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The *Empis* (*Coptophlebia*) *hyalea*-group from Thailand, with a discussion of the worldwide distribution of this species group (Diptera: Empididae: Empidinae)

CHRISTOPHE DAUGERON and PATRICK GROOTAERT

Department of Entomology, Royal Belgian Institute of Natural Sciences, rue Vautier 29, B-1000 Brussels, Belgium; e-mail: cdaugeron@naturalsciences.be

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Abstract. The *Empis* (*Coptophlebia*) *hyalea*-group is especially diversified in the Oriental region and is here partly reviewed. Twelve new species from Thailand are described and keyed, namely *Empis* (*Coptophlebia*) *atratata* sp. n., *E.* (*C.*) *kosametensis* sp. n., *E.* (*C.*) *lamruensis* sp. n., *E.* (*C.*) *miranda* sp. n., *E.* (*C.*) *nahaeoensis* sp. n., *E.* (*C.*) *nganga* sp. n., *E.* (*C.*) *pakensis* sp. n., *E.* (*C.*) *pseudospinotibialis* sp. n., *E.* (*C.*) *pulchra* sp. n., *E.* (*C.*) *ratburiensis* sp. n., *E.* (*C.*) *spinotibialis* and *E.* (*C.*) *thapensis* sp. n. The group is recorded for the first time from the Nearctic and Neotropical regions, and is presently known to be distributed in tropical and subtropical regions of Central America, Africa, Southeast Asia and Australasia, and Southwestern North America.

INTRODUCTION

The subfamily Empidinae (Diptera: Empididae) of the Oriental region is poorly known; the first species was described by Walker (1849) in the genus *Hilara* Meigen, 1822. Afterwards, significant contributions were made by Becker (1907), Bezzi (1904, 1912, 1914), De Meijere (1907), Brunetti (1913, 1917, 1920), Melander (1946), Frey (1953), Smith (1965), Saigusa (1965, 1966) and more recently by Yang & Yang (1997) and Grootaert & Kiatsoonthorn (2001). A hundred empidine species were described from the Oriental region, of which the genus *Empis* Linnaeus, 1758 contains 50 species (after *E. licenti* Séguy, 1956 was recognized as a Palaearctic species, see Daugeron, 1997c) in three subgenera: *Planempis* Frey, 1953 (including the four species originally placed in the subgenus *Leptempis* Collin, 1926; see Saigusa, 1964, 1992; Daugeron, 1999), *Coptophlebia* Bezzi, 1909 and *Empis* s.str. Apart from the 7 species in the subgenus *Planempis* and the transfer of *Empis* (*Coptophlebia*) *poecilosoma* Melander, 1946 a distinct *Empis* (*Coptophlebia*) group (Daugeron & Grootaert, 2003), the remaining 42 *Empis* species probably belong to the same monophyletic group, namely *Empis* (*Coptophlebia*) *hyalea*.

In this paper, the distribution of the *E.* (*C.*) *hyalea*-group is increased by new records, especially for the Oriental region for which the group is preliminarily reviewed and twelve new species from Thailand are described.

MATERIALS AND METHODS

The *Empis* (*Coptophlebia*) *hyalea*-group

The subgenus *Coptophlebia* of the genus *Empis* is a large worldwide group of species very similar to *Empis* s.str. with a rather long, well sclerotized proboscis (especially the labium), a characteristic venation (R4+5 at right angle, cell dm truncate) and a well-developed pilosity on the legs of males. These subgenera are easily distinguished by the abbreviation of the first median vein (M1) in *Coptophlebia*. In addition, as already pointed out on several occasions, *Coptophlebia* and *Empis* s. str., like several other taxa of generic or subgeneric level within the tribe Empidini, are not monophyletic (Chvála, 1994; Daugeron 1997a, 2000a, b, 2001), and the name of *Coptophlebia* should be reserved for a small group of Palaearctic species related to the type-species of the subgenus, namely *E.* (*C.*) *hyalipennis* Fallén, 1816. Consequently species of *Coptophlebia* and *Empis* s.str. should be studied together whenever possible.

To resolve taxonomic and phylogenetic problems monophyletic species groups within the tribe Empidini were recognized instead of the traditional genera and subgenera, for which it was not possible to assess the monophyly, and these groups were included as terminal taxa in a global phylogeny of the Empidini (Daugeron, 1997a, 2000a, 2000b, 2001). In this way, forty monophyletic groups were recognized and tentatively included in a phylogenetic analysis (Daugeron, 2000b).

Within the subgenus *Coptophlebia*, eight monophyletic groups are known, including the *Empis* (*Coptophlebia*) *hyalea*-group, which was recently discovered and defined on the basis of two synapomorphies (Daugeron, 2002), the presence of a desclerotized zone in the middle of the labella and an unpaired epandrium in the male hypopygium, which allow this group to be distinguished from all other species groups of Empidini.

Material and morphological terms

This study is partly based on material collected in Thailand by one of us (PG), during several successive missions (1997, 1999, 2000 and 2001) especially at the Na Haeo Field Research Station (SWU-FIRS), and deposited in the Royal Belgian Institute of Natural Sciences (KBIN-IRSNB, Brussels). The undetermined Oriental and Australasian material studied was borrowed from the Bishop Museum (Hawaii) and the Australian Museum (Sydney).

Whenever possible, the Oriental species of the genus *Empis* (apart from those belonging to the subgenus *Planempis*, which significantly differs from *Empis* s.str. and *Coptophlebia*) were studied in order to compare them with the potential new species: Types of species described by Melander (1946), De Meijere (1907, 1911) and Frey (1953) were borrowed from the National Museum of Natural History, Smithsonian Institution (Washington, USNM), the Zoölogisch Museum (Amsterdam, ZMAN) and the Zoological Museum (Helsinki) respectively.

Nevertheless, the type material of species described by Frey, Bezzi and Yang & Yang (1997) and placed in *Empis* s.str. was not available for study; however these species have a complete M1 vein whereas it is abbreviated in all the new species described in this work. For the same reason, it was not possible to study the type specimens described without subgeneric placement or in *Coptophlebia* by Brunetti (1913, 1917, 1920) and Bezzi (1904, 1912, 1914). In this case the original descriptions, figures and the key published by Brunetti (1920) tentatively allowed us to include these species in the *E.* (*C.*) *hyalea*-group and compare them with the new species described in this paper.

In addition to the five Oriental *Coptophlebia* species, Melander (1946) described or recognized six additional *Coptophlebia* from North and Central America. These species were also borrowed (Washington, USNM) and studied in detail, in order to check for the possible presence of the *E.* (*C.*) *hyalea*-group in the New World.

The morpho-anatomical terms follow McAlpine (1981) except for the male genital sclerites, which are those of Sinclair et al. (1994), Cumming et al. (1995) and Daugeron (1997b). It must be noted that the epandrium is unpaired in the *E.* (*C.*) *hyalea*-group (Daugeron, 2002); consequently the term epandrial lamella simply refers to the lateral aspects of the epandrium. Diagnoses only refer to males.

KEY TO THE ORIENTAL SPECIES-GROUPS OF THE GENUS *EMPIS*

1 R4+5 at right-angle; cell dm truncate; proboscis strongly sclerotized, especially the labium with short, sparse bristles or bristly-hairs, or bare; cercus never developed antero-posteriorly and ventro-dorsally and elevated in relation to the epandrial lamella ..... (*Empis* s. str. - *Coptophlebia* complex) 2
– R4+5 more or less S-shaped; cell dm not truncate; proboscis thicker, with distinct more numerous bristles especially on labella; cercus considerably developed antero-posteriorly and ventro-dorsally, elevated in relation to the epandrial lamella ..... *Empis* (*Planempis*)
2 Scutum yellow with a blackish rounded spot in front of the postalar callus; proboscis without bristles or bristly-hairs, labium with distinct annulations, labella without a distinct desclerotized zone in the middle; epandrium paired ..... *Empis* (*Coptophlebia*) *poecilosoma*-group
– Species generally blackish, if yellowish never with a blackish spot in front of the postalar callus; proboscis with short bristles, sometimes only with a few sparse minute bristly-hairs, labium without annulations, labella with a distinct desclerotized zone in the middle; epandrium unpaired ..... *Empis* (*Coptophlebia*) *hyalea*-group

