiones, El Soberbio, Rta. 2 camino a Moconá, 06/IV/2017, Col. L. Alvarez, M. Lucia. 1♀, Paraguay, Mbororó [Sic.] (probably Mbororé), –X-1944, Col. F. Schade.

Distribution: Bolivia. Paraguay (Urban & Moure, 2002). Argentina: Misiones. **New records.**

Remarks: Moure (1960) revised the species described by Vachal and presented a key for their identification, re-described the holotype of *Prosopis fossitermis* Vachal, 1910 and synonymized this species under *Hylaeus bertonii*. This species is characterized by fine and sparse piligerous punctures on mesoscutum, scutellum and metanotum while the punctuation is dense and coarse on the lower portion of the mesepisternum (Fig. 2C, D) (Moure, 1960).

***Hylaeus paradoxus* (Schrottky, 1907) (Figs. 2E, F and 5)**

Material examined (9♀): 1♀, Argentina, Misiones, 05/IX/1909, Col. P. Joergensen. 2♀, Argentina, Misiones, Loreto, Col. A. Ogloblin. 2♀, Argentina, Misiones, M. Belgrano 15/II/1949. 1♀, Argentina, Misiones, 2 de Mayo, 07/XI/1965. Col. A. Ogloblin. 1♀, Argentina, Misiones, 2 de Mayo. 15/XI/1965. Col. A. Ogloblin. 2♀, Argentina, Misiones, Parque Nacional Iguazú, 17/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van Somer – Pescado T1-E2 //.

Distribution: Until now only known from the type locality; Paraguay: Puerto Bertoni (Urban & Moure, 2002; Rasmussen et al., 2009). Argentina: Misiones. **New records.**

Remarks: *Hylaeus paradoxus* can be easily recognizable by the sculpture of the mesoscutum, which presents deep and transverse grooves (Fig. 2E) (Schrottky, 1907).

***Hylaeus polybiaeformis* (Schrottky, 1907) (Figs. 2G, H and 5)**

Material examined (13♀): 1♀, Argentina, Misiones, Loreto, Col. A. Ogloblin. 6♀, Argentina, Misiones, M. Belgrano 15/II/1949. 1♀, Argentina, Misiones, Parque Nacional Iguazú, 12/XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Límite, Van-Pesc., T1-E1 // 2♀, Argentina, Misiones, Parque Nacional Iguazú, 16/XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van-Pesc., T1-E2 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 09/XII/2017, Col. L. Alvarez – P. Ramello // Recolectada con vainillin, Sitio 5, (-25°42'22.2", -54°21'41.7"), dosel 12 m // 2♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101. 27/IV/2018. Col. L. Alvarez, D. Aquino.

Distribution: Paraguay (Urban & Moure, 2002; Rasmussen et al., 2009). Argentina: Misiones. **New records.**

Remarks: *Hylaeus polybiaeformis* is a species characterized by the great development of yellow spots on the head and mesosoma, including clypeus, antenna, a large part of the face and paraocular area (Fig. 2G), pronotum, pronotal lobe, tegula, scutellum and axilla. This species is easily distinguished from other species of the genus by the gena with a yellow spot as long as the eye (Fig. 2H) (Schrottky, 1907).

Tribe Caenohalictini Genus *Habralictus* Moure

The genus *Habralictus* was erected by Moure (1941) to include several species of small halictid bees, with the head and mesosoma metallic bright green to blackish and the metasoma brown or black that in the female usually has yellow basal bands or basal lateral spots on the terga (Michener, 2007). Two subgenera are recognized by Michener (2007), the monotypic *Zikaniella* Moure, from Rio de Janeiro, known only from the male and *Habralictus* s. str. that contains the remnant of the species. However, actually *Zikaniella* is considered a junior synonym of *Habralictus* (Moure, 2007; Gibbs, 2012), and this genus includes 26 species, distributed mainly in the most tropical portion of America, from Bolivia and Parana, Brazil to Mexico, including Dominica, Grenada and Saint Vincent and the Grenadines; however, several species are undescribed (Smith-Pardo, 2009; Gibbs, 2012, 2016). This genus was recorded firstly in Argentina by Zamudio et al., (2021), who reported tentatively four morphospecies (one of them undescribed) associated with the palm *Euterpe edulis* Mart. (Arecaceae).

