

A new curious species of *Empis* Linnaeus, 1758 (Diptera: Empididae) from Armenia

Новый необычный вид *Empis* Linnaeus, 1758 (Diptera: Empididae) из Армении

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КЛЮЧЕВЫЕ СЛОВА. Empidoidea, мухи-толкунчики, *Pachymeria*, Кавказ.

ABSTRACT. A new species of the subgenus *Pachymeria* Stephens, 1829 of the genus *Empis* Linnaeus, 1758 is described and illustrated from Armenia: *E. (P.) vanadzoriensis* Shamshev, **sp.n.** A key to species of *Empis* (*Pachymeria*) known from Armenia is provided.

РЕЗЮМЕ. Новый вид подрода *Pachymeria* Stephens, 1829 рода *Empis* Linnaeus, 1758 описан и иллюстрирован из Армении. Дана определительная таблица видов *Empis* (*Pachymeria*), известных из Армении.

Introduction

The dance flies of the genus *Empis* Linnaeus, 1758 (Diptera, Empididae) are a marked element of the biota of the Caucasus, particularly at the late spring and at the beginning of summer. However, the fauna of this group of many areas of the region remains very poorly known [Shamshev, 2016]. The checklist of Empididae recorded from Armenia includes only ten species [Arzumanyan *et al.*, 2025], of which six species belong to the genus *Empis* [Shamshev, 2001; Shamshev, Kustov, 2008, 2018].

Our paper includes the description of a new species of the genus *Empis* from Armenia. The structure of the male terminalia would suggest that the new species is a member of the subgenus *Empis* (*Pachymeria* Stephens, 1829). However, it has some unusual characters for species of this group, including bare thoracic prosternum, shiny mesonotum and spinose fore femora of the female. In all known species of *Empis* (*Pachymeria*) the prosternum is setose, the mesonotum is densely pruinose and the fore femur of the female is covered with only fine setulae. The subgenus *Empis* (*Pachymeria*) comprises 15 currently known species (including one described

herein) distributed almost exclusively in the western part of the Palaearctic, where they are most diverse in the Mediterranean and sub-Mediterranean areas [Shamshev, Barták, 2019].

Material and Methods

This study is based on material deposited in the Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZISP). The photographs were taken using a Canon EOS 11 40D camera using a Canon MP-E 65 mm objective, with multiple layers combined using the Helicon Focus 5.3.14 software. To facilitate observations, the terminalia were macerated in cold 10% KOH, then immersed for a short period in 85% lactic acid and viewed in glycerine. Terms used for adult structures follow those of Cumming, Wood [2017]. Label data for primary types are cited in full with original spelling, punctuation, and date. Label lines are delimited by a slash (/) and the data from each label are separated by two slashes (/). Additional information to label data (e.g., current name of an old place name, affiliation to a present-day country, geographical coordinates, English translations, etc.) is included in square [] brackets. Secondary type data are abridged. Male body length was measured from antennal base to the tip of genitalia and female body length from base of antennae to the tip of cerci. Thoracic setae are counted on one side of the body (except scutellars).

Taxonomic account

Class Insecta Linnaeus, 1758
Order Diptera Linnaeus, 1758
Suborder Brachycera Macquart, 1834
Superfamily Empidoidea Latreille, 1804
Family Empididae Latreille, 1804
Genus *Empis* Linnaeus, 1758
Subgenus *Pachymeria* Stephens, 1829

Empis (Pachymeria) vanadzoriensis Shamshev, **sp.n.**
Figs 1–4.

