First record of an extant species of the genus *Schistostoma* Becker (Diptera: Dolichopodidae: Microphoridae) from the Oriental Region

Первая находка современного вида рода *Schistostoma* Becker (Diptera: Dolichopodidae: Microphoridae) из Ориентальной области

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ABSTRACT. A new species of the genus *Schistostoma* Becker, 1902 (Dolichopodidae: Microphoridae) is described from the foothills of the Himalayas (India, Uttarakhand) — *S. indicum* sp.n. It is the first extant species of the genus recorded from the Oriental Region, in addition to two species described from Burmese amber. The new species belongs to the *S. albopilosum* species group which also includes one species from the Mediterranean and three species from South Africa.

Material and methods

This study is based on Diptera material housed in the Zoological Museum of Moscow State University, Moscow, Russia (ZMMU). Terms used for adult structures and descriptive format follow those of Shamshev and Sinclair [2006] and Brooks et al. [2019]. Photographs were taken with a Canon EOS 110D camera supplied by a Canon MP-E 65 mm objective and were combined using the Helicon Focus 5.3.14 software. 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. 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). Holotype label data is cited verbatim, with data from each label placed in quotation marks and separated from data on other labels by a semicolon. Lines on labels are delimited by a slash (/).

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Taxonomic account

Class Insecta Linnaeus, 1758
Order Diptera Linnaeus, 1758
Suborder Brachycera Macquart, 1834
Superfamily Empidioidea Latreille, 1804
Family Dolichopodidæe Latreille, 1809
Subfamily Microphorinae Collin, 1960
Genus Schistostoma Becker, 1902

Schistostoma indicum Shamshiev, sp.n. Figs 1–4.

DESCRIPTION. Male (Fig. 1). Body 1.6 mm, wing 1.7 mm. Head black. Eyes holoptic; upper ommatidia considerable enlarged, with rather scattered ommatriclia. Frons represented by very small, subtriangular, greyish space just above antennae. Face broad, greyish pruinose. Ocellar triangle with 2 pairs of fine setae (partly missing). Occipit brownish grey pruinose (in some views with some dark bluish tinge), with black setae; postoculars minute, almost bare on upper part, some short setae laterally and around mouth-opening. Antenna black; scape short, postpedicel with circle of subapical setulae including 1 longer seta dorsally; postpedicel onion-shaped, slightly broader than high, pubescent with microtrichia; stylus long, 3.3X longer than postpedicel width. Proboscis short, directed forward. Palpus black, obscured by mouth-cavity, with black setae.

Thorax black, densely brownish grey pruinose, black setose; mesoscutum strongly arched, more distinctly brownish grey pruinose (in some views with some dark bluish tinge), with black setae; prepectal bar minute, almost bare on upper part, some short setae laterally and around mouth-opening. Antenna black; scape short, postpedicel with circle of subapical setulae including 1 longer seta dorsally; postpedicel onion-shaped, slightly broader than high, pubescent with microtrichia; stylus long, 3.3X longer than postpedicel width. Proboscis short, directed forward. Palpus black, obscured by mouth-cavity, with black setae.

Hypopygium (Figs 2–4) lateroflexed to right, inverted with posterior end directed anteriorly, small, asymmetrical. Cercus yellowish, short, bilobed, with several long setae apically. Epandrium with pair of symmetrical, slender, finger-like dorsal lobes (part of surstylus), bearing one short spine-like seta near mid-length and one short spine-like blunt-tipped subapical seta, mostly straight; right epandrial lamella oblong, left epandrial lamella subrectangular. Right ventral surstylus broadly expanded, subtriangular apically; left ventral surstylus with digitiform extension. Phallos stalk-shaped with somewhat hooked tip. Postgonites rounded apically. Hypandrium fringed with posteriorly, mid femur with similar setation but dorsal setae less distinct, hind femur with almost complete row of short setae dorsally (nearly half as long as femur width) and complete row of mostly short anteroventral setae (3–4 subapical setae longer).

Wing membrane uniformly faintly infuscate, with brownish normally sclerotised veins, covered with uniform microtrichia. Pterostigma absent. Longitudinal veins complete (except CuA+CuP evanescent). Costa circumambient; extreme anterior base with 2 strong setae; short setulae along anterior margin, distinct throughout, upper surface with distinct dorsal spinules. Sc distinct apically, reaching costa near middle of wing (or nearly opposite base of M₂). R₁ weakly sinuous, reaching costa far beyond middle of wing. Base of Rs originating opposite humeral crossvein. R₁₂ diverging from R₁, apically, R₁₂ weakly sinuous. R₁₂, and M₁, M₂, M₃, and M₄ diverging beyond cell dm. Short r-m crossvein present in basal portion of wing, distal to base of R₁₂. Crossvein bm-m complete. Cell dm present, emitting three veins, closed by base of M₁ and crossvein dm-m, cell extended to middle of wing. Cells br, bm and cua in basal fourth of wing. 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, densely brownish grey pruinose (in some view tinges darker); tergites with rather sparse intermixed pale and black longer laterally (black setae more numerous distally); sternites with scattered short, fine, pale and dark setae (except noted), sternites 3–5 bearing pair of long, stout, blunted-tipped setae mounted on small tubercles, sternite 8 with several long postero marginal setae.

DIFFERENTIAL DIAGNOSIS. In having ommatriclia (pubescence presence) and a shortened hypandrial lobe fused to the epandrium basally the new species should be compared with species of the Schistostoma albiplum group [Shamshiev, Sinclair, 2006]. This group includes one species distributed broadly in the Mediterranean, i.e. S. albiplum (Becker, 1910), and three species known only from South Africa, i.e. S. brandbergensis Shamshiev et Sinclair, 2006; S. kaligat Shamshiev et Sinclair, 2006 and S. stuckenbergi Chvála, 1991. Schistostoma indicum sp.n. differs from all these species primarily by unmodified mid tibiae and spine-like setae on abdominal sternites of the male. The female of the new species is unknown, however, once discovered it may likely differ from the females of the species of the S. albiplum group by the onion-shaped...
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ETYMOLOGY. The specific epithet refers to the country of the origin of the new species.

DISTRIBUTION. Orient: India (Uttarakhand). According to the label data, the holotype was collected in the foothills of the Himalayas near a “forest stream”.

![Image of Schistostoma indicum sp.n. holotype](image-url)
Discussion

The new species possesses an interesting combination of characters, some of which are unique or rare in Schistostoma. Schistostoma indicum sp.n. has distinct ommatrichia (pubescence eyes) and a shortened hypandrial lobe fused to the epandrium basally that place it in the S. albopilosum group [Shamshev, Sinclair, 2006]. Although the phylogenetic relationships of Schistostoma remain unresolved, this group appears to be distinct and may represent the sister group to all remaining Schistostoma. The male terminalia of the new species are strikingly similar to the male terminalia of the South African species of the S. albopilosum group. However, S. indicum sp.n. differs from all species of the S. albopilosum group by simple male mid leg, onion-shaped postpedicel, the absence of the pterostigma, spine-like setae on abdominal sternites and the presence of a pair of setae near the base of the hypandrium.

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