

***Hilara* newly recorded from Shaanxi with seven new species  
(Diptera: Empididae)**

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**ABSTRACT**

The genus *Hilara* Meigen is reported from Shaanxi for the first time with 9 species. The following seven species are described as new to science: *Hilara biprocera* sp. nov., *H. digitata* sp. nov., *H. lata* sp. nov., *H. ningshana* sp. nov., *H. qinlingensis* sp. nov., *H. spinata* sp. nov., and *H. zhouzhiensis* sp. nov. Two species are newly recorded from this province: *H. flata* Liu, Li *et al.* Yang and *H. digitiformis* Liu, Li *et al.* Yang. A key to the species of the genus *Hilara* from Shaanxi is presented.

**Key words:** Empidinae, Hilarini, new species, China.

**INTRODUCTION**

The genus *Hilara* Meigen, 1822 is the largest genus of the subfamily Empidinae with a global distribution. Until now, 389 species have been described, of which 38 species are known to occur in China (Yang *et al.* 2007, Qin *et al.* 2008, Li *et al.* 2010, Liu *et al.* 2010a, Liu *et al.* 2010b). The Palaearctic species of *Hilara* were mainly studied by Chvála (2002, 2005), the Oriental species were mainly studied by Frey (1952); and the Chinese species were mainly studied by Ding Yang and Jikun Yang (1997), Ding Yang and Xiaodong Wang (1998), Ding Yang and Yishu Li (2001), Grootaert *et al.* (2003), Weichun Qin, Huigang Tian and Ding Yang (2008), Zhu Li, Weina Cui and Ding Yang (2010), Qifei Liu, Zhu Li and Ding Yang (2010a, 2010b).

Shaanxi Province (105°29'~ 111°15' E, 31°42'~ 39°35' N) is located in northwest China, stretching across the middle of the Yellow River and Yangtze River. The region also connects the eastern and central part with the southwest and northwest part of China, extending along with the Qinling-Huaihei line. About 40% of the area belongs to the Loess

Plateau where the species diversity is relatively low, whereas the Qinling Mountains, which only takes about 28% of shaanxi province, have the most abundant species diversity. The main vein of Qinling Mountains gradually increases from the east to the west. The foothills of Qinling Mountains is always short and steep in north but long and moderate in south; however, both the northern and the southern portions have a large number of canyons. The climate of Qinling Mountains can be significantly different, which changes greatly by the change of elevation, which makes the complicated geographic and geomorphic conditions. The biodiversity here is very rich, but there was no record of *Hilara*. Now, 9 species including 7 new species are reported from Shaanxi. A key to the species of the genus *Hilara* from China is presented.

**MATERIALS AND METHODS**

The specimens were studied and illustrated with ZEISS Stemi 2000-c. Genitalic preparations were made by macerating the apically portion of the abdomen in warm

10% NaOH for 17–20 min (or add 40 µL Proteinase K, heating in 56° water bath for 5–6h), after examination it was transferred to fresh glycerine and stored in a microvial pinned below the specimen. The specimens examined were deposited in the Entomological Museum of China Agricultural University (CAU), Beijing. The following abbreviations are used: acr = acrostichal, ad = anterodorsal, av = anteroventral, C = costal, d = dorsal, dc = dorsocentral, h = humeral, npl = notopleural, oc = ocelli, pd = posterodorsal, presc = prescutellar, psa = postalar, pv = posteroventral, sa = supraalar, sc = scutellar, Sc = subcosta, v = ventral.

## TAXONOMY

### Genus *Hilara* Meigen

*Hilara* Meigen, 1822: 1. Type species: *Empis maura* Fabricius, 1776 (designated by Curtis, 1826).

*Pseudoragas* Frey, 1952: 121. Type species: *Pseudoragas japonica* Frey, 1952 (original designation).

*Calohilara* Frey, 1952: 124 (as subgenus of *Hilara*).

Type species: *Hilara (Calohilara) elegans* Frey, 1952 (original designation).

*Merlurula* Frey, 1952: 126 (as subgenus of *Hilara*).

Type species: *Hilara vetula* Frey, 1952 (original designation).

*Pseudorhamphomyia* Frey, 1953: 73 (as subgenus of *Hilara*). Type species: *Hilara (Pseudorhamphomyia) hyalinata* Frey, 1953 (original designation).

**Diagnosis** — The genus *Hilara* Meigen is characterized by the following features: Head nearly as long as high; proboscis little shorter than head height. Male and female eyes distinctly separated between frons and face. Frons with one row of hairs on each side, but penultimate one bristle-like. Wing with Sc complete and reaching C; R<sub>1</sub> thickened apically, R<sub>4+5</sub> furcated. Male fore tibia slightly thickened apically. Male fore basitarsus usually thickened, with or without strong bristles. Female fore tibia and basitarsus not thickened. Male genitalia: Left and right epandrial lobes widely separated basally, with apico-lateral process; hypandrium well-developed, basally wide, apically narrowed and extended backward; aedeagus long, strongly curved backward.

### Key to species of *Hilara* from Shaanxi

- 1 All coxae black entirely . . . . . 2
  - Fore coxa dark yellow or yellowish brown . . . . . 4
- 2 Antenna black entirely; fore basitarsus without dorsal bristles . . . . . 3
  - 1st and 2nd antennal segments dark yellowish brown; fore basitarsus with 2 short dorsal bristles and 1 row of short ventral bristles . . . *Hilara spinata* sp. nov.
- 3 Antennal apical style little shorter than 3rd segment; fore basitarsus shorter than fore tarsomeres 2–5 together; cercus long finger-like, dorsally straight; surstylus short finger-like . . . . .
  - . . . . . *Hilara digitata* sp. nov.
  - Antennal apical style little longer than 3rd segment; fore basitarsus longer than fore tarsomeres 2–5 together; cercus short and wide, nearly trapezoidal; surstylus flattened . . . . . *Hilara lata* sp. nov.
- 4 Femora dark brown or black . . . . . 5
  - Femora nearly or entirely yellow . . . . . 8
- 5 Antenna not longer than head . . . . . 6
  - Antenna longer than head obviously . . . . .
    - . . . . . *Hilara ningshana* sp. nov.
- 6 Antennal apical style shorter or as long as 3rd segment; fore basitarsus with 1 dorsal bristle at most . . . . . 7
  - Antennal apical style obviously longer than 3rd segment; fore basitarsus with 2 long dorsal bristles . . . . .
    - . . . . . *Hilara qinlingensis* sp. nov.
- 7 Antennal apical style nearly as long as 3rd segment; fore basitarsus without dorsal bristles . . . . . *Hilara flata*
  - Antenna apical style shorter than 3rd segment; fore basitarsus with 1 dorsal bristle . . . . . *Hilara biprocera* sp. nov.

- 8 Thorax laterally with dark yellow spot; surstylus strongly sclerotized . . . . . *Hilara digitiformis*  
 — Thorax laterally without dark yellow spot; surstylus weakly sclerotized . . . . . *Hilara Zhouziensis* sp. nov.

1. *Hilara biprocera* sp. nov.

(Figs. 1, 10)

urn:lsid:zoobank.org:act:63B74E71-6AFA-4E7C-8BB8-A3FD98684283

*Diagnosis* — Antenna black except 1st and 2nd segments dark yellowish brown. Fore and mid coxae yellow, hind coxa yellowish brown; fore and mid femora yellowish brown, hind femur brown. Fore basitarsus with 1 dorsal bristle. Surstylus with 2 processes.

*Description* — Male. Body length 3.1-3.4 mm. Wing length 3.5-3.6 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc and 2 short posterior hairs. Frons with one row of 5 bristles on each side, mostly short haired, just penultimate one bristle-like. Antenna black except 1st and 2nd segments dark yellowish brown; 1st segment dorsally and 2nd segment apically with black hairs; 3rd segment long conical, 3.1 times longer than wide; apical style 0.7 times as long as 3rd segment. Proboscis dark brown, with blackish hairs; about 0.6 times longer than head height; palpus brownish with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen; hairs and bristles black. Pronotum with 1 long bristle laterally. Humerus with 2 short hairs and 1 h; hairs on mesonotum long; 2 npl thick and long; acr quadriseriate, dc uniseriate; 1 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak. Legs brown; coxae yellow, but hind coxa yellowish brown; fore and mid femora yellowish brown. Hairs and bristles on legs black. Mid femur with 5 ad and 2-3 av. Hind femur apically with 5 av. Fore tibia apically slightly thickened, with 3 ad and 4 apical bristles (1 subapical pd relatively long); basitarsus slightly thickened, with 1 dorsal bristle at middle.

Fore basitarsus nearly 1.4 times thicker than fore tibia, nearly 0.6 times as long as fore tibia, as long as fore tarsomeres 2-5 together. Mid tibia with 1 ad, 2 av and 3 apical bristles. Hind tibia with 1 ad, 3 pd, 4 av, and 4 apical bristles. Wing slightly tinged grey; pterostigma long and narrow, brown; veins dark brown. Halteres dark brown except base brown.

