



Revista de la Sociedad Entomológica Argentina  
ISSN: 0373-5680  
ISSN: 1851-7471  
santiago@cepave.edu.ar  
Sociedad Entomológica Argentina  
Argentina

## Taxonomic studies on the subgenus *Megachile* (*Dactylomegachile*) in Argentina (Hymenoptera: Megachilidae)

**DURANTE (†), Silvana P.; TORRETTA, Juan P.; CABRERA, Nora C.; ROIG-ALSINA, Arturo**

Taxonomic studies on the subgenus *Megachile* (*Dactylomegachile*) in Argentina (Hymenoptera: Megachilidae)

Revista de la Sociedad Entomológica Argentina, vol. 79, no. 2, 2020

Sociedad Entomológica Argentina, Argentina

**Available in:** <https://www.redalyc.org/articulo.oa?id=322062959004>

# Taxonomic studies on the subgenus *Megachile* (*Dactylomegachile*) in Argentina (Hymenoptera: Megachilidae)

Estudios taxonómicos del subgénero *Megachile*  
(*Dactylomegachile*) en Argentina (Hymenoptera:  
Megachilidae)

Silvana P. DURANTE (†)

Juan P. TORRETTA torretta@agro.uba.ar

Universidad de Buenos Aires, Facultad de Agronomía, Cátedra de  
Botánica General., Argentina

Nora C. CABRERA

División Entomología, Museo de La Plata, Argentina

Arturo ROIG-ALSINA

Museo Argentino de Ciencias Naturales "Bernardino Rivadavia",  
Argentina

Revista de la Sociedad Entomológica  
Argentina, vol. 79, no. 2, 2020

Sociedad Entomológica Argentina,  
Argentina

Received: 21 December 2019

Accepted: 04 May 2020

Published: 29 June 2020

Redalyc: [https://www.redalyc.org/  
articulo.oa?id=322062959004](https://www.redalyc.org/articulo.oa?id=322062959004)

**Abstract:** This contribution deals with the most common and frequently collected species of *Megachile* (*Dactylomegachile*) in Argentina. The taxonomy of seven species is clarified, presenting sex associations for all but one of the species, *M. binota*, the male sex of which remains unknown. In most cases sex associations are based on specimens reared from trap-nests. The following new synonymies are proposed: *M. nigella* Vachal is a junior synonym of *M. ctenophora* Holmberg; *M. parsoniae* Schrottky and *M. riojanensis* Mitchell are junior synonyms of *M. infima* Vachal; *M. trochantina* Vachal and *M. perspicua* Mitchell are junior synonyms of *M. leucografa* Friese; *M. albopunctata* Jörgensen is a junior synonym of *M. tetrazona* Friese; *M. suspecta* Vachal and *M. impudens* Mitchell are junior synonyms of *M. vagata* Vachal. Redescriptions, distributional data, and a key to the studied species are given.

**Keywords:** Argentina, Leafcutter bees, Taxonomy, Wild bees.

**Resumen:** Esta contribución trata las especies más comunes y frecuentemente colectadas de *Megachile* (*Dactylomegachile*) en Argentina. Se esclarece la taxonomía de siete especies, presentando asociaciones de sexos para todas menos para *M. binota*, cuyo macho permanece desconocido. En la mayoría de los casos las asociaciones de sexos se basan en ejemplares criados de nidos trampa. Se proponen las siguientes nuevas sinonimias: *M. nigella* Vachal es sinónimo posterior de *M. ctenophora* Holmberg; *M. parsoniae* Schrottky y *M. riojanensis* Mitchell son sinónimos posteriores de *M. infima* Vachal; *M. trochantina* Vachal y *M. perspicua* Mitchell son sinónimos posteriores de *M. leucografa* Friese; *M. albopunctata* Jörgensen es sinónimo posterior de *M. tetrazona* Friese; *M. suspecta* Vachal y *M. impudens* Mitchell son sinónimos posteriores de *M. vagata* Vachal. Se presentan redescripciones, datos de distribución y una clave para las especies tratadas.

**Palabras clave:** Abejas cortadoras de hojas, Abejas silvestres, Argentina, Taxonomía.

## INTRODUCTION

The genus *Megachile* Latreille is widely distributed in temperate and tropical areas of the world, with great diversity in the Neotropical region (Michener, 2007; Moure et al., 2007; Raw, 2007). This genus is easy to recognize, but identification of its subgenera is often difficult. Mitchell revised the New World fauna and subdivided the genus into numerous subgenera; he described (1943) five neotropical subgenera, including *Chrysosarus* and *Dactylomegachile*. Mitchell (1980) newly revised the genus and proposed a different arrangement; he divided *Megachile* into genera, one of them *Chrysosarus*, with *Dactylomegachile* as a subgenus. Michener (2000) recognized *Megachile* as a single genus and grouped the subgenera into three informal groups, assigning *Chrysosarus* to “Group 1” and including *Dactylomegachile* as a synonym of *Chrysosarus*. This status was accepted by various authors (Raw, 2002, 2007; Carvalho & Raw, 2005; Moure et al., 2007; González, 2008). However, Silveira et al. (2002) considered both *Chrysosarus* and *Dactylomegachile* as valid subgenera. Durante & Cabrera (2009) tested the monophyly of *Chrysosarus* and *Dactylomegachile* using cladistic methodology. According to the results of these authors, these two subgenera can be interpreted as two closely related, although independent clades. González (2013) commented on *Chrysosarus*, considering that *Dactylomegachile*, *Austrosarus* Raw, *Stelodides* Moure, and *Zonomegachile* Mitchell are better interpreted as synonyms of this subgenus. However, González et al. (2018) recognized *Zonomegachile* as a valid subgenus and presented a cladogram showing representatives of *Chrysosarus*, *Dactylomegachile* and *Stelodides* not forming a monophyletic group. The subgenus *Dactylomegachile* is treated here as defined by Mitchell (1943) and Durante & Cabrera (2009).

The main objective of this contribution is to provide a first approach to the systematics of *Dactylomegachile*, clarifying the identity of numerous species, proposing new synonymies, giving distributional data, and presenting a key to the studied species.

## MATERIAL AND METHODS

Morphological terminology follows Michener (2007), except that Mitchell (1980) is followed for terminology of the hidden sterna of the male. The maximum diameter of the median ocellus (MOD) is used as a reference to express the length of the pubescence and other structures, and the diameter of punctures (PD) to indicate the size of the intervals between the punctures. The metasomal terga (T) and sterna (S) are identified with Arabic numerals. The sex of the specimens is indicated by F, female, and M, male.

Individuals studied are deposited in the following institutions: Cátedra de Botánica General, Facultad de Agronomía, Universidad de Buenos Aires (FAUBA), Buenos Aires, Argentina; Instituto Argentino de Investigaciones de Zonas Áridas (IADIZA), Mendoza, Argentina; Museo Argentino de Ciencias Naturales Bernardino

Rivadavia (MACN), Buenos Aires, Argentina; Museum of Comparative Zoology (MCZ), Harvard University, Cambridge, Massachusetts, USA; Museo de La Plata (MLP), La Plata, Argentina; Museum National d'Histoire Naturelle (MNHN), Paris, France; The Natural History Museum (NHMUK), London, United Kingdom; Snow Entomological Collection (SEMC), Lawrence, Kansas, USA; Zoologisches Museum, Museum für Naturkunde der Humboldt Universität (ZMB), Berlin, Germany. Acronyms are used to indicate depositories of the specimens.

## RESULTS

### *Genus Megachile Latreille*

#### *Subgenus Dactylomegachile Mitchell*

*Type species: Megachile parsonsia Schrottky*

**Diagnosis.** The subgenus *Dactylomegachile* is distinguished by the following combination of characters: antenna, wing venation and tegula black to brown; female mandible 4-dentate, without cutting edges, fourth tooth truncate or incised; female T6 generally straight in profile and apically truncate; female S6 homogeneously covered by scopal hairs; male mandible 3-dentate, with angle on inferior margin; male front coxa glabrous, with short spine and with group of ferruginous bristles; male front tarsus flattened, not excavated anteriorly, pale, with black spot on under surface; male T6 with preapical carina usually denticulate.

### *Megachile (Dactylomegachile) binota Vachal*

*Megachile binota* Vachal, 1908: 225 (Holotype female, Argentina, Mendoza, MNHN, not examined). Jörgensen, 1912a: 131, 132; 1912b: 312.

*Megachile (Chrysosarus) binota*: Raw, 2002: 9; 2007: 31. Moure et al., 2007: 955. Durante et al., 2008: 432.

**Diagnosis.** This species is distinguished by its black integument and vestiture, except for a small lateral patch of white hairs laterally on T2. The females can be distinguished from other species with extensively black vestiture as follows: from *M. tetrazona* by its smaller size and lack of white tufts behind the pronotal lobe, from melanic individuals of *M. jenseni* by its narrow vertex, and from melanic individuals of *M. ctenophora* by the shorter vestiture and the sparser punctuation of the scutum, the integument of which is polished between punctures.

**Redescription. Female:** Body length: 9.8-12.0 mm. Forewing length: 5.6-6.7 mm. **Coloration.** Integument black except: underside of flagellum and apex of mandible dark brown in some specimens. Wings subhyaline with light brownish tinge, and darker apices; veins and pterostigma

dark brown. *Pubescence*. Head: entirely black. Mesosoma: entirely black. Disc of scutum with long hairs (1.0-1.5 x MOD), longer on scutellum (1.5-2.0 x MOD). Legs with black hairs, except black to brown on inner surface of tarsi. Metasoma: with black hairs, except T2 with white lateral patch occupying 1/3-1/4 of width of tergum; discs of T2-T4 with very short (0.3-0.8 x MOD) hairs, discs of T5-T6 with short and long hairs; T3-T5 with apical bands not dense (length of hairs 0.3-0.5 x MOD); scopa black. *Structure*. Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.1; interantennal distance 1.45 x antennocular distance; distance between lateral ocellus and occipital margin 1.6-1.7 x MOD; proportions of scape, pedicel and first three flagellomeres 2.9:1.0:1.0:0.9:1.0; maximum width of gena 1.0-1.1 x maximum width of compound eye. Apical margin of clypeus denticulate; fourth mandibular tooth pointed. T6 slightly concave in profile, with rounded apex in dorsal view. *Punctuation*. Clypeus with coarse, dense punctures, separated by shiny interspaces 0.1-0.5 x PD, supraclypeal area with shiny interspaces 0.2-0.3 x PD, some specimens with small impunctate area on center of supraclypeal area. Scutum and scutellum with punctures separated by shiny interspaces 0.2-0.5 x PD. Discs of T2-T5 shiny, punctures on disc of T2 small, separated by 1.0-3.0 x PD.

**Distribution.** Argentina, provinces of Chubut, Mendoza, Río Negro, and Santa Cruz.

**Material examined.** Argentina. **Chubut:** Comodoro Rivadavia, 1 F (MACN). **Mendoza:** Puente del Inca, 1 F (MACN); Puente del Inca, 2 F, 11-III-2010, Galvani (MACN); El Sosneado, 1 F, 22-I-2003, L. Compagnucci (MACN). **Río Negro:** Ñorquínco, 5 km N Río Chico, 1 F, 21-I-2006, ex *Nassauvia axillaris*, D. Medan (MACN). **Santa Cruz:** Río Pinturas, Cueva de las Manos, 3 F, 28-I-1994, A. Roig A. (MACN).

### *Megachile* (*Dactylomegachile*) *ctenophora* Holmberg

*Megachile ctenophora* Holmberg, 1886: 144-146 (Lectotype male [Argentina, Buenos Aires, Tandil] MACN, examined, **present designation**). Dalla Torre, 1896: 427. Schrottky, 1903: 184. Friese, 1908: 63, 64, 68 (Tucumán). Jörgensen, 1909: 215, 224. Vachal, 1909: 229. Friese, 1911: 266. Jörgensen, 1912a: 128, 133, 135; 1912b: 311. Schrottky, 1913a: 247; 1909: 267 (Catamarca). Cockerell, 1917: 240 (Santa Fe).

