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Redescription of the Caucasian endemic *Diamesa tskhomelidzei* Kownacki et Kownacka (Diptera: Chironomidae: Diamesinae)

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Diamesa tskhomelidzei Kownacki et Kownacka was described by pharate male extracted from a mature pupa in the watercourses of the Terek River basin flowing down from the high mountain glaciers of the Caucasus (alt. 1800–3000 m a.s.l.), namely from the Chkheri River (Ortsveri Glacier) and the Suatisi River (Savitisi Glacier) in Georgia (Kownacki & Kownacka 1973). The species was known only from the original description and was not identified from other areas of the Palaearctic region and, in our opinion, is endemic to the Caucasus (Makarchenko *et al* 2023). This assumption is confirmed by the finds of adult males and mature pupa of this species made by Dmitry Palatov in 2023 in the rivers at an altitude 2500–2630 m a.s.l., originating in the Kashkatash and Dzhankuat glaciers of Kabardino-Balkaria Republic of Russia (Elbrus Region) and which also belong to the Terek River basin.

Since the species was described based on a male extracted from a pupa and description of pupa is incomplete, we found it advisable to make a morphological redescription of this rare endemic species based on material collected in rivers of Kashkatash and Dzhankuat glaciers of Elbrus Region.

Material and methods

The adult males and pupa were preserved in 96% ethanol and mounted in the polyvinyl lactophenol. The morphological terminology and abbreviations used below generally follow Sæther (1980). The photographs were taken using an Axio Lab.A1 (Karl Zeiss) microscope with an AxioCam ERc5s digital camera, and then stacked using Helicon Focus software. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

All material is deposited in the collection of the Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far East Branch of the Russian Academy of Sciences, Vladivostok (FSCEATB FEB RAS).

Taxonomy

Diamesa tskhomelidzei Kownacki et Kownacka

(Figs 1–10)

Diamesa tskhomelidzei Kownacki et Kownacka, 1973: 135; Ashe & O'Connor 2009: 287.

Material examined. RUSSIA: 2 adult males, Republic of Kabardino-Balkaria, Elbrus District, Kashkatash Glacier, altitude 2630 m a.s.l., 23.VII.2023, 43°12'35.59"N, 42°41'02.39"E., leg. D. Palatov; 1 mature pupa (male), the same data, except Dzhankuat Glacier, Adylsu River, altitude 2500 m a.s.l., 18.VII.2023, 43°12'47.75"N, 42°43'13.05"E., leg. D. Palatov.

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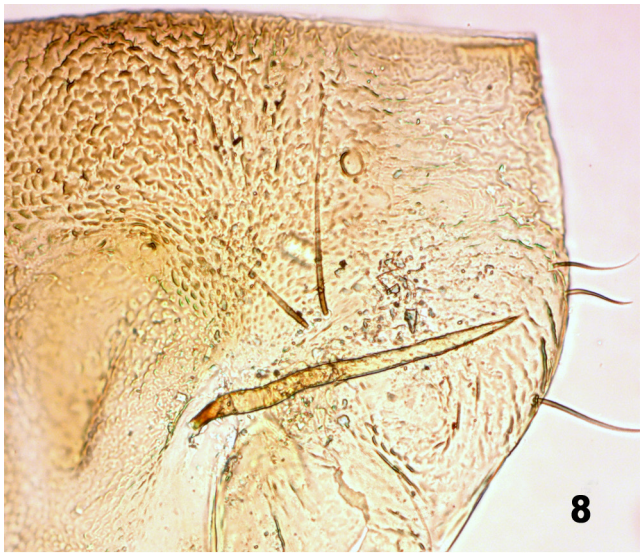
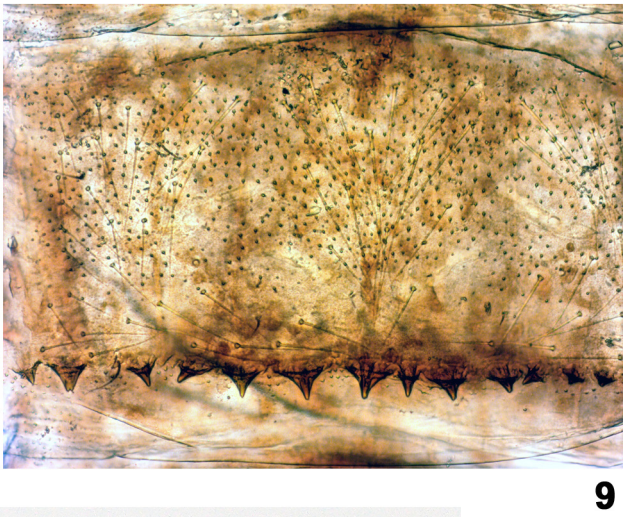
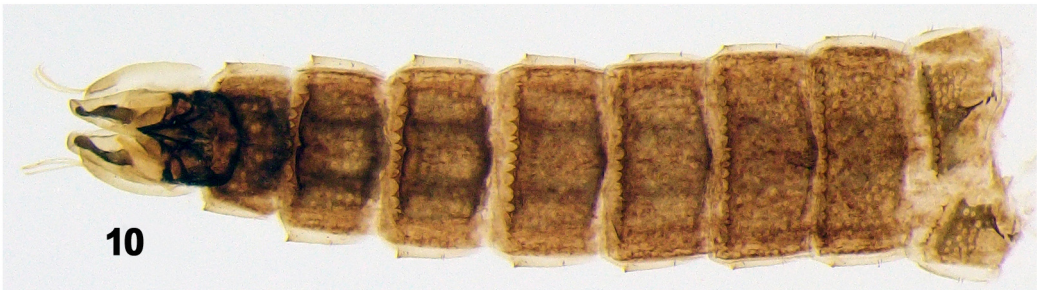
FIGURES 1–7. Adult male of *Diamesa tskhomelidzei* Kownacki et Kownacka **1,** hypopygium in dorsal view; **2,** tergite IX with anal point; **3,** hypopygium in ventral view; **4,** gonocoxite, gonostylus and volsellae; **5,** transverse sternapodeme; **6,** gonostylus; **7,** hypopygium in pupal exuvia. Scale bar: 50 µm.







