

Research Note

FIRST OBSERVATION OF *XYLOCOPA PUBESCENS*, SPINOLA 1838 IN THE CONSTANTINE AREA (EASTERN ALGERIA)

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ABSTRACT

Xylocopa pubescens Spinola is a carpenter bee of the Apidae family distributed in several regions of the world including North Africa. In Algeria, the species has only been recorded in two regions (central and western parts of the country). With this short note, we report its first observation in Constantine since work on solitary bees was relaunched in our country around thirty years ago. A brief diagnosis as well as the global distribution map of the species are provided.

Keywords: Apidae, Xylocopinae, Carpenter bee, New record, *Xylocopa pubescens*.

INTRODUCTION

Xylocopes are solitary bees belonging to the Apidae family. They are characterized by their often large and black bodies. They build their nests primarily in dead wood by digging tunnel galleries, hence their name "carpenter bees." Xylocopes are mainly diversified in the tropical and sub-tropical regions (Michener 2007). *Xylocopa pubescens* is naturally present in North Africa (Algeria, Tunisia, Morocco, Lybia and Egypt) (Shebl *et al* 2021). Five species of xylocopes have been reported in the north-east of Algeria: *Xylocopa amadaei* Lapeletier, 1841; *X. iris* Christ, 1791; *X. valga* Gerstaecker, 1872; *X. violacea* L., 1758 and *X. cyanescens* Brullé, 1832 (Louadi *et al.*, 2008). To date and to our knowledge, the presence of *Xylocopa pubescens* has only been reported in Algiers (North center) on fababean (Bendifallah *et al.*, 2011) and recently in Tlemcen (Nord-West) (Ouahab and Bendifallah 2021; Khedim *et al.*, 2024).

The bee can have several generations; it's polylectic foraging on many plants (Gerling *et al.*, 1983). This present note aims to report for the first time the presence of this xylocope in the Constantine area, a semi-arid climate

region in north east of Algeria. We give a short diagnose of this species and a map of its global distribution.

Species Observation

The species was captured on the flowers of a Lamiaceae in May at the Chaabat Erssas Campus (36° 33' 04" N, 6° 63' 10" E) of the University of Constantine 1 during observations made on the surrounding spontaneous flora.

Material examined

Constantine: Chaabat erssas, 1♀ 13. V.2025 sur *Mentha* sp x *Salvia* sp. Leg K.Benachour ; 1♂ 21/V/2025 and 1♀ 25. V.2025 on the same plant, Leg F.El Hadj-Moussa.

Description of the species

The female's body of the observed specimens is large, measuring approximately 25 mm long (Figure 1a), black with the presence on the scutum of a yellow pubescence except for a hairless area in the middle. *X. pubescens* was long confused with *X. aestuans* but in 1964, Lieftinck differentiated morphologically the two species. In

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particular, the female of *X. pubescens* differs from that of *X. aestuans* by the absence of a longitudinal impunctate line at the center of the clypeus (Figure 2a). The presence

of a hairless area in the middle of the thorax differentiates it from other species.

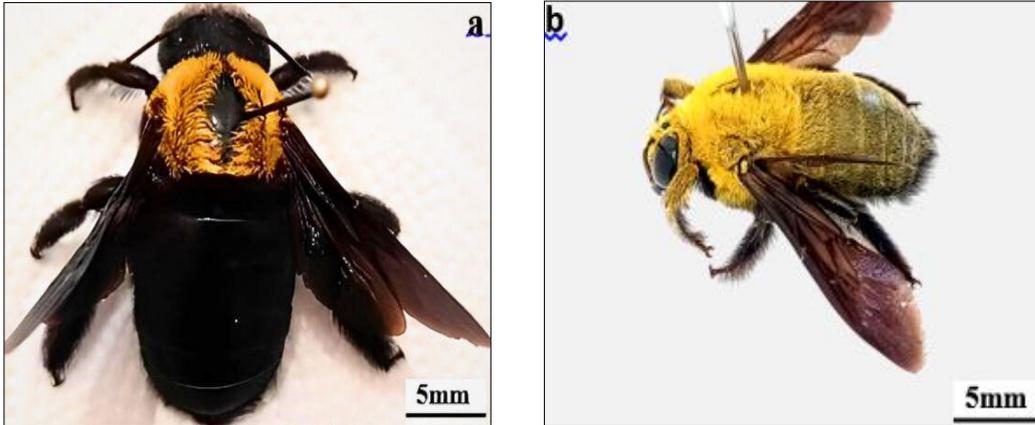


Figure 1. Dorsal views of *X.pubescens* female (a) and male (b).