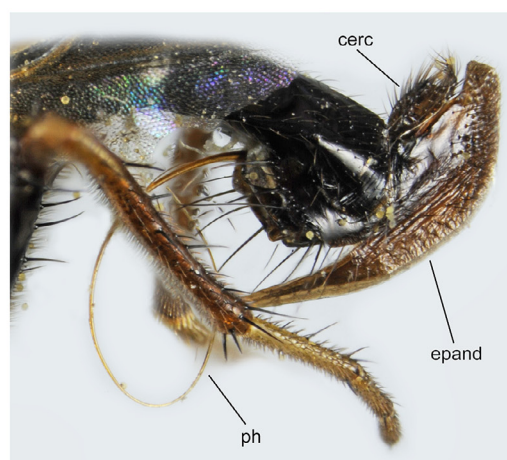
TYPE MATERIAL. Holotype, ♂, labelled: [label printed in Cyrillic, Russian] Kirovakan [now Vanadzor, 40°48'N 44°29'E], Armen. [Armenia] beech forest, 2.viii. [1]959, V. Richter (dissected, terminalia in microvial, ZISP).

Paratypes. **Armenia:** Arzakand [now Arzakan, 40°26'N 44°36'E], 19.vii.1962, V. Richter (1 ♀, ZISP); Geghard [40°14'N 44°81'E], 28.vii.1965, V. Richter (1 ♀, ZISP); Khosrov Forest [39°49'N 44°50'E], 17.vii.1969, V. Richter

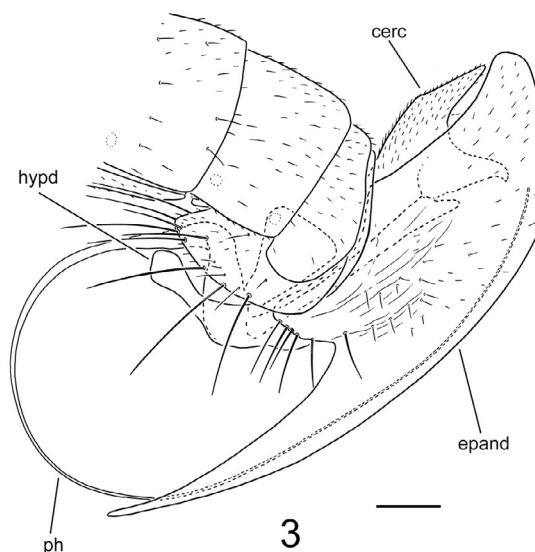
(1 ♀, ZISP); env. Ankavan [40°38'39"N 44°28'53"E], 21.viii.969, V. Richter (1 ♂, ZISP); Goght [40°8'N 44°46'E], 22.vi.1985, M. Dolgovskaya (1 ♀, ZISP).

DIAGNOSIS. The species is distinguished by the following combination of characters: prosternum bare, mesonotum shiny. Male: hind tibia simple; epandrial lamella with lower posterior angle very acute and greatly produced downwards. Female: legs without pennate setae; fore femur bearing 5–6 very short, closely set, spine-like setae on about middle anterodorsally.

DESCRIPTION. Body length about 4.5, wing 4.3–4.6 mm. **Male** (Fig. 1). **Head** with frons, ocellar triangle, occiput and



2



3

Figs 1–4. *Empis (Pachymeria) vanadzoriensis* Shamshev, **sp.n.**: 1 — male habitus (holotype), lateral view (dissected); 2 — male postabdomen, lateral view; 3 — male terminalia (holotype), lateral view; 4 — female habitus, lateral view. Abbreviations: cerc — cercus; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar 0.1 mm.

Рис. 1–4. *Empis (Pachymeria) vanadzoriensis* Shamshev, **sp.n.**: 1 — габитус самца (голотип), вид сбоку; 2 — постабдомен самца, вид сбоку; 3 — терминалии самца (голотип), вид снизу; 4 — габитус самки, вид сбоку. Сокращения: cerc — церк; epand — эпандрий; hypd — гипандрий; ph — фаллус. Масштаб 0,1 мм.

postgena faintly greyish pruinose, rather subshiny (especially frons); face densely greyish pruinose on about upper half and shiny on lower half, clypeus and gena shiny; black setose. Eyes dichoptic, with ommatidia equally small. Frons very narrow on upper part, slightly narrower than anterior ocellus diameter, somewhat broadened above antennae; bare. Face moderately broad, almost parallel-sided, bare. Ocellar triangle with 2 moderately long setae and some setulae posteriorly. Occiput with strong, moderately long postoculars and numerous similar setae laterally; postgena with moderately long hair-like setae. Antenna with scape and pedicel brown, postpedicel (except extreme base) and stylus black; scape rather tubular, about 1.5X longer than subglobular pedicel, both with short setulae; postpedicel elongate-conical, narrow, concave ventrally on about distal 2/3, nearly 3X as long as basal width; stylus short, nearly 3X shorter than postpedicel. Proboscis short, with labrum only slightly (1.2–1.3X) longer than head height; palpus short, mostly brownish, with yellow apex; with black, scattered setulae.