FIGURES 8–10. Pupa of *Diamesa tskhomelidzei* Kownacki et Kownacka. **8,** anterior part of cephalothorax with thoracic horn and precorneals; **9,** tergite IV; **10,** abdomen in dorsal view.

Description

Adult male (n = 2, except when otherwise stated). Total length 3.0–3.5 mm.

Total length/wing length 0.97–1.03.

Coloration. Head, thorax and abdomen dark brown; legs brown to light brown; wings greyish.

Head. Eyes bare and not extended dorsomedially. Temporal setae including 5–7 preoculars, 11–12 verticals and 3 postorbitals. Clypeus with 10 setae. Antenna with 13 flagellomeres and developed plume in which maximal length of setae 558–623 µm but number of setae is slightly reduced; terminal flagellomere with subapical seta 20 µm long; basal segment with 3 setae; AR 0.88–0.94. Palpomere lengths (in µm): 36–40; 68–76; 96–116; 104–116; 120–156. Palpomere 3 distally with sensilla capitata (diameter 12 µm). Head width/palp length 1.2–1.3.

Thorax. Antepronotum with 5–6 lateral setae. Acrostichals absent; dorsocentrals 6–9, 88–100 µm long; prealars 5–6; scutellars 14–18, 90–92 µm long.

Wing. Length 2.9–3.6 mm, width 1.0–1.04 mm. R and R_1 with 24–25 setae, R_{4+5} with 4 setae in distal part. Costa extension 98 µm long. RM length/MCu length 1.8–3.0. Anal lobe developed, outline rounded. Squama with 21–25 setae, 128–148 µm long. VR 0.90.

Legs. Spur of fore tibia 44–56 µm long; spurs of mid tibia 32–36 µm and 40–56 µm; of hind tibia 36–56 µm and 48–76 µm long. Hind tibial comb with 12–14 setae. Length (µm) and proportions of leg segments are as in Table 1.

TABLE 1. Lengths (in µm) and proportions of leg segments of *Diamesa tskhomelidzei* Kownacki et Kownacka, male (n=2)

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
P_1	1017–1410	1148–1706	754–1115	377–590	213–344	98	115–148
P_2	1132–1558	1066–1525	492–640	262–410	148–246	82–98	98–131
P_3	1296–1920	1279–1780	820–1132	820–1132	218–295	82–98	98–148

TABLE 1. (Continued)

	LR	BV	SV	BR
P_1	0.65–0.66	3.59–3.64	2.79–2.87	1.88
P_2	0.42–0.46	4.214.56	4.47–4.82	1.33
P_3	0.64	4.23–4.27	3.14–3.27	2.00