The captured male specimen of *X. pubescens* measures approximately 19 mm (fig.1b), it is easily distinguished from other species by the upper part of its body being entirely covered with yellow to olive-green hair (in fresh specimens). Compared to *X. aestuans*, the male of *X.pubescens* does not have a tooth at the base of the hind femurs (present in *X. aestuans*), and its apical process of

the hind tibiae is more developed. If we consider the appearance, only the species *X. caffra* (originating from Africa) has a similar morphology but the male of *X.pubescens* is distinguished by its last abdominal tergite having two strong teeth (absent in *X. caffra*) and the disc of its clypeus generally black (Figure 2b) whereas in *X.caffra* it has a broad yellow longitudinal line.

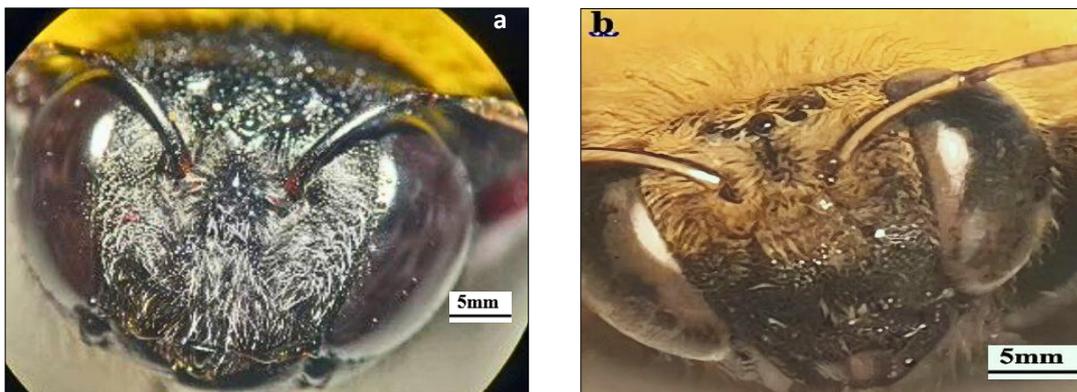


Figure 2. Frontal views of the head of *X.pubescens* female (a) and male (b).

Distribution

X.pubescens has a large distribution; it is naturally present in North Africa (Algeria, Tunisia, Morocco, Egypt), in the Sahel (Cape Verde, Senegal, Niger, Cameroon, Ethiopia, Eritrea), in the Middle East (Lebanon, Yemen, Jordan, Syria, and Saudi Arabia; Iran), South East Türkiye and India (Pauly 2016; Ascher & Pickering 2020; Shebl *et al* 2021) (Figure 3). More recently this species has spread to Southern Europe; it has been discovered in southern Spain

(Ortiz-Sanchez & Pauly, 2016), the Canary Islands (Ruiz *et al.*, 2020), Greece (Catania 2023) and in France (Le Divelec *et al.*, 2022). This expansion would be favored by global warming and the trade of woody materials, thus providing new habitats suitable for nesting (Le Divelec *et al.*, 2022; Catania 2023).



Figure 3. Map of the global distribution of *X. pubescens* (<https://www.gbif.org/species/1342075>).

DISCUSSION AND CONCLUSION

The presence of *X. pubescens* in the Constantine region confirms its adaptation to hot and dry climates. Le Divelec *et al.* (2022) validated, using Maxent software (species distribution modeling), the current distribution of the species with a clear preference for the hot and dry regions of North Africa, Southern Europe and the Middle East. In Algeria, its distribution area may extend to other regions with an arid and hot climate such as the northern Sahara. Xylocopes, like most bees, have an agro-economic interest as pollinators; they have proven to be good pollinators, particularly on vegetables (Pando *et al.* 2013; Pauly *et al.* 2015) hence the interest to protect these bees which are beneficial for our crops.

CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

FUNDING

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AI TOOL DECLARATION

The authors declares that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

REFERENCES

Ascher, J. S., & Pickering, J. (2020). *Discover Life bee species guide and world checklist (Hymenoptera:*

Apoidea: Anthophila). Retrieved from http://www.discoverlife.org/mp/20q?guide=Apoidea_species.

Bendifallah, L., Louadi, K., Doumandji, S., & Michez, D. (2011). Rôle des abeilles solitaires (Hymenoptera: Apoidea) dans la pollinisation de la fève *Vicia faba* (Fabaceae) en région de Mitidja. In *Actes de la 9ème Conférence Internationale sur les ravageurs en agriculture (CIRA)*, Montpellier, France (26–27 octobre 2011).

