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Wei Shuyu, Wang Mingfu, Zhang Dong

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One new species of *Fannia* (Diptera, Fanniidae) from Yunnan, China

Wei Shuyu[‡], Wang Mingfu[§], Zhang Dong[‡]

[‡] Beijing Forestry University, Beijing, China

[§] Shenyang Normal University, Shenyang, China

Corresponding author: Zhang Dong (ernest8445@163.com)

Abstract

Background

The Fanniidae includes over 400 described species mainly known from the Holarctic Region. Species in Oriental Region is under estimate.

New information

A new species of the genus *Fannia* (Diptera, Fanniidae) is described from Yunnan, Oriental part of China, namely *Fannia menglaensis* **sp. nov.** The detailed description and morphological photographs of *F. menglaensis* are provided. All specimens are preserved in the Museum of Beijing Forestry University.

Keywords

new species, *Fannia fuscinata*-group, Yunnan, male terminalia

Introduction

The *Fannia fuscinata*-group was separated from *metallipennis*-group and erected an independent group by Wang et al. (2011) because of the complex structure of cercus and surstylus. To date, nine species occur in the world. Apart from *F. pileatus*, other species were found in Palaearctic Region (Xue et al. 2001). China is a large country having various geographical regions and climates. Before the present contribution, eight species of the *F. fuscinata*-group were known in China (Wang et al. 2011). However, species in Oriental Region in China is still far from adequate. Yunnan, in the southwest of China, is one of the highest biodiversity hotspots in the world (Myers et al. 2000). The primary aims of this

article are to describe a new species of the *F. fuscinata*-group and to provide a key for the known species from China.

Materials and methods

Terminology follows McAlpine (1981) and Stuckenberg (1999). A series of photographs of continuous sequences were taken by a Cannon 750D digital camera coupled with ZEISS SteREO Discovery. V20 and fed into Helicon Focus 3.20 Free for Windows, to combine images with more field depth. The digital images were labeled on Windows 10 platform by Adobe Photoshop CC 2018 for Windows. All specimens examined in this paper, including the types of the new species, are deposited in the Museum of Beijing Forestry University, Beijing, China (MBFU).

Abbreviations used throughout the text are as follows:

acr acrostichal seta,

ad anterodorsal seta,

av anteroventral seta,

d dorsal seta,

p posterior seta,

pd posterodorsal seta,

pv posteroventral seta.

Taxon treatment

Fannia menglaensis, sp. n.

Materials

Holotype:

- a. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen

Paratypes:

- a. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: female; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
- b. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the

- Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
- c. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
 - d. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
 - e. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
 - f. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen
 - g. country: China; countryCode: CN; stateProvince: Yunnan; county: Xishuangbanna; municipality: Mengla; locality: Yexianggu; year: 2018; month: 2; day: 13; individualID: the Museum of Beijing Forestry University, Beijing, China; sex: male; lifeStage: adult; recordedBy: D. Zhang & J. R. Zhang; basisOfRecord: PreservedSpecimen

Description

Male: Body length 5.5–6.0 mm (Fig. 1A). Eye bare. Fronto-orbital plate and parafacial with dense grayish pollinosity; frons almost as wide as the distance between two posterior ocelli at narrowest point. Frontal vitta black, the narrowest point as 1/2 as the width of fronto-orbital plate. Frontal setae twenty, nearly reaching ocellar triangle. Postocular setae in one row, hair-like, slender and forward, occipital setae behind the postocular setae on vertex in one shorter row. Parafacial bare and black, at middle as 1/2 as the width of fronto-orbital plate. Antenna black, postpedicel 2.50x longer than wide, arista pubescent, swollen in basal part, the longest individual hair shorter than basal arista width. Epistoma not projecting; subvibrissal setae in one row, lateral with one row of short setae. Gena with black setae; then with grayish pollinosity. Palpus black, claviform, longer than the length of prementum.

Thorax black, notum without distinct vitta; prestural acr in four rows, only prescutellar pairs slightly stout, dorsocentrals 2+3, intra-alars 0+2, supra-alars 2, scutellum with widely spread fine setae in the dorsal except median parts; notopleuron without seta. Katepisternal setae 1:1. Anterior spiracle brown, posterior one opening. Calypters yellow, the lower one slightly projecting beyond the upper one.