KEY TO MALES OF SPECIES OF THE *EMPIS* (*COPTOPHLEBIA*) *HYALEA*-GROUP FROM THAILAND

1 Small species (length of wing ≤ 2.5 mm) 2
– Large species (length of wing ≥ 3.5 mm) 8
2 Fore tibia deformed, more or less S-shaped in lateral or frontal view, with a strong spine-like dorsal bristle at middle (Fig. 13); halter pale 3
– Fore tibia not deformed, without a strong spine-like dorsal bristle at middle; halter brown or black 4
3 Fore tibia strongly deformed, distinctly S-shaped in frontal view; cercus without a minute ventral projection at tip (Fig. 9) ..... *E.* (*C.*) *pseudospinotibialis* sp. n.
– Fore tibia less distinctly deformed (Fig. 13); cercus with a minute ventral projection at tip (Fig. 12) ..... *E.* (*C.*) *spinotibialis* sp. n.
4 Epandrium with 1 very strong, long bristle at tip (visible without dissection) (Figs 1, 2) 5
– Epandrium with bristles not as strong and long (Figs 3, 8, 14) 6
5 Black species; hind tibia and tarsus covered with numerous long bristles especially dorsally; hind tarsomeres strongly swollen (first hind tarsomere wider than hind tibia); epandrium only with a pair of dorsal bumps (Fig. 1) ..... *E.* (*C.*) *atratata* sp. n.
– Brown species; hind tibia and tarsus only with a few strong, long dorsal bristles; hind tarsomeres not as swollen (first hind tarsomere not wider than hind tibia); epandrium with a pair of dorsal projections bearing a brush of bristles (Fig. 2) ..... *E.* (*C.*) *kosametensis* sp. n.
6 Fore tibia with a dorsal and ventral rows of 8–10 long bristles (longer than tibia depth, stronger dorsally) ..... *E.* (*C.*) *lamruensis* sp. n.
– Fore tibia with an anterodorsal row of short (not longer than tibia depth) bristles, short ventral bristles 7
7 Fore tibia with an anterodorsal row of about 5 distinct bristles apically ending in 2 strong spine-like bristles; epandrium with about 10 strong bristles at tip (Fig. 8) ..... *E.* (*C.*) *pakensis* sp. n.
– Fore tibia with an anterodorsal row of 8–10 rather strong bristles not ending in 2 strong spine-like bristles; epandrium with about 4 strong bristles at tip (Fig. 14) ..... *E.* (*C.*) *thapensis* sp. n.
8 Legs with pennate bristles 9
– Legs without pennate bristles 10
9 Legs partly yellow; first mid tarsomere with anterodorsal and posteroventral pennate bristles; hind tibia with dorsal pennate bristles apically; first hind tarsomere lengthened, ventrally and dorsally covered with pennate bristles; mid tibia without pennate bristles ..... *E.* (*C.*) *pulchra* sp. n.
– Legs brown (hind tarsus can be yellowish); only mid tibia with antero- and posteroventral pennate bristles on apical third (Fig. 4) ..... *E.* (*C.*) *miranda* sp. n.
10 First flagellomere partly yellow; labium with distinct short bristles ..... (*C.*) *nahaeoensis* sp. n.
– First flagellomere black or dark brown; labium bare or only with minute bristles 11
11 Wing clear to slightly dark ..... *E.* (*C.*) *nganga* sp. n.
– Wing brown ..... *E.* (*C.*) *ratburiensis* sp. n.

Empis (*Coptophlebia*) *atratata* sp. n.

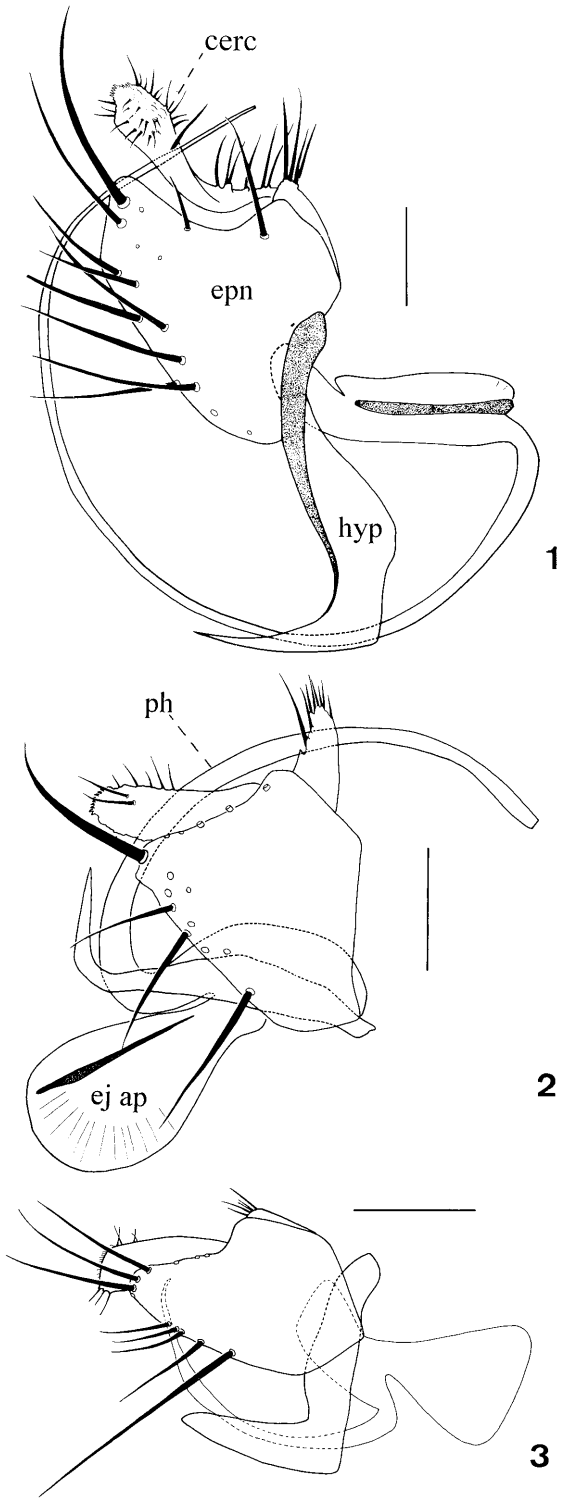
(Fig. 1)

Black species of medium size with clear wings, hind tarsus strongly swollen, hind tibia and tarsus densely covered with strong, long bristles.

Male

Head. Occiput black with row of short postocular bristles. Ocellar triangle prominent, black with pair of bristles. Face black. Palpus dark brown. Antenna black, first flagellomere conical, second and third flagellomeres aristiform. Proboscis black. Labrum length 1.3 times head height. Labella shorter than prementum with short bristles, desclerotized zone indistinct. Holoptic, upper ommatidia considerably enlarged.

Thorax black, scutum somewhat shiny to dusty in prescutellar depression. All bristles black. Antepronotum with 1 short lateral bristle. Postpronotal lobe with 1 strong basal bristle. Proepisternum with 1 short bristle. Prosternum with 1 long and 1 short lateral bristle. Acrosti-



Figs 1–3. Male hypopygium of species of the *E.* (*C.*) *hyalea*-group from Thailand. 1 – *E.* (*C.*) *atratata* sp. n., lateral view; 2 – *E.* (*C.*) *kosametensis* sp. n., lateral view; 3 – *E.* (*C.*) *lamruensis* sp. n., lateral view. Abbreviations: cerc, cercus; ej ap, ejaculatory apodeme; epn, epandrium; hyp, hypandrium; ph, phallus. Scale = 0.1 mm.

chals irregularly biserial, fine, short, absent in prescutellar depression. Dorsocentrals uniserial ending with 3 strong, long bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles black.

Legs black except for mid tarsomeres almost clear-yellowish. Fore tibia with 1 antero- and 1 posterodorsal row of bristles longer than tibia depth; first fore tarsomere with 1 posterolateral and 1 posteroventral strong, long bristle at base, 1 dorsal row of strong bristles, 1 apical circlet of strong bristles. Mid femur with strong, long antero- and posteroventral bristles especially on basal 1/2; mid tibia with 1 dorsal row of 4 strong, long bristles (1 shorter at base, 1 on basal 1/4, 1 on apical 1/4, 1 apically), 1 very strong, long anteroventral bristle on basal 1/4; first mid tarsomere with 1 very strong, long anterodorsal bristle apically; second mid tarsomere with 1 strong, short anterodorsal bristle apically. Hind femur with 1 anterodorsal row of rather long bristles, 1 strong, long ventral bristle on apical 1/3; hind tibia ventrally and dorsally covered with numerous anterior and posterior strong, long bristles; hind tarsus swollen; first hind tarsomere dorsally covered with numerous anterior and posterior strong, long bristles, shorter spine-like ventrals; remaining tarsomeres with same pattern of pilosity.