*Megachile nigella* Vachal, 1908: 223 (Holotype female, Argentina, Mendoza, XI, MNHN n° EY6319, examined). Jörgensen, 1912a: 131, 132; 1912b: 312. Cockerell, 1919: 219. **New synonym**

*Megachile* (*Chrysosarus*) *ctenophora*: Raw, 2002: 10; 2007: 34. Moure et al., 2007: 956. Durante et al., 2008: 432.

*Megachile* (*Chrysosarus*) *nigella*: Raw, 2002: 11; 2007: 36. Moure et al., 2007: 958. Durante et al., 2008: 432.

*Megachile* (*Dactylomegachile*) *ctenophora*: Durante & Cabrera, 2009: 57, fig. 12.

**Diagnosis.** This species is close to *M. vagata*, from which it is distinguished by the longer vestiture in both sexes. Females of *M. ctenophora* and *M. vagata* have an orange scopa and the integument of the scutum is tessellate between punctures, characters shared by *M. jenseni*, from which they are distinguished by the narrow vertex. Males of *M. ctenophora* differ from males of *M. infima* and *M. jenseni* in the pilose hypostomal area.

**Redescription.** Female: Body length: 9.2-11.9 mm. Forewing length: 6.2-7.7 mm. **Coloration.** Integument black except: underside of flagellum and apex of mandible dark brown in some specimens. Wings subhyaline with light brownish tinge and darker apices; veins and pterostigma dark brown. **Pubescence.** Head: pale specimens with white hairs on paraocular areas and mid part of gena, and intermixed with black hairs on frons; dark specimens with pubescence entirely black. Mesosoma: pale specimens with white patches behind pronotal lobe and above propodeal spiracle; hairs white intermixed with some black hairs on pronotal collar, on scutum and around scutellum; dark specimens with black hairs, except white patch behind pronotal lobe. Disc of scutum with long hairs (0.8-1.2 x MOD), longer on scutellum (1.2-2.0 x MOD). Legs with black hairs, except ferruginous on inner surface of tarsi. Metasoma: pale specimens with complete apical bands of long hairs on T1-T5 (0.4-0.6 x MOD on T1 and T2), hairs of bands white, plumose on T1-T2 and laterally on T3, black, mostly simple on middle of T3 and on T4-T5, and some simple golden hairs intermixed on T4-T5; discs of T2-T4 with very long, erect hairs (1.0-2.0 x MOD), white on T1-T2, intermixed with black hairs on T3-T4, and mostly black on T5. Dark specimens with white hairs reduced to short lateral bands on T1-T2. Scopa varying from ferruginous on S2-S5 to entirely black. **Structure.** Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.1; interantennal distance 1.25x antennocular distance; distance between lateral ocellus and occipital margin 1.6-1.9 x MOD; proportions of scape, pedicel and first three flagellomeres 3.4:0.9:1.0:1.0:1.1; maximum width of gena 1.1 X maximum width of compound eye. Apical margin of clypeus denticulate; fourth mandibular tooth truncate, weakly incised. T6 slightly concave in profile, with rounded apex in dorsal view. **Punctuation.** Clypeus with dense punctures, separated by shiny interspaces 0.1-0.2 x PD, supraclypeal area with interspaces 0.1-0.2 x PD, some specimens with small, impunctate, tessellate area on center of supraclypeal area. Scutum and scutellum with dense, homogeneous punctures, separated by tessellate interspaces 0.1-0.25 x PD. Discs of T2-T5 with tessellate interspaces; punctures on disc of T2 small, separated by 0.5-1.0 x PD.

Male : Body length: 8.7-10.6 mm. Forewing length: 5.9-7.3 mm. **Coloration.** Similar to that of female, except foreleg: under surface of femur and tibia, and entire tarsus ferruginous; underside of second tarsomere with black spot. **Pubescence.** Long, abundant, whitish hairs on clypeus, supraclypeal area, paraocular area, and gena; dark brown on remainder of head, intermixed with white hairs on vertex; hairs on hypostomal area varying from white to brown. Mesosoma: pale specimens



with pubescence mostly white, except few intermixed, erect, long, dark brown hairs on scutum and black patch laterally on propodeum; dark specimens with dark brown hairs on mesopleuron below hypoepimeral area, on middle of metapleuron and on lateral side of propodeum. Foreleg: hairs on coxa white, on remainder of leg mostly orange and white, except tibia with short dark hairs on dorsal and outer surfaces; outer fringe of tarsus with orange hairs ventrally, covered with shorter white hairs dorsally. Middle and hind legs mostly with dark hairs, except middle tarsus with hairs paler. Metasoma: pale specimens on T1 with long, white hairs and poorly defined apical band; dark specimens on T1 with dark brown hairs. T2-T4 with black hairs on discs and whitish apical bands (varying from complete to medially interrupted). T5-T6 with black hairs. *Structure*. Lower margin of mandible forming triangular projection near middle. Hypostomal area pilose. Maximum width of gena 1.2-1.3 x maximum width of compound eye. Anterior surface of forecoxa with sparse punctures bearing minute hairs, and group of 15-20 ferruginous bristles in front of coxal spine; spine of moderate length, 0.7 x MOD; lower outer margin of forefemur and tibia rounded. Anterior basitarsus flattened, proportion of lengths of basitarsus and second tarsomere along midline 1:0.7, basitarsus twice as long as its apical width. Carina of T6 with small median notch and laterally with 3-5 spiniform teeth; T6 with weak median depression above carina. Pregradular area of S5 with simple hairs laterally; postgradular area with medial area of stiff, basally thickened hairs, and remainder of area with simple hairs; separation area narrow, translucent (Fig. 1C). Lateral pregradular area of S6 with long hairs finely branched apically; central area bare medially and laterally with simple hairs directed mesally; apical lobes short, subtriangular, with a row of simple hairs running from one lobe to the other (Fig. 1C).

**Comments.** The citation of *M. ctenophora* for the province of Santa Fe (Cockerell, 1917) may be erroneous. The known distribution of the species is restricted to the south of the province of Buenos Aires, northern Patagonia and western Argentina. We know of no specimens from the mesic central parts of Argentina.

The original description of Holmberg (1886) was based on several specimens from the town of Tandil, and from Cerro Claraz (today within the town of Tandil). The specimen selected as the lectotype bears a small triangle with no inscriptions (as is the case with many specimens in the Holmberg collection), a handwritten label "*Megachile* / *ctenophora* / Holmberg," a label "col. HOLMB.", and another label "SYNTYPUS". We added a lectotype label.

The specimens studied from Mendoza and northern Patagonia are smaller and darker than those of southern Buenos Aires. The type of *M. nigella* Vachal corresponds to the small, black morphotype. This species has been reared from trap nests in two localities (Bahía Blanca, province of Buenos Aires, and Villavicencio, province of Mendoza). Information on the nesting ecology of this species can be found in Dorado et al. (2011) and Dorado & Vázquez (2016).

**Distribution.** Argentina, provinces of Buenos Aires, Jujuy, Mendoza, Neuquén, Río Negro, and Salta.

**Material examined.** Argentina. **Buenos Aires:** Mar del Plata, 2 F, XII-2003, González Vaquero (MACN); Carmen de Patagones, 1 F, 30-XII-2007, T. Moyano, G. Moyano, A. Roig Alsina (MACN); Bahía Blanca, 1 F, 31-XI-2004, S. Villamil (MACN); Bahía Blanca, 2 F, 1 M, reared from trap-nest, emerged 22-23-II-2016, S.C. Villamil (MACN); 1 F, 2 M, reared from trap-nest, emerged 2-4-I-2016, S.C. Villamil (MACN); Bahía Blanca, 1 M, 22-XII-2008, H.J. Marrero (FAUBA); Tandil, Ea. Lonacepin, 1 F, 27-XII-1934 (MLP); Monte Hermoso, 1 M, 19-XII-1974 (MLP). **Jujuy:** Tumbayá, 1 M, 20-XI-1992, A. Roig A. (MACN); Huacalera, 17 km N Tilcara, 2800m, 2 M, 6-I-1982, D. Brothers (SEMC). **Mendoza:** Cacheuta, 2 F, 3 M (MACN); Uspallata, 1 F, II-1973, A. Roig A. (MACN); Potrerillos, 1 F, 24-III-1979, A. Roig A. (MACN); Mina Aída, 1 F, A. Stevenin (MACN); Villavicencio, 14 F, 7 M, reared from traps, D. Vázquez, N. Chacoff & J. Dorado (MACN); Uspallata, 4 M and 1 F, 16-XII-1954, A. Ogloblin (MLP); 1 M, 3-I-1908, Jörgensen (MLP); 1 F, 17-XI-1907, Jörgensen (MLP); 2 F, 20-III-1908, Jörgensen (MLP); Challao, C° Bodega, 1 M, III-1997, Roig & Debandi (IADIZA); Potrerillos, A° Tres Saltos, 1 F, 19-XII-2002, G. Debandi (IADIZA); Godoy Cruz, Puesto Chambón, 1 F, 25-II-1995, G. Debandi (IADIZA). **Neuquén:** Rinconada, 2 F, 25-I-1965, A. Gaii (MACN); Chapelcú, 1 F, I-1963, A. Gaii (MACN); Quequemtreu, 3 F, 3-II-1963, A. Gaii (SEMC); Collón Curá, 1 F, 1 M, 25-I-1963, A. Gaii (SEMC); San Martín de los Andes, 2 F, I-1953, Schajovskoi (MLP); San Martín de los Andes, 3 F, II-1954, Schajovskoi (MLP); San Martín de los Andes, 1 F, III-1954, Schajovskoi (MLP); San Martín de los Andes, 4 F, 3-III-1953, A. Ogloblin (MLP); Junín de los Andes, 1 F, 17-XI-1965, Schajovskoi (MLP); Río Aluminé, 2 F, 29-II-1964, 7-XII-1964, Schajovskoi (MLP). **Río Negro:** Paso Flores, 4 F, II-1963, A. Gaii (SEMC); Paso Córdoba, 8 km SW Gral. Roca, 1 M, 6-7-XI-1997, C. & M. Vardy (NHMUK); Old INTA station, ca. 13 km W Gral. Roca, 1 F, 9-XI-1997, C. & M. Vardy (NHMUK); Paso Flores, 2 F, 13-II-1956, S. Schajovskoi (MLP); Comallo, 2 F, I-1943, Marti (MLP). **Salta:** Tastil, 3200 m a.s.l., 1 M, 12-I-1994, M.F. Trucco Alemán (MACN). **BOLIVIA.** Villazón, 2 F, 1 M, 7-I-1988, L. Moffatt (MACN).

### *Megachile (Dactylomegachile) infima* Vachal

*Megachile infima* Vachal, 1908: 238-239 (Syntypes female and male, Mendoza, XII, MNHN, examined). Vachal, 1909: 13. Jörgensen, 1912a: 131; 1912b: 312. Schrottky, 1920: 210. Cockerell, 1927: 395.

*Megachile simillima*: Friese, 1906: 95 (misidentification, specimens from Mendoza, Argentina). Friese, 1908: 65 (*idem*). Jensen-Haarup, 1908: 105 (*idem*). Jörgensen, 1909: 214 (*idem*).

*Megachile parsonsia* Jörgensen, 1912a: 128; 1912b: 311 (*Nomen nudum*).



*Megachile parsonsiae* Schrottky, 1913b: 197 (Syntypes female and male, Misiones, Argentina, Asunción and V. Encarnación, Paraguay, not examined). Schrottky, 1913a: 247. Cockerell, 1914: 428; 1917: 240; 1926: 216. Ramos et al., 2015: 357 (Two syntypes, male and female, from V. Encarnación, Paraguay preserved at Museu de Zoologia, São Paulo).

**New synonym.**

*Megachile riojanensis* Mitchell, 1930: 302 (Holotype female, La Rioja, Argentina, MCZ n° 6208, examined). **New synonym.**

*Megachile* (*Dactylomegachile*) *parsonsiae*: Mitchell, 1943: 670. Silveira et al., 2002: 212. Durante & Cabrera, 2009: 57.

