

Two new hoverfly species of the genus *Eumerus* Meigen, 1822 (Diptera, Syrphidae) from Russia and Tajikistan

Два новых вида мух-журчалок из рода *Eumerus* Meigen, 1822 (Diptera, Syrphidae) из России и Таджикистана

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Ключевые слова: Syrphidae, *Eumerus*, новый вид, Россия, Таджикистан.

Abstract. Two new species of hoverflies from the genus *Eumerus* Meigen, 1822 are described. *Eumerus zhelechovtsevi* Barkalov, **sp.n.**, was collected in Stavropolskii Krai of Russia, and *Eumerus kvakensis* Barkalov, **sp.n.** in Tajikistan. Drawings of antenna, hind leg, head and male genitalia are given for both species.

Резюме. Приводится описание двух новых видов мух-журчалок из рода *Eumerus* Meigen, 1822. Первый вид — *Eumerus zhelechovtsevi* Barkalov, **sp.n.** обнаружен в Ставропольском крае России. Экземпляр второго вида — *Eumerus kvakensis* Barkalov, **sp.n.** собран в Таджикистане. Для обоих видов даны рисунки усика, задней ноги, головы и гениталий самцов.

2019a, b, 2021; Zlatanov, 2015, 2023; Markov et al., 2016; Chroni et al., 2017; Steenis et al., 2017; Mutin, Barkalov, 2018; Mutin, 2019; Barkalov et al., 2020; Gilasian et al., 2020; Smit et al., 2020; Song et al., 2020; Choi et al., 2021; Speight et al., 2021; Aguado-Aranda et al., 2022a, b; Gilasian et al., 2022; Hassan et al., 2022]. Despite a large number of papers, several new species have been discovered while sorting out the materials of the Zoological Institute of the Russian Academy of Sciences, the Zoological Museum of the Moscow State University and the Siberian Zoological Museum at the Institute of Systematics and Ecology of Animals. Two more new species are described in this paper.

Introduction

Hoverflies, or the syrphids (Syrphidae) are a large Diptera family with worldwide distribution. In recent years, this family has been subject of intensive studies both in Russia and abroad. Thanks to the work of European and North American syrphidologists, it has become one of the most well-studied dipteran families. Yet, the genus *Eumerus* Meigen, 1822 has remained poorly studied for a long time. Its representatives are often small-sized and inconspicuously grey-coloured, hence not attracting entomologists' attention neither to collect them, nor to actively study. For a long time, the main work with the identification key of the Palearctic *Eumerus* species had remained the work by A.A. Stackelberg [1961] and only since the end of the 20th — the beginning of the 21st centuries, a whole series of works devoted to faunistics, taxonomy and systematics of this genus started to appear [Doczkal, 1996; Šimič, Vujić, 1996; Vujić, Šimič, 1999; Barkalov, Gharaei, 2004; Speight et al., 2013; Grković et al., 2015, 2017,

Materials and methods

The material for this paper originated from the collections of hoverflies deposited in the Zoological Museum of the Moscow State University (Moscow) — ZMMU and the Zoological Institute of the Russian Academy of Sciences (Saint Petersburg) — ZIN. The identification was carried out based on the key to the Palearctic *Eumerus* species by Stackelberg [1961] and the latest papers listed above. The male genitalia are of the greatest importance for species ID, therefore herein we have provided drawings of the male genitalia for both new species. In addition, drawings of the ocellar triangles, antennae and sternites IV of males have been provided. The male genitalia were dissected and prepared for study following the method by Hippa [1968]. Figures were made using an ocular grid and graph paper.

Nomenclatural acts introduced in the present work are registered in ZooBank (www.zoobank.org) under urn:lsid:zoobank.org:pub:E2D8B005-5CCD-40F9-9E97-37F3801F832A.

Eumerus zhelochovtsevi Barkalov, sp.n.

Figs 1–5.

urn:lsid:zoobank.org:act:5DF4F2B4-867F-49FC-87B7-525479CBD026

Material. Russia, *Stavropolskii Krai*: Holotype, ♂ — Many, 10 km E of Divnoe, 25.V.1950, A.N. Zhelokhovtsev leg. (ZMMU). The original label: «Маньч, 10 км в. Дивное 25.V.1950 (А. Желуховцев)».