Wing light brown; veins dark brown, tegula brown; basicosta brown, costal spine inconspicuous. Node of Rs bare on ventral and dorsal surfaces; crossveins without obvious cloud; haltere yellow.

Tibiae brownish-yellow, other parts of legs black. Fore femur with complete pv and pd rows, fore tibia with one apical p; mid coxa without any hooked spines or spine-like setae on lower and outer margins; mid femur with complete av and pv rows, becoming gradually denser towards apex (Fig. 3C), then with 8 thorn-like pd in apical; mid tibia with one ad, one subapical av and pv (Fig. 3D); mid first tarsomere without basal tooth-like spines on ventral surface; hind femur with a complete av rows, without p and pv rows; hind tibia with 1 submedian av, 1 submedian ad and 1 subapical d.

Abdomen black, long and flattened. Each tergite with long lateral marginal setae. Syntergite 1+2 to tergite 4 each with one median inverted black triangular vitta (Fig. 1 B). Surstylus separated into two branches, anterior branch of surstylus spiral and twist, with hook-like projection, then with some setae on turning point and apical, posterior branch of surstylus with hand-like projection (Fig. 4B); cercus separated into six branches, anterior two branches bacilliform, profoundly curved inward, with swollen marginals, median two branches bacilliform, with length as 1/2 as the length of posterior branches, posterior two branches long and slender, with hook-like projection on its lower margin curved outward. (Fig. 4D).

Female: Body length 5.20 mm (Fig. 1C). Eye bare. Fronto-orbital plate and parafacial with dense grayish pollinosity; frons at middle about 2/5 as wide as the distance between the width of head. Parafacial as 1/3 as the width of fronto-orbital plate. Antenna black, postpedicel 2.00x longer than wide (Fig. 2D). Legs entirely black. Other morphological characteristics are similar to those of the male.

Etymology

The specific epithet refers to the name of the type locality, Mengla.

Distribution

The species are at present known only from the type locality.

Identification keys

Remarks		
<i>Fannia menglaensis</i> sp. nov. is most similar to <i>F. pileatus</i> (Xue et al. 2001), especially the shape of surstylus, but the new species can be distinguished by the shape of sternite 5, branches of surstylus and the shape of cercus. The sternite 5 of <i>F. menglaensis</i> sp. nov. is slender and flat, with the length 4.00x longer than middle width (Fig. 3B); anterior branch without an protruding and the length of posterior branch of surstylus is 4.50x longer than width (Fig. 4B); posterior two branches of cercus with the hook-like projection on its lower margin curved strongly outward (Fig. 4D).		
1	Fore and mid legs entirely yellow	2

–	Fore and mid entirely black or partly black	3
2	Scutellum with four profoundly dark vertical stripes, surstylus in lateral view without branches	<i>Fannia polustylata</i>
–	Scutellum without dark vertical stripes, surstylus in lateral view with branches	<i>Fannia flavifuscinnata</i>
3	Mid tibia with only one ad	4
–	Mid tibia with two or more ad, at least on one side with two ad	6
4	Frontal setae twenty; postpedicel 2.50x longer than wide; eye bare; cercus with projecting	5
–	Frontal setae twelve or thirteen; postpedicel 2.00x longer than wide; eye with hairs; cercus without projecting	<i>Fannia maximiguttatus</i>
5	the cercus with the projection on its lower margin curved strongly inward	<i>Fannia pileatus</i>
–	thefuscinata cercus with the projection on its lower margin curved outward	<i>Fannaia menglaensis</i>
6	Eye with hairs	7
–	Eye bare	<i>Fannia scissifolia</i>
7	Hind femur with only one av; calypters brown; surstylus with sharp branch	<i>Fannia polustylodes</i>

—	Hind femur with two av; calypters from white to yellow; surstylus with gnawed branch or not	8
8	Presutural acr two rows; frontal setae thirteen or fourteen pairs; cercus projecting from its postsutural part	<i>Fannia triaenocera</i>
—	Presutural acr three rows; frontal setae ten to twelve pairs; cercus projecting from its median of ventral	<i>Fannia fuscinata</i>

Acknowledgements

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- Xue W, Wang M, Li F (2001) The description of two new species of *Fannia* (Diptera, Fanniidae. Zoological Systematics 26 (2).



