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## The Madeiran species of *Dilophus* MEIGEN (Diptera, Bibionidae)

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*Dilophus maderae* WOLLASTON is removed from synonymy with *D. femoratus* MEIGEN and reinstated as a good species; *D. maderae* is redescribed, figured and a lectotype is designated. An other species of *Dilophus*, *D. oceanus* sp. nov., is described as new and figured. A key to males of *Dilophus* from Madeira is provided.

Keywords: Bibionidae, *Dilophus*, systematics, new species, Madeira

### INTRODUCTION

The family Bibionidae is poorly represented on Madeira, in contrast to the Canary Islands where four species are known to occur (BÁEZ 1984). The first *Dilophus* species recorded from Madeira was *Dilophus maderae* WOLLASTON (1858), then BECKER (1908) recorded also the widespread *D. femoratus* MEIGEN, 1804, which has been considered subsequently as the senior synonym of the former species.

In the course of the preparation of the chapter Bibionidae for the CDEPA (Catalogue of Diptera of Spain, Portugal and Andorra), material collected by one of us (MB) proved to belong indeed to two species with very distinctive genitalia, and different from *D. femoratus*. Examination of type material of WOLLASTON indicated that one of the two species collected belongs to *D. maderae*, which is thus removed from synonymy and redescribed. The second species, which appeared to be new, is described.

### MATERIAL AND METHODS

This study is based on recent material from the collection of the junior author (MB), deposited in the collections of the University La Laguna, Tenerife (ULL) and in the collection of the Muséum d'histoire naturelle de Neuchâtel (MHNN), and on type material from The Natural History Museum, London (NHM), where the collection of T.V. WOLLASTON is housed.

### TAXONOMY

#### ***Dilophus maderae* WOLLASTON, 1858 stat. nov. (Figs. 1-4)**

*Dilophus maderae* WOLLASTON 1858: 113, pl. V, fig. 1

*Type material*: The type serie in NHM consists of two male syntypes (J.E. CHAINEY pers com.). One of these specimens was made available to one of us (JPH). It is labelled: "1450 [on reverse of card

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where the specimen is glued] / Madeira: T.V. WOLLASTON B.M. 1855-7 [printed label] / Syntype [printed on round label circled with blue] / Syntype *Dilophus maderae* WOLLASTON det. J.E. CHAINEY 2000". This specimen is designated here as lectotype and has been labelled accordingly: "Lectotype *Dilophus maderae* WOLLASTON ♂ des. HAENNI & BAEZ 2000" [red label]. The specimen is glued on card and is in good condition. The tip of the abdomen was cut and macerated in KOH to allow study of genital structures, then put into a microvial with glycerine and fixed at the same pin as the card bearing the specimen.

*Additional material:* Madeira, Rabaçal, 10.VII.1990, leg. M. BÁEZ, 1 ♂ in coll. M. BÁEZ deposited in ULL.

*Diagnosis.* Among West-Palaeartic species of the *febrilis*-group (those species with only two sets of spines on fore tibiae), *D. maderae* is easily distinguished by yellow-brownish tinged wings with conspicuous brown pterostigma and contrasting brownish hind veins, and by its small size. The only other West-Palaeartic species with a rather similar coloration of wings is *D. beckeri* HARDY from the Canaries, from which it differs notably in possessing elongated, nearly straight and apically pointed gonostyles (Fig. 2) (these are angled at two-thirds of their length and more or less rounded apically in *D. beckeri*).

