

Six new species of *Empis* (*Coptophlebia*) (Diptera: Empididae) from Gaoligongshan, China

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Abstract: *Coptophlebia* Bezzi is one of the largest subgenera in the genus *Empis* Linnaeus with over 160 known species distributed worldwide. 38 species were known to occur in China. Three species of *Coptophlebia* were reported from Gaoligongshan, Yunnan. Six new species belonging to the *Empis* (*Coptophlebia*) *hyalea* group are added to this region: *Empis* (*Coptophlebia*) *brevidigitata* sp. nov., *Empis* (*Coptophlebia*) *longistylus* sp. nov., *Empis* (*Coptophlebia*) *lushuiana* sp. nov., *Empis* (*Coptophlebia*) *tengchongana* sp. nov., *Empis* (*Coptophlebia*) *xuankuni* sp. nov. and *Empis* (*Coptophlebia*) *yanleiae* sp. nov. A key to the species of *Coptophlebia* from Gaoligongshan is presented.

Key words: dance fly; taxonomy; key

中国高黎贡山缺脉舞虻亚属 *Coptophlebia* 六新种 (双翅目: 舞虻科)

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摘要: 缺脉舞虻亚属 *Coptophlebia* Bezzi 是舞虻属 *Empis* Linnaeus 最大的亚属之一, 目前已知 160 余种, 分布于世界各地, 我国已知 38 种。云南高黎贡山缺脉舞虻亚属已知 3 种, 本文又报道该地区亮缺脉舞虻种团 *Empis* (*Coptophlebia*) *hyalea*-group 6 新种: 短指突缺脉舞虻 *Empis* (*Coptophlebia*) *brevidigitata* sp. nov., 长端刺缺脉舞虻 *Empis* (*Coptophlebia*) *longistylus* sp. nov., 泸水缺脉舞虻 *Empis* (*Coptophlebia*) *lushuiana* sp. nov., 腾冲缺脉舞虻 *Empis* (*Coptophlebia*) *tengchongana* sp. nov., 轩磊缺脉舞虻 *Empis* (*Coptophlebia*) *xuankuni* sp. nov., 艳磊缺脉舞虻 *Empis* (*Coptophlebia*) *yanleiae* sp. nov.。文中还编制了高黎贡山缺脉舞虻亚属分种检索表。

关键词: 舞虻; 分类; 检索表

Introduction

Coptophlebia Bezzi is one of the largest subgenera in the genus *Empis* Linnaeus with 160 known species distributed worldwide (Yang *et al.* 2007). It is easily identified by vein M₁ reduced, usually apically not reaching the wing margin (Yang *et al.* 2002). The major references dealing with the Palaearctic and Oriental *Coptophlebia* are as follows: Yang *et al.*

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(2002), Daugeron (2002), Daugeron & Grootaert (2003a, b, 2005), Daugeron *et al.* (2003), Liu *et al.* (2010), Zhao & Yang (2013), Zhou *et al.* (2021). 38 species were known to occur in China (Yang *et al.* 2018). Gaoligongshan located in Southwest China is one of the biodiversity hotspots in Asia. Three species of the subgenus *Coptophlebia* were reported from Gaoligongshan (Zhou *et al.* 2021). Here six new species belonging to the *Empis* (*Coptophlebia*) *hyalea* group are added to this region. A key to the species of *Coptophlebia* from Gaoligongshan is presented.

Material and methods

The specimens were examined and illustrated using a ZEISS Stemi 2000–c. Genitalic preparations were made by macerating the apical portion of the abdomen in cold 10% NaOH for about 6 hours. The type specimens are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing.

The following abbreviations are used for seta(e): acr — acrostichal bristle(s); ad — anterodorsal bristle(s); av — anteroventral bristle(s); dc — dorsocentral bristle(s); h — humeral bristle(s); npl — notopleural bristle(s); oc — ocellar bristle(s); p — posterior bristle(s); pd — posterodorsal bristle(s); prsc — prescutellar bristle(s); psa — postalar bristle(s); pv — posteroventral bristle(s); sa — supraalar bristle(s); sc — scutellar bristle(s).

Taxonomy

Key to species of subgenus *Coptophlebia* from Gaoligongshan (males)

