

**Three new Palaearctic species of the genus *Gymnomus* LOEW, 1863
(Diptera: Heleomyzidae)**

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ABSTRACT. Adult males of three new Asiatic species of the genus *Gymnomus* are described and illustrated: *G. grunini* (Tajikistan), *G. primitivus* (Russia) and *G. renatae* (Mongolia and Russia). Female diagnostic characters of *G. renatae* are also given. The new species are compared with their closest relatives within the genus.

KEY WORDS: Diptera, Heleomyzidae, *Gymnomus*, taxonomy, new species, male terminalia, Palaearctic Region.

INTRODUCTION

The genus *Gymnomus* was erected by LOEW (1863) and subsequently proposed as a subgenus within *Scoliocentra* LOEW, 1862 (GORODKOV 1984). Recently it belongs to the *Gymnomus* genus group sensu PAPP & WOŹNICA (1993), based on following characters: two well developed but unequal in length orbital bristles, one pair of prosternal bristles, bare anepisternum (except for haired anterior corner), bare anepimeron, katepisternum and meron, usually one katepisternal bristle with entirely haired katepisternal area and with elongated but united sternite VIII in female; male terminalia with well developed basistylus and dististylus flattened in dorsal part, with rather distinct protrusion in the ventral part; cerci fused in the basal part, and separated in the apical part. The World fauna and geographical distribution of this genus is poorly known. Only a few species originally de-

scribed in the genus *Amoebalaria* CZERNY 1924 were recorded in the Nearctic region (GILL 1962). In the Palaearctic, 16 species are known (WOŹNICA 2007), and only 6 were recorded from Asia so far. In the present paper three new species of *Gymnomus* are described. *Gymnomus grunini* is reported from high mountains (Tien Shan Massif), *G. primitivus* - in a Siberian cave and *G. renatae* - from Russian and Mongolian steppes. In the general structure of the male terminalia (the shape of the basistylus, dististylus and postgonite), all these species differ distinctly. *Gymnomus grunini* is similar to *G. mongolicus* PAPP & WOŹNICA, 1993 regarding external morphological characters. *Gymnomus primitivus* is likely closely related to *G. sabroskyi* (GILL 1962), widely distributed in the mountainous areas of the Holarctic Region. *Gymnomus renatae* is similar to the *G. gorodkovi* PAPP & WOŹNICA, 1993, known from Mongolia.

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MATERIAL AND METHODS

The present work is based on material deposited in Museum of the Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZIRANSP). The terminalia were cleared in a solution of KOH and placed in a glycerine microvial. The terminology of the external structures and abbreviations of measurements follow those used by WOŹNICA (2003, 2006). For a better comparison all similar figured structures are magnified to the same scale.

TAXONOMY

Gymnomus grunini sp. n.

(Figs 1-4)

Diagnosis

First flagellomere rounded and reddish-brown in colour. Proepimeron with one additional and minute bristle, and more than twenty thin hairs in the anterior corner of anepisternum. Postpronotum totally grey, and hind tibia with one thin dorsolateral bristle. *G. grunini* is similar to *G. mongolicus* but the latter species differs from the newly described in possessing the totally orange first flagellomere, and less than twelve hairs in the anterior corner of anepisternum, and also in the male genitalia.

Description

Measurements. Body length: big species, ca 8.0 mm long.

Head. Head ratio ca 1.3. Anterior part of frontal plates yellowish-brown, hind part dark brown. Eye borders whitish dusted. Ocellar triangle dark brown in colour. One strong vibrissa with 1-2 small hairs over it. Genal setulae in 2-3 irregular rows. Two strong orbital bristles, anterior ca 0.70 of the posterior one. Palpus orange. Proboscis totally dark brown. 2 strong verticals, postverticals smaller in size.

Antenna. Scape and pedicel reddish-orange, first flagellomere slightly elongated, reddish-brown, and darkened in the apical part. Flag-cheek ratio less than 0.50. Arista blackish-brown, longer than height of head. Eye round, face slightly depressed below antennae, cheek-eye ratio ca 0.80.

