

Redescription of the holotype of *Lichtwardtia formosana* (Diptera: Dolichopodidae), with new data on its synonymy

Переописание типового экземпляра *Lichtwardtia formosana* (Diptera: Dolichopodidae) с новыми данными к синонимии вида

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The type specimens *Lichtwardtia formosana* Enderlein, 1912 is redescribed, including a study of morphology of the hypopygium. The species *L. taiwanensis* Zhang, Masunaga & Yang, 2009 is considered as a synonym of *L. formosana*.

Приведено переописание голотипа *Lichtwardtia formosana* Enderlein, 1912, которое включает описание гипопигиума. Название *Lichtwardtia taiwanensis* Zhang, Masunaga & Yang, 2009 синонимизировано с *L. formosana*.

Key words: redescription, holotype, Oriental Region, Dolichopodidae, *Lichtwardtia*

Ключевые слова: переописание, голотип, Ориентальная область, Dolichopodidae, *Lichtwardtia*

INTRODUCTION

The genus *Lichtwardtia* was described by Enderlein (1912) in the subfamily Dolichopodinae with type species *Lichtwardtia formosana* Enderlein, 1912. Becker (1922) considered this species as synonym of *Dolichopus ziczac* Wiedemann, 1824 without study of the type specimen of the former. The description of the species in the work of Wiedeman (1824) is very short and based only on a female. The complete description of a male of this species is given in the description of the genus *Dolichopus* Latreille, 1796 in the monograph of T. Becker (1922). Later, Hollis (1964) transferred *D. ziczac* to genus *Lichtwardtia* from the genus *Vaalimyia* Curran 1926. Brooks (2005) considered *Lichtwardtia* as synonym of *Dolichopus*, but other authors considered *Lichtwardtia* as a separate genus (Grichanov, 2004; Zhang &

Yang, 2005). Negrobov (1979) suggested to consider *Lichtwardtia* as the subgenus of *Pterostylus* and noted that *Lichtwardtia* is also closely related to *Poecilobothrus* and *Dolichopus*. The world fauna of *Lichtwardtia* includes 21 species; 16 of them are known from the Afrotropical Region (Grichanov, 1998, 2004), four species are present in the Oriental Region (Zhang & Yang, 2005; Zhang et al., 2009) and one species is known from Australia.

MATERIAL AND METHODS

The present paper is based on study of the specimen from the Museum and Institute of Zoology, Polish Academy of Sciences, Warszawa, Poland (MIZ PAS). Terminology of parts of the hypopygium follows Negrobov & Stackelberg (1971).

RESULTS

Order **DIPTERA**

Family **DOLICHOPODIDAE**

Genus *Lichtwardtia* Enderlein, 1912

Lichtwardtia formosana Enderlein, 1912,
reestablished name
(Figs 1–5)

Lichtwardtia formosana Enderlein, 1912: 407.

Lichtwardtia taiwanensis Zhang, Masunaga & Yang, 2009: 199, **new synonym**

Material examined. Holotype. Male, “Formosa [China: Taiwan], Takao [province], 21.12. [19]07, leg. H. Sauter S.” / “*Lichtwardtia formosana* Enderlein, det. Dr. Enderlein“ [orange label]; MIZ PAS.

Description. Frons metallic shining, violet, green along its margins, with insignificant dust. Face silver-white, with parallel margins converging in upper third of the head. Ends of face margins lie before lower margin of the eye. Eye as wide as 1st flagellomere. Antennae yellow, most of its 1st flagellomere dirty yellow (Fig. 4). Ratio of length of 1st flagellomere to its width and to length of arista is 1.2:1.4:5.1. Arista with long hairs, each of them approximately three times as long as basal diameter of arista. Palpus yellow, with white hairs and one strong black bristle. Proboscis dirty yellow. Upper postocular bristles black, lower bristles white, uniseriate.

