Specimen

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First reported case of gynandromorphism in the cuckoo bee *Epeolus variegatus* (Linnaeus) (Hymenoptera: Apidae: Nomadinae)

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INTRODUCTION

Gynandromorphs (or gynanders) are aberrant specimens displaying both male and female morphological features (Michez et al., 2009). Gynandromorphy amongst Arthropods is mainly explained by a chromosomic abnormality during fertilisation or ontogenic development (Narita et al., 2010). Reports of gynandromorphs in bees (Anthophila) are relatively numerous, with six of the seven globally recognized bee families including documented specimens (Michez et al., 2009). The parasitic subfamily Nomadinae (Anthophila: Apidae) contains few reported gynandromorphs, with a total of eight specimens of which only one is from the genus *Epeolus* and, more specifically, from the species *Epeolus julliani* Pérez (Schenck, 1871; Tsuneki, 1975; Pérez-Iñigo Mora, 1982; Wolf, 2000; Engel, 2007; Le Féon et al., 2016; Carion et al., 2025).

RESULTS AND DISCUSSION

A gynandromorph of *Epeolus variegatus* (Linnaeus) was collected in Le Crotoy (Somme, Haut-de-France, France; 50.249310N, 1.593641E) on September 20th, 2024. The specimen is placed in the species *Epeolus variegatus* following the key characters of Astafurova & Proshchalykin (2024). The present specimen exhibits a typical male head with 13 antennal articles per antenna, white long hairs all across the face and the vertex as well as a black labrum (Fig. 1b, c, f). However, when compared to the redescription and figures of Bogusch & Hadrava (2018) as well as reference specimens of this species hosted in the UMons' collection, both the meso- and metasoma of our gynandromorph exhibit female traits at the exception of some brown thick hairs centrally on sternum 4, which are typical male characters as well as a supplementary male-like partial sternum just on the right of the sternum 5 (Fig. 1a-f). Considering the disposition of male characters on the head and the sternum 4 as well as the supplementary partial sternum while the rest of the body is female, this gynandromorph can be considered as a mosaic gynandromorph (i.e. a gynandromorph in which male and females traits have a disordered and asymetric distribution across the body) (Michez et al., 2009; Barrett, 2021). The other known gynandromorph inside the genus was originally described by Wolf (2000) without classification and Michez et al. (2009) later classified the case as transversal. However, the specimen should be regarded as a mosaic gynandromorph due to the asymmetric and disordered distribution of characters described by Wolf (2000), indeed only the left side of the head was reported as male while the rest of the body was considered female (Wolf, 2000). Both reported gynandromorphs in the genus show different distribution of characters, highlighting the overall variability of gynandromorph phenotypes within a single genus.

MATERIAL

Specimen data available at https://doi.org/10.5886/fikqky

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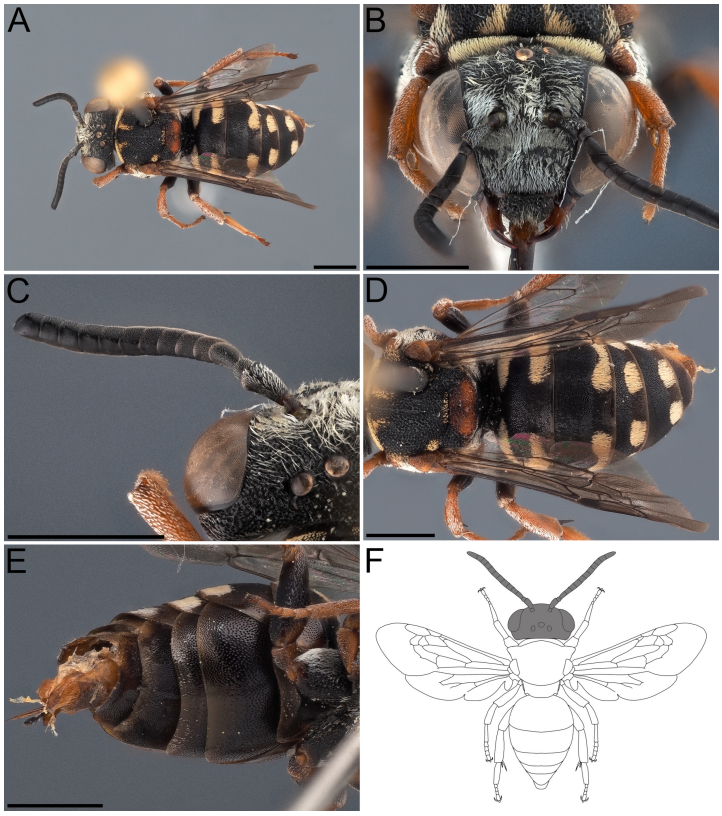

Figure 1: Studied gynandromorph specimen of *Epeolus variegatus* (Linnaeus) (PLAL16333). All scale bars represent 1 mm. **a)** Habitus in dorsal view. **b)** Head in frontal view. **c)** Left antenna in dorsal view. **d)** Meso- and metasoma in dorsal view. **e)** Metasoma in ventral view. **f)** Drawing of the studied specimen in dorsal view, male characteristics in grey, female characteristics without colours, ventral characteristics not represented.