***Habralictus chlorobaptus* Moure, 1941 (Figs. 3A-C and 5)**

Material examined (3♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, Palmital cruce, 25°41'23.20"S, 54°28'46.97"O, en flores de *Euterpe edulis*, –/IX/2013, Col. F. Zamudio. 1♀, Argentina, Misiones, Parque Nacional Iguazú, 14/II/2009, Col. Zamudio, Colleselli & Gómez de Oliveira // Mixto, Van Somer – Fruta T2-E1 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, 17/XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van-Pesc., T1-E2 //.

Distribution: Brazil: Goiás (Moure, 2007). Argentina: Misiones. **New record.**

Remarks: Females of this species are easily distinguished from other species of the genus by the long face, the small yellow spot on the metasoma and the metallic green reflections on T3 to T5 (Fig. 3B) (Moure, 1941). Individuals of this species were collected using Van Somer traps baited with mature fruit or rotten fish.

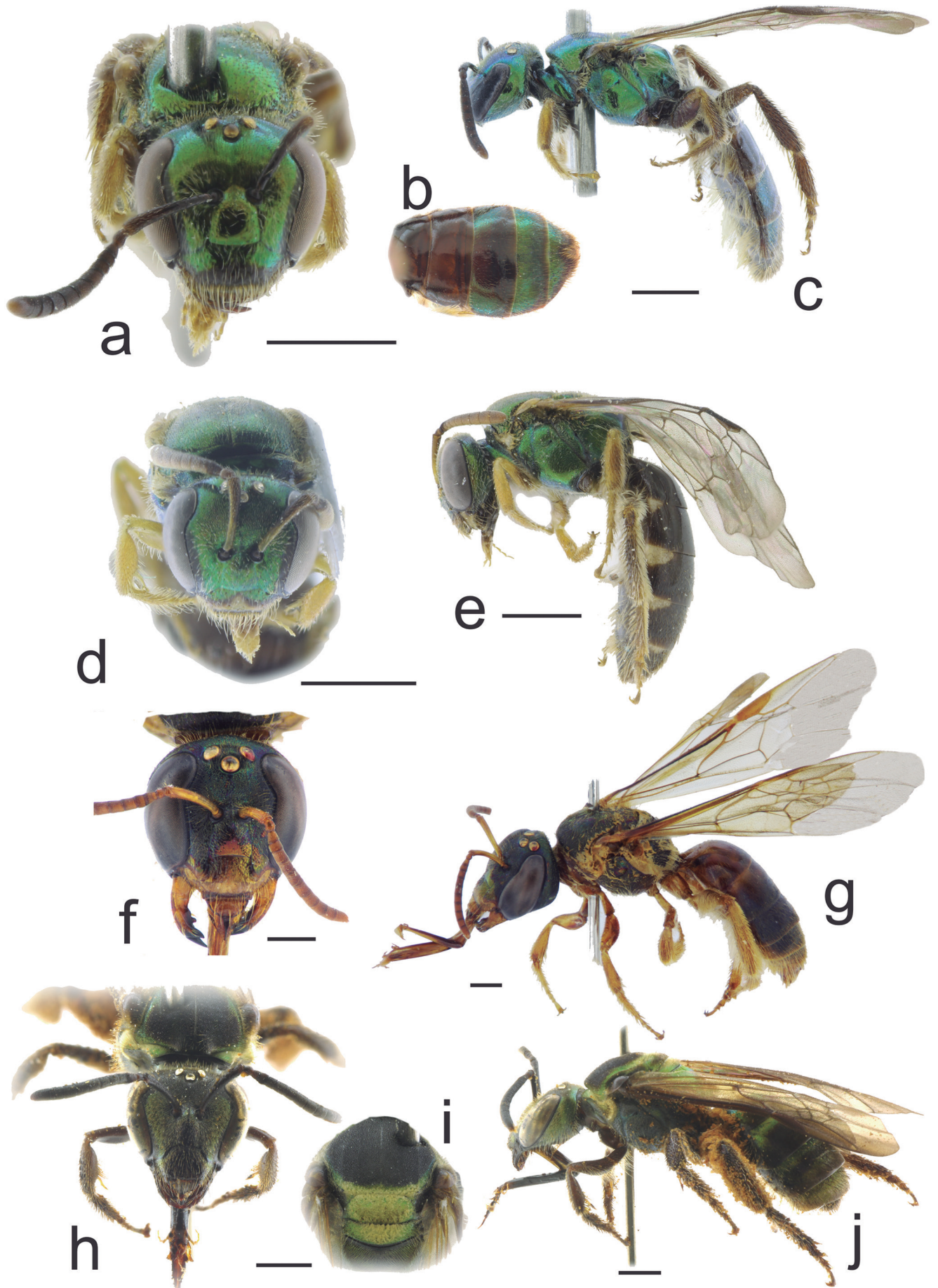


Figure 3. (A-C) *Habralictus chlorobaptus* Moure female. (D, E) *Ha. flavopictus* Moure female. (F, G) *Megalopta guimaraesi* Santos & Silveira female. (H-J) *Neocorynura euadne* (Schrottky) female. A, D, F, H = head in frontal view. B = metasoma in dorsal view. C, E, G, J = lateral view. i = scutellum and metanotum. Scale bars: 1 mm.

***Habralictus flavopictus* Moure, 1941 (Figs. 3D, E and 5)**

Material examined (1♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, Palmital cruce, 25°41'23.20"S, 54°28'46.97"O, en flores de *Euterpe edulis*, -/IX/2013, Col. F. Zamudio.

Distribution: Brazil: Minas Gerais, São Paulo (Moure & Melo, 2022). Argentina: Misiones. **New record.**