Abdomen nearly straight, blackish, with pale grey pollen, slightly shiny. Hairs and bristles on abdomen black. Male genitalia slightly thickened, nearly as thick as pregenital segments, slightly curved upward. Epandrial lamella with 3 very long bristles; surstylus nearly finger-like. Cercus anteriorly with a short finger-like process on dorsal margin. Postgonite with an acute tip. Hypandrium apically narrowed.

Female. Body length 3.4-3.6 mm. Wing length 3.1-3.2 mm. Hind tibia nearly clavate, basally thin, apically thickened.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1400m, 2013. VII. 2013, Ding Yang. Paratypes 1♂, same data as holotype; 1♂, Shaanxi, Ningshan, Huoditang, 1505m, 2013. VII. 13, Ding Yang; 2♂3♀, Shaanxi, Ningshan, Huoditang, 1505m, 2013. VII. 12, Ding Yang (CAU).

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara bispina* Li, Cui et Yang, but can be separated from the latter by the 3rd antennal segment 3.1 times longer than wide and acr quadriseriate. In *Hilara bispina*, the 3rd antennal segment is 1.9 times longer than wide and acr are biseriate (Li et al. 2010).

*Etymology* — The specific name refers to the surstylus with 2 processes.

2. *Hilara digitata* sp. nov.

(Figs. 2, 11)

urn:lsid:zoobank.org:act:C4D5A0DC-EA0A-4AA6-86DA-67B9A92C780D

*Diagnosis* — Antennal apical style 0.8 times as long as 3rd segment. Acr quadriseriate. Legs black except knees dark yellowish brown. Fore basitarsus without dorsal bristles. Cercus long finger-like, dorsal margin straight; surstylus short finger-like.

*Description* — Male. Body length 4.4-5.2

mm. Wing length 4.7-5.3 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes dark brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli yellowish brown, with 2 long oc and 4 short posterior hairs (2 close to oc). Frons with one row of 5 bristles on each side, mostly short haired, just penultimate one bristle-like. Antenna black; 1st segment dorsally and 2nd segment apically with black hairs; 1st segment little longer than 2nd segment; 3rd segment long conical, about 2.3 times longer than wide; apical style 0.8 times as long as 3rd segment. Proboscis dark brown, with black hairs; 0.6 times longer than head height; palpus blackish with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen; hairs and bristles black. Pronotum with 1 long bristle laterally. Humerus with 1 h; mesonotum with obvious hairs; npl 3 (anterior 1 short); acr quadriseriate, dc uniseriate; 1 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak. Legs black except knees dark yellowish brown. Hairs and bristles on legs blackish to black, hairs short and bristles obvious. Mid femur with 4 long ad. Hind femur with dorsal bristles and 4 apical long av. Fore tibia apically thickened, with 2 long ad and 4 apical bristles (3 dorsal bristles long). Fore basitarsus obviously thickened, nearly 1.3 times thicker than fore tibia, 0.6 times longer than fore tibia, 0.9 times as long as fore tarsomeres 2-5 together. Fore basitarsus without long dorsal bristles, only with 1 short hair-like ad apically. Mid tibia apically with 1 av and 1 short thick pv. Hind tibia with 3-4 ad and 3 apical bristles (1 subapical ad long). Wing hyaline, slightly tinged grey; pterostigma long and narrow, dark brown; veins dark brown. Halteres dark brown.

Abdomen nearly straight, blackish but apically black, with pale grey pollen, slightly shiny. Hairs and bristles on abdomen black. Male genitalia slightly thickened, nearly as thick as pregenital segments, slightly curved upward. Epandrial lamella with obvious hairs, without long bristles; surstylus thin finger-like, dorsal margin oblique and straight. Cercus strongly sclerotized, long finger-like, dorsal margin of apical 2/3 nearly straight. Hypandrium apically narrow.

Female. Body length 5.2 mm. Wing length 4.3 mm. Eyes distinctly separated.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1505m, 2013. VII. 13, Ding Yang (CAU). Paratypes 1♂1♀, same data as holotype.

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara bispina* Li, Cui *et* Yang, but can be separated from the latter by the 3rd antennal segment 2.3 times longer than wide and acr quadriseriate. In *Hilara bispina*, the 3rd antennal segment is 1.9 times longer than wide and acr are biseriata (Li *et al.* 2010).

*Etymology* — The specific name refers to the long finger-like cercus.

### 3. *Hilara lata* sp. nov.

(Figs. 3, 12)

urn:lsid:zoobank.org:act:05D77225-4BEC-4149-A13A-FC1CADC3D517

*Diagnosis* — Antennal apical style little longer than 3rd segment. Acr quadriseriate. Legs dark brown except knees dark yellowish brown. Fore basitarsus without dorsal bristles, only with 1 short thin ad apically. Cercus short and wide, nearly trapezoidal; surstylus flattened.

*Description* — Male. Body length 3.5 mm. Wing length 3.3 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes dark brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc and 2 short posterior hairs close to oc. Frons with one row of 4 bristles on each side, mostly short haired, just penultimate one bristle-like. Antenna black; 1st segment dorsally and 2nd segment apically with black hairs; 1st segment not lengthened, nearly as long as 2nd segment; 3rd segment long conical, 1.9 times longer than wide; apical style little longer than 3rd segment. Proboscis dark brown, with black hairs; 0.7 times longer than head height; palpus brownish with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen. Hairs and bristles black. Pronotum with 1 long bristle laterally. Humerus with 1 h; mesonotum with obvious hairs; npl 3; acr quadriseriate, dc uniseriate; 1 presc, 1 sa, 1 psa; scutellum with 2

pairs of sc, basal pair relatively short and weak. Legs dark brown except knees dark yellowish brown. Hairs and bristles on legs blackish to black; hairs short and bristles obvious. Mid femur basally with 2 long ad. Hind femur with dorsal bristles, a row of anteroventral hairs (apically 3 long ones bristle-like) and a row of short posteroventral hairs. Fore tibia apically thickened; apically with 3 long dorsal bristles. Fore basitarsus obviously thickened, nearly 1.2 times thicker than fore tibia, 0.7 times longer than fore tibia, about 1.2 times as long as fore tarsomeres 2-5 together. Fore basitarsus without long dorsal bristles, only with 1 short and thin ad apically. Mid tibia with 2 pv on apical 1/3 and 2 apical bristles. Hind tibia with 3 ad, 3 av and 2 apical bristles. Wing hyaline, slightly tinged grey; pterostigma long and narrow, dark brown; veins dark brown. Halteres dark brown.

Abdomen nearly straight, black with pale grey pollen, slightly shiny. Hairs and bristles on abdomen black. Male genitalia slightly thickened, nearly as thick as pregenital segments, slightly curved upward. Epandrial lamella with obvious hairs, without long bristles; surstylus flattened. Cercus short and wide, nearly trapezoidal. Hypandrium apically narrow.

Female. Body length 4.4 mm. Wing length 3.7 mm.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1505m, 2013. VII. 12, Ding Yang (CAU). Paratype 1 ♀, same data as holotype.

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara basiprojecta* Liu, Li *et* Yang in the shape of the cercus, but can be separated from the latter by the 3rd antennal segment 1.9 times longer than wide and acr quadriseriate. In *Hilara basiprojecta*, the 3rd antennal segment is 2.2 times longer than wide and acr are irregularly triseriate (Liu *et al.* 2010).

*Etymology* — The specific name refers to the short and wide cercus.

#### 4. *Hilara ningshana* sp. nov.

(Figs. 4, 13)

urn:lsid:zoobank.org:act:08D3B66C-D1B4-4FE1-A9E8-C81FDF8EC26B

*Diagnosis* — Antenna longer than head. Proboscis as long as head height. Legs dark brown, coxae yellowish brown, fore femur brown. Fore basitarsus without dorsal bristles.

*Description* — Male. Body length 3.2-3.5 mm. Wing length 3.7-3.9 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes dark brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc and 2 short posterior hairs. Frons with one row of 5 bristles on each side, mostly short haired, just penultimate one bristle-like. Antenna black, 1.2 times as long as head; 1st segment dorsally and 2nd segment apically with black hairs; 1st segment nearly 2 times longer than 2nd segment; 3rd segment long conical, 3.1 times longer than wide; apical style 0.6 times longer than 3rd segment. Proboscis dark brown, with black hairs, as long as head height; palpus brownish with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen. Hairs and bristles black. Pronotum with 1 long bristle laterally. Humerus with 1 h; hairs on mesonotum short; npl 2; acr biseriate, dc uniseriate; 1 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak. Legs dark brown, coxae yellowish brown; fore femur brown. Hairs and bristles on legs black; hairs short and bristles thick. Mid femur basally with 1-2 ad. Hind femur without obvious dorsal bristles. Fore tibia apically slightly thickened, with 2 ad and 4 long thick apical bristles. Fore basitarsus obviously thickened, about 1.6 times thicker than fore tibia, 0.6 times longer than fore tibia, as long as fore tarsomeres 2-5 together. Fore basitarsus without dorsal bristles. Mid tibia with 3 thick av and 3 apical bristles. Hind tibia with 2 ad, 4 long and thick av, and 4 apical bristles. Wing hyaline, slightly tinged grey; pterostigma long and narrow, dark brown; veins dark brown. Halteres dark brown.