Thorax. Mesonotum and pleurae greyish except brownish anterior part of anepimeron. Postpronotum greyish. 1+3 dorsocentral bristles, postsutural bristles emerging from brown, almost fused stripes. A distinct thin median brownish stripe along the dorsocentral bristles present. Scutellum brownish, slightly greyish dusted dorsally. Postscutellum greyish. Proepimeron with one strong and one small additional bristles. Anterior corner of anepisternum covered by more than 20 thin hairs. Katepisternum grey and densely covered by fine hairs, and with one strong bristle only.

Wings. Length 8.20 mm, width 2.95 mm. Membrane transparent, cross veins not darkened. Costal spines distinct, longer than width of the costa. Veins yellowish-brown. Medial vein ratio ca 1.18. Halteres yellowish.

Legs. Yellowish-brown, covered by relatively long and dense hairs. Fore femur greyish anterodorsally, and with one row of anterodorsal and posteroventral bristles. Hind femur with one thin dorsolateral bristle. All tibia covered by long thin hairs (the length of it greater than width of the tibia). First and second tarsomere of mid leg long haired. First and second tarsomere of hind leg at the same size. Three last tarsomeres of all legs dark brown.

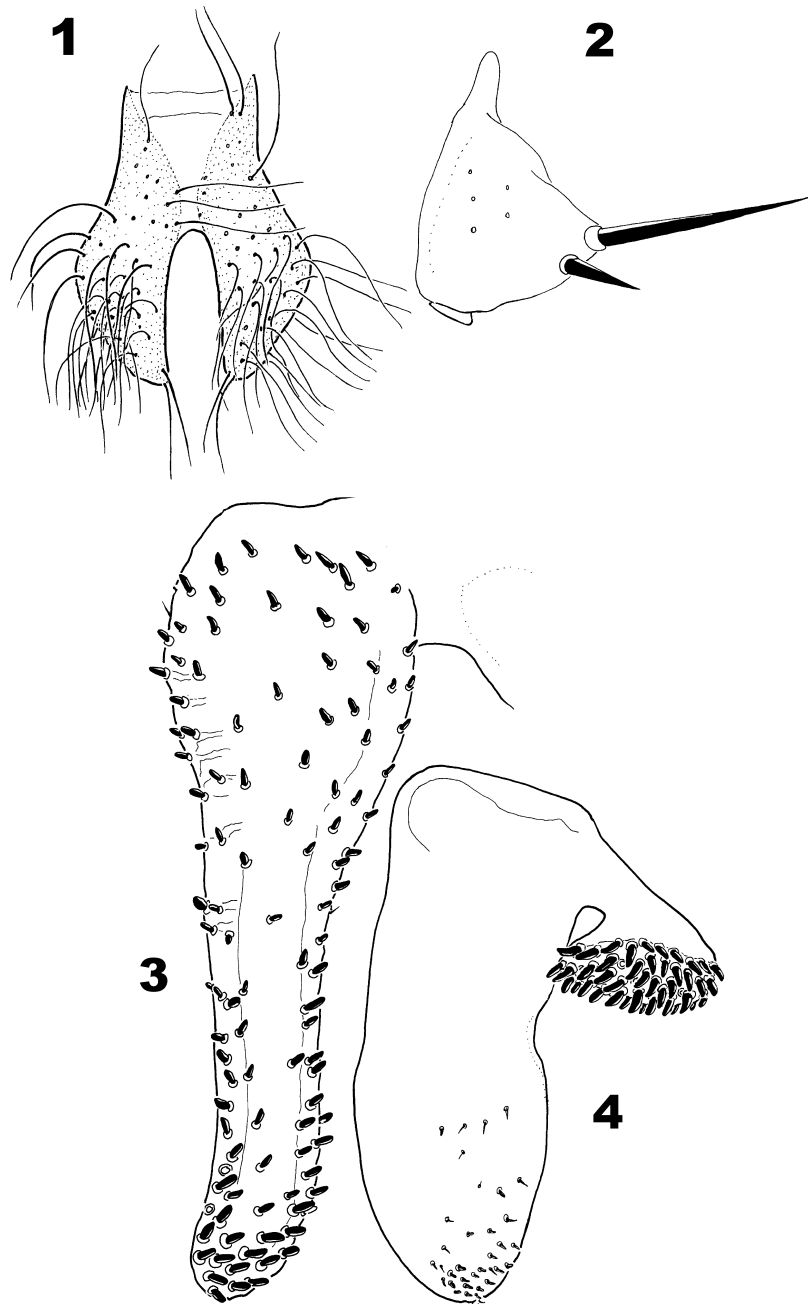
Abdomen. All tergites grey covered by long and thin hairs and with thin long marginal bristles.

