

Artículos

On the identity of *Megachile (Chrysosarus) pamperella* (Hymenoptera Megachilidae)

Sobre la identidad de *Megachile (Chrysosarus) pamperella* (Hymenoptera Megachilidae)

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Abstract: The study contributes to the knowledge of *Megachile (Chrysosarus) pamperella* Vachal, a leaf-cutter bee species practically not recognized since its description early in the twentieth century. As a result of field works in the Pampean region (Argentina), 20 nests of *M.(C.) pamperella* were obtained which allowed the sexes to be correctly associated. Diagnosis, redescrptions of both sexes, study of type material, illustrations and a distribution map are presented.

Keywords: Argentina, Leaf-cutter bees, Pampean Region, Taxonomy.

Resumen: El estudio contribuye al conocimiento de *Megachile (Chrysosarus) pamperella* Vachal, una especie de abeja cortadora de hojas prácticamente no reconocida desde su descripción a principios del siglo XX. Como resultado de trabajos de campo en la Región Pampeana (Argentina), se obtuvieron 20 nidos de *M.(C.) pamperella*, lo cual nos permitió asociar correctamente los sexos. Se presentan diagnosis, redescrpciones de ambos sexos, estudio del material tipo, fotografías y un mapa distribucional.

Palabras clave: Abejas cortadoras de hojas, Argentina, Región Pampeana, Taxonomía.

INTRODUCTION

The name *Megachile pamperella* was erected by Vachal (1908) to include four leaf-cutter bee females collected in the lower valley of the Paraná River in Argentina, with a brief description. Vachal deposited the type material in its own collection, which posteriorly was transferred to the Muséum National d'Histoire Naturelle, Paris, where it is currently housed. Schrottky (1920) compared his species *M. subinfima* Schrottky with Vachal's (1908) description of *M. pamperella* and differentiated them by the color of the pubescence. Cockerell (1927) commented that *M. pamperella* appeared to be an "analogous variety of *M. infima*", without recording any taxonomic modification. Raw (2002) included *Megachile pamperella* in the subgenus *Chrysosarus*, one of the major neotropical subgenera of *Megachile* Latreille (Moure et al., 2007; Raw, 2007; Ascher & Pickering, 2020). Raw (2002) mistakenly cited as a part of the original description the male sex, which was described in the following year (Vachal, 1909), and designated a female lectotype; however, this author did not indicate which specimen he designated for this nomenclatural act. This invalid lectotype designation was indicated by Moure et al. (2007). Finally, Durante et al. (2008) reported the presence of *M. (C.) pamperella* in the provinces of Buenos Aires and Entre Ríos (Argentina). Excluding these brief comments, this species was practically not recognized until now.

The Pampean region constitutes an economically important and highly modified region (Medan et al., 2011), where the ecology of solitary bees in agroecosystems has been poorly studied (reviewed in Torretta et al., 2025). Some studies have dealt with the nesting ecology of leaf-cutter bees in trap-nests in the Pampean region (De Santis, 1973, 1974; Tesón et al., 1976, 1977; Torretta & Durante, 2011; Torretta et al., 2012, 2024; Rosanigo et al., 2020; Graffigna et al., 2021), and their host-parasite interactions (Torretta, 2015; Torretta et al., 2017). Trap-nests are an effective tool for getting biological information on solitary bees that nest in pre-existing cavities (Krombein, 1967). As a result of field works in this region, we obtained nests of several species of *Megachile (Chrysosarus)*, which allowed us to correctly associate sexes, including nests of two species described as new, *M. (C.) platensis* Roig-Alsina & Torretta and *M. (C.) sancticlaudii* Roig-Alsina & Torretta (Roig-Alsina & Torretta, 2023), as well as of the little-known species *M. (C.) pamperella*.



Figure 1.

Megachile pamperella Vachal, female lectotype (MNHN, Paris, images published with permission).

a. Dorsal view. b. Face. c. Lateral view. d. Labels. Scale bars= 1 mm.

