

## Dance flies (Diptera: Empididae) in A.P. Fedtschenko's Collection from Turkestan: *Empis* subgenus *Polyblepharis*

### Мухи-толкунчики (Diptera, Empididae) в коллекции А.П. Федченко из Туркестана: *Empis* (подрод *Polyblepharis*)

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КЛЮЧЕВЫЕ СЛОВА. Diptera, Empididae, новый вид, А.П. Федченко, Средняя Азия.

**ABSTRACT.** The material on dance flies of the subgenus *Polyblepharis* Bezzi of the genus *Empis* Linnaeus (Diptera: Empididae) from the collection taken by the Russian naturalist and explorer A.P. Fedtschenko in Middle Asia (1869–1871) was examined. Ten species were found, of which five species are described as new: *Empis* (*Polyblepharis*) *fandariensis* **sp.n.** (Tajikistan), *E. (P.) fedtschenkoi* **sp.n.** (Tajikistan, Uzbekistan), *E. (P.) hirsutitarsis* **sp.n.** (Kyrgyzstan), *E. (P.) sogdiensis* **sp.n.** (Tajikistan, Uzbekistan), *E. (P.) turkestanica* **sp.n.** (Kazakhstan, Kyrgyzstan, Uzbekistan).

**РЕЗЮМЕ.** Изучен материал по мухам-толкунчикам подрода *Polyblepharis* Bezzi рода *Empis* Linnaeus (Diptera: Empididae) из коллекции, собранной Российским натуралистом и путешественником А.П. Федченко в Средней Азии (1869–1871). Найдено десять видов, из которых пять видов описываются как новые: *Empis* (*Polyblepharis*) *fandariensis* **sp.n.** (Таджикистан), *E. (P.) fedtschenkoi* **sp.n.** (Таджикистан, Узбекистан), *E. (P.) hirsutitarsis* **sp.n.** (Кыргызстан), *E. (P.) sogdiensis* **sp.n.** (Таджикистан, Узбекистан), *E. (P.) turkestanica* **sp.n.** (Казахстан, Кыргызстан, Узбекистан).

### Introduction

This paper is the second report on flies of the family Empididae collected by the Russian naturalist and explorer A.P. Fedtschenko during his 1869–1871 Expedition in Turkestan (a historical region partly coinciding with an area now commonly called Central Asia or Middle Asia) [Shamshev, 2023]. It includes material on the subgenus *Polyblepharis* Bezzi, 1909 of the genus *Empis* Linnaeus, 1758.

*Polyblepharis* has a Holarctic distribution. However, in North America, an exact number of described species of the subgenus remains unclear. In Eurasia, *Polyblepharis* comprises 81 species and the subgenus is especially diverse in Middle Asia (21 species) [Chvála, 1999; Çiftçi et al., 2012; Shamshev, 2003, 2006, 2018, 2019; Shamshev, Grootaert, 2005]. Species of *Polyblepharis* prefer open areas inhabiting warm steppe to semi-desert biotopes (at spring and at the beginning of summer), high mountain alpine meadows, etc. [Chvála, 1999].

The A. Fedtschenko's collection contains ten species of *Polyblepharis*, including five new species described herein. Therefore, now *Polyblepharis* comprises 86 species in Eurasia, of which 26 species are recorded in Middle Asia.

### Material and Methods

This study is primarily based on material deposited in the Zoological Museum of Moscow University, Moscow, Russia (ZMMU). In addition, some number of specimens housed in the Siberian Zoological Museum, Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Novosibirsk (SZMN) and the Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZISP) were added to the type series of the new species.

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. Label data for primary types are cited in full with original spelling, punctuation, and date. Label lines are delimi-

ted 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. The repository of specimens is given in parentheses (ZMMU, when omitted). Some comments to A. Fedtschenko's labels were provided in our previous paper [Shamshev, 2023]. 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 *Polyblepharis* Bezzi, 1909

*Empis (Polyblepharis) fandariensis* Shamshev, **sp.n.**  
 Figs 1–5.

**MATERIAL EXAMINED.** Holotype, ♂, labels as in Fig. 4, [Tajikistan] small bluish green label only with number 19. [= 19.vi.1869] [A. Fedtschenko] // [printed in Cyrillic, Russian, pre-1918 orthography] Fan [= Fan Darya River] (ZMMU).