Abdomen slightly curved downward, black, with pale grey pollen, slightly shiny. Hairs and

bristles on abdomen black, tergites with hairs and bristles dark yellow except tergite 3 with black bristles at posterior margin. Male genitalia slightly thickened, nearly as thick as pregenital segments, slightly curved upward. Epandrial lamella with obvious hairs, without long bristles; surstylus thin finger-like, dorsal margin oblique and straight. Cercus strongly sclerotized, long finger-like, dorsal margin of apical 2/3 nearly straight. Hypandrium apically narrow.

Female. Unknown.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1400m, 2013. VII. 13, Ding Yang. Paratype 1♂, Huoditang, Ningshan, Shaanxi, China, 1505m, 2013. VII. 13, Ding Yang (CAU).

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara bispina* Li, Cui *et* Yang, but can be separated from the latter by the 3rd antennal segment 3.1 times longer than wide, surstylus thin finger-like and dorsal margin oblique and straight. In *Hilara bispina*, the 3rd antennal segment is 1.9 times longer than wide and the surstylus is strongly sclerotized in two spines (Li *et al.* 2010).

*Etymology* — The specific name refers to the collection site Ningshan of the holotype of the new species.

### 5. *Hilara qinlingensis* sp. nov.

(Figs. 5, 14)

urn:lsid:zoobank.org:act:CEF73FE0-5D82-4A1A-AA84-25A35E293B77

*Diagnosis* — Antennal apical style little longer than 3rd segment. Fore coxa dark yellow; fore basitarsus with 2 very long dorsal bristles. Hypandrium apically wide with both sides parallel. Cercus curved, basally with convex dorsal margin, apically obviously narrowed with an acute tip.

*Description* — Male. Body length 2.7-3.1 mm. Wing length 2.6-2.7 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes dark brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc, 2 short hairs between oc and 2 short posterior hairs. Frons with one row of 5 bristles on each side, mostly short

haired, just penultimate one bristle-like, nearly as long as oc. Upper occiput with long postocular bristles on each side. Antenna blackish; 1st segment dorsally and 2nd segment apically with black hairs; 3rd segment nearly short conical, 1.6 times longer than wide; apical style about 1.3 times as long as 3rd segment. Proboscis dark brown with blackish hairs; 0.6 times longer than head height; palpus dark brown with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen. Hairs and bristles black. Pronotum with 1 long bristle laterally. Humerus with 1 h; hairs and bristles on mesonotum long; 3 npl long; acr biseriate, dc uniseriate; 1 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak. Legs brown to dark brown; fore coxa dark yellow, mid and hind coxae brown; fore femur yellowish brown; mid and hind knees yellowish brown. Hairs and bristles on legs black. Mid femur with 4 ad and 4 apical av. Hind femur with bristle-like dorsal hairs and 5 apical av (inner 3 very long). Fore tibia apically slightly thickened, with 5 ad and 4 apical bristles (1 subapical ad and 1 long subapical pd). Fore basitarsus obviously thickened, with 3-4 short ad and 2 very long dorsal bristles; apically with 1 ad and 1 pd. Fore basitarsus nearly 1.7 times thicker than fore tibia, 0.6 times longer than fore tibia, as long as fore tarsomeres 2-5 together. Mid tibia with 1 av and 3 apical bristles. Hind tibia with 4 pd, 3-4 av and 2 apical short bristles. Wing slightly tinged grey; pterostigma long and narrow, brown; veins dark brown. Halteres dark brown except base yellowish brown.

Abdomen nearly straight, blackish, with pale grey pollen, slightly shiny. Hairs and bristles on abdomen black. Male genitalia slightly thickened, nearly as thick as pregenital segments, slightly curved upward. Epandrial lamella with obvious hairs, without long bristles; surstylus stubby, finger-like. Cercus curved, basally with convex dorsal margin, apically obviously thin with an acute tip. Hypandrium apically wide with both sides parallel.

Female. Body length 2.5 mm. Wing length 2.4 mm.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1505m, 2013. VII. 12, Ding Yang (CAU). Paratypes

2♂1♀, same data as holotype.

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara bispina* Li, Cui *et* Yang, but can be separated from the latter by the 3rd antennal segment nearly short conical and 1.6 times longer than wide. In *Hilara bispina*, the 3rd antennal segment is long conical and 1.9 times longer than wide (Li *et al.* 2010).

*Etymology* — The specific name refers to the type locality Qinling.

### 6. *Hilara spinata* sp. nov.

(Figs. 6, 15)

urn:lsid:zoobank.org:act:7AB59394-7A98-4BF0-A679-37E7E1C90778

*Diagnosis* — Male abdomen basally yellowish brown. Antennal 1st and 2nd segments dark yellowish brown. Antennal apical style little longer than 3rd segment. Legs blackish except knees yellowish brown. Fore basitarsus with 2 short dorsal bristles, apically with 1 ad and 1 long pd. Epandrial lamella with 3 very long bristles. Hypandrium apically diamond-shaped, with 2 short spines laterally.

*Description* — Male. Body length 4.5-5.4 mm. Wing length 4.7-5.3 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes brown, distinctly separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc and 4 short posterior hairs. Frons with one row of 5 bristles on each sides, mostly short haired, just penultimate one bristle-like, as long as oc. Upper occiput with very long postocular bristles. Antenna black except basal 2 segments brownish; 1st segment dorsally and 2nd segment apically with black hairs; 3rd segment long conical, 2.1 times longer than wide; apical style 1.2 times as long as 3rd segment. Proboscis brownish with black hairs; 0.7 times longer than head height; palpus dark brown with black hairs, apically with 1 very long ventral bristle.

Thorax black with pale grey pollen; hairs and bristles black; hairs on mesonotum obviously. Pronotum with 1 long bristle laterally. Humerus with 1 h; npl 3 (anterior 1 short and weak); acr irregularly quadriseriate, dc uniseriate (posterior 2 long); 1 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak.

Legs blackish except knees yellowish brown. Hairs and bristles on legs black. Fore femur apically with 1 av and 2 long pv. Mid femur with 5 ad, apically with 1 av and 1 pv. Hind femur apically with 3 av and 1 pv. Fore tibia apically slightly thickened, with 2 ad and 4 apical bristles. Fore basitarsus obviously thickened, nearly 1.5 times thicker than fore tibia, 0.8 times longer than fore tibia, 1.2 times as long as fore tarsomeres 2-5 together; with 2 short dorsal bristles and 1 row of short ventral bristles; apically with 1 ad and 1 long pd. Mid tibia with 2-3 av and 3 apical bristles. Hind tibia with 1 ad, 3-4 pd, 5 av and 3 apical bristles. Wing hyaline, slightly tinged grey; perostigma long and narrow, dark brown; veins dark brown. Halteres dark brown, base yellowish brown.

Abdomen nearly straight, blackish, tergites 2-3 and sternites 2-4 yellowish brown, apically black, with pale grey pollen, slightly shiny. Hairs and bristles on abdomen black. Epandrial lamella with 3 very long bristles; surstylus nearly finger-like. Cercus anteriorly with a short finger-like process on dorsal margin. Postgonite with an acute tip. Hypandrium apically diamond-shaped, with 2 short spines laterally.

Female. Body length 4.8-5.4 mm. Wing length 4.1-5.0 mm. Abdomen always pale grey, basally changeless.

*Material examined* — Holotype ♂, Huoditang, Ningshan, Shaanxi, China, 1400m, 2013. VII. 13, Ding Yang. Paratypes 36♂30♀, Huoditang, Ningshan, Shaanxi, China, 1505m, 2013. VII. 13, Ding Yang (CAU).

*Distribution* — Shaanxi (Ningshan).

*Remarks* — The new species is somewhat similar to *Hilara sheni* Qin, Tian *et* Yang, but can be separated from the latter by the legs blackish except knees yellowish brown and surstylus nearly finger-like. In *Hilara sheni*, the legs are yellowish brown and the surstylus is thin with an acute tip (Qin *et al.* 2008).

*Etymology* — The specific name refers to the 2 short spines laterally on the hypandrium apically.

**7. *Hilara flata* Liu, Li et Yang**  
(Figs. 7, 16)

*Hilara flata* Liu, Li et Yang, 2010: 66. Type locality:  
China: Hubei, Shennongjia, Dalongtan.

*Diagnosis* — Scutum with 2 black median vittae. Male fore basitarsus thick with 2-3 short weak dorsal bristles. Cercus short and wide.

*Material examined* — 3♂2♀, Houzhenzi, Zhouzhi, Shaanxi, China, 1297m, 2015.VIII. 05, Xuankun Li (CAU).

*Distribution* — China (Hubei, Shaanxi).

