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Dicrotendipes orientalis sp.n., a new species of non-biting midges (Diptera: Chironomidae: Chironominae) from the Russian Far East

Dicrotendipes orientalis sp.n., новый вид комаров-звонцов (Diptera: Chironomidae: Chironominae) с российского Дальнего Востока

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КЛЮЧЕВЫЕ СЛОВА: Diptera, Chironomidae, *Dicrotendipes,* новый вид, российский Дальний Восток

ABSTRACT. A new species of chironomids of the tribe Chironomini, *Dicrotendipes orientalis* **sp.n.**, is described on the base of adult male and pupa morphology from the Russian Far East.

РЕЗЮМЕ. Приведены иллюстрированные описания имаго самца и куколки нового для науки вида трибы Chironomini, *Dicrotendipes orientalis* **sp.n.**, с российского Дальнего Востока. Самцы нового вида имеют следующие морфологические характеристики: длина тела 4.0–5.3 мм; длина крыла 2.1–2.8 мм; AR 2.32–2.71; R с 29–37, R_1 с 15–24, R_{4+5} с 26–38 щетинками; чешуйка крыла с 10–25 щетинками; верхний придаток гонококсита ножковидный, с 9–15 щетинками в дистальной половине; гоностиль расширен в проксимальной трети. Куколка нового вида характеризуется присутствием медиальной группы тёмных шипиков на тергите I, тергиты II–VI с одинаковой шагренью, тергит VIII с двумя передне- и заднелатеральными группами шипиков, тергиты VII–VIII с сетчатой структурой, стерниты без поперечных полос шипиков.

Introduction

The genus *Dicrotendipes* (Kieffer, 1913) is represented by sixteen species in the Palaearctic Region. Ten species of *Dicrotendipes* have been recorded from all regions of the Eastern Palaearctic, namely, 7 species for Japan [Niitsuma, 1995; Sasa & Kikuchi, 1995], 6 — for China [Sæther et al., 2000; Wang, 2000] and 3 — for Korea [Ashe & Cranston, 1990; Sæther et al., 2000].

In Russia before our investigation were known four species [Shilova, 1976; Makarchenko et al., 1997; Makarchenko & Makarchenko, 2000]. During the preparation the keys to chironomid fauna of the Russian Far East we studied material from Primorye and Khabarovsk Territories, Magadan district and discovered ten species [Makarchenko et al., 2005], one of them is new for science and described below.

Material was fixed in 70% ethanol and mounted in Fora-Berlese solution.

Morphological terminology and abbreviations follow Shilova [1976] and Sæther [1980].

Holotype and paratypes of new species are deposited in the Institute of Biology and Soil Sciences FEB RAS, Vladivostok, Russia.

Dicrotendipes orientalis Zorina, **sp.n.**
Figs 1–11.

TYPE MATERIAL. Holotype: ♂, Russia, Khabarovsk Territory, Amur River, Ussuriyskiy Island, 18.08.2005, leg. N. Yavorskaya; Paratypes: ♂, Ussury River near Zabaykalskaya Village, 25.07.2003, leg. T. Tiunova; 2 ♂♂, Amur Territory, Amur River near Ignatenko Village, 28–29.08.2004, leg. T. Tiunova; ♂, Zeya River below HES, 23.06.2004, leg. T. Tiunova; ♂, Zeya River near Krasnoyarovo Village, 20.08.2004, leg. T. Tiunova; ♂, Magadan district, Kava River, 9.07.2001, leg. S. Kocharina; 6 ♂♂, Primorye Territory, Razdolnaya River, 05.06.1987, leg. T. Vshivkova; 3 ♂♂, Ussury River near Lesozavodsk Town, 25.06.1983, leg. V. Bogatov; 1 pupa, 3 pupal exuviae, Tauy River, 7.07.2001, leg. S. Kocharina.

Imago male (n=6). General colour yellowish. Total length 4–5.3 mm; total length/wing length 1.82–2.43.

