

Two New Species of the Genus *Eukiefferiella* Thienemann, 1926 (Diptera: Chironomidae) from China

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Abstract. Two new species of *Eukiefferiella* Thienemann, *E. camuraloba* sp. nov. and *E. tianmuensis* sp. nov., are described and illustrated as male image from China. *E. camuraloba* sp. nov. can be separated from the previously known species of the whole genus in having the approximately triangular and curved apically inferior volsella; *E. tianmuensis* sp. nov. is easily separated from the other species of the genus as following characters: mid and hind legs with 2 pseudospurs on ta₁, ta₂ and ta₃; length of ta₄ shorter than ta₅ in all legs; inferior volsella trapeziform.

Key words: Diptera, Chironomidae, *Eukiefferiella camuraloba*, new species.

INTRODUCTION

The genus *Eukiefferiella* was erected by Thienemann in 1926, with *Eukiefferiella gracei* Edwards (1929) as type species (Spies and Sæther, 2004). The larvae of *Eukiefferiella* are almost exclusively lotic in flowing waters of all types. Eurythermy seems normal, though some species are restricted to colder montane waters. The genus occurs in all biogeographic regions, except the southern Neotropics and Antarctica. Presently 99 species are recorded (Sublette and Sublette, 1973; Freeman and Cranston, 1980; Cranston and Martin, 1989; Cranston *et al.*, 1989; Ashe and Cranston, 1990; Oliver *et al.*, 1990; Sasa and Kikuchi, 1995; Wang, 2000; Chaudhuri *et al.*, 2001; Wang and Halvorsen, 2002; Makarchenko and Makarchenko, 2011; Qi *et al.*, 2012a). Based on the current records, Eastern Palaearctic Asia appears to be a rich area of diversity in the genus: 32 species in Japan, 7 species in the Far East of Russia and 9 species in Palaearctic China were recorded (Sasa and Kikuchi, 1995; Wang, 2000; Wang and Halvorsen, 2002; Makarchenko and Makarchenko, 2011; Qi *et al.*, 2012a). In this paper, two new species of the genus are described from China based on adult males caught by light trapping.

MATERIALS AND METHODS

The morphological nomenclature follows Sæther (1980) and the abbreviations of parts measured follow Qi *et al.* (2012b). The material examined was mounted on slides, following the procedure outlined by Sæther (1969). Measurements are given as ranges followed by the mean, when three or more specimens are measured, followed by the number of specimens measured (n) in parentheses. Specimens are deposited in the College of Life Science, Nankai University, China and College of Life Science, Taizhou University, China.

Eukiefferiella camuraloba, new species

(Fig. 1)

Diagnostic characters

The imagines are characterized by the following character combination: Ommateum with setae; antenna with 12 clavola; Wing vein R₂₊₃ absent, squama without setae; mid and hind tibiae with one tibial spur; inferior volsella approximately triangular, curved apically.

Male imago (n = 23)

Total length 1.50–2.13 (1.77) mm. Wing length 1.23–2.05 (1.37) mm. Total length/wing length 1.20–1.60 (1.34). Wing length/length of profemur 1.39–3.95 (3.49). Light yellow in coloration.

