

***Helina subpyriforma* sp. n., a new muscid fly (Diptera: Muscidae) from Yunnan, China**

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Zhang, D., Li, K. & Wang, M. 2011: *Helina subpyriforma* sp. n., a new muscid fly (Diptera: Muscidae) from Yunnan, China. — Entomol. Fennica 22: 1–4.

Helina subpyriforma Wang sp. n., a species from Yunnan, China, is described and illustrated as new to science. The new species can be assigned to the *Helina quadrum*-group, based on male morphological and genitalic structures. The species is also incorporated into the existing key of *H. quadrum*-group (males) from China.

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Received 24 November 2010, accepted 21 February 2011

1. Introduction

Helina Robineau-Desvoidy, 1830, the second largest genus of the family Muscidae, occurs in all zoogeographic regions of the world and comprises over 520 species, the majority of which are from the Palaearctic region (Pont 1977–1989, Carvalho *et al.* 2005, Wang *et al.* 2008).

China belongs faunistically to two zoogeographic regions, namely the Palaearctic region and the Oriental region, and the greatest species diversity of *Helina* is found in China. According to present knowledge, some 200 species of *Helina* are known from China (Xue & Chao 1998, Xue *et al.* 2005, Wang *et al.* 2008).

Since Ringdahl (1924, 1949), there have been some reviews of the subgenera and species-groups of the genus *Helina* (van Emden 1951, 1965, Huckett 1965, Hennig 1957–1958, Wang *et al.* 2004–2008). While checking a series of *H. quadrum*-group specimens in the collections of the Institute of Entomology, Shenyang Normal University, Shenyang, China, we found one fur-

ther undescribed species, which is closely related to *Helina pyriforma* Feng & Xue, 2004 and *H. pardiabdominis* Xue & Li, 2000. Now, the *H. quadrum*-group comprises 19 Chinese species.

2. Material and methods

The single specimen of the new species examined in this study was collected by sweeping from brushwood in the mountainous region of Yunnan. Specimens along with the new species were dried and studied, and are deposited in the Institute of Entomology, Shenyang Normal University, Shenyang, China.

The external morphology was observed under a stereoscopic microscope Olympus SZX16 and metric characters were measured with an ocular micrometer. To observe the detailed characters of the male terminalia, these organs were detached from the body, cleared by warming in a 10% KOH solution (at approximately 100 °C) for five minutes, placed in glycerine, and observed under a compound light microscope.

Morphological terms follow McAlpine (1981), except that we follow Stuckenberg (1999) in using “postpedicel” for first antennal flagellomere. Absolute measurements are used for body length in mm. Abbreviations used for characters are: *a* = anterior seta, *acr* = acrostichal seta, *ad* = anterodorsal seta, *av* = anteroventral seta, *d* = dorsal seta, *dc* = dorsocentral seta, *ia* = intra-alar seta, *p* = posterior seta, *pd* = posterodorsal seta, *pra* = prealar seta, *pv* = posteroventral seta, and *v* = ventral seta.

Specimens of two described species related with the new one were examined. These were:

- *Helina pyriforma* Feng & Xue: holotype, male, CHINA: Sichuan: Mt. Erlang, alt. 2,740 m a.s.l., 20.VIII.1984, Coll. Y. Feng.
- *Helina paridiabdominis* Xue & Li: holotype, male, CHINA: Yunnan: Lushui: Liuku, alt. 2,400 m a.s.l., 15.V.1983, Coll. F.H. Li.

3. Description of *Helina subpyriforma* Wang sp. n. – Fig. 1

Type material. Holotype. ♂, China: Yunnan, Mt. Gaoligong (25°58'48"N, 98°48'36"E), alt. 3,500–3,600 m a.s.l., 25.VII.2005, Coll. H. Ao.

The type specimen is deposited in the Institute of Entomology, Shenyang Normal University, Shenyang.

Description. Male. Body length about 7.00 mm.

