

***Schistostoma negrobovi*, a new species of the subfamily Microphorinae (Diptera: Dolichopodidae) from the Russian Far East**

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***Schistostoma negrobovi* – новый вид подсемейства Microphorinae (Diptera: Dolichopodidae) с Дальнего Востока России**

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Abstract. A new species of dolichopodid genus *Schistostoma* Becker, *S. negrobovi* **sp. nov.**, is described from the southern part of the Russian Far East (Primorskiy Territory). It is the first species of the genus recorded from the extreme eastern part of the Palaearctic region.

Key words. Diptera, Empidoidea, Microphorinae, *Schistostoma*, Eastern Palaearctic, description.

Резюме. Новый вид мух-долгоножек рода *Schistostoma* Becker – *S. negrobovi* **sp. nov.** – описывается из южной части Дальнего Востока России (Приморский край). Это первая находка рода из крайней восточной части Палеарктики.

Ключевые слова. Diptera, Empidoidea, Microphorinae, *Schistostoma*, Восточная Палеарктика, описание.

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Introduction

The genus *Schistostoma* Becker, 1902 (with type species *S. eremita* Becker, 1902) comprises quite small, greyish flies occurring mostly in southern territories and inhabiting typically sandy biotopes. The group currently includes 22 described species: in the Afrotropical region – 3; in the Oriental and the Nearctic regions – on 1; in the Palaearctic region – 17 (Chvála, 1987, 1991; Shamshev, 1991, 1993, 1999; Shamshev, Sinclair, 2006; Pârvu, Popescu-Mirceni, 2007; Gatt, 2014; Brooks et al., 2019). In addition, two species were described very recently from Burmese amber (Brooks et al., 2019). In the Palaearctic region the *Schistostoma* species are mostly distributed in the Mediterranean region and across deserts and semi-deserts of Asia as far east as Mongolia. This paper includes the description of a new species of *Schistostoma* collected from the south of the Russian Far East.

Material and methods

This study is based on Diptera material housed in the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZISP). Terms used for adult structures and descriptive format follow

those of Shamshev and Sinclair (2006) and Brooks et al. (2019). To facilitate observations, the terminalia were macerated in cold 10% KOH, then put for a short period in 85% lactic acid and immersed in glycerine. Drawings of morphological features were made with a camera lucida attached to a compound microscope. In describing the hypopygium, “dorsal” and “ventral” refer to the position prior to genital rotation and flexion. Figures showing the male genitalia in lateral view are oriented as they appear on the intact specimen (rotated and lateroflexed to the right).

Taxonomic part

Superfamily Empidoidea Latreille, 1809

Family Dolichopodidae Latreille, 1809

Subfamily Microphorinae Collin, 1960

Genus *Schistostoma* Becker, 1902

Schistostoma negrobovi sp. nov.

<http://zoobank.org/BC0358ED-8B20-4EE5-AE16-F472070311BC>

Figs 1–3

Type material. *Holotype*: male, RUSSIA, Primorskiy Territory, “zap. [zapovednik] [= Nature Reserve] “Kedrovaya Pad”, Primor’e, 30.V.1983, Zlobin [leg.] (ZISP).

Paratypes. 2 males, same locality and collector as holotype, 14.V.1983 (ZISP).

Diagnosis. Small greyish flies (body length 1.7 mm); postpedicel short and slightly constricted in distal half, stylus longer than postpedicel; thorax with black setation, acrostichals biserial, dorsocentrals uniserial; mid tibia with 1 moderately long, spine-like, ventral seta near apex; mid basitarsus with 2 short, closely set, spine-like setae near base ventrally; abdominal sternite 5 with 4 short spine-like posteromarginal setae medially.

Description. *Male*. Body length 1.7 mm, wing length 1.8 mm. Head black. Eyes holoptic; upper ommatidia somewhat enlarged, bare. Frons represented by very small, subtriangular, greyish space just above antennae. Face broad, greyish pruinose. Ocellar triangle with 2 long, laterocline, anterior and 2 short posterior setae. Occiput brownish grey pruinose, with black setae; upper postoculars short (except 2 uppermost setae); postgena with some short fine setae; gena narrow. Antenna black; scape short, postpedicel with circlet of subapical setulae including 1 longer seta dorsally; postpedicel rather subtriangular, slightly constricted in distal half, short (nearly 1.3 times longer than wide), pubescent with microtrichia; stylus long, 2.1–2.2 times longer than postpedicel width, 1.8 times longer than postpedicel length. Proboscis short, directed forward. Palpus black, obscured by mouth-cavity, with black setulae.

Thorax black, densely greyish pruinose, black setose; mesoscutum moderately arched; viewed anteriorly with indistinct narrow brownish vittae along rows of acrostichal setae and somewhat broader vitta along rows of dorsocentral setae; in dorsal and, especially, posterior views with 3 dull, black, subequally broad vittae. Prosternum separated. Proepisternum with 1 moderately long seta on upper part opposite anterior spiracle. Antepnotum with 2 setulae on each side. Postpronotal lobe with 1 long and 1 very short setae. Mesonotum with 4 short, closely set setae on anterior margin medially; acrostichals arranged in 2 almost regular rows, 4–5 setae per row, moderately long, lacking on prescutellar depression; dorsocentrals uniserial, mostly subequal in length to acrostichals, two posterior pairs longer (prescutellar pair longest); 1 long presutural intra-alar, 1 long presutural supra-alar, 2 postsutural supra-alars (anterior seta shorter, just in front of suture), 1 postalar, 2 notopleurals, 4 scutellars (inner pair much longer; in one paratype 2 additional lateral setulae present). Spiracles brown. Mesopleuron bare.