The purpose of the present study is to redescrbed the female and the male of *Megachile pamperella*, a species that has not been properly recognized since its description early in the twentieth century, and to provide illustrations and distributional data.

MATERIALS AND METHODS

Morphological terminology follows Michener (2007) for general terms, Michener & Fraser (1978) for mandibular structures, and Mitchell (1980) 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. A distribution map was constructed using SimpleMappr (Shorthouse, 2010).

The material studied belongs to the following institutions: Cátedra de Botánica General, Facultad de Agronomía, Universidad de Buenos Aires (FAUBA), Museo Argentino de Ciencias Naturales, Buenos

Aires (MACN), Museo de La Plata (MLP), Muséum national d'Histoire naturelle, Paris (MNHN), and Snow Entomological Collection, Natural History Museum, Lawrence, Kansas (SEMC).

RESULTS

Systematics

Genus *Megachile* Latreille

Subgenus *Chrysosarus* Mitchell

***Megachile* (*Chrysosarus*) *pamperella* Vachal**

(Figs. 1-4)

Megachile pamperella Vachal, 1908: 239. Lectotype female, by present designation, Buenos Aires [Argentina], 7-I-02, mislabeled as holotype (MNHN, EY35452, examined through photographs).

Megachile (*Chrysosarus*) *pamperella*: Raw 2002: 11.

Diagnosis. Among the species of the subgenus *Chrysosarus* with dark veins and pterostigma, and females having lateral apical fasciae under the scopa, and an incised upper tooth in the mandible, females of *M. pamperella* are easily recognized by the abundant grayish white pilosity on the head and thorax, and the presence of a distinct scuto-scutellar band (Fig. 1a-c). Males are distinguished by the lower margin of the mandible without any angle or projection, the presence of a scuto-scutellar band (Fig. 2a), the tuberculate first metasomal sternum, and the lack of appressed pubescence on T6 (Fig. 2d-e).



Figure 2.

***Megachile pamperella* Vachal, male.**

a. Dorsal view. b. Foretarsus, dorsal view. c. Foretarsus, ventral view. d-e. caudal terga of male showing variability of the preapical carina of T6. Scale bars= 1 mm.

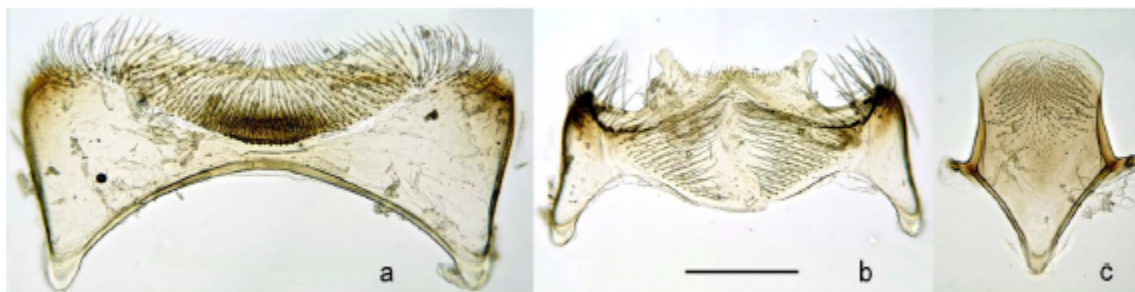


Figure 3.

Megachile pamperella Vachal, male, metasomal sterna.

a. S5. b. S6. c. S8. Scale bar= 0.5 mm.

Redescriptions.

Female. Body length: 7.6-10.2 mm. Forewing length: 5.8-6.4 mm.

