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## TWO NEW SPECIES OF THE TRIBE DIRHAGINI (COLEOPTERA: EUCNEMIDAE) FROM PALAEARCTIC REGION

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### ABSTRACT

Two new species of the Palearctic Eucnemidae: *Microrhagus nuristanicus* sp. n. from the Eastern Afghanistan and *Entomophthalmus kirejtshuki* sp. n. from the Russian Far East are described.

**Key words:** Dirhagini, Eucnemidae, new species, Palearctic, systematics, taxonomy

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## ДВА НОВЫХ ВИДА ТРИБЫ DIRHAGINI (COLEOPTERA: EUCNEMIDAE) ИЗ ПАЛЕАРКТИКИ

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### РЕЗЮМЕ

В статье описаны два новых вида палеарктических Eucnemidae: *Microrhagus nuristanicus* sp. n. из восточного Афганистана и *Entomophthalmus kirejtshuki* sp. n. с Российского Дальнего Востока.

**Ключевые слова:** Dirhagini, Eucnemidae, новые виды, Палеарктика, систематика, таксономия

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## INTRODUCTION

Dirhagini Reitter, 1911 is the largest tribe of the subfamily Melasinae Fleming, 1821, which currently comprises 25 genera and about 290 described species in the world fauna (Muona 1993, 2011). In the Palearctic Region, this tribe is represented by 33 described species from 10 genera (Muona 2007). In the course of the study of the material from the Palearctic region deposited in the Zoological Institute RAS, two new species of the tribe Dirhagini were found and described in this paper.

## MATERIAL AND METHODS

Holotypes of described species are housed in the collection of the Zoological Institute RAS, Saint Petersburg, Russia (ZIN). Male genitalia after the standard preparation procedure were dipped in a drop of Euparal and placed on a plastic card below the beetle. The digital colour photographs were taken from dry specimens with a Leica MZ9.5 stereo microscope equipped with a Leica DFC290 digital camera and were combined using the Helicon Focus software.

The author follows the general morphological nomenclature of insects that slightly differs from the current nomenclature accepted among the specialists on Eucnemidae and closely related beetle families. In particular, the terms “epistomal part of epicranium” and “prohypomeron” were accepted in this paper instead of the “clypeus” and “hypomeron” respectively used by Muona (1993, 2000, 2011).

## SYSTEMATICS

### Family Eucnemidae Eschscholtz, 1829

### Subfamily Melasinae Fleming, 1821

### Tribe Dirhagini Reitter, 1911

### Genus *Microrhagus* Dejean, 1833

**Type species:** *Elater pygmaeus* Fabricius, 1792.

### *Microrhagus nuristanicus* sp. nov.

(Figs. 1, 2, 5–7, 13)

**Holotype.** Male “Afghan. Nurestan, W Barikot, 2500 m, 21.7.1972, Kabakov” “*Dirrhagus pygmaeus* F. Kabakov det.” (ex O.N. Kabakov coll.)

**Etymology.** This species of *Microrhagus* is named after Nuristan, province of Afghanistan, where the type specimen was collected.

**Differential diagnosis.** Among the Palearctic members of *Microrhagus*, the new species resembles *M. mystagogus* (Fleutiaux, 1923) (Fig. 8) from Japan and the Russian Far East (Fleutiaux 1935; Hisamatsu 1960) in the short anterior lateral carina of the pronotum, pectinate male antennae with antennomere 3 not branched and reduced male sex-comb on protarsomere 1, but differs from it in the less produced apex of antennomere 4, slightly shorter branches of antennomeres 5–10 (Fig. 5), lighter colouration of the body, and in structure of the aedeagus. Also, the new species is similar to the West Palearctic *M. emyi* (Rouget, 1855) (Fig. 9) in the short anterior lateral carina of the pronotum, and the structure of the aedeagus, but the latter species differs from *M. nuristanicus* sp. nov. in serrate male antennae.

**Description.** Holotype, male (Figs. 1, 5–7, 13)

Body length 3.75 mm, width 1.15 mm.

Body widest at anterior third of pronotum, somewhat tapered posterad; brownish black; anterior margin of pronotum, outer carina of antennal

grooves, antescutellar lobe of pronotum, apices of posterior angles, and scutellum slightly lighter; antennae dark brown; legs light reddish brown with lighter tarsi and darkened femora. Head and pronotum mostly dull, elytra rather shining. Dorsum with short, fine recumbent yellowish grey pubescence, interspersed with longer hairs. Underside with fine yellowish hairs.