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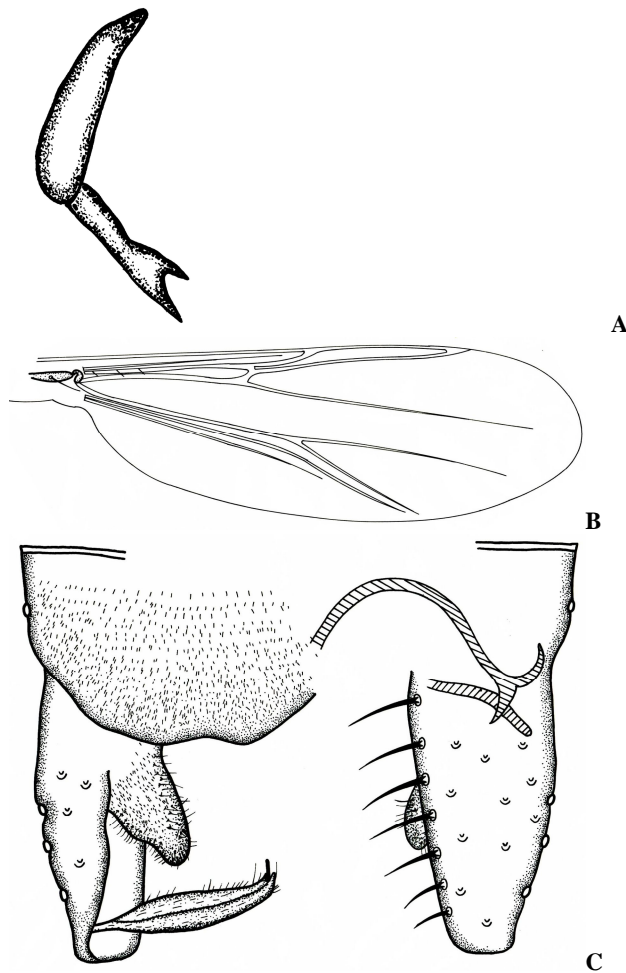


Fig. 1. *Eukiefferiella camuraloba*, new species, male. A, tentorium; B, wing; C, hypopygium.

Head

Antenna with 12 clavola. AR 0.25–0.32 (0.28). Temporal setae 3–5, including 0–1 inner verticals, 0–1 outer verticals, and 1–3 (2) postorbitals. Clypeus with 4–6 (5) setae. Tentorium 78–112 (97) μm long, 12–27 (20) μm wide, bilobed apically (Fig. 1A). Palpomere lengths (in μm): 15–27 (20); 25–39 (30); 51–68 (59); 65–89 (77); 88–121 (103). Palpomere 5th/3rd: 1.72–1.80 (1.74).

Wing (Fig. 1B)

Wing transparent, without markings. VR 1.33–1.48 (1.43). R_{2+3} absent. Brachiolum with 0–2 (1) setae; R with 2–6 (4) setae. Remaining veins without setae. Squama without setae.

Thorax

Anteprenotum with 0–2 (1) lateral setae. Dorsocentrals 4–8 (5); acrostichals 6–10 (8); prealars 2–4 (3). Scutellum with 2–4 (3) setae.

Legs

Mid and hind legs with one tibial spur only. Mid and hind legs without pseudospur on tarsus. Sensilla chaetica 2–5, (3) on ta_1 of hind leg, situated in the anterior 2/10. Hind tibial comb with 10–13 (11) setae. Pulvilli small. Lengths (μm) and proportions of legs in Table I.

Table I.- Lengths and proportions of legs of *Eukiefferiella camuraloba*, new species.

	P ₁	P ₂	P ₃
fe	340–440 (369)	410–500 (450)	420–500 (462)
ti	430–490 (462)	410–490 (447)	420–510 (477)
ta ₁	190–270 (234)	180–220 (202)	220–260 (243)
ta ₂	120–170 (143)	100–140 (109)	120–190 (159)
ta ₃	90–120 (108)	80–100 (87)	100–140 (118)
ta ₄	60–100 (75)	60–80 (69)	50–110 (79)
ta ₅	50–90 (65)	50–70 (59)	50–90 (69)
LR	0.44–0.59 (0.51)	0.43–0.50 (0.47)	0.49–0.53 (0.51)

Abbreviations used: P₁, fore leg; P₂, mid leg; P₃, hind leg; fe, femur; ti, tibia; ta₁...ta_n, tarsus₁...tarsus_n; LR, leg ratio, length of ta₁/length of tibia.