1. Tergite 8 modified with middle incision and lateral processes; epandrial lamella furcated 2
- Tergite 8 not modified, without middle incision and lateral processes; epandrial lamella not furcated 4
2. Eyes separated on frons; hind tibia not thickened subapically 3
- Eyes contiguous on frons; hind tibia strongly thickened subapically
..... *Empis* (*C.*) *angularis* Zhou, Ding, Shamshev & Yang
3. Fore tibia with 1 pv near middle; epandrial dorsal process with 2 apical setae
..... *E. (C.) biseta* Zhou, Ding, Shamshev & Yang
- Fore tibia without setae; halter yellow; epandrial dorsal process with 4 apical setae
..... *E. (C.) wangi* Zhou, Ding, Shamshev & Yang
4. Fore tibia bent at base; mid femur with rowed dense av and pv 5
- Fore tibia not bent base; mid femur with only few av and pv 8
5. Fore tibia distinctly or strongly bent at base; fore tarsomere 1 very long, nearly as long as fore tibia; hind tibia with weak or distinct posterior process 6
- Fore tibia weakly bent at base; fore tarsomere 1 distinctly shorter than fore tibia; hind tibia without posterior process 7
6. Fore tibia basally strongly bent with weak dorsal convexity and distinct ventral convexity; hind tibia with a weak posterior process at extreme base; biseriate acr present *E. (C.) tengchongana* **sp. nov.**
- Fore tibia basally distinctly bent without dorsal convexity and ventral convexity; hind tibia with a short finger-like posterior process at extreme base; acr absent *E. (C.) brevidigitata* **sp. nov.**
7. Fore tibia weakly bent with weak dorsal convexity at base; cercus apically distinctly projected beyond

- postero-lateral tip of epandrium *E. (C.) yanleiae* **sp. nov.**
- . Fore tibia weakly bent without dorsal convexity at base; cercus apically not projected beyond postero-lateral tip of epandrium *E. (C.) xuankuni* **sp. nov.**
- 8. Antennal stylus 0.4 times as long as first flagellomere *E. (C.) lushuiana* **sp. nov.**
- . Antennal stylus nearly as long as first flagellomere *E. (C.) longistylus* **sp. nov.**

1. *Empis* (*Coptophlebia*) *brevidigitata* **sp. nov.** (Fig. 1)

Description. Male. Body length 4.0–4.4 mm, wing length 4.9–5.0 mm.

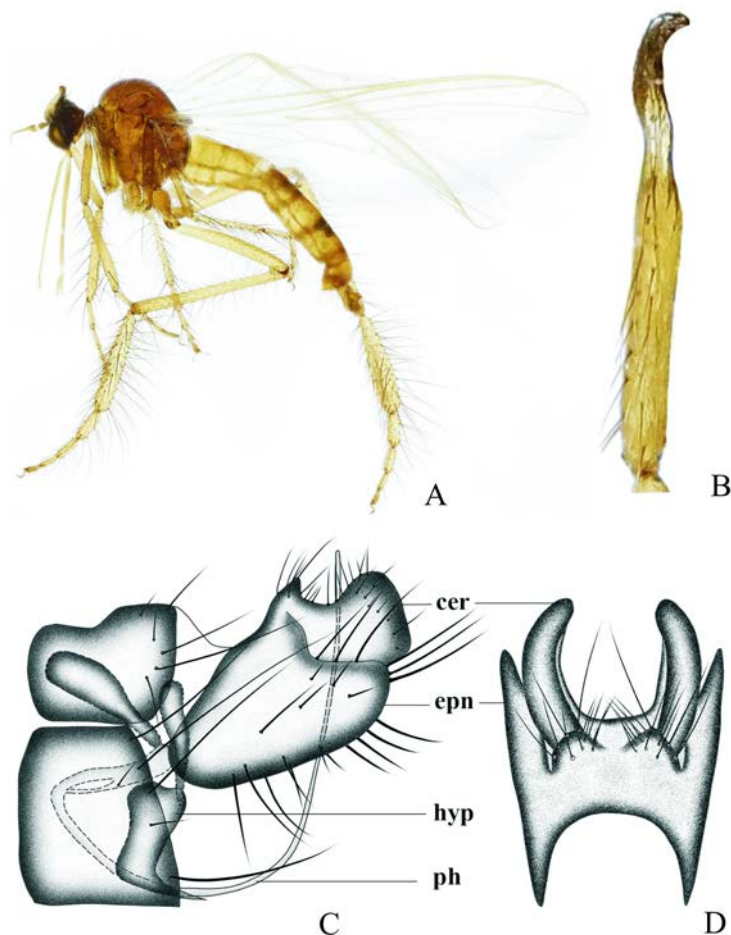


Figure 1. *Empis* (*Coptophlebia*) *brevidigitata* **sp. nov.** A. Male habitus, lateral view; B. Male fore tibia, lateral view; C. Male genitalia, lateral view; D. Epandrium and cerci, dorsal view. Abbreviations: cer – cercus; epn – epandrium; hyp – hypandrium; ph – phallus.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long subconical, 3.1 times longer than wide; stylus 0.6 times as long as first flagellomere. Proboscis 2.2 times longer than head height, blackish with some short blackish hairs; palpus yellow with a few black hairs and 1 long black ventral bristle at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl, acr absent, dc uniseriate and very long, 2 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs dark brownish yellow, but all coxae dark brown. Hairs and bristles on legs blackish. Mid femur with long or very long thin av. Hind femur with row of short thin av and long or very long thin pv. Fore tibia thickened, basally thin and distinctly bent. Fore tibia with one row of ad and pd (ad longer and thicker than pd). Fore tarsomere 1 very long, nearly as long as fore tibia, weakly thickened, nearly as thick as fore tibia, with 6 very long thick ad and 4 long thin pv. Mid tibia with 2 very long ad and 2 very thin av at middle; apically with 3 bristles (1 very long ad nearly as long as tarsomere 1). Mid tarsomere 1 with long dense av and pv; apically with 5 bristles (1 ad very long, slightly shorter than tarsomere 1); tarsomere 2 with 1 very long ad apically. Hind tibia with a short finger-like posterior process at extreme base. Hind tibia with long or very long thin dorsal bristles; apically with 1 very long thin ad and 1 very long thin pd. Hind tarsus with very long thin dorsal bristles; tarsomere 1 slightly thicker than hind tibia, with three rows of ventral bristles. Wing hyaline, indistinctly tinged brownish; stigma indistinct, veins brown, M_1 complete and reaching wing margin. Halter dark brown.

