

A new species of dance flies of the subgenus *Euempis* Frey (Diptera: Empididae) from Armenia and Azerbaijan, with a key to species of the Caucasus

Новый вид мух-толкунчиков подрода *Euempis* Frey (Diptera: Empididae) из Армении и Азербайджана, с определителем видов фауны Кавказа

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КЛЮЧЕВЫЕ СЛОВА. Diptera, Empididae, *Empis*, *Euempis*, Палеарктика, Кавказ, новый вид, определитель, мухи-толкунчики.

ABSTRACT. A new species of dance flies of the *Empis* subgenus *Euempis* Frey, 1953, *Empis* (*Euempis*) *tanasiytshuki* sp.n., is described from Armenia and Azerbaijan. A key to eight species of *Euempis* recorded from the Caucasus is compiled for the first time.

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РЕЗЮМЕ. Описан новый вид мух-толкунчиков подрода *Euempis* Frey, 1953 рода *Empis* Linnaeus из Армении и Азербайджана: *Empis* (*Euempis*) *tanasiytshuki* sp.n. Впервые составлена определительная таблица для восьми видов *Euempis*, известных с Кавказа.

Introduction

The subgenus *Euempis* Frey, 1953 (with *Empis tessellata* Fabricius, 1794 as type species) of the genus *Empis* Linnaeus, 1758 includes large to medium sized, robust, strongly bristled species possessing holoptic eyes in the male, prosternum covered with setae, unmodified abdominal sternites of male pregenital segments, and small and simple or large and broadly cleft male cerci (*E. tessellata* and *E. ciliata* groups, respectively). Chvála [1994] provided some other distinctive characters of these dance flies.

The subgenus has been only recognised from the Palaearctic Region and it currently includes 21 species [Yang et al., 2007]. The majority of species are known from the

western part of the region, especially from the Mediterranean and sub-Mediterranean areas. Seven species of *Euempis* have been recorded from the Caucasus, but *Empis basalis* Loew, 1873 is assigned to this subgenus provisionally [Shamshev, 2016]. In our paper we describe a new species of the subgenus *Euempis* from Armenia and Azerbaijan. Also, a key to all species of *Euempis* recorded from the Caucasus is provided for the first time.

Material and methods

This study is based on Empididae material housed in the Zoological Museum of Moscow State University, Moscow, Russia (ZMMU) and the Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZISP). Pinned, dried specimens were studied. To facilitate observations, the terminalia were macerated in cold 10% KOH, then transferred for a short period in 85% lactic acid and immersed in glycerine. Terms used for adult structures primarily follow those summarised by Cumming and Wood [2009]. The photos were produced using a Nikon SMZ 1500 stereomicroscope equipped with a Nikon D700 digital SLR camera and were aligned and stacked using the Helicon Focus 5.3.14 software. Label data for primary types are cited from the top downward, with the data from each label in quotation marks. Labels are cited in full, with original spelling, punctuation, and date, and label lines are delimited by a slash (/). Additional information is included in square [] brackets. Secondary type data are abridged and listed alphabetically. The holotype of the new species is deposited in ZMMU, the paratypes as noted.

Taxonomic account

*Empis (Euempis) tanasijtshuki*Shamshev et Kustov, **sp.n.**

Figs 1–5.

TYPE MATERIAL. **Holotype:** ♂, labelled [printed in Cyrillic, Russian], [AZERBAIJAN:] “Госмалян [Gosmalyan, 38.7477°N 48.4364°E, = Kosmoljan] 25.v./ юж. Лерика [south of Lerik]/ Л. Зими́на [L. Zimina] 1969”; “Empis/ tanasijtshuki/ Shamshev, Kustov, sp.n.” (ZMMU).

