Deimyia villosa gen. nov., spec. nov. (Diptera, Mycetophilidae) from Taiwan, with notes on its systematic position

[*Deimyia villosa* gen. nov., spec. nov. (Diptera, Mycetophilidae) aus Taiwan, mit Anmerkungen zu ihrer systematischen Stellung]

by
Uwe KALLWEIT

Dresden (Germany)

Abstract A **new genus** and **species**, ***Deimyia villosa***, is described from Taiwan. It appears to be allied to the more primitive forms of the provisional taxon Gnoristinae and is characterized by the completely fused face and clypeus, shortened hind coxae and a short, strongly angled wing vein CuA_2.

Key words Diptera, Mycetophilidae, taxonomy, new genus, new species, Oriental region, Taiwan

Zusammenfassung Eine **neue Gattung** und **Art**, ***Deimyia villosa***, wird von Taiwan beschrieben. Sie gehört wahrscheinlich zu dem provisorischen Taxon Gnoristinae und ist durch die Verschmelzung von Praefrons und Clypeus, kurze Hinterhüften und die stark gewinkelte Flügelader CuA_2 gekennzeichnet.

Stichwörter Diptera, Mycetophilidae, Taxonomie, neue Gattung, neue Art, Orientalis, Taiwan

Introduction

While studying the genus *Boletina* and its relationships, I received a few specimens of a strange-looking species from Taiwan. These were found among a collection of sciarid flies on loan from the Bishop Museum in Honolulu to Dr FRANK MENZEL in Eberswalde, who kindly forwarded them to me for study. The material is rather damaged and no specimen is complete, but a full suite of characters can be compiled from study of all the specimens. In the course of this, I found that the species is distinct from the described species of Mycetophilidae and cannot be fitted into any of the existing genera without an unacceptable broadening of generic diagnoses. It has thus been necessary to describe the species into a new genus which may be important for further studies into the phylogenetic relationships within the Mycetophilidae because it shows a rather ancestral character-set.

Methods

The specimens were mounted in Canada balsam. Some parts of the mostly dissected specimens were removed for examination and then remounted. The terminology follows MCALPINE (1981), unless otherwise stated. The species description is a composite of the four male specimens examined.

Genus *Deimyia* gen. nov.

Type species: *Deimyia villosa* spec. nov.

Description. Head: with three ocelli. Lateral ocelli well separated from eye margin. Frons bare. Face and clypeus completely fused, forming a rather large, subquadrate sclerite; the clypeal part very slightly prominent and with several setae; face possibly completely divided into two lateral parts. Palpus with three visible palpomeres, the basal palpomere with

a large shallow sensory pit. Antennae with 14 flagellomeres. Postcranium and genae bristled. With a distinct furrow between median ocellus and tip of frontal tubercle. No suture present between eye margin and lateral ocellus. Scutum with relatively short acrostichal, dorsocentral and sublateral setae, the intervening areas bare. Scutellum with several setae of equal length scattered over upper half of the sclerite. Prosternum, mesopleuron, mediotergite, laterotergites and metepisternum bare. Proepisternum with several bristles. Lower part of mesepimeron strongly narrowed and backwardly-directed, finally disappearing, ending far from mid coxa. Metepisternum about as high as wide, hind coxa about twice as long as metepisternum is high. Without setae present behind base of haltere. Wings with dense and remarkably long microtrichia, membrane without macrotrichia. Microtrichia irregularly arranged. R, R_1, R_5, distal part of r-m, M-branches, CuA_1, CuA_2 and anal vein with strong setae above. Sc and R_1 with few setae ventrally, other veins bare ventrally. Recurved sensory setae on costa not visible. C ending halfway between R_5 and M_1, stopping almost exactly at wing tip. Sc long, ending free about halfway between wing base and base of Rs. Rs distinct, about 1/4 as long as crossvein r-m. R_5 and all postradial veins conspicuously curved backwards. Apical quarter of CuA_2 running exactly vertical to anterior wing margin. M1 about 2.5 times as long as m-stalk, M_2 a little shorter. Bifurcation of CuA distinctly in front of base of crossvein r-m. Number of tibial spurs 1:2:2. Anteroapical tibial organ distinct, without conspicuous apical comb, with many relatively strong hairs scattered over its surface. Tibial setulae irregular, no stronger tibial setae (with distinct alveoli) on fore tibiae; a few on mid tibiae and some more on hind tibiae, not arranged in distinct longitudinal rows, more or less scattered over the tibia. Empodium well developed. Hind coxa about 0.6 times as high as scutellum and mediotergite together, much shorter than fore and mid coxae, only at extreme tip with a few bristly-hairs. The abdomen on sternites 2-8 with a pair of pale, well defined, submedian fold-lines. Abdominal segments 7-8 not conspicuously reduced and probably not retractable. Male tergite 9 small, square. Gonocoxal apodemes long, distally passing into a roof-like gonocoxite-bridge. This bridge is well sclerotized and firmly connected to the ventrally fused gonocoxites by a membraneous zone.