*Megachile* (*Chrysosarus*) *parsonsiae*: Michener, 2000: 553. Raw, 2007: 37. Moure et al., 2007: 958.

*Megachile* (*Chrysosarus*) *infima*: Raw, 2002: 10; 2007: 35. Moure et al., 2007: 957.

*Megachile* (*Chrysosarus*) *riojanensis*: Raw, 2002: 11; 2007: 38. Moure et al., 2007: 959.

*Megachile* (*Dactylomegachile*) *infima*: Durante & Cabrera, 2009: 57.

*Megachile* (*Dactylomegachile*) *riojanensis*: Durante & Cabrera, 2009: 57.

**Diagnosis.** This species is the smallest of the subgenus. The females are recognized by the presence of sternal pilose lateral bands below the scopa. The males are distinguished by the glabrous hypostomal area, a feature shared with *M. jenseni*, from which it is distinguished by the narrower vertex, and the lower margin of the mandible with an angle near middle (on basal third in *M. jenseni*).

**Redescription.** *Female*: Body length: 6.7-9.4 mm. Forewing length: 5.0-6.5 mm. *Coloration*. Integument black except: dark brown on underside of flagellum, tegula, legs, and tibial spurs; apex of mandible and claws dark ferruginous (although claws dark brown apically). Wings hyaline to weakly infusate, costal margin of forewing with strongly infusate band which on marginal cell occupies over half of cell; veins and pterostigma dark brown. *Pubescence*. Head: white on paraocular area, lateral margin of clypeus, gena and underside of head; white with intermixed black hairs on rest of clypeus, supraclipeal area and frons; vertex with erect, long black hairs and decumbent, short, brownish hairs. Mesosoma: dense, white patches on dorsolateral angle of pronotal collar, pronotal lobe, on anterior end of tegula, on scutum anteriorly to axilla, and above propodeal spiracle; hairs on upper half of meso and metapleura varying from white to entirely black; intermixed white and black hairs on disc of scutum and scutellum; remainder of mesosoma with sparse white hairs; hairs on disc of scutum short (0.3-0.4 x MOD) with sparse, intermixed longer hairs (0.9-1.1 x MOD); hairs on scutellum long (1.5-2.0 x MOD). Legs with white hairs, except yellowish to ferruginous on inner surface of tarsi. Metasoma: with complete apical bands of short, plumose hairs on T1-T5 (0.5-0.6 x MOD on T1 and T2), usually basal bands whitish and apical ones yellow; discs of T2-T4 with very short (0.3-0.4 x MOD) pale hairs, discs of T5-T6 with pale hairs intermixed with longer black ones; S2-S5 with incomplete apical bands of dense

yellow hairs occupying lateral 0.16 (on S2) to 0.30 (on S5) of width of sternum; scopa yellowish; S6 with yellowish hairs basally and black hairs apically. *Structure*. Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.15; interantennal distance 1.4-1.5x antennocular distance; distance between lateral ocellus and occipital margin 1.5-1.6 x DOM; proportions of scape, pedicel and first three flagellomeres 3.3:1.0:1.0:1.0:1.1; maximum width of gena 0.80 x maximum width of compound eye. Apical margin of clypeus denticulate; fourth mandibular tooth truncate, incised. T6 slightly concave in profile, with rounded apex in dorsal view. *Punctuation*. Clypeus with dense punctures, separated by shiny interspaces 0.10-0.25x PD, supraclypeal area with tessellate interspaces 0.1-0.3x PD, some specimens with small impunctate area on center of supraclypeal area. Scutum and scutellum with dense punctures, separated by shiny interspaces 0.10-0.25x PD. Integument of T2-T5 shiny on discs, weakly tessellate on pregradular areas; punctures on disc of T2 small, separated by 0.8-1.0x PD.

*Male*: Body length: 5.3-7.5 mm. Forewing length: 4.7-5.3 mm. *Coloration*. Similar to that of female, except foreleg; under surface of femur and tibia, and entire tarsus yellowish to ferruginous; underside of second tarsomere with black spot. Pubescence. Long, abundant, yellowish hairs on clypeus, supraclypeal and paraocular area, brown on vertex and disc of scutum and scutellum, remainder of head and mesosoma, and legs with whitish hairs; outer fringe of anterior basitarsus and first two tarsomeres with hairs white, short: on basitarsus as long as 1.0-1.5 x apical width of basitarsus. T1-T5 with complete apical bands of short, plumose, whitish to yellowish hairs; disc of T2-T5 with brown hairs, paler on basal terga and nearly black on T5-T6; S2-S4 with complete apical white fringes. *Structure*. Lower margin of mandible forming triangular projection near middle. Hypostomal area flattened, forming large, glabrous, polished area. Maximum width of gena 0.9-1.0 x maximum width of compound eye. Anterior surface of forecoxa with sparse punctures bearing minute hairs, and group of 4-5 ferruginous bristles in front of coxal spines; spines of moderate length, 1.0 x MOD; lower outer margin of forefemur sharply angled, of foretibia carinate. Anterior basitarsus weakly modified, proportion of lengths of basitarsus and second tarsomere along midline 1:0.80, basitarsus twice as long as its apical width. Carina of T6 with small median notch and laterally with 4-5 spiniform teeth; T6 without anterior depression. Pregradular area of S5 with simple hairs laterally; postgradular area with medial area of stiff, basally thickened hairs, and remainder of area with simple hairs; separation area narrow, translucent (Fig. 1A). Lateral pregradular area of S6 with long hairs finely branched apically; central area bare medially and laterally with short, simple hairs directed mesally; apical lobes glabrous, short, subtriangular (Fig. 1A).

**Comments.** Specimens in collections have usually been identified as *M. infima*. The species has a broad distribution, from Mendoza in Argentina (Jørgensen, 1912a, 1912 b) to the state of São Paulo in Brazil

(Silveira et al., 2002). The name *M. infima* has only been cited in lists or catalogs after its description, although Schrottky (1920) recognized that his *M. parsonsiae* and *M. infima* may belong to a “collective species”. The study of the type of *M. infima* shows that it corresponds to the same species. This species has been reared from trap nests in the locality of Berisso, province of Buenos Aires.

**Distribution.** Argentina, provinces of Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Rioja, Mendoza, Misiones, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero, and Tucumán.

**Material examined.** Argentina. **Buenos Aires:** 1 F, 17-XII-1908, A. Zotta (MACN); Buenos Aires, 1 F, 4-IV-1904, J. Brèthes (MACN); Ciudad de Buenos Aires, Reserva Costanera Sur, 1 F, 2 M, 20-I-2012, Compagnucci, Galvani & González Vaquero (MACN); Jardín Botánico Facultad de Agronomía, CABA, 1 F, 11-XI-2009, N. Mazzeo & J.P. Torretta (FAUBA); Berisso, 5 M, 2 F, 23/26-XII-2010 (reared from trap nests), L. Álvarez (MLP); Canal San Fernando, 2 M, 1 F, 25-XI-1945 (MLP). **Catamarca:** Manantiales, 1 F, 15-30-I-1960, I. Apóstol (MACN); Valle Viejo, San Isidro, El Bañado, 1 F, 17-IV-1936 (MLP); Las Viñas, 1 M, 9-XI-1942, A. Ogloblin (MLP); Andalgalá, 1 M, 19-XI-1944, A. Ogloblin (MLP); 1 M, C.S. Reed (MLP). **Chaco:** Roque Sáenz Peña, 1 M, 1930, Ohnmeiser (MACN); P.N. Chaco, 1 F, 12-13-XI-2007, L. Compagnucci (MACN); Capitán Solari, P.N. Chaco, 1 F, 5-V-2008, A. Taylor & N. Veiga (MACN); Resistencia, 1 M, 17-XI-1945, A. Ogloblin (MLP); Roque Sáenz Peña, 1 F, 11-XI-2004, J.P. Torretta & N. Montaldo (FAUBA). **Córdoba:** San Marcos Sierras, 1 M, 7-15-I-2005, L. Compagnucci (MACN); Huinca Renancó, 1 F, 14-II-1977, sobre girasol (MLP). **Corrientes:** Santa Teresa, Parque Nacional Mburucuyá, 2 F, 5-17-X-2009, N. Veiga (MACN). **Entre Ríos:** Palmar de Colón, 1 F, 10-XI-1995, Di Iorio (MACN); Pronunciamiento, 1 M, I-1961, M. Zelich (MLP). **Formosa:** El Colorado, INTA, 1 M, 23-X-2010, Roig A. et al., ex *Prosopis* sp. (MACN); Laguna Yema, 1 F, 5 M, L. Damer (MACN); San Francisco de Laishi, Reserva El Bagual, 1 F, 7-I-2014, J.P. Torretta (FAUBA). **Jujuy:** 1 M, (MACN); Yuto, 1 M, 10-IV-1911, Jörgensen (MLP). **La Rioja:** 48 M, 15 F, E. Giacomelli col., cat. n° 11765 (MACN); 2 M, 2 F, Gemigani col., cat. n° 11095 (MACN); Malanzán, 1 M, II-1923, M. Gómez (MACN); Iliar, 1 F, V-1932, M. Gómez (MACN); 2 M, C.S. Reed (MLP). **Mendoza:** ciudad Mendoza, 1 F, II-1973, A. Roig A. (MACN); Mendoza, 1 F, 17-II-1906, P. Jörgensen (MLP); Mendoza, 1 M, 12-I-1907, P. Jörgensen (MLP); Mendoza, 1 F, 5-III-1910, P. Jörgensen (MLP); 2 F, 3 M, C.S. Reed (MLP); 1 M, X-1920, C.S. Reed (MLP); Chacras de Coria, 2 M (MLP); Pedriel, Depto. Maipú, 1 M, G. Debandi (IADIZA). **Misiones:** Posadas, 2 M (MACN); Campo Viera, 1 F, XII-1957 (SEMC); Loreto, 1 M, A. Ogloblin (MLP); Bompland, 1 F, 14-II-1911, Jörgensen (MLP); 1 M, 11-I-1911, Jörgensen (MLP). **Salta:** Puesto Zapallar, ca. San Patricio (23° 51' 50" S – 62° 34' 34" W), 1 F, J. Meriggi (MACN); Coronel Moldes, 1 M, 28-XII-1992, A. Roig A. & L. Horovitz (MACN); Rosario

de Lerma, XII-1992, A. Roig A. & L. Horovitz (MACN); Saucelito, 1 M, 1-XII-1957, A. Ogloblin (MLP). **San Juan:** Ciudad de San Juan, 1 M, 21-XII-1920, F.T. Amal (MACN); Pocito, Rinconada, 1 F, 1 M, 26-I-1937 (MLP); 1 M, C.S. Reed (MLP). **San Luis:** Suyuque Viejo, 1 M, 17-I-1982, A. Roig A. (MACN); Parque Nacional Sierra Las Quijadas, 1 F, 4-5-I-2003, Compagnucci (MACN). Santa Fe: Esperanza, 1 F, 9-II-2005, M. Dalmazzo (MACN); Guadalupe, 5 M, 8-I-1945, A. Ogloblin (MLP). **Santiago del Estero:** 1 F, 5 M, X-1929, M. Gómez (MACN); Fernández, 1 F, II-1957 (SEMC); Termas de Río Hondo, 6 M, 4 F, 17-XI-1951, A. Ogloblin (MLP). **Tucumán:** Tañi Viejo, 1 M, II-1914, Girard (MACN); 11 km N Cadillal, 1 M, 7-XI-1993, A. Roig A. (MACN); 6 km W Tapia, 1 F, 20-XI-1993, A. Roig A. (MACN); Tucumán, 1 F, Arnau (SEMC).

### *Megachile* (*Dactylomegachile*) *jenseni* Friese

*Megachile jenseni* Friese, 1906: 95 (Type female, Mendoza, Januar, ZMB, not examined). Friese, 1908: 63, 65, 67, 68. Jensen-Haarup, 1908: 105. Vachal, 1909: 12. Jörgensen, 1909: 214. Strand, 1910: 535. Jörgensen, 1912a: 127, 132, 133, 135; 1912b: 310. Friese, 1912: 364. Schrottky, 1913a: 247. Cockerell, 1914: 427. Schrottky, 1920: 206. Hedicke, 1933: 43.