Head large, frons convex, occiput without distinct median keel. Eyes rather large, strongly convex, inner margin of eye over antennal groove slightly emarginate due to projection of frons bearing deep sensory pit. Distance between inner edges of antennal insertions very small, about five times as great as distance from inner edge of antennal insertion to inner margin of eye. Epistomal part of epicranium subtriangular, with cariniform lateral projections between antennal groove and base of mandibles.

Antennae long, about two-thirds as long as body, pectinate (Fig. 5). Antennomere 3 about 1.5 times as long as antennomere 4, its apical angle slightly produced. Antennomere 4 subtriangular, its apical angle strongly produced, forming subtriangular lobe. Antennomeres 5 to 10 with rather long process at apex, gradually becoming longer to antennomere 8 and further slightly gradually becoming shorter. Antennomere 11 about 2.6 times as long as antennomere 10.

Pronotum 1.15 times as wide as long at midline and 1.3 times as wide as head, in dorsal view its sides slightly arcuately narrowing at apical third and nearly parallel-sided in posterior half. Anterior margin of pronotum with convex, finely crenulate ridge continuous with anterior lateral carina. Disc of pronotum slightly convex, without lateral impressions or median groove. Base of pronotum in front of antescutellar lobe with short median carina and pair of small oval pits. Posterior margin of pronotum distinctly bisinuate, with short, flat, shiny antescutellar lobe distinctly elevated at sides. Posterior angles acute, with strong dorsal carinas. Anterior lateral carina short, about 1/3 of length of pronotum along the middle. Posterior lateral carina long, almost reaching to anterior third of length of pronotum (Fig. 6).

Scutellum subtriangular, narrowly rounded at apex, nearly flat, only its apex slightly convex.

Elytra elongate, 2.25 times as long as wide combined and 2.55 times as long as pronotum, widest at base, and then gradually narrowing to conjointly rounded apices. Epipleura strongly narrowed posteriorly.