Remarks: Females of *H. flavopictus* can be distinguished by the following characters: clypeus with a yellow apical band, broader medially (Fig. 3D); mandibles, labrum, fore and middle legs and pronotal lobe yellow; metasoma brown, T2-T5 with basolateral yellow spots (Fig. 3E); inner hind tibial spur pectinate, with three branches (Moure, 1941).

Tribe Augochlorini Genus *Megalopta* Smith

The species of genus *Megalopta* are relatively large halictine bees that have crepuscular or nocturnal behaviors and therefore exhibiting the typical large ocelli and pale integumental pigmentation (Engel, 2000). There are 35 valid species of Neotropical distribution (Moure & Melo, 2022) and Santos & Melo (2015) review the Brazilian species and update the taxonomy of the genus.

***Megalopta guimaraesi* Santos & Silveira, 2009 (Figs. 3F, G and 5)**

Material examined (6♀♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 08/XII/2017, Col. L. Alvarez – P.J. Ramello // Recolectada con vainillin, Sitio 3, (-25°40'32.0", -54°13'50.8"), dosel 12 m // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 08/XII/2017, Col. L. Alvarez – P.J. Ramello // Recolectada con metil salicilato, Sitio 3, (-25°40'32.0", -54°13'50.8"), dosel 12 m // 2♀♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 25/I/2018, Col. Alvarez-Almada-Avalos // Recolectada con metil salicilato, Sitio 3, (-25°40'32.0", -54°13'50.8"), dosel 12 m // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 25/I/2018, Col. Alvarez-Almada-Avalos // Recolectada con metil salicilato, Sitio 4, (-25°41'03.0", -54°12'14.9"), dosel 12 m // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 25/I/2018, Col. Alvarez-Almada-Avalos // Recolectada con metil salicilato, Sitio 4, (-25°41'03.0", -54°12'14.9"), sotobosque 1.5 m //.

