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First report of the genus *Endotribelos* Grodhaus, 1987 (Diptera: Chironomidae) from China, with description of a new species

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Abstract: *Endotribelos* Grodhaus, 1987 is recorded for the first time in China. The adult male of *E. redimiculum* sp. nov. is described and illustrated based on specimens collected from Zhejiang Province. A key to the males of this genus worldwide is given.

Key words: Nematocera; Chironomidae; key; taxonomy
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中国新记录属内三叶摇蚊属 *Endotribelos* Grodhaus 一新种记述（双翅目：摇蚊科）

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摘要：报道摇蚊科中国 1 新记录属：内三叶摇蚊属 *Endotribelos* Grodhaus, 1987，并描述采自浙江的该属 1 新种：条带内三叶摇蚊 *E. redimiculum* sp. nov.。提供了此属世界已知雄成虫的分类检索表。

关键词：长角亚目；摇蚊科；检索表；分类

Introduction

Endotribelos Grodhaus, 1987 was first described as a genus in the tribe Chironomini for a Nearctic species, *Tendipes* (*Tribelos*) *hesperium* Sublette, 1960. *Endotribelos* is very similar to *Tribelos* Townes, 1945, but is distinguished by owning a subapical outer seta on the superior volsella. The adults and pupae of *Endotribelos* have much in common with *Phaenopsectra* Kieffer, 1921, the most striking difference between the two genera is the absence of setae on the wing membrane in *Endotribelos* (Grodhaus 1987; Cranston *et al*. 1989). The immature stages of *Endotribelos* have been reported living in macrophytes, detritus, wood, leaves, freshwater sponges and fallen fruits in streams (Grodhaus 1987; Roque *et al*. 2005; Roque & Trivinho-Strixino 2008). Groadhaus (1987) anticipated a rich *Endotribelos* fauna in the

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southernmost part of the Nearctic Region and the Neotropical Region. Since then, Sublette & Sasa (1994) described two new species (*E. albatum* and *E. grodhausi*) from Guatemala and emended the diagnosis of the genus given by Grodhaus (1987); Spies & Reiss (1996) recorded *E. albatum*, *E. grodhausi* and *E. hesperium* distributed from Costa Rica and northwards, reaching southern USA; Roque *et al*. (2005) recorded *E. albatum* and *E. grodhausi* from southeastern Brazil; Roque & Trivinho-Strixino (2008) described four new species (*E. calophylli*, *E. euterpe*, *E. ficus* and *E. talaumae*) from southeastern Brazil and provided keys to male imagines and larvae of the Neotropical species.

In this contribution, a new species of *Endotribelos* from Oriental China is described and a list and key to the males of *Endotribelos* are presented.

Material and methods

The morphological nomenclature follows Sæther (1980) and the abbreviations of parts measured follow Qi *et al*. (2012). The material examined was mounted on slides, following the procedure outlined by Sæther (1969). Specimens are deposited in the College of Life Science, Nankai University, China.

Description

Genus *Endotribelos* Grodhaus, 1987, new record to China

Endotribelos Grodhaus, 1987: 237; Cranston *et al*., 1989: 378.

Type species: *Endotribelos hesperium* (Sublette, 1960), by original designation.

Diagnosis and description. See Grodhaus (1987) and Sublette & Sasa (1994).

Distribution. Oriental, Nearctic and Neotropical Regions.