Afghan. Nurestan  
W Barikot \* 2500m  
21.7.1972 Kabakov

Coll. ZIN RAS  
ex coll.  
O.N. Kabakov

**HOLOTYPUS**  
*Microrhagus nur-*  
*istanicus* sp. n.  
A. Kovalev des. 2013

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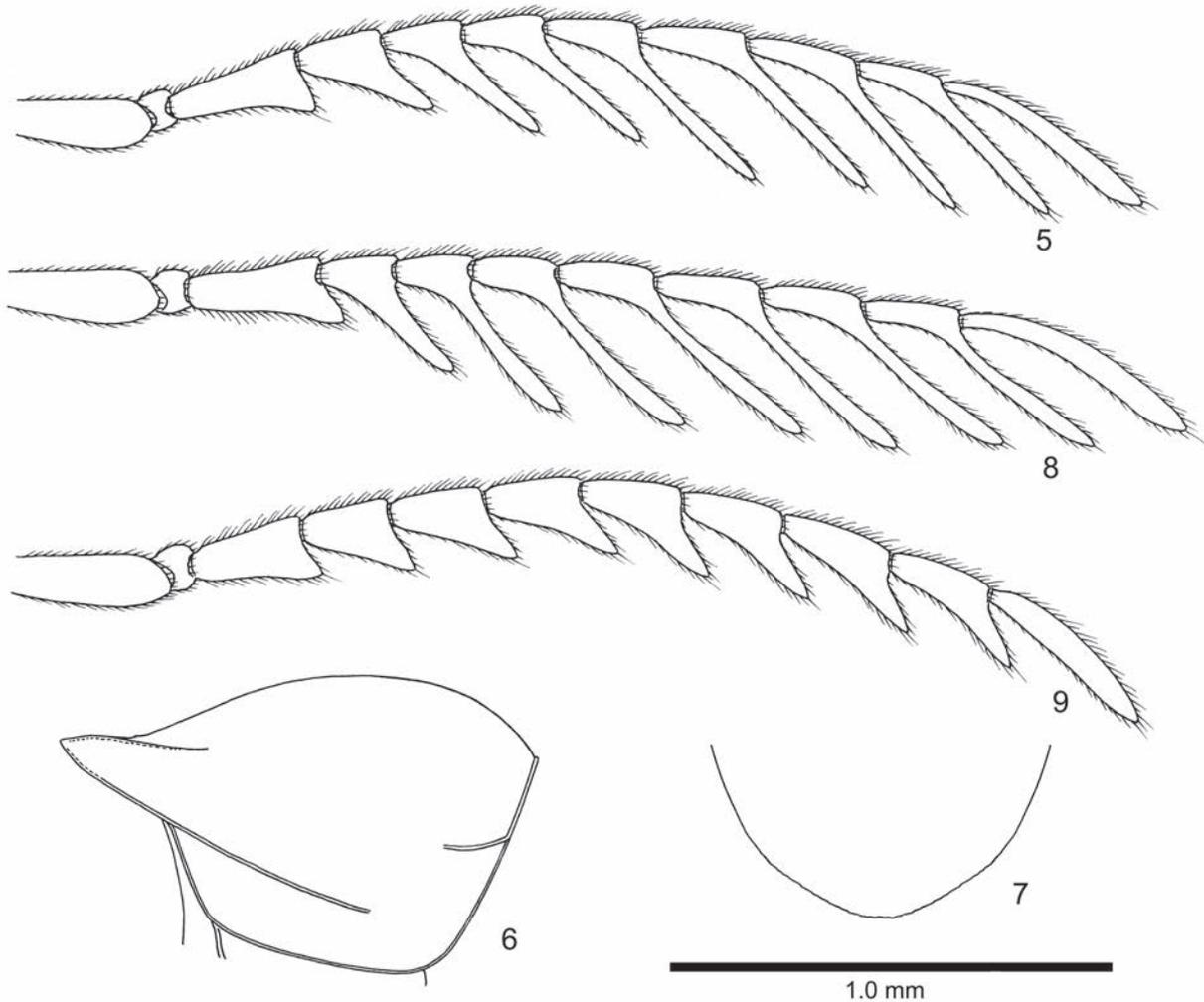


Приморский край  
зап. "Кедровая падь"  
дол. р. Кедровая"  
Кирейчук 30.08.980

**HOLOTYPUS**  
*Entomophthalmus*  
*kirejtshuki* sp. n.  
A. Kovalev des. 2013

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Figs. 1–4. Eucnemidae: 1, 2 – *Microrhagus nuristanicus* sp. nov., holotype, male; 3, 4 – *Entomophthalmus kirejtshuki* sp. nov., holotype, male. Habitus (1, 3); labels (2, 4).



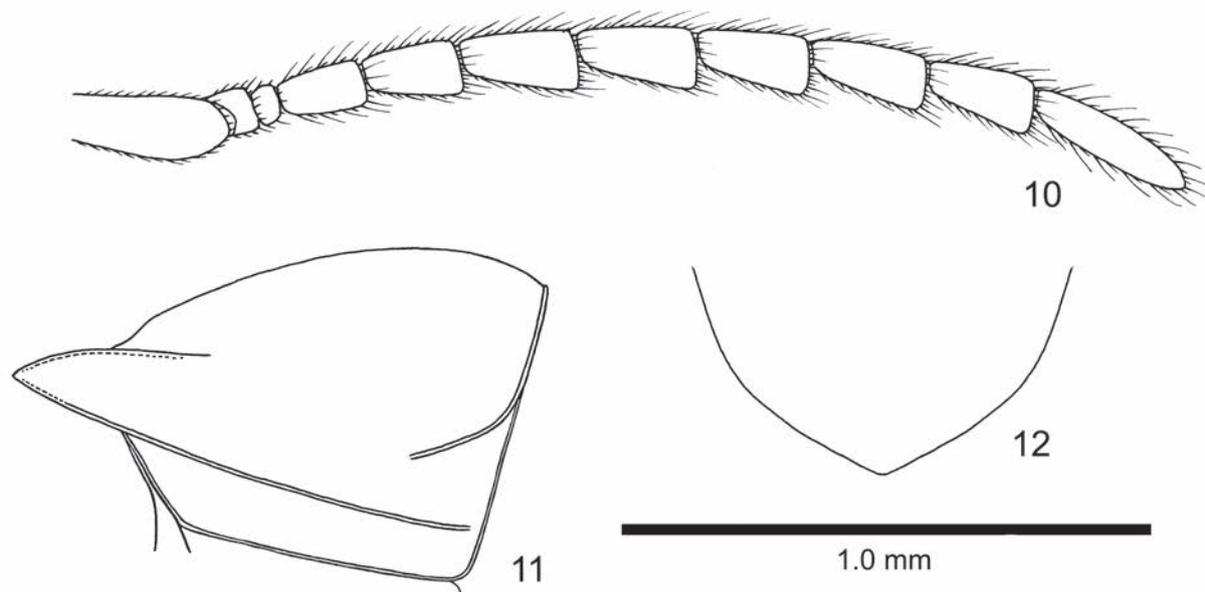
**Figs. 5–9.** *Microrhagus* spp.: 5–7 – *Microrhagus nuristanicus* sp. nov.; 8 – *M. mystagogus* (Fleutiaux, 1923); 9 – *M. emyi* (Rouget, 1855). Antenna (5, 8, 9); lateral carinas of pronotum (6); apex of abdominal ventrite 5 (7).