Hypopygium (Fig. 1C)

Tergite IX without long setae. Laterosternite IX with 1–3 (2) setae. Phallapodeme 36–49 (45) μm long; transverse sternapodeme curved without oral projections, 40–64 (53) μm long. Gonocoxite 132–145 (136) μm long. Inferior volsella approximately triangular, curved apically, covered with microtrichiae and about 30–40 weak setae. Gonostylus bent upwards distally, 62–79 (68) μm long, with numerous microtrichiae; crista dorsalis absent; megaseta 8–12 (10) μm long. HR 1.80–2.21 (2.00); HV 2.17–3.13 (2.60).

Etymology

The specific epithet is from the Latin “camura” and “lobus”, referring to the inferior volsella of the species curved apically.

Holotype

♂, Daocheng County, Sichuan Province, 10–IV–1996, light trap, Wang Xin-hua; Paratypes: 18♂♂, Daocheng County, Sichuan Province, 10–IV–1996, light trap, Wang Xin-hua; 1♂, Luding County, Sichuan Province, 15–IV–1996, light trap, Wang Xin-hua; 2♂♂, Kangding County, Sichuan Province, 15–VI–1996, light trap, Wang Xin-hua; 1♂, Dali City Yunnan Province, 23–VII–1996, light trap, Wang Xin-hua.

Distribution

Sichuan and Yunnan Provinces in Oriental China.

Remarks

The new species *E. camuraloba* is separated from *E. coerulescens* Kieffer on the basis of following points: (1) the color of entire body light yellow in *E. camuraloba* while dark brown in *E. coerulescens*; (2) acrostichals 6–10 (8) in *E. camuraloba*, but no acrostichal in *E. coerulescens*; (3) the inferior volsella of *E. camuraloba* approximately triangular, curved apically, while the inferior volsella of *E. coerulescens* oval.

This new species can also be separated from *E. jintuquindecima* Sasa on the basis of following characters: (1) the inferior volsella of *E. camuraloba* curved apically while not curved apically in *E. jintuquindecima*; (2) Mid legs with only one tibial spur in *E. camuraloba* but Mid legs of *E. jintuquindecima* with two tibial spurs.

Eukiefferiella tianmuensis new species

(Fig. 2)

Diagnostic characters

The imagines are characterized by the following character combination: Antenna with 13 clavola; wing vein R_{2+3} present, without setae in wing veins, squama with 11–13 long setae; mid and hind tibia with two tibial spurs; mid and hind legs with 2 pseudospurs on ta_1 , ta_2 and ta_3 ; length of ta_4 shorter than ta_5 in all legs; inferior volsella trapeziform, with numerous microtrichiae and 18–25 apical weak setae.

Male imago ($n = 5$)

Total length 1.98–2.10 (2.02) mm. Wing

length 1.13–1.16 (1.14) mm. Total length/wing length 1.75–1.82 (1.78). Wing length/length of profemur 2.14–2.45 (2.26). Dark brown in coloration.

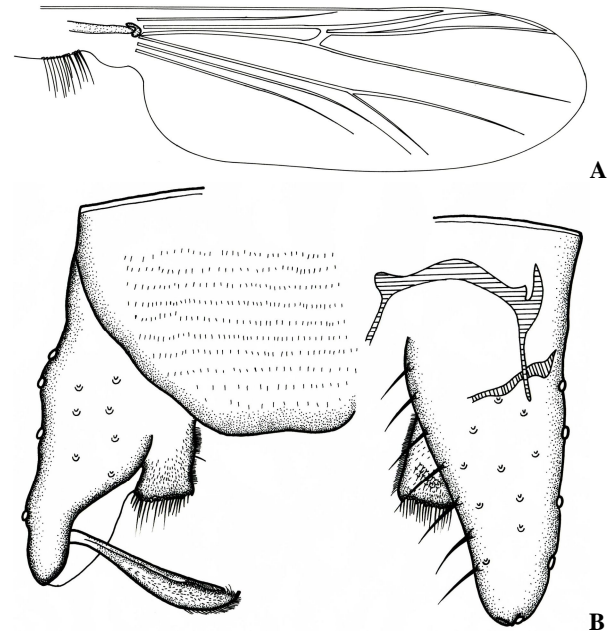


Fig. 2. *Eukiefferiella tianmuensis*, new species, male. A, wing; B, hypopygium.

