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## *Dicrotendipes weiqiangensis* sp. nov. (Diptera: Chironomidae) from Zhejiang, China

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**Abstract:** *Dicrotendipes weiqiangensis* sp. nov. from Xianju National Park, Zhejiang, China is described and nominated. This new species is morphologically most similar to *D. nudus* Qi, Lin & Wang, 2012. It can be distinguished from the known species in the genus by  $R_{4+5}$  without seta and the shape of the superior volsella, which is semi-triangular viewed dorsally and spherical viewed laterally. Diagnostic characteristics of the male imago (e.g., wing, hypopygium, anal point and superior volsella) are illustrated. A key to the males of *Dicrotendipes* in China is also provided.

**Key words:** Culicoidea; taxonomy; key

### 中国浙江二叉摇蚊属一新种（双翅目：摇蚊科）

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**摘要:** 记述采自浙江省仙居国家公园韦羌山的二叉摇蚊属 1 新种: 韦羌二叉摇蚊 *Dicrotendipes weiqiangensis* sp. nov., 该新种与光裸二叉摇蚊 *D. nudus* Qi, Lin & Wang, 2012 相似, 区别于本属其它已知种的主要特征是  $R_{4+5}$  脉无刚毛及上附器的特殊形状 (背面观呈近三角状, 侧面观呈球状); 文中绘制了雄成虫的翅、生殖节、肛尖、上附器等特征图, 并提供了中国二叉摇蚊属已知种的分种检索表。

**关键词:** 蚊总科; 分类; 检索表

### Introduction

The genus *Dicrotendipes* was erected by Kieffer in 1913, with *Dicrotendipes septemmaculatus* (Becker, 1908) as type species (Kieffer 1913). The immature stages of *Dicrotendipes* are found in both lentic and lotic habitats, but are generally more prevalent in lentic conditions (Epler 1988). More than 100 species have been described (Qi *et al.* 2012). Among them, 9 species have been reported from China (Chen *et al.* 2015).

Six species of *Dicrotendipes* have been recorded from Zhejiang Province: *D. inouei* Hashimoto 1984, *D. nervosus* (Staeger, 1839), *D. nudus* Qi, Lin & Wang, 2012, *D. saetanumerosus*

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Qi, Lin & Wang, 2012, *D. septemmaculatus* (Becker, 1908) and *D. tamaviridis* Sasa, 1981 (Wang 2000; Qi *et al.* 2012; Chen *et al.* 2015). In the present study, a new species in this genus is described from the Xianju National Park of Zhejiang Province based on male imagines caught by sweep-net. A key to the males of *Dicrotendipes* in China is also provided.

## 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 procedures outlined by Sæther (1969). The type specimen is deposited in the College of Life Science, Taizhou University, China.

### Key to adult males of *Dicrotendipes* known in China (modified from Cheng *et al.* 2015)

1. R<sub>4+5</sub> without setae ..... 2
- R<sub>4+5</sub> with setae ..... 3
2. Superior volsella digitiform, with short ventral extension ..... *D. nudus* Qi, Lin & Wang
- Superior volsella semi-triangular viewed dorsally, spherical viewed laterally ..... *D. weiqiangensis* sp. nov.
3. Small, membranous, triangular flap-like appendages present near base of anal point .....  
..... *D. fusconotatus* (Kieffer)
- Base of anal point without appendages ..... 4
4. Inferior volsella deeply bifid apically ..... *D. septemmaculatus* (Becker)
- Inferior volsella with simple apex or apex bulbiform ..... 4
5. Tergite IX with median setae ..... 6
- Tergite IX without median setae ..... 7
6. Anal point sharply reflexed ventrad; tergite IX with 6–14 setae ..... *D. pelochloris* (Kieffer)
- Anal point not sharply reflexed ventrad; tergite IX with more than 30 setae .....  
..... *D. saetanumerosus* Qi, Lin & Wang
7. Wing with more than 35 setae on R & R<sub>1</sub> ..... 8
- Wing with less than 30 setae on R & R<sub>1</sub> ..... 9
8. Apex of superior volsella expanded, inflated, anal point pyriform to elongate-elliptical .....  
..... *D. nervosus* (Staeger)
- Apex of superior volsella not expanded, anal point spatulate ..... *D. inouei* Hashimoto
9. Superior volsella with 3 short setae; cylindrical, curving outward; apex bare, expanded .....  
..... *D. flexus* (Johannsen)
- Superior volsella with 9–10 short setae; pediform, apex not expanded ..... *D. tamaviridis* Sasa