Distribution: Brazil (Bahia, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, São Paulo) (Santos & Melo, 2015). Argentina: Misiones. **New record.**

Remarks: Females of *Megalopta guimaraesi* are included in the *amoena* species group by presenting the posterior

upper margin of metepisternum modified into a conspicuously large process covered with velvety pilosity and differ from other members of this group by the following combination of characters: basal area of metapostnotum metallic green, the mesoscutum with the dense punctuation adjacent to parapsidial line and sparser in direction to mesoscutal lip, and scutellum with posterior margin leveled to anterior margin of metanotum (Santos & Silveira, 2009; Santos & Melo, 2015). *Megalopta guimaraesi* and *M. sodalis* (Vachal, 1904) are the species with the southernmost distribution of the genus, reaching the Brazilian states of Paraná and Santa Catarina, respectively. All the specimens studied in this work were collected using euglossine traps baited with methyl salicylate or vanillin. This behavior was reported by Knoll & Santos (2012). This is the first record of the genus and species for Argentina.

Genus *Neocorynura* Schrottky

Neocorynura is one of the most speciose genera in Augochlorini, with more than 100 described species (Moure & Melo, 2022). The species of *Neocorynura* present in Argentina and Paraguay were revised by Smith-Pardo (2010), and later Gonçalves (2019) treated the Brazilian fauna, which includes numerous records of species present in Argentina not previously cited.

***Neocorynura euadne* (Schrottky, 1909) (Fig. 3H, J)**

Material examined (11♀♀, 3♂♂): 1♀, Argentina, Misiones, Loreto, 18/I/2014, Col. M. Lucia. 2♀♀, 1♂, Argentina, Misiones, Rta. Prov. Nº 2 Km 36, 21/I/2014, Col. M. Lucia. 1♀, Argentina, Misiones, Rta. Prov. Nº 2 Km 36, 19/I/2014, Col. M. Lucia. 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 23/I/2017, Col. L. Alvarez, A. Avalos & J.P. Torretta // Recolectada con vainillin, Sitio 2, (-25°40'25.7", -54°16'38.8"), sotobosque 1.5 m // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 09/IV/2017, Col. L. Alvarez – M. Lucia // Recolectada con vainillin, Sitio 5, (-25°42'22.2", -54°21'41.7"), sotobosque 1.5 m // 4♀♀, 2♂♂, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 09/XII/2017, Col. L. Alvarez – P.J. Ramello // Recolectada con vainillin, Sitio 6, (-25°40'32.8", -54°13'50.8"), dosel 12 m // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 09/XII/2017, Col. L. Alvarez – P.J. Ramello // Recolectada con vainillin, Sitio 5, (-25°42'22.2", -54°21'41.7"), dosel 12 m //.

Distribution: Brazil: Paraná, Rio Grande do Sul. Paraguay (Gonçalves, 2019). Argentina: Misiones. **New records.**

Remarks: Females of *N. euadne* are characterized by presenting the scutellum and metanotum densely pubescent (Fig. 3I). Seven females and two males were collected in euglossine traps baited with vanillin.

Genus *Pseudaugochlora* Michener

Pseudaugochlora includes rather large, metallic blue-green species characterized by sharp, hooked last antennal segment of males and the rounded crest behind the ocelli of the females (Michener, 2007). *Pseudaugochlora* include seven species that occur through South, Central and North America, which were revised by Almeida (2008).

Pseudaugochlora callaina Almeida, 2008 (Figs. 4A, B and 5)

Material examined (1♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 25/I/2018, Col. Alvarez-Almada-Avalos // Recolectada con vainillin, Sitio 6, (-25°43'21.7", -54°24'15.5", sotobosque 1.5 m //.