Description. Male. Head. Face narrow, with parallel sides, covered with fine grey dusting and dense white hairs. Cheeks narrow, black, without dusting. Frons narrow (Fig. 1), black, with dense white hairs. Antennae black, pedicel and basoflagellomere with dense grey dusting, basoflagellomere oval, with fine antero-ventral angle, in anterior 1/3 sensorial pit (Fig. 2); arista black, broadened near base and then sharply narrowed. Eyes holoptic connected on distance in 2 times shorter than frons length, almost bare, only with a few very short white hairs. Vertical triangle narrow and long, shiny, with blueish reflection, covered with white hairs, ocellar triangle isosceles (Fig. 1). Occiput shiny, with white hairs.

Thorax. Mesonotum and scutum blueish, shiny, roughly dotted, without distinct longitudinal stripes of grey dusting, covered with short, semierect yellow hairs. Pleurae bluish black, shiny, with short, semierect white hairs. Legs: coxae without any spurs and spikes, black with brownish tips; trochanters brownish black; femora black with narrowly yellow tips; hind femur moderately swollen, on apical third with not high keel bearing long, strong black spikes; hairs short, pressed (Fig. 3); tibiae yellow-brown in basal half and on tip and blackish in the rest part, hind tibia ventrally in basal half with a thin low ridge with short, black, procumbent spinules; 1–4 segments of tarsi black dorsally and yellow ventrally, the 5th segments yellow in apical half; segments of mid tarsus with small, strong black spinules ventrally near tip; hind basitarsus longer than all other segments combined. Wings translucent, except basal third of basal cells, covered microtrichia.

Abdomen mostly black, only sides of tergum II with unclear brown spots, hind margin of tergum IV broadly yellow, spots of grey dusting present on terga II–IV, hairs short pressed (only on sides of tergum I hairs erect yellow); short pressed hairs mostly black, only on grey spots and on sides of tergum IV they are yellow, its inwardly curved posterior corners carry tufts of relatively long hairs; sternum IV with deep cut (Fig. 4). Genitalia — posterior surstylus with one lobe, with oblique keel going from base to the middle, anterior surstylus with dense hairs (Fig. 5).

Size: body length 8.9 mm, wing length 6.3 mm.

Differential diagnosis. As the new species has an intermediate state of the abdominal colouration, which is the basis for the subdivision of the genus into two large groups of species in the Stackelberg ID key [Stackelberg, 1961], it should be compared with species from both groups.

In the group of species with reddish abdomens *E. zhelochovtsevi* sp.n. goes to the couplet 5. From morphologically similar species it differs as follows:

- 5(6) Abdomen with reddish brown spots on the tergum II and with third of tergum IV only. Genitalia as on Fig. 5 ...
..... *E. zhelochovtsevi* sp.n.
- 6(7) Abdomen completely red or with black basis and tip. Genitalia are different..... *E. tarsalis* Loew, 1848 and *E. armenorum* Stackelberg, 1960

In the group of species with completely black abdomen the new species goes to the couplet 93. From the related species it differs as follows:

- 94 (95) Mesonotum without longitudinal stripes of grey dusting, tergum II with unclear reddish-brown spots
..... *E. zhelochovtsevi* sp.n.

- 95(94) Mesonotum with distinct longitudinal strips of grey dusting, tergum II completely black
..... *E. nudus* Loew, 1848

Distribution. Russia, *Stavropolskii Krai*.

Etymology. The new species is named after the famous Soviet entomologist Anatolij Nikolaevich Zhelokhovtsev.

Eumerus kvakensis Barkalov, sp.n.

Figs 6–10.

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Material. Tajikistan: Holotype, ♂ — the tract Kvak, 35 km N of Stalinabad (=Dushanbe), 2000 m a.s.l., 20.VI.1937, V.V. Gussakovskij leg. (ZIN). The original label: «Ур. Квак, 35 км Н Сталинаб. 20.VI.1937 Гуссаковский».