Abdomen straight, apically distinctly bent downward, dark brown with gray pollen; hypopygium narrower than pregenital segments. Hairs and bristles blackish.

Male genitalia. Epandrium with middle process short, subconical and with short wide postero-lateral portion widely obtuse at apical margin. Cercus basally with a trapezoidal dorsal incision, apically very wide and slightly projected beyond postero-lateral tip of epandrium.

Female. Body length 3.8–4.2 mm, wing length 4.2–4.6 mm.

Holotype. ♂, China, Yunnan, Tengchong, Zizhi, 2200 m, 31-V-2007, Yanlei LI (CAU).

Paratypes. 17♂18♀, same data as holotype (CAU).

Etymology. The specific epithet is from the Latin *brevi* (“short”) and *digitatus* (“finger-like”), referring to the hind tibia with a short finger-like posterior process at the extreme base.

Diagnosis. Acr absent. Fore tibia thickened, basally thin and distinctly bent. Fore tarsomere 1 very long, nearly as long as fore tibia. Mid tibia and tarsomere 1 each with 1 very long ad at extreme tip. Hind tibia with a short finger-like posterior process at extreme base. Cercus basally with trapezoid dorsal incision, apically very wide and slightly projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis (Coptophlebia) liuxihensis* Daugeron, Grootaert & Yang from Guangdong, but may be separated from the latter by the fore tibia thickened, distinctly bent, but not S-shaped. In *E. (C.) liuxihensis*, the fore tibia is strongly bent and S-shaped (Daugeron *et al.* 2003).

2. *Empis (Coptophlebia) longistylus* sp. nov. (Fig. 2)

Description. Male. Body length 3.0–3.1 mm, wing length 3.0–3.1 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia. Hairs and bristles on head black. Ocellar tubercle distinct with 2 long oc. Antenna black; first flagellomere long subconical, 2.2 times longer than wide; stylus 0.95 times as long as first flagellomere. Proboscis 1.4 times longer than head height, blackish

with some short blackish hairs; palpus dark yellow with few black hairs and 1 long black ventral bristle at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl, acr absent, dc uniseriate and very long, 1 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs brown to dark brown, but all coxae dark brown. Hairs and bristles on legs black. Fore femur with row of short spine-like anterior bristles. Mid femur with few mostly short pv (1 middle pv very long). Hind femur with row of short to long thin av. Fore tibia not bent, with very weak dorsal convexity at base. Fore tarsus with few very long ad and pd. Fore tarsomere 1 distinctly shorter than fore tibia, weakly thickened, nearly as thick as fore tibia, with 2 long av and 3 long pv. Mid tibia with 2 long ad and 2 long av at middle; apically with 3 bristles (1 very long ad longer than tarsomere 1). Mid tarsomere 1 with thick av and pv; apically with 4 bristles (1 very long ad nearly as long as tarsomere 1). Hind tibia with 2–3 long ad and 1 long av at middle; apically with 3 bristles (1 very long ad and 1 very long pd). Hind tarsomere 1 distinctly thickened, thicker than hind tibia, with 2 very long ad and 2 very long pd at large middle portion, 3–4 short av and 3–4 short pv; apically with 1 long av. Wing hyaline; stigma brownish; veins brown, M_1 complete and reaching wing margin. Halter dark brown.