*Megachile* (*Dactylomegachile*) *jenseni*: Mitchell, 1943: 671. Durante & Cabrera, 2009: 57, figs. 4, 6.

*Megachile* (*Chrysosarus*) *jenseni*: Raw, 2002: 11; 2007: 36. Moure et al., 2007: 956. Durante et al., 2008: 432.

**Diagnosis.** This species is distinguished by a broad vertex. Females are characterized by an orange scopa, and males by the concave lower margin of the mandible ending in an angle near the basal third, and by the preapical carina of T6 denticulate, without median emargination.

**Redescription.** *Female*: Body length: 11.0-12.8 mm. Forewing length: 6.9-7.6 mm. *Coloration.* Integument black except: underside of flagellum and apex of mandible dark brown in some specimens. Wings weakly infusate with darker apices; veins and pterostigma brown. *Pubescence.* Head: pale specimens with white hairs on paraocular areas and mid part of gena and intermixed with black hairs on frons; dark specimens with pubescence entirely black. Mesosoma: pale specimens with white patches behind pronotal lobe and above propodeal spiracle; white hairs intermixed with some black hairs on pronotal collar, on scutum, around scutellum and on posterior surface of propodeum; dark specimens with black hairs, except white patch behind pronotal lobe. Disc of scutum with long hairs (0.9-1.1 x MOD), longer on scutellum (1.8-2.5 x MOD). Legs with black hairs, except ferruginous on inner surface of tarsi. Metasoma: pale specimens with complete apical bands of white, plumose hairs on T1-T5 (0.5-1.5 x MOD on T1 and T2); discs of T2-T4 with long, erect hairs (0.3-0.5 x MOD); discs of T1-T5 with black hairs and some intermixed white hairs; T6 with black hairs. Dark specimens with white hairs reduced to short lateral bands on T1-T2. Scopa varying from ferruginous on S2-S6 to entirely black.

**Structure.** Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.11; interantennal distance 1.3 x antennocular distance; distance between lateral ocellus and occipital margin 2.1-2.3 x diameter of ocellus; proportions of scape, pedicel and first three flagellomeres 3.2:0.9:1.0:1.0:1.0; maximum width of gena 1.25 x maximum width of compound eye. Apical margin of clypeus with median narrow emargination bearing three denticles, irregular laterally; fourth mandibular tooth truncate, weakly incised. T6 slightly concave in profile, with rounded apex in dorsal view. **Punctuation.** Clypeus with dense punctures, separated by shiny interspaces 0.10-0.20 x PD, supraclypeal area with interspaces 0.2-0.2 x PD. Scutum and scutellum with dense, homogeneous punctures, separated by tessellate interspaces 0.10-0.40 x PD. Discs of T2-T5 tessellate; punctures on disc of T2 separated by 0.2-1.0 x PD.

**Male** : Body length: 10.2-11.5 mm. Forewing length: 6.0-6.4 mm. **Coloration.** Similar to that of female, except foreleg: under surface of femur and tibia ferruginous, and entire tarsus yellowish; underside of second tarsomere with black spot. **Pubescence.** Long, abundant, yellowish hairs on clypeus, supraclypeal and paraocular areas; hairs dark brown on remainder of head except white on gena and long white hairs surrounding glabrous space of hypostomal area. Mesosoma entirely with white hairs. Foreleg: hairs on coxa and trochanter white, on remainder of leg mostly orange and white, except tibia with short dark hairs on dorsal and outer surfaces; outer fringe of tarsus with orange hairs ventrally, which are covered with shorter white hairs dorsally. Middle and hind legs mostly with dark hairs, except middle tarsus with hairs paler. Metasoma: T1-T2 with long, white hairs on discs and white apical bands; T3-T4 with dark hairs on discs and yellowish apical bands (varying from complete to medially interrupted); T5-T6 with black hairs. **Structure.** Lower margin of mandible concave, forming triangular projection near basal third. Hypostomal area flattened, forming large, glabrous, polished area. Gena wider than compound eye (1.1:1.0). Anterior surface of forecoxa with sparse punctures bearing minute hairs, and group of 10-15 ferruginous bristles in front of coxal spine; spines of moderate length, 1.0 x MOD; lower outer margin of forefemur rounded, of tibia carinate. Anterior basitarsus flattened, proportion of lengths of basitarsus and second tarsomere along midline 1:0.80, basitarsus 1.60 as long as its apical width. Carina of T6 without median notch, with 8-12 spiniform teeth; T6 with weak median depression above carina. Pregradular area of S5 with simple hairs laterally; postgradular area with medial area of stiff, basally thickened hairs, and remainder of area with simple hairs, without separation area (Fig. 1B). Lateral pregradular area of S6 with long hairs finely branched apically; central area with simple hairs directed mesally; apical lobes glabrous, short, apically rounded, directed laterally (Fig. 1B).

**Comments.** This species varies in the color of the pubescence. In the above description, only the palest and the darkest specimens are described, but all intermediates occur. This species has been reared from



trap nests in the localities of Pila and Carlos Casares, province of Buenos Aires.

**Distribution.** Argentina, provinces of Buenos Aires, Chubut, La Rioja, Mendoza, Neuquén, Río Negro, and San Juan.

**Material examined.** Argentina. **Buenos Aires:** Pila, Ea. Las Chilcas, 10 F and 4 M (reared from trap-nests), 17-VIII-2011/15-X-2011 (emergence dates), J.P. Torretta (MACN); C. Casares, Ea. San Claudio, 2 F and 3 M (reared from trap-nests), J.P. Torretta (MACN); C. Casares, Ea. San Claudio, 1 F, 5-XII-2008, ex *Raphanus sativus*, J.P. Torretta (MACN); C. Casares, Ea. San Claudio, 15 F and 15 M, (reared from trap-nests), XII-2015/III-2016, J.P. Torretta (FAUBA); Pila, Ea. Las Chilcas, 20 F and 20 M, (reared from trap-nests), XII-2011/II-2012, J.P. Torretta (FAUBA); H. Ascasubi, 3 M, 1 F, 10-I-1975, Teson & Dagoberto (MLP); Felipe Solá, 2 M, 13-I and 30-I-1946, A. Ogloblin (MLP); San Fernando, 2 F, 15-XII-1946 (MLP); Berisso, 2 F (nest # 29), 7-XI-2012 and 9-XI-2012, L. Álvarez (MLP); Berisso, 2M, 2 F (nest # 27), 6-XI-2012, L. Álvarez (MLP). **Chubut:** Trelew, 1 M, 20-I-1961 (MLP); 1 F (MACN). **La Rioja:** Jagüel, 1 M, 22-I-2006, L. Compagnucci (MACN); La Rioja, 1 F, C.S. Reed (MLP). **Mendoza:** Uspallata, 1 F, 9-I-2003, Compagnucci (MACN); Uspallata, 1 M, 16-XII-1954, A. Ogloblin (MLP); 1 M, 1 F, C.S. Reed (MLP); 6 F, 7-XI-1906, 10-XI-1906, 10-XII-1906, 17-XI-1907, 10-XII-1907, 20-III-1907, P. Jörgensen (MLP); 2 M, 17-XI-1907, 11-XI-1908, P. Jörgensen (MLP). **Neuquén:** Quequemtreu, 1 F, 3-II-1963, Giai (SEMC). **Río Negro:** Paso Flores, 2 F, III-1963 (MACN); Paso Flores, 1M, III-1963 (SEMC); INTA station, ca. 18 km W Gral. Roca, 1F, 27-II-1998, YPT, C. & M. Vardy (NHMUK); Río Colorado, 1 M, II-1943 (MLP). **San Juan:** Pocito, Va. Aberastain, 1 M, 22-I-1964, Torres-Ferreyra (MLP); 3 F, San Juan, X-1941, Ch. Molinari (MLP).

### *Megachile (Dactylomegachile) leucografa* Friese

*Megachile leucografa* Friese, 1908: 63, 67 (Lectotype female, Argentina, Mendoza, 18-XII-1906, Jensen, "Lectotypus, Fritz," ZMHU, examined, **present designation**). Jörgensen, 1909: 215. Schrottky, 1920: 203.

*Megachile trochantina* Vachal, 1909: 14 (Lectotype male, Argentina, Mendoza, 20-I-1906, Rolle H., Berlim W., MNHN, examined, designated by Durante, 1994). Jörgensen, 1912a: 132, 135; 1912b: 312. **New synonym.**

*Megachile leucographa*: Jörgensen, 1912a: 125, 126, 128, 133, 135; 1912b: 309, 311. Schrottky, 1913a: 247. Durante et al., 2008: 433.

*Megachile perspicua* Mitchell, 1930: 289-290, pl. XIV (Holotype female, Argentina, Córdoba, Davis, MCZ n° 16203, examined). **New synonym.**

*Chrysosarus (Dactylomegachile) trochantina*: Durante, 1994: 41-44, Figs. 1-9 (Lectotype designation).

*Megachile (Chrysosarus) trochantina*: Raw, 2002: 12; 2007: 38. Moure et al., 2007: 959. Durante et al., 2008: 432.

*Megachile* (*Chrysosarus*) *perspicua*: Raw, 2002: 11; 2007: 37. Moure et al., 2007: 958. Durante et al., 2008: 432.

*Megachile* (*Chrysosarus*) *leucographa*: Moure et al., 2007: 957.

*Megachile* (*Dactylomegachile*) *leucographa*: Durante & Cabrera, 2009: 57, figs. 8, 14.

**Diagnosis.** Females of this species are readily distinguished by the pointed fourth tooth of the mandible, the apical margin of the clypeus with a median smooth emargination, and by a white scuto-scutellar band of hairs. Males are distinguished by the preapical carina of T6 emarginate, without spines, and by the basal tuft of yellowish hairs on the lower margin of the mandible.

**Redescription.** *Female* : Body length: 8.9-11.4 mm. Forewing length: 5.9-7.1 mm. *Coloration.* Integument black except: underside of flagellum, tegula, legs, and tibial spurs dark brown (some specimens darker), apex of mandible and claws dark ferruginous (although claws dark brown apically). Wings subhyaline with a light brownish tinge, with darker apices; veins and pterostigma brown. *Pubescence.* Head: white hairs on paraocular areas and gena, and intermixed white and black hairs on frons. Mesosoma: dense, white patch on dorsolateral angle of pronotal collar continued to pronotal lobe and anterior part of tegula; white, short, plumose, hairs forming a dense patch on lateral margin of scutum and a band on scuto-scutellar suture; band of white hairs on posterior margin of scutellum and metanotum; white longer, sparse, hairs on mid part of pronotum, anterior part of scutum, upper part of metapleura, and lateral and posterior side of propodeum. Disc of scutum with short (0.2-0.6 x MOD), black hairs, longer on scutellum (0.9-1.7 x MOD). In some specimens with white patch in front of mid coxa. Coxae, trochanters, and femora with black hairs, except front femur with some intermixed white hairs in some specimens; outer surface of tibiae and tarsi with white hairs; and inner surface of tarsi with ferruginous hairs. Metasoma: with complete apical bands of short, plumose hairs on T1-T5 (0.8-1.2 x MOD on T1 and T2), usually basal bands whitish and apical ones yellowish; disc of T2-T4 with short (0.2-0.6 x MOD) brownish hairs; T6 with pale, decumbent hairs intermixed with longer brownish ones; scopa whitish, except S6 with black hairs. *Structure.* Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.1; interantennal distance 1.3x antennocular distance; distance between lateral ocellus and occipital margin 2.2-2.6 x MOD; proportions of scape, pedicel and first three flagellomeres 3.8:1.0:1.0:1.0:1.1; maximum width of gena 1.1 x maximum width of compound eye. Apical margin of clypeus with median smooth emargination; fourth mandibular tooth pointed. T6 slightly concave in profile, with rounded apex in dorsal view. Punctuation. Clypeus with punctures separated by shiny interspaces 0.1-0.2 x PD, supraclypeal area with tessellate interspaces 0.2-0.4 x PD, and with impunctate, tessellate area on center of supraclypeal area. Scutum and scutellum with dense punctures, separated by tessellate interspaces 0.1-0.5 x PD. Discs of T2-T5 weakly tessellate; punctures on disc of T2 separated by 0.4-1.0 x PD.