Distribution: Brazil: Distrito Federal, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, São Paulo (Almeida, 2008). Argentina: Misiones. **New record.**

Remarks: *Pseudaugochlora callaina* is the second species of the genus present in Argentina. Females of this species are easily distinguished from the common and widely distributed *Pseudaugochlora graminea* (Fabricius, 1804) by the broadly depressed clypeus and the bluish-green coloration of the metasoma (Fig. 4A, B) (Almeida, 2008). The female was collected in a euglossine trap baited with vanillin.

Genus *Rhectomia* Moure

The genus *Rhectomia* s. l. was revised by Gonçalves (2010), who transferred two species to *Corynurella* Eickworth, proposed the new subgenus *Paracorynurella* Gonçalves and conducted a species phylogeny based on morphological characters. Also, he described one new species of *Rhectomia* s. s., and presented a key to differentiate the three species included in this subgenus. Species of genus *Rhectomia* s. s. are small, dull-green bees sometimes with the body partly testaceous or reddish, and others with marked blue-green reflection (Michener, 2007). Females of *Rhectomia* can be distinguished from other similar genera by the obtuse epistomal angle, wide gena and metapostnotum not carinate.

Rhectomia catarina Gonçalves, 2010 (Fig. 4C, D)

Material examined (1♀): 1♀, Argentina, Entre Ríos, Quinta Arco Iris (Is. del Ibicuy), (33°47'00"S, 58°33'01"W, 7 msnm), 29-30/XII/2011. Col. Jensen, R., Lutz, A.

Distribution: Brazil: Santa Catarina (Gonçalves, 2010). Argentina: Entre Ríos. **New record.**

Remarks: This is the first record of genus and species from Argentina. *Rhectomia catarina* is very similar to *R. pumilla*

Moure, 1947, from which it differs by the length of the mesoscutal median line, which in *R. catarina* reaches the middle portion of the sclerite (Fig. 4D) (Gonçalves, 2010).

Genus *Thectochlora* Moure

The species of *Thectochlora* are medium-sized green bees. The genus *Thectochlora* is characterized by the presence of a well-developed acarinarium on T1, the presence of a strong dorsal hook on the middle trochanter, and a lamellate dorsal pronotal ridge (Engel, 2000). Taxonomic revision of the genus and identification keys for females and males for the five recognized species (although females of two species [*Thectochlora alaris* (Vachal, 1904) and *T. basiatra* (Stand, 1910)] were considered indistinguishable) were presented by Gonçalves & Melo (2006).

Thectochlora hamata Gonçalves & Melo, 2006 (Figs. 4E-G and 5)

Material examined (56♀♀, 4♂♂): 4♀, Argentina, Misiones, Loreto, 18/I/1948, Col. A. Ogloblin. 1♀, Argentina, Misiones, San Ignacio, Teyú Cuaré, 30/XII/2015, Col. L. Alvarez-J.P. Torretta. 2♀♀, 2♂♂, Argentina, Entre Ríos, Pueblo Liebig. -/XII/1997. Col. L. Caire. 2♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Mandarina NOVA, 13/X/2009, Col. G. Dellapé. 6♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Mandarina NOVA, 26/I/2010, Col. G. Dellapé. 12♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Mandarina NOVA, 19/X/2010, Col. G. Dellapé. 1♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Valencia, 15/X/2009, Col. G. Dellapé. 4♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Valencia, 27/I/2010, Col. G. Dellapé. 5♀♀, 1♂, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Valencia, 25/II/2010, Col. G. Dellapé. 6♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Común, 27/I/2010, Col. G. Dellapé. 6♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Común, 25/II/2010, Col. G. Dellapé. 2♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, Naranja Común, 18/X/2010, Col. G. Dellapé. 3♀♀, Argentina, Entre Ríos, Concordia, INTA Concordia, -/III/2011, Col. G. Dellapé. 2♀♀, Argentina, Entre Ríos, Concordia, Osvaldo Magnasco (31°19'03"S, 58°02'26", 48 m), 15/XII/2011, Col. J.P. Bouvet. 1♂, Argentina, Entre Ríos, Parque Nac. El Palmar, 10-11/I/2020, S/ Lamiaceae sp. Col. L. Alvarez.