Etymology. The generic name *Deimyia* derives from the acronym DEI, for Deutsches Entomologisches Institut, and the Greek word *-myia* (fly); it is feminine in gender. I take pleasure in naming the genus after this institution, in recognition of its support for dipterological research.

Diagnosis. The genus *Deimyia* is well separated from the other genera of Mycetophilidae s.str. by the following set of apomorphous character-states:

- face and clypeus completely fused, forming a rather large, subquadrate sclerite
- hind coxa about 0.6 times as high as scutellum and mediotergite together, much shorter than fore and mid coxae
- apical quarter of CuA_2 running almost exactly vertical to anterior wing margin, ending at level of Rs, while CuA is rather short, about a third as long as CuA_1

Deimyia villosa spec. nov.

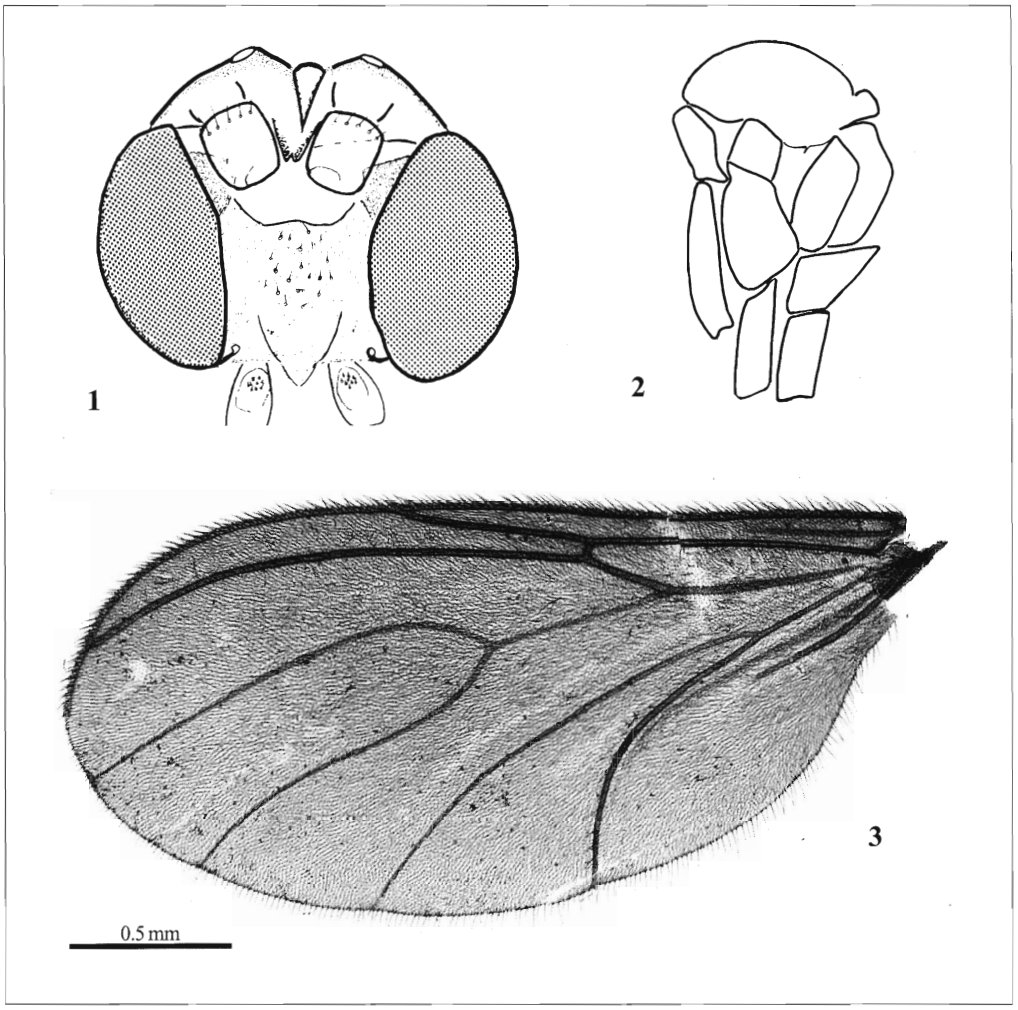
(Figs 1-6)

Specimens examined: male holotype and three male paratypes [Figs 1-6] collected in Taiwan: Kwantzeling, Tainan Hsien at an elevation of 250 m, 6.-7.iv.1965, deposited in the Bishop Museum, Honolulu.