**Male** : Body length: 9.0-11.9 mm. Forewing length: 5.5-7.7 mm. **Coloration.** Similar to that of female, except foreleg; under surface of femur and tibia, and entire tarsus yellowish to ferruginous; underside of second tarsomere with black spot. **Pubescence.** Hairs long, abundant, white on clypeus, supraclypeal and paraocular areas, sparser, white to brownish on vertex, yellowish on gena and hypostomal area, white on remainder of head. Mesosoma with whitish hairs; scuto-scutellar band conspicuous. Mandible on lower surface with conspicuous basal tuft of dense yellow hairs. Foreleg: hairs on coxa and trochanter white, on femur orange, on tibia whitish; outer fringe of tarsus with yellowish hairs ventrally (as long as 2.0-2.3 x apical width of basitarsus), covered with shorter white hairs dorsally. Middle and hind legs with white hairs, long on middle (2.0-3.0 x MOD), and hind (1.8-2.5 x MOD) basitarsi. T1-T4 with complete apical bands of short, plumose, whitish to yellowish hairs; few specimens also with band on T5; T1-T2 with long white hairs on discs; discs of T3-T4 with intermixed white and brown hairs; T5-T6 with hairs nearly black on T5-T6. S2-S4 with scattered short hairs on discs and lateral, apical white fringes. **Structure.** Lower margin of mandible forming angle near middle. Gena wider than compound eye (1.0:0.85). Anterior surface of forecoxa with sparse punctures bearing minute hairs, and group of 10-12 ferruginous bristles; spine 1.0 x MOD; lower outer margin of forefemur carinate, of foretibia rounded. Anterior basitarsus wide, flattened, proportion of lengths of basitarsus and second tarsomere along midline 1.0:0.9, basitarsus 1.5 as long as its apical width. Carina of T6 with median notch and undulate laterally; T6 with anterior depression. Pregradular area of S5 with simple hairs laterally; postgradular area with glabrous, translucent area of separation occupying basal half, and apical half with simple hairs. Lateral pregradular area of S6 with long hairs finely branched apically, margined laterally by short hairs; central area of sternum with short, simple hairs; apical lobes glabrous, broad, truncate, subcuadrangular.

**Comments.** Figures of the hidden sterna and genitalia of the male were presented by Durante (1994) under the name *M. trochantina*. This species has been reared from trap nests in two localities (Pila, province of Buenos Aires, and Villavicencio, province of Mendoza). These specimens allowed the correct association of the sexes. Information on the nesting ecology of this species can be found in Dorado & Vázquez (2016).

The female lectotype of *M. leucografa* was labelled as such by M. Fritz, but he never published this designation. This specimen is designated as the lectotype herein. The holotype of *M. perspicua* agrees in all details with *M. leucografa*.

**Distribution.** Argentina, provinces of Buenos Aires, Catamarca, Córdoba, La Pampa, La Rioja, Mendoza, Neuquén, Salta, San Juan, San Luis, Santiago del Estero and Tucumán.

**Material examined.** Argentina. **Buenos Aires:** 1 M, 20-II-1909 (MLP); Bella Vista, 2 M, 20-XII-1958 (MLP); Canal San Fernando, 1 F, 24-XII-1951, A. Ogloblin (MLP); Pila, Ea. Las Chilcas, 10 F and 4 M (reared from trap-nests), 17-VIII-2011/15-X-2011 (emergence dates),

J.P. Torretta (MACN); C. Casares, Ea. San Claudio, 2 F and 3 M (reared from trap-nests), J.P. Torretta (MACN); C. Casares, Ea. San Claudio, 1 F, 5-XII-2008, ex *Raphanus sativus*, J.P. Torretta (MACN). **Catamarca:** 1M, 27-XI-1941 (MLP); Andalgalá, 1M, 19-XI-1944, A. Ogloblin (MLP); San Antonio Paz, 10-XII, 1952, (MLP); Catamarca, 2 F, 22-XI-1944, A. Ogloblin (MLP); Campo El Arenal, 1 M, 15-XI-1993, A. Roig A. (MACN); Hualfin, 3 F, 30-I-2010, J.P. Torretta, ex *Larrea nitida* (MACN); San Fernando, 50 km N Belén, 3 M, 1 F, 4-XI-1989, L. Moffatt (MACN); Chumbicha, 1 F, 22-XI-1944, A. Ogloblin (MLP). **Córdoba:** Serrezuela, 1 M, 1 F 26-XI-1944, A. Ogloblin (MLP); Quilino, 2 M, 8-XI-1942, 3-XII-1942, A. Ogloblin (MLP); Córdoba, 1 M, 26-XI-1944, A. Ogloblin (MLP); Chancaní, 10 M, 10 F, X-1991, Genise, Farina & Hazeldine (MACN); Villa Dolores, 8 M, 23-X-1989, J. Genise, ex *Prosopis* sp. (MACN); El Sauce, 1 M, 16-X-1970, G. Williner (MACN); Ciudad de Córdoba, 1 M, 27-XI-1927, M. Gómez, cat. n° 21516 (MACN). **La Pampa:** Toay, Ea. Anquilóo, 1 M, 11-XII-2010, Torretta (MACN); Santa Isabel, 3 M, 14-I-2007, Compagnucci, Martínez, Ojanguren (MACN). **La Rioja:** 25 Km N Chepes, La Puerta, 1 F, 11-X-1997, S. Roig (IADIZA); Cuesta de Miranda, Piedra Pintada, 2 F, 12-X-1997, S. Roig (IADIZA); 10 Km S Vinchina, 3 F, 13-X-1997, S. Roig (IADIZA); 15 Km W Chamical, 1 F, 21-X-1997, S. Roig (IADIZA); Iliar, 11 F, 2 M, 30-X-1928, M. Gomez (SEMC); Iliar, 1 M, 4 F, V-1932, M. Gomez (SEMC); Iliar, 2 F, 3 M, I-1935, M. Gomez (SEMC); Iliar, 1 F, II-1934, M. Gomez (SEMC); Estación Amado, 3 F, X-1934, M. Gomez (SEMC); Anillaco, 12 F, 1-6-XI-2011, Roig A., González V. & Compagnucci (MACN); Anillaco, 1 F, 1-6-XI-2011, Roig A., González V. & Compagnucci, ex *Prosopis* sp. (MACN); 3 Km SE Pinchas, 1 F, 4-5-XI-2011, Roig A., González V. & Compagnucci, ex *Cercidium praecox* (MACN); 3 Km SE Pinchas, 1 M, 4-5-XI-2011, Roig A., González V. & Compagnucci, ex *Capparis atamisquea* (MACN); Sanagasta, subida a Pampa de la Viuda, 8 F, 4-XI-2011, Roig A., González V. & Compagnucci, ex *Larrea divaricata* (MACN); Chilecito, Samaihuasi, 1 F, 2 M, 23-XI-1927, M. Gómez, cat. n° 21491-21492 (MACN); Nonogasta, 2 F, XI-1927, M. Gómez, cat. n° 21609 (MACN); Estación Amado, 12-I-1922, M.P. Gómez (MACN); Guayapa, Patquía, 1 M, 12-X-1965, E. Maury (MACN); Guayapa, Patquía, 1 M, 16-XI-1961, L. Yivoff (MACN); Iliar, 1 M, V-1932, M. Gómez (MACN); Patquía, 1 M, 3-X-1954, Pastrana (MLP); Sañogasta 1 M, 24-II-1939, Biraben-Scott (MLP); La Rioja, 1 M, 26-XI-1941 (MLP); La Sébila, 10 F, 24-XI-1944, A. Ogloblin (MLP). **Mendoza:** Godoy Cruz, Pto. Chambón, 8 F, 1/5-XII-1995, G. Debandi (IADIZA); Lavalle, Reserva Telteca, 3 F, 18/25-X-1997, S. Roig (IADIZA); Santa Rosa, Reserva Ñacuñan, 6 F, XI/XII-1998, S. Roig (IADIZA); Santa Rosa, Reserva Ñacuñan, 1 F, 25-XI-2000, G. Debandi, ex *Larrea divaricata* (IADIZA); 2 M and 1 F, 17/20-II-1906, P. Jörgensen (MLP); 1 M, 2-II-1907, Jörgensen (MLP); 1 M, 1 F, 20-II-1907 (reared from trap-nests), P. Jörgensen (MLP); 2 M, C.S. Reed (MLP); Monte Comán, 1 M, 24-XI-1944, Daguerre (MLP); 10 km W Carrizal, 1 M, 6-I-1990, A. Roig A.



(MACN); Villavicencio, 35 F, 8 M, from trap nests, 1225-1259 m a.s.l., D. Vázquez, N. Chacoff & J. Dorado (MACN); 14 km NW El Sosneado, San Rafael, 17-I-2012, D. Medan, ex *Proustia cuneifolia* (MACN). **Neuquén:** La Lipela, P.N. Nahuel Huapi, 1 M, 9-XII-2000, Medan, Montaldo & Devoto, ex *Phacelia* sp. (MACN); P.N. Nahuel Huapi, La Lipela, 1 M, 9-XII-2000, Medan et al. (MACN). **Salta:** San Carlos, 2 M, 4-XI-2004, Compagnucci & Grismado (MACN). **San Juan:** 1 M, Chiesa Molinari (MLP); Pocito, 1 M, 5-XII-2017, Allasino & Marrero (FAUBA); San Agustín de Valle Fértil, 1 M, 14-XII-1979, A. Roig A. (MACN); Las Tumanas, Valle Fértil, 1 F, 25-I-2010, J.P. Torretta, ex *Larrea divaricata* (MACN). San Luis: Charlone, 1 M, II-1933, M. Vignatti (MLP); Chosme, 1 F, 16-IX-1941, A. Ogloblin (MLP); Parque Nacional Sierra Las Quijadas, 4 M, 4-5-I-2003, Compagnucci (MACN); San Jerónimo, 3 M, XI-1972, G. Williner (MACN). **Santiago del Estero:** Desvío 511, Dpto. Matará, 1 F, 24-X-1928, M. Gómez (SEMC). **Tucumán:** 1 F, C.S. Reed (MLP); Amaicha del Valle, 2 M, 2-XI-2004, Compagnucci & Grismado (MACN).

### *Megachile (Dactylomegachile) tetrazona* Friese

*Megachile tetrazona* Friese, 1908: 64, 67 (Holotype male, Argentina (ZMB), examined). Vachal, 1909: 7. Jörgensen, 1909: 214, 215; 1912a: 130; 1912b: 312. Schrottky, 1913a: 248. Moure et al., 2007: 1000.

*Megachile albopunctata* Jörgensen, 1909: 225 (Lectotype female, Argentina, Mendoza, 12-XII-1907, P. Jörgensen, MLP, examined, **present designation**). Jörgensen, 1912a: 127, 132; 1912b: 310. Schrottky, 1913a: 246. **New synonym.**

*Megachile (Dasymegachile) albopunctata*: Toro, 1986: 127. Moure et al., 2007: 963.

*Megachile (Chrysosarus) albopunctata*: Raw, 2002: 79; 2007: 31. Durante et al., 2008: 432.

*Megachile (Dactylomegachile) albopunctata*: Durante & Cabrera, 2009: 57.

**Diagnosis.** This species is distinguished by its large size. The female is recognized by its pilosity entirely black, except for the white punctiform tufts behind the pronotal lobe and on the sides of T1 and T2, and the presence of a small cutting edge on the third tooth of the mandible. The male is readily recognized by the bicolored integument of the anterior basitarsus, which is widest basally and tapers apically, having the under surface flattened, glabrous, and polished. The anterior tibial spur has a black apex in both sexes; it is truncate in the male.