Head. Frontal tubercles 23–32 μm long and 9–14 μm wide. Temporal setae 24–33. Clypeus with 22–30 setae. Maxillary palp brown, lengths of last 4 palpal segments (μm): 68–81, 180–207, 198–225, 243–315. Palp length/head width 1.52–1.90. Scapus yellow, flagellomeres 1–11 — dark-brown, 930–1040 μm long. AR 2.32–2.71. Antenna length/palp length 1.22–1.44.

Thorax. Ground colour of scutum pale yellow, mesonotal strips yellow. Aps 0, rarely 2, Ac 17–20, Dc 11–20, Pa 5–6, Su 1. Scutellum pale yellow, with 16–18 setae. Postnotum in distal 2/3 dark brown.

Wing length 2.1–2.8 mm. Squama with 10–25 setae. R with 29–37, R_1 with 15–24 setae, R_{4+5} with 26–38 setae. VR 1.04–1.11. Halters pale yellow.

Legs. P_1 pale yellow, with the exception of t_1, distal half of ta_1, ta_{2-5} which are brown. P_2 and P_3 yellowish, ta_{1-5} gradually darkled to the end. Terminal combs of t_2 and t_3 with spurs long 23 μm. BR_1 1.9–2.5, BR_2 3.9–4.4, BR_3 3.8–5.8. Length (μm) and proportions of legs segments:

P	f	t	ta_1	ta_2	ta_3	ta_4	ta_5
P_1	680–760	540–700	840–1000	420–500	340–400	300–340	130–160
P_2	600–760	580–700	320–400	180–220	120–160	80–100	60–80
P_3	700–840	800–960	520–640	290–360	220–260	120–160	80–100

P	LR	SV	BV
P_1	1.43–1.61	1.38–1.50	1.76–1.83
P_2	0.54–0.61	3.84–3.50	3.19–3.35
P_3	0.63–0.67	2.81–2.97	2.75–3.0

Abdomen yellowish brown.

Hypopygium (Figs 1–4). Anal point spatulate (length 50–63 μm, width 23 μm), with 2–5 dorsal setae at the basis. Laterosternite IX with 3–5 setae. Transverse sternapodeme 63–86 μm long. Gonocoxite 158–194 μm long, with 2–3 setae. Superior volsella pediform (length 108–126 μm, width 36–59 μm), with 9–15 dorsal setae and covered with microtrichia except for apical part. Inferior volsella 158–216 μm long, with 9–11 dorsal setae. Gonostylus 180–216 μm long, curved, widest at about proximal one-third. HR 0.73–0.96.

Pupa (n=3). Cephalothorax. Length of cephalothorax 1.8–2.0 mm. Frontal tubercles conical 117–126 μm long, 63–90 μm width (Fig. 5). Frontal setae 72 μm long. Basal ring of thoracic horn oval constricted medially (length 90 μm, width 41 μm) with completely separate tracheal branches. Thorax strongly granulose. Prealar tubercle developed. Distance between DC_1 and DC_2 72–113 μm, DC_3 and DC_4 18–45 μm, DC_2 and DC_3 72–140 μm. Two antepronotals, 2–3 precorneals and 4 dorsocentrals present.

Abdomen (Figs 6–11). Length 5.5 mm. Tergite I with 2–10 dark spines medially; tergite II–VI with extensive uniform shagreen; VII with two rounded, anterolateral patches of spines; VIII with two anterolateral and posterolateral patches of spines. Posterior corners of tergites V–VI with groups spines. Tergites VII–VIII with reticulate. Anal lobe without shagreen. Sternite I with one lateral longitudinal band of spines, II and IV with two longitudinal bands of spines, III with median field of shagreen and lateral longitudinal band of shagreen. Hook row with 98–130 hooks. Conjunctives III/IV, IV/V and V/VI with band of shagreen. Anal combs with simple apical spur and 1–2 lateral spurs. Segment I without L setae, II–IV with 3 L setae, V–VIII with 4 LS setae. Anal lobe with fringe of 60–69 lamelliform setae in single row. Dorsal lamelliform seta present.

Larva unknown.