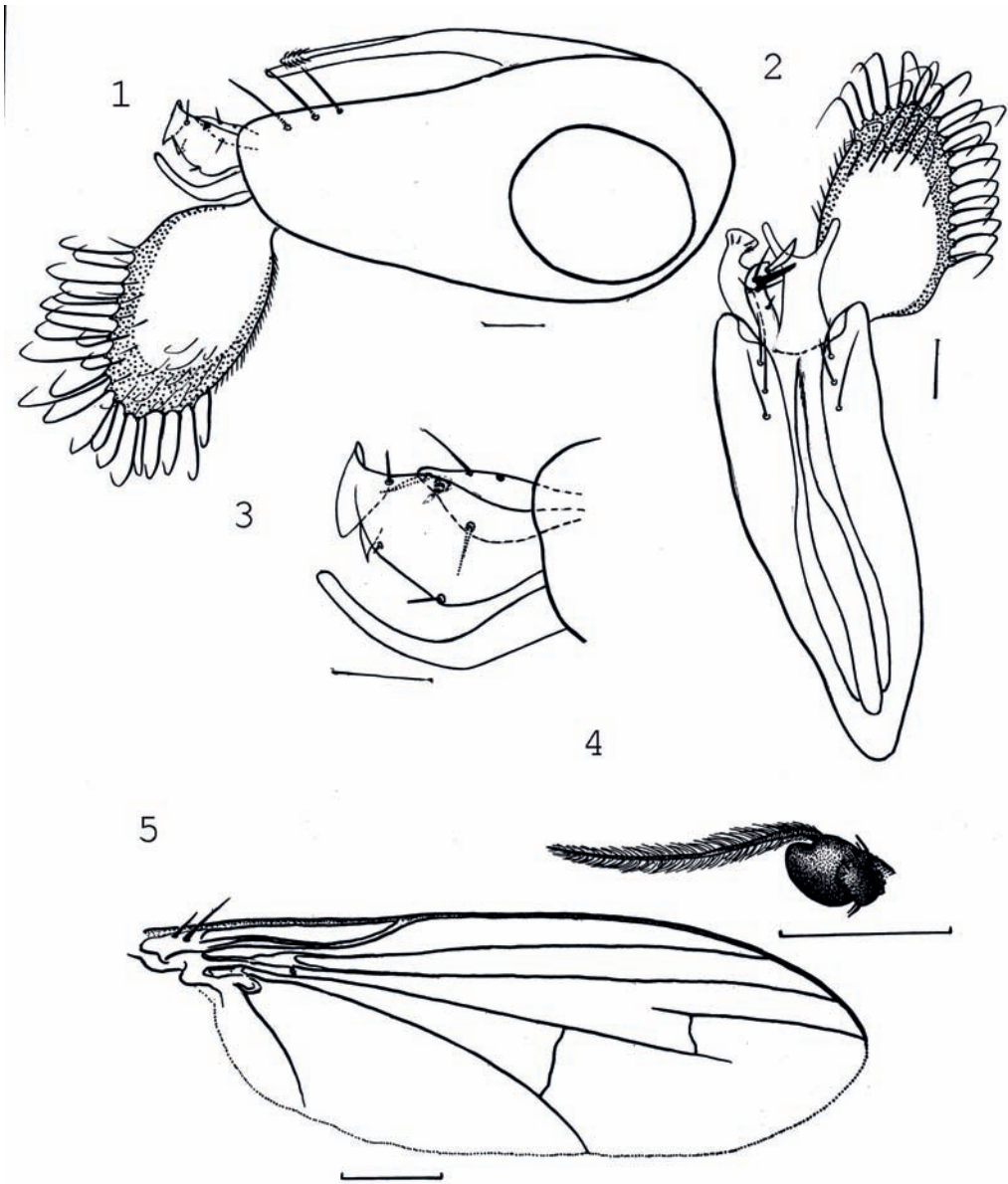
Mesonotum violet, with green tints, without dust. Thorax pleurae with dense grey dust. Six pairs of dorsocentral bristles. Acrostichal bristles well developed and arranged in two rows. Propleuron with single strong black bristle. Scutellum with two strong setae and two small setae on its lateral margins.

