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***Cleptes pallipes* var. *androgyna* DU BUYSSON, 1896 is a
gynandromorph of *Cleptes semiauratus* (LINNAEUS, 1761)
(Hymenoptera, Chrysididae)**

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A b s t r a c t : *Cleptes pallipes* var. *androgyna* DU BUYSSON, 1896, was found to be a gynandromorph of *Cleptes semiauratus* (LINNAEUS, 1761), after type examination. This species shows a strong sexual dimorphism in colouration and morphology. The examined mosaic gynandromorph is mostly male-like, but shows also female characters on head and mesosoma. The specimen, collected in Germany (Mecklenburg), is the second known gynandromorph in the genus *Cleptes* LATREILLE, 1802. The name *androgyna* was never reported by subsequent authors, however, being described as variation before 1961, it is an available species-group name.

K e y w o r d s : *Cleptes semiauratus*, gynander, sexual dimorphism.

Introduction

In a recent article, ROSA & ZETTEL (2018) analysed the case of a chrysidid gynander of *Holopyga fervida* (FABRICIUS, 1781), providing an overview on gynandromorphs in Hymenoptera and Chrysididae, yet omitting the short note on the gynander of *Chrysis pseudodichroa* LINSENMAIER, 1959 by WOLF (2004). Even if gynandromorphy is a widespread phenomenon among some Hymenoptera and many cases have been reported in at least 29 families (see, e.g., Apidae listed by MICHEZ et al. 2009 for bees), gynandromorphs are considered very rare in cuckoo wasps (ROSA & ZETTEL 2018).

Gynandromorphism is the phenomenon by which an organism possesses tissue that is genotypically and phenotypically male and female (NARITA et al. 2010), thus showing both male and female features. There are several types of phenotypical gynander (or gynandromorph), mostly attributable to: bilateral or transversal symmetry, when male and females traits are clearly developed along a particular axis of the body, or a mosaic pattern having male and female patches across the body (CAMPOS et al. 2011, WCISLO et al. 2004, SKVARLA & DOWLING 2014).

One case of an outstanding mosaic gynandromorphy in the subfamily Cleptinae has already been reported (STRUMIA 2004) for *Cleptes triestensis* MÓCZÁR, 2000. Yet, the case of *Cleptes pallipes* var. *androgyna* was published before (DU BUYSSON 1896) and it is worthy to be here discussed for its taxonomical history and its noticeable mix of male and female characters. In fact, the genus *Cleptes* LATREILLE, 1802 is well known to be sexually dimorphic in morphology, having five visible terga in male and four in female, and in colouration: usually West Palaearctic males have blue head and mesosoma, contrasting with red to golden-red female colouration (LINSENMAIER 1959; KIMSEY &

BOHART 1991; MÓCZÁR 2001). The gynandromorph described by DU BUYSSON (1896) clearly shows colouration as well as structural features of both sexes, such as the shape of head, antennae, wings, and mesopleuron.

Materials and methods

Gynander collected in Mecklenburg (Mecklenburg-Vorpommern), Germany, by Friedrich Wilhelm Konow on the 4th of July 1893, deposited in the collection of the Natural History Museum in Paris.

The specimen was examined and described under a Carton Togonal stereomicroscope. Photographs were taken with a Nikon D-3400 camera connected to the Togonal SCZ stereomicroscope and stacked with Combine ZP software.

Results and discussion

Cleptes semiauratus is a widespread species in Europe, seemingly more common in Northern and Central countries (MÓCZÁR 2001), eastwards to Urals (ROSA et al. 2017), and also occurs in North America (United States) where it is most likely introduced (KIMSEY & BOHART 1991, MÓCZÁR 2001). Its occurrence in the East Palaearctic countries is uncertain, since some previous citations prove to result from misidentifications of Chinese (SHENG et al. 1998, misidentified specimen later described as *Cleptes shengi* WEI, ROSA & XU, 2013) or Korean specimens (HA et al. 2011). Hosts are sawflies of the family Tenthredinidae, such as *Caliroa cerasi* (LINNAEUS) (PAUKKUNEN et al. 2015).

Recently, after type examination, ROSA et al. (2015) re-established the synonymy *Cleptes semiauratus* (LINNAEUS, 1761) = *Cleptes pallipes* LEPELETIER, 1806, clarifying some taxonomical and nomenclatorial problems found in literature. The type of *Cleptes pallipes* var. *androgyna* actually belongs to *Cl. semiauratus* (LINNAEUS, 1761), as correctly interpreted by LINSSENMAIER (1959) (ROSA et al. 2015) and not to *Cl. semiauratus* auctt., sensu MÓCZÁR (2001) (= *Cl. striatipleuris* ROSA, FORSHAGE, PAUKKUNEN & SOON, 2015).

The case of *Cleptes pallipes* var. *androgyna* DU BUYSSON in ANDRÉ, 1896 is rather interesting, since this taxon name was never reported in subsequent catalogues, revisions or works, e.g. in KIMSEY & BOHART (1991), MÓCZÁR (2001) or STRUMIA (2004). However, being described as "var. nov." before 1961, it is an available species group name.

Description of the gynander of *Cleptes semiauratus* (LINNAEUS, 1761)

D i a g n o s i s . The gynander is predominantly male-like. The head is largely female-like, with golden red colour and typical shortened flagellomeres, lighter scape, pedicel and first flagellomeres (vs. elongate and black flagellomeres in the male); the left side of the head shows anyway some male characters. Mesosoma male-like, blue coloured, with unusual sculpture of mesopleuron; slightly darkened and banded wings; hind-femora dorsally light brown are more coloured as female. Metasoma male-like, with five visible terga.