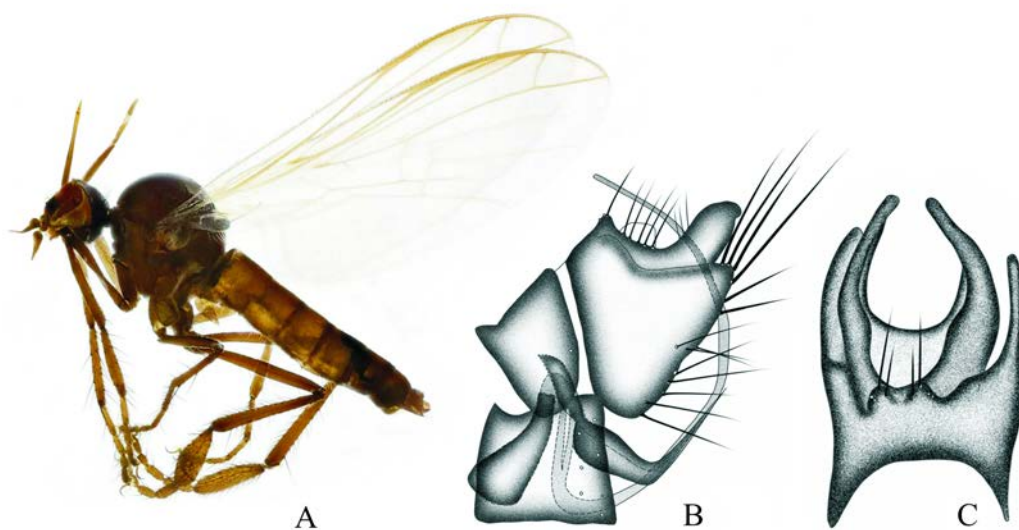


Figure 2. *Empis* (*Coptophlebia*) *longistylus* sp. nov. A. Male habitus, lateral view; B. Male genitalia, lateral view; C. Epaandrium and cerci, dorsal view.

Abdomen straight, apically weakly curved downward, dark brown with gray pollen; hypopygium thicker than pregenital segments. Hairs and bristles blackish except those of basal portion mostly dark yellow.

Male genitalia. Epaandrium with middle process very short and somewhat conical, and with short postero-lateral portion apically narrowed and somewhat triangular with 4 very long bristles. Cercus basally with very wide dorsal incision; apically narrow, not distinctly projected beyond postero-lateral tip of epaandrium.

Female. Body length 2.9–3.0 mm, wing length 2.9–3.0 mm. Wing brownish.

Holotype. ♂, **China**, Yunnan, Tengchong, Zizhi, 07-V-2012, Wenliang LI (CAU).
Paratypes. 12♂3♀, same data as holotype (CAU).

Etymology. The specific epithet is from the Latin *longi* (“long”) and *stylus* (“columnar”), referring to the long stylus.

Diagnosis. Stylus nearly as long as first flagellomere. Fore tibia not bent with very weak dorsal convexity at base. Hind tarsomere 1 distinctly thickened. Cercus basally with a very wide dorsal incision; apically narrow, not distinctly projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis (Coptophlebia) xui* Daugeron, Grootaert & Yang from Guangdong, but may be separated from the latter by the epandrium with the postero-lateral portion apically narrowed and the cercus apically not distinctly projected beyond postero-lateral tip of the epandrium. In *E. (C.) xui*, the epandrium has the postero-lateral portion wide apically, and the cercus is distinctly projected beyond the postero-lateral tip of the epandrium (Daugeron *et al.* 2003).

3. *Empis (Coptophlebia) lushuiana* sp. nov. (Fig. 3)

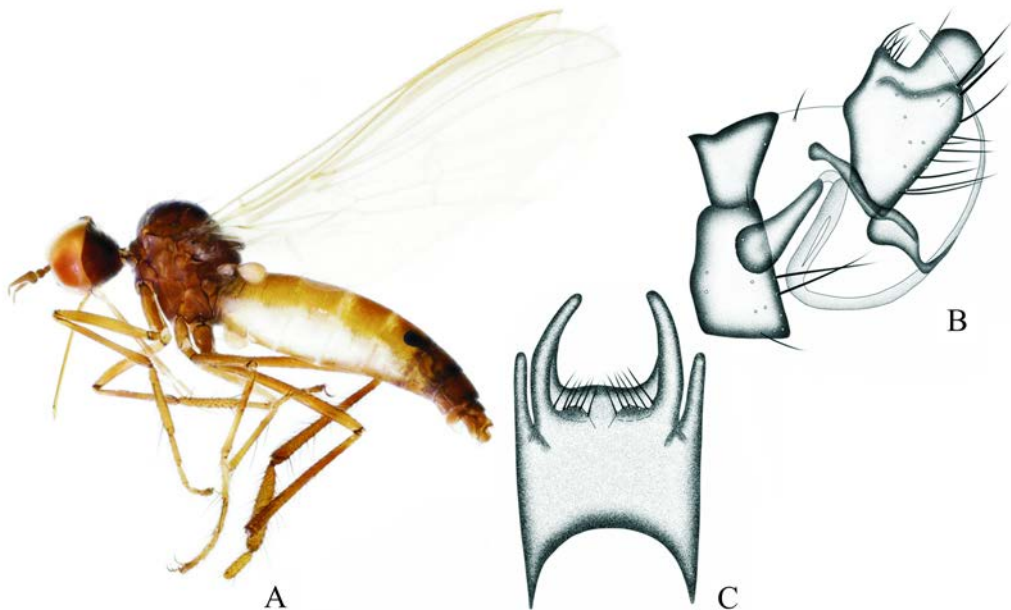


Figure 3. *Empis (Coptophlebia) lushuiana* sp. nov. A. Male habitus, lateral view; B. Male genitalia, lateral view; C. Epandrium and cerci, dorsal view.