DIAGNOSIS. The male imagines of a new species have following characteristics: total length 4.0–5.3 mm; wing length 2.1–2.8 mm; AR 2.32–2.71; R with 29–37, R_1 with 15–24, R_{4+5} with 26–38 setae; squama with 10–25 setae; superior volsella pediform, bearing 9–15 setae in distal half; gonostylus widest at about proximal one-third. Pupa is characterized by following features: tergite I with 2–10 dark spines medially; tergite II–VI with uniform shagreen; tergite VIII with two anterolateral and posterolateral patches of spines; tergites VII–VIII with reticulate, sternites without transverse bands.

ETYMOLOGY. From Latin *orientalis*=Eastern, referring to widespread of new species on the Russian Far East.

DISTRIBUTION. Known from Amur River basin (Primorye and Khabarovsk Territories), Kava and Tauy Rivers (Magadan disrict), Razdolnaya River (Primorye Territory).

REMARKS. The male imagines of new species is closely related by structure of hypopygium to *D. pulsus* (Walker, 1856) and *D. tamaviridis* Sasa, 1981, but differs from the latters by following features:

— *D. orientalis* **sp.n.**: total length 4.0–5.3 mm; wing length 2.1–2.8 mm; AR 2.32–2.71; frontal tubercles 23–32 μm long; R with 29–37, R_1 with 15–24 setae, R_{4+5} with 26–38 setae; squama with 10–25 setae; proximal part of superior volsella gradually enlarged to the apex, 9–15 setae distributed in distal half; gonostylus widest at about proximal one-third.

— *D. pulsus* (Walker) [Epler, 1987]: total length 2.75–5.69 mm; wing length 1.80–3.38 mm; AR 2.02–3.11; frontal tubercles 3–18 μm long; R and R_1 with 15–47 setae, R_{4+5} with 2–37 setae; squama with 7–21 setae; proximal part of superior volsella abruptly separated from distal part, bearing 6–19 setae; gonostylus widest at about proximal one-third.

— *D. tamaviridis* Sasa [Niitsuma, 1995]: total length 2.5–3.3 mm; wing length 1.5–1.9 mm; AR 1.9–2.3; frontal tubercles 3–10 μm long; R with 11–19, R_1 with 6–12, R_{4+5} with 6–17 setae; squama with 1–3 setae; proximal part of superior volsella no abruptly separated from swelling distal part, bearing 6–9 setae; gonostylus extended at median.

Pupa of new species is similar also to *D. pulsus* (Walker, 1856) and *D. tamaviridis* Sasa, 1981, but is distinguished from the latters by following features:

— *D. orientalis* **sp.n.**: tergite I with spines medially; tergite VI with T-shaped shagreen; conjunctives III/IV, IV/V and V/VI with band of shagreen; tergites III–VI with uniform shagreen; tergites tergites VII–VIII with reticulate.

— *D. pulsus* (Walker) [Epler, 1987]: tergite I without spines; tergite VI with median shagreen and two patches of spines in proximal part; tergites III–VI with more strong shagreen on anterior and posterior margins; tergites VII–VIII without reticulate.

— *D. tamaviridis* Sasa [Niitsuma, 1995]: tergite I without spines; tergite VI with two groups of weak spines anterolaterally, median patches of strong shagreen and two groups of weak spines posteromedially; tergites III–V with strong shagreen medially and more weak spines anterolaterally; tergites VII–VIII without reticulate.