Head. Eyes with sparse and short hairs, facets a little expanded on anterior margin in upper part; frons slightly wider than the distance between outer margins of posterior ocelli, and about 1.20–

1.30 times as wide as postpedicel, frontal vitta black, at narrowest point as wide as fronto-orbital plate, 5–7 frontal setae, upper orbital setae absent, fronto-orbital plate and parafacial with greyish-brown pollinosity, parafacial about 1.20–1.30 times as wide as postpedicel; antenna black, postpedicel about 2.50 times as long as wide, arista with long plumes, the longest hair about 2.00 times as long as postpedicel width; lunule yellow; epistoma not projecting, vibrissal angle behind frontal angle in profile; gena with grey pollinosity, gena and metacephalon with black hairs, upper margin of gena with 2 rows of up-curved setae; proboscis short, labella large, prementum pruinose, about 2.00 times as long as high, palpus black, slender and long.

Thorax. Ground-colour black with dense grey pruinescence, scutum with four dark vittae in posterior view, the median pair not reaching scutoscutellar suture; presutural *acr* in 3 irregular rows and hair-like, only a pair of prescutellar *acr* longish, the distance between two *acr* rows narrower than the distance between *acr* row and *dc* row, *dc* 2+4, *ia* 0+2, *pra* hair-like; ventral and lateral margins of scutellum bare; basisternum, proepisternum, anepimeron, katepimeron and meron bare; katapisternal setae 2:2; anterior spiracle yellowish, posterior one brown.

Wings. Translucent, tegula and basicosta brownish-yellow, costal spine conspicuous, about as long as crossvein r-m, vein Sc sinuate, node of R_s bare, vein R_{4+5} and M slightly diverging from each other in distal part, crossvein r-m robust, crossvein dm-cu straight, crossveins without cloudy appearance; calypters yellowish, the lower one projecting beyond the upper one, haltere brownish-yellow.

Legs. Tibiae and apex of mid and hind femora

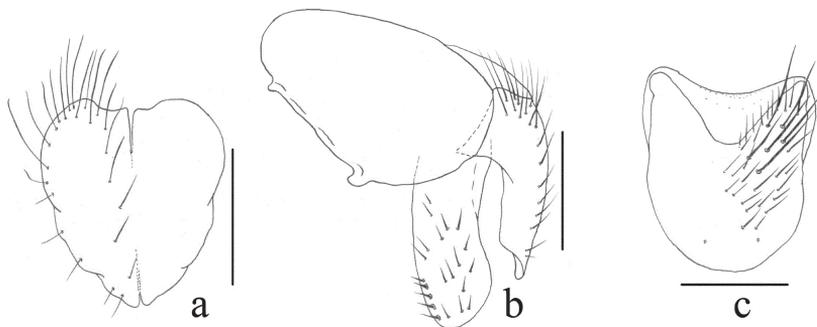


Fig. 1. *Helina subpyriforma* Wang sp. n., male holotype, from Yunnan, China. – a. Cercus, dorsal view, scale bar 0.25 mm. – b. Terminalia, lateral view, scale bar 0.25 mm. – c. Sternite 5, scale bar 0.40 mm.

yellow, the remaining parts black; fore tibia with 1 median *p*; mid femur with a row of *pv*, strong in basal half, fine towards apex, without *av*, mid tibia with 2 or 3 *p*; hind femur with complete *av* row, stout towards apex, *pv* row short and curved in distal 1/3, hind tibia with 2 or 3 *av*, 3 *ad*, without sub-basal *pd* and median *p* rows.

Abdomen. Conical, ground-colour black, with densely brownish-yellow pruinescence, without distinct median vitta and lateral marks; abdominal tergites 3 and 4 each with a pair of small spots; sternite 1 bare; cercus heart-shaped in dorsal view.

Female. Unknown.

Etymology. The species name means that it is similar to *Helina pyriforma*, especially in the male terminalia form.

Distribution. China (Yunnan).