Wing (2.5 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter black.

Abdomen. Tergites 5–8 with distinct bristles posteriorly. Sternites 5–7 with pair of strong, long posterior bristles, sternite 8 with about 10 strong, long posterior bristles.

Hypopygium (Fig. 1). Cercus apically expanded, with fine, short internal bristles apically. Epandrium with 2 anterodorsal bumps bearing about 5 short, spine-like bristles; epandrial lamella truncate at tip with 1 very strong, long bristle; several strong, long ventral bristles. Hypandrium well sclerotized, pointed at tip in lateral view. Phallus slender, long, yellowish.

Female

Similar to male except for the following characters: dichoptic with lower facets slightly enlarged, frons slightly wider than face. Legs entirely black with very short pilosity except for the following long pennate bristles: fore tibia with 1 row of dorsals on apical 2/3, first fore tarsomere with 1 row of dorsals; mid femur with 1 row of dorsals, 1 row of ventrals except basally, mid tibia with 1 row of dorsals, a few ventrals basally, first mid tarsomere with 1 row of dorsals. Hind femur and tibia with 1 row of dorsals and ventrals, first hind tarsomere with 1 row of dorsals. Fore tibia with short ventral flattened bristles on apical 3/4. Second mid tarsomere with 1–2 short dorsal pennate bristles. Abdomen with short bristles, pointed at tip with cercus longer than wide and with a few short bristles.

Type material. Holotype, male, Thailand, Rayong Province, Ko Samet, 28.iii.2001, P. Grootaert, KBIN-IRSNB (sample No. 21027); paratypes. 9 males, 5 females, and 2 males, 3 females (in alcohol), same data.

Etymology. From the Latin atratata meaning dressed in black.

Remark. The species is only known from Ko Samet island, Rayong Province (Fig. 15).

***Empis* (*Coptophlebia*) *kosametensis* sp. n.**

(Fig. 2)

Dark brown species; epandrium with 1 strong spine-like bristle at tip and a pair of dorsal projections bearing a brush of bristles.

Male

Head. Occiput black with row of postocular bristles. Ocellar triangle black, prominent with pair of bristles. Palpus dark brown. Antenna black, first flagellomere conical, second and third flagellomeres aristiform. Labrum blackish, length almost twice head height. Labium blackish with short bristles, labella shorter than prementum. Holoptic, upper ommatidia enlarged.

Thorax dark brown to black. Most bristles missing. Antepronotum with some short black lateral bristles. Dorsocentrals apparently uniserial ending with 2 strong bristles in prescutellar depression. Laterotergite with fan of strong, long black bristles. Anterior and posterior spiracles brown.

Legs brown. Fore tarsomeres somewhat swollen, first fore tarsomere with 1 strong, long anteroventral bristle at base and apical circlet of strong, long bristles, other fore tarsomeres with numerous strong, long dorsal bristles especially at tip. Mid femur with 1 antero- and posteroventral rows of strong, long bristles; mid tibia with 1 dorsal row of 3 strong, long bristles (on basal 1/4, middle and apically), 1 strong, long ventral bristle on basal 1/3; first 3 mid tarsomeres with apical circlet of strong, long bristles especially first two mid tarsomeres with 1 strong, long dorsal bristle. Hind femur with short bristles dorsally, fine, slightly longer bristles ventrally; hind tibia with 1 dorsal row of 5–7 strong, long bristles, at least 1 strong, long ventral on middle; hind tarsomeres swollen; first hind tarsomere with numerous strong ventral bristles, 1 strong, long dorsal basally, 1 pair of strong, long apically; second and third hind tarsomeres with strong dorsal bristles especially apically.

Wing (2.25 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter dark brown.

Abdomen brown. Tergites with minute bristles, tergite 8 with additional distinct bristles. Sternites with distinct posterior bristles, sternite 8 with some distinct bristles.

Hypopygium (Fig. 2). Cercus with some fine, short internal bristles at tip. Epandrium with pair of antero-dorsal projections bearing brush of short spine-like bristles; epandrial lamella pointed at tip with 1 very strong, long bristle; at least 5 strong, long bristles ventrally. Hypandrium well sclerotized. Phallus slender, long.

Female unknow.

Type material. Holotype, male (in alcohol), Thailand, Rayong Province, Ko Samet, 20.x.2000, P. Grootaert, KBIN-IRSNB (sample No. 20056); paratype, 1 male, same data.

Etymology. The name of the species is derived from the type-locality.

Remark. The species is only known from Ko Samet island, Rayong Province (Fig. 15).

***Empis* (*Coptophlebia*) *lamruensis* sp. n.**

(Fig. 3)

Brownish species of small size; fore tibia with dorsal and ventral rows of rather long bristles.

Male

Head. Occiput dusty grey, with row of postocular bristles. Ocellar triangle prominent, dusty with pair of short bristles. Face black, dusty. Palpus clear brown. Antenna blackish, first flagellomere conical, second and third flagellomeres aristiform. Labrum brown, length 1.5 times head height. Labium dark brown, with short bristles. Labella shorter than prementum. Holoptic, upper ommatidia enlarged.

Thorax brown, scutum dusty, scutellum very dusty grey. All bristles black. Antepronotum with 1 fine lateral bristle. Postpronotal lobe with 1 strong, long basal bristle. Proepisternum, lateral part of prosternum without distinct bristle. Acrostichals only represented by pair of fine, short posterior bristles in front of prescutellar depression. Dorsocentrals uniserial, distinct, ending with 3 strong, long posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar. Anterior and posterior spiracles blackish and brown respectively.

Legs brown. Fore tibia with 1 dorsal and ventral rows of rather strong, long bristles; first fore tarsomere ventrally and dorsally covered with rather strong, long bristles; all fore tarsomeres with apical circlet of distinct bristles. Mid femur with 2 strong, long posteroventral bristles basally; mid tibia with 1 dorsal and ventral rows of 3 and 2 strong, long bristles respectively; first mid tarsomere with 1 strong, long posteroventral bristle; other mid tarsomeres with distinct bristles apically. Hind tibia with 1 dorsal row of 3 strong bristles on apical 3/4; hind tarsomeres swollen; first hind tarsomere with strong, short ventral bristles especially on base; first four hind tarsomeres with 2 strong, long dorsoapical bristles.

Wing (2.5 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter brown.

Abdomen brown with distinct bristles on base and margins of first 3 tergites, sternites with pair of strong, long posterior bristles.

Hypopygium (in poor condition) (Fig. 3). Cercus with fine short internal bristles (visible in dorsal view). Epandrium with pair of small bristly dorsal bumps; epandrial lamella with 1 very long ventral bristle. Hypandrium well sclerotized, very distinct in lateral view. Phallus characteristic: rather fine, short, distinctly flared at tip (visible in dorsal and caudal views).

Female unknown.

Type material. Holotype, male, Thailand, Phang-Nga Province, Lamru, 6.v.1998, primary rain forest, P. Grootaert, KBIN-IRSNB (sample No. 98016).

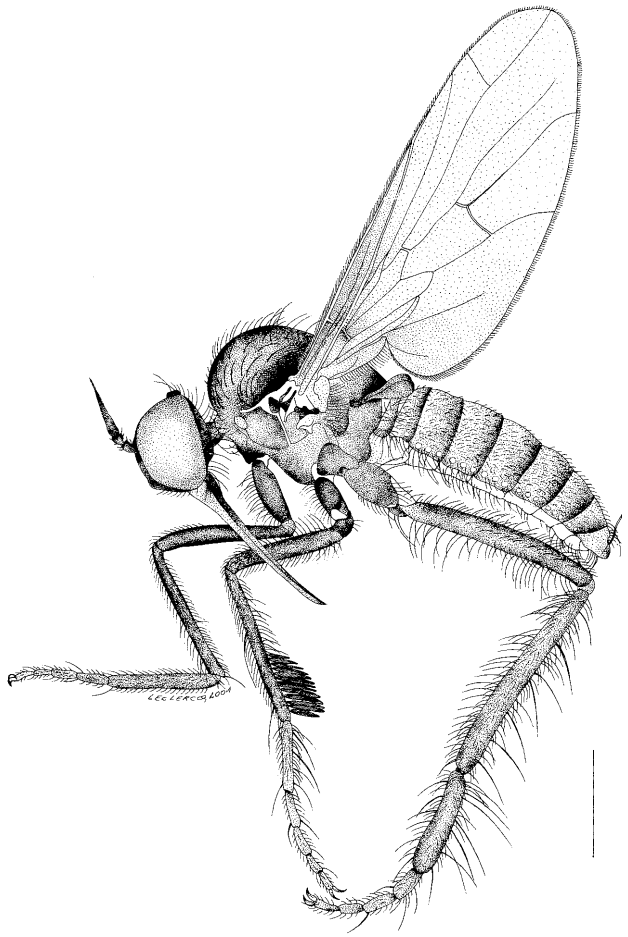


Fig. 4. *E.* (*C.*) *miranda* sp. n., habitus. Scale = 1 mm.