Head

Ommateum without setae. Antenna with 13 clavola. AR 0.79–0.83 (0.82). Temporal setae absent. Clypeus with 7–12 (9) setae. Tentorium 110–120 (115) μm long, 22–35 (28) μm wide. Palpomere lengths (in μm): 30–40 (35); 36–48 (43); 60–65 (62); 110–123 (118); 150–165 (158). Palpomere 5th/3rd: 2.5–2.8 (2.6).

Wing (Fig. 2A)

Wing transparent, without markings. VR 1.25–1.30 (1.27). R_{2+3} present, ending closer to R_1 than to R_{4+5} . Wing veins without setae. Squama with 11–13 (12) long setae.

Thorax

Anteprenotum with 0–2 (1) lateral setae. Dorsocentrals 7–9 (7); acrostichals 3–5 (4); prealars 0–3 (2). Scutellum with 1–2 setae.

Legs

Spurs on mid tibia 23–25 (24) μm and 18–20

(19) μm long. Spurs on hind tibia 35–45 (40) μm and 18–20 (19) μm long. Hind tibial comb with 7–10 (8) setae. Mid and hind legs with 2 pseudospurs on ta_1 , ta_2 and ta_3 . Sensilla chaetica 2–5, (3) on ta_1 of hind leg, situated in the anterior 2/10. Pulvilli small. Lengths (μm) and proportions of legs in Table II.

Table II.- Lengths and proportions of legs of *Eukiefferiella tianmuensis*, new species.

	P ₁	P ₂	P ₃
fe	510–540 (530)	480–520 (512)	490–550 (525)
ti	500–560 (540)	500–550 (535)	510–570 (540)
ta ₁	220–300 (260)	210–250 (230)	240–320 (276)
ta ₂	180–240 (210)	120–140 (130)	170–220 (190)
ta ₃	110–180 (150)	80–100 (87)	100–140 (120)
ta ₄	80–90 (85)	30–45 (36)	30–50 (40)
ta ₅	100–120 (110)	55–70 (59)	60–80 (69)
LR	0.44–0.59 (0.51)	0.43–0.52 (0.46)	0.47–0.60 (0.54)

For abbreviations, see Table I.

Hypopygium (Fig. 2B)

Tergite IX without long setae. Laterosternite IX with 0–3 (2) setae. Phallapodeme 50–70 (63) μm long; transverse sternapodeme, 70–100 (83) μm long, oral projections well developed. Gonocoxite 290–320 (310) μm long. Inferior volsella trapeziform, with numerous microtrichiae and 18–25 apical weak setae. Gonostylus slender and cucullate, 110–130 (126) μm long, with numerous microtrichiae; crista dorsalis absent; megaseta 7–12 (9) μm long. HR 1.60–2.70 (2.10); HV 1.78–1.91 (1.83).

Etymology

The species is named after the type locality, Tianmu Mountain, Zhejiang Province; using the Latin suffix –ensis, denoting place of origin.

Holotype

♂, Tianmu Mountain, Zhejiang Province, 8–IX–1998, light trap, Wu Hong; Paratypes: 4♂♂, Tianmu Mountain, Zhejiang Province, 25–VII–2011, light trap, Lin Xiao-long.

Distribution

Zhejiang Province in Oriental China.

Remarks

The new species *E. tianmuensis* is similar to the species of genus *Cardiocladius* Kieffer as following characters: mid and hind legs with 2 pseudospurs on ta_1 , ta_2 and ta_3 ; length of ta_4 shorter than ta_5 in all legs; but can be separated from the species of *Cardiocladius* on the basis of following points: the ta_4 not cordiform and all wing veins without setae.

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