

Species of *Empis* (*Coptophlebia*) (Diptera: Empididae) from Vietnam

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Abstract: Previously only one species in the subgenus *Coptophlebia* was known from Vietnam. Here the following three new species are added to the fauna of Vietnam: *Empis* (*Coptophlebia*) *bicoloripes* sp. nov., *E. (C.) longisetosa* sp. nov., and *E. (C.) wangi* sp. nov.. A key to the species in this subgenus from Vietnam is presented.

Key words: Brachycera; Empidoidea; dance flies; key; taxonomy

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越南缺脉舞虻亚属研究（双翅目：舞虻科）

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摘要: 越南的缺脉舞虻亚属 *Coptophlebia* 以前仅知 1 种。本文记述 3 新种：双色缺脉舞虻 *Empis* (*Coptophlebia*) *bicoloripes* sp. nov., 长鬃缺脉舞虻 *E. (C.) longisetosa* sp. nov. 和王氏缺脉舞虻 *E. (C.) wangi* sp. nov.。文中还编制了该亚属越南种类检索表。

关键词: 短角亚目；舞虻总科；舞虻；检索表；分类

Introduction

Coptophlebia Bezzi is one of the largest subgenera in the genus *Empis* Linnaeus with 161 known species distributed worldwide (Yang *et al.* 2007). It is characterized by M1 reduced and apically not reaching the wing margin (Daugeron 1997, 2001). The *Empis* (*Coptophlebia*) *hyalea*-group is the largest species group in the subgenus *Coptophlebia* and is characterized by the labella with an unsclerotized zone in the middle, epandrial lamellae linked dorsally by a broad sclerite and epandrium with a dorsal process (Daugeron 2002; Daugeron & Grootaert 2003a, b, 2005). The Oriental species of the *Empis* (*Coptophlebia*) *hyalea*-group were studied mainly by Yang *et al.* (2002), Daugeron & Grootaert (2003a, 2005), Daugeron *et al.* (2003) and Liu *et al.* (2010). The phylogenetic systematics of the *Empis* (*Coptophlebia*) *hyalea*-group was studied and a catalog of this group, including 72 species, was provided by Daugeron & Grootaert (2005).

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Previously only one species, *Empis* (*Coptophlebia*) *inferiseta* Daugeron & Grootaert, 2005, was known from Vietnam. Here three new species are added to the fauna of Vietnam. Thus, a total of four species in the subgenus *Coptophlebia* are known to occur in Vietnam. These four species belong to the *Empis* (*Coptophlebia*) *hyalea*-group. Types are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing.

Terms used for adult structures and male genitalia follow those of McAlpine (1981), Sinclair & Cumming (2006), and Daugeron & Grootaert (2005). The following abbreviations are used for seta(e): acr—acrostichal, ad—anterodorsal, av—anteroventral, dc—dorsocentral, h—humeral, npl—notopleural, oc—ocellar, p—posterior, pd—posterodorsal, prsc—prescutellar, psa—postalar, pv—posteroventral, sa—supraalar, sc—scutellar.

Key to species of the subgenus *Coptophlebia* from Vietnam

1. Fore tibia and tarsus not modified; cerci projected weakly or distinctly beyond postero-lateral tip of epandrium..... 2
- Fore tibia deformed at base, fore tarsus swollen; cerci not projected beyond postero-lateral tip of epandrium *E. (C.) inferiseta* Daugeron & Grootaert
2. Legs mostly dark brownish yellow or dark brown; epandrium with postero-lateral portion weakly elongated and obtuse..... 3
- Legs entirely black; epandrium with postero-lateral portion distinctly elongated and nearly acute..... *E. (C.) wangi* sp. nov.
3. Mid tarsus bicoloured, partly pale yellow; cerci rather wide, distinctly projected and upturned beyond postero-lateral tip of epandrium *E. (C.) bicoloripes* sp. nov.
- Mid tarsus uniformly dark brownish yellow; cerci relatively narrow, indistinctly projected and not upturned beyond postero-lateral tip of epandrium *E. (C.) longisetosa* sp. nov.