Distribution: Brazil: Paraná, Santa Catarina, Rio Grande do Sul. Uruguay: Río Negro (Gonçalves & Melo, 2006). Argentina: Entre Ríos and Misiones. **New records.**

Remarks: *Thectochlora hamata* is the second species of the genus recorded in Argentina. This species can be easily distinguished from *T. alaris* (the other species present in Argentina) and all other species of the genus by the presence of a hook on the foreleg trochanter (Fig. 4F).

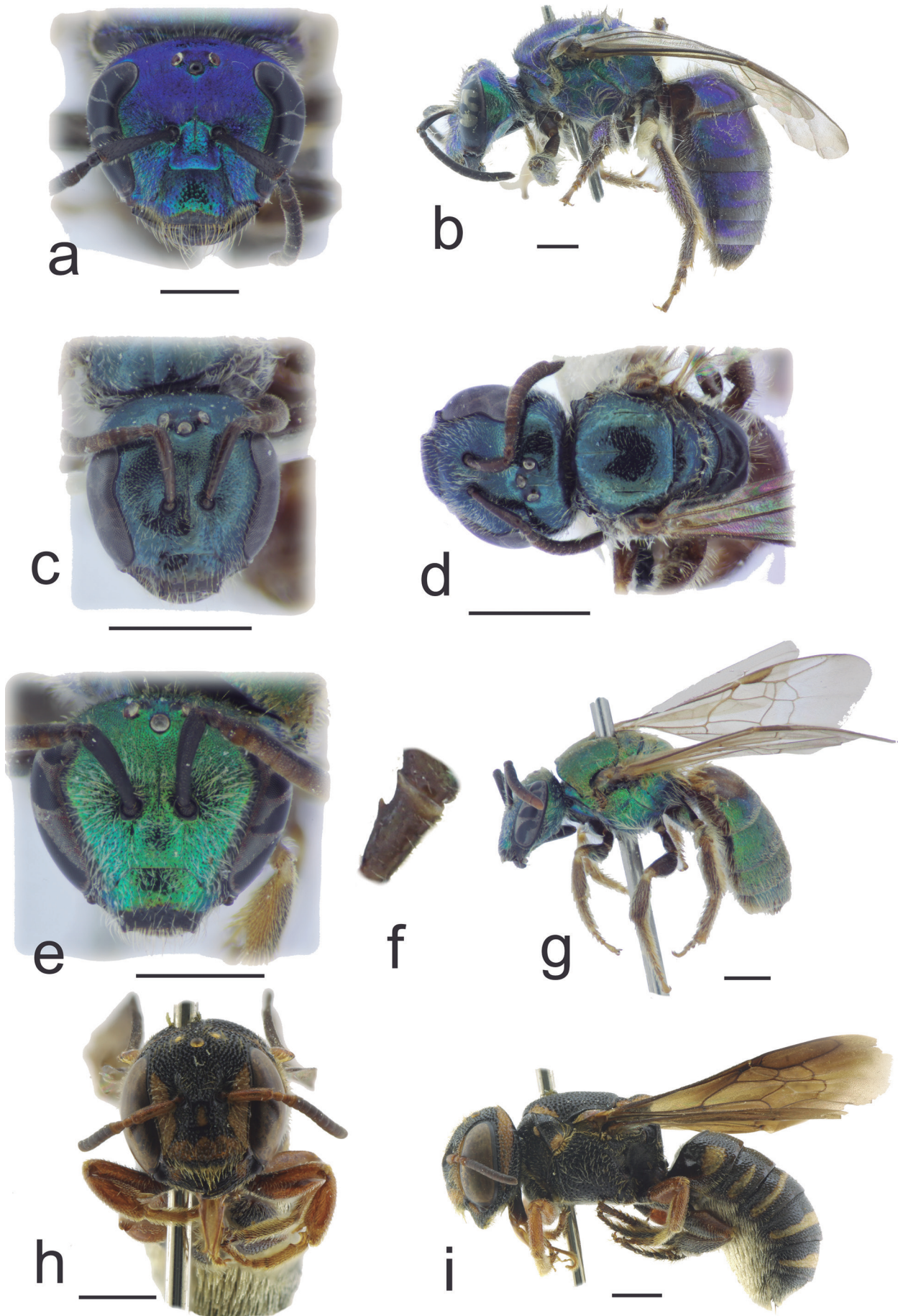


Figure 4. (A, B) *Pseudaugochlora callaina* Almeida female. (C, D) *Rhectomia catarina* Gonçalves female. (E-G) *Thectochlora hamata* Gonçalves & Melo female. (H, I) *Bothranthidium lauroi* Moure female. A, C, E, H = head in frontal view. B, G, I = lateral view. D = mesoscutum in dorsal view. F = foreleg trochanter. Scale bars: 1 mm.

Family Megachilidae
Tribe Anthiini
Genus *Bothranthidium* Moure

The genus *Bothranthidium* is considered a subgenus of *Anthodiocetes* Holmberg by Michener (2007), a position not adopted here, following the position of Moure (1947) and subsequent works (Parizotto et al., 2021; Urban, 1998, 2004). The genus is monotypic, and is characterized by the long pronotal lobe, the smaller stigma and the very broad scutoscutellar foveae.