**Paratypes.** Tajikistan: same data as holotype (2 ♂♂, 2 ♀♀, ZMMU; 2 ♂♂ (both dissected), 1 ♀, ZISP).

**DIAGNOSIS.** Mid-sized species (body about 5 mm); male eyes holoptic; proboscis with labrum nearly 2X longer than eye height; palpus mostly brownish in male, yellow in female; mesoscutum with 3 brownish vittae along rows of acrostichal and dorsocentral setae; acrostichal setae irregularly 2–3-serial, presutural dorsocentrals irregularly 3–4-serial, laterotergite with pale setae; abdominal tergites 2–6 extensively shiny (lateral view); female mid and hind femora with flattened setae.

**DESCRIPTION.** Body length 4.8–5.1 mm, wing 5.3–5.5 mm. **Male** (Fig. 1). Head capsule regions black, mostly densely greyish pruinose, face along lower margin and clypeus shiny. Eyes holoptic, upper ommatidia enlarged. Frons represented by small subtriangular space just below ocellar triangle and larger space above antennae, bare. Face broad, bare. Ocellar setae black, long, fine. Occiput covered with numerous, long, fine, black setae (including postoculars); postgena with pale, long, hair-like setae. Antenna with scape and pedicel brownish, postpedicel and stylus black; scape nearly 1.5X longer than subglobular pedicel, both with short setulae; postpedicel nearly 3X as long as basal width; stylus nearly as long as postpedicel basal width. Proboscis with labrum brownish, paler apically; nearly 2X longer than eye height; palpus short, mostly brown, rather yellowish brown at tip; bearing long, black setae.

Thorax black in ground-colour, mostly densely greyish pruinose; mesoscutum with 3 brownish, indistinct vittae along rows of acrostichal and dorsocentral setae. Prosternum bare. Proepisternum with tuft of numerous pale, fine setae on lower part, bare on upper part. Anteprototum with 4–5 black, short setae dorsally and numerous pale, long, fine setae laterally.

Postpronotal lobe with 1 long, strong, black and numerous short, fine, black and pale setae. Mesonotal setae black (except noted): acrostichals arranged in 2–3 irregular rows (often entirely biserial), rather long, fine, absent on prescutellar depression; presutural dorsocentral setae arranged in 3–4 irregular rows, similar to acrostichals; postsutural dorsocentrals sparser, becoming uniserial, longer and stronger towards scutellum, 1 pair of prescutellars longest; 1 rather fine presutural supra-alar; 3 notopleurals, 2 postsutural supra-alars (anterior seta shorter and finer), 1 long and 1 minute postalars, 4 scutellars (setae of lateral pair slightly shorter); in addition, supra-alar face with numerous black and pale setulae, notopleuron with similar pale setulae anteriorly. Laterotergite with numerous pale setae. Anterior and posterior spiracles pale.

Legs with coxae densely greyish pruinose, remaining podomeres subshiny. Legs colour: almost entirely brown, usually only hind femur at apex and hind tibia near base narrowly brownish yellow (sometimes hind femur entirely brownish). Legs mostly black setose. Fore coxa covered with pale, dense, hair-like setae (2–3 stronger, black, subapical setae); hind trochanter with numerous pale, short, fine setae, 4–5 brownish to black, long, strong, subapical setae ventrally and 1–2 similar setae dorsally. Fore and mid femora whitish pubescent ventrally; hind femur with indistinct ventral pubescence only closer to apex. Fore femur with rows of fine anteroventral and posteroventral setae, which are pale on about basal half, short closer to apex and becoming longer towards base (longest setae nearly as long as femur width); dense, long, fine setae posteriorly (pale closer to base). Fore tibia with 4–6 short anterodorsal setae and subequal to them in length, fine setae posterodorsally (2–3 setae on apical half usually stronger). Fore basitarsus slender; with 2 short anterodorsal setae; anteroventral and posteroventral spine-like setae. Mid femur with rows of subequally long anteroventral and posteroventral setae; additional fine setae near extreme base and spinule-like ventral setulae on basal half; 1 anterior subapical seta. Mid tibia with 4–5 anterodorsal and 4–5 posterodorsal long setae; stronger setulae closer to apex ventrally. Mid tarsus with anteroventral and posteroventral, spine-like setae. Hind femur only slightly broader than mid femur; with 2 anterodorsal setae near apex, 1 anterior subapical seta; complete row of moderately long strong anteroventral setae (longest setae at most half as long as femur width); row of short posteroventral setae intermixed with additional fine setae; dense ventral spinule-like setulae. Hind tibia slightly, gently thickened towards apex; bearing rows of 4–5 moderately long anterodorsal and posterodorsal setae; simple setulae ventrally; no seta in posteroapical comb. Hind tarsomeres rather slightly thickened; basitarsus with 2–3 short anterodorsal and posterodorsal setae; spine-like setae ventrally.