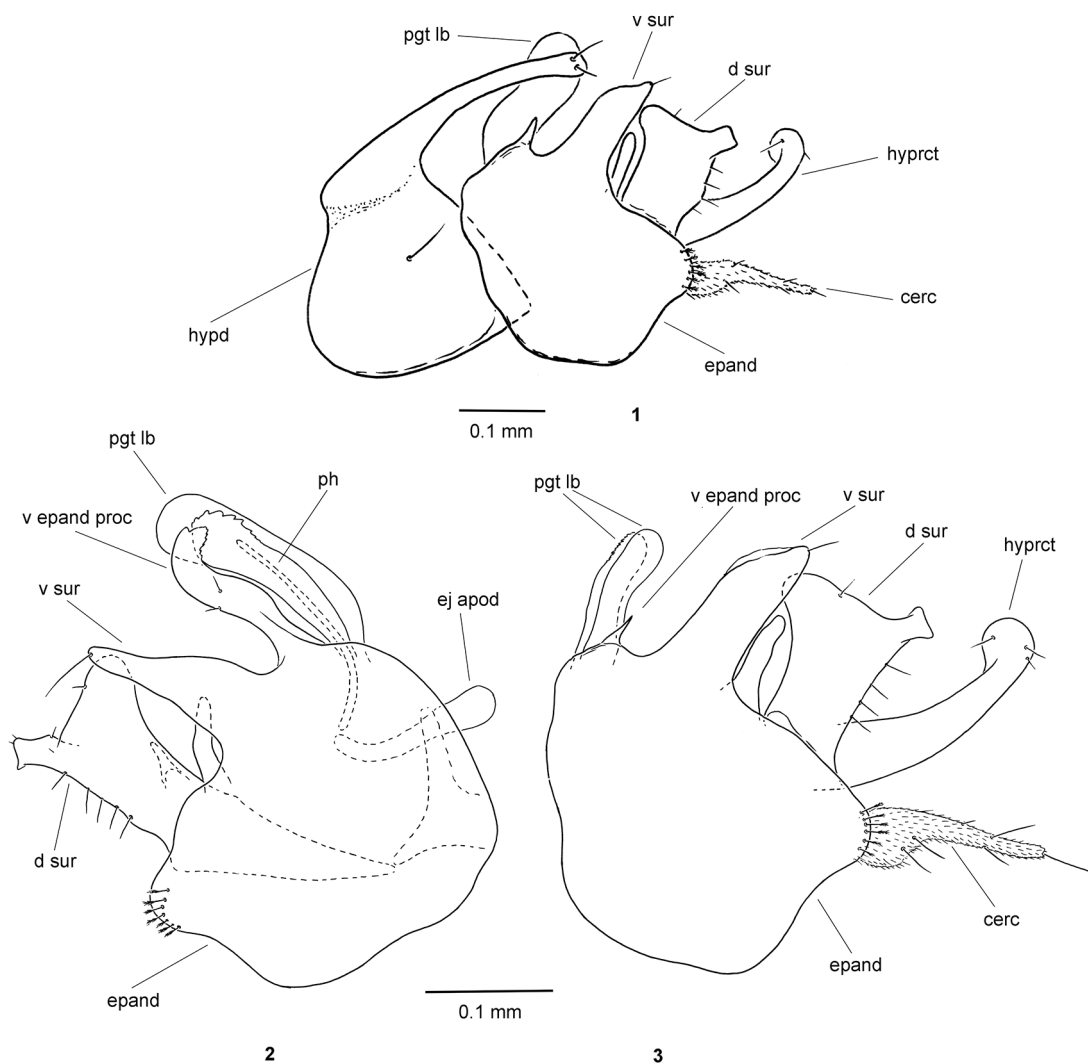
Legs almost uniformly brownish, only “knees” paler (especially on fore and mid legs); greyish pruinose, with inconspicuous black setation. Coxae and trochanters with simple setae, mid trochanter with 2 fine setae. Fore femur with moderately long fine setae dorsally, complete row of similar posteroventral setae and some similar setae near apex posteriorly; fore tibia with longer fine setulae dorsally. Mid femur covered with short setae; mid tibia with 1 moderately long, spine-like, ventral seta near apex. Hind femur with some rather long setae dorsally; complete row of anteroventral setae, short on about basal third and becoming moderately long toward apex. Hind tibia slightly evenly thickened toward apex; with moderately long anterodorsal and posterodorsal fine setae over entire length. All tarsomeres slender; mid basitarsus slightly produced at apex ventrally, bearing 2 short, closely set, spine-like setae near base ventrally.