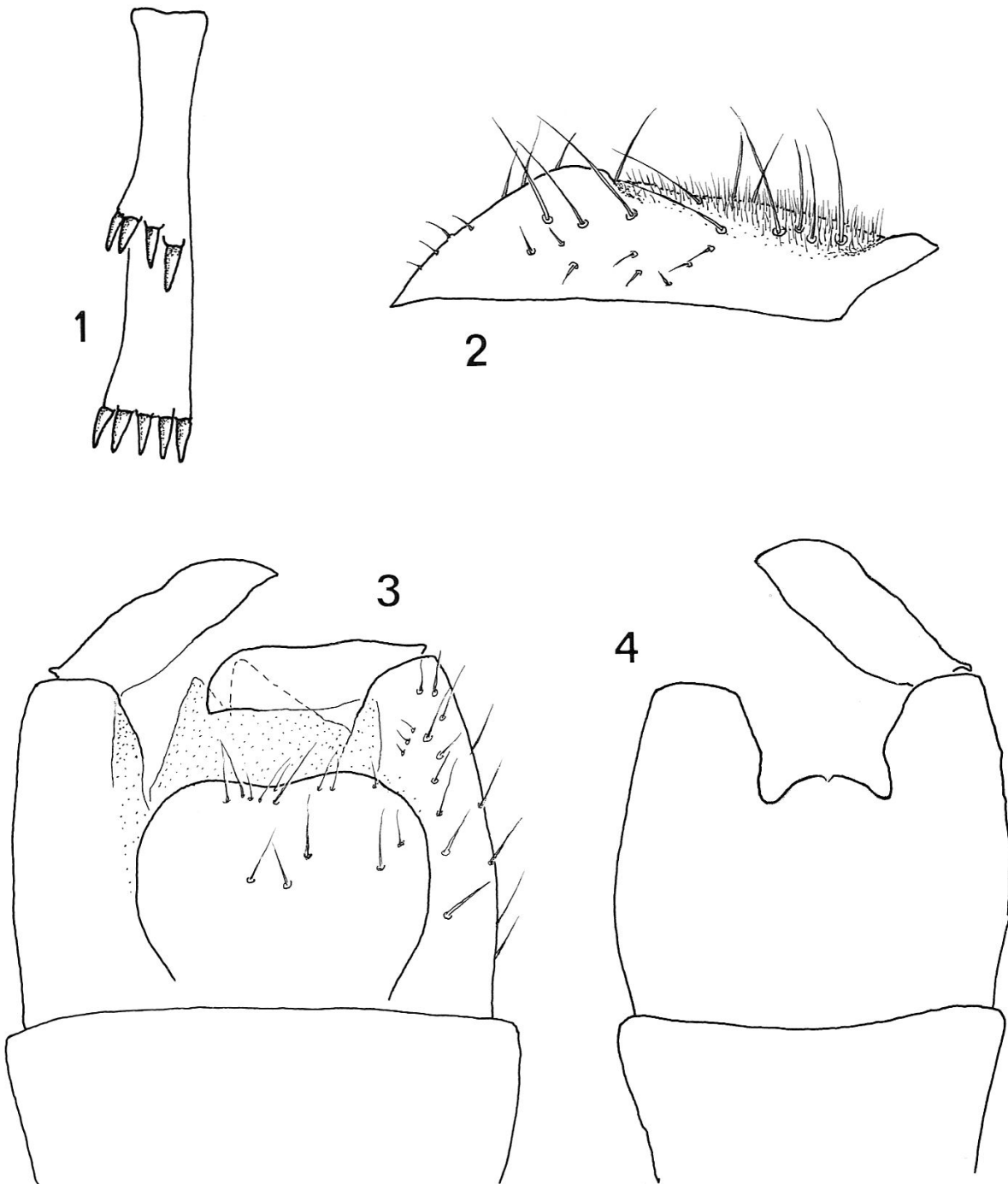
*Description.* Male: 4.2 mm long, black in general colour with light pilosity. Head black, rostrum hardly extending beyond base of antennae. Antennae 11-segmented, first flagellar segments distinctly separated, last segment hardly separated from penultimate. Thorax black, shining including pleurae; pronotum with a transverse row of 10 spines, anterior margin of mesonotum with a row of 18 smaller spines. Wings 3.8 mm long, light brownish, pterostigma dark-brown, well-marked, anterior veins brownish black, posterior veins brownish, contrasting with membrane. Halteres brownish-black with black stem. Legs black, with anterior femora brownish medially; anterior tibia (Fig. 1) bearing 2 rows of well-developed spines, a transverse median set of 4 spines with the anterior slightly more apical than the 3 others, and an apical set of 8 spines; hind tibiae and tarsi not modified. Abdomen black, less shining than thorax. Hypopygium with posterior margin of sternite 9 bearing a deep posterior median emargination, reaching about 1/3 of the length of sternite (Fig. 4); tergite 9 with posterior margin more or less straight (Fig. 3); gonostyles (Fig. 2) elongated, practically straight, apically pointed.

Female: unknown.

*Ecology.* According to WOLLASTON (1858) the species inhabits the sylvan districts of intermediate elevations (S. Antonio de Serra, Ribeiro Frio, etc.) of Madeira. The recently collected specimen was caught in a laurel forest at Rabaçal.

*Distribution.* *Dilophus maderae* is known so far only from Madeira.

*Discussion.* Due to the very scanty original description, *D. maderae* was not recognized by subsequent authors. However, based on the figure of the original description, BECKER (1908) stated that *D. maderae* differs from *D. femoratus* by the presence of well-marked stigma. DUDA (1930) indicated that *D. maderae* might be a synonym of *D. minor* BECKER [that is *beckeri* HARDY] from the Canary Islands, which has also yellow-brownish wings with dark pterostigma in male sex; this opinion was followed by FREY (1949). But HARDY (1951) considered that "WOLLASTON's *maderae* is evidently a synonym of *femoratus*" although he didn't see any specimen from Madeira, and this synonymy was followed by KRIVOSHEINA (1986) in chapter Bibionidae of Catalogue of Palaeartic Diptera.