Wing membrane faintly brownish infusate; entirely covered with microtrichia; veins mostly brownish, well-sclerotized (except noted). Veins  $R_5$  and  $M_1$  divergent towards wing margin; radial fork acute;  $R_5$  meeting costa before wing apex;  $CuA+CuP$  (anal vein) complete but weakened beyond middle. Cell  $dm$  rather short, with elongate apex; apical portion of  $M_4$  nearly 3.5X longer than its middle portion. Pterostigma absent. Basal costal seta present, short. Anal lobe well-developed; axillary incision acute but closer to 90°. Squama yellow, pale fringed. Halter pale yellow.

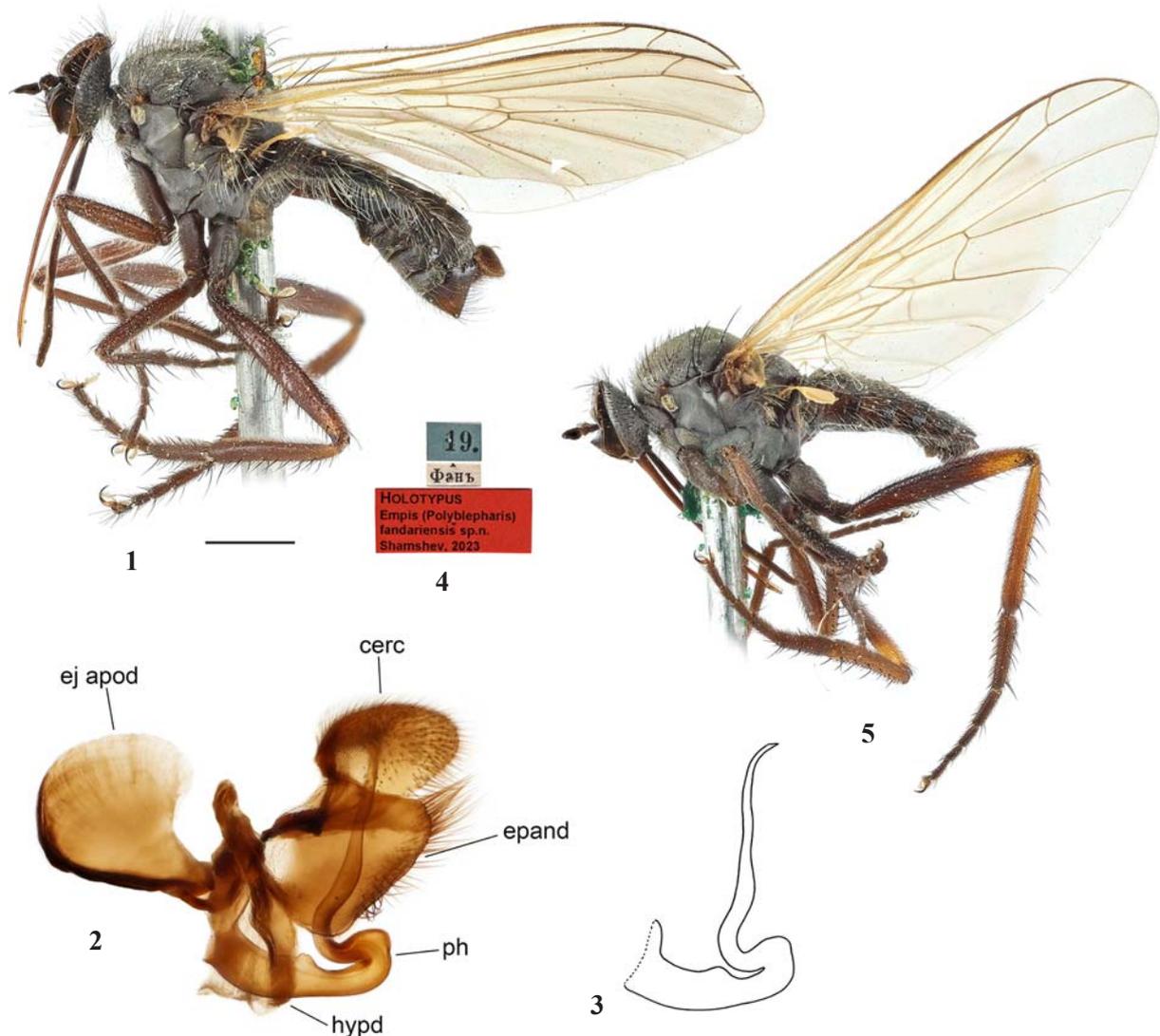
Abdomen entirely dark-brown. Tergite 1 entirely greyish pruinose; tergites 2–6 mostly shiny, narrowly brown pruinose antero-dorsally (dorsal view); tergite 7 with brownish, slightly iridescent pruinosity dorsally and greyish pruinose laterally; tergite 8 invisible; tergite 1 with pale setae, tergites 2–6 with black setulae dorsally and numerous long pale setae