**Redescription.** Female: Body length: 11.5-14.6 mm. Forewing length: 7.9-9.5 mm. Coloration. Integument black except: underside of flagellum and apex of mandible dark brown. Wings weakly infusate with darker apices; veins and pterostigma brown. Pubescence. Head: entirely black. Mesosoma: entirely black, except white tuft behind pronotal lobe. Disc of scutum with long hairs (1.0-1.3 x MOD), longer on scutellum (1.5-2.2 x MOD). Legs with black hairs, except ferruginous on inner surface of tarsi.



Metasoma: with black hairs, except T1-T2 with white punctiform lateral patch; disc of T2-T4 with very short (0.2-0.6 x MOD) hairs, disc of T5-T6 with short and long hairs; T3-T5 with apical hairs not forming bands; scopa black. *Structure*. Inner margin of eyes nearly parallel, proportion of upper to lower interocular distance 1.1-1.2; interantennal distance 1.2-1.4 x antennocular distance; distance between lateral ocellus and occipital margin 2.6-2.8 x MOD; proportions of scape, pedicel and first three flagellomeres 3.1:1.0:1.0:1.1:1.2; maximum width of gena 0.75 x maximum width of compound eye. Apical margin of clypeus weakly crenulate; fourth mandibular tooth truncate. T6 slightly concave in profile, with rounded apex in dorsal view. *Punctuation*. Clypeus with dense punctures, separated by shiny interspaces 0.1-0.2 x PD, supraclypeal area with tessellate interspaces 0.3-0.6 x PD. Scutum anteriorly and laterally with punctures separated by tessellate interspaces 0.4-1.0 x PD, punctures on center of disc sparser, separated by 1.5-2.5 x PD; scutellum with punctures separated by 0.2-0.5 x PD. Integument of T2-T5 shiny on discs; punctures sparse on T2-T5, on disc of T2 separated by 1.0-2.0 x PD.

Male: Body length: 11.6-12.6 mm. Forewing length: 6.9-8.8 mm. *Coloration*. Similar to that of female, except legs. Foreleg with trochanter, femur and tibia yellowish brown, except dark outer surfaces; basal part of under surface of basitarsus yellowish brown; remainder of leg dark brown to black. Middle and hind legs brown to black, some specimens with yellowish brown areas on femora and sometimes on tibiae. *Pubescence*. Hairs white on face, lower part of gena and hypostomal areas, brown on vertex (intermixed with white hairs in some specimens), and upper part of gena; mandible with abundant long, brown hairs on basal half. Scutum medially with area of sparse, brown hairs, surrounded by intermixed white and brown hairs; scutellum with brown hairs and metanotum with white hairs. White tufts present behind pronotal lobe and behind tegula; remainder of mesosoma with brown hairs. Foreleg with white hairs on trochanter, basal half of femur, and outer fringe of tarsus (as long as 2.0-2.5 x apical width of basitarsus); inner brush with orange hairs; rest of leg with brown hairs. Mid and hind legs with brown hairs, except inner tarsal brushes orange. T1-T4 with white apical bands, broader laterally; bands entire or interrupted; vestiture on rest of metasoma dark brown. *Structure*. Lower margin of mandible forming angle near middle. Gena narrower than compound eye (0.73x). Anterior surface of forecoxa with long, abundant hairs, hiding group of weak, yellowish bristles close to spine; spine flattened, 1.1 x MOD; lower outer margins of forefemur and tibia rounded. Anterior basitarsus widest basally at level of distal end of strigillar concavity, then tapering apically; under surface flattened, glabrous, polished; tibial spur truncate, with black apex; proportion of lengths of basitarsus and second tarsomere along midline 1:0.3, basitarsus 5-6 x as long as its apical width. Carina of T6 with median notch; T6 with anterior depression. Pregradular area of S5 with simple hairs laterally, longer apically and shorter, thicker and sinuous basally; postgradular area with short, thick, curved hairs bordering gradulus, medial area with long, simple, stiff hairs forming a median, longitudinal dense brush occupying

one fifth of postgradular area; remainder of area with spatulate and simple hairs; without separation area. Lateral pregradular area of S6 with long hairs finely branched apically; central area laterally with simple hairs directed basally, and medially mostly bare, with scattered short hairs; apical lobes large, forming truncate median projection of sternum, with long, simple hairs.

**Comments.** This species strikingly differs from the other six studied species, which form a morphologically homogeneous group. Noteworthy features are the robustness of the species, the presence of a very small cutting edge on the third mandibular tooth of the female, the shape of the male foretarsus, and the shape and ornamentation of the male metasomal hidden sterna.

**Distribution.** Argentina, provinces of Buenos Aires, Catamarca, Córdoba, La Pampa, La Rioja, Mendoza, Río Negro, San Juan, and San Luis. Chile, Los Andes.

**Material examined.** Argentina. **Buenos Aires:** Carmen de Patagones, 1 M, XII-1937, M.J. Viana (MACN); Cerro de la Caballada, Patagones, 1 M, 29-II-1937, M.J. Viana (MACN); Felipe Sola, 1 F, XII-1944, A. Martinez (MLP). **Catamarca:** Las Viñas, 1 M, 9-XI-1942, A. Ogloblin (MLP). **Córdoba:** Tilquicho, 1 F, 20-X-1989, J. Genise (MACN). **La Pampa:** Cuchilloco, 1 F, 1913, A. Copello (MACN); Toay, Ea. Anquilóo, 3 F, 15-XI-2008, 15-XI-2009, 12-XII-2009, H.J. Marrero (FAUBA); Toay, Ea. Anquilóo, 3 F, 11-XII-2010, J.P.Torretta (MACN). **La Rioja:** Anillaco, 1 M, 1-6-XI-2011, Roig A., González V. & Compagnucci, WPT (MACN); Iliar, 1 F, 30-X-1928, M. Gomez (MACN); Subida a Pampa de la Viuda, Departamento Sanangasta, 1 F, 4-XI-2011, Roig A., Compagnucci & González V. (MACN). **Mendoza:** Reserva Telteca, Lavalle, 1 M, 16-X-2003, G. Debandi (IADIZA); Villavicencio, 2 F, Sitio V1, 32.523139°S 68.955111°W, 9-XI-2009, 11-XII-2009, D. Vázquez, N. Chacoff & J. Dorado (IADIZA); Villavicencio, 1 M, Sitio V4, 32.538722°S 68.993961°W, 4-XII-2007, D. Vázquez, N. Chacoff & J. Dorado (IADIZA); Villavicencio, 2 F, 2 M, Sitio V4, 32.538722°S 68.993961°W, 4-XII-2007, 7-XII-2007, D. Vázquez, N. Chacoff & J. Dorado (MACN); Godoy Cruz, Puesto Chambón, 1 F, 2-XII-1995, G. Debandi (IADIZA); 1 F, C.S. Reed (MLP); Mendoza, 2 M, 20-III-1908, 15-XI-1908, Jörgensen (MLP). **Río Negro:** Cinchinales, 1 F, 24-XI-1965, Schajovskoi (MLP). **San Juan:** Pocito, Va. Aberastain, 1 F, XI-19787, J. Garcia (MLP). **San Luis:** San Jerónimo, 1 M, XI-1972, G. Williner (MACN); D. Donovan, 2 F, 14-XI-1941 (MLP). **CHILE. Los Andes:** Aconcagua, 2 F, 9-XII-1944, T. Ramírez (MLP).

### *Megachile (Dactylomegachile) vagata* Vachal

*Megachile vagata* Vachal, 1908: 228-229 (Syntypes female and male, Mendoza, MNHN, examined). Vachal, 1909: 12. Jörgensen, 1912a: 131, 133, 135; 1912b: 312. Cockerell, 1914: 427; 1917: 240.

*Megachile suspecta* Vachal, 1909: 12 (Lectotype male, Argentina, Buenos Aires, 9-XI-01, MNHN n° EY6315, examined, **present designation**). **New synonym.**

*Megachile impudens* Mitchell, 1930: 288-289, pl. XIV (Holotype female, Argentina, Cordova, Davis, MCZ n° 16204, examined). **New synonym.**

*Megachile* (*Dactylomegachile*) *vagata*: Mitchell, 1943: 671. Durante & Cabrera, 2009: 58.

*Megachile* (*Chrysosarus*) *vagata*: Raw, 2002: 12; 2007: 40. Moure et al., 2007: 960. Durante et al., 2008: 432.

*Megachile* (*Chrysosarus*) *impudens*: Raw, 2002: 10; 2007: 35. Moure et al., 2007: 957. Durante et al., 2008: 432.

*Megachile* (*Sayapis*) *suspecta*: Raw, 2002: 35.

*Megachile* (*Chrysosarus*) *suspecta*: Moure et al., 2007: 959.

**Diagnosis.** This species is close to *M. ctenophora*, from which it is distinguished by the shorter vestiture in both sexes. Females of *M. vagata* and *M. ctenophora* have an orange scopa and the scutum with tessellate integument between punctures, characters shared by *M. jenseni*, from which they are distinguished by the narrow vertex. Males of *M. vagata* differ from males of *M. infima* and *M. jenseni* in the pilose hypostomal area.

**Redescription.** Female: Body length: 9.5-10.6 mm. Forewing length: 5.6-7.1 mm. **Coloration.** Integument black except: dark brown on underside of flagellum in some specimens; apex of mandible and claws dark ferruginous (although claws dark brown apically). Wings subhyaline with a light brownish tinge, with darker apices; veins and pterostigma brown. **Pubescence.** Head: pale specimens with white hairs on paraocular areas and mid part of gena, and intermixed with black hairs on frons; dark specimens with pubescence entirely black. Mesosoma: pale specimens with white patches behind pronotal lobe and above propodeal spiracle; white hairs intermixed with some black hairs on pronotal collar, on scutum, around scutellum, and on posterior surface of propodeum; dark specimens with black hairs, except white patch behind pronotal lobe. Disc of scutum with long hairs (0.8-1.1 x MOD), longer on scutellum (1.2-2.0 x MOD). Legs with black hairs, except ferruginous on inner surface of tarsi. Metasoma: with complete apical bands of white, plumose hairs on T1-T5 (0.5-1.5 x MOD on T1 and T2); discs of T2-T4 with short, erect, black hairs (0.3-0.8 x MOD); T6 with black hairs, in some specimens with some white decumbent hairs. Scopa ferruginous on S2-S6. **Structure.** Inner margin of eyes slightly convergent below, proportion of upper to lower interocular distance 1.15; interantennal distance 1.4 x antennocular distance; distance between lateral ocellus and occipital margin 1.7 x MOD; proportions of scape, pedicel and first three flagellomeres 3.4:1.0:1.0:1.0:1.1; maximum width of gena 0.9 x maximum width of compound eye. Apical margin of clypeus denticulate; fourth mandibular tooth truncate, weakly incised. T6 slightly concave in profile, with rounded apex in dorsal view. **Punctuation.** Clypeus with dense punctures, separated by shiny interspaces 0.1-0.2 x PD, supraclypeal area

with tessellate interspaces 0.2-0.4 x PD. Scutum and scutellum with dense punctures, separated by tessellate interspaces 0.1-0.2 x PD. Discs of T2-T5 tessellate; punctures on disc of T2 small, separated by 0.2-1.0 x PD.