Etymology. The name of the species is derived from the type-locality.

Remark. The species is known from Phang-Nga Province (Fig. 15).

***Empis* (*Coptophlebia*) *miranda* sp. n.**

(Figs 4, 5)

Blackish species of large size; wing very dark, densely microtrichiate; middle of labella with a long desclerotized zone, mid tarsus of legs dark brown to brownish-yellowish, mid tibia with antero- and posteroventral rows of pennate bristles apically.

Male

Head. Occiput black with row of postocular bristles. Ocellar triangle prominent, black. Face black. Palpus dark brown. Antenna black, first flagellomere long, four times pedicel length, second and third flagellomeres somewhat styliform. Labrum blackish, length twice head height. Labium dark, with some minute bristles, labella longer than prementum with long desclerotized zone on middle. Holoptic, upper ommatidia enlarged.

Thorax blackish. All bristles black. Postpronotal lobe with about 5 distinct lateral bristles. Prosternum with 2 bristles, 1 of which strong, long. Acrostichals biserial, absent in prescutellar depression. Dorsocentrals uniserial to irregularly biserial ending with 2 strong, long posterior bristles in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 presutural, 2 postsutural supraalars, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles black.

Legs dark brown except mid tarsus brownish-yellowish. Fore tibia with distinct antero- and posterodorsal bristles on apical 1/2, numerous fine, short ventrals on apical 1/2, 3–4 spine-like ventrals on middle, 3 strong spine-like ventrals apically; first fore tarsomere with spine-like anterodorsal bristles basally, 3 strong, long dorsals apically. Mid femur with some fine ventral bristles basally, covered with fine, rather long anterodorsals; mid tibia with 2 strong, long dorsal bristles (on basal 1/3, apically), 1 posteroventral row of long pennate bristles, 1 posteroventral row of very short pennate bristles, 1 anteroventral row of shorter pennate bristles, all rows on apical 1/3; first mid tarsomere with very strong spine-like ventral and lateroventral bristles, an apical circlet of strong spine-like bristles; other mid tarsomeres with 2 ventral rows of short spine-like bristles, distinct apical circlet (except for last tarsomere). Hind femur dorsally and ventrally covered with numerous fine, long bristles; hind tibia with 1 antero- and posterodorsal rows of 5–6 strong, long bristles and numerous fine, long ventrals; first hind tarsomere with 1 antero- and posterodorsal rows of 3–4 strong, long bristles; all hind tarsomeres with 2 ventral rows of spine-like bristles.

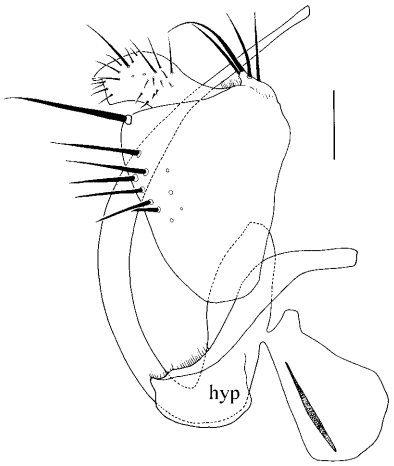
Wing (4.5 mm) dark brown, densely microtrichiate, microtrichia longer than usual, especially between R1 and R2+3, R2+3 and R5; with three clear subtriangular spots towards margin between M1 and M2, M2 and CuA_1, CuA_1 and A1. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate. Halter with black base, dark brown knob.

Abdomen dark brown. Base, second tergite, lateral part of tergites 2–5 with distinct bristles. Sternite with posterior pair of bristles.

Hypopygium (Fig. 5). Cercus somewhat S-shaped, thick in lateral view, with some distinct bristles. Epandrium with 2 distinct pointed, small anterodorsal projections bearing some rather long bristles; epandrial lamella not lengthened, with 1 strong, long bristle at tip and 1 row of strong, shorter bristles ventrally. Hypandrium well sclerotized, with characteristic notch at tip in caudal view. Phallus thick basally to thin apically, long, black to yellowish apically.

Female

Similar to male except for the following characters: dichoptic with all ommatidia of equal size; frons as wide as face; first mid tarsomere whitish; legs densely covered with long pennate bristles as follows: fore and mid tibiae, all femora with ventrals and dorsals, hind tibia with dorsals, and ventrals except on basal third, first hind tarsomere with dorsals; first fore tarsomere with short dorsal pennate bristles; wing bicolor: basal third dark brown, apical 2/3 transparent; abdomen with short bristles, pointed at tip with cercus longer than wide with a few bristly hairs.



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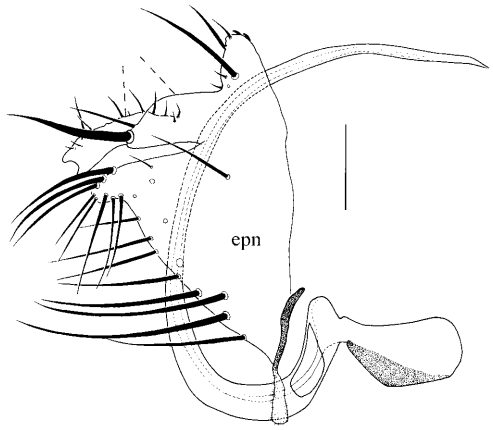

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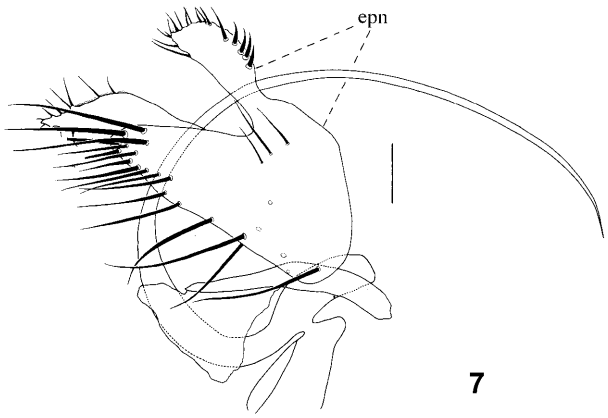

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Figs 5–7. Male hypopygium of species of the *E.* (*C.*) *hyalea*-group from Thailand. 5 – *E.* (*C.*) *miranda* sp. n., lateral view; 6 – *E.* (*C.*) *nahaeoensis* sp. n., lateral view; 7 – *E.* (*C.*) *nganga* sp. n., lateral view. Abbreviations: cerc, cercus; epn, epandrium; hyp, hypandrium. Scale = 0.1 mm.

Type material. Holotype, male (in alcohol), Thailand, Ko samet, 28.iii.2001, P. Grootaert, KBIN-IRSNB (sample No. 21027); paratypes, 1 male (in alcohol), Thailand, Ko Samet, 17.x.2000, P. Grootaert, KBIN-IRSNB (sample No. 20056); 2 females (in alcohol), Thailand, Ko Samet, 16.v.2001, P. Grootaert, KBIN-IRSNB; 1 female (in alcohol), Thailand, Ko Samet, 18.v.2000, P. Grootaert, KBIN-IRSNB.

Other material. 1 female in poor condition (in alcohol), Thailand, Ko Samet, 20.v.2000, P. Grootaert, KBIN-IRSNB.

Etymology. From the Latin miranda meaning beautiful.

Remark. The species is only known from Ko Samet island, Rayong Province (Fig. 15).

***Empis* (*Coptophlebia*) *nahaeoensis* sp. n.**

(Fig. 6)

Brownish species of medium size; first flagellomere partly yellow; legs yellowish.

Male

Head. Occiput dusted black with row of postocular bristles. Ocellar triangle prominent, black, with pair of rather long bristles. Face dusted black. Palpus yellow. Scape and pedicel dark brown to black, first flagellomere strongly conical, lengthened, yellow at base, blackish apically, second and third flagellomeres aristiform, black. Labrum brown, length about twice head height. Labium dark brown; prementum with 2 rows of distinct, short anterior bristles; labella black, as long as prementum, with row of distinct short bristles. Holoptic, upper ommatidia enlarged.