Color. Black, except reddish brown claws. Wings weakly infusate, veins and pterostigma dark brown (Fig. 1a, c). **Pubescence.** Head: grayish white on clypeus, supraclypeal area, and frons, with intermixed black hairs (Fig. 1b); grayish white on gena and underside of head; black on vertex. Mesosoma: white behind pronotal lobe, sides of metanotum, and above propodeal spiracle; yellowish white hairs on anterior and lateral margins of scutum, and on scuto-scutellar suture; disc of scutum with erect black hairs (0.3-0.7x MOD), intermixed with white shorter ones (0.1-0.2x MOD); disc of scutellum with erect, black hairs; other areas of mesosoma with white hairs. Pubescence of legs mostly white, yellow to orange on inner surface of tarsi. Scutellum and metanotum with very long hairs, up to 2.8x MOD. Scuto-scutellar suture with band of dense, appressed, short hairs, and suture between scutellum and metanotum with similar but much narrower band (Fig. 1a, c). Mesopleuron densely covered with white hairs 1.5-2.0x MOD. Disc of T1 with long white hairs, 1.0-1.2x MOD. T1-T5 with distinct apical bands, yellowish white on T1, yellowish on T2-T3, yellow on T4-T5; discs of T2-T5 with black and yellow erect hairs (0.3-0.8x MOD); T6 with yellowish white appressed pubescence and stiff erect black hairs. Scopa white on S2-S3, yellow on S4-S5, and with yellow and black hairs on S6; S2-S5 with short lateral apical whitish fasciae under scopa. **Sculpture.** Clypeus with dense, regular punctures separated by shiny interspaces (0.2-0.3x PD); supraclypeal area with similar punctures (Fig. 1b). Punctures on scutum small, nearly coalescent; punctures of mesopleuron small and dense, similar to those of scutum. Disc of metasomal terga with small punctures separated by 0.1-0.3x PD. **Morphology.** Inner margin of eyes converging below, upper interocular distance 1.2x lower interocular distance (Fig. 1b). Distance from lateral ocellus to posterior margin of head 1.7x MOD. Maximum width of gena in lateral view 1x maximum width of eye. Clypeus 1.9x as wide as long; apex denticulate (in some specimens

medial denticle longer than lateral ones) (Fig. 1b). Mandible with four teeth; first tooth longer, second and third teeth of similar size; fourth tooth broad, distinctly incised; upper acetabular groove with small apical tuft. Proportions of scape, pedicel and first three flagellomeres 3.3:0.9:1:0.9:0.9; first flagellomere 1.3x as long as its apical width. Hind basitarsus 2.4x as long as its maximum width in lateral view.

Male. Body length: 7.4-10.2 mm. Forewing length: 5.1-6.4 mm.

Color. Black, except foreleg with underside of femur, most of tibia, tibial spur and tarsus yellowish brown (Fig. 2c); underside of second tarsomere with ovoid black spot (Fig. 2c). Claws yellowish brown. Wings as in female. *Pubescence.* Hairs of head yellowish to yellow on face and frons; black on vertex (Fig. 2a), grayish white on gena and underside of head. Lower margin of mandible with white hairs, without basal tuft of hairs. Dorsum of mesosoma with yellowish to yellow hairs; yellow hairs on anterior and lateral margins of scutum, and scuto-scutellar suture; disc of scutum with black hairs intermixed with shorter yellow hairs; disc of scutellum with erect, black hairs; venter and sides of mesosoma with grayish white hairs (Fig. 2a). Legs with whitish hairs; fringes of fore and middle basitarsi white; with yellow to orange hairs on inner surface of middle and hind tarsi. Outer fringe of foretarsus of long hairs, on basitarsus 1.4-2.0x MOD, longer basally, on second tarsomere 0.9-1.4x MOD (Fig. 2b-c). T1-T5 with distinct yellow apical bands and their discs with erect, simple, yellow hairs; disc of T5 also with appressed, plumose, yellow hairs, at least basally; T6 with erect, simple, yellowish, slender hairs, and without appressed pubescence on the disc (Fig. 2a). S2-S4 with apical fringes; hairs on S2 longer laterally, 1.2-1.6x MOD. *Sculpture.* Punctuation similar to that of female. T6 with small, coalescent punctures forming rugulose sculpture. *Morphology.* Lower margin of mandible without any angle or projection. Proportions of scape, pedicel and first three flagellomeres 3.5:0.8:1:1.2:1.3; first flagellomere as long as 1.2x its apical width. Anterior surface of forecoxa with abundant, long hairs, without patch of red bristles close to coxal spine; coxal spine short, as long as 1x MOD. Outer margin of foretibia rounded. Forebasitarsus flattened, 2x as long as its apical width (Fig. 2b-c). Preapical carina of T6 with small median emargination, and lateral to it entire to crenulate (Fig. 2d-e). S1 bearing a median tubercle pointing caudally. 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. 3a). 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. 3b). S8, as in Fig. 3c.