**8. *Hilara digitiformis* Liu, Li et Yang**  
(Figs. 8, 17)

*Hilara digitiformis* Liu, Li et Yang, 2010: 65. Type locality: China: Hubei, Shennongjia, Pingqian.

*Diagnosis* — Thorax with yellowish brown spot. Antennal 1st and 2nd segments dark yellow, 3rd segment basally dark yellowish brown; apical style as long as 3rd segment. Coxae and femora yellow, hind femur dark yellowish brown. Fore basitarsus without dorsal bristles. Epandrial lamella with several long bristles.

*Material examined* — 1♂, Laoxiancheng, Zhouzhi, Shaanxi, China, 1896m, 2015. VII. 31, Peng Hou; 3♂5♀, Taibaishan, Zhouzhi, Shaanxi, China, 1711m, 2015. VII. 30, Xuankun Li (CAU).

*Distribution* — China (Hubei, Shaanxi).

**9. *Hilara zhouzhiensis* sp. nov.**  
(Figs. 9, 18)

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*Diagnosis* — Coxae and femora yellow; fore and mid femora apically and hind femur dorsally brown. 1st and 2nd antennal segments dark yellowish brown; apical style nearly as long as 3rd segment. Fore basitarsus without dorsal bristles. Epandrial lamella with a few slender bristles.

*Description* — Male. Body length 5.2-5.3 mm. Wing length 5.4-5.6 mm.

Head black with pale grey pollen; hairs and bristles black. Eyes dark brown, distinctly

separated on frons and face; ocellar tubercle weak, ocelli brown, with 2 long oc curved laterally and 4 short posterior hairs. Frons with one row of 4 bristles on each side, mostly short haired, just last one bristle-like, slightly shorter than oc. Upper occiput with long postocular bristles. Antenna black, 1st and 2nd segments dark yellow; 1st segment dorsally and 2nd segment apically with black bristles; 3rd segment long conical, 2.0 times longer than wide; apical style as long as 3rd segment. Proboscis mostly yellowish brown with black hairs; 0.7 times longer than head height; palpus dark yellow, with black hairs, apically with 1 very long ventral bristle.

Thorax black, with pale grey pollen; hairs short, yellow, but hairs on mesonotum mostly black, bristles black; hairs on mesonotum short. Pronotum with 1 long bristle laterally. Humerus without obvious bristles; npl 3 (the anterior 1 short and weak); acr irregularly quadriseriate, dc short haired, uniseriate, posterior 2 slightly long; 2 presc, 1 sa, 1 psa; scutellum with 2 pairs of sc, basal pair relatively short and weak. Legs yellow except femora apically and hind femur dorsally brown, tibiae and tarsi black, but fore tibia blackish. Hairs and bristles on legs black. Fore femur apically with 1 av and 1 pv. Mid femur with 5 ad; apically with 1 av and 1 pv. Hind femur apically with 3 av and 1 pv. Fore tibia apically slightly thickened, with 2 ad and 4 apical bristles. Fore basitarsus obviously thickened, nearly 1.5 times thicker than fore tibia, 0.8 times longer than fore tibia, as long as fore tarsomeres 2-5 together; apically without obvious bristles. Mid tibia with 1 av and 3 apical bristles. Hind tibia with 1 ad, 5-6 pd, 5 av and 3 apical bristles. Wing hyaline, slightly tinged grey; pterostigma long and narrow, dark brown; veins dark brown. Halteres dark brown except base yellowish brown.

Abdomen stretching backward straightly, blackish but apically black, with pale grey pollen, slightly shiny. Hairs on abdomen dark yellow; apical margins of sternites 2-6 with black bristles, hairs and bristles on male genitalia mostly blackish. Epandrial lamella with 3 long bristles; surstylus nearly finger-like. Cercus anteriorly with a short finger-like process on dorsal margin. Postgonite with an acute tip. Hypandrium

apically diamond-shaped, with 2 short spines laterally.

Female. Unknown.

*Material examined* — Holotype ♂, Taibaishan, Zhouzhi, Shaanxi, China, 1711m, 2015. VII. 30, Xuankun Li. Paratype 1♂, Laoxiancheng, Zhouzhi, Shaanxi, China, 1896m, 2015. VII. 31, Peng Hou (CAU).

*Distribution* — Shaanxi (Zhouzhi).

*Remarks* — The new species is somewhat similar to *Hilara digitiformis* Liu, Li *et* Yang, but can be separated from the latter by acr quadriseriate and thorax laterally without dark yellow spot. In *Hilara digitiformis*, acr are biseriate and sparse, and the thorax has the dark yellow spots laterally (Liu *et al.* 2010).

*Etymology* — The specific name refers to the type locality Zhouzhi.

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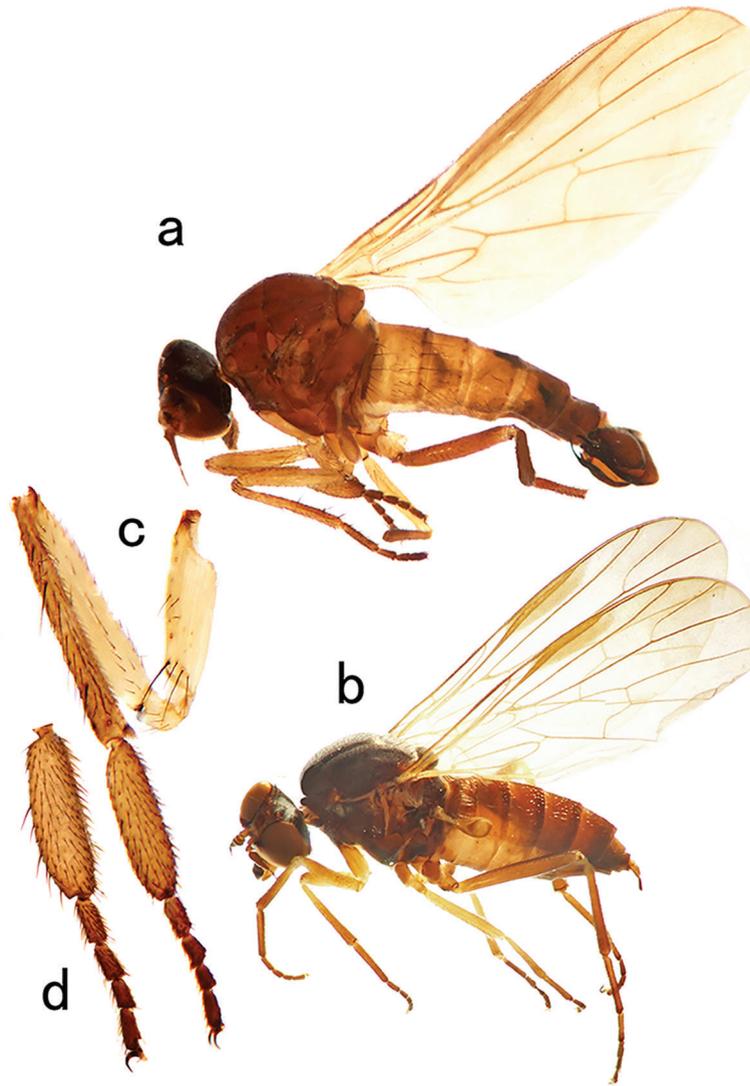


Figure 1. *Hilara biprocera* sp. nov. a. lateral view of male; b. lateral view of female; c. fore leg of male; d. tarsus of male.