## Taxonomy

### *Dicrotendipes weiqiangensis* sp. nov. (Figs. 1–6)

Diagnostic characters. The male imago can be distinguished from all the known species in this genus by R<sub>4+5</sub> without seta and the shape of the superior volsella, which is semi-triangular viewed dorsally and spherical viewed laterally.

Male ( $n = 5$ ).

Total length 3.33–3.68 mm. Wing length 1.80–2.03 mm. Total length/wing length 1.72–1.85. Wing length/length of profemur 2.00–2.25.

Coloration. Head, thorax and abdomen brown; legs yellowish-brown.

Head. AR 1.56–1.94. Temporal setae 9–12. Clypeus with 15–18 setae. Tentorium 100–115  $\mu\text{m}$  long, 23–35  $\mu\text{m}$  wide. Palpomere lengths (in  $\mu\text{m}$ ): 25–38, 38–40, 140–150, 130–150, 230–260. L: 5th/3 rd 1.64–1.73. Frontal tubercle 12–17  $\mu\text{m}$  long, 6.00–8.50  $\mu\text{m}$  wide.

Wing (Fig. 1). Wing transparent, without markings. VR 1.09–1.12. B 2–5 setae, R with 14–15 setae, R<sub>1</sub> with 2–4 setae, and R<sub>4+5</sub> without seta. Squama with 2–3 setae.

Thorax. Dorsocentrals 5–8, acrostichals 10–11, prealars 3–4. Scutellum with 3–6 setae.

Legs. Fore tibia with rounded scale lacking spur. Spurs on mid tibiae 33–38  $\mu\text{m}$  and 27–28  $\mu\text{m}$  long, including combs 17–22  $\mu\text{m}$  and 20–22  $\mu\text{m}$  long; spurs on hind tibia 40–45  $\mu\text{m}$  and 35–40  $\mu\text{m}$  long including combs 22–27  $\mu\text{m}$  and 22–25  $\mu\text{m}$  long. Width at apex of front tibia 55–63  $\mu\text{m}$ , of mid tibia 60–63  $\mu\text{m}$ , of hind tibia 60–70  $\mu\text{m}$ . Lengths (in  $\mu\text{m}$ ) and proportions of legs in Table 1.

**Table 1. Lengths (in  $\mu\text{m}$ ) and proportions for legs of *Dicrotendipes weiqiangensis* sp. nov.**

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
fe	900–1000	775–825	875–950
ti	625–650	675–725	950–1000
ta <sub>1</sub>	1250–1300	350–400	625–675
ta <sub>2</sub>	550–600	200–220	300–325
ta <sub>3</sub>	500–525	125–150	250–275
ta <sub>4</sub>	400–425	70–75	125–150
ta <sub>5</sub>	200–325	50–75	90–100
LR	1.98–2.00	0.50–0.59	0.65–0.68
BV	0.90–0.96	2.07–2.32	1.72–1.76
SV	1.22–1.27	3.63–4.21	2.89–3.00

