


The first record of a gynandromorph *Halictus scabiosae* (Rossi, 1790) (Hymenoptera: Halictidae)

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Introduction

Gynandromorphs are individuals harboring both male and female tissues. The causes of these anomalies remain poorly understood though several hypotheses have been proposed to explain them (Michez et al. 2009; Sommaggio et al. 2021). There are more and more descriptions of gynandromorph bees recently, and more behavioral observations of these bees in nature (Krichilsky et al. 2020). These new observations and descriptions can be valuable to understand how these phenomena occur (Michez et al. 2009; Sommaggio et al. 2021). Most of the current descriptions concern relatively large bees in which there is a relatively striking sexual dimorphism (Michez et al. 2009; Lucia et al. 2013; Lucia et al. 2012). A few descriptions of gynandromorph bees of the genus *Halictus* Latreille exist in the literature (Brau et al. 2024, Michez et al. 2009) however no descriptions of such a case in the species *Halictus scabiosae* (Rossi, 1790) was found.

Results and Discussion

The bee was observed on Asteraceae flowers on 4 July 2023 in a suburban area near a forest in Besançon (25), France (47.2698, 6.0514). It was not collecting pollen but rather feeding on nectar. Male tissues are present on the left part of the body, and female tissues on the right part of the body except on metasomal segments 2-4 which are only female. The genitalia are similar to those of a female with small narrow and unmodified gonostylus and a sting (Table 1, Figure 1). The shape of the metasoma is closer to that of a female, less elongated than what we can observe in male specimens.

From these observations, this individual can be considered a mosaic gynandromorph (Michez et al. 2009), though it is close to a bilateral gynandromorph. The behaviour of the individual before capture is not sex-specific, so it is not possible to say whether the individual behaved as a male or a female. The lack of previous description of such a gynandromorph

individual for this widespread and common bee species in Western Europe is quite surprising.

Material

https://data.canadensys.net/micropublications/resource?r=specimen_39

References

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Table 1. Description of characters of the gynandromorph compared to those typical of males and females.

Character	Male (♂)	Female (♀)	Gynander
Head	head narrow and elongate (0.8-0.85 times larger than long)	head large (1.05-1.1 times larger than long)	(♂) on left part, (♀) on right part (as large as long)
Clypeus	partially yellow	completely dark	(♂) on left part, (♀) on right part
Antennae	scape partially yellow, 13 segments, segments larges and last segment curved	scape completely dark, 12 segments, all segments straight and narrow	(♂) on left part, (♀) on right part
Legs	tibia, tarsus and apical part of femur yellow	all segments dark, scopae present on hind tibiae	(♂) on left part, (♀) on right part
T1	narrow, spot of pubescence on the sides at the basis of the segment	large, without spot of pubescence on the sides	(♂) on left part, (♀) on right part
T2-T4	narrow, a basal band only on T2 and T3	large, basal band on all segments	(♀) on both sides
T5-T6	without a furrow and with an apical hair band	with a furrow and without an apical hair band	(♂) on left part, (♀) on right part
Genitalia	with penis valves and large gonostylus	with a sting and small narrow gonostylus	(♀)

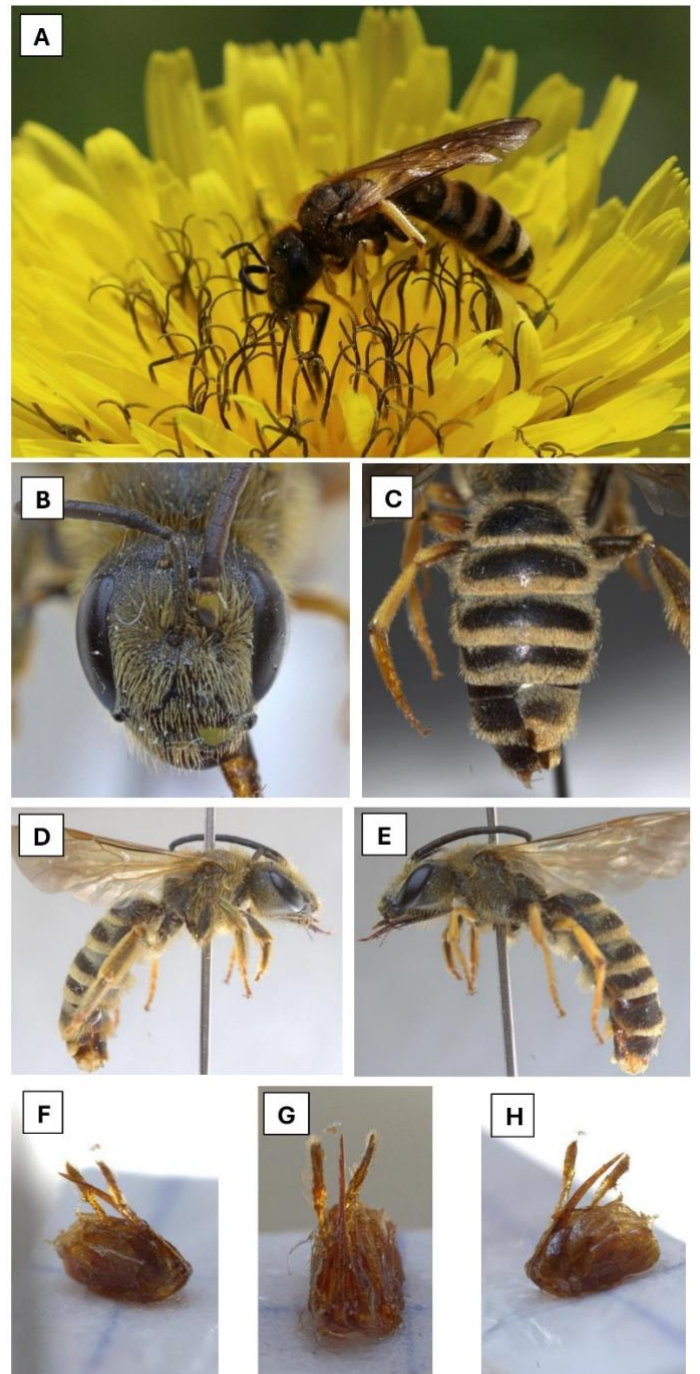


Fig. 1. Gynandromorph of *Halictus scabiosae*, specimen AB230168. Photo stacking made using a Canon 7D mark ii with a 90mm Tamron macro lens. A: Gynandromorph on Asteraceae flower; B: Face; C: Metasoma dorsal view; D: Habitus right side (female); E: Habitus left side (male); F: Genitalia (latero-dorsal view of left side); G: Genitalia (dorsal view); H: Genitalia (latero-dorsal view of left side).