Description

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

Diagnosis. Legs dark brown except extreme bases of tibiae and tarsomeres 2–5 yellow or pale yellow but yellow portions on mid tarsus wide. Mid femur with row of av and 1 long strong pv at basal 1/3. Fore tarsomere 1 weakly thickened; hind tibia and tarsomere 1 distinctly thickened. Epandrium with postero-lateral portion not elongated and obtuse in lateral view; cerci rather wide, distinctly projected and upturned beyond postero-lateral tip of epandrium.

Male. Body length 2.4 mm, wing length 2.4 mm.

Head black with pale gray pollen. Eyes dark yellow, contiguous on frons with enlarged dorsal facets. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long conical, 3.1 times longer than wide; style black, 0.6 times as long as first flagellomere. Proboscis 1.7 times longer than head height, blackish with few black short hairs; palpus dark brown with black hairs and bristles and 1 long v at tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum distinct; humerus with 2 short hairs and 1 long h; 3 npl, acr biseriate and short, dc uniseriate and long, 1 sa, 1 psa, 1 prsc; scutellum with pair of sc. Legs dark brown except extreme bases of tibiae and tarsomeres 2–5 yellow or pale yellow; yellow areas on mid tarsus wide, particularly tarsomere 1 yellow except extreme tip. Hairs and bristles on legs black. Mid

femur with row of av and 1 long strong pv at basal 1/3. Hind femur apically with 2–3 ad and 3–4 av. Fore tibia with 1 ad at apical 1/3; apically with 4–5 bristles. Fore tarsomere 1 weakly thickened with 1–2 ad; apically with 4–5 distinct bristles. Mid tibia with 2 long ad and 2 long av at middle; apically with 4 bristles (1 very long ad slightly longer than tarsomere 1). Mid tarsomere 1 with 2 av, 2 pv and 2 p; apically with 4 bristles (1 very long ad slightly longer than tarsomere 2). Hind tibia and tarsomere 1 distinctly thickened, tarsomeres 2–3 weakly thickened. Hind tibia with 2 long ad, 1 long pd and 1 long av at middle; apically with 3 bristles. Hind tarsomere 1 with 2 long ad, 1 long pd, and two rows of irregular v; apically with 6 bristles (1 ad and 1 pd long). Wing hyaline, stigma indistinct; veins dark yellowish, anal vein weak but invisible apically. Halter dark brown.

Abdomen nearly straight, black, with thin gray pollen. Hairs and bristles on abdomen black. Male genitalia (Fig. 1): Epandrium with postero-lateral portion not elongated and obtuse in lateral view; cerci rather wide, distinctly projected and upturned beyond postero-lateral tip of epandrium.

Holotype. ♂, **Vietnam:** Vinh Phue, Me Linh Station, 02-X-2011, Guoquan WANG (CAU).

Distribution. Vietnam.

Remarks. The new species is similar to *E. (C.) wangi* sp. nov., but may be separated from the latter by the legs mostly dark brown with bicolored tarsi, and postero-lateral portion of epandrium weakly elongated and obtuse.

Etymology. The specific epithet refers to the bicolored tarsi.

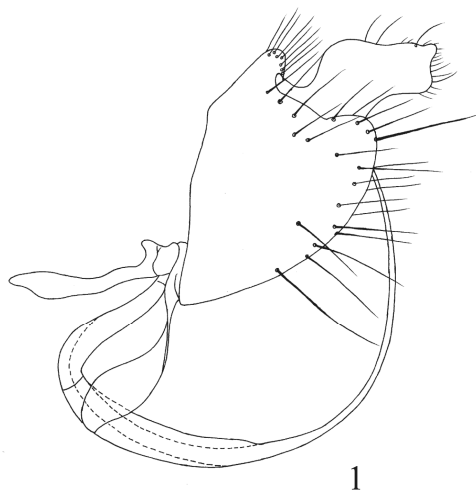


Figure 1. *Empis (Coptophlebia) bicoloripes* sp. nov. Male genitalia, lateral view.

2. *Empis (Coptophlebia) inferiseta* Daugeron & Grootaert, 2005

Empis (Coptophlebia) inferiseta Daugeron & Grootaert, 2005: 363. Type locality: Vietnam: 15 km northeast of Dalat.