Wing membrane uniformly faintly infuscate, with brownish normally sclerotised veins, covered with uniform microtrichia. Pterostigma present, brownish. Longitudinal veins complete (except CuA+CuP evanescent). Costa circumambient; extreme anterior base with 1 long seta. R1 weakly sinuous, reaching costa far beyond middle of wing; R4+5 weakly sinuous.

Crossvein bm-m complete. Cell dm present, emitting 3 veins, closed by base of M2 and crossvein dm-m, cell extended somewhat beyond middle of wing, broadened anteriorly. Cells bm and cua broader than br. Cell cua closed, rounded apically with CuA curved. Anal lobe well-developed and right-angled, alula absent. Calypter brownish yellow, pale fringed. Halter with yellowish knob and brown stem.

Abdomen black, almost entirely densely greyish pruinose (sternites 5–7 somewhat shiny), with black setation; mostly covered with numerous, fine, moderately long setae longer on tergites laterally (except sternite 6, segment 7 and tergite 8); sternite 5 with 4 short spine-like posteromarginal setae medially; sternite 8 with numerous long posteromarginal setae.

Hypopygium (Figs 1–3), moderately large, lateroflexed to right, inverted with posterior end directed anteriorly, small, partly asymmetrical (as noted), mostly brownish. Epandrium entirely divided, asymmetrical; each epandrial lamella with row of 6–7 short, brush-like, marginal setae near cercus. Left epandrial lamella (Fig. 2) with digitiform, rather long, slightly curved ventral process. Right epandrial lamella (Fig. 3) with very short, pointed ventral process. Left and right dorsal surstyli symmetrical; dorsal surstylus represented by two sclerites; upper sclerite of dorsal surstylus large, rather subrectangular, bilobed, with additional short internal process closer to base, bearing some short setulae; lower sclerite of dorsal surstylus short, digitiform, bare. Left and right ventral surstyli asymmetrical; left ventral surstylus long, tapered, with 1 moderately long apical seta; right



Figs. 1–3. *Schistostoma negrobovi* sp. nov. (paratype, male). 1 – hypopygium, right lateral view; 2 – hypopygium, hypandrium, cerci and hypoproct removed, left lateral view; 3 – hypopygium, hypandrium removed, right lateral view. Abbreviations: cerc – cercus; d sur – dorsal lobe of surstylus; ej apod – ejaculatory apodeme; epand – epandrium; hypd – hypandrium; hypcr – hypoproct; pgd lb – postgonite lobe; ph – phallus; v epand proc – ventral epandrial process; v sur – ventral lobe of surstylus.

ventral surstylus long, somewhat broader than left ventral surstylus, with moderately long apical seta. Hypandrium separated from epandrium; with long, slender apical prolongation; bearing pair of long setae closer to base laterally and pair of short apical setae. Postgonite lobes asymmetrical, rather short; left postgonite lobe digitiform, slightly shorter than right lobe, rounded apically, with serrate lower margin on subapical part; right postgonite lobe digitiform, rounded apically. Phallus slender, slightly arcuate. Hypoproct brownish yellow, long, longer than cercus, divided, each lobe somewhat broadened at apex (lateral view) and bearing 3 short setae. Cercus brownish, short, bilobed, with several long setae apically.

Female. Unknown.

Differential diagnosis. The new species can be readily distinguished from all Palaearctic species of *Schistostoma* by the presence of a ventral, subapical, spine-like seta on mid tibia and 2 ventral, spine-like setae on mid basitarsus (Chvála, 1987; Shamshev, 1993; Gatt, 2014). Within the key to North American species of *Microphor* Macquart, which, actually, includes some species of *Schistostoma*, the new species would run to *M. tacomae* Melander (Melander, 1940). According to the original description, *M. tacomae* differs from *S. negroboli* **sp. nov.** at least by the presence of 8–10 stiff marginal setae on abdominal sternite 5 (vs. 4 setae) and, probably, by simple setose mid tibia and mid basitarsus.

Etymology. The specific name is a patronym in memory of late Professor Oleg Pavlovich Negrobov (1941–2021).

Distribution. Russia (Primorskiy Territory).

Discussion

Chvála (1987) distinguished two species groups in *Schistostoma*, *S. truncatum* and *S. eremita* groups. Shamshev and Sinclair (2006) added a new species group, the *S. albopilosum* group, which unites one species from the Mediterranean, three species from South Africa and one species from India. Very recently, Brooks et al. (2019) proposed one more species group in *Schistostoma* to include two peculiar species described by them from Burmese amber. The new species belongs to the *S. truncatum* group as defined by Chvála (1987) and characterised primarily by a pubescent postpedicel in addition to bare eyes (eyes pubescent in species of *S. albopilosum* group) and simple fore and mid legs (strongly modified in species from Burmese amber). However, the phylogenetic relationships of *Schistostoma* remain unresolved and a monophyly of *S. truncatum*- and *S. eremita*-groups sensu Chvála is yet questionable.

The record of *Schistostoma* from the south of the Russian Far East expands greatly an area of this genus in the Palaearctic region and may be important for a future analysis of relationships of these flies with North American fauna.

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