Prosternum simply convex, prosternal process in ventral view pointed apically. Antennal grooves slightly widened posteriorly, rather deep, and becoming deeper anteriorly, nearly smooth, moderately coarsely punctured in posterior part, sharply and completely limited externally and clearly defined internally, its base delimited by slightly oblique carina. Prohypomera behind basal carina of antennal grooves with deep pits close to procoxa. Part of each prohypomeron between posterior lateral carina and outer carina of antennal grooves distinctly wider than antennal groove, slightly enlarged posteriorly and obliquely delimited at base. Metepisterna extremely narrow in front, strongly broadened posteri-

orly. Metacoxal femoral plates distinctly lengthening inwards. Abdomen simply convex, last abdominal ventrite narrowly rounded apically (Fig. 7).

Legs short and slender. Protarsomere 1 slightly produced at apex, its apical angle with very small sex-comb consisting of 5–6 light spines. Metatarsomere 1 about as long as metatarsomeres 2–5, metatarsomere 4 not strongly widened to apex, oblique and feebly excavated apically, metatarsomere 5 about as long as metatarsomeres 3 and 4 combined.

Surface of head very densely and finely punctured, interspaces between punctures very narrow, about half as wide as diameter of punctures. Pronotum covered with very dense punctation, interspaces



Figs. 10–12. *Entomophthalmus kirejtshuki* sp. nov.: 10 – antenna; 11 – lateral carinas of pronotum; 12 – apex of abdominal ventrite 5.

between punctures about half of puncture diameter. Scutellum finely and densely punctured. Elytra with weak striae, coarsely and densely punctured, mostly rugose. Underside densely to very densely punctured.

Aedeagus (Fig. 13) poorly sclerotized. Phallobase distinctly emarginated at base. Distal part of aedeagus formed by fused parameres and penis, elongate, more or less parallel-sided, with apically enlarged ventral plate. Ventral plate of aedeagus bilobed, its apical lobes obliquely sloped to median emargination and bear numerous short setae, its laterodistal angles rounded. Spicules of endophallus serrate in distal half, its denticles approached to each other.

Female unknown.

**Remarks.** The accepted generic assignment of the new species is evidenced by the characters of propyomera, distinctly lengthened inwards metacoxal plates, strongly approximate antennal insertions, and pectinate antennae in male. *Microrhagus* Bonvouloir, 1871 is distributed worldwide and currently comprising about 130 described species (Muona 2011). However, this genus needs further revision and some of its species may be transferred to other genera of Dirhagini in the future. Before the present study, this genus contained 14 species in the Palearctic Region (Muona 2007).