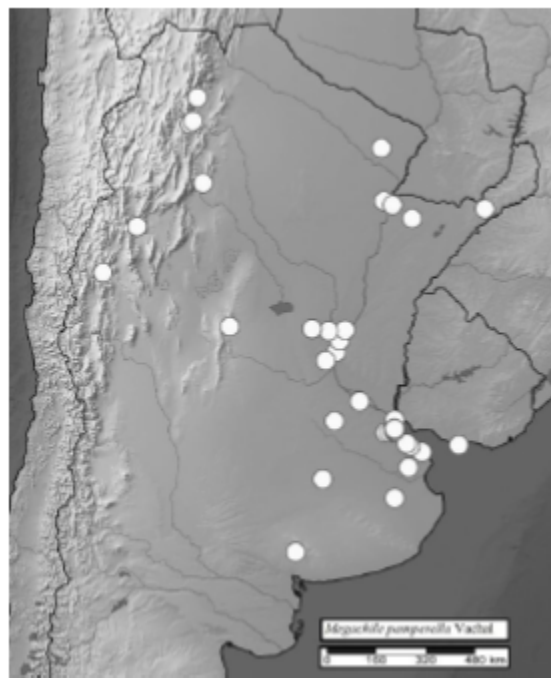


Figure 4.
Distributional map of *Megachile pamperella* Vachal.

Comments. Vachal (1908) based his species on four female specimens from “la basse vallée du Parana, Republique Argentine”. Raw (2002) designated a female lectotype, but his designation does not comply with the requirements of the ICZN (Moure et al., 2007). We designate here as the lectotype a female specimen from the Vachal collection that has been mislabeled as the holotype (Fig 1d).

Females of *M. pamperella* are similar to females of *M. infima*, from which they can be distinguished by the abundant white pilosity on the head and thorax, and the presence of a scuto-scutellar band. Males are similar to those of *M. interjecta* Vachal and *M. platensis* due to the absence of an angle or projection on the lower margin of the mandible, the morphology of the forebasitarsus, the abruptly slanting T6 without appressed pubescence, and the distinctly emarginate preapical carina of T6. The hidden sterna are similar to those of *M. infima* (Durante et al., 2020) and *M. sancticlaudii* (Roig-Alsina & Torretta, 2023). They also share with males of *M. platensis* the tuberculate first metasomal sternum. Males of *M. pamperella* can be easily distinguished from these males by the long outer fringe of the foretarsus (more reduced in the other species) and the presence of a scuto-scutellar band.

Distribution. Argentina, provinces of Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Jujuy, La Rioja, Misiones, Salta, San Luis, Santa Fe and Tucumán. Uruguay, department of Montevideo (Fig. 4).

