

A NEW SPECIES OF LARGE CARPENTER BEE, *XYLOCOPA* (HYMENOPTERA: APIDAE), FROM ARGENTINA¹

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ABSTRACT: The new species *Xylocopa* (*Neoxylocopa*) *atamisquensis* is described and illustrated from adult female and male specimens. We designate Predio Isla Verde (28°38'54"S, 64°04'58"W; 120 m), Department Atamisqui in south-central Santiago del Estero province, Argentina, as the type locality. The closest species are *X. (N.) mendozana* and *X. (N.) ordinaria*.

KEY WORDS: New species, carpenter bee, Apidae, *Xylocopa*, Argentina

Bees of the genus *Xylocopa* Latreille are robust, hairy bees, with coloration black, blue/green, ferruginous or yellow, well known for their nests made by digging galleries usually within dead wood. These bees are polylectic, and some are economically important as pollinators in natural and agricultural ecosystems. They depend on pollen and nectar for feeding, being adapted both morphologically and ethologically to different plant species (Roubik, 1989; Gerling et al., 1989).

Xylocopa includes 31 subgenera with about 470 species, most of them occurring in tropical and subtropical areas of the world (Michener, 2007). In the Neotropics, 109 species in 16 subgenera have been recorded in a great variety of habitats (Moure et al., 2007). The subgenus *Neoxylocopa* Michener is the most numerous and conspicuous, with 49 species distributed in the New World, and it is characterized by the contrast between dark-colored females and the usually yellow or testaceous-colored males (Michener, 2007). Little is known about the species of *Xylocopa* from Argentina: Moure et al. (2007) cited 25 species, 10 of them of the subgenus *Neoxylocopa*.

In the present paper a new species of *Xylocopa* is described, illustrated and compared with *X. (N.) mendozana* and *X. (N.) ordinaria*, which are considered its closest relatives. The present study is an attempt to contribute to the taxonomy and diversity of Argentinean carpenter bees.

METHODS

The morphological terminology follows Hurd and Moure (1963) and Michener (2007). In the descriptions S and T are used for metasomal sternum and tergum. All measurements were taken with an ocular micrometer attached to a stereoscopic microscope. For examination with scanning microscope (SEM) Jeol-JSM-6360MV, specimens were mounted on metal studs, coated with gold-

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palladium. Type specimens are deposited in the entomological collection of the Museo de La Plata, Argentina (MLP).

SYSTEMATIC ENTOMOLOGY

Xylocopa (Neoxylocopa) atamisquensis, new species

(Figs. 1-3)

Diagnosis. Female. Pubescence and integument black, wings dark brown with a changeable violet-green iridescence, narrow vertex, scutellum gently rounded in lateral view, and apex of basitibial plate asymmetrically bifid. Male. Pubescence yellowish, integument yellow brown, wings light brownish, tegula translucent, metasomal terga with hairs shorter on T2-3, 2-3 times longer on T4, ventral face of the hind tibia with hairs restricted to medial and basal portions. This species is closely related to *X. mendozana* Enderlein and *X. ordinaria* Smith. The female resembles those species by the dark color and general appearance, but it is smaller and the vertex is narrower. *X. atamisquensis* sp. nov. is easily separated from *X. mendozana*, because the latter has the median tubercle of the labrum well developed and the medial pubescence on T2 is much shorter than that on T3; *X. atamisquensis* is separated from *X. ordinaria* by the larger posterior apical lobe of the basitibial plate and the rounded scutellum.

Description:

Female. Holotype (Figs. 1 A, C, E, F). Body length, 23.50 mm. (Paratypes 21.3-24.0 mm).

Coloration. Integument black, underside of flagellum reddish brown; wings dark brown with changeable violet-green iridescence, veins dark brown; tegula black.

Pubescence. Black, except inner side of fore tarsi and pygidial fimbria with ferruginous short hairs. Generally long, abundant, face with intermixed simple and plumose hairs; mesosoma with abundant plumose hairs except discal area of scutum hairless; apical margins of metasomal sterna with long and abundant hairs, terga with longer lateral hairs, T1 with plumose hairs, medial pubescence on T2-3 simple and short, 2-3 times longer on T4-5.