Fig. 1 A-B. *Cleptes pallipes* var. *androgyna* DU BUYSSON, **A.** Habitus, dorsal view; **B.** Habitus, lateral view. Scale bar = 1.0 mm.

Body length: 5.7 mm.

Head. Appearance female-like (Figs. 1A, 2A, 2C). Head colour golden-red, on occiput purple-red. Face with a mix of male and female characters: right side female-like, with red colour and a median black spot, as typical for females; left side mostly male-like, largely blue, with shortened malar space, deforming the clypeus shape. Head without clear sexual dimorphic evidences in punctation: moderately punctate, with even punctures and interstices between punctures 1-2 PD wide and polished. Mandible brownish, proximally metallic. Antennae female-like, with scape, pedicel, first and

second flagellomeres yellowish, the third one brownish, and the followings brown; flagellomeres shortened and broadened, first flagellomere 1.0 MOD, second and third about 0.5 MOD (vs. elongate and black male flagellum, with first flagellomere almost 2.0 MOD, second and third slightly more than 1.0 MOD).

Mesosoma. Male-like, except for: unusual sculpture of mesopleuron, latero-ventrally with large and elongate foveae and postero-ventrally still with elongate foveae and striae; wings slightly banded as in the female; mid- and hind-femora dorsally light brown, not dark brown and without metallic reflections. Pronotum posteriorly with row of few large, yet shallow, foveae; mesonotum sparsely punctate with polished interstices 2–3 PD wide. Propodeum dorsally with irregular rugose carinae. Lateral propodeal teeth acute and divergent, outwards directed. Pubescence on mesosoma yellowish. Femora dorsally brown, ventrally bluish, tibiae and tarsi light brown.

Metasoma. Male-like, with five visible terga; first three terga orange-brown; the last two entirely metallic blue. First tergum proximally polished, with sparse puncture on posterior half; second and third tergum with small, scattered punctures with interstices 1–3 PD wide; fourth tergum with denser and deeper punctures. All metasomal segments with a large impunctate stripe along posterior margin. Pubescence yellowish. Genital capsule not examined for risk of damaging the specimen.

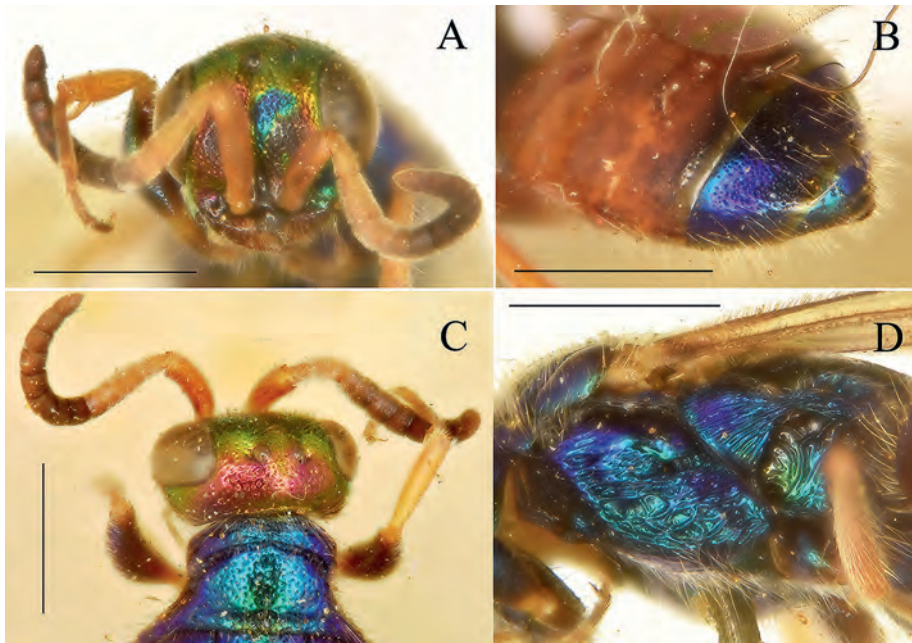


Fig. 2 A-D. *Cleptes pallipes* var. *androgyna* DU BUYSSON, **A.** Head and pronotum, dorsal view; **B.** Head, frontal view; **C.** Metasoma, dorso-lateral view; **D.** Mesopleuron, lateral view. Scale bar = 1.0 mm.

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Zusammenfassung

Die Untersuchung des Typus von *Cleptes pallipes* var. *androgyna* DU BUYSSON, 1896 hat ergeben, dass es sich um ein gynandromorphes Exemplar von *Cleptes semiauratus* (LINNAEUS, 1761) handelt. Diese Goldwespenart zeigt hinsichtlich Färbung und Morphologie einen starken Sexualdimorphismus. Das Typusexemplar ist ein "Mosaik-Gynander" mit hauptsächlich männlichen Eigenschaften, aber auch einigen Weibchen-Merkmalen auf Kopf, Mesosoma und Metasoma. Das in Mecklenburg, Deutschland, gefangene Exemplar ist erst der zweite Gynander, der in der Gattung *Cleptes* LATREILLE, 1802 bekannt wurde. Der Name *androgyna* wurde von keinem Folgeautor je verwendet, ist aber als vor 1961 beschriebene Variation ein verfügbarer Name der Artgruppe.

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