Description. Male. Body length 3.5 mm, wing length 3.4 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long subconical, 3.1 times longer than wide; stylus 0.4 times as long as first flagellomere. Proboscis 1.9 times longer than head height, blackish with some short blackish hairs; palpus dark yellow with few black hairs and 1 long black ventral bristle at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl, acr absent, dc uniseriate and very long, 1 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs dark brown except mid tarsomeres 1–4 dark brownish yellow. Hairs and bristles on legs black. Mid femur basally with 4 long thin av and 2 very long thin pv. Hind femur with 5–6 short thin av apically. Fore tibia not bent at base. Fore tarsus with rather long ad and pd. Fore tarsomere 1 distinctly shorter than fore tibia, weakly thickened, nearly as thick as fore tibia, with 1 very long pd at base and few long thin ventral bristles; apically with 5 mostly very long bristles. Mid tibia with 2 very long ad and 1 very long av on basal half; apically with 3 bristles (1 very long ad distinctly longer than tarsomere 1). Mid tarsomere 1 apically with 4 bristles (1 very long ad nearly as long as tarsomere 1). Hind tibia with somewhat dense dorsal and ventral hairs; apically with 1 long thin ad and 1 very long pd. Hind tarsomere 1 thicker than hind tibia, with 1 very long ad and 1 very long pd near middle; apically with 1 very long ad and 1 long av. Wing hyaline, slightly tinged brownish; stigma brown; veins brown, M_1 weak, complete and reaching wing margin. Halter dark brown.

Abdomen apically weakly curved downward, dark brown with gray pollen; hypopygium nearly as thick as pregenital segments. Hairs and bristles blackish.

Male genitalia. Epandrium with weak middle process and short wide postero-lateral portion nearly truncate at apical margin. Cercus basally with a V-shaped dorsal incision; apically rather wide, nearly quadrate and distinctly projected beyond postero-lateral tip of epandrium.

Female. Unknown.

Holotype. ♂, China, Yunnan, Lushui, 2356 m, 11-VII-2016, Liang WANG (CAU).

Etymology. The specific epithet refers to the type locality: Lushui.

Diagnosis. Legs brown to dark brown except mid tarsomeres 1–4 dark brownish yellow. Mid femur only with 4 thin av basally and 2 very long pv near base. Mid tibia with 2 very long ad and 1 very long av at base. Cercus basally with V-shaped dorsal incision; apically rather wide, nearly quadrate and distinctly projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis* (*Coptophlebia*) *bicoloripes* Zhao & Yang from Vietnam, but can be separated from the latter by the cercus with a large V-shaped dorsal incision at base and rather wide apically. In *E. (C.) bicoloripes*, the cercus has a small and somewhat quadrate dorsal incision at base and is distinctly narrow apically (Zhao & Yang, 2013).

4. *Empis* (*Coptophlebia*) *tengchongana* sp. nov. (Fig. 4)

Description. Male. Body length 3.8–4.8 mm, wing length 4.4–5.2 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long subconical, 2.8 times longer than wide; stylus 0.6 times as long as first flagellomere. Proboscis 2.5 times longer than head height, blackish with some short blackish hairs; palpus yellow with few black hairs and 1 long black ventral bristle at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl, acr irregularly biseriate and short, dc uniseriate

and very long, 2 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs brown to dark brown, but fore coxa dark brownish yellow and fore femur brownish yellow. Hairs and bristles on legs black. Mid femur with weak av and pv (pv longer than av). Hind femur with row of long dense av on apical 2/3 and 5 pv at middle. Fore tibia basally strongly bent with weak dorsal convexity and distinct ventral convexity. Fore tarsus with very long ad and pd. Fore tarsomere 1 very long, slightly longer than fore tibia, weakly thickened, nearly as thick as fore tibia, with several very long av and pv. Mid tibia with 2 very long ad and 2 very long av at middle; apically with 3 bristles (1 very long ad nearly as long as tarsomere 1). Mid tarsomere 1 with thick av and pv; apically with 5 bristles (1 ad very long, nearly as long as tarsomere 1); tarsomere 2 with 1 very long ad apically. Hind tibia with a weak posterior process at extreme base. Hind tibia with long or very long thin dorsal bristles; apically with 1 very long thin ad and 1 very long thin pd. Hind tarsus with very long thin dorsal bristles; tarsomere 1 slightly thicker than hind tibia, with three rows of thick ventral bristles. Wing hyaline, slightly tinged brownish; stigma dark brown; veins dark brown, M_1 complete and reaching wing margin. Halter dark brown.