**Male** : Body length: 9.4-11.4 mm. Forewing length: 5.9-6.9 mm. **Coloration**. Similar to that of female, except foreleg; under surface of femur and tibia, and entire tarsus ferruginous; underside of second tarsomere with black spot. **Pubescence**. Hairs long, abundant, yellowish on clypeus, supraclypeal area and paraocular area; whitish on gena, yellowish and white on hypostomal area, dark brown on remainder of head; in some specimens with intermixed white hairs on vertex. Mesosoma: pale specimens with pubescence entirely white; dark specimens with few intermixed, erect, long, dark brown hairs on scutum and dark brown hairs on mesopleuron below hypoepimeral area, on middle of metapleuron and on lateral side of propodeum. Foreleg: hairs on coxa and trochanter white, on remainder of leg mostly orange and white, except tibia with short dark hairs on dorsal and outer surfaces; outer fringe of tarsus with orange hairs ventrally and covered with shorter white hairs dorsally. Middle and hind legs mostly with dark hairs, except middle tarsus with hairs paler. Metasoma: T1 with long, white hairs on disc and defined white apical band; T2-T4 with black hairs on discs and white, complete apical bands. T5 variable, with or without white apical band, sometimes with basal decumbent white hairs. T6 with black hairs. **Structure**. Lower margin of mandible forming triangular projection near middle. Hypostomal area pilose. Gena wider than compound eye (1.1:1.0). Anterior surface of forecoxa with sparse punctures bearing minute hairs, and group of 15-20 ferruginous bristles in front of coxal spine; spine of moderate length, 0.75 x MOD; lower outer margin of forefemur and tibia rounded. Anterior basitarsus flattened, proportion of lengths of basitarsus and second tarsomere along midline 1:0.75, basitarsus 1.8 as long as its apical width. Carina of T6 with small median notch and laterally with 4-5 spiniform teeth; T6 with weak median depression above carina. Pregradular area of S5 with simple hairs laterally; postgradular area with medial area of stiff, basally thickened hairs, and remainder of area with simple hairs; separation area narrow, translucent (Fig. 1D). Lateral pregradular area of S6 with long hairs finely branched apically; central area bare medially and laterally with simple hairs directed mesally; apical lobes glabrous, short, subtriangular (Fig. 1D).

**Comments**. This species has been reared from trap nests in three localities (Carlos Casares, province of Buenos Aires, Toay, province of La Pampa, and Villavicencio, province of Mendoza).

**Distribution**. Argentina, provinces of Buenos Aires, Catamarca, Córdoba, Jujuy, La Pampa, La Rioja, Mendoza, Río Negro, Salta, San Juan, San Luis, Santiago del Estero, and Tucumán. Uruguay, departments of Canelones, Montevideo and Río Negro.

**Material examined**. Argentina. **Buenos Aires**: Bahía Blanca, 3 M, 2 F, 27-I/1-II-2016, S.C. Villamil (MACN); Ciudad Autónoma de Buenos Aires, 2 M, 29-I-1906 & 21-XII-1908, J. Brèthes (MACN); Campo de Mayo, 2 M, I-1920, M. Gómez (MACN); Palermo, 1 M, III-1917,



Bosq (MACN); Lomas, 1 M, X-1917 (MACN); San Antonio de Padua, 3 F, 21-XI-2003, M.F. Rodríguez (MACN); Claromecó, Partido Tres Arroyos, 1 F, 2-III-2006, A. Roig A. (MACN); Mar del Plata, 1 F, XII-2003, R. González Vaquero (MACN); La Plata, 1 F, XII-2005, F. Vossler (MACN); General Conesa, 3 F, 2 M, 26-XII-1952, Senkute (SEMC); Villa Elisa, 1 F, II-1955, J. Foerster (SEMC); Mar de Ajó, 1 M, 15-25-XII-1952, M. Senkute (SEMC); San Clemente del Tuyú, 1 F, 22-XI-1951, J. Forester (SEMC); González Catán, 2 F, II-1952, Foerster (SEMC); Tigre, 1 F, 3-10-XI-1956 (SEMC); Lavallol, 4 F, 20-II-1952, M. Senkute (SEMC); Carlos Casares, Ea San Claudio, 1 F (reared from trap-nest), 13-II-2011, J.P. Torretta (FAUBA); Ciudad Autónoma de Buenos Aires, Jardín Botánico Facultad de Agronomía, 1 F, 30-XI-2007, J.P. Torretta (FAUBA); Va. Devoto, 2 M, 1 F, 8-I-1941, A. Ogloblin (MLP); Va. Devoto, 1 F, 27-XI-1927, S.J. Gomez (MLP); Henderson, 1 F, 15-XII-1974 (MLP); H. Ascasubi, 1 M, 18-XII-1974 (MLP); Trenque Lauquen, 2 F, 6 M, 13-XII-1974 (MLP); José C. Paz, 1 F, 1 M, 10-I-1940, A. Ogloblin (MLP). **Catamarca:** 20 km N Andalgalá, 1 M, 27-XII-1971, D. Brothers (SEMC). **Córdoba:** Chancaní, 2 M, 10 F, X-1991, Genise, Farina & Hazeldine (MACN); Chancaní, 1 F, X-1987, J. Genise (MACN); ciudad de Córdoba, 1 F, II-1975, G. Williner (MACN). **Jujuy:** San Salvador de Jujuy "en casa", 1 F, 2 M, XII-1903, E.L. Holmberg (MACN). **La Pampa:** Toay, Ea. Anquilóo, 2 M, 2 F, 29-X-2011 (reared from trap-nests), J.P. Torretta (FAUBA); Toay, Ea. Anquilóo, 2 M, 11-XII-2010, J.P. Torretta (FAUBA); Toay, Ea. Anquilóo, 1M, 10-XI-2008, H.J. Marrero (FAUBA); Toay, Ea. Anquilóo, 2 F, 10-II-2010, ex *Baccharis ulicina*, H.J. Marrero (FAUBA); Santa Rosa, 1 F, III-1939, T. Aramendia (MACN); Cuchillocó, 1 F, 1913, A. Copello (MACN). **La Rioja:** 20 Km N Chepes, 1 F, 11-X-1997, S. Roig (IADIZA); 10 Km S Vinchina, 1 F, 13-X-1997, S. Roig (IADIZA); 16 M, 3 F, Giacomelli col., cat. n° 11765 (MACN); ciudad La Rioja, 1 F, Giacomelli (MACN); Jagüel, 1 F, 22-I-2006, L. Compagnucci (MACN); Anillaco, 1 F, 29-X-2011, P. Fidalgo (MACN); Iliar, 4 F, 1 M, 30-X-1928, M. Gómez (SEMC). **Mendoza:** Lavalley, Reserva Telteca, 2 F, 16/25-X-1997, S. Roig (IADIZA); Lavalley, Reserva Telteca, 1 M, 16-II-1998, S. Roig (IADIZA); Godoy Cruz, Pto. Chambón, 1 F, 2-XII-1995, G. Debandi (IADIZA); El Salto, Departamento Luján, 1 M, 21-XII-1995, A. Roig A. (MACN); Potrerillos, 1 M, I-1974, A. Roig A. (MACN); Villavicencio, 4 F, 1 M, reared from traps, D. Vázquez, N. Chacoff & J. Dorado (MACN); Mendoza, 10-XI-1906, Jörgensen (MLP). **Rio Negro:** Cipolletti, 1 F, III-1957, E. Fleiss (MLP); Río Colorado, 2 M, II-1943, JMB (MLP); Río Colorado, 1 M, 18-II-1913, Jörgensen (MLP). **Salta:** Cerrillos, INTA, 1 M, 21-X-1994, P. Hoc (MACN); 5 km NE Cafayate, 8 F, 2 M, 14-XI-1993, A. Roig A. (MACN); 1 F, 2-XI-1912 (MLP). **San Juan:** San Juan, 1 F, X-1941, Chiesa Molinari (MLP); 1 M, 29-XI-1922, M. Gómez (MACN). **San Luis:** Potrero de los Funes, 1 F, 20-I-1926, M. Gómez (MACN). **Santiago del Estero:** Beltrán, 1 M, 7-XI-1940, Maldonado (MLP); Colonia Dora, 1 F, X-1956 (SEMC). **Tucumán:** Amaicha del Valle, 1 F, 2-II-1987, L. Moffatt (MACN); Tapia, 25 km N Tucumán,



10-XII-1971, D. Brothers (SEMC); Benjamín Paz, 1 M, 19-I-1951, A. Ogloblin (MLP). URUGUAY. **Canelones:** P° de Falzón, 1 F, 6-IV-1923 (MACN). **Montevideo:** Montevideo, 25-II-1909, J. Brèthes (MACN); Pocitos, 1F, 22-XI-1951, C. Carbonell (MLP); Peñarol, 1 F, 5-XII-1931 (MLP). **Río Negro:** 1 F, Menafrá, 10-XII-1914 (MACN).

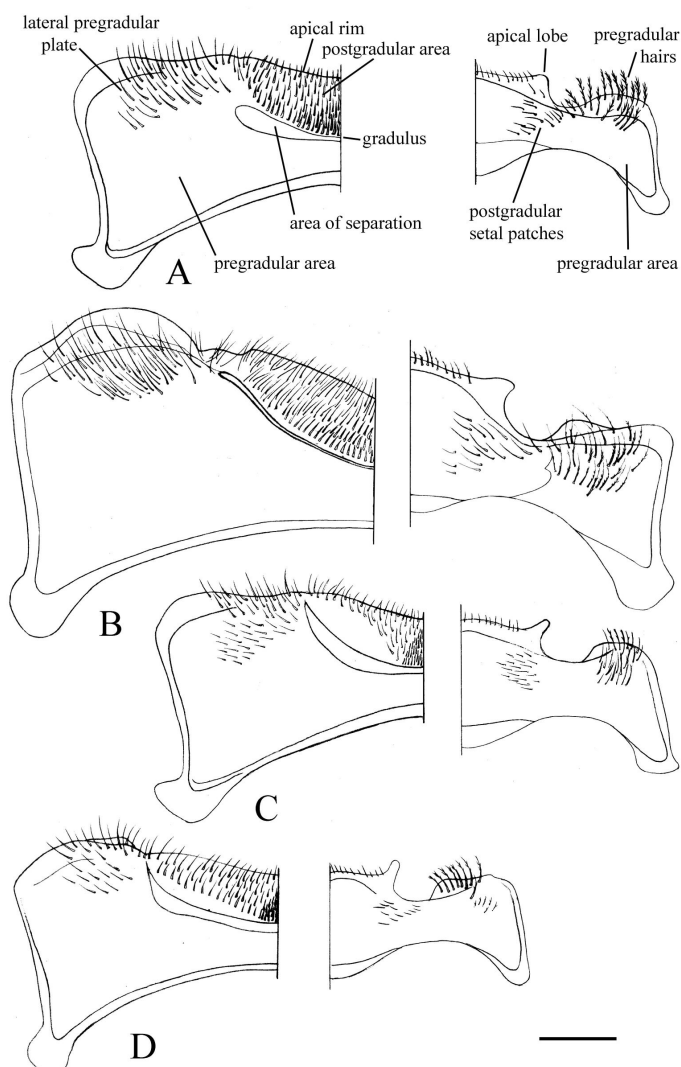


Fig. 1. Male metasomal sterna 5 (left half) and 6 (right half) in ventral views. A. *M. infima*. B. *M. jensenii*. C. *M. ctenophora*. D. *M. vagata*. Scale = 0.5 mm

## Key to species included in this study

### Females

1. Vertex broad, distance from lateral ocellus to posterior margin of head 2.1-2.8 x MOD ..... 2.

1'. Vertex narrow, distance from lateral ocellus to posterior margin of head 1.5-1.9 x MOD ..... 4.

2. Disc of scutum with punctures irregularly spaced, separated by 0.5-3.0 PD. Scopa black. Vestiture black, except white punctiform tufts below tegula and laterally on T1 and T2 ..... *M. tetrazona*.

2'. Disc of scutum with punctures dense, evenly spaced, separated by 0.3-0.5 PD. Scopa yellowish or orange (black in few Patagonian specimens). T1 and T2 usually with white apical bands either complete or interrupted (never punctiform), but entirely black in some Patagonian specimens ..... 3.

3. Anterior margin of clypeus medially smooth, without denticles. Basal tooth of mandible pointed. Scopa yellowish ..... *M. leucografa*.

3'. Anterior margin of clypeus denticulate, although sometimes denticles weak. Basal tooth of mandible truncate. Scopa varying from orange on S2-S6 to entirely black ..... *M. jenseni*.

4. Apical margin of S2-S5 with lateral hair fasciae beneath scopa. Outer surface of hind tibia with white hairs. Small species, 6.7-9.4 mm long ..... *M. infima*.

4'. Apical margin of S2-S5 without lateral hair fasciae beneath scopa. Outer surface of hind tibia with black hairs. Larger species, 9.2-12.0 mm long ..... 5.