Key to adult males of *Endotribelos* known in the world (modifed from Roque & Trivinho-Strixino 2008)

1. Wings with several setae on M ····· 2
-. Wings without seta on M ····· 3
2. Mid tibiae with 2 spurs ····· *E. redimiculum* sp. nov.
-. Mid tibiae with 1 spur ····· *E. hesperium* (Sublette)
3. Dark brown marks or bands on abdominal segments III, IV, VI and VII ····· *E. calophylli* Roque & Trivinho-Strixino
-. Abdominal segments not as above ····· 4
4. Superior volsella with macrotrichia ····· *E. talaumae* Roque & Trivinho-Strixino
-. Superior volsella without macrotrichia ····· 5
5. Thorax without dark stripe on scutum ····· *E. albatum* Sublette & Sasa
-. Thorax with narrow dark stripe down the midline of the scutum which expands posteriorly covering the prescutal area ····· 6
6. Anal point more or less parallel-sided ····· *E. ficus* Roque & Trivinho-Strixino
-. Anal point apically swollen ····· 7
7. Mid tibiae with 2 spurs ····· *E. grodhausi* Sublette & Sasa
-. Mid tibiae with 1 spur ····· *E. euterpe* Roque & Trivinho-Strixino

A list of *Endotribelos* in the world

1. ***Endotribelos albatum*** **Sublette & Sasa, 1994**

Endotribelos albatum Sublette & Sasa, 1994: 38; Roque & Trivinho-Strixino, 2008: 192.

Distribution. Brazil, Costa Rica, Guatemala, USA.

2. ***Endotribelos calophylli*** **Roque & Trivinho-Strixino, 2008**

Endotribelos calophylli Roque & Trivinho-Strixino, 2008: 193.

Distribution. Brazil.

3. ***Endotribelos euterpe*** **Roque & Trivinho-Strixino, 2008**

Endotribelos euterpe Roque & Trivinho-Strixino, 2008: 196.

Distribution. Brazil.

4. ***Endotribelos ficus*** **Roque & Trivinho-Strixino, 2008**

Endotribelos ficus Roque & Trivinho-Strixino, 2008: 201.

Distribution. Brazil.

5. ***Endotribelos grodhausi*** **Sublette & Sasa, 1994**

Endotribelos grodhausi Sublette & Sasa, 1994: 39.

Distribution. Brazil, Costa Rica, Guatemala, USA.

6. ***Endotribelos hesperium*** **(Sublette, 1960)**

Tendipes (*Tribelos*) *hesperium* Sublette, 1960: 217.

Endotribelos hesperium: Grodhaus, 1987: 239.

Distribution. Brazil, Costa Rica, USA.

7. ***Endotribelos talaumae*** **Roque & Trivinho-Strixino, 2008**

Endotribelos talaumae Roque & Trivinho-Strixino, 2008: 203.

Distribution. Brazil.

8. ***Endotribelos redimiculum*** **sp. nov.** (Figs. 1–8)

Diagnostic characters. The male imago can be distinguished from known species in this genus by the following combination of characters: abdomen with brown bands in the median and apex of each abdomere, mid tibiae with 2 spurs, M vein with 6–7 setae, anal point more or less parallel-sided.

Male (n = 2).

Total length 6.20–6.28 mm. Wing length 2.33–2.37 mm. Total length/wing length 2.66–2.67. Wing length / length of profemur 1.98–2.01.

Coloration. Head yellowish brown. Thorax (Fig. 1) with narrow dark stripe down the midline of the scutum which expands posteriorly covering the prescutal area, postnotum dark, and anterolateral marks brownish. Abdomen (Fig. 2) yellow, with brown band in the median and apex of each abdomere. Hypopygium brown. Leg pale yellow.

Head (Fig. 3). AR 2.69–2.70. Ultimate flagellomere 105–106 μm long. Temporal setae 32–34 including 15–16 inner verticals, 16–17 outer verticals and 1–2 postorbitals. Clypeus with 42–47 setae. Tentorium 210–250 μm long, 40–50 μm wide. Palpomere lengths (in μm): 54–58; 63–65; 140–143; 185–187; 235–237. Palpomere 5th/3rd: 1.64–1.66.

Thorax. Acrostichals 12–13; dorsocentrals 20–21; prealars 6–7. Scutellum with 23–24

setae.

Wing (Fig. 4). Wing transparent, without any pigmentation. VR 1.08–1.11. Brachiolum with 6–7 setae, R with 35–37, R_1 with 20–23, R_{4+5} with 30–32, M with 6–7 setae. Squama with 13–14 setae.