Paratypes: AZERBAIJAN: 2 ♀♀, same locality as holotype, 20.v.1969 (ZMMU); 2 ♂♂ (terminalia dissected, attached in microvial), 2 ♀♀, same locality as holotype, 21.v.1969 (1 ♂ and 1 ♀ in ZISP, 1 female in ZMMU); 1 ♀, Talysh, Zuvand, Kyalakhan, 23.v.1969, L. Zimina (ZMMU); 2 ♀♀, Kosmoljan, Lerikskiy District, Talysh, 1600–1700 m, 20.v.1963, Tanasijtshuk (ZISP); 3 ♂♂, 4 ♀♀, Yardimli distr., Kyurekchi, *Ulmus* forest, 38°52'N 48°07'E, ~1700 m asl, 23–25.v.2009, coll. K. Tomkovich (ZMMU). ARMENIA: 1 ♀, 15 km NW of Megri, 15.v.1957, L. Zimina (ZMMU).

DIAGNOSIS. Large species of the *E. ciliata* group with face and scutellum covered with pale hair-like setae. Male: acrostichals and dorsocentrals hair-like, black, multiseriate; legs entirely black; wing uniformly faintly infuscate, halter brownish. Female: acrostichals and dorsocentrals pale; legs (except coxae and trochanters) yellow to brownish yellow, mid and hind femora with subpennate posteroventral setae on subapical part; wing with pale stripe distal to base of radial fork, halter yellow.

DESCRIPTION. **Male** (Fig. 1). Head black in ground colour. Eyes holoptic, upper ommatidia enlarged, border

between upper and lower ommatidia indistinct. Frons reduced to small bare triangular space above antennae. Face wide, widened ventrally, densely dark grey pollinose; clypeus subshiny; with numerous, rather long, mostly pale (black just below antennae) hair-like setae along eye margins. Occiput densely dark grey pollinose, covered with dense, long, pale hair-like setae, bearing slightly stronger black postocular setae on upper part. Ocellars undifferentiated; ocellar tubercle with several long, black thin setae similar to postoculars. Antenna black; scape elongate, twice as long as pedicel, clothed in long, black thin setae, bare on inner side; pedicel subglobular, with circlet of black setulae; postpedicel elongate, 3.5–4 times longer than wide; stylus about 2/3 postpedicel length. Proboscis with labrum nearly 2 times head height, reddish-brown; palpus largely brownish, narrowly brownish-yellow on apical part; pubescent with microtrichia, bearing numerous long, thin pale (on basal part) and black (on apical part) setae. Cervical sclerites bare.

Thorax black in ground-colour; scutum densely dark grey pollinose; with 3 blackish brown vittae (viewed dorsally) running along theoretical lines of dorsocentral and acrostichal setae; lateral vitta broad and extending almost to base of scutellum; median vitta narrow and disappearing before prescutellar depression. Prothorax covered with long pale hair-like setae. Proepisternum with similar pale hair-like setae on lower and upper parts. Anteprepronotum clothed in long pale hair-like setae and with several black strong setae dorsally. Postpronotal lobe covered with dense pale moderately



Fig. 1. *Empis (Euempis) tanasijtshuki* **sp.n.**, habitus, lateral view, male, holotype.

Рис. 1. *Empis (Euempis) tanasijtshuki* **sp.n.**, габитус, сбоку, самец, голотип.

long hair-like setae anteriorly and similar black (sometimes with additional pale) setae posteriorly, postpronotal seta hardly prominent, sometimes undifferentiated from surrounding setation. Mesonotal setation: main setae black; presutural supra-alar seta absent, 4–7 (more often 4–5) long notopleurals arranged in one row (number variable, sometimes, even on right and left sides), 1–2 thinner postsutural supra-alar, 1 similar postalar and 6–8 thin scutellar setae; acrostichal and dorsocentral setae mostly black (with additional pale setae anteriorly), long, hair-like, barely separated, former arranged at least in 6 irregular rows extending to base of scutellum, latter multiserial, undistinguishable laterally from similar supra-alar setation, prescutellar dorsocentrals long, thin; notopleuron and supra-alar space covered with numerous long pale hair-like setae (in latter case often intermixed with black setae behind suture), similar setae also present on postalar ridge and scutellum (including anterior face). Laterotergite with numerous long pale setae. Anterior and posterior spiracles pale.