Sculpture: Clypeus with strong, regularly distributed punctures, with impunctate longitudinal area and apical margin. Frons and paraocular area with punctures closer than on clypeus and vertex; medial longitudinal area of vertex smooth, weakly defined; gena densely and irregularly punctate. Scutum and scutellum densely punctate, dorsal central area smooth. Metasomal terga more or less uniformly punctured, on medial area of T2-3 more sparsely punctured than on remaining terga.

Structure: Head broader than long (proportion 1.14: 1); inner orbits weakly incurved, scarcely converging above (proportion 0.97: 1). Vertex narrow, distance ocelloccipital (median ocellus) 3.9 times ocellar diameter (median ocellus). Lateral ocellus located below supraorbital line. Interocellar distance shorter than ocellocular distance (0.85: 0.95 mm) and than ocelloccipital distance (0.85: 1.30 mm). Proportion of ocellocular to alveolocellar distance (to lateral ocellus): 0.95:

1. Clypeocellar distance similar to distance between median ocellus and posterior margin of head (1.70: 1.75 mm). Proportion of orbitoccipital to ocellular distance 1.21: 1. Proportion of alveolocular to interalveolar distance 1.09: 1. Clypeus flat, broader than long (proportion 1.86: 1). Proportion of clypeal length to orbitoccipital distance 1.83:1. Proportion of length of scape, pedicel and first four flagellomeres 2.95:0.37:1:0.32:0.47:0.47. Frontal carina moderately elevated. Labrum broader than long, with three tubercles similarly developed. Scutellum gently rounded as seen in profile. Metanotum subvertical. Apex of basitibial plate situated beyond middle of tibia, asymmetrically bifid, posterior apical lobe slightly shorter than anterior apical lobe (Fig. 1 F). Metasoma, 8.80mm wide, pygidial plate triangular with rounded apex and with pair of subapical lateral spines; medial, longitudinal carina of the sterna elevated on S3-6.

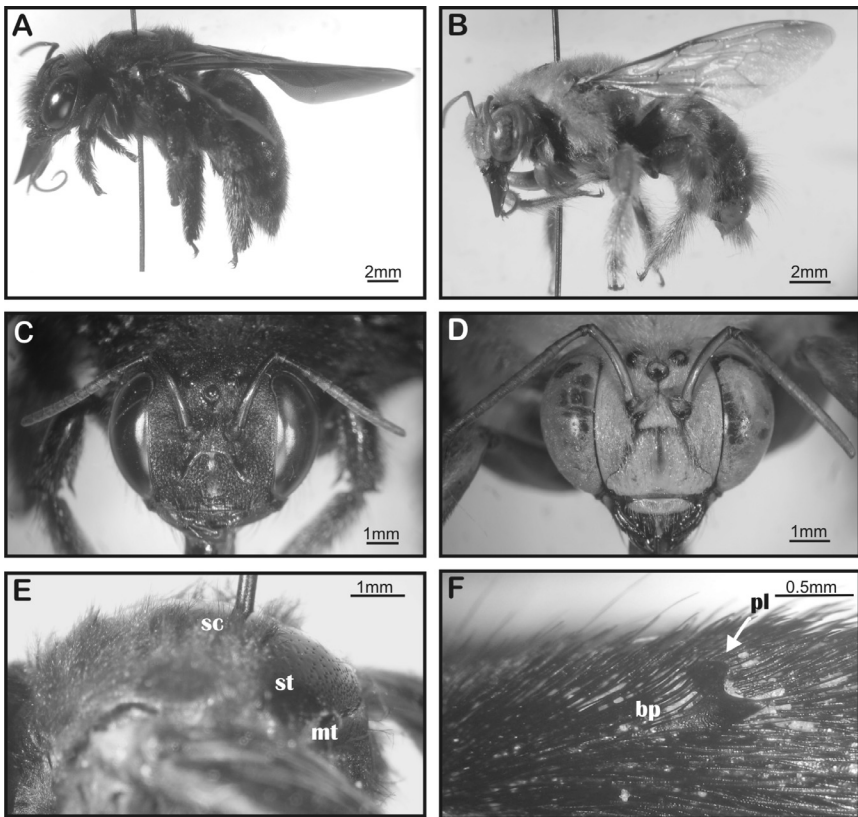


Figure 1. *Xylocopa atamisquensis*, n. sp.: A, C, E, F. Female. A. General view. C. Details of head in frontal view. E. Mesosoma in profile view. F. Basitibial plate of hind tibia; B, D. Male. B. General view. D. Details of head in frontal view. Abbreviations: sc, scutum; st, scutellum; mt, metanotum; bp, basitibial plate; pl, posterior lobe.