Diagnosis. Legs brownish yellow except mid tarsomere 1 whitish. Fore tibia deformed at base, with 2 long strong dorsal setae; fore tarsus swollen. Epandrium with postero-lateral portion elongated and nearly acute in lateral view; cerci not projected beyond postero-lateral tip of epandrium.

Distribution. Vietnam.

3. *Empis (Coptophlebia) longisetosa* sp. nov. (Fig. 2)

Diagnosis. Legs dark brownish yellow except coxae and trochanters dark brown. Mid femur with 1 very long pv at basal 1/3. Fore tarsomere 1 with 1 long av at extreme base and 1 long pv at apical 1/3. Epandrium with postero-lateral portion not elongated and obtuse in lateral view; cerci relatively narrow, not distinctly projected and not upturned beyond

postero-lateral tip of epandrium.

Male. Body length 2.1–2.4 mm, wing length 2.1–2.2 mm.

Head black with pale gray pollen. Eyes brownish yellow, contiguous on frons with enlarged dorsal facets. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long conical, 3.6 times longer than wide; style black, 0.55 times as long as first flagellomere. Proboscis 1.7 times longer than head height, blackish with few black short hairs; palpus dark brown with black hairs and bristles and 1 short v near tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum distinct; humerus with 2 short hairs and 1 long h; 3 npl, acr biseriate and short, dc uniseriate and long sparse, 1 sa, 1 psa, 1 prsc; scutellum with one pair of sc. Legs dark brownish yellow except coxae and trochanters dark brown. Hairs and bristles on legs black. Mid femur with 1 very long pv at basal 1/3. Hind femur with row of 7–8 ad and row of weak av. Fore tibia with 1 ad at middle; apically with 4–5 weak bristles. Fore tarsomere 1 with 1 long av at extreme base and 1 long pv at apical 1/3. Mid tibia with 1 ad and 2 av at middle; apically with 1 very long d as long as tarsomere 1. Mid tarsomere 1 apically with 1 very long ad. Hind tibia weakly thickened, with 2 long ad and 4–5 av; apically with 1 long pd. Hind tarsomeres 1–2 thickened. Hind tarsomere 1 with 2 long ad, 1 long pd, basally with 1 av and 1 pv. Wing hyaline, stigma indistinct; veins blackish, anal vein but invisible apically. Halter dark brown.

Abdomen straight, black, with thin pale gray pollen. Hairs and bristles on abdomen black. Male genitalia (Fig. 2): Epandrium with postero-lateral portion not elongated and obtuse in lateral view; cerci relatively narrow, not distinctly projected and upturned beyond postero-lateral tip of epandrium.

Female. Unknown.

Holotype. ♂, **Vietnam:** Vinh Phue, Me Linh Station, 02-X-2011, Xingyue LIU (CAU).

Paratypes. 4♂, same data as holotype.

Distribution. Vietnam.

Remarks. The new species is peculiar and may be separated from other known species of this group by fore tarsomere 1 with 1 long av at extreme base and 1 long pv at apical 1/3 (Daugeron & Grootaert 2005).

Etymology. The specific epithet refers to the mid femur with 1 very long ventral seta at basal 1/3.

4. *Empis* (*Coptophlebia*) *wangi* sp. nov. (Fig. 3)

Diagnosis. First flagellomere with dorsal margin slightly convex. Legs black. Mid femur

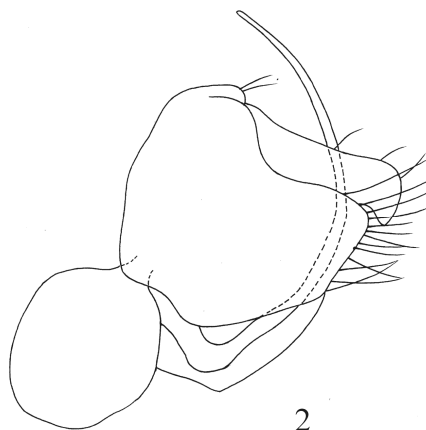


Figure 2. *Empis* (*Coptophlebia*) *longisetosa* sp. nov. Male genitalia, lateral view.

with row of long av and pv at apical 2/3. Fore tarsomere 1 distinctly thickened with long posterior hairs, distinct av and pv. Hind tarsomeres 1–2 weakly thickened. Epandrium with postero-lateral portion distinctly elongated and nearly acute in lateral view; cerci distinctly projected beyond postero-lateral tip of epandrium.