***Bothranthidium lauroi* Moure, 1947**
(Figs. 4H, I and 5)

Material examined (6♀♀): 1♀, Argentina, Misiones, Parque Nacional Iguazú, 18/XI/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Límite, Van-Pesc., T1-E1 // 2♀♀, Argentina, Misiones, Parque Nacional Iguazú, 12/

XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Límite, Van-Pesc., T2-E1 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, 17/XII/2008, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Van-Pesc., T1-E2 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, 13/II/2009, Col. Zamudio, Colleselli & Gómez de Oliveira // Palmital, Red-Tarde, T1 // 1♀, Argentina, Misiones, Parque Nacional Iguazú, Rta. 101, 09/XII/2017, Col. L. Alvarez – P. Ramello // Recolectada con vainillin, Sitio 5, (-25°42'22.2", -54°21'41.7"), dosel 12 m //.

Distribution: Brazil: Espírito Santo, Minas Gerais, Mato Grosso, Mato Grosso do Sul, São Paulo, Paraná, Santa Catarina. Bolivia: Santa Cruz. Paraguay: San Estanislao. Perú: San Martín (Urban, 2004). Argentina: Misiones. **New record.**

Remarks: Individuals of this species were collected using Van Someren traps baited with rotten fish and one female was collected in an euglossine trap baited with vanillin.