Material studied. ARGENTINA. Buenos Aires: 4 M, 1 F, Carlos Casares, Ea. San Claudio, 8 November 2015 to 18 January 2016 (range of date of emergence from trap-nests), J.P. Torretta (FAUBA); 2 M, 2 F, Carlos Casares, Ea. San Claudio, 8 November 2015 to 18 January 2016 (range of date of emergence from trap-nests), J.P. Torretta (MLP); 1 M, 1 F, Carlos Casares, Ea. San Claudio, 20 January 2016 (date of emergence from trap-nests), J.P. Torretta & G. Ramirez (FAUBA); 1 M, 1 F, Carlos Casares, Ea. San Claudio, 2 February 2016 (date of emergence from trap-nests), J.P. Torretta & G. Ramirez (FAUBA); 3 M, 2 F, Carlos Casares, Ea. San Claudio, 4-9 December 2017 (range of date of emergence from trap-nests), J.P. Torretta (FAUBA); 6 M, 12 F, Pila, Ea. Las Chilcas, 19 November 2011 to 26 December 2011 (range of date of emergence from trap-nests), J.P. Torretta (FAUBA); 3 M, 1 F, Pilar, Va. Astolfi, 19-21 November 2016 (range of date of emergence from trap-nests), J.P. Torretta (FAUBA); 6 M, 3 F, Tornquist, 5 March 2022 (date of collection of trap-nests), J. Haedo & H. Marrero (FAUBA); 1 F, Tigre, 12 km NO Tigre, 15.i.1990, A.Roig Alsina & L. Moffatt (MACN); 1 F, Tigre, 12 km NO Tigre, 17.xi.2005, Compagnucci & Roig Alsina (MACN); 1 F, Hurlingham, INTA Castelar, 6.xi.2003, ex *Lotus corniculatus*, Compagnucci & Roig Alsina (MACN); 1 F, Ciudad Buenos Aires, Parque Centenario, 6.xi.2007, A. Roig A. (MACN); 1 F, 20 km SE Magdalena, Ea. El Destino, 2/5.ii.2000, A. Roig A. (MACN); 1 F, Laguna Chascomús, Camping Setia, 16.xi.1990, A. Roig A. (MACN); 2 F, Pdo. San Pedro, Vuelta de Obligado, 13.xii.2012, C. & A. Roig (MACN); 1 F, 1 M, Buenos Aires, 6.i.1904, 8.xii.1908, J. Brèthes (MACN); 2 M, Campo de Mayo, 25.ii.1919, Mateo Gómez (MACN); 3 F, Pila, Ea. Las Chilcas, 14.xi/7.xii.2011, J.P. Torretta (MACN); 1 F, 1 M, Rojas, 15.ii.2015, J.P. Torretta (MACN); 2 M, Boulogne, 7.xi.2012, A. Sanguinetti; 1 M, La Plata, xii.2005, F. Vossler (MACN); 1 M, Otamendi, 21.xii.1994, A. Roig A. (MACN); 1 M, Olivos, La Lucila, 22.xii.2010 (MACN); 1 F, Benavidez, 15.xi.2002, L. Compagnucci (MACN); 2 F, 3 M, Villa Elisa, ii.1955, J. Foerster (SEMC); 1 M, Capital Federal, i.1950, Senkute (SEMC); 4 F, San Isidro, 1955, i.1956 (SEMC); 1 F, Río Luján, 27.x.1952, M. Senkute (SEMC). Catamarca: 1 M, Tinogasta, RP 3, 7 km Costa de Reyes, 28.i.2010, ex Asteraceae, J.P. Torretta (MACN). Chaco: 1 M, Resistencia, xii.1935, J.B. Daguerre (MACN); 1 F, Resistencia, Pque. Caraguatá, 21.x.2016, A. Schaller (MACN); 1 M, Ruta 90, km 21, 4.xii.2008 (MACN). Córdoba: 1 M, Dpto. Punilla, V. Hermoso, ii.1943, M.J. Viana (MACN). Corrientes: 1 F, 1 M, Santa Teresa, P. N. Mburucuyá (28°01.233 S, 58°02.367 W), 26.ii.2010, N. Veiga (MACN); 1 M, San Cayetano, Ebco, 6.xi.2007, L. Compagnucci (MACN). Entre Ríos: 1 M, Diamante, 14/18.xii.2015, Compagnucci, González Vaquero & Vossler (MACN); 1 F, Paraná, S. Castillo (MACN). Jujuy: 1 M, 5.xii.1903, “en casa”, E. L. Holmberg (MACN). La Rioja: 1 M, La

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On the identity of *Megachile (Chrysosarus) pamperella*
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