Legs. Terminal scale of fore tibia 65–66 μm long, subtriangular, with an apical spur, 15–20 μm long (Fig. 5). Mid and hind tibiae with closely approximated fused combs, each comb 14–15 μm long; spurs on mid tibiae 14–15 μm and 14–15 μm long (Fig. 6), spurs on hind tibiae 8–9 μm and 14–15 μm long (Fig. 7). Width at apex of fore tibia 73–75 μm, of mid tibia 80–85 μm, of hind tibia 115–120 μm. Mid tarsomere 1 with 6–7 sensilla chaetica distally. Lengths (in μm) and proportions of legs in Table 1.

Table 1. Lengths (in μm) and proportions of legs of *Endotribelos redimiculum* sp. nov.

	P_1	P_2	P_3
fe	1175–1180	1350–1360	1400–1450
ti	1125–1135	1250–1260	1375–1400
ta_1	1675–1670	700–720	975–980
ta_2	875–890	410–415	600–610
ta_3	650–655	310–320	450–500
ta_4	550–560	180–200	270–290
ta_5	300–305	80–100	160–175
LR	1.47–1.48	0.56–0.57	0.70–0.71
BV	1.65–1.67	3.22–3.36	2.43–2.53
SV	1.37–1.38	3.63–3.71	2.85–2.91

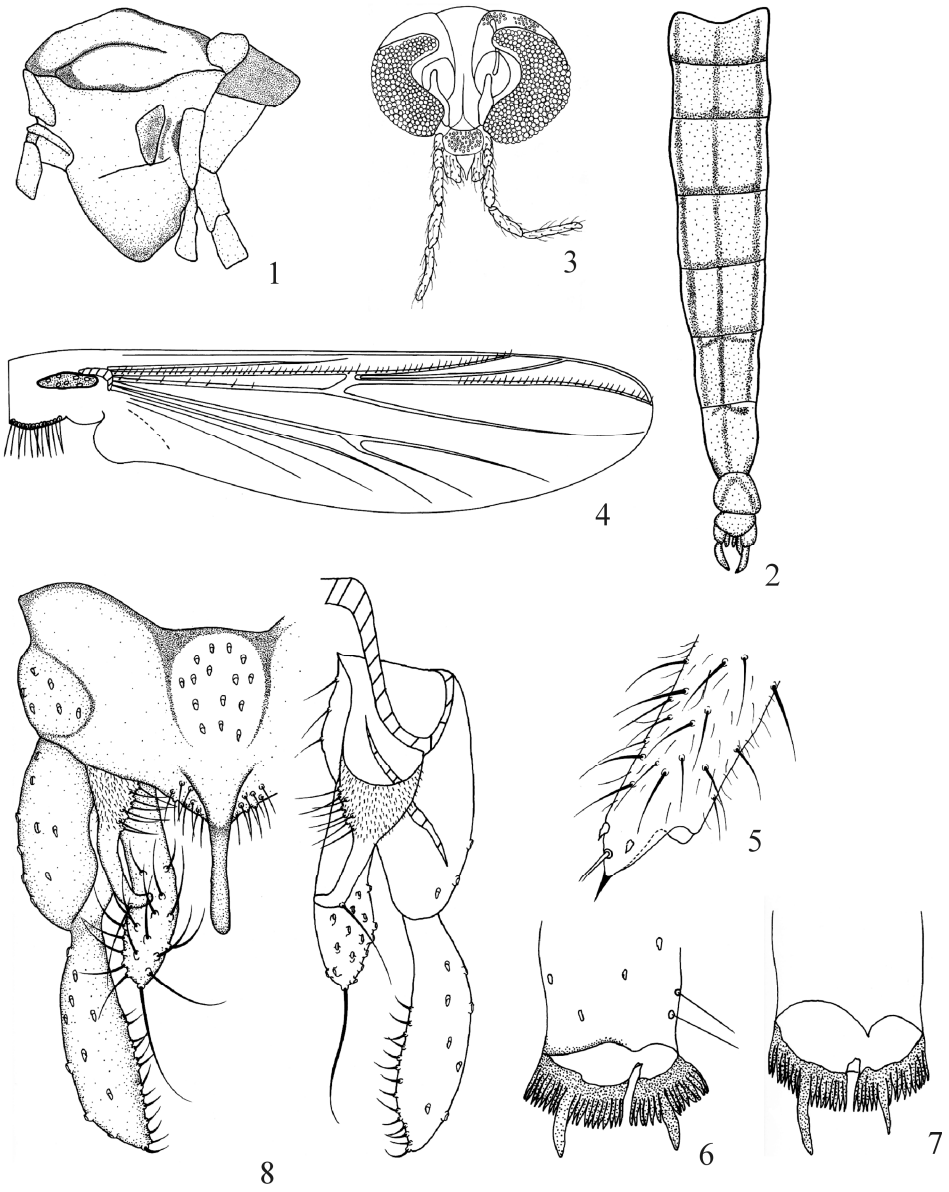
Hypopygium (Fig. 8). Tergite IX with 15–16 strong median setae and 16 setae at base of anal point. Laterosternite with 5–6 setae. Anal point 135–150 μm long, 25–30 μm wide in apex, 15–20 μm wide in base, more or less parallel-sided, distally rounded. Phallapodeme 115–135 μm long. Transverse sternapodeme 150–160 μm long. Gonocoxite 229–235 μm long. Superior volsella hooked, 110–115 μm long, 23–25 μm wide; base with 8–9 long setae and numerous macrotrichiae, distally bare with 1 distolateral, subapical, strong seta. Inferior volsella 180–185 μm long, digitiform, with 16–20 long setae. Gonostylus 180–185 μm long, with 14–15 long setae along inner margin. HR 1.24–1.31. HV 3.39–3.44.