Thorax brown to grey in ground color, prescutellar depression very dusty, scutellum dark brown to dusty on posterior margin. All bristles black. Antepronotum with some lateral distinct bristles. Postpronotal lobe with 1 strong, long basal bristle. Proepisternum with 1 bristle. Prosternum with 2 bristles. Acrostichals irregularly biserial, fine, absent in prescutellar depression. Dorsocentrals uniserial ending with 3 strong, long posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 2 postsutural supraalars, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles brown.

Legs brown-yellowish. Fore tibia with 1 antero- and posterodorsal rows of strong, long bristles; first fore tarsomere with 1 strong, long anterolateral bristle basally, 1 posterolateral on middle, short spine-like ventrals; first 3 fore tarsomeres with apical circlet of strong, long bristles; last 4 fore tarsomeres with fine, rather long dorsal bristles. Mid femur with 1 antero- and posteroventral rows of strong, long bristles on basal 1/2; mid tibia with 3 very strong, long dorsal bristles (on basal 1/4, middle, apically), 1 strong, long anteroventral on basal 1/4; first mid tarsomere with apical circlet of strong bristles, especially 1 long dorsal bristle; all mid tarsomeres with numerous spine-like ventrals. Hind femur with 1 row of rather fine, long posterodorsal and posteroventral bristles; hind tibia with 1 antero- and posterodorsal rows of strong, long bristles, 1 strong, long posteroventral bristle on apical 1/3; first hind tarsomere somewhat swollen with distinct short spine-like ventrals and longer finer dorsals.

Wing (3.75 mm) clear. Sc, M1 abbreviated, A1 feebly sclerotized but complete, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter with pale base, brown stem and knob.

Abdomen brown, covered with numerous distinct bristles on base, posterior margins of tergites, lateral margins of tergites and sternites; all sternites with posterior pair of strong, long bristles; sternites 6 and 7 feebly sclerotized; tergite 8 without bristles.

Hypopygium (Fig. 6). Cercus with 1 very strong, curved spine-like bristle laterally. Epandrial lamella narrowly separated mediodorsally, higher than long, fused with cercus anterodorsally, prolonged anterodorsally as long rounded projection bearing 2 strong, short apically rounded spines, with fan of at least 5 strong, long bristles at tip, several strong, long bristles ventrally. Hypandrium membranous ventrally. Phallus long, rather thick, dark at base; thin, clear at tip.

Female uncertain.

Material examined. Holotype, male (in alcohol), Thailand, Loei Province, Na Haeo (SWU-FIRS), 22-29.vii.2000, leg. Verapong Kiatsoonthorn, KBIN-IRSNB, malaise trap; paratypes, 1 male (in alcohol), Thailand, Loei Province, Na Haeo (SWU-FIRS), 30.vii.1999, P. Grootaert, KBIN-IRSNB; 1 male, Thailand, Loei Province, Na Haeo (SWU-FIRS), 9.v.2001, P. Grootaert, KBIN-IRSNB; 1 male, Thailand, Loei Province, Na Haeo (SWU-FIRS), 23.v.1998, leg. Verapong Kiatsoonthorn, KBIN-IRSNB (sample No. 98066), malaise trap in bamboo forest; 1 male, Thailand, Loei Province, Na Haeo (SWU-FIRS), 23.vi.1998, P. Grootaert, KBIN-IRSNB (sample No. 98064).

Etymology. The name of the species is derived from the type-locality.

Remarks. All females collected at Na Haeo appear morphologically identical (especially as lateral margins of first four abdominal tergites bear pennate bristles), whereas three males belonging to another species closely related to *E.* (*C.*) *nahaeoensis* were also collected at Na Haeo. In addition, four males with the hypopygium identical to *E.* (*C.*) *nahaeoensis* but with significant differences in the pilosity of legs were collected in two localities other than Na Haeo (namely Ko Samet and Muay Don Lakon) with four females with darker wings than the females from Na Haeo and without abdominal pennate bristles. Finally a single male collected in the South of Thailand (at Ban Khlong Kua, Songkhla Province), although very close to *E.* (*C.*) *nahaeoensis*, is a different species. Thus *E.* (*C.*) *nahaeoensis* belongs to a complex of closely related species and it is best to wait for additional material or mated pairs before describing the female.

Empis (*Coptophlebia*) *nganga* sp. n.

(Fig. 7)

Brownish species of medium size; labella longer than prementum; wing clear to slightly dark.

Male

Head. Occiput black, dusty, with row of postocular bristles. Ocellar triangle prominent, black with pair of bristles. Face black, subshiny. Palpus black. Antenna black, first flagellomere conical, second and third flagellomeres aristiform. Labrum dark brown, more than twice head height. Labium dark brown, almost bare; labella longer than prementum. Holoptic, upper and anteroventral ommatidia enlarged.

Thorax dark brown in ground color, scutum blackish, shiny to dusty in prescutellar depression, scutellum dusty. All bristles black, most of scutal bristles broken. Antepronotum with some lateral bristles. Postpronotal lobe yellowish, with strong, long bristle. Proepisternum with 1 short bristle. Prosternum apparently bare. Acrostichals apparently uniserial, fine, absent in prescutellar depression. Dorsocentrals uniserial, ending with 2 posterior strong bristles in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles dark brown.

Legs dark brown. Fore tibia clear at base, with short distinct anterodorsal bristles on apical 1/2; first fore tarsomere with apical circlet of strong bristles. Mid femur with fine ventral bristles; mid tibia with 1 row of 3 strong, long dorsal bristles (on basal half, middle, apically), 2 strong, long ventral bristles (on middle, apical 1/3); first mid tarsomere with 1 ventral and anterolateral rows of bristles; first 3 mid tarsomeres with apical circlet of strong, long bristles. Hind femur dorsally and ventrally covered with fine bristles; hind tibia with numerous fine, long ventral and dorsal bristles, 1 row of about 10 very strong, long dorsals; first hind tarsomere swollen covered with numerous very strong, long dorsals and ventrals; second and third hind tarsomeres with apical circlet of bristles.

Wing (4 mm) slightly tinged with brown. Veins brown. Sc, M1 and A1 abbreviated, R4+5 at right angle, cell dm strongly truncate, anal lobe well developed. Halter dark brown-black.

Abdomen dark brown. Distinct bristles at base. Tergites with distinct lateral and posterior bristles. Sternites with at least 1 pair of posterior bristles, sternite 8 with about 10 strong, long posterior bristles.

Hypopygium (Fig. 7). Cercus distinctly projected posteriorly, pointed at tip, middle rather thick in lateral view, with numerous fine, short internal bristles. Epandrium with 2 long anterodorsal projections, bearing 1 row of minute spine-like dorsal bristles; epandrium lamella lengthened, pointed at tip with numerous strong, long bristles ventrally and at tip. Hypandrium membranous ventrally. Phallus very long, pointed at tip.

Female unknown.

Material examined. Holotype, male, Thailand, Phang Nga Province, Phang Nga, 6.v.1998, P. Grootaert, KBIN-IRSNB (sample No. 98014), secondary rain forest (river bed); paratype, 1 male, Thailand, Phang-Nga Province, Lamru, 6.v.1998, P. Grootaert, KBIN-IRSNB (sample No. 98017), primary rain forest.

Etymology. The name of the species is derived from the type-locality.

Remark. The species is known from Phang Nga Province (Fig. 15).