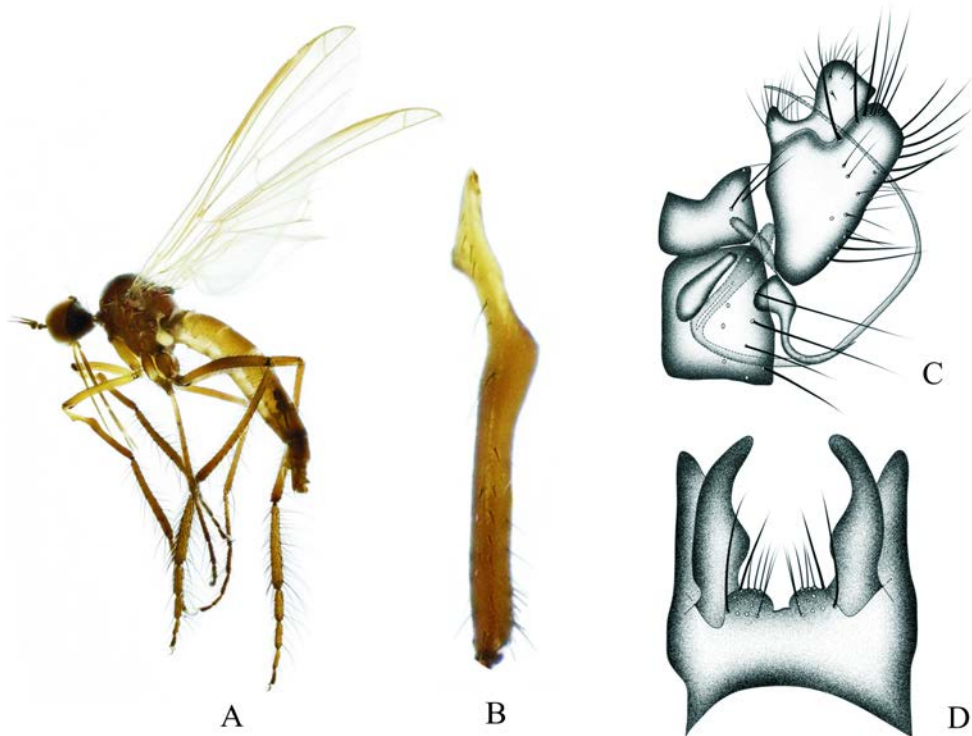


Figure 4. *Empis (Coptophlebia) tengchongana* sp. nov. A. Male habitus, lateral view; B. Male fore tibia, lateral view; C. Male genitalia, lateral view; D. Epandrium and cerci, dorsal view.

Abdomen straight, apically distinctly bent downward, dark brown with gray pollen; hypopygium narrower than pregenital segments. Hairs and bristles blackish.

Male genitalia. Epandrium with middle process short, subconical and short, wide

postero-lateral portion nearly truncate at apical margin. Cercus basally with a trapezoidal dorsal incision; apically wide, not distinctly projected beyond postero-lateral tip of epandrium.

Female. Body length 3.8–4.2 mm, wing length 4.2–4.6 mm.

Holotype. ♂, **China**, Yunnan, Tengchong, Xiaodifang, 10-V-2012, Yuanye LIU (CAU).

Paratypes. 8♂6♀, same data as holotype (CAU).

Etymology. The specific epithet refers to the type locality: Tengchong.

Diagnosis. Fore tibia basally strongly bent with weak dorsal convexity and distinct ventral convexity. Fore tarsomere 1 very long, slightly longer than fore tibia. Mid tibia and tarsomere 1 each with 1 very long ad at extreme tip, nearly as long as tarsomere 1. Male cercus basally with a trapezoidal dorsal incision; apically wide, not distinctly projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis* (*Coptophlebia*) *liuxihensis* Daugeron, Grootaert & Yang from Guangdong, but may be separated from the latter by the cercus having a distinct dorsal incision basally and rather wide apically. In *E. (C.) liuxihensis*, the cercus has no dorsal incision basally and is narrowed apically (Daugeron *et al.* 2003).

5. *Empis* (*Coptophlebia*) *xuankuni* sp. nov. (Fig. 5)

Description. Male. Body length 3.1–3.5 mm, wing length 3.0–3.3 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia dark yellow. Hairs and bristles on head black. Ocellar tubercle distinct with 2 very long oc. Antenna black; first flagellomere very long subconical, 4.1 times longer than wide; stylus rather short, 0.25 times as long as first flagellomere. Proboscis 2.4 times longer than head height, blackish with some short blackish hairs; palpus dark yellow with few black hairs and 1 long black ventral bristle at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl (short, only middle bristle very long), acr absent, dc uniseriate and very long, 1 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs mostly brownish yellow, but fore and mid coxae dark brownish yellow, hind coxa brownish; fore and hind tarsi dark brownish yellow, mid tarsus brownish yellow but all of tarsomere 5 dark brown. Hairs and bristles on legs black. Fore femur with row of short spine-like anterior bristles and several short av. Mid femur with 7–8 short to very long av. Hind femur without long ventral bristles. Fore tibia weakly bent at base. Fore tarsus with few long ad and pd. Fore tarsomere 1 distinctly shorter than fore tibia, weakly thickened, nearly as thick as fore tibia, with 4 ad, 1 very long anterior bristle at base, 5 av, 1 very long pv near tip; apically with 5 bristles (1 av very long). Mid tibia with 2 very long ad and 1 very long av at base; apically with 3 bristles (1 very long ad distinctly longer than tarsomere 1). Mid tarsomere 1 with several av and pv; apically with 4 bristles (1 very long ad slightly longer than tarsomere 1). Hind tibia with 2 rather long ad at middle; apically with 1 long ad and 1 long pd. Hind tarsomere 1 nearly as thick as hind tibia, with 1 long thin ad and 2 long thin pd at middle; apically with 4 bristles (1 ad and 1 av very long thin). Wing hyaline, slightly tinged brownish; stigma indistinct; veins brown, M1 weak, complete and reaching wing margin. Halter brown.