Male terminalia. Epandrium relatively big and slightly elongated. Cerci lengthened and broadened in the middle (Fig. 1). Basistylus long and slightly curved in the apical part (Fig. 3), dististylus as in fig. 4. Postgonite broad and with two bristles, the lower is less than 1/2 of the length of the upper one (Fig. 2). Hypandrium with three lateral bristles. Distiphallus banded and slightly twisted and not haired.

Type Material

Holotype, ♂, Tajikistan, Gisearskiy hr., Anzobskiy pereval, 3400m, Grunin, 27.6.[1]956 (ZIRANSP).

Distribution. Asiatic, East-Palaearctic species. Probably a high mountainous species with unknown biology.



Figs 1-4. *Gymnomus grunini* sp. n. 1-4, male terminalia: 1 – cerci, 2- postgonite laterally, 3 – basistylus laterally, 4 – dististylus laterally.

Etymology

The name is dedicated to the late DR. Konstantin YAKOVLEVICH GRUNIN, the collector of the species and specialist on parasitic Calyptrate flies.

Gymnomus primitivus sp. nov.

(Figs 5-8)

Scoliocentra sp. n: GORODKOV, 1977: 84 (Russia).

Diagnosis

G. primitivus differs from all known *Gymnomus* species in having one additional bristle behind the big vibrissa, and in the structures of male terminalia.

Description

Measurements. Body length (without antennae) varies from 5.5 mm to 5.8 mm.

Head. Head ratio ca 1.17. Anterior part of frontal plate yellowish-orange, posterior part brownish in colour. Ocellar triangle dark, brownish-black. One strong vibrissa with additional medium sized bristle behind of it. Genal setulae strongly developed in one irregular row. Two well developed orbital bristles, anterior distinctly smaller than the posterior one. Palpus dark orange. Proboscis regularly brown in colour. Two strong verticals, postvertical cruciate and smaller than verticals.

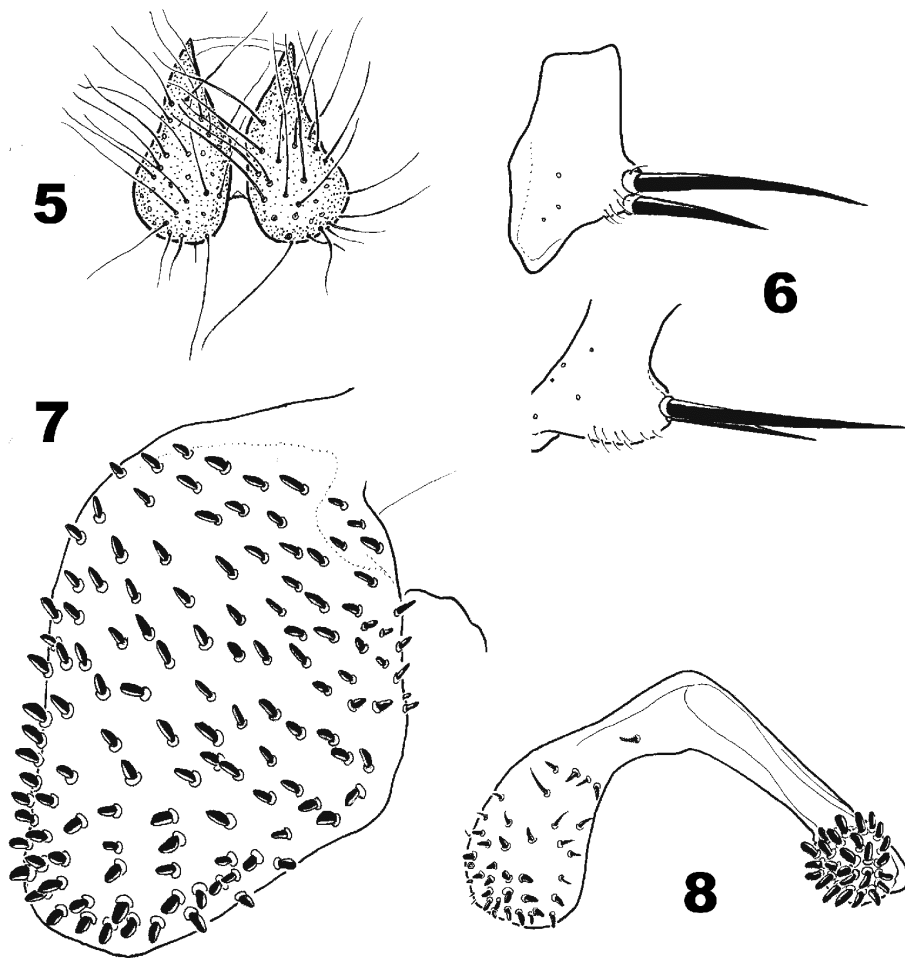
Antenna. First flagellomere missing, but with all probability big, scape and pedicel orange in colour. Eye rounded, face below antennal grooves slightly depressed, cheek-eye ratio ca 0.42-0.49.