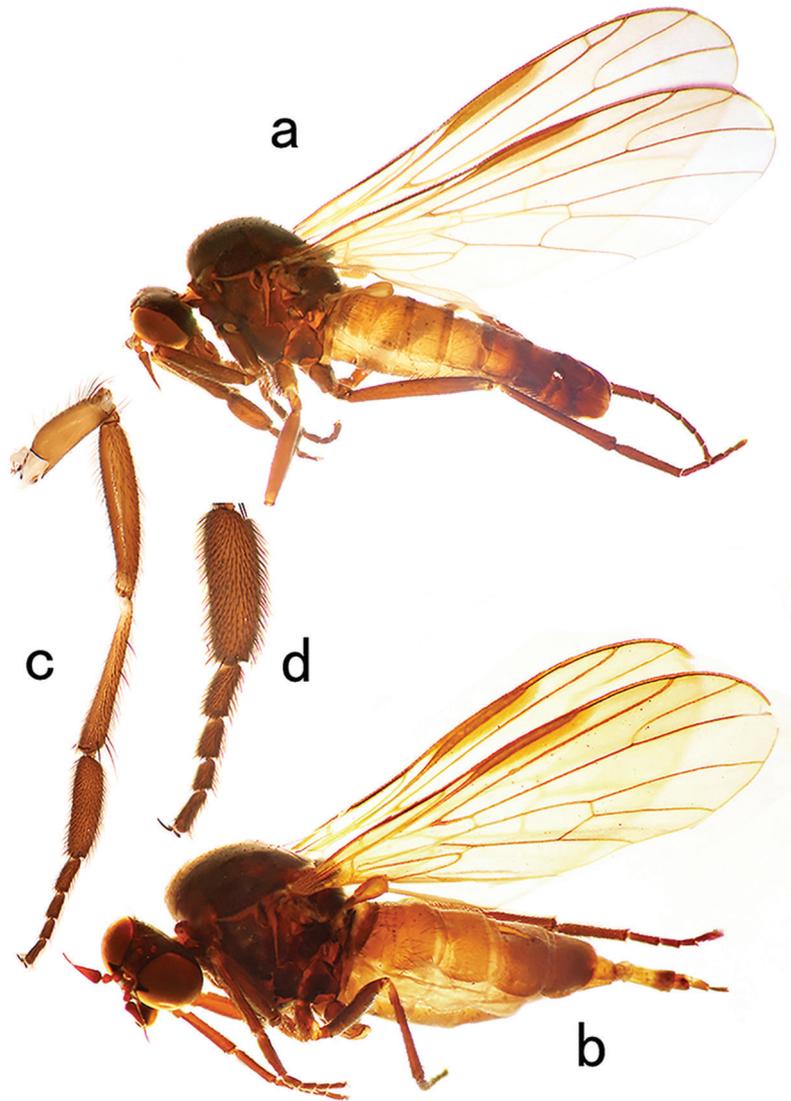


Figure 2. *Hilara digitata* sp. nov. a. lateral view of male; b. lateral view of female; c. fore leg of male; d. tarsus of male.

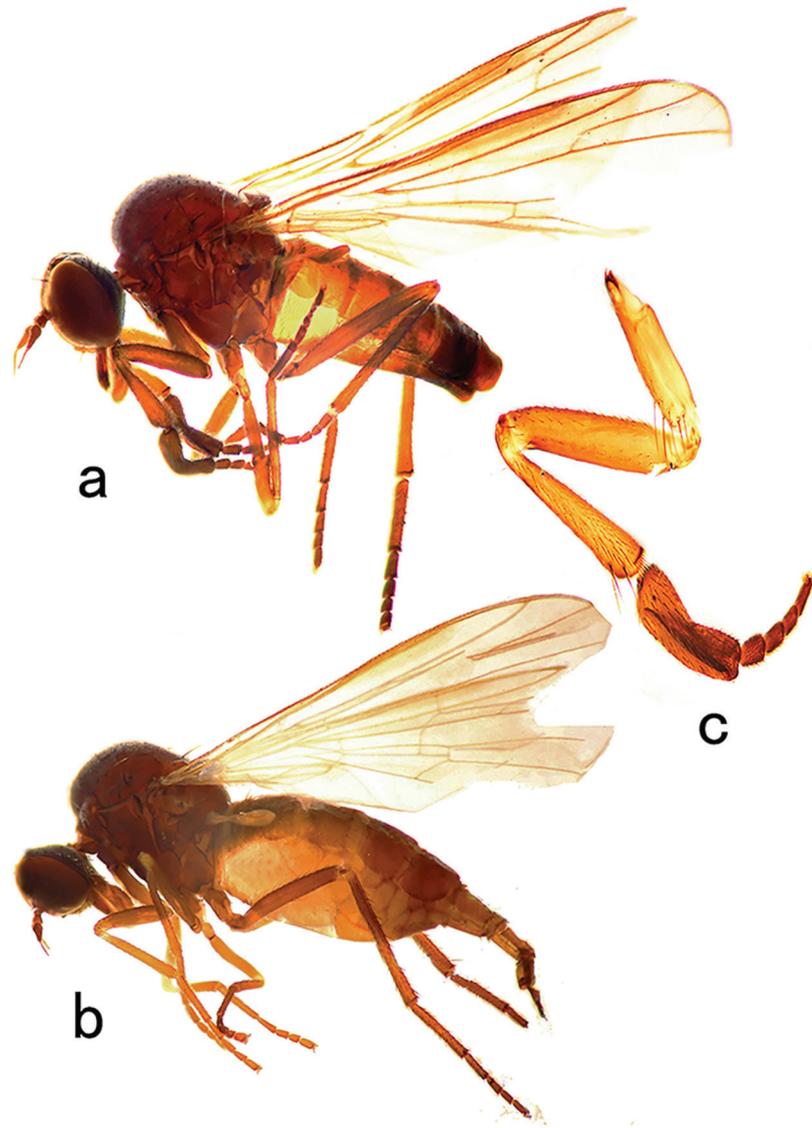


Figure 3. *Hilara lata* sp. nov. a. lateral view of male; b. lateral view of female; c. fore leg of male.

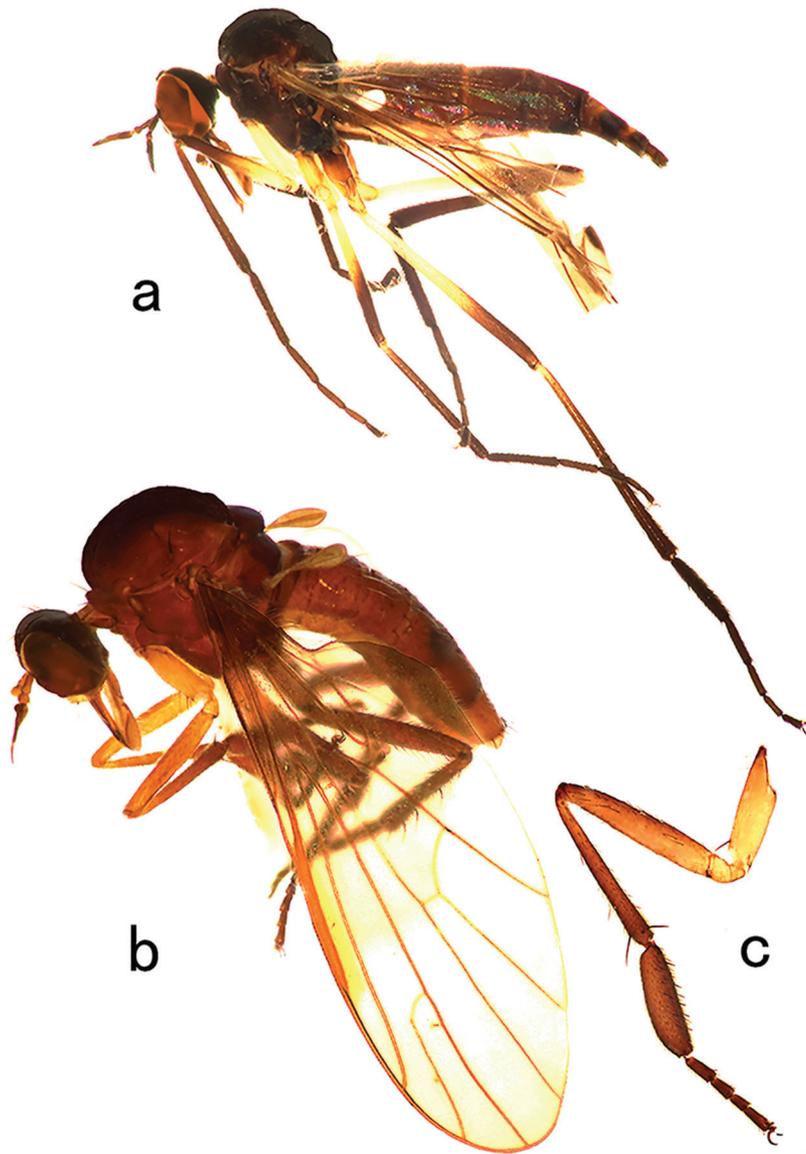


Figure 4. *Hilara ningshana* sp. nov. a. lateral view of female; b. lateral view of male; c. fore leg of male.