Holotype. ♂, **China**: Zhejiang Province, Sanmen County, (29°05.55'N, 121°23.45'E), 28-VII-2010, sweeping method, Xiaolong LIN; **Paratype.** 1♂, the same as the holotype.

Etymology. From Latin "*redimiculum"* meaning "band", referring to abdomen with brown bands in each abdomere.

Biology and Distribution. Before now, *Endotribelos* had only been recorded in the Nearctic and Neotropical Regions. *Endotribelos* is among the most abundant of chironomids in low-order streams in southeastern Brazil and 7 species are known from the area (Roque & Trivinho-Strixino 2008). The Chinese specimens were collected in the southeast of Zhejiang Province, an area with a subtropical monsoon climate. The discovery of *E. redimiculum* sp. nov. in Oriental China, approximately 19,000 km from Brazil, provides a remarkable range

extension for this genus. The larvae of *Endotribelos* had been reported living in macrophytes, detritus, wood, leaves, fallen fruits and freshwater sponges. The type locality of *E. redimiculum* sp. nov. is an area where water hyacinth is well developed. For this reason, it indicates that the larvae of this species maybe penetrate in the leaves and stems of water hyacinth and ingest them as food.



Figures 1–8. *Endotribelos redimiculum* sp. nov., ♂. 1. Thorax, lateral view; 2. Abdomen; 3. Head; 4. Wing; 5. Fore tibial apex, ventral view; 6. Mid tibial apex, ventral view; 7. Hind tibial apex, ventral view; 8. Hypopygium.

Remarks. The new species has distinct pigmentation patterns on abdomen easily distinguished from other species. *E. redimiculum* sp. nov. resembles *E. hesperium* in the general structure of hypopygium and wings with several setae on M vein, but it can be separated by the superior volsella with macrotrichia, which are absent in *E. hesperium*; the mid tibiae with 2 spurs, but with 1 spur in *E. hesperium*.

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