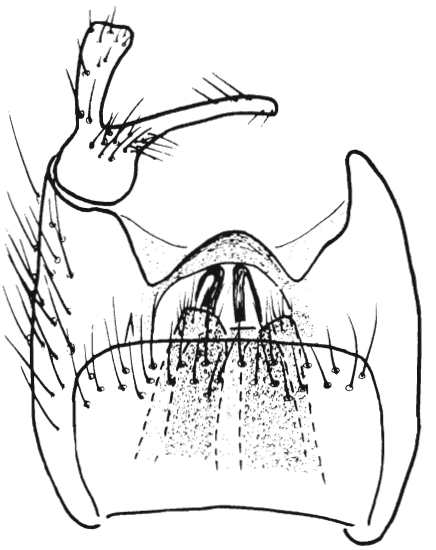
Description

Male. Head (Fig. 1): Head capsule, palpi, labella and antennae brown. Ocelli three, the median one about half the diameter of each lateral one, the latter separated from the eye margin by about 2.5 times, and from the median ocellus by about 1.5 times its own diameter. Compound eyes very slightly emarginate above base of antennae, sparsely covered with fine hairs. The apical two palpomeres 1.5 times as long as the basal palpomere. The large pit of the basal palpomere with 8-9 sensory setulae. All flagellomeres with a rugose surface. Flagellomeres 2-13 about 2-2.5 times as long as broad, flagellomeres 1 and 14 only slightly longer. Scape, pedicel and all flagellar segments hairy. Antenna about 2.2 times as long as thorax.

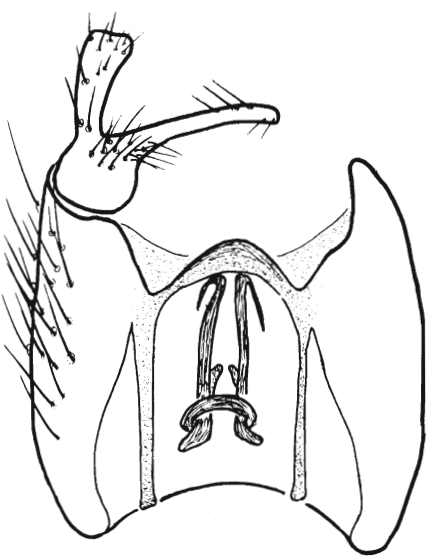
Thorax (Fig. 2): Uniformly brown. Anepimeral cleft not visible. No prescutal suture. Membrane between tergite 1 and metanotum with two conspicuous submedian setae. Preepisternum 2 (sensu Söli 1997) posteriorly enlarged. Above the suture between metepimeron and metanotum



Figs 1-3: *Deimyia villosa* spec. nov., male. – **1**: head, anterior view; – **2**: thorax, lateral view; – **3**: wing, dorsal view.

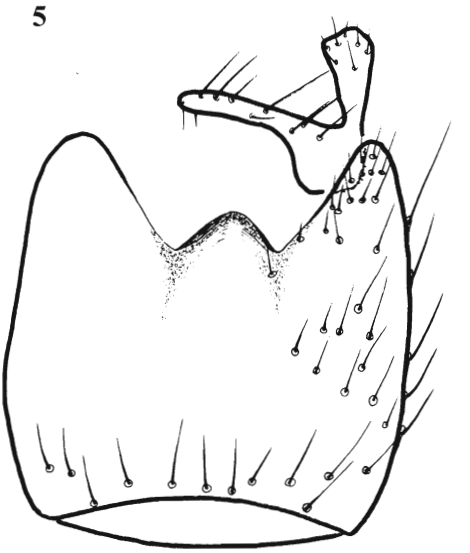


4



5

0.1 mm



6

Figs 4-6: *Deimyia villosa* spec. nov., male. – **4**: terminalia including tergite 9 and proctiger, dorsal view; – **5**: terminalia, tergite 9 and proctiger removed, dorsal view; – **6**: terminalia, ventral view.

with an exceptionally prolonged process. **Wings** (Fig. 3): Length 2.8 mm. Wings entirely brownish, with pale lines between R_5 and M_1, M_2 and CuA_1, CuA_1 and CuA_2, CuA_2 and CuP and behind A. Microtrichia irregularly arranged. CuA_2 much stronger than CuA_1. M-branches reaching wing margin. CuP ending slightly beyond r-m base and An ending at about level of CuA-furcation. Haltere brown. In comparison with the whole body, the wings are relative large. **Legs**: Entirely brown. Fore tibia very slightly longer than fore femur. Spurs brown, with brown vestiture. Length of tibial spurs subequal to maximum width of tibial apex. Tibial setae

rather weak; fine tibial setae without or with indistinct alveoli hardly distinguishable from stronger setae. Tarsal claws each with one large and two much smaller ventral teeth. Mid tibia swollen, the swelling with a "sense organ" situated slightly above middle of tibia.