Thorax black in ground-colour, black setose; prothoracic sclerites (including postpronotal lobe), notopleural depression and entire mesopleuron densely greyish pruinose; scutum (including postalar tubercle) and scutellum shiny. Proepisternum with 6–7 moderately long, fine setae on lower part and 3–4 similar setae on upper part. Prosternum bare. Antepronotum with 8 moderately long strong setae on each side. Postpronotal lobe with 1 strong, long seta posteriorly and numerous additional short setae. Mesonotal setae: acrostichals short, thin, arranged in 2 close, irregular rows, lacking on prescutellar depression; dorsocentrals mostly similar to acrostichals, uniserial anteriorly and posteriorly, arranged in 2 irregular rows and somewhat laterocline on middle part of mesoscutum, 2 prescutellar pairs long; 1 moderately long and weak presutural intra-alar (close to inner margin of postpronotal lobe), 0 presutural supra-alar, 3 strong notopleurals (anterior seta much shorter), 2 postsutural supra-alars (anterior seta weaker and shorter), 1 very long and 1 minute postalars, 4 scutellars (lateral setae not much shorter); in addition, supra-alar space with some setulae and notopleuron with tuft of short hair-like setulae anteriorly. Laterotergite with numerous setae. Anterior and posterior spiracles yellow.

Legs moderately long, rather robust, subshiny (except noted), black setose; coxae densely pruinose (except shiny base of fore coxa). Leg colour: coxae, trochanters, mid and hind femora brown (except noted); fore femur rather yellowish brown close to base and getting paler toward apex, mid and hind femora narrowly brownish yellow near apex; tibiae reddish yellow; basitarsus of all legs yellow, tarsomeres 2–5 getting gradually darker from brownish at apex of tarsomere 2 to entirely brownish tarsomere 5. Coxae and trochanters with simple setae; fore coxa almost bare anteriorly, only with scattered minute setulae close to apex, row of moderately long strong setae on outer side. Fore femur with short, strong setae posterodorsally, minute anteroventral and posteroventral setulae. Fore tibia with short, intermixed finer and stronger, anterodorsal and posterodorsal setae over entire length. Fore basitarsus slender, with stronger setulae anteroventrally. Mid femur covered with dense, short to moderately long, fine setae ventrally. Mid tibia with 3–4 anterodorsal and 3–4 posterodorsal setae of different lengths (besides circlet of moderately long subapicals); pubescent ventrally. Mid basitarsus slender; with some spinule-like setae ventrally. Hind femur slightly broader than fore and mid femora; with row of anterodorsal setae, which are short close to base but getting longer and much stronger toward apex (rather biserial on about middle), 1 long and strong subapical anterior seta, row of 4–5 strong antero-

ventral setae on about apical 1/3; covered with dense short, fine setae ventrally. Hind tibia simple, with 3–5 anterodorsal and 3–4 posterodorsal setae, no strong ventral setae; no seta in posteroapical comb. Hind basitarsus slender; with some spinule-like setae ventrally. Tarsomere 4 of all legs very short.