Legs entirely black, long, rather slender, subshiny (except coxae). Coxae densely tomentose except hind coxa shiny anteriorly; fore coxa covered with dense, long hair-like setae and bearing some black subapical setae; mid and hind coxae with similar numerous pale setae and more numerous black setae. Trochanters with intermixed pale and black thin setae. All femora slender, unmodified, subequal in thickness (fore femur slightly narrower), faintly pubescent with microtrichia

ventrally. Fore femur mostly clothed in pale thin setae, longer posteriorly; similar dark moderately long anteroventral and posteroventral setae on apical part and short setulae dorsally. Fore tibia with 4–6 short dorsal strong setae of subequal lengths, covered with longer setulae posteriorly. Fore basitarsus slightly thickened, nearly as broad as apex of fore tibia, with similar setae posteriorly, bearing some short spine-like setae ventrally and somewhat longer strong setae of subapical circlet; remaining tarsomeres covered with uniform short setulae and bearing subapical circlet of short strong setae. Mid femur with long pale hair-like setae on basal half anteriorly and some similar setae near base posteriorly, otherwise clothed in black setae, bearing numerous intermixed thin and spine-like short anteroventral and posteroventral setae. Mid tibia with 4–5 anterodorsal, 5–7 posterodorsal and 2–3 posterior moderately long strong setae arranged on about apical 2/3; circlet of several similar subapical setae. Hind femur covered with long pale hair-like setae anteriorly on basal 2/3 and posteriorly on basal 1/3, with numerous intermixed thin and spine-like short setae ventrally, bearing 4–5 moderately long anterodorsal subapical strong setae. Hind tibia with rows of numerous moderately long anterodorsal and posterodorsal strong setae (besides circlet of similar subapical setae). Mid and hind basitarsus slender, covered with short setulae, otherwise mid and hind tarsomeres with similar setation to fore tarsomeres.



Fig. 2. *Empis (Euempis) tanasijtshuki* sp.n., habitus, lateral view, female, paratype.

Рис. 2. *Empis (Euempis) tanasijtshuki* sp.n., габитус, сбоку, самка, паратип.

Wing uniformly faintly brownish infusate. Basal costal seta absent. Pterostigma distinct, narrow, brownish. Veins R_5 and M_{1+2} strongly divergent subapically; radial fork acute. Anal angle very acute, subsequently anal lobe well developed. Calypter brownish yellow, pale fringed. Halter brownish.

Abdomen black; pregenital segments with unmodified vestiture and structure. Tergite 1 entirely, tergites 2–3 narrow anteriorly and tergites 2–7 laterally faintly greyish pollinose, otherwise shiny. Tergites covered with long, dense, pale to pale yellow hair-like setae laterally and short thin black setae dorsally; bearing some long black postero-marginal setae laterally (variable in colour and robustness). Sternites densely grey pollinose and densely long pale setose. Hypopygium (Figs 3, 4) elongate, compressed laterally. Cercus brownish to yellowish brown, with lower margin usually somewhat paler, covered with black setae; deeply cleft, upper projection narrow, digitiform, lower projection broad, subrectangular (lateral view). Epandrial lamella mostly brownish, brownish-yellow along upper margin, covered with numerous long, mainly black setae (number of pale setae variable); large, rather subtriangular with convex lower margin and rounded apex (lateral view). Hypandrium yellow on apical part and brown on basal part; short, narrow, entirely sclerotised, pubescent with microtrichia on distal half ventrally. Phallus (Fig. 4) yellow; almost uniformly slender, somewhat thicker on basal part, evenly curved.

MEASUREMENTS. Body 9.5–11 mm, wing 9–10.3 mm.