Figs 1-4. *Dilophus maderae* WOLLASTON, holotype. 1: Right anterior tibia; 2: Left gonostyle, dorso-lateral view; 3: Hypopygium, ventral view; 4: Hypopygium, diagrammatic dorsal view.

As can be seen by examination of genital characters, *D. maderae* seems closely related to *D. femoratus*, but the shape of the gonostyle is clearly distinct in the two species. These differ also notably in characters of the wing, which has the membrane tinged, pterostigma well marked and hind veins contrasting with membrane in *D. maderae*, and membrane milky-white, pterostigma very inconspicuous and hind veins translucent not contrasting with membrane in *D. femoratus*. As pointed by DUDA (1930), *D. maderae* resembles also *D. beckeri* which has similar wing characters, but very distinctive gonostyle.

No other European or North African species of the *febrilis*-group as defined by HAENNI (1981, 1982) fits with these characters.

***Dilophus oceanus* sp. nov. (Figs 5-8)**

*Type material*: Holotype ♂ labelled "Madeira: Camacha, 9.VII.1990, M. BÁEZ / Holotype *Dilophus oceanus* sp. nov. ♂ HAENNI & BÁEZ 2000 [red label]" in good condition (except for broken left mid tarsus), in coll. M. BÁEZ deposited in ULL. The tip of the abdomen was cut and macerated in KOH to allow study of genital structures, then put into a microvial with glycerina fixed at the same pin as the specimen. Paratype ♂ labelled "Madeira: Camacha - Santo da Serra, 21.VIII.1989, M. BÁEZ / Paratype *Dilophus oceanus* sp. nov. ♂ HAENNI & BÁEZ 2000 [red label]" in good condition, deposited in MHNN.

*Etymology*. The epithet *oceanus* refers to the geographic position of the island of Madeira in Atlantic Ocean.

*Diagnosis*. Among the species with 2 rows of spines on anterior tibiae, *D. oceanus* appears closely related to *D. humeralis* ZETTERSTEDT, from which it can be clearly distinguished by the shape of gonostyle which is much more enlarged apically in *D. oceanus* (Fig. 6). It would run to *D. humeralis* in both the keys to North African species of the *D. febrilis*-group (HAENNI 1981) and to European species of the same group (HAENNI 1982).