Male. Length, 21.5 mm-24 mm (Fig. 1, B, D)

Coloration. Integument yellow brown, except for dark-brown coxae, middle

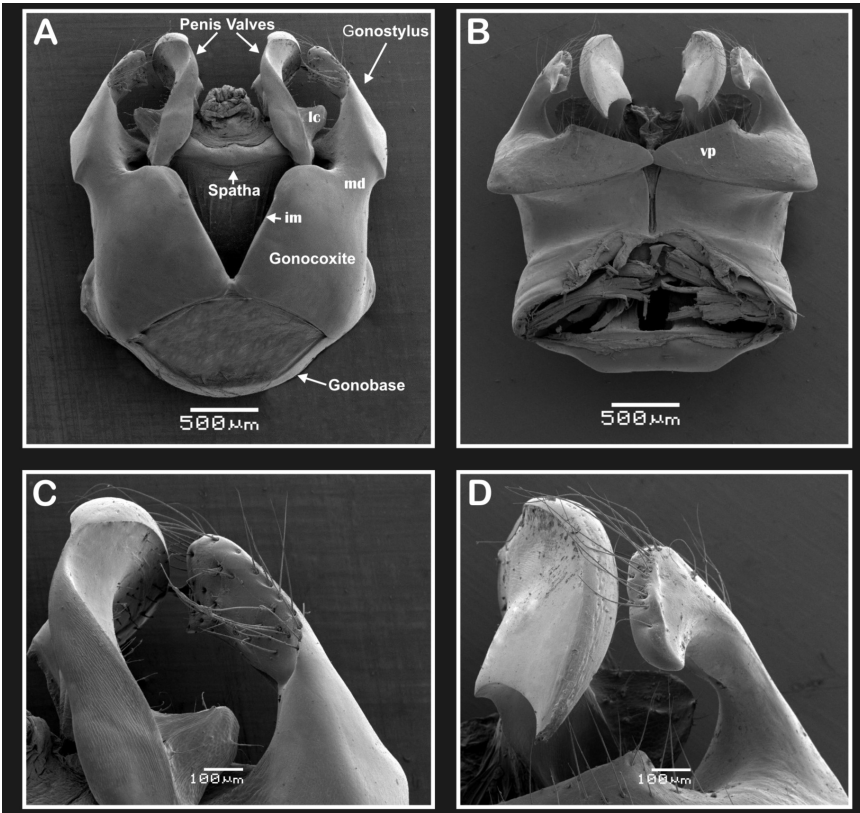


Figure 2. *Xylocopa atamisquensis*, n. sp.: male genitalia; A. Dorsal view; B. Ventral view; C, D. apex of penis valve and gonostylus in dorsal and ventral views. Abbreviations: md, medial depression; im, inner margin; lc, lateral carina; vp, ventroapical plate.

and hind femora and apical bands on T1-5; wings light brownish, veins brown; tegula translucent.

Pubescence. Yellowish (varying from ferruginous to very pale or whitish yellows), generally long and abundant. Metasomal terga with hairs shorter on T2-3, 2-3 times longer on T4. Ventral face of the hind tibia with hairs restricted to medial and basal portions.

Sculpture: Clypeus with strong, regularly distributed punctures, with impunctate median longitudinal area and apical margin. Face, vertex and gena with punctures closer than on clypeus. Scutum and scutellum densely punctate, except on dorsal central area of scutum. Metasomal terga homogeneously punctate.