Figure 1.

Fannia menglaensis sp. nov. from Yunnan, China **A** Male habitus, lateral view (BFU-10730, holotype) **B** Male abdomen, dorsal view (BFU-10730, holotype) **C** Female habitus, lateral view (BFU-10730, paratype). Scale bars: **A** = 1.00 mm; **B** = 0.50 mm; **C** = 1.00 mm.

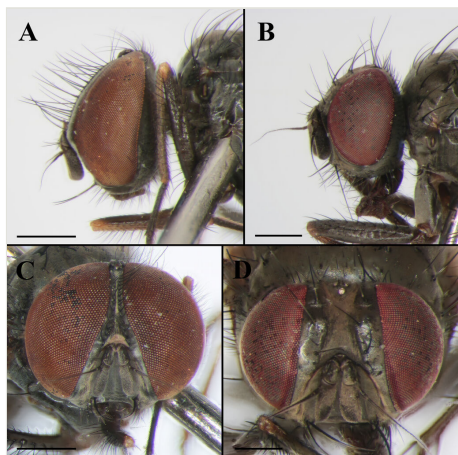


Figure 2.

Fannia menglaensis sp. nov. from Yunnan, China **A** Male head, lateral view (BFU-10730, holotype) **B** Female head, lateral view (BFU-10731, paratype) **C** Male head, anterior view (holotype, BFU-10730) **D** Female head, anterior view (BFU-10731, paratype). Scale bars: **A–C** = 1.00 mm; **D** = 0.50 mm.

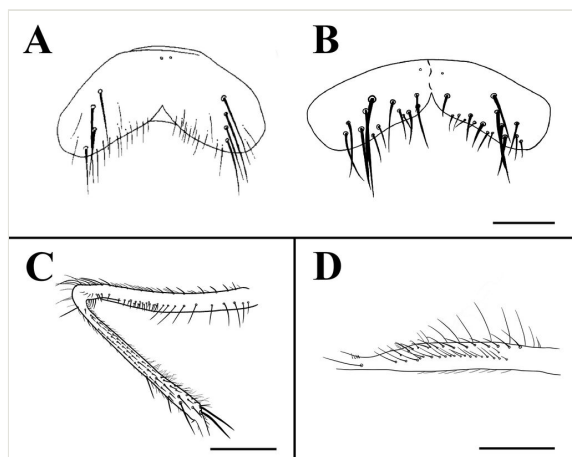


Figure 3.

A Sternite 5 of *Fannia pileatus* (from Xue et al. 2001), male, ventral view **B** Sternite 5 of *Fannia menglaensis* sp. nov. from Yunnan, China, male, ventral view (BFU-10732, paratype) **C** Mid femur and tibia of *Fannia menglaensis* sp. nov. from Yunnan, China, male, anterior view (BFU-10730, holotype) **D** Mid femur of *Fannia menglaensis* sp. nov. from Yunnan, China, male, posteroventral view (BFU-10730, holotype). Scale bars: A, B = 0.30 mm; C, D = 0.50 mm.

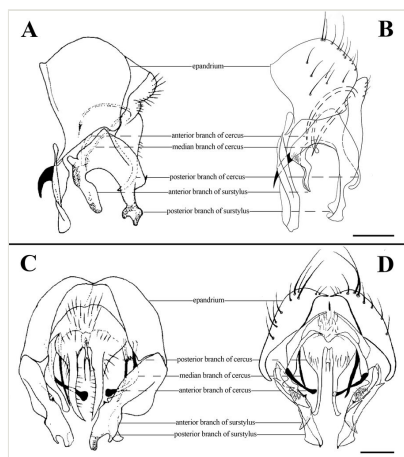


Figure 4.

A Male terminalia of *F. pileatus* (from Xue et al. 2001), lateral view **B** Male terminalia of *Fannia menglaensis* sp. nov. from Yunnan, China, lateral view (BFU-10732, paratype) **C** Male terminalia of *F. pileatus* (from Xue et al. 2001), ventral view **D** Male terminalia of *Fannia menglaensis* sp. nov. from Yunnan, China, ventral view (BFU-10732, paratype). Scale bars: A, B = 0.30 mm; C, D = 0.30 mm.