laterally, slightly stronger lateral posteromarginal setae pale yellow; tergite 7 with scattered pale setulae laterally. Sternites 1–7 densely greyish pruinose, with pale setae, sternite 1 bare; sternite 8 contrastingly subshiny, mostly with black setae. Pregenital segments: segment 6 unmodified; tergite 7 with straight posterior margin, slightly humped mid-dorsally (lateral view); sternite 7 simple; pleuron 7 unmodified; segment 8 with separated tergite and sternite; tergite 8 represented by two subtriangular sclerites separated mid-dorsally, with several short setae posteriorly; sternite 8 scoop-shaped, unmodified anteriorly, with 2 digitiform, short, lateral projections on each side closer to upper margin anteriorly (posterior projection slightly longer).

Hypopygium (Fig. 2) moderately large; epandrium black; cerci pale brown to yellowish brown; hypandrium invisible; phallus brownish yellow. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella subtriangular (lateral view), with broadly rounded apex; bearing dark

fine setae more numerous along lower margin and dense at apex. Hypandrium separated from epandrium; mostly membranous, narrowly sclerotized along margin, with truncate apex, narrowly separated on apex; bare; gonocoxal apodeme small. Cerci separated with each other and from epandrium; cercus egg-shaped, with posterior margin extending beyond apex of epandrial lamella, undivided, with smoothed inner margin; covered with dark setulae. Phallus (Fig. 3) almost entirely hidden, only medial curvature and, often, short apical portion visible; zigzag bent; its basal portion almost horizontal, mostly thick, with mid-dorsal tubercle; apical portion long, almost vertical and straight, slightly curved on apex (with its tip pointing almost to rear), becoming gently slenderer towards apex. Ejaculatory apodeme very large, extended far beyond basal curvature of phallus, with lateral wings.

**Female** (Fig. 5). Similar to male except as follows. Dichoptic, ommatidia equally small. Frons very broad, broader than distance between outer margins of posterior ocelli; with



Figs 1–5. *Empis (Polyblepharis) fandariensis* Shamshev, **sp.n.**: 1 — male, holotype, habitus; 2 — hypopygium; 3 — phallus; 4 — holotype labels; 5 — female, habitus; 1–3, 5 — lateral view. Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar is 1 mm.

Рис. 1–5. *Empis (Polyblepharis) fandariensis* Шамшев, **сп.н.**: 1 — самец, голотип, габитус; 2 — гипопигий; 3 — фаллус; 4 — этикетки голотипа; 5 — самка, габитус; 1–3, 5 — сбоку. Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус. Шкала = 1 мм.