Female (Fig. 2). Similar to male, except as follows: Frons parallel-sided, bearing numerous mostly whitish marginal setulae, with some black setulae above. Eyes dichoptic, ommatidia of equal size. Occiput with shorter setation, except stronger postoculars. Palpus with broader yellow apical part, bearing mostly pale setae. Mesonotum with somewhat shorter hair-like setation. Postpronotal lobe almost uniformly pale setose, only scattered dark setulae present. Scutum almost evenly covered with pale setulae, some scattered black setulae present anteriorly and, sometimes prescutellar dorsocentral setae black. Legs extensively yellow to brownish yellow, only coxae and trochanters black, fore femur brownish dorsally (also sometimes mid and hind femora brownish toward apex) and

tarsomere 5 of all legs almost entirely brown; with shorter setation. Coxae and trochanters with only pale setae. Fore femur with some black setae on subapical part only, otherwise covered with pale hair-like setae; fore tibia covered with uniform short setulae (besides dorsal and circlet of subapical bristles); fore basitarsus slender, covered with uniform short setulae. Mid femur with moderately long black subpennate posteroventral setae on subapical part, bearing very short black anteroventral setae on apical 2/3 only; mid tibia with rows of several short anteroventral and posteroventral bristles. Hind femur with moderately long pennate posteroventral setae on apical half, anterodorsal subapical bristles short; hind tibia with 3–4 short anteroventral bristles and somewhat longer ventral setulae on subapical part (sometimes intermixed with single subpennate setae). Wing membrane with pale elongate oblique patch with pale stripe distal to base of radial fork; calypter and halter yellow. Abdomen with tergites 1, 6 and 7 entirely, tergites 2–3 anteriorly, tergites 2–5 laterally densely greyish pollinose, otherwise tergites shiny black (except tergite 8); sternites 1–7 densely grey pollinose; segment 8 subshiny black; abdomen covered with only pale to pale yellow hair-like setae (shorter than in male) denser on tergites 1–3 laterally. Cercus concoloured with tergite 8, covered with dark setulae, slender.

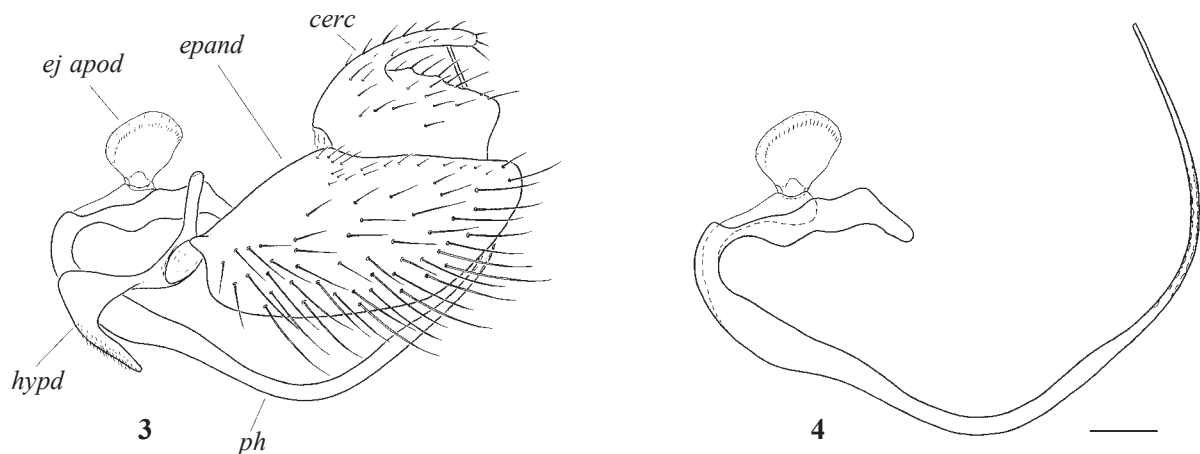
MEASUREMENTS. Body 9.4–10.8 mm; wing 9.1–9.6 mm.

DIFFERENTIAL DIAGNOSIS. In having brown halteres, the new species could be compared only with *E. ciliata* Fabricius, 1787 known from Europe and with *E. sevanensis* Shamshev, 2001 known from Armenia and Turkey [Shamshev, 2001; Çiftçi, Hasbenli, 2007]. However, *E. tanasijtshuki* sp.n. can be readily distinguished from both these species primarily by the setose face.