Abdomen weakly curved downward, brown with gray pollen; hypopygium thicker than

pregenital segments. Hairs and bristles blackish.

Male genitalia. Epandrium with middle process very short and subconical, and with postero-lateral portion apically narrowed and obtuse. Cercus basally with a somewhat U-shaped dorsal incision; apically narrow, not projected beyond postero-lateral tip of epandrium.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Gongshan, Pukawang, 1452 m, 30-VI-2013, Xuankun LI (CAU). **Paratype.** 1♂, same data as holotype (CAU).

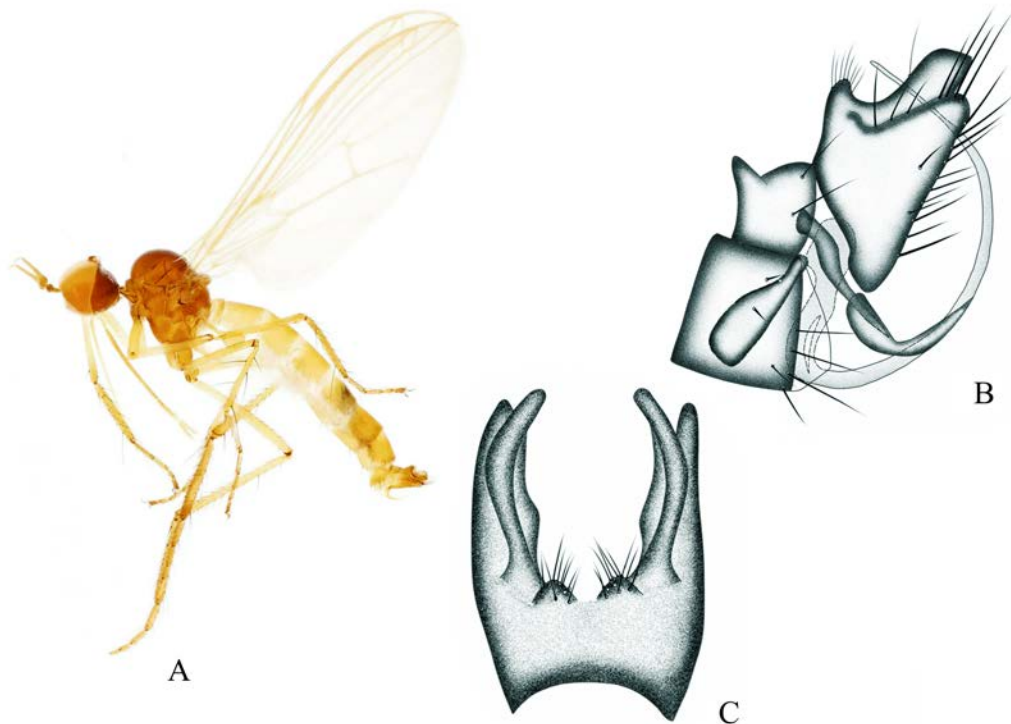


Figure 5. *Empis (Coptophlebia) xuankuni* sp. nov. A. Male habitus, lateral view; B. Male genitalia, lateral view; C. Epandrium and cerci, dorsal view.

Etymology. The specific epithet refers to the collector: Xuankun LI.

Diagnosis. Fore tibia weakly bent at base. Fore femur with several short av. Fore tarsomere 1 distinctly shorter than fore tibia. Epandrium with postero-lateral portion apically narrowed and obtuse. Cercus basally with a somewhat U-shaped dorsal incision; apically narrow, not projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis (Coptophlebia) xui* Daugeron, Grootaert & Yang from Guangdong, but may be separated from the latter by the epandrium with the postero-lateral portion apically narrowed and the cercus apically not distinctly projected beyond postero-lateral tip of the epandrium. In *E. (C.) xui*, the epandrium has the postero-lateral portion apically wide, and the cercus is distinctly projected beyond the postero-lateral tip of the epandrium (Daugeron *et al.* 2003).

6. *Empis* (*Coptophlebia*) *yanleiae* sp. nov. (Fig. 6)

Description. Male. Body length 3.3 mm, wing length 4.0 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged upper ommatidia. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere and arista broken. Proboscis 2.0 times longer than head height, blackish with some short blackish hairs; palpus yellow with few black hairs and 1 long black ventral bristle at tip.