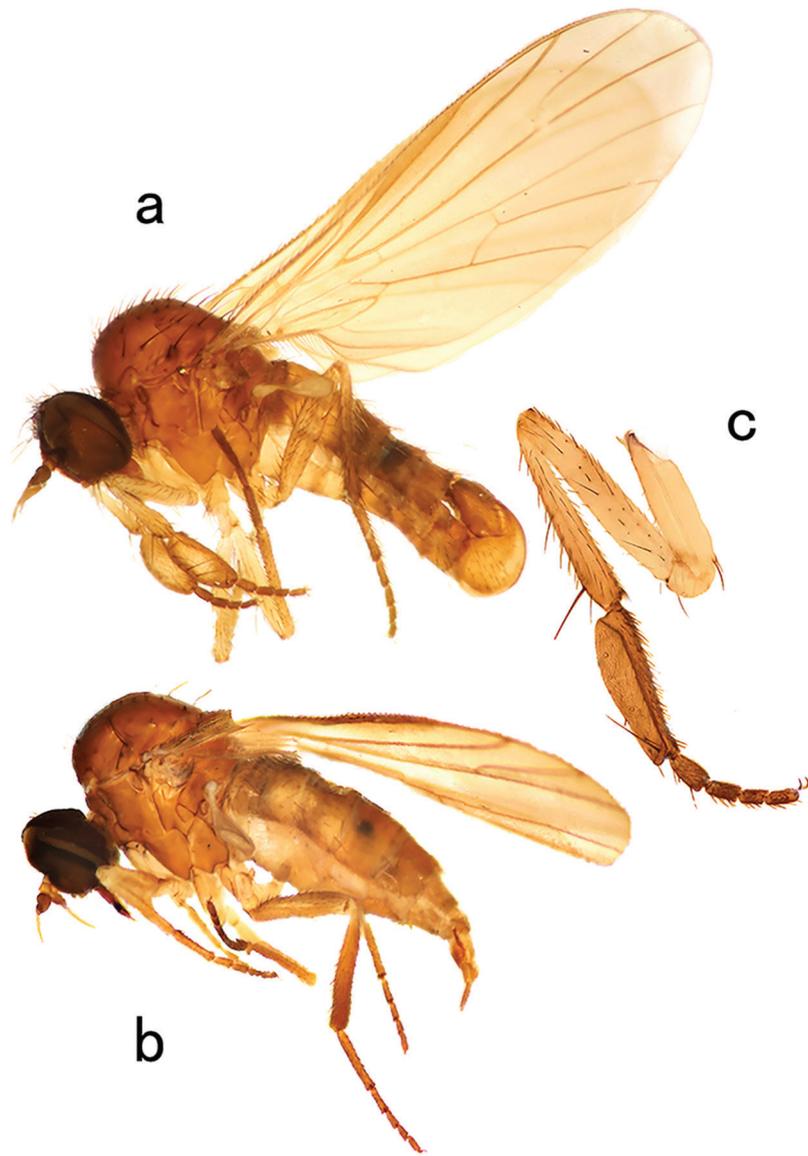


Figure 5. *Hilara qinlingensis* sp. nov. a. lateral view of male; b. lateral view of female; c. fore leg of male.

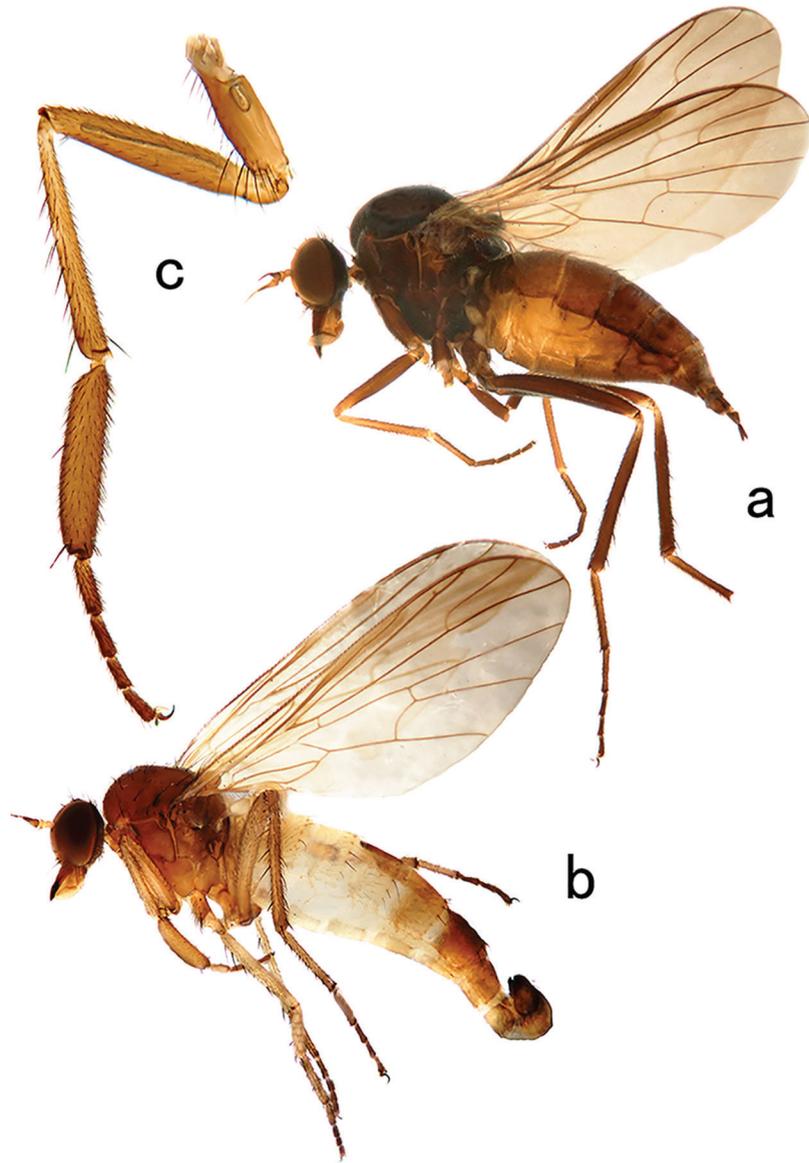


Figure 6. *Hilara spinata* sp. nov. a. lateral view of female; b. lateral view of male; c. fore leg of male.

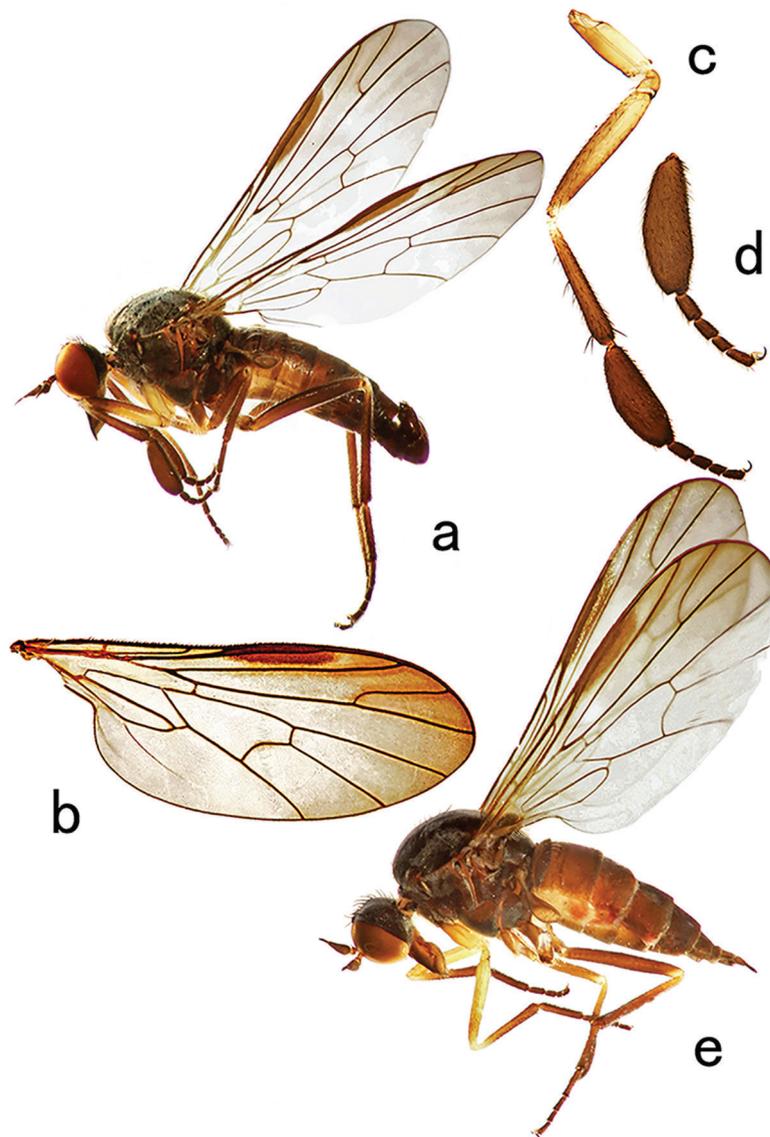


Figure 7. *Hilara flata* Liu, Li, and Yang a. lateral view of male; b. wing; c. fore leg of male; d. tarsus of male; e. lateral view of female.