Catania. (2023). The recent spread of the carpenter bee *Xylocopa pubescens* (Hymenoptera, Apidae) in Europe and the first record for the Aegean Archipelago. *Sociobiology*, 70(2), e8678. <https://doi.org/10.13102/sociobiology.v70i2>.

Gerling, D., Hurd, P. D., Jr., & Hefetz, A. (1983). Comparative behavioral biology of two Middle East species of carpenter bees (*Xylocopa* Latreille) (Hymenoptera: Apoidea). *Smithsonian Contributions to Zoology*, 369, 1–33.

Khedim, R., Bessaoud, A., Houlala, I., Kidoud, B., Gaouar, S., & Bechir, S. (2024). A comprehensive inventory of wild bees in Tlemcen (North-West of Algeria). *Genetics & Biodiversity Journal*, 8(2), 99–112. <https://doi.org/10.46325/gabj.v8i2.408>.

Le Divelec, R., Semal, L., Szuba, M., & Rome, Q. (2022). Sur la présence de *Xylocopa (Koptortosoma) pubescens* Spinola, 1838, en France métropolitaine (Hymenoptera, Apidae). *Bulletin de la Société Entomologique de France*, 127, 205–212. https://doi.org/10.32475/bsef_2232.

Lieftinck, M. A. (1964). The identity of *Apis aestuans* Linné, 1758, and related Old World carpenter bees (*Xylocopa* Latr.). *Tijdschrift voor Entomologie*, 107(3), 137–158.

Louadi, K., Terzo, M., Benachour, K., Berchi, S., Aguib, S., Maghni, N., & Benarfa, N. (2008). Les Hyménoptères Apoidea de l'Algérie orientale avec une liste d'espèces et

- comparaison avec les faunes ouest-paléarctiques. *Bulletin de la Société Entomologique de France*, 113(4), 459–472. Retrieved from <https://lasef.org/bulletin-113/>.
- Michener, C. D. (2007). *The bees of the world* (2nd ed.). Baltimore, MD: Johns Hopkins University Press.
- Ortiz-Sánchez, F. J., & Pauly, A. (2016). Primera cita de *Xylocopa* (*Koptortosoma*) *pubescens* Spinola, 1838 (Hymenoptera, Apidae) en Europa occidental. *Boletín de la Asociación Española de Entomología*, 40, 499–501.
- Ouahab, Y., & Bendifallah, L. (2021). Checklist, diversity and distribution of wild bees (Hymenoptera: Apoidea; Anthophila) across Tlemcen Mountains in the north west of Algeria. *Journal of Fundamental and Applied Sciences*, 13(1), 547–581. Retrieved from <http://www.jfas.info>.
- Pando, G. B., Tchuenguem Fohouo, F. N., & Tamesse, J. L. (2013). Activité de butinage et de pollinisation de *Xylocopa olivacea* Fabricius 1787 (Hymenoptera : Apidae) sur les fleurs de *Vigna unguiculata* (L.) Walp. 1843 (Fabaceae) à Yaoundé-Cameroun. *Faunistic Entomology*, 66, 47–59. Retrieved from <https://popups.uliege.be/2030-6318/index.php?id=2520>.
- Pauly, A. (2016). *Les Xylocopes d'Afrique. Atlas Hymenoptera*. Retrieved July 6, 2025, from <http://www.atlashymenoptera.net/page.aspx?id=84>.
- Pauly, A., Nzigidahera, B., Eardley, C., Ndayikeza, L., Mpawenimana, A., & Habonimana, B. (2015). Les abeilles du genre *Xylocopa* Latreille (Hymenoptera: Apoidea: Apidae) au Burundi, de bons pollinisateurs des légumineuses. *Belgian Journal of Entomology*, 25, 1–27. Retrieved from <http://www.srbe-kbve.be>.
- Ruiz, C., Suarez, D., Naranjo, M., & De la Rúa, P. (2020). First record of the carpenter bee *Xylocopa pubescens* (Hymenoptera, Apidae) in the Canary Islands confirmed by DNA barcoding. *Journal of Hymenoptera Research*, 80, 169–175. <https://doi.org/10.3897/jhr.80.59649>.
- Shebl, M., Benabdelkader, F., Bendifallah, L., Benachour, K., Bataw, A., Bufliga, M., Osman, M., & Kamel, S. (2021). The melittology research in Northern Africa and the Middle East: Past and present situations. *The Journal of Basic and Applied Zoology*, 82(18), 1–11. <https://doi.org/10.1186/s41936-021-00217-y>.