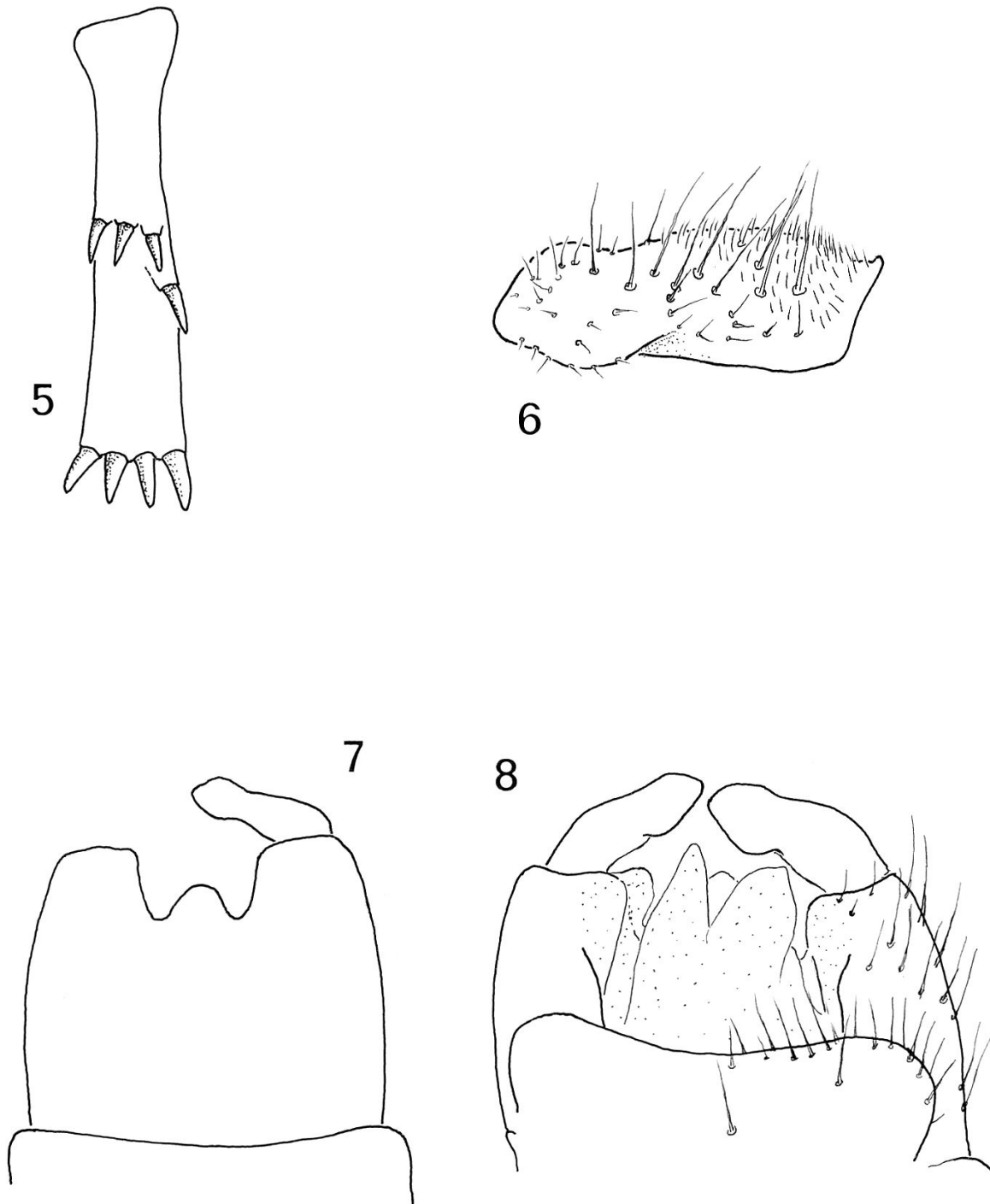
*Description*. Male: 4.3-5.0 mm long. Black in general colour with white pilosity. Head shining black, with rostrum very short, not extending beyond base of antennae. Antennae 11-segmented, flagellar segments closely jointed, difficult to count. Thorax including pleura shining black. Pronotum with a transverse row of 8-11 spines, anterior margin of mesonotum with a transverse row of 11-12 smaller spines. Wings 3.6-4.6 mm long, slightly milky-white, with nearly inconspicuous pterostigma, brown anterior veins and translucent posterior veins. Halteres brownish-black with black stem. Legs black, except front femora brownish, mid and hind femora brownish-black. Anterior tibia (Fig. 5) bearing 2 rows of strong spines, a transverse median set of 4 spines with the anterior one conspicuously more apical than the others, and an apical set of 8 spines. Hypopygium with ergite 9 with a shallow undulated median emargination on posterior margin, reaching about 1/4 of the length of the tergite (Fig. 7); sternite 9 broad, with a nearly straight posterior margin (Fig. 8); gonostyles (Fig. 6) straight, with a central constriction, apically enlarged and rounded.

Female: unknown.

*Ecology*. The two known specimens were collected in a mixed secondary forest of pine and *Eucalyptus* in the Levada dos Tornos, between Camacha and Santo da Serra.

*Distribution*. The new species is presently known only from the type locality on the island of Madeira.

*Discussion*. This new species may be the species recorded under the name *Dilophus femoratus* MEIGEN by BECKER (1908), since the external appearance of *D. oceanus* is very close to that of *D. femoratus* (wing membrane clear, somewhat milky, hind veins colourless, pterostigma inconspicuous). The gonostyle of the new species is however very different from that of *D. femoratus*, which is apically angled and club-shaped. Considering the genital characters, the new species appears to be



Figs 5-8. *Dilophus oceanus* sp. nov., holotype. 5: Right anterior tibia; 6: Left gonostyle, dorso-lateral view; 7: Hypopygium, diagrammatic dorsal view; 8: Hypopygium, ventral view.

more closely related to *D. humeralis*. It could also be considered as a subspecies of the latter, but genital characters appear sufficiently distinct to deserve a specific status for this taxon. It is likely that *D. oceanus* is also an endemic element of Madeira, but this hypothesis will have to be tested by further collecting in North Africa and Macaronesia.

*Key for the identification of Dilophus of Madeira (males only)*

- 1 Wings slightly tinged with yellowish-brown, with well marked pterostigma and contrasting hind veins; gonostyles elongated, pointed at apex (Fig. 2) .....*D. maderae* WOLLASTON, 1858  
- Wings slightly milky white, with pterostigma inconspicuous and hind veins colourless; gonostyles somewhat constricted after the middle, inflated and rounded apically (Fig. 6) .....*D. oceanus* sp. nov.

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RÉSUMÉ

Les espèces de *Dilophus* de Madère (Diptera, Bibionidae) - *Dilophus maderae* WOLLASTON, considéré comme un synonyme de *D. femoratus* MEIGEN, est revalidé, redécrit et illustré; un lectotype est désigné pour cette espèce. Une autre espèce de *Dilophus*, *D. oceanus* sp. nov. est décrite et figurée. Une clé pour la séparation des mâles des 2 espèces est donnée.

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