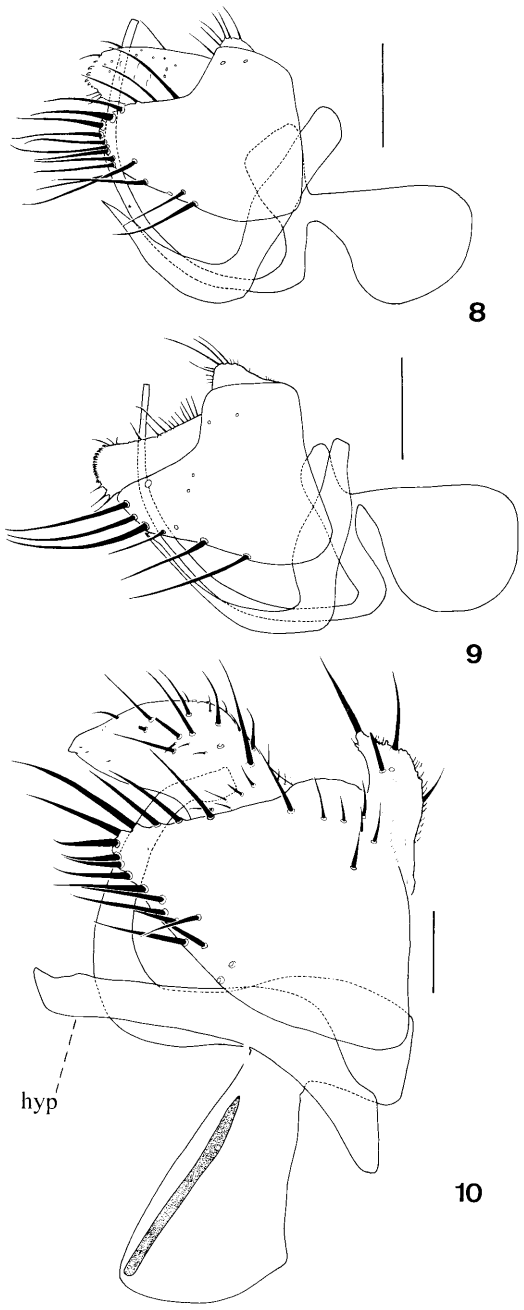
Empis (*Coptophlebia*) *pakensis* sp. n.

(Fig. 8)

Brownish species of small size; fore tibia with 1 anterodorsal row of short bristles apically ending in 2 longer, strong spine-like bristles.

Male

Head. Occiput black, somewhat shiny, with row of short postocular bristles. Ocellar triangle prominent,



Figs 8–10. Male hypopygium of species of the *E.* (*C.*) *hyalea*-group from Thailand. 8 – *E.* (*C.*) *pakensis* sp. n., lateral view; 9 – *E.* (*C.*) *pseudospinotibialis* sp. n., lateral view; 10 – *E.* (*C.*) *pulchra* sp. n., lateral view. Abbreviations: ph, phallus. Scale = 0.1 mm.

black with pair of short bristles. Face black, shiny. Palpus brown. Antenna black, first flagellomere conical, second and third flagellomeres aristiform. Labrum dark brown, length 1.5 times head height. Labium dark brown with short bristles; labella shorter than prementum. Holoptic, upper ommatidia enlarged.

Thorax dark brown, scutum shiny to dusty in prescutellar depression, scutellum dusty. All bristles black. Antepronotum with 1 distinct lateral bristle. Postpronotal lobe with 1 strong, long basal bristle. Proepisternum, lateral part of prosternum with 1 short bristle. Acrostichals uniserial, fine, absent in prescutellar depression. Dorsocentrals uniserial, ending with 3 strong posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles brown and black respectively.

Legs dark brown. Base of fore tibia somewhat deformed (especially visible in frontal view) with 1 anterodorsal row of distinct short bristles including 2 strong spine-like apicals; fore tarsomeres somewhat swollen with distinct bristles apically; first fore tarsomere with 1 strong, long anteroventral bristle basally. Mid femur with 1 dorsal and ventral rows of bristles as long as femur depth; middle of mid tibia with 1 strong, long ventral bristle, 1 antero- and posterodorsal rows of strong, long bristles; first mid tarsomere with 1 strong, long anterolateral bristle. Hind femur with 1 dorso- and ventroposterior rows of long bristles; hind tibia with 1 ventral and dorsal rows of strong, long bristles; hind tarsomeres swollen; first hind tarsomere with long dorsal bristles; long dorsal bristles on tips of the remaining 3 hind tarsomeres.

Wing (2.25 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter brown.

Abdomen dark brown, base with distinct bristles. Sternites 5–7 with pair of distinct posterior bristles ventrally, tergites 5–7 with minute bristles.

Hypopygium (Fig. 8). Cercus thick in lateral view. Epandrium with pair of bristly bumps dorsally, tip of epandrial lamella rather rounded with row of about 10 strong, long bristles. Hypandrium well sclerotized, pointed at tip. Phallus rather long.

Female unknown.

Material examined. Holotype, male, Thailand, Satun Province, Pak Bara, 3.xi.1997, P. Grootaert, KBIN-IRSNB (sample No. 97160), swept in a mangrove.

Etymology. The name of the species is derived from the type-locality.

Remark. The species is known from Satun Province (Fig. 15).

Empis (*Coptophlebia*) *pseudospinotibialis* sp.n.

(Fig. 9)

Very similar to *E.* (*C.*) *spinotibialis* except for the following characters: occiput entirely dusty black, antenna very dusty, thorax more dusty. Fore femur and basal 1/2 of fore tibia pale brown, otherwise legs dark brown. Bristles of legs somewhat stronger, more numerous on tarsi. Fore tibia more distinctly deformed in lateral view, S-shaped in frontal view, with slightly shorter dorsal spine-like bristle on middle. Cercus somewhat rounded at tip in dorsal view, without minute ventral projection (Fig. 9).

Female

Similar to male except for the following characters: all bristles shorter; occiput blackish, not dusty; dichoptic with all ommatidia of equal size; frons wider than face,

brown, subshiny; face subshiny; thorax shiny dark brown to somewhat dusty in prescutellar depression; fore tibia not deformed, only with short bristles; first fore tarsomere with strong, short ventral bristles; mid femur with very short dorsal bristles on apical 1/3; hind femur with 1 ventral and dorsal rows of pennate bristles as long as femur depth. Hind tibia with 1 row of ventral pennate bristles as long as tibia depth at middle, shorter pennate dorsal bristles on apical 1/2; hind tarsomeres not swollen. Abdomen pointed at tip with cercus longer than wide with a few bristly hairs.

Material examined. Holotype, male, Thailand, Phang Nga Province, Thap Put, 23.x.1997, P. Grootaert, KBIN-IRSNB (sample No. 97105); paratypes, 2 males, 2 females, same data.

Etymology. The name of the species is derived from that of *E.* (*C.*) *spinotibialis* sp. n., as these two species are very similar morphologically.

Remark. The species is known from Phang Nga Province (Fig. 15).

***Empis* (*Coptophlebia*) *pulchra* sp. n.**

(Fig. 10)

Dark brown to blackish species of rather large size; legs partly yellow, first mid tarsomere, hind tibia and first hind tarsomere with pennate bristles; wing brown.

Male

Head. Occiput black somewhat dusty, with row of postocular bristles. Ocellar triangle prominent, black. Face subshining black. Palpus brown-yellowish. Scape, pedicel black, flagellum missing. Labrum brown-yellow, length twice head height. Labium brown-black, labella longer than prementum. Holoptic, upper ommatidia enlarged.

Thorax dark brown to black, scutum shiny to dusty in prescutellar depression. All bristles black. Antepronotum with some short lateral bristles. Postpronotal lobe with 1 strong, long basal bristle. Proepisternum apparently bare. Prosternum with about 5 short bristles, 1 stronger and longer. Acrostichals biserial, fine, absent in prescutellar depression. Dorsocentrals uniserial, distinct, ending with 3 strong, long posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles or strong insertions are as follows: 1 presutural supraalar, 1 postsutural supraalar (insertion), 2 notopleurals (insertion), 2 apical scutellars. Anterior and posterior spiracles brown.

Legs. Coxa brown, fore legs yellowish to brownish, mid legs, hind femur yellowish, hind tibia brown to yellowish at base, hind tarsus brown-black. Fore tibia posterodorsally covered with fine, rather long bristles on apical 1/2; first fore tarsomere swollen with 1 anterodorsal row of flattened bristles. Mid tibia with 1 dorsal row of 5 very strong, long bristles on apical 2/3; mid tarsus clear; first mid tarsomere with 1 posterior row of strong bristles, 1 anterolateral row of 5 pennate bristles. Hind tibia dilated apically, with 1 row of dorsal pennate bristles on apical 1/3, some other pennate bristles on apical tip anteriorly, and numerous rather fine long ventral bristles. First hind tarsomere lengthened (2/3 the tibia length), antero- and posterolaterally covered with long pennate bristles, 2 dorsal rows of strong, long bristles; second hind tarsomere with antero- and posterolateral pennate bristles.

Wing (5.25 mm) brown. Sc, M1, A1 abbreviated, R4+5 widely open, cell dm truncate, anal lobe well developed. Halter with brown base and stem, black knob.

Abdomen black. Sternites with posterior pair of rather long bristles, sternite 8 with 3 strong, long posterior bristles. Tergites 4–7 with very short bristles. Tergite 8 without distinct bristles.