ETYMOLOGY. The new species is named in memory of Russian dipterist Vitaliy Nikolaevich Tanasijtshuk (1928–2014), worked on Chamaemyiidae, who collected part of the type material.

DISTRIBUTION. Palaearctic: Armenia, Azerbaijan (Fig. 5).

HABITAT AND SEASONAL OCCURRENCE. According to label data the new species appears to inhabit mountain (1600–1700 m) broad-leaved forests (*Ulmus*), and in flight



Figs 3–4. *Empis (Euempis) tanasijtshuki* sp.n., male, paratype: 3 — terminalia, lateral view; 4 — phallus, lateral view; cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar: 0.1 mm.

Рис. 3–4. *Empis (Euempis) tanasijtshuki* sp.n., самец, паратип: 3 — терминалии, вид сбоку; 4 — фаллус, вид сбоку; cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус.

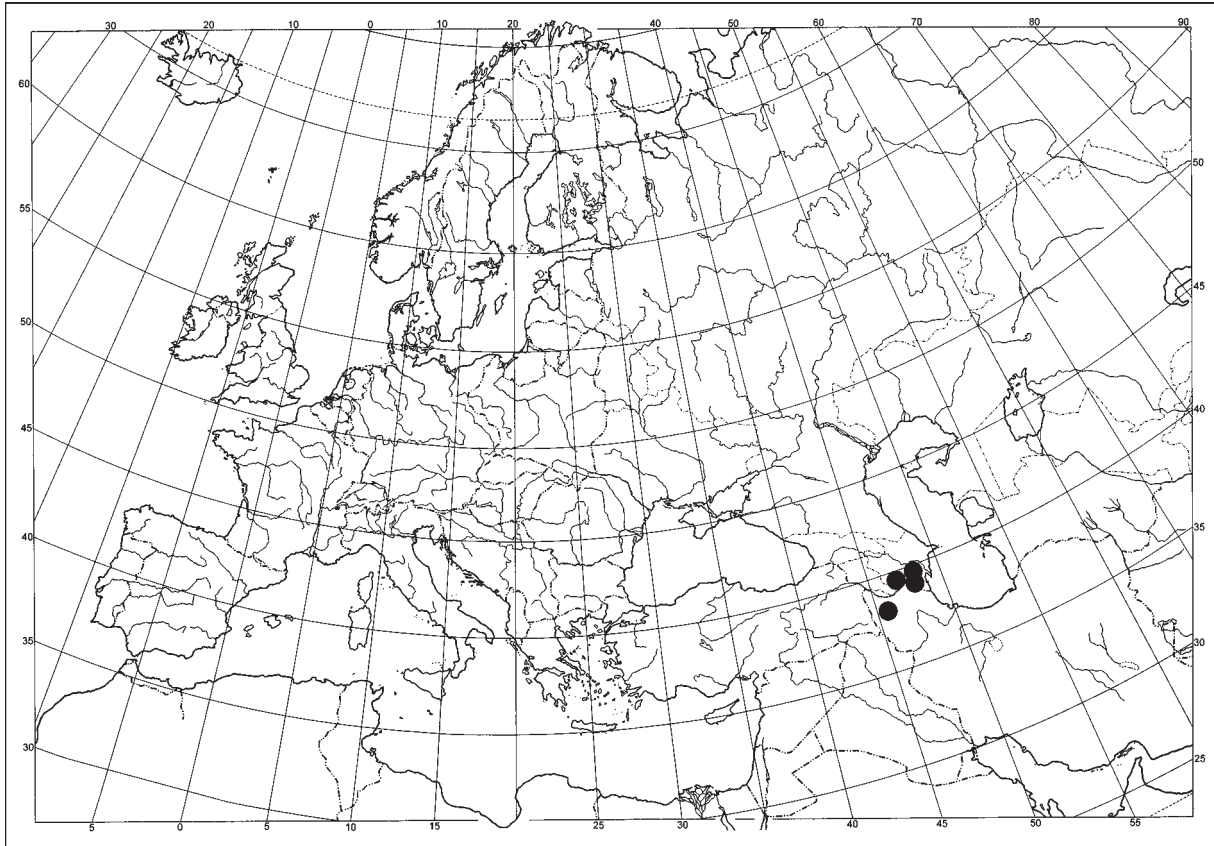


Fig. 5. Distribution of *Empis (Euempis) tanasijtshuki* sp.n. in the Palearctic Region.