### Genus *Entomophthalmus* Bonvouloir, 1871

**Type species:** *Entomophthalmus americanus* Bonvouloir, 1872.

#### *Entomophthalmus kirejtshuki* sp. nov.

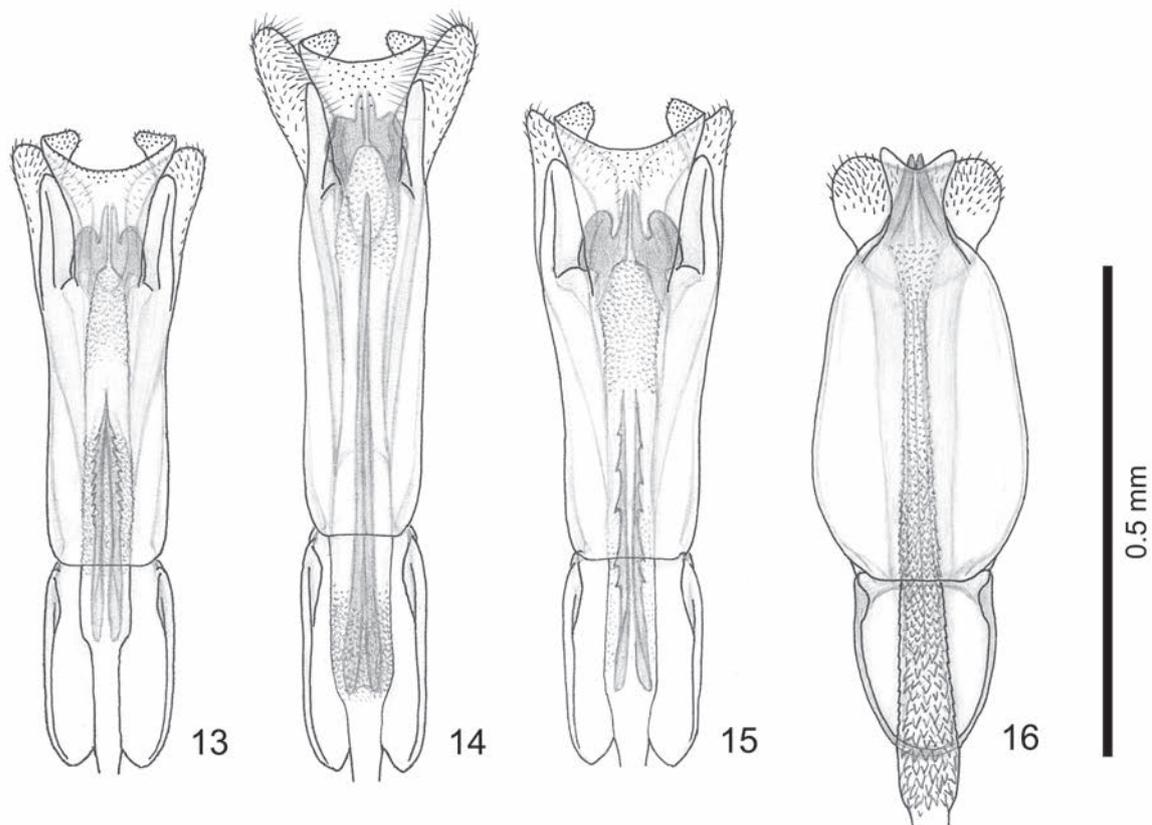
(Figs. 3, 4, 10–12, 16)

**Holotype.** Primorskiy Territory, Kedrovaya Pad Nature Reserve, valley of Kedrovaya River, Kirejtshuk, 30.viii.1980.

**Etymology.** This species is dedicated to A.G. Kirejtshuk, a world authority on Coleoptera, who collected the type specimen.

**Differential diagnosis.** The new species differs in its pale body from all known Oriental species of the genus, which are darker, brown to brownish black coloured. *Entomophthalmus kirejtshuki* sp. nov. seems to be closely related to the Nearctic *E. rufiolus* (LeConte, 1866) differing from the new species in the longer male antennae and structure of aedeagus with somewhat less emarginate apex of the penis, and also larger ventral plate of aedeagus with subangular lateral lobes.

**Description.** Holotype, male (Figs. 3, 10–12, 16). Body length 3.65 mm, width 1.1 mm.



**Figs. 13–16.** Aedeagus, dorsal view: 13 – *Microrhagus nuristanicus* sp. nov.; 14 – *M. mystagogus* (Fleutiaux, 1923); 15 – *M. emyi* (Rouget, 1855); 16 – *Entomophthalmus kirejtshuki* sp. nov.

Body colouration uniformly yellowish rufous; antennae and legs somewhat paler. Head and pronotum moderately, elytra distinctly shining. Dorsum with short, fine, recumbent yellowish hairs, interspersed with longer hairs. Underside with fine yellowish hairs.