Male. Body length 3.3–3.5 mm, wing length 3.3–3.5 mm.

Head black with pale gray pollen. Eyes dark brownish yellow, contiguous on frons with enlarged dorsal facets. Hairs and bristles on head black. Ocellar tubercle distinct with 2 oc. Antenna black; first flagellomere long conical, with dorsal margin slightly convex, 2.9 times longer than wide; style black, 0.74 times as long as first flagellomere. Proboscis 1.6 times longer than head height, blackish with few black short hairs; palpus dark brown with black hairs and bristles and 1 short v near tip.

Thorax black with pale gray pollen. Hairs and bristles on thorax black. Hairs and bristles on mesonotum distinct; humerus with 2 short hairs and 1 long h; 3 npl, acr biseriate and short, dc uniseriate and long sparse, 1 sa, 1 psa, 1 prsc; scutellum with one pair of sc. Legs black. Hairs and bristles on legs black. Mid femur with row of 6 long thin av and 6–7 long thin pv at apical 2/3. Fore tibia with row of ad and pd, and long thin pv at middle; apically with 4 bristles (1 very long posterior hair). Fore tarsomere 1 distinctly thickened, with two rows of long posterior hairs, and mostly long av and mostly short pv. Mid tibia with 2 ad, 2 pd and 2 av at middle; apically with 3 bristles (1 ad very long, slightly longer than tarsomere 1). Mid tarsomere 1 with 3 ad and 3 pd; apically with 3 bristles (1 ad very long, longer than tarsomere 2); tarsomere 2 apically with 3 bristles (1 ad very long, longer than tarsomere 3). Hind tibia weakly thickened apically. Hind tibia with 2 long ad; apically with 1 short av and 1 long pd. Hind tarsomeres 1–2 weakly thickened (not thicker than tibia). Hind tarsomere 1 with 2 very long ad, 2 very long pd, 4 av and 4–5 pv. Wing hyaline, stigma indistinct; veins brown, anal vein weak but invisible apically. Halter dark brown.

Abdomen nearly straight, black, with pale gray pollen. Hairs and bristles on abdomen black. Male genitalia (Fig. 3): Epandrium with postero-lateral portion distinctly elongated and nearly acute in lateral view; cerci distinctly projected beyond postero-lateral tip of epandrium.

Female. Body length 3.1–3.7 mm, wing length 3.3–3.5 mm. Similar to male, but fore tarsomere 1 not swollen.

Holotype. ♂, **Vietnam:** Lao Cai, Sapa, Seomyty, 16-VI-2011, Guoquan WANG (CAU). **Paratypes.** 5♂, same data as holotype (CAU); 2♂5♀, **Vietnam:** Lao Cai, Sapa, Fansipan, 15-VI-2011, Guoquan WANG (CAU).

Distribution. Vietnam.

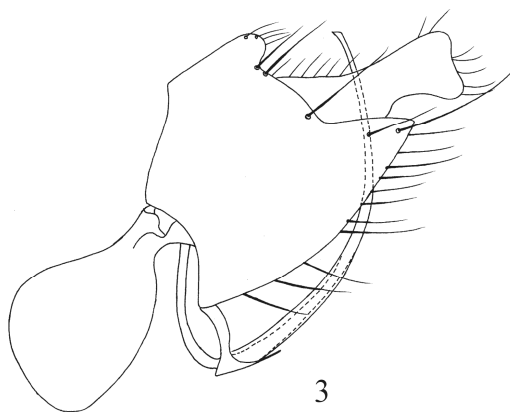


Figure 3. *Empis (Coptophlebia) wangi* sp. nov.
Male genitalia, lateral view.

Remarks. The new species is similar to *E. (C.) bicoloripes* sp. nov., but may be separated from the latter by the legs entirely black and epandrium with the postero-lateral portion distinctly elongated and nearly acute. In *bicoloripes*, the legs are mostly dark brown with bicolored tarsi, and the postero-lateral portion of the epandrium is weakly elongated and obtuse.

Etymology. This new species is named after the collector Guoquan WANG.

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