Hypopygium (Fig. 10). Cercus thick in lateral view, pointed at tip, distinctly projected posteriorly. Epandrium with 2 distinct bristly anterodorsal projections; epandrial lamella apically pointed, tip with a dozen very strong bristles, dorsally and ventrally. Hypandrium ring-like. Phallus very thick in caudal view.

Female unknown.

Material examined. Holotype, male, Thailand, boundary of Prachuap and Chumporn Provinces, 11.xii.1965, J.S. Burton (Bishop Museum).

Etymology. From the Latin pulchra meaning beautiful.

Remark. The species is known from the boundary of Prachuab and Chumpon Provinces (Fig. 15).

***Empis* (*Coptophlebia*) *ratburiensis* sp. n.**

(Fig. 11)

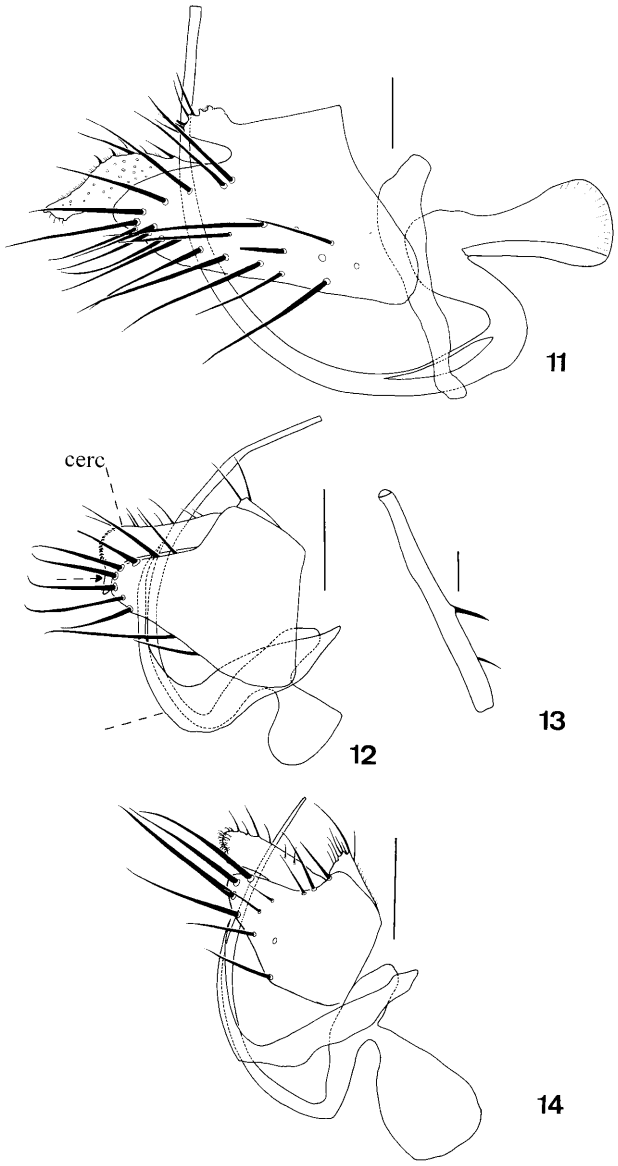
Brownish species of medium size; epandrium with numerous strong, long bristles especially ventrally; brown wing.

Male

Head. Occiput dusted blackish with row of postocular bristles. Ocellar triangle prominent, black with pair of short bristles. Face black. Palpus brown. Scape and pedicel dark brown, flagellum black, first flagellomere somewhat conical, second and third flagellomeres aristiform. Labrum brown-black, length twice head height. Labium black, bare, labella as long as prementum. Holoptic, upper ommatidia enlarged.

Thorax brown-black, somewhat dusty, especially in prescutellar depression. All bristles black. Antepronotum not visible. Postpronotal lobe with 1 strong, long basal bristle. Proepisternum and prosternum with 2 distinct bristles. Acrostichals uniserial, absent in prescutellar depression. Dorsocentrals uniserial ending with 3 strong, long posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 presutural, 2 postsutural supraalars, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles brown.

Legs. Fore and mid legs brown, hind legs dark brown. Fore tibia with 1 antero- and posterodorsal rows of rather short, strong bristles on apical 1/2; first fore tarsomere with 1 dorsal row of strong bristles. Mid tibia with 1 strong, very long ventral bristle on middle, 1 dorsal row of 3 strong, long bristles (on basal 1/4, middle, apically); first mid tarsomere with numerous short ventral, lateral spine-like bristles. Hind femur with fine, short anterodorsal bristles on basal 1/2 and ventrals; hind tibia covered with numerous strong, long antero- and



Figs 11–14. Species of the *E.* (*C.*) *hyalea*-group from Thailand. 11 – *E.* (*C.*) *ratburiensis* sp. n., male hypopygium in lateral view; 12 – *E.* (*C.*) *spinotibialis* sp. n., male hypopygium in lateral view, the ventro-apical projection of cercus is indicated by an arrow; 13 – *E.* (*C.*) *spinotibialis* sp. n., frontal view of right male fore tibia; 14 – *E.* (*C.*) *thapensis* sp. n., male hypopygium in lateral view. Abbreviations: cerc, cercus; hyp, hypandrium. Scale = 0.1 mm.

posterodorsal bristles, shorter ventrals; first hind tarsomere swollen, covered with numerous strong, long dorsal bristles, rather shorter spine-like ventrals; second and third hind tarsomeres with 2 strong, long dorsals apically.

Wing (3.5 mm) tinged brown. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate. Halter with yelowish-brown base, black knob.

Abdomen brownish. Base and posterior margin of segments with distinct bristles. Posterior margins of tergite and sternite 8 with 5 and 6 strong, long bristles respectively.

Hypopygium (Fig. 11). Cercus pointed at tip, middle rather thick in lateral view, with numerous short internal bristles. Epandrium with 2 strong anterodorsal projections bearing some strong dorsal spine-like bristles; epandrial lamella subtriangular, somewhat lengthened, with about 15 strong, long bristles on ventral margin and tip. Hypandrium membranous ventrally. Phallus thin, long, not pointed at tip.

Female unknown.

Material examined. Holotype, male, Thailand, 20 km NW of Ratburi, 15.viii.1966, T.C. Maa (Bishop Museum).

Etymology. The name of the species is derived from the type-locality.

Remark. The species is known from Ratburi (Ratchaburi) Province (Fig. 15).

***Empis* (*Coptophlebia*) *spinotibialis* sp. n.**

(Figs 12, 13)

Brownish species of small size; fore tibia deformed with 1 strong spine-like dorsal bristle on middle; halter with whitish knob.

Male

Head. Occiput black, dusty laterally, with row of distinct postocular bristles. Ocellar triangle prominent, black, with pair of bristles. Face dusty black. Palpus blackish. Antenna black, first flagellomere conical, third and second flagellomeres aristiform. Labrum brown, length 1.5 times head height. Labium brownish with short bristles, labella shorter than prementum. Holoptic, upper ommatidia enlarged.

Thorax dusty dark brown. All bristles black. Antepronotum with 1 distinct lateral bristle. Proepisternum with 1 short bristle. Prosternum bare. Postpronotal lobe with 1 strong, long basal bristle. Only 1 visible fine posterior acrostichal in front of prescutellar depression. Dorsocentrals uniserial, ending with 3 strong, long posterior bristles, 2 of which in prescutellar depression. Laterotergite with fan of strong, long distinct bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles blackish and brown respectively.