Structure: Head broader than long (proportion 1.35: 1), inner orbits weakly incurved, converging above (proportion 0.93: 1). Vertex narrow, distance ocelloccipital (medial ocellus) 1.5 times diameter of medial ocellus. Lateral ocellus located just below supraorbital line. Interocellar distance longer than ocellocular distance (0.60:0.50 mm) and than ocelloccipital distance (0.60:0.53 mm). Proportion of ocellocular to alveolocellar distance (to lateral ocellus) 0.9: 1. Clypeo-

cellar distance longer than distance between medial ocellus and posterior margin of head (1.25:0.90 mm). Proportion of orbitocipital to ocellocular distance 1.5: 1. Proportion of alveolocular to interalveolar distance 1.3: 1. Clypeus flat, broader than long (proportion 1.57: 1 mm). Proportion of clypeal length to orbitocipital distance 2.47: 1. Proportion of lengths of scape, pedicel and first four flagellomeres 2.93:0.4:1:0.46:0.46:0.46. Frontal carina weakly elevated. Labrum broader than long with medial triangular process weakly defined. Scutellum horizontal, metanotum subhorizontal. Apex of basitibial plate simple, situated before middle of tibia.

Genitalia. (Fig. 2 A-D). Genital capsule longer than wide; in dorsal view: gonobase reduced; gonocoxite strongly developed, broad at base, narrower toward apex, with conspicuous medial depression; basal inner margin straight;

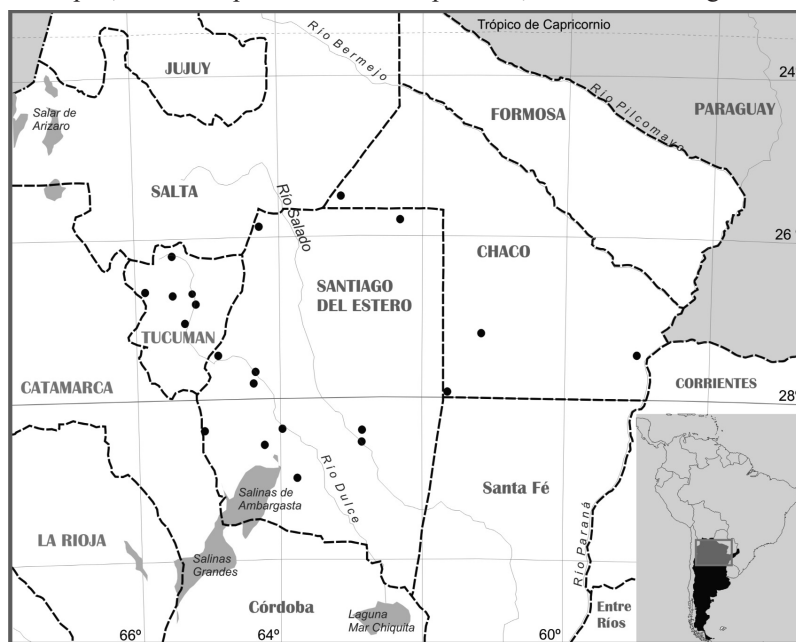


Figure 3. *Xylocopa atamisquensis*, n. sp., geographic distribution.

gonostylus curved inwards, with sparse hairs, apex simple; penis valve arcuate, exceeding gonostylus length, incurved at apex, with narrow, well developed basal projection (lateral carina); spatha reduced, transversely elongate; gonocoxite in ventral view with large ventroapical plate, medial apical lobe reduced.

Etymology. The specific epithet refers to the department of the type locality “Departamento Atamisqui.” This region is located in NW Argentina, in the south central Santiago del Estero province.

Distribution. (Fig. 3). Argentina: Tucumán, Chaco and Santiago del Estero provinces.

Type Material. ARGENTINA, Holotype ♀, *Santiago del Estero*, Dto. Atamis-

qui, Predio Isla Verde (28°38'54"S, 64° 04'58"W; 120m), 17-III-2009, M. Lucia-L. Alvarez (MLP). 15 Paratypes: 5♀♀, 2♂♂, same data as holotype (MLP), 5♀♀, 3♂♂, *Santiago del Estero*, Dto Atamisqui, Villa Atamisqui (28°27'36.48"S, 63° 50'53.75"W; 123 m), M. Lucia-L. Alvarez (MLP). Types are deposited in the MLP.