Head large, frons evenly convex, vertex with short and fine median keel. Eyes large, moderately convex, inner margin of eye over antennal groove deeply incised by subtriangular projection of frons bearing deep sensory pit. Distance between inner edges of antennal insertions nearly as great as distance between inner edge of antennal insertion and inner margin of eye. Epistomal part of epicranium subtrapezoidal, with poorly defined keel-form lateral projections between antennal groove and base of mandibles.

Antennae long, 0.6 times as long as body, slender, feebly serrate, with moderately long, fine, suberect setae (Fig. 10). Antennomere 3 very small, transverse; antennomeres 2 and 3 combined about as long as antennomere 4. Antennomeres 4–10 each about

twice as long as wide, feebly serrate. Antennomere 11 about 1.6 times as long as antennomere 10.

Pronotum transverse, 1.25 times as wide as long at midline and 1.2 times as wide as head, in dorsal view its sides subparallel, slightly narrowed at apex and faintly concave (nearly straight) to posterior angles. Anterior margin of pronotum with convex and finely crenulate ridge continuous with anterior lateral carina. Disc of pronotum moderately convex, without lateral impressions or median groove. Base of pronotum in front of antescutellar lobe with short convex median carina and pair of small pits. Basal margin of pronotum distinctly bisinuate with short antescutellar lobe. Posterior angles acute, with short slightly bent (in dorsal view) dorsal carinas. Anterior lateral carina short, about 1/3 of pronotal length. Posterior lateral carina long, almost reaching anterior margin of pronotum (Fig. 11).

Scutellum subflattened, subtriangular, with narrowly rounded apex.

Elytra elongate, 2.3 times as long as wide combined and 2.9 times as long as pronotum, widest at base, gradually narrowing to conjointly rounded apices. Epipleura strongly narrowed posteriorly.

Prosternum evenly convex, prosternal process in ventral view pointed apically. Antennal grooves moderately wide, subparallel, rather deep, almost smooth, deepened anteriorly, sharply and completely limited externally and clearly defined internally, its base delimited by almost straight ridge. Prohypomera behind basal ridge of antennal grooves with deep pits close to procoxa. Part of each prohypomeron between posterior lateral carina of prothorax and outer carina of antennal groove wider than antennal groove, feebly enlarged posteriorly and obliquely delimited at base, its internobasal angle slightly oblique by anterior ridge of profemoral groove. Metepisterna narrow, subparallel, faintly widened posteriorly. Metacoxal femoral plates distinctly lengthened inwards. Abdomen convex, last visible abdominal ventrite obtusely pointed at apex (Fig. 12).

Legs short and slender. Protarsomere 1 slightly enlarged and scarcely produced at apex, sex-comb strongly reduced and nearly indiscernible. Metatarsomere 1 slightly longer than 2–5 combined, metatarsomere 4 rather long, distinctly widened to apex, slightly excavated from above and lobed beneath. Metatarsomere 5 attached near middle of metatarsomere 4, as long as metatarsomeres 3 and 4 combined.

Head densely and finely punctured, interspaces between punctures about as great as one puncture diameter or somewhat greater. Pronotum covered with fine and very dense punctation, interspaces between punctures distinctly smaller than one puncture diameter. Scutellum scarcely punctured, slightly rugose. Elytra weakly striate, coarsely and densely punctured, mostly rugose. Underside very densely punctured.

Aedeagus (Fig. 16) poorly sclerotized. Phallobase with rounded base. Distal part of aedeagus formed by fused parameres and penis, suboviform, with apically enlarged ventral plate. Apex of ventral plate of aedeagus widely emarginate at middle, forming short and widely rounded lateral lobes which bear numerous short setae. Apex of penis deeply emarginate.

Female unknown.

**Remarks.** Based on the characters of prohypomera, distinctly lengthened inwards metacoxal plates, short, transverse antennomere 3, and deeply

incised inner margin of eyes, this species must be assigned to the genus *Entomophthalmus* Bonvouloir, 1871 (Cobos 1964; Muona 2000), comprising 23 known species (Muona 2011) distributed mainly in tropical regions of the Old and New World. This genus has been recorded from the Palaearctic Region only after one destroyed specimen collected in Kyushu and remained undescribed (Hisamatsu 1955). Thus, the new species is the first representative of *Entomophthalmus* described from the Palaearctic.

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