Legs brown. Fore tibia somewhat deformed, with 1 strong, spine-like dorsal bristle on middle and another finer, shorter on apical 1/4 (Fig. 13); first fore tarsomere with 1 strong, long anterolateral bristle at tip, 1 strong, long ventral apically; first 3 fore tarsomeres with distinct bristles apically. Mid femur with 1 strong, long posteroventral bristle on middle; mid tibia with 1 dorsal row of 3 bristles (1 short on basal 1/4, 1 longer on middle, 1 strong, very long apically), 1 strong, long anterolateral bristle on basal 1/3; base of first mid tarsomere with 1 strong, long ventral bristle, 1 anterolateral apically. Hind femur with rather fine ventral bristles slightly longer than femur depth on basal 1/2; hind tibia covered with rather strong ventral bristles, 1 dorsal row of 4 long bristles, 1 strong, long anterodorsal bristle on apical tip; hind tarsomeres swollen; base of first hind tarsomere with pair of

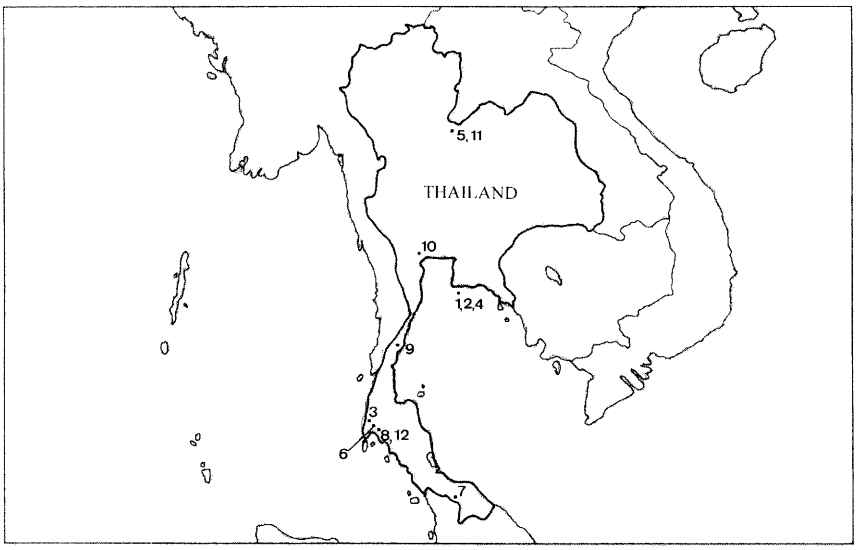


Fig. 15. Distribution of the *Empis* (*Coptophlebia*) *hyalea*-group in Thailand. 1 – *E.* (*C.*) *atratata* sp. n.; 2 – *E.* (*C.*) *kosametensis* sp. n.; 3 – *E.* (*C.*) *lamruensis* sp. n.; 4 – *E.* (*C.*) *miranda* sp. n.; 5 – *E.* (*C.*) *nahaeoensis* sp. n.; 6 – *E.* (*C.*) *nganga* sp. n.; 7 – *E.* (*C.*) *pakensis* sp. n.; 8 – *E.* (*C.*) *pseudospinotibialis* sp. n.; 9 – *E.* (*C.*) *pulchra* sp. n.; 10 – *E.* (*C.*) *ratburiensis* sp. n.; 11 – *E.* (*C.*) *spinotibialis* sp. n.; 12 – *E.* (*C.*) *thapensis* sp. n.

strong ventral bristles; all hind tarsomeres with pair of rather fine, long dorsal bristles apically.

Wing (2.5 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe developed. Halter with brown base and stem, whitish knob.

Abdomen brown. Sternites with pair of distinct posterior bristles. Tergite 8 without distinct bristles, sternite 8 with strong, long posterior bristles.

Hypopygium (Fig. 12). Cercus prolonged apically in narrow ventral projection. Epandrium with 2 dorsal bristly bumps; tip of epandrial lamella rather pointed with 5 strong, long bristles, with 1–2 finer bristles dorsally and ventrally. Hypandrium well sclerotized, narrowly associated with phallus (in lateral view). Phallus slender, long, somewhat dark at tip.

Female unknown.

Material examined. Holotype, male, Thailand, Loei Province, Na Haeo (SWU-FIRS), 23.v.1998, P. Grootaert, KBIN-IRSNB (sample No. 98069), gallery forest near water fall.

Etymology. From the Latin spina and tibia in reference to the presence of a strong spine-like bristle on the fore tibia.

Remark. The species is known from Loei Province (Fig. 15).

Empis (*Coptophlebia*) *thapensis* sp. n.

(Fig. 14)

Brownish species of small size; fore tibia with 1 anterodorsal row of 8–10 strong, short bristles.

Male

Head. Occiput blackish, somewhat dusty, with some short postocular bristles. Ocellar triangle prominent, black, with pair of short bristles. Face black. Palpus brown. Antenna black, first flagellomere conical, second and third flagellomeres aristiform. Labrum brown to black, length twice head height. Labium brownish with short distinct bristles; labella shorter than prementum. Holoptic, upper ommatidia enlarged.

Thorax dark brown to black, scutum dusty in prescutellar depression, scutellum dusty. All bristles black. Antepronotum with 1 strong, short lateral bristle. Postpronotal lobe with 1 strong, long basal bristle and several short anteriors. Proepisternum, lateral part of prosternum with 1 distinct bristle. Acrostichals apparently absent. Dorsocentrals uniserial, ending with 2 strong, long posterior bristles in prescutellar depression. Laterotergite with fan of strong, long bristles. The other strong, long bristles are as follows: 1 pre- and 1 postsutural supraalar, 3 notopleurals, 1 postalar, 2 apical scutellars. Anterior and posterior spiracles blackish.

Legs dark brown. Fore tibia with anterodorsal row of about 10 rather short, strong bristles; basal tip of first fore tarsomere with 1 strong, long anterolateral bristle; first 3 fore tarsomeres with 1 strong ventroapical; last three fore tarsomeres with fine, rather long dorsals. Mid femur with 1 posteroventral row of rather long bristles; mid tibia with 1 strong, long ventral bristle on middle, 1 dorsal row of 3 strong, long bristles; apical tip of first mid tarsomere with 1 strong, long dorsal bristle. Hind femur with very short dorsals; hind tibia with 4 strong, long dorsals; hind tarsus swollen with long dorsal and spine-like short ventral bristles.

Wing (2 mm) clear. Sc, M1, A1 abbreviated, R4+5 at right angle, cell dm truncate, anal lobe well developed. Halter brown.

Abdomen dark brown. First 3 tergites with distinct bristles on posterior margin. Segment 8 with some distinct posterior bristles.

Hypopygium (Fig. 14). Cercus rather slender in lateral view. Epandrium with pair of dorsal bristly bumps; tip of epandrial lamella rather pointed with 3 strong, long bris-

tles, and 3–4 others ventrally. Hypandrium well sclerotized. Phallus slender, long.

Female unknown.

Material examined. Holotype, male, Thailand, Phang Nga Province, Thap Put, 23.x.1997, P. Grootaert, KBIN-IRSNB (sample No. 97105), swept from vegetation along river in primary rain forest; paratypes, 3 males, same data.

Other material. 1 male in poor condition, same data.

Etymology. The name of the species is derived from the type-locality.

Remark. The species is known from Phang Nga Province (Fig. 15).

DISTRIBUTION OF THE *EMPIS* (*COPTOPHLEBIA*) *HYALEA*-GROUP

In the Oriental region the tribe Empidini is undoubtedly dominated by the *E.* (*C.*) *hyalea*-group: in addition to the 23 species not available for study and only tentatively included in this group, 31 described and 15 undescribed species are now inventoried from India, Burma, Thailand, Laos, Vietnam, South China (including Hainan Island), Malaysia, Singapore, Taiwan, Philippines, Japan (Ryukyu Islands) and Indonesia (Sumatra, Java). The group also seems well diversified in the Australasian region (with the exception of Australia and New Zealand) with 12 species, 10 of which are new, recorded from Papua New Guinea and New Caledonia.

Even if the *E.* (*C.*) *hyalea*-group is well represented in the Oriental and Australasian regions, it seems to have a worldwide distribution with the exception of the Palaearctic region. In Africa, after reviewing all known species and studying extensive determined and undetermined material of the tribe Empidini (Daugeron, 1997a, 2000a, 2001, Daugeron & Grootaert, 2003), four unnamed species from West Africa (Guinea, Ivory Coast and Central Africa) were found. The *E.* (*C.*) *hyalea*-group is also recorded from the Nearctic and Neotropical regions and includes at least the following four species: *E. anthophila* Melander, 1946 (New Mexico), *E. asema* Melander, 1902 (Texas), *E. hirticrus* Melander, 1927 (Arizona) and *E. impar* Melander, 1946 (Costa Rica). In the New World, the group therefore appears to be confined to Southwestern North America and Central America. Finally, the distribution of the group is much more widespread than expected. In a previous paper, one of us (Daugeron, 2002) hypothesized that the *E.* (*C.*) *hyalea* group was at least of Miocene origin as it seemed to follow an Afro-Oriental track with an Australasian extension (New Caledonia). Actually, with the exception of the Palaearctic region, the group is worldwide, but appears to be mostly confined to the tropical or subtropical regions of Central America, Africa, Asia and Australasia, and Southwestern North America. Thus, the present distribution of the group requires a more complex explanation, and only the reconstruction of the phylogeny and a comparison with groups showing a similar distribution (e.g. the Hemiptera Fulgoromorpha of the family Lophopidae, see Soulier-Perkins, 2000) may facilitate an historical interpretation of its biogeography (Daugeron, in prep.).

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