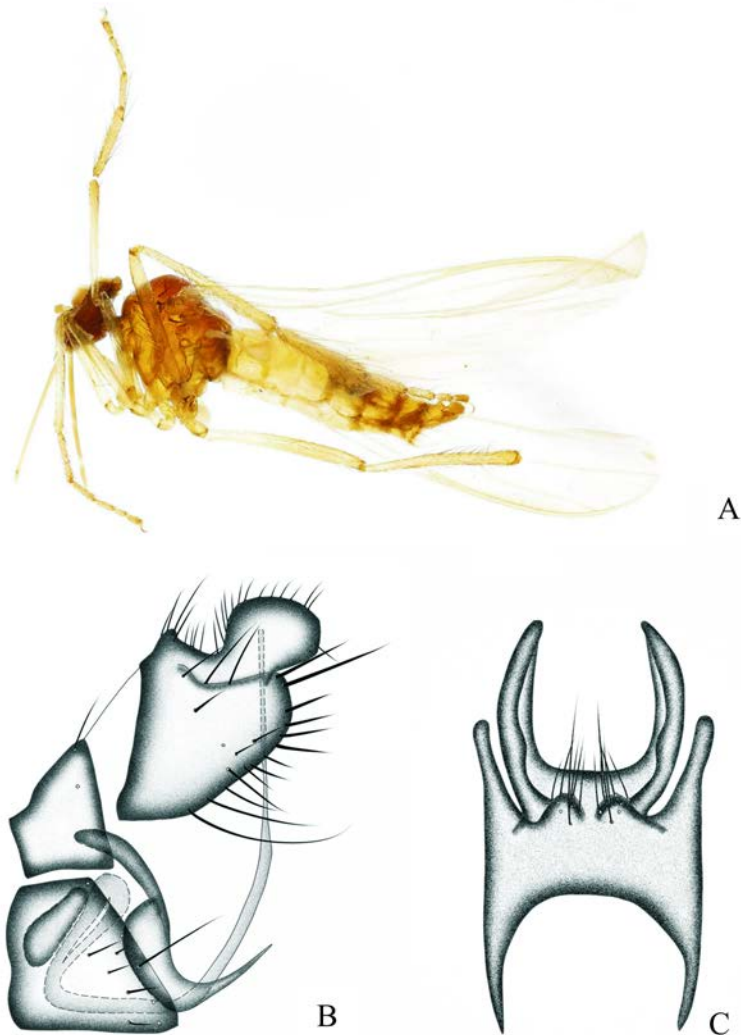


Figure 6. *Empis* (*Coptophlebia*) *yanleiae* sp. nov. A. Male habitus, lateral view; B. Male genitalia, lateral view; C. Epandrium and cerci, dorsal view.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum sparse; 1 very long h, 3 npl, acr absent, dc uniseriate and very long, 2 sa, 1 psa, 1 very long prsc; scutellum with pair of very long sc. Legs brownish to brown, but all coxae brown, basal half of hind femur brownish yellow, all tarsi brown. Hairs and bristles on legs

black. Mid femur with short weak av and long to very long pv. Hind femur without long ventral bristles. Fore tibia weakly bent with weak dorsal convexity at base. Fore tarsus with rather long ad and pd. Fore tarsomere 1 distinctly shorter than fore tibia, weakly thickened, nearly as thick as fore tibia, with 1 very long thin anterior bristle at base, 1 long av and 1 long pv at base. Mid tibia with 2 long ad and 2 long av at middle; apically with 3 bristles (1 very long ad). Mid tarsomere 1 with thick av and pv; apically with 5 bristles (1 ad very long). Hind tibia with long thin dorsal bristles. Hind tarsomere 1 slightly thicker than hind tibia, with 2 very long thin ad, 2 long thin pd, 4 av and 4 pv (1 basalmost av and pv long, thick); apically with 4 bristles (1 pd very long). Wing hyaline, slightly tinged brownish; stigma indistinctly brownish; veins brown, M1 complete and reaching wing margin. Halter brown.

Abdomen straight, dark brown with gray pollen; hypopygium narrower than pregenital segments. Hairs and bristles blackish.

Male genitalia. Epandrium with weak middle process and short wide postero-lateral portion nearly truncate at apical margin and with few very long bristles. Cercus basally with a small and somewhat V-shaped dorsal incision; apically rather wide, nearly quadrate and distinctly projected beyond postero-lateral tip of epandrium.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Tengchong, Zizhi, 2200 m, 31-V-2007, Yanlei LI (CAU).

Etymology. The specific epithet refers to the collector Yanlei LI.

Diagnosis. Fore tibia weakly bent with weak dorsal convexity at base. Fore tarsomere 1 distinctly shorter than fore tibia. Cercus basally with small and somewhat V-shaped dorsal incision; apically rather wide, nearly quadrate and distinctly projected beyond postero-lateral tip of epandrium.

Remarks. This species is somewhat similar to *Empis (Coptophlebia) bicoloripes* Zhao & Yang from Vietnam, but may be separated from the latter by the cercus very wide apically. In *E. (C.) bicoloripes*, the cercus is distinctly narrow apically (Zhao & Yang 2013).

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