5. Disc of scutum with punctures separated by smooth, shiny interspaces 1.0-1.5 PD. Scopa black ..... *M. binota*.

5'. Disc of scutum with punctures separated by tessellate interspaces 0.10-0.25 PD. Scopa usually orange or black and orange, but entirely black in some Patagonian specimens ..... 6.

6. Disc of T2-T4 with long erect hairs of nonuniform length, between 1.0-2.0 x MOD ..... *M. ctenophora*.

6'. Disc of T2-T4 with short erect hairs of nonuniform length, between 0.3-0.8 x MOD ..... *M. vagata*.

### *Males*

1. Preapical carina of T6 with distinct median emargination, and at each side of it at most undulate ..... 2.

1'. Preapical carina of T6 conspicuously denticulate, with or without median emargination ..... 3.

2.- Lower margin of mandible with basal, dense tuft of hairs. Foretarsus with basitarsus broadened (1.5x as long as apical width), hairy on under surface, with large outer fringe; second tarsomere with distinct black spot on underside; tibial spur with yellowish apex ..... *M. leucografa*.

2'. Lower margin of mandible with abundant hairs, but not forming a tuft. Foretarsus with basitarsus slender (5-6x as long as apical width), broader basally and tapering apically, with glabrous under surface, with small fringe; second tarsomere entirely black; tibial spur truncate, with black apex ..... *M. tetrazona*.

3. Hypostomal area with glabrous, smooth and shiny area. Preapical carina of T6 without median emargination ..... 4.

3'. Hypostomal area pilose. Preapical carina of T6 with median emargination ..... 5.

4. Lower margin of mandible concave, forming triangular projection near basal third. Large species, 10.2-11.5 mm ..... *M. jenseni*.

4' Lower margin of mandible with angle near middle. Small species, 5.3-7.5 mm ..... *M. infima*.

5. Disc of T2-T4 with long, erect hairs of nonuniform length, between 0.9-1.1 x MOD ..... *M. ctenophora*.

5'. Disc of T2-T4 with short, erect hairs of nonuniform length, between 0.4-0.5 x MOD ..... *M. vagata*.

This article has been registered in the Official Register of Zoological Nomenclature (ZooBank) as [urn:lsid:zoobank.org:pub:61C28B44-0212-48FD-B605-8C68B0630EA6].

## ACKNOWLEDGEMENTS

We thank S. Roig Juñent (IADIZA, Mendoza), S. Cover (MCZ, Cambridge), C. Villemant (MNHN, Paris), D. Notton (NHMUK, London), M. Engel (SEMC, Lawrence), and F. Koch (ZMB, Berlin) for the loan of specimens. We thank Cecilia Gorretta for her help with the drawings of male sterna and two anonymous reviewers for their useful comments and corrections on the manuscript.

## LITERATURE CITED

- Carvalho, F.L. de, & Raw, A. (2005) Avaliação de sinonimia entre os subgêneros *Chrysosarus* e *Dactylomegachile* (*Megachile* Latreille, 1802) (Hymenoptera: Megachilidae). *Anais 11º seminário de iniciação científica da UES-Ciências Biológicas*. 194-195.
- Cockerell, T.D.A. (1914) Descriptions and records of bees. -LVIII. *Annals and Magazine of Natural History, Series 8*, **13**, 424-433.
- Cockerell, T.D.A. (1917) Descriptions and records of bees. -LXXVI. *Annals and Magazine of Natural History, Series 8*, **20**, 235-241.
- Cockerell, T.D.A. (1919) Bees in the collection of the United States National Museum-3. *Proceedings of the United States National Museum*, **55**(2264), 167-221.
- Cockerell, T.D.A. (1926) Descriptions and records of bees. -CVIII. *Annals and Magazine of Natural History, Series 9*, **17**, 214-226.
- Cockerell, T.D.A. (1927) Megachilid bees from Bolivia collected by the Mulford biological expedition, 1921-22. *Proceedings of the United States National Museum*, **71**(12), 1-22.
- Dalla Torre, C.G. de (1896) *Catalogus Hymenopterorum, Vol. 10, Apidae (Anthophila)*. Engelmann, Leipzig.
- Dorado, J., & Vázquez, D.P. (2016) Flower diversity and bee reproduction in an arid ecosystem. *PeerJ*, **4**, e2250.

- Dorado, J., Vázquez, D.P., Stevani, E.L., & Chacoff, N.P. (2011) Rareness and specialization in plant-pollinator networks. *Ecology*, **92**, 19-25.
- Durante, S.P. (1994) Aportes al conocimiento de *Chrysosarus* (*Dactylomegachile*) *trochantina* (Vachal 1909) *comb. nov.* (Hymenoptera: Megachilidae). *Neotrópica*, **40**(103-104), 41-44.
- Durante, S.P., & Cabrera, N. (2009) Cladistic analysis of *Megachile* (*Chrysosarus*) Mitchell and revalidation of *Megachile* (*Dactylomegachile*) Mitchell (Hymenoptera, Megachilidae). *Zootaxa*, **2284**, 48-62.
- Durante, S.P., Cabrera, N.C., & Gómez de la Vega, L.E. (2008) Megachilidae. *Biodiversidad de artrópodos argentinos, vol. 2.* (ed. Claps, L.E., Debandi, G., & Roig-Juñent, S.), pp. 421-433. Sociedad Entomológica Argentina ediciones, Mendoza.
- Friese, H. (1906) Resultate einer Reise des Herrn A.C. Jensen-Haarup in die Gegand von Mendoza (Argentina). *Flora og Fauna, Silkeborg, Denmark, III Hefte*, 31-96.
- Friese, H. (1908) Die Apidae (Blumenvespen) von Argentina nach den Reisergebnissen der Herren A.C. Jensen-Haarup und P. Jörgensen in den Jahren 1904-1907. *Flora og Fauna, Silkeborg, Denmark*, 1-94.
- Friese, H. (1911) Das Tierreich. Apidae I. Megachilinae. R. Friedlander und Sohn, Berlin.
- Friese, H. (1912) Zur Bienenfauna des südlichen Argentinien. (Hym.). *Deutsche Entomologische Zeitschrift*, **1912**, 362-367.
- Gonzalez, V.H. (2008) Phylogeny and classification of the bee tribe Megachilini (Hymenoptera: Apoidea, Megachilidae), with emphasis on the genus *Megachile*. Ph.D. dissertation, University of Kansas, Lawrence.
- Gonzalez, V.H. (2013) Taxonomic comments on *Megachile* subgenus *Chrysosarus* (Hymenoptera: Megachilidae). *Journal of Melittology*, **5**, 1-6.
- Gonzalez, V.H., Griswold, T., & Engel, M.S. (2018) South American leaf-cutter bees (Genus *Megachile*) of the subgenera *Rhyssomegachile* and *Zonomegachile*, with two new subgenera (Hymenoptera: Megachilidae). *Bulletin of the American Museum of Natural History*, **425**, 1-73.
- Hedicke, H. (1933) Beiträge zur Synonymie der Apiden (Hym.). II. *Mitteilungen der Deutschen Entomologischen Gesellschaft*, **4**(3), 42-46.
- Holmberg, E. L. (1886) Viajes al Tandil y a la Tinta, 2ª parte, Zoología, Insectos. I. Himenópteros- Hymenoptera. *Actas de la Academia Nacional de Ciencias de la República Argentina*, **5**, 137-184.
- Jensen-Haarup, A.C. (1908). Biological researches amongst the Argentine bees with special reference to flowers they visit. *Flora og Fauna*, **10**, 95-107.
- Jörgensen, P. (1909) Beobachtungen über Blumenbesuch, Biologie, Verbreitung usw. der Bienen von Mendoza. (Hym.). *Deutsche Entomologische Zeitschrift, Heft II*, 211-227.
- Jörgensen, P. (1912a) Revision der Apiden der Provinz Mendoza, Republica Argentina (Hym.). *Zoologische Jahrbücher. Abteilung für Systematik, Geographie und Biologie der Tiere*, **32**, 89-162.
- Jörgensen, P. (1912b) Los crisídidos y los himenópteros aculeatos de la Provincia de Mendoza. *Anales del Museo Nacional de Historia Natural de Buenos Aires*, **22**(3), 267-338.
- Michener, C.D. (2000) *The Bees of the World*. Johns Hopkins University Press, Baltimore.

- Michener, C.D. (2007) *The Bees of the World*. 2<sup>nd</sup> edition. Johns Hopkins University Press, Baltimore.
- Mitchell, T.B. (1930) A contribution to the knowledge of neotropical *Megachile* with descriptions of new species (Hymenoptera: Megachilidae). *Transactions of the American Entomological Society*, **56**, 155-305.
- Mitchell, T.B. (1943) On the classification of neotropical *Megachile* (Hymenoptera: Megachilidae). *Annals of the Entomological Society of America*, **36**, 656-671.
- Mitchell, T.B. (1980) *A generic revision of the Megachiline bees of the Western hemisphere (Hymenoptera: Megachilidae), contribution from the department of Entomology*. North Carolina State University, Raleigh.
- Moure, J.S., Melo, G.A.R., & DalMolin, A. (2007) Megachilini Latreille, 1802. *Catalogue of Bees (Hymenoptera, Apoidea) in the Neotropical Region* (ed. Moure, J.S., Urban, D., & Melo, G.A.R.) Sociedade Brasileira de Entomologia, Curitiba.
- Ramos, K.S., Kawada, R., & Brandão, C.R.F. (2015) Type specimens of bees (Hymenoptera: Apidae) deposited in the Museu de Zoologia da Universidade do São Paulo, Brazil. *Papeis Avulsos de Zoologia*, **55**(24), 335 - 361.
- Raw, A. (2002) New combinations and synonymies of leafcutter and mason bees of the Americas (*Megachile*, Hymenoptera, Megachilidae). *Zootaxa*, **71**, 1-43
- Raw, A. (2007) An annotated catalogue of the leafcutter and mason bees (Genus *Megachile*) of the Neotropics. *Zootaxa*, **1601**, 1-127
- Schrottky, C. (1903) Enumération des hyménoptères connus jusqu'ici de la République Argentine, de l'Uruguay et du Paraguay. *Anales de la Sociedad Científica Argentina*, **55**, 176-186
- Schrottky, C. (1909) Himenópteros de Catamarca. *Anales de la Sociedad Científica Argentina*, **68**, 233-272.
- Schrottky, C. (1913a) La distribución geográfica de los himenópteros argentinos. *Anales de la Sociedad Científica Argentina*, **75**, 180-270.
- Schrottky, C. (1913b) As espécies brasileiras do genero *Megachile*. *Revista do Museu Paulista*, **9**, 134-223.
- Schrottky, C. (1920) Himenópteros nuevos o poco conocidos sudamericanos. Pt. 2. *Revista do Museu Paulista*, **12**, 179-227.
- Silveira, F.A., Melo, G.A.R., & Almeida, E.A.B. (2002) *Abelhas Brasileiras: Sistemática e Identificação*. Editora IDM Composição e Arte, Belo Horizonte.
- Strand, E. (1910) Beiträge zur Kenntnis der Hymenopterenfauna von Paraguay auf Grund der Sammlungen und Beobachtungen von Prof. J.D. Anisits. VII, Apidae. *Zoologische Jahrbucher, Jena*, **29**, 455-562.
- Toro, H. (1986) Lista preliminar de los ápidos chilenos (Hymenoptera: Apoidea). *Acta Entomológica Chilena*, **13**, 121-132.
- Vachal, J. (1908) Espèces nouvelles ou litigeuses d'Apidae du haut bassin du Parana et des Régions contigües et d'elimination d'une nouvelle sous-famille Diphaglossinae (Hym). *Revue d'Entomologie, Caen*, **27**, 221-244.
- Vachal, J. (1909) Espèces nouvelles ou litigeuses d'Apidae du haut bassin du Parana et des Régions contigües et d'elimination d'une nouvelle sous-famille Diphaglossinae (Hym). *Revue d'Entomologie, Caen*, **28**, 5-72.



## Author notes

torretta@agro.uba.ar