Remarks. The new species belongs to the *Helina quadrum*-group. In Wang *et al.* (2006b), *H. subpyriforma* will key through the *H. quadrum*-group (males) to couplet 10. *H. subpyriforma* can be incorporated into the male key of Wang *et al.* (2006b) as follows:

10. Antenna entirely black 11a
 – Antennal scale and apex of pedicel brown; the longest arisal hair 1.8 times as long as postpedicel width; fronto-orbital plate 1.2 times as wide as postpedicel; prealar hair-like *H. pyriforma* Feng & Xue
 11a. The longest arisal hair as long as postpedicel width; prealar 2/3 to 3/4 as long as second notopleural seta; abdominal tergite 4 with inconspicuous spots *H. ciliata* Karl
 – The longest arisal hair over 1.5 times as long as postpedicel width 11b
 11b. The longest arisal hair 1.5 times as long as postpedicel width; abdominal tergite 4 with a pair of spots *H. paridiabdominis* Xue & Li
 – The longest arisal hair 2.0 times as long as postpedicel width; abdominal tergites 3 and 4 each with a pair of small spots
H. subpyriforma Wang sp. n.

After checking the type specimens of *Helina pyriforma* and *H. paridiabdominis*, we found that the new species also differs from *H. pyriforma* in having palpus entirely black; presutural *acr* in 3

rows; costal spine conspicuous; calypters yellowish, haltere brownish-yellow; hind femur with short *pv* row in distal 1/3, hind tibia with 2 or 3 *av*, without sub-basal *pd* (*pyriforma*: palpus brown in basal half, dark in distal half; presutural *acr* in 4 rows; costal spine inconspicuous; calypters brown, haltere reddish-brown; hind femur without *pv* row, hind tibia with 1 or 2 *av*, with 1 sub-basal *pd*). It is also distinct from *H. paridiabdominis* by having parafacial about 1.20–1.30 times as wide as postpedicel; upper margin of gena with 2 rows of upcurved setae; costal spine about as long as crossvein r-m; hind femur with short and curved *pv* row in distal 1/3, hind tibia without sub-basal *pd* (*paridiabdominis*: parafacial about 1.40 times as wide as postpedicel; upper margin of gena with one row of upcurved setae; costal spine short; hind femur without *pv* row, hind tibia with 2 short sub-basal *pd*).

4. Discussion

Presently, over 200 species of *Helina* are known from China, which is some 40 percent of the known world species and twice the number of European species (Wang *et al.* 2008). However, our knowledge of this genus in China is still far from adequate. *Helina* includes so many species that it is an intimidating task to undertake research on it or even to identify the species correctly. Accordingly, recognising species-groups in this genus is very important, and is convenient not only for identifying species but for further studies in phylogeny. Wang *et al.* (2004, 2005a, 2005b, 2006a, 2006b) recently reviewed the *H. annose*-group, *H. hirsutitibia*-group, *H. obtusipennis*-group *H. quadrum*-group. These groups are a practical way to enable an aggregate of *Helina* species to be differentiated and identified.

The Hengduan Mountains lie in the eastern Himalayan range and comprise a series of spectacular north-south trending ridges and valleys from the eastern Qinghai-Xizang (Tibet) Plateau to Sichuan and Yunnan Provinces in southwestern China (Zhang & Chen 2006). This region is one of the 25 global hotspots with exceptionally high rates of endemism (Myers *et al.* 2000). In recent years, we have researched the fauna of *Helina* in the southern portion of the Hengduan

Mountains (Sichuan and Yunnan). So far, some 90 *Helina* species have been recorded in this region, over 40 percent of the known Chinese species, and nearly all of them are endemic species.

Acknowledgements. We are very grateful to Dr. Adrian C. Pont (Oxford University Museum of Natural History, Oxford, U.K.), who gave us invaluable help over many years, and also to two reviewers for their critical comments on the manuscript. This study was supported by the Fundamental Research Funds for the Central Universities (No. BFU-YX2010-15), the Chinese Postdoctoral Science Foundation (No. 20100470009), the National Nature Science Foundation of China (No. 31071957, No.30770252 and No.30870463), the Scientific Research for College Foundation of the Educational Department of Liaoning Province (No.2005386), Science Foundation of Doctor Subjects, State Education Ministry of China (No.20090014120015) and State Forestry Administration, China (No.201004054).

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