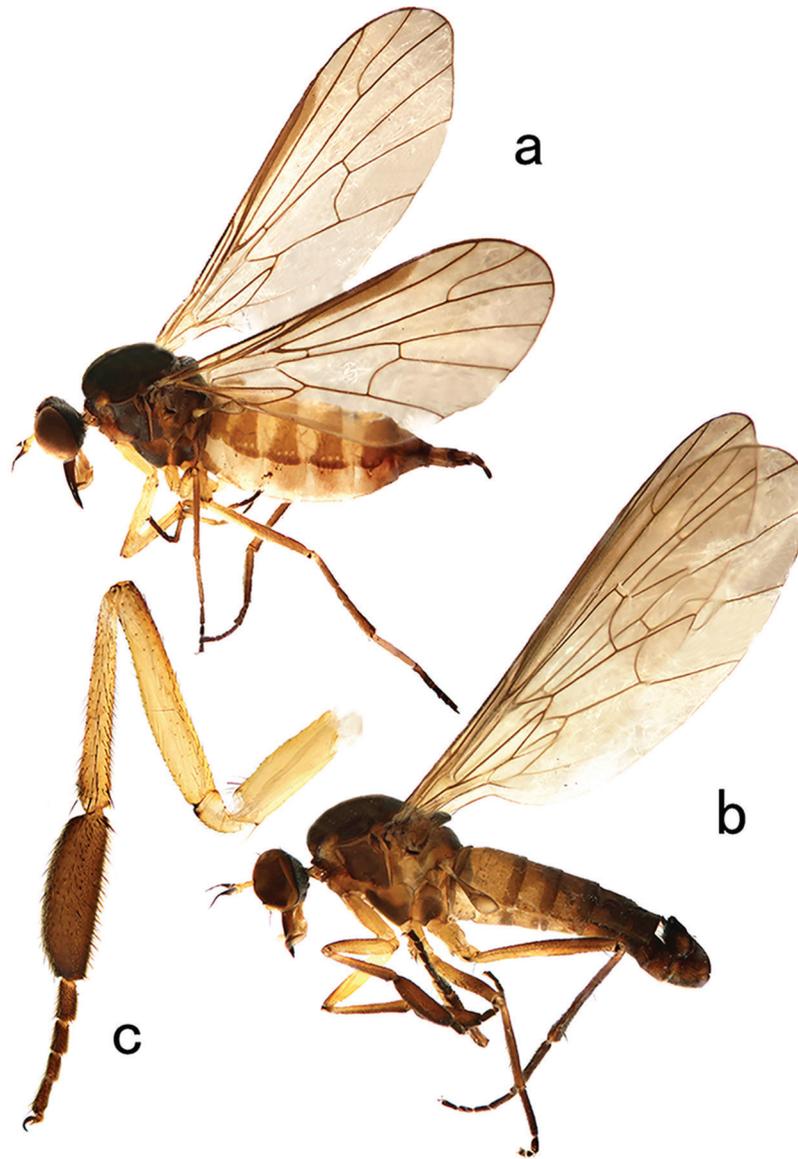


Figure 8. *Hilara digitiformis* Liu, Li *et* Yang a. lateral view of female; b. lateral view of male; c. fore leg of male.

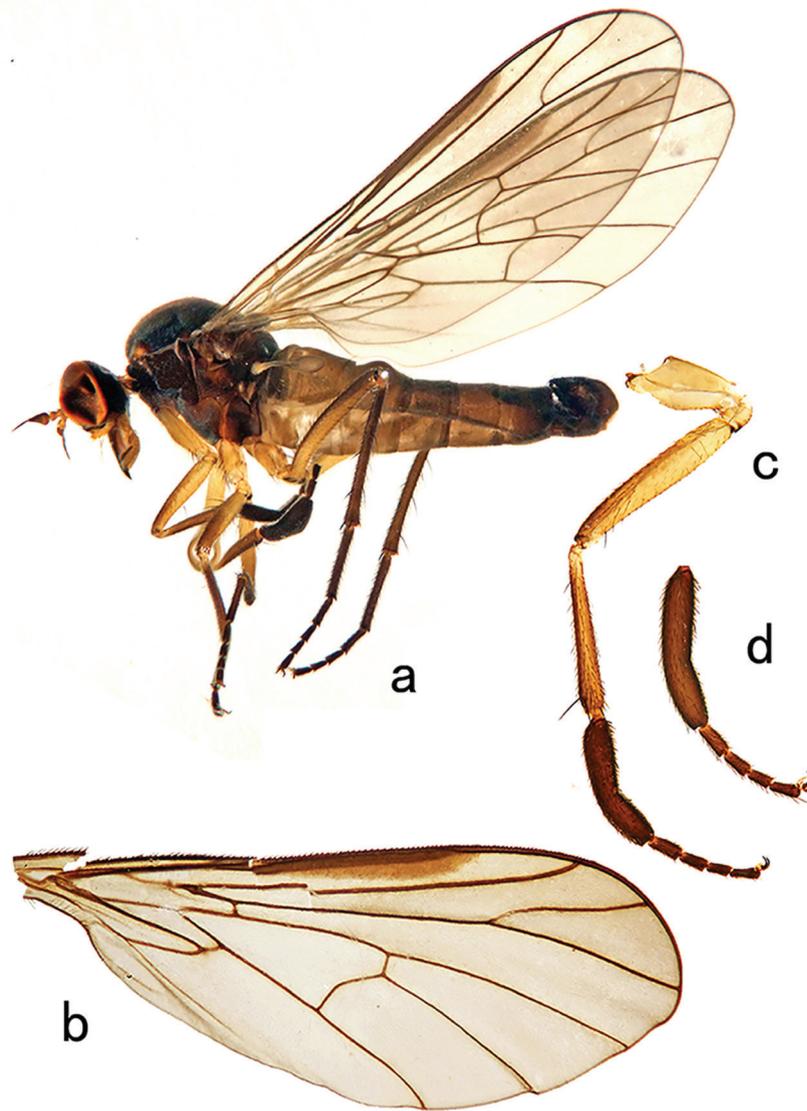


Figure 9. *Hilara Zhouzhiensis* sp. nov. a. lateral view of male; b. wing; c. fore leg of male; d. tarsus of male.

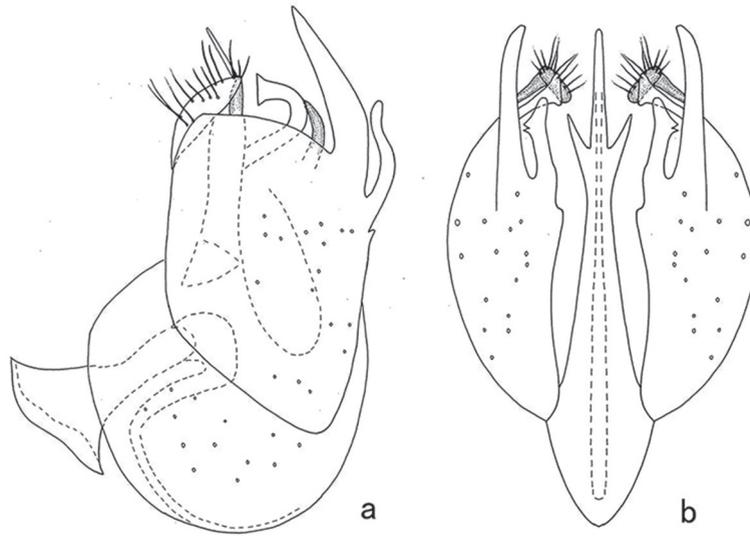


Figure 10. *Hilara biprocera* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

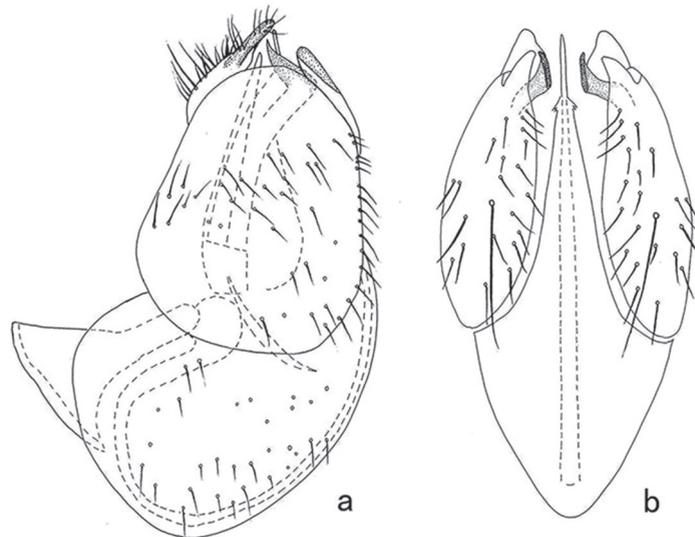


Figure 11. *Hilara digitata* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