Рис. 5. Распространение *Empis (Euempis) tanasijtshuki* sp.n. в Палеарктическом регионе.

around the middle and end of May. The presence of pollen on the body of several specimens suggest that the new species is an active flower-visitor like other species of *Euempis*, e.g., *E. ciliata* [Chvála, 1994].

KEY TO SPECIES OF *EUEMPIS* FROM THE CAUCASUS

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1. Male (unknown in <i>E. basalis</i>) | 2 |
| — Female | 8 |
| 2. Cercus large, deeply cleft posteriorly (lateral view). Prosternum with pale setae | 3 |
| — Cercus small, simple. Prosternum with black setae (except <i>E. calcarata</i>) | 4 |
| 3. Face bare. Halter yellow | <i>E. sevanensis</i> Shamshev |
| — Face with numerous mostly pale setae. Halter brown | <i>E. tanasijtshuki</i> , sp.n. |
| 4. Hind femur near apex with black posteroventral comb of several very closely set bristles. Prosternum with pale setae | <i>E. calcarata</i> Bezzi |
| — Hind femur with simple setae near apex. Prosternum with black setae | 5 |
| 5. Abdominal tergite 4 with shiny patch on each side, bearing 3–4 very strong spine-like bristles and small cluster of 2–3 much shorter spines near hind margin laterally. Smaller, body about 5 mm | <i>E. pleurica</i> (Collin) |
| — Abdominal tergite 4 uniformly densely pollinose, with simple setation. Larger, body 8–11 mm | 6 |
| 6. Genitalia with epandrial lamella subrectangular; phallus very slender, mostly free | <i>E. sericans</i> Brullé |
| — Genitalia with epandrial lamella subtriangular; phallus short and rather stout, concealed within epandrial lamellae | 7 |
| 7. Hind tibia with horn-like projection closer to apex posteriorly | <i>E. shushaensis</i> Shamshev |
| — Hind tibia simple | <i>E. tessellata</i> Fabricius |
| 8. Prosternum with pale setae | 9 |
| — Prosternum with black setae | 11 |
| 9. Face with numerous mostly pale setae | |
| — Face bare | 10 |
| 10. Palpus black, only tip reddish. Hind femur only slightly broader than mid femur on middle, with posteroventral and dorsal pennation throughout, hind tibia with pennation on about middle. Larger, body 9–11 mm | <i>E. sevanensis</i> Shamshev |
| — Palpus pale yellow. Hind femur thickened, nearly twice as broad as mid femur, with posteroventral pennation only on subapical part, hind tibia setose only. Smaller, body 7–8 mm | <i>E. calcarata</i> Bezzi |
| 11. Mid and hind femora pennate. Anterior spiracle black | <i>E. basalis</i> Loew |
| — Legs not pennate. Anterior spiracle pale | 12 |
| 12. Only abdominal tergite 1 with more or less distinct setae, including postermarginal bristles, otherwise tergites almost bare, covered with minute setulae only | 13 |
| — At least abdominal tergites 1–3 with distinct postermarginal bristles longer laterally | 14 |
| 13. Smaller, body about 5 mm. Legs brownish yellow | <i>E. pleurica</i> (Collin) |
| — Larger, body 8–11 mm. Legs uniformly black | <i>E. sericans</i> Brullé |

14. Postpronotal lobe with numerous subequally short setae only *E. shushaensis* Shamshev
 — Postpronotal lobe with 1 long bristle and numerous subequally short setae *E. tessellata* Fabricius

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