Legs including coxae yellow, basal two-thirds of middle femora and basal part of hind femora dark. Coxae with black bristles and hairs. Hind coxae with one strong and one small bristles on outer surface. Femur ventrally without long hairs, fore femur with short bristles near its apex, middle and hind

femora with 1 strong apical bristle on outer surface. Fore tibia with two anterodorsal bristles, two posterodorsal bristles, one posteroventral bristle, row of short anterodorsal setae on apical half, one strong anteroventral bristle and one strong posteroventral bristle. Anteroventral apical bristle curved and longer than posteroventral bristle. Ratio of fore tibia length to length of 1–5 joints of fore tarsi 7.5:4.2:1.7:1.3:0.8:0.9. Middle tibia with three anterodorsal bristles, two posterodorsal bristles, one anteroventral bristle, and four strong and long apical bristles. Ratio of middle tibia length to length of 1–5 joints of middle tarsi 10.8:5.8:2.8:2.5:1.6:1.2. Hind tibia with four anterodorsal bristles, four or five posterodorsal bristles, three or four short anteroventral bristles and two long ventroapical bristles. First joint of hind tarsus with one strong dorsal bristle, row of short posterodorsal bristles and short black anterodorsal bristle in basal part. Second joint of hind tarsus with two short ventral bristles; third joint with three short ventral bristles; and fourth joint with one short ventral bristle. Ratio of hind tibia length to length of 1–5 joints of hind tarsi as 12.0:4.6:5.1:3.9:2.4:2.2.

Wings transparent, with yellow veins. Costa simple (Fig. 5). Vein M_{1+2} with sharp bend in apical part. M_{1+2} interrupted in middle of its distal part and connected to costal vein in apical part of wing. Apical segment of M_{3+4} as long as cross vein *m-cu* (proportion between them 2.9:3.0). Halteres yellow. Calypter yellow, with black bristles.

Abdomen metallic green, with tints of violet, with fine silver dust on lateral surfaces, black hairs and marginal setae. Eight segment of abdomen black, with black hairs. Epandrium elongate-oval, narrowed distad, black, approximately two times as long as wide (Figs 1, 2). Phallus thin, with small denticles before its apex. Hypandrium brown. Surstylus undeveloped, with three strong epandrial setae on apical part of epandrium. Ventral lobe of gonopodes oval, approximately twice as long as wide, with 2 ventral, 1 preapical and 1 dorsal small setae



Figs 1–5. *Lichtwardtia formosana* (holotype). **1, 2**, hypopygium; **3**, gonopodes and dorsal appendage; **4**, antenna; **5**, wing. Lateral view (1, 3, 4), ventral view (2) and dorsal view (5). Scale bars: 0.1 mm (1–3), 0.05 mm (4, 5).

(Fig. 3). Dorsal lobe of gonopodes broad, longer than ventral lobe, with dorsal and ventral notch before apex, and three marginal setae. Dorsal appendage hook-shaped. Cercus light, with black margins, elongate-oval, curved, with long marginal setae.

Body length 3.6 mm, length of wing 3.9 mm.

Taxonomic Notes. According to description of Becker (1922), *L. ziczac* has a white grey face which is 1.5 times as wide as the 1st flagellomere. The face of the holotype of

L. formosana is silvery white, shining, and its width approximately equals to length of the 1st flagellomere. *Lichtwardtia ziczac* and *L. formosana* are clearly different in morphology of the gonopodes, cerci and epanthrium. The degree of these morphological differences, in our opinion, is high enough to restore *L. formosana* as a distinct species.

Two more species of the genus *Lichtwardtia* – *L. dentalis* Zhang, Masunaga & Yang, 2009 from China (Yunnan) and *L. taiwanensis* Zhang, Masunaga & Yang, 2009 from Taiwan – have been described recently. When comparing the description and drawings of *L. taiwanensis* and *L. formosana* we did not find any differences between them, therefore we consider *L. taiwanensis* as a synonym *L. formosana*.

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