Abdomen: All abdominal segments brown, including terminalia. Tergites sparsely covered with long setae. Abdominal segments 7-8 not conspicuously reduced and not retractable; the degree of accuracy of the segment measurements is low, because the abdomen of each specimen had been cut at this point before I made my examination, but I am reasonably confident that segments 7-8 are at most slightly shortened and are not considerably retractable. Terminalia (Figs 4-6) medium sized. Tergite 9 small, square, twice as wide as long, almost covering cerci and proctiger. Gonocoxites fused ventrally. Gonocoxal apodemes long, proximal well separated and distally passing into a roof-like gonocoxite-bridge. This bridge is well sclerotized and connected to gonocoxites by a membraneous zone. Aedeagal apodeme short, aedeagus not found; parameral apodemes connected basally by a strong bridge, parameres somewhat longer than gonocoxites. Gonostylus bilobate, with several scattered setae, outer lobe blunt, inner lobe pointed.

Female. Unknown.

Distribution. The species is known only from the type locality in Taiwan.

Etymology. The species name is derived from the Latin *villosus* (shaggy), because the thorax and wings of the specimens are densely covered with conspicuously long microtrichia.

Remarks. All the specimens are defective. The holotype has the following parts missing: right wing, apical four tarsomeres of right fore leg, right hind leg, left fore tibia and tarsus, apical 9 flagellomeres of the right antenna, all flagellomeres of the left antenna. Head capsule and thorax slightly damaged.

Discussion

Deimyia is defined by three probable autapomorphies, as listed in the diagnostic section. Furthermore, the lack of recurved sensory setae on the costal vein is a strong apomorphous character, even if these setae may be hidden by being more straight in this case, which means they are present somewhere but not obvious. The genus shows some resemblance to the *Tetragoneura*-complex, but is distinct in several characters such as the wing venation, the form of the thoracic sclerites and legs, and the vestiture. It fits well into the Gnoristinae sensu VÄISÄNEN (1986), as one of the more ancient members. It differs from this group in having two sternal fold lines and in the vestiture of the hind coxae. In my opinion the fold lines are part of the ground-plan of the Mycetophilidae, and the coxal setae may have been reduced together with the length of the coxae. *Fenderomyia* SHAW, 1948, the possible sister-taxon of *Macrocera* MEIGEN, 1803 (Keroplatidae), shows a similar combination - the shortening of the hind coxae and the reduction of the coxal setae, thus being convergent evolution (MATILE 1997). However, the group Gnoristinae is undoubtedly paraphyletic, as shown by SÖLI (1997), and further investigation is needed to arrive at a natural grouping of the Mycetophilidae s. str.

Acknowledgements

I thank Dr FRANK MENZEL of the Deutsches Entomologisches Institut im ZALF e.V., Eberswalde, and Dr. NEAL L. EVENHUIS of the Bishop Museum, Honolulu, who kindly made available the specimens described here. Dr ADRIAN C. PONT is thanked for the critical comment on the manuscript and LOUIS GIBB of BIOSIS UK for technical help.

Literature

MATILE, L. (1997): *Fenderomyia* SHAW, a valid North American taxon in Macrocerinae. – Proceedings of the Entomological Society of Washington **99**: 50-54; Washington, DC.

MCALPINE, J. F. (1981) Morphology and terminology - Adults. – Pp. 9-63 in: MCALPINE et al. (eds): Manual of Nearctic Diptera. 1. – Research Branch Agriculture Canada, Monograph **27**: Ottawa.

SÖLI, G. E. E. (1997) On the morphology and phylogeny of Mycetophilidae, with a revision of *Coelosia* WINNERTZ (Diptera, Sciaroidea). – Entomologica scandinavica Supplement **50**: 1-139; Copenhagen.

VÄISÄNEN, R. (1986) The delimitation of the Gnoristinae: criteria for the classification of recent European genera (Diptera, Mycetophilidae). – Annales Zoologici Fennici **23**: 197-206; Helsinki.

Author's address

Uwe KALLWEIT
Staatliche Naturhistorische Sammlungen Dresden
Museum für Tierkunde
Königsbrücker Landstrasse 159
D-01109 Dresden
Germany
E-mail: kallweit@snsd.de

The paper was accepted on 22 July 2001.
Editum: 31 January 2002.