Thorax. Mesonotum greyish, pleura grey except yellowish-brown postpronotum and anterior anepimeral part. Dorsal part covered by thick blackish setulae. Scutellum greyish-brown but darkened at the base and on the lateral borders. Dorsal part of postscutellum totally grey, ventral part brownish in colour. Chaetotaxy: 1 + 3 dorsocentral bristles with well developed pair of prescutellars. Anterior part of anepisternum covered by several blackish hairs (one is setula-like and distinctly longer from all other). Katepisternum with one distinct katepisternal bristle.

Legs. Pale orange in colour, stocky, and shortly haired only. Fore femur greyish dusted anteriorly, mid and hind femora with dorsolateral bristles. Mid femur with two rows of strong anterodorsal bristles, hind femur with 1-2 dorsolateral bristles. Three last tarsomeres of fore and hind tarsi, and last two of mid tarsus dark, blackish-brown in colour. Two rows of distinct internal black spines on first tarsomere of mid leg. First tarsomere of hind leg slightly longer than the second one and with distinct tooth-like spine.

Wings. Length 5.90-5.95 mm, width ca 2.15 mm. Membrane transparent, cross veins not darkened. Costal spines well developed, big and strong, and longer than width of the costa. All veins pale brown in colour. Medial vein ratio ca 1.11-1.13. Halteres yellow.

Abdomen. Tergites reddish-orange, short haired, marginal bristles of segments III-V distinctly longer than length of segments.



Figs 5-8. *Gymnomus primitivus* sp. n. 5-8, male terminalia: 5 – cerci, 6 – postgonites laterally, 7 – basistylus laterally, 8 – dististylus laterally.

Male terminalia. Epandrium round shaped and rather small in size, covered by long black hairs. Cerci relatively small but wide, flattened and broadened in the apical part (Fig. 5). Basistylus much broader than dististylus and with dense black thorns on both sides (Fig. 7). Dististylus narrowed, shaped like an inverted V, in lateral view, and with left distal part (lateral lobe) distinctly extended (Fig. 8). The medial lobe with a projecting process with black thorns grouped in the apex. Postgonite shorter than high, apically sharpened, with two strong bristles, the lower (first) distinctly shorter than the upper one (ca 0.6x) (Fig. 6).

Female. Unknown.

Type Material

Holotype: ♂, Russia, Barsuchya peshchera, okr. Krasnoyarska, N. Ovodov, 7.VI.[1]965 (ZIRANSP); Paratype: ♂, Barsuchya peshchera, okr. Krasnoyarska, N. Ovodov, 7.VI.[1]965 (ZIRANSP).

Remarks

The most primitive *Gymnomus* species, with haired basiphallus and short but broad basistylus. It is similar to *G. sabroskyi* (GILL, 1962) basing on the male terminalia.