Additional Material. ARGENTINA. *Tucumán.* 1♀, Famaillá (San Ramón) –XI-1947, B. Garcia (IML); 3♀♀, Los Zazos (Río Amaicha) (26°36'19.3"S, 65° 53'25.8"W; 2089 m), 21-X-2006, M. Lucia-A. Abrahamovich-E. Jiménez (MLP); 1♀, Las Cañas, 10-I-1960, Terán-Willink (IML); 1♀, Dique el Cadillal, 9-XI-2008, M. Lucia-B. Defea (MLP); 1♀ San Pedro de Colalao, 9-X-2008, M. Lucia-B. Defea (MLP); 1♀ San Pedro de Colalao, 1-III-1953, Terán (IML); 1♀, Amaicha, 27-XI-1965, L. Stange (IML); 2♂♂, Tucumán, 30-I-1965 (430m), W. Weyrauch (IML); 1♀, Siambón (Dto de Tafi), 3-IV-1946, D. Olea (IML); 1♀, La Mesada, Dto. Burreyacú, 11-X-1947, Ares (IML). *Chaco.* 1♀, Resistencia, 14-II-1936, Denier (MLP); 7♀♀, Paraje el Pintado, (E.G.B 245, 10 Km E. Picada Barilari, 256m (25°17'50.9"S 63°1'21.2"W; 260m), 10/18-I-2007, M. Lucia. (MLP); 1♂, Charata, -X-1924 (MLP); 1♀, Tres Mojones, 28-XI-1952, R. Aguilar (IML). *Santiago del Estero.* 4♂♂ 9♀♀ Dto. Atamisqui, Predio Isla Verde (28° 38'54"S, 64° 04'58"W; 120 m), 17-III-2009, M. Lucia-L. Alvarez (MLP); 3♂♂ 8♀♀, Santiago del Estero (Capital), (26°47'60"S, 65°11'58"W; 192 m), 18-III-2009, M. Lucia-L. Alvarez (MLP); 8♀♀, Dto Atamisqui, Villa Atamisqui (28° 27'36.48"S, 63°50'53.75"W; 123 m), M. Lucia-L. Alvarez (MLP); 11♀♀, 7♂♂, La Banda, 1977, Colungo (MLP); 1♀, Los Tigres, 11/16-I-1970, R. Golbach (IML); 4♂♂ 5♀♀, Warner (MLP); 1♀, Termas de Río Hondo (Dique frontal), 3-V-1972, C. Porter (IML); 1♀, 18-X-1939, Maldonado (MLP); 2♀♀, San Gregorio, -IV-1977, Colunga (MLP); 1♀, Añatuya, III-1979, Fritz (MLP); Tapso, 22-V-1951, A. Ogloblin (MLP); 1♀, Río Hondo, 14-II-1948, R. Golbach (IML); 5♀, Cuesta Río Salado, Coll. Gomez (MACN); 1♀, Mistal Paso Río Salado (Cerca Icaño), 1927-1929, E. Wagner (MACN).

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LITERATURE CITED

- Gerling, D. H., H. W. Velthuis, and A. Hefetz.** 1989. Bionomics of the large carpenter bees of the genus *Xylocopa*. *Annual Review of Entomology* 34:163-190.
- Hurd, P. D. and J. S. Moure.** 1963. A classification of the large carpenter bees (Xylocopini) (Hymenoptera: Apoidea). *University of California Publications in Entomology* 29:1-365.
- Michener, C. D.** 2007. *The Bees of the World*. 2nd Edition. The Johns Hopkins University Press. Baltimore, Maryland, U.S.A. 953 pp.
- Moure, J. S., D. Urban, and G. A. R. Melo.** 2007. *Catalogue of bees (Hymenoptera: Apoidea) in the Neotropical Region*. Sociedade Brasileira de Entomologia Press. Curitiba, Brasil. 1058 pp.
- Roubik, D. W.** 1989. *Ecology and Natural History of Tropical Bees*. Cambridge University Press, New York, U.S.A. 514 pp.