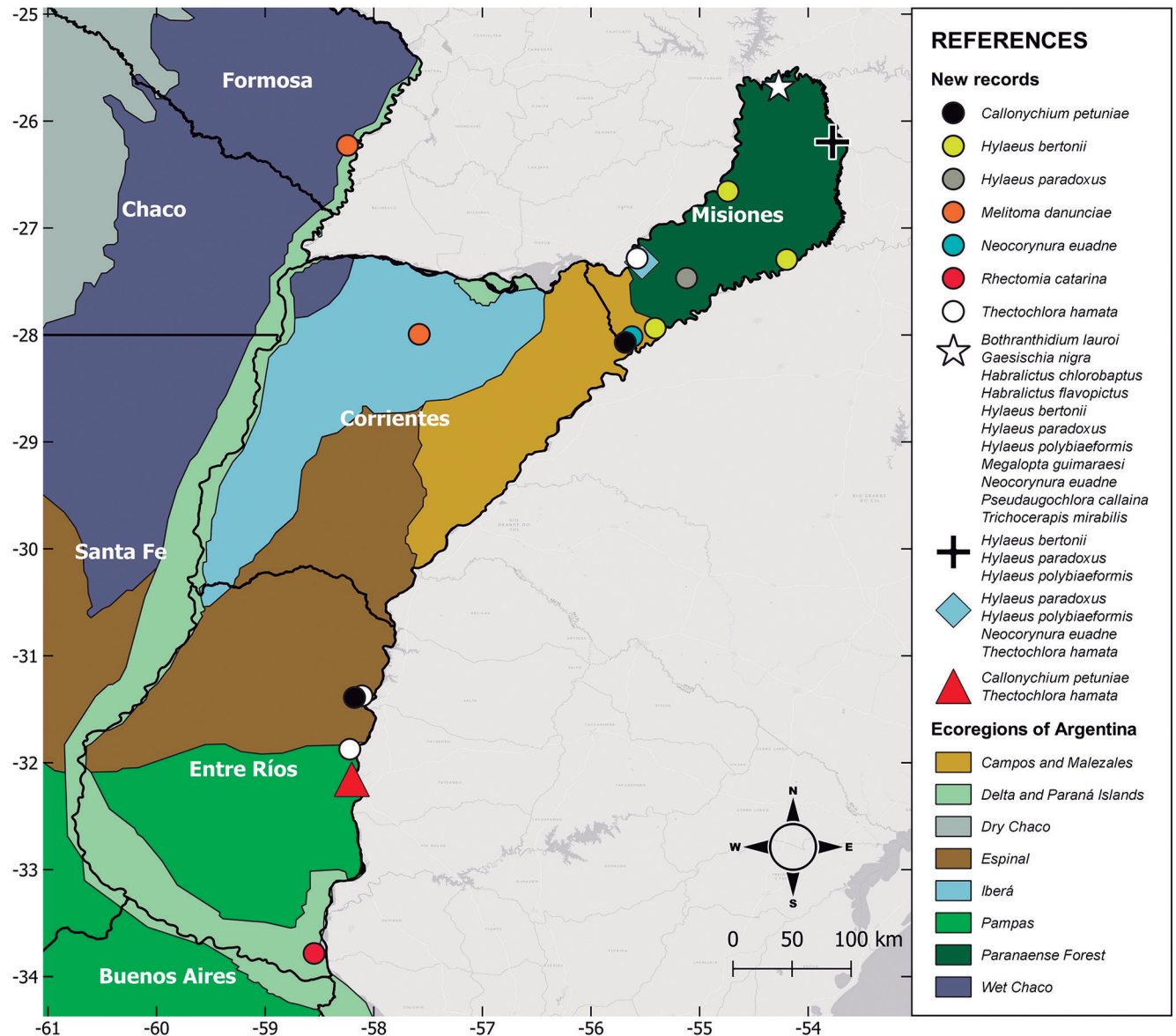


Figure 5. Georeferenced new records of bee species for Argentina. The Ecoregions corresponding to each record are presented. Symbols represent localities with more than one new record: Star = Parque Nacional Iguazú; Plus = M. Belgrano; Diamond = Loreto; Triangle = Pueblo Liebig.

CONCLUSION

We cited the genera *Bothranthidium*, *Megalopta*, *Rhectomia*, and *Trichocerapis* for the first time in Argentina and identified 15 species of bees not previously reported for Argentina, belonging to 12 genera and five families. On the other hand, some genera and species recorded for the first time were collected using alternative sampling methods (such as the Van Somer bait trap with mature fruit or rotten fish and traps with baits for male euglossine bees). The Van Somer traps, baited with decomposed freshwater fish, were the most effective method in capturing wild bees (richness and abundance) in mature forests in Colombia (Smith-Pardo & Gonzalez, 2007). The new species records within a country holds significant importance for various reasons. It contributes to the biodiversity inventory of the country and provides a more comprehensive understanding of its natural history. This knowledge plays a crucial role in identifying species present in different ecoregions of the country, which, in turn, can have implications for ecological studies and conservation. Moreover, these records can indicate changes in species distributions, potentially attributed to habitat modification. New taxa records are not merely scientific novelties; they are critical components of the biological data within ecoregions or countries, significantly enhancing our ecological understanding.

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