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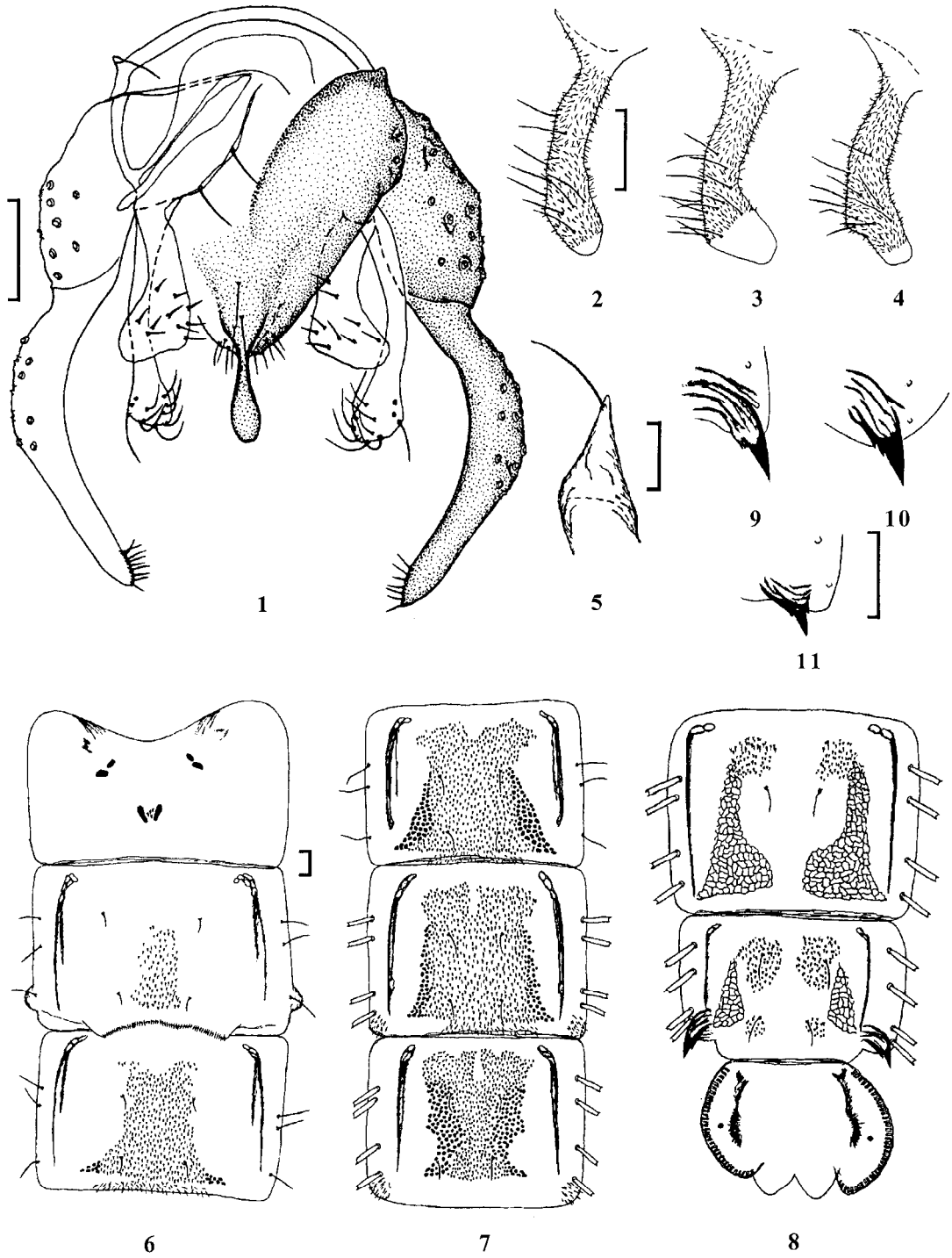

Figs 1–11. Details of *Dicrotendipes orientalis* **sp.n.**: 1 — total view of hypopygium, dorsal view; 2–4 — superior volsellae of gonocoxite; 5 — frontal tubercle; 6 — tergites I–III; 7 — tergites IV–VI; 8 — tergites VII–IX; 9–11 — anal combs; 1–4 — male; 5–11 — pupa. Scale bars — 50 μm.

Рис. 1–11. Детали строения *Dicrotendipes orientalis* **sp.n.**: 1 — общий вид гипопигия, сверху; 2–4 — верхний придаток гонококсита; 5 — фронтальный бугорок; 6 — тергиты I–III; 7 — тергиты IV–VI; 8 — тергиты VII–IX; 9–11 — анальный гребень; 1–4 — самец; 5–11 — куколка. Масштабные линейки — 50 мкм.

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