Distribution. East Palaearctic species.

Biology. Unknown, probably a troglophilous species found in cave.

Etymology

The name *primitivus* (=primitive) refers to the primal structures of male terminalia.

***Gymnomus renatae* sp. n.**

(Figs 9-14)

Scoliocentra (Amoebalaria) ventricosa (not BECKER, 1907): Gorodkov, 1972: 896 (Mongolia).

Diagnosis

Dark brown first flagellomere, yellow postpronotum, anepisternum with several hairs in the anterior corner and hind femur with one dorsolateral bristle only distinguish this species from other known *Gymnomus* species.

Description

Measurements. Body length: 7.95 mm - 9.05 mm. Head ratio varies from 1.20 to 1.25.

Head. Anterior part of frontal plate, reaching to first orbital bristle orange, remaining part brownish. Face brownish, and silver dusted like gena and eye border area. Anterior orbital bristle ca 0.60-0.70x of the posterior one. Genal setulae in 3-4 irregular rows.

Antenna. Scape and pedicel intensively orange, first flagellomere brownish-orange, slightly elongated, and more darkened at apex. Cheek-eye ratio varies from 0.75 to 0.82, flag-cheek ratio ca 0.45.

Thorax. Mesonotum greyish-brown, postpronotum yellowish to dirty yellow. Notopleural areas and upper part of katepisternum near katepisternal bristle similarly coloured. Proepisternum and hind metasternal part yellowish-brown in colour. Anterior part of anepisternum covered with 20 to 25 hairs. Scutellum yellowish-brown, sometimes dorsum greyish dusted. Postscutellum greyish. Dorsocentral bristles arising from small blackish-brown dots.

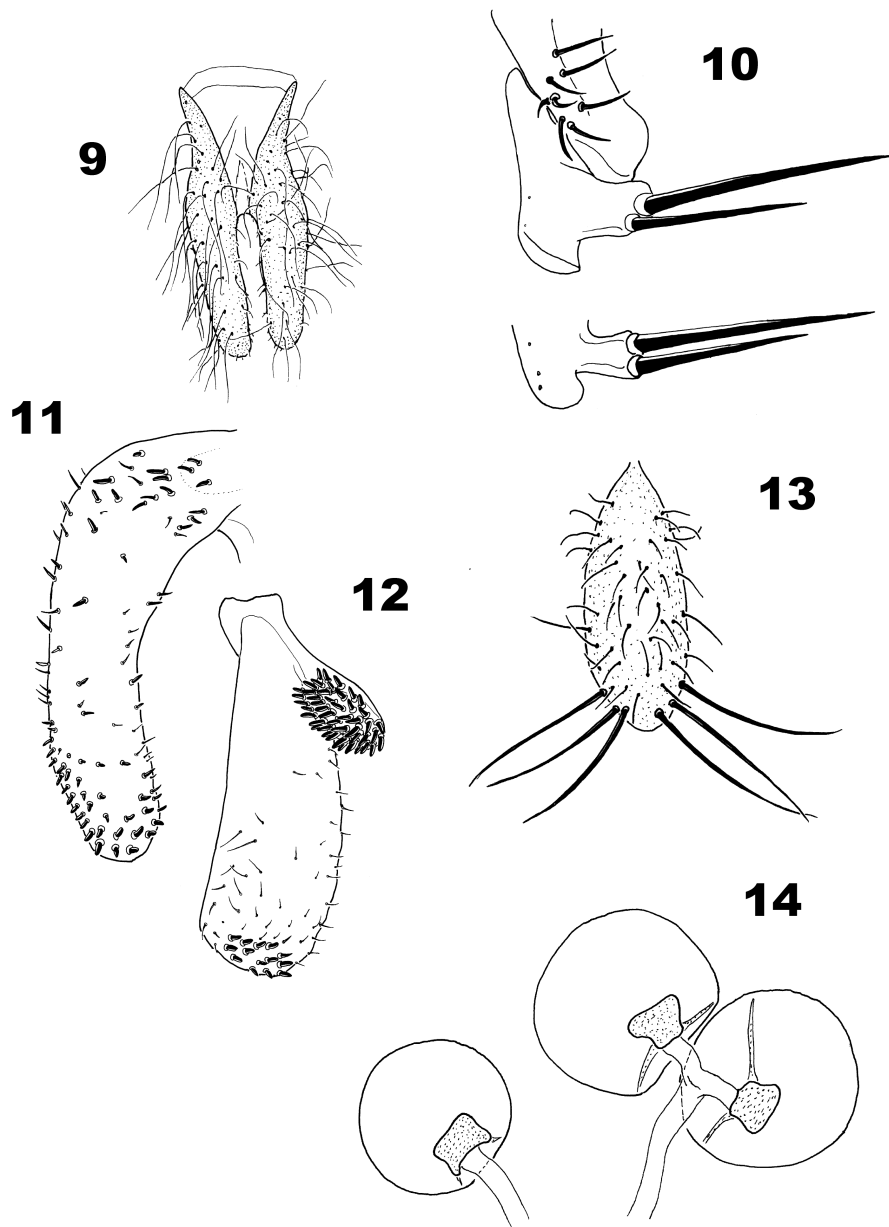
Wings. Length: 8.00 mm - 9.50 mm, width: 2.80 mm - 3.10 mm. Medial vein ratio: 1.06-1.09. Costal spines well developed and distinctly greater than width of the costa. Membrane slightly yellowish tinged. Halteres yellowish-brown in colour.