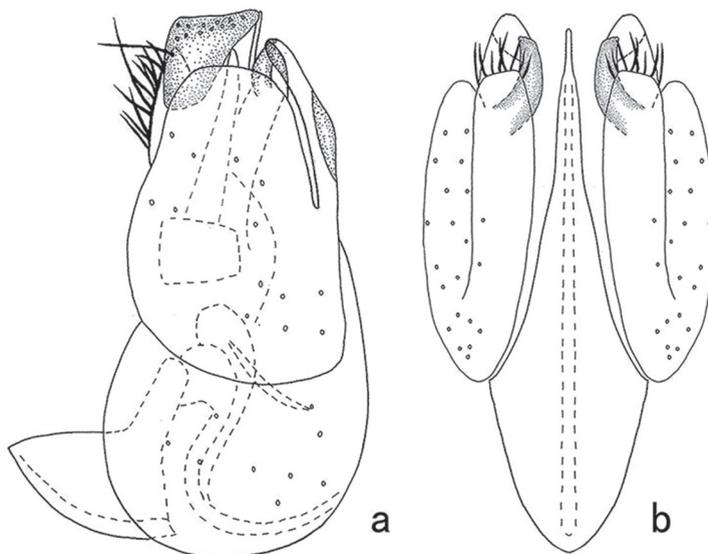


Fig. 12. *Hilara lata* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

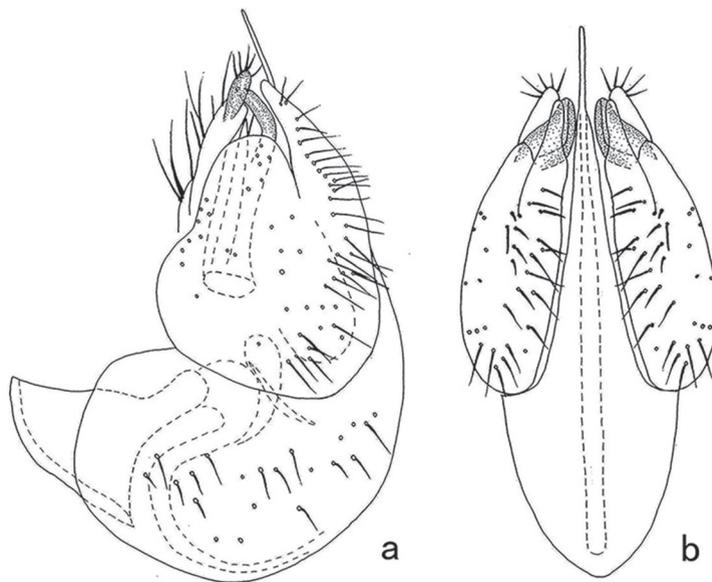


Figure 13. *Hilara ningshana* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

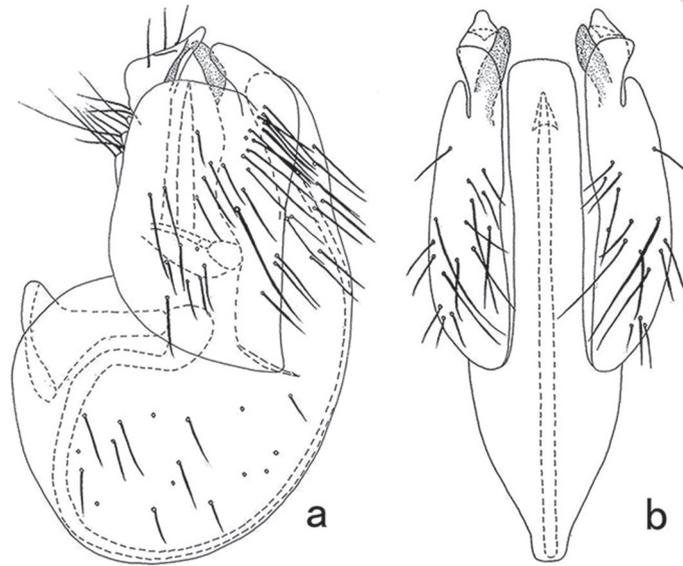


Fig. 14. *Hilara qinlingensis* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

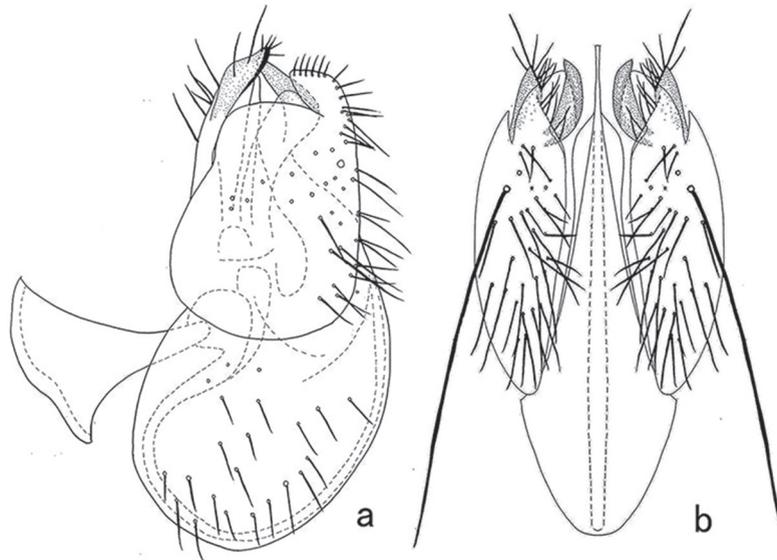


Figure 15. *Hilara spinata* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.

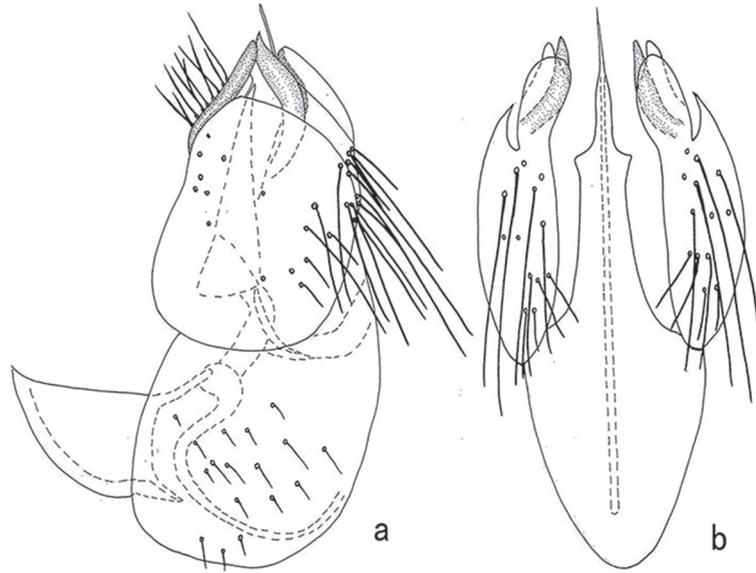


Figure 16. *Hilara flata* Liu, Li et Yang (♂) a. genitalia, lateral view; b. genitalia, posterior view.

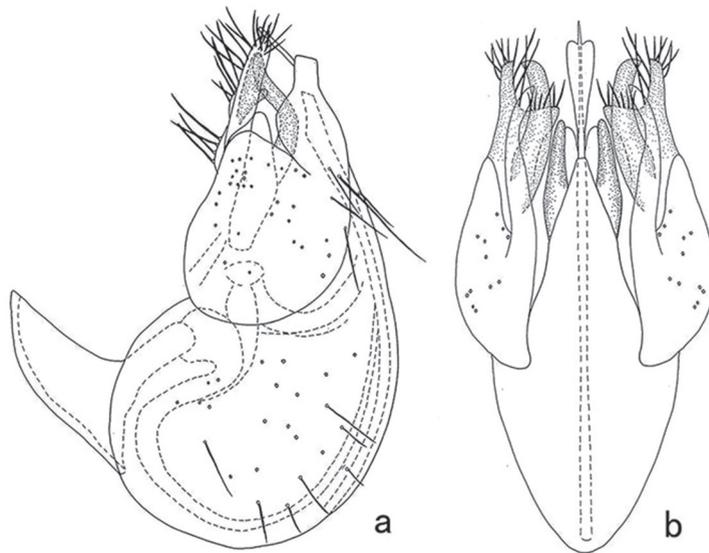


Figure 17. *Hilara digitiformis* Liu, Li et Yang (♂) a. genitalia, lateral view; b. genitalia, posterior view.

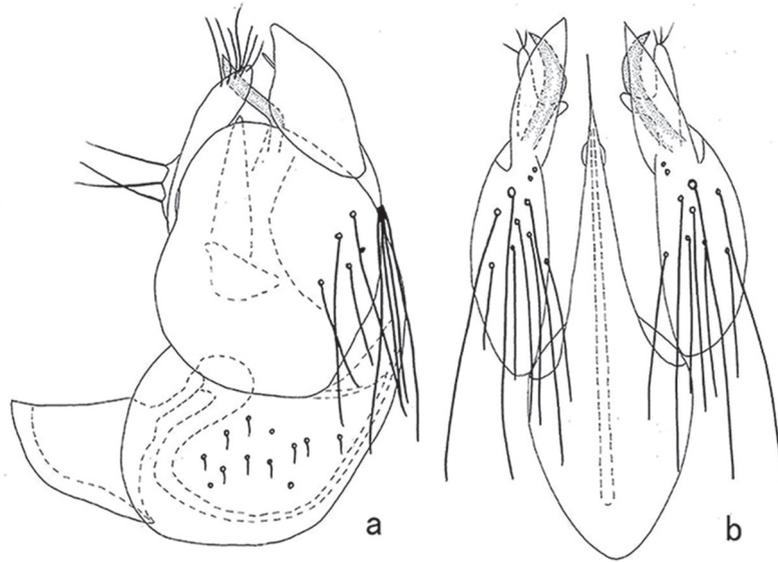


Figure 18. *Hilara zhouzhiensis* sp. nov. (♂) a. genitalia, lateral view; b. genitalia, posterior view.