Description. Male. Head. Face narrow, black with bluish reflection, covered with fine grey dusting and dense silver-grey hairs. Genae narrow, brownish. Frons very narrow (Fig. 6), covered with dense grey dusting and semi-erect silver hairs, lunula shiny, without dusting. Antennae brownish red, basoflagellomere elongated with antero-ventral angle (Fig. 7), covered with dense grey dusting, on the border with pedicel orange, in basal third with transverse furrow, from which two short longitudinal furrows extend; arista black, broadened in the base and sharply narrowed in other part (Fig. 7). Eyes dichoptic, separated by a narrow strip (Fig. 6), completely covered with dense, short white hairs. Vertical triangle narrow, black, shiny, covered with white hairs; ocellar triangle elongated, isosceles (Fig. 6). Vertex brownish, covered with white hairs.

Scutum and scutellum black, covered with comparatively short, erect light-yellow hairs, 2 longitudinal stripes of grey dusting well developed and almost reach hind margin of scutum. Postpronotum black, shiny. Lateral stripes of grey dusting undeveloped. Pleura mostly shiny black, only katapimeron light brown, covered with comparatively short, pressed white hairs. Legs simple, except hind femur without spurs and projections; fore and mid coxae brownish-black, hind coxa black; trochanters brown; femora black with tapering yellow tips, hind femur finely swollen, in apical half with low keel, on which are located comparatively long, strong black spurs (Fig. 8), hairs short, semi-erect yellow; tibia yellow in basal half and black in apical half, middle tibia covered with short, dense, depressed white hairs, which when viewed from above cover their main color, hind tibia in basal half with small keel on which there are small pressed black spikes; tarsi yellow ventrally and mainly black dorsally, except completely yellow the fifth segments of all tarsi and the first segment of middle tarsus; hind basitarsus slightly shorter all others put together (Fig. 9). Wings translucent, except basal half of cells R and BM covered with microtrichia.

Abdomen with almost parallel sides, with black tergum I and middle part of tergum II and brown in last part, covered with short, semierect hairs yellow on sides of terga and black on parts and hind part of tergum IV; terga with difficult to distinguish grey spots (the specimen was probably in water or alcohol); sternites partially eaten by Dermestidae, sternum VI with yellow hairs. Hypopygium with very long hypandrium and rather simple epandrium (Fig. 10).

Size: body length 9.2 mm; wing length 7.2 mm.

Differential diagnosis. In the Stackelberg ID key [Stackelberg, 1961], the new species goes to the couplet 40:

40(41) Abdomen mostly brown, basoflagellomere reddish brown, mid tibiae with dense, semi-erect silver hairs, hypandrium very long (Fig. 10) *E. kvakensis* sp.n.

41(40) The listed characters never occur at the same time, phypandrium is different.

Etymology. The species epithet is an adjective taken from the type locality — the tract Kvak in Tajikistan.

Distribution. Central Tajikistan.