Legs. Yellowish-brown in colour. Fore femur greyish dusted anteriorly. Mid femur with two rows of few strong anterodorsal bristles placed in the subapical part. Hind femur with one dorsolateral bristle. All femora and tibiae, with exception of basal part of mid tibia, distinctly long haired. All tarsomeres brownish, especially in the apical part. First tarsomere of mid leg long haired.

Abdomen. Male segments I-IV greyish with rather thick and distinct marginal bristles. Segment V and epandrium brownish-grey. In the female hind half of segment V and remaining yellowish-brown in colour.

Male terminalia. Cerci elongated and long haired (Fig. 9). The separated apical part more longer than 1/2 of total the length of it. Apical part slightly narrowed and blunted at apex. Basistylus middle sized, with wide and rounded apex, covered by several thorns (Fig. 11). Dististylus distinctive: lateral lobe strongly narrowed, extended apically, inner apical part with few distinct thorns only. Medial lobe narrowed and knob-like apically, and covered with several thorns (Fig. 12). Postgonite short, lower bristle distinctly shorter than the upper one (more than half of the longer one) (Fig. 10). Hypandrium U-shaped, well sclerotized and with three bristles on lateral sides. Thin and long distiphallus is slightly twisted only. The base of basiphallus bears two small lobed appendices.

Female terminalia. Sternite VIII tear-shaped (Fig. 13), spermatahaece round and smooth as in fig. 14.



Figs 9-14. *Gymnomus renatae* sp. n. 9-12, male terminalia: 9 – cerci, 10- postgonite laterally, 11 – basistylus laterally, 12 – dististylus laterally. 13-14, female diagnostic characters: 13 - VIIIth sternite, 14 – spermathecae.

Type Material

Holotype, ♂, Barguzinskiye stepi, Zabaykale, Zarubina, VIII-IX. 1957, Iz gnezd tarbagana (ZIRANSP). Paratypes, 8♂♂6♀♀, Barguzinskiye stepi, Zabaykale, Zarubina, VIII-IX. 1957 (2♂♂1♀ in author coll., other to ZIRANSP): 1♂, Bichikte-Mishigun, Halha, Mong., Kozlov 1-7.IX.[1]925; *Amoebaleria ventricosa* BECK. det. CZERNY (ZIRANSP). 1♂, Mongolia, Vost.-Gob., aimak, g. Caentael-Obo, Kerzhner 11. VI. [1]971(ZIRANSP).

Distribution. An Asiatic species known from Mongolia and Southern part of Russia, probably widely distributed in the steppe zones.

Biology. Reared from larvae developed in excrements of *Marmota sibirica* (RADDE).

Etymology

The species name is dedicated to my wife RENATA ZOFIA, who over the years has graciously provided encouragement and constant support of my work on the Heleomyzidae.

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