Hypopygium (Figs 1–7). Tergite IX with 6 setae (56–80 μm long) from one side of anal point and wide triangular anal point, 100–104 μm long which in apical part is 24 μm long, pale hyaline and with seta 4–5 μm long at apex; anal tergal bands V-shaped (Figs 1–2). Laterosternite IX with 5–7 setae, 40–48 μm long.Transverse sternopodeme as in Fig. 5, 32–36 μm length, 168–204 μm wide. Aedeagal lobe as in Fig. 4, 84–88 μm long, weakly chitinized; phallapodeme sclerotized, 96–100 μm long. Gonocoxite 232–320 μm long; inferior volsellae yellow, wide in basal 1/3 and finger-like in distal 2/3, 204–240 μm long, densely covered with short setae; superior volsellae dark brown, as in Figs 3–4, 84–96 μm long, covered with short setae. Gonostylus 168–228 μm long, slightly curved in the basal third and slightly expanded distally, with a rounded apex and megaseta 8 μm long (Figs 1, 4, 6). Gonostylus of the male in the pupa has a different shape (Fig. 7).

Pupa (n=1). Total length 4.2 mm. Cephalothorax dark brown, abdomen yellowish brown. Coloration brownish. Exuviae brownish yellow.

Cephalothorax. Frontal apotoma with 2 setae 128 μm long. Thorax wrinkled, in anterodorsal and lateral parts granulated. Thoracic horn 208 μm long, filiform, with small spinules at the top, yellow except for brownish basal part. Precorneal setae 2, lengths (μm): Pc_1 -136, Pc_2 -116 (Fig. 8). Antepronotum with 3 median seta, 44–108 μm long and 1 lateral antepronotals, 80–84 μm long. Mesonotum with 2 dorsocentrals.

Abdomen. Tergite I with shagreen in anterior third. Tergites II–VII with shagreen in anterior two thirds or half, tergite VIII almost all with shagreen. Sternites I–III without shagreen, sternites IV–VIII with rare shagreen and IX without shagreen. Tergites I–VIII with posterior transverse row spines, number of these spines on tergites respectively—16 : 14 : 17 : 15 : 14 : 15 : 13 : 11 (Figs 9–10). Number of posterior transverse row spines of sternites III–VIII respectively—16 : 14 : 14 : 11 : 8 : 8–9. Segments I–VIII with 4 pairs of lateral setae, 48–64 μm long. Segments II–VIII with spine-like process on posterolateral corner (Fig. 10). Anal lobe with 3 yellow anal macrosetae, 249–248 μm long, slightly curved in distal part and pointed. Male genital sac extended beyond anal lobe (Figs 7, 10).

FIGURES 11–12. Locality and habitats on Kashkatash **(10)** and Dzhankuat glaciers, Adylsu River **(11).**

Remarks.

In general, adult male and pupa from Elbrus Region are similar to those of the original description (Kovnacki & Kownacka 1973) but males from our material have total length 3.0–3.5 mm, pupa—4.2 mm, AR 0.88–0.94, dorsocentrals 6–9, while in males from Georgia total length 6 mm, pupa—5 mm, AR 0.96, dorsocentrals 10–12. It should be noted that our redescription has been supplemented with a number of features which were absent in the original description.

Ecology and distribution. Adult males were collected near stream of Kashkatash Glacier located at 2630 m a.s.l. (Fig. 11) and pupa was found in Adylsu River of Dzhankuat Glacier at 2500 m a.s.l. with single large stones and sand, at a current speed of 0.7–0.9 m/sec (Fig. 12). Known only from glacial streams of Terek River basin in Caucasus.

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References

Ashe, P. & O'Connor, J.P. (2009) *A World Catalogue of Chironomidae (Diptera). Part 1. Buchonomyiinae, Chilenomyiinae, Podonominae, Aphroteniinae, Tanypodinae, Usambaromyiinae, Diamesinae, Prodiamesinae and Telmatogetoninae.* Irish Biogeographical Society & National Museum of Ireland, Dublin, 445 pp.

Kownacki, A. & Kownacka, M. (1973) Chironomidae (Diptera) from the Caucasus. II. *Diamesa* Waltl group *latitarsis*. *Bulletin de L'Académie des Polonaise des Sciences. Série des sciences biologiaues*, 21, 131–138.

Makarchenko, E.A., Semenchenko, A.A. & Palatov, D.M. (2023) Fauna and taxonomy of Diamesinae (Diptera, Chironomidae) from the Caucasus, with a morphological description and DNA barcoding of new taxa and a discussion of diagnostic problems for *Diamesa* Meigen and *Pseudodiamesa* Goetghebuer. *Zootaxa*, 5271 (2), 313–328. https://doi.org/10.11646/zootaxa.5271.2.6

Sæther, O.A. (1980) Glossary of chironomid morphology terminology (Diptera: Chironomidae). *Entomologica scandinavica*, Supplement 14, 1–51.