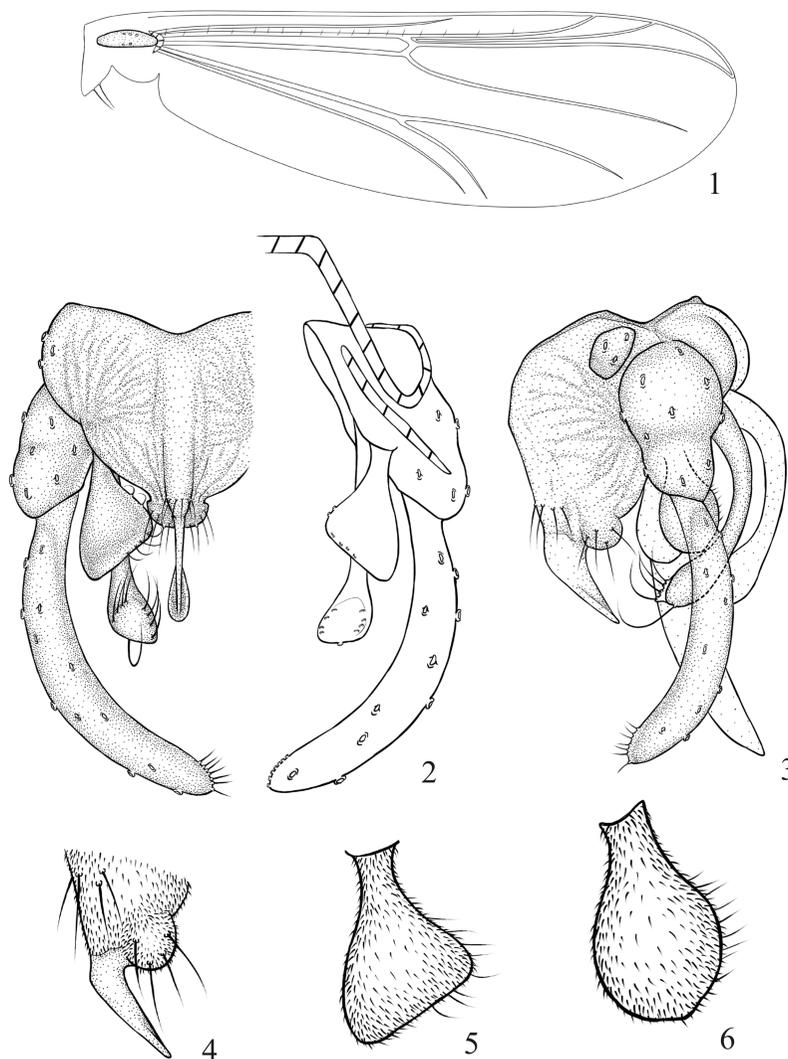
Hypopygium (Figs. 2, 3). Anal point 48–53  $\mu\text{m}$  long, bare dorsally, slender, with basal peduncle and bulbous ventral extension, 5–6 dorsal basal setae and 8–10 lateral basal setae; apex of anal point swollen and rounded (Fig. 4). Laterosternite IX with 3–4 setae. Phallapodeme 80–100  $\mu\text{m}$  long; transverse sternapodeme 40–60  $\mu\text{m}$  long, laterally narrowed, medially broad, inverted U-shaped. Gonocoxite 122–165  $\mu\text{m}$  long. Superior volsella 75–85  $\mu\text{m}$  long, 45–53  $\mu\text{m}$  wide; semi-triangular viewed dorsally (Fig. 5), spherical viewed laterally (Fig. 6); with numerous micro setae and 6–8 short apical setae. Inferior volsella 138–175  $\mu\text{m}$  long; with tip of club moderately expanded, apex shallowly bifid, with 2 dorsal rows of 4–5 setae and 1 large ventral apical seta. Gonostylus 138–200  $\mu\text{m}$  long; slightly curved medially, with 7–8 apical setae along inner margin. HR 0.81–0.89, HV 1.66–2.67.

**Holotype.** ♂, **China**, Zhejiang Province, Taizhou City, Xianju County, Xianju National Park, Weiqiang Mountain, 25-VIII-2015, sweeping net, Xin Qi. **Paratypes.** 4♂, same as holotype.

Etymology. The species epithet is named after the type locality, using the Latin suffix *-ensis*, denoting place of origin.

Remarks. The shape of the superior volsella of *D. weiqiangensis* sp. nov. is characteristic of the genus. This new species closely resembles *D. nudus* Qi, Lin & Wang in R<sub>4+5</sub> without

seta and the structure of hypopygium, but the superior volsella of *D. weiqiangensis* sp. nov. is semi-triangular viewed dorsally and spherical viewed laterally, whereas that of *D. nudus* Qi, Lin & Wang is digitiform, with a short ventral extension.



Figures 1–6. *Dicotendipes weiqiangensis* sp. nov. ♂. 1. Wing; 2. Hypopygium, dorsal view; 3. Hypopygium, lateral view; 4. Anal point, lateral view; 5. Superior volsella, dorsal view; 6. Superior volsella, lateral view.

### Acknowledgements

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