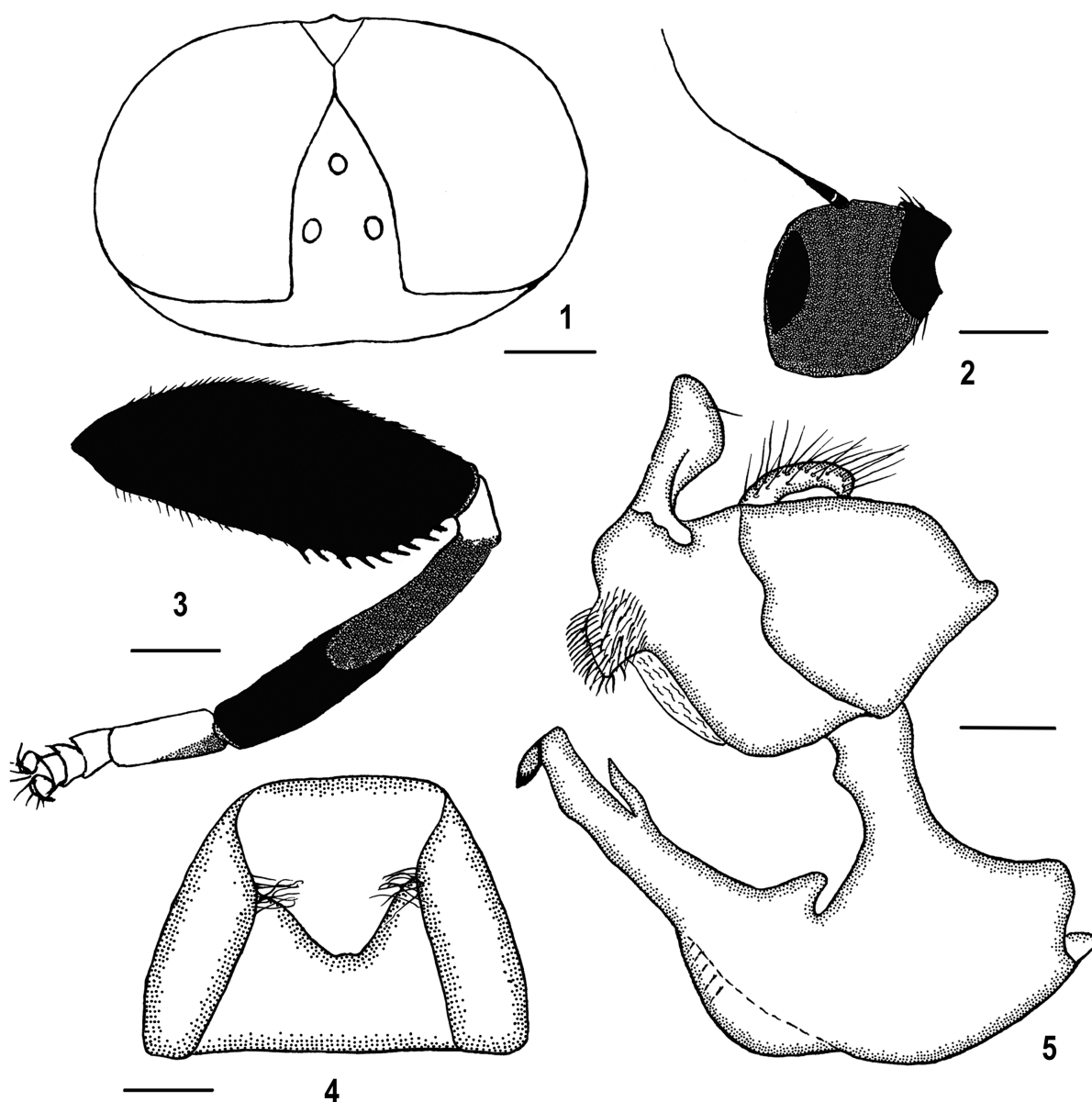
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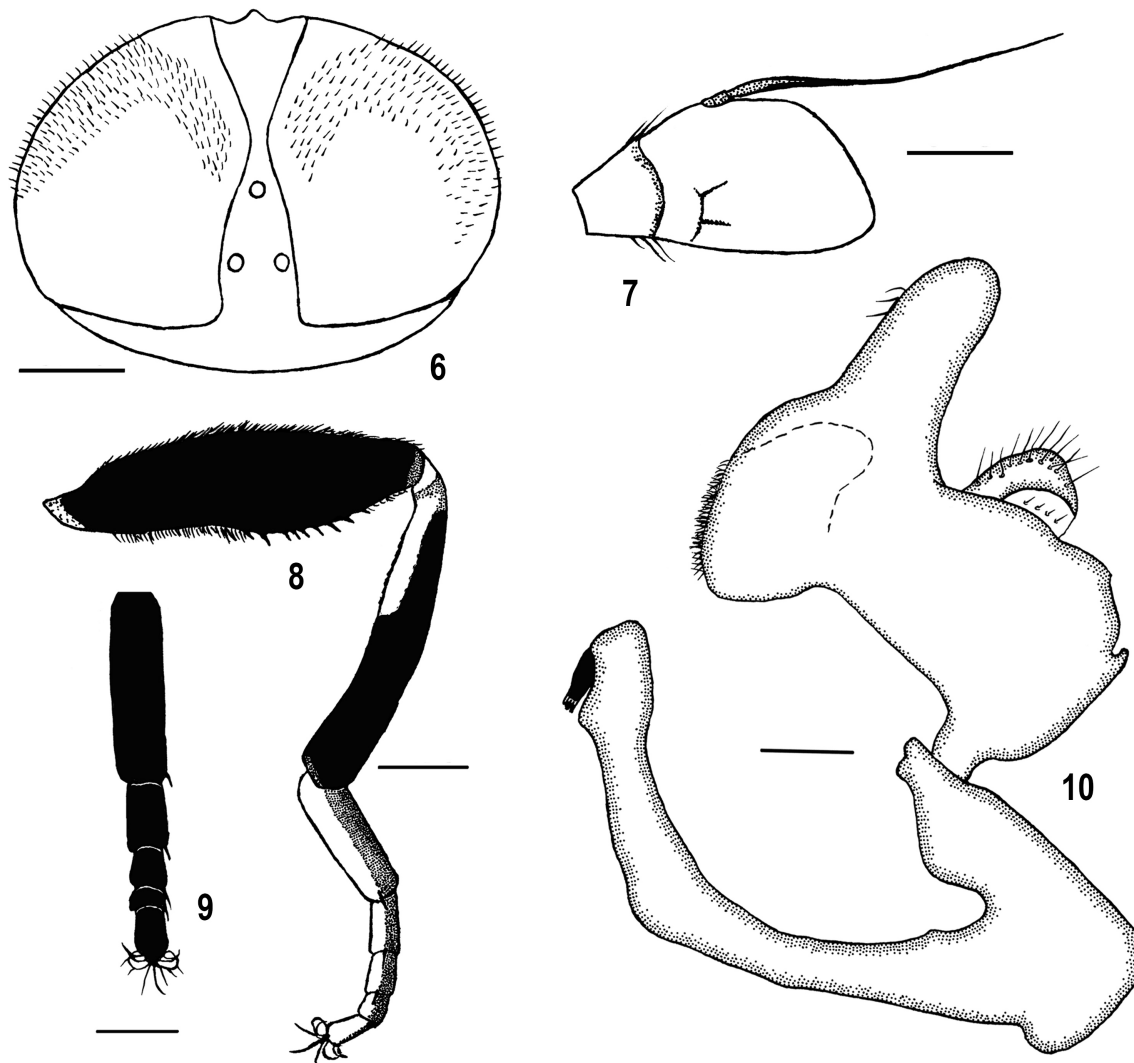
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Figs 1–5. *Eumerus zhelochovtsevi* sp.n., male, details of structure. 1 — head, dorsal view; 2 — pedicel and basoflagellomere, lateral view; 3 — hind leg, lateral view; 4 — tip of abdomen, ventral view; 5 — genitalia, lateral view. Scale bars 1, 3, 4 — 0.45 mm, 2, 5 — 0.23 mm.

Рис. 1–5. *Eumerus zhelochovtsevi* sp.n., самец, детали строения. 1 — голова, вид сверху; 2 — педикел и базифлагелломер, вид сбоку; 3 — задняя нога, вид сбоку; 4 — вершина брюшка, вид снизу; 5 — гениталии, вид сбоку. Масштаб: 1, 3, 4 — 0,45 мм, 2, 5 — 0,23 мм.



Figs 6–10. *Eumerus kvakensis* sp.n., male, details of structure. 6 — head, dorsal view; 7 — pedicel and basoflagellomere, lateral view; 8 — hind leg, lateral view; 9 — hind tarsus, dorsal view; 10 — genitalia, lateral view. Scale bars 6, 8 — 0.36 mm, 7 — 0.23 mm, 9, 10 — 0.45 mm.

Рис. 6–10. *Eumerus kvakensis* sp.n., самец, детали строения. 6 — голова, вид сверху; 7 — педикел и базофлагелломер, вид сбоку; 8 — задняя нога, вид сбоку; 9 — задняя лапка, вид сверху; 10 — гениталии, вид сбоку. Масштаб: 6, 8 — 0,36 мм, 7 — 0,23 мм, 9, 10 — 0,45 мм.

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