Wing membrane faintly, uniformly, brownish infusate, veins mostly brownish, brownish yellow close to base; costal cell as well as cells br, bm and cua with inconspicuous microtrichia at basal part. Veins R_5 and M_1 gently divergent toward wing margin, radial fork acute [in paratype male right wing without radial fork], R_5 meeting costa far from wing apex; anal vein (CuA+CuP) reaching wing margin but weakened on about middle; apical portion of M_4 nearly 3X longer than its middle portion. Cell dm short, with strongly elongate apex. Pterostigma brownish. Basal costal seta long, strong (nearly as long as dorsocentral prescutellar seta). Axillary excision very acute. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, black setose. Pruinescence: tergites almost entirely shiny, only tergite 1 faintly greyish pruinose laterally; sternites subshiny, faintly greyish pruinose. Chaetotaxy: tergites mostly with scattered, short, weak setae somewhat longer on tergites 1–2 laterally; tergite 1 with very long posteromarginal setae laterally, on remaining tergites posteromarginal setae becoming gradually shorter from tergite 2 to tergite 8; sternite 1 bare, sternites 2–7 with scattered hair-like setae, sternite 8 with very long posteromarginal setae. Sternite 7 very narrow, weakly sclerotised. Segment 8 with separated sclerites; tergite 8 narrow, sternite 8 enlarged, produced anteriorly beneath segments 6 and 7, oriented toward below.

Terminalia (Figs 2, 3) moderately large, black setose; cerci and epandrium brownish to yellowish brown, subshiny. Epandrial lamella with lower posterior angle very acute and greatly produced downwards (lateral view); bearing scattered, moderately long, marginal setae on lower margin. Hypandrium divided medially, represented by short lateral arms. Phallus very long, exposed in basal portion, mostly very thin, hair-like, somewhat thickened just on basal curvature, gently curved. Ejaculatory apodeme oriented vertically; moderately large, with lateral wings. Cercus small, rather subtriangular (lateral view), with internal subtriangular projection; covered with short setulae.

Female (Fig. 4). Similar to male except the following characters. Dichoptic, frons broad, parallel-sided, with minute marginal setulae. Legs without pennate setae. Fore femur with 5–6 very short, closely set, spine-like setae on about middle anterodorsally. Fore tibia with shorter setae dorsally. Mid femur with much sparser setae ventrally; anteroventral and posteroventral setae stronger and arranged in almost distinct rows on about apical 2/3. Hind femur strongly thickened, evenly concave dorsally; shiny and almost bare ventrally, only with scattered minute setulae; almost complete row of short spine-like anteroventral setae (finer closer to base). Abdomen shiny. Cercus brown, short, covered with dense hair-like setulae.

DISTRIBUTION. Armenia.

ETYMOLOGY. The epithet refers to the type locality of the new species.

REMARKS. The new species can be readily distinguished from other species assigned to the *Empis* subgenus *Pachymeria* by bare prosternum and shiny mesonotum. The female of the new species differs from females of other species by an armature of fore femur bearing 5–6 very short, closely set, spine-like setae on about middle anterodorsally. Within the key to *Empis* (*Pachymeria*) species of the Palaearctic [Shamshiev, Barták, 2019] the new species would run to *E. obscuripes* (Loew, 1873) and *E. contigua* (Loew, 1864) (*E. tumida* group).

KEY TO SPECIES OF *EMPIS* (*PACHYMERIA*) FROM ARMENIA

1. Male2
– Female4
2. Prosternum bare. Mesonotum shiny. Epandrial lamella with lower posterior angle very acute and greatly produced downwards *E. (P.) vanadzoriensis* **sp.n.**
– Prosternum setose. Mesonotum densely pruinose. Epandrial lamella small, dolabriform 3
3. Frons below ocellar triangle very narrow, eyes usually almost touching. Abdominal sternites shiny. Halter yellow *E. (P.) obscuripes* (Loew)
– Frons below ocellar triangle broader, at least twice as broad as anterior ocellus. Abdominal sternites pruinose. Halter with yellow stem and dusky to brownish knob *E. (P.) tumida* Meigen
4. Prosternum bare. Mesonotum shiny. Fore femur bearing 5–6 very short, closely set, spine-like setae on about middle anterodorsally *E. (P.) vanadzoriensis* **sp.n.**
– Prosternum setose. Mesonotum densely pruinose. Fore femur with short, fine setulae only 5
5. Halter yellow *E. (P.) obscuripes* (Loew)
– Halter with yellow stem and dusky to brownish knob *E. (P.) tumida* Meigen

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