marginal setulae. Occiput with sparser and stronger setae. Palpus yellow, with scattered short setae. Mesoscutum with shorter acrostichal and dorsocentral setae; presutural supra-alar space only with black fine setae. Legs colour: mid and hind femora narrowly yellow at apex; mid and hind tibiae rather brownish yellow (the former generally slightly darker). Hind trochanter only with pale fine setae ventrally. Fore leg with simple setae (similar pattern but somewhat shorter than in male). Mid femur with short, fine anteroventral setae longer closer to base; moderately long, flattened setae on about apical 2/3 posteroventrally. Mid tibia with 2–3 anteroventral and 1–2 posteroventral setae. Hind femur with fringe of short, dense, slightly flattened setae posteroventrally (except extreme base). Hind tibia with 1–2 anteroventral setae. Abdomen with shorter setae, only pale setose; tergites mostly shiny, narrowly greyish pruinose along lateral margin (in addition, tergite 2 narrowly pollinose anteriorly; tergite 1 entirely pruinose); sternite 8 subshiny. Cercus very short, covered with dense, erect setulae.

**DIFFERENTIAL DIAGNOSIS.** The new species is very similar to *Empis tajikistanica* Chvála, 1999. *Empis fandariensis* sp.n. differs from *E. tajikistanica* by shorter proboscis (labrum nearly 2X longer than head height) and extensively shiny abdominal tergites 2–6 (lateral view). In addition, the male of the new species has sparser and finer subapical, ventral setae on hind trochanter and rounded cerci. In *E. tajikistanica* the labrum of proboscis is nearly 3X longer than head height and abdominal tergites 2–6 extensively greyish pruinose (lateral view). The male of *E. tajikistanica* has a tuft of strong, black, ventral setae on the hind trochanter and somewhat pointed cerci [Chvála, 1999: 210, fig. 28]. The female of *E. fandariensis* sp.n. differs from the female of *E. tajikistanica* primarily by somewhat pennate mid and hind femora.

**ETYMOLOGY.** The epithet refers to the type locality of the new species, an area near Fan Darya River (Tajikistan).

**DISTRIBUTION.** Tajikistan.

*Empis (Polyblepharis) fedtschenkoii* Shamshev, sp.n.  
Figs 6–9.

**TYPE MATERIAL.** Holotype, ♂, labels as in Fig. 9, [Tajikistan] small bluish green label only with number 19. [= 19.vi.1869] [A. Fedtschenko] // [printed in Cyrillic, Russian, pre-1918 orthography] Fan [= Fan Darya River] (ZMMU).

**Paratypes. Tajikistan:** same data as holotype [A. Fedtschenko] (1 ♂, 1 ♀; 1 ♂, dissected, ZISP); Yagnob, 21.vi.1869 [A. Fedtschenko] (1 ♂, ZMMU); Turkestanskiy kray, 2.vi.1869 [A. Fedtschenko] (1 ♂, ZMMU); Novabad, Komarou Gorge, 7–8.vi.1986, M. Dolgovskaya (2 ♂♂, 1 ♀, ZISP); Tavildara District, village Dekhi-Kolon, 38,65°N 70,52°E, 1800–2000m, 24.v.2016, coll. A. Barkalov (3 ♂♂, SZMN; 1 ♂, 1 ♀, ZISP); same locality, 26.v.2016 (1 ♂, SZMN); 15.v.2016 (1 ♂, SZMN); 17.v.2016 (2 ♂♂, SZMN); Tavildara District, village Sary-Dzhangal, 38,66°N 70,49°E, 1826–1945m, 25.v.2016, coll. A. Barkalov (1 ♂, SZMN); Varzab Gorge, 3 km NE of village Kalon, 2440m, 39,06°N 68,87°E, 30.vi.2017, coll. A. Barkalov (1 ♀, SZMN). **Uzbekistan:** Salbar, valley of Ak-su, E of Bukhara, 31.v.1897, Kaznakov (1 ♂, ZISP).

**DIAGNOSIS.** Mid-sized species (body length 6–6.5 mm); male eyes holoptic; labrum nearly 1.5X longer than eye height, palpus yellow to brownish yellow on apical half; prosternum setose; mesoscutum with 4 distinct vittae, acrostichal and dorsocentral setae multiserial, laterotergite with pale setae; legs entirely brown, fore and mid basitarsi long setose; abdomen mostly pale setose, tergites 2–5 shiny dorsally; female hind femur flattened, somewhat convex dorsally and straight ventrally, with slightly flattened setae.

**DESCRIPTION.** Body length about 5.8–6.4 mm, wing 5.9–6.5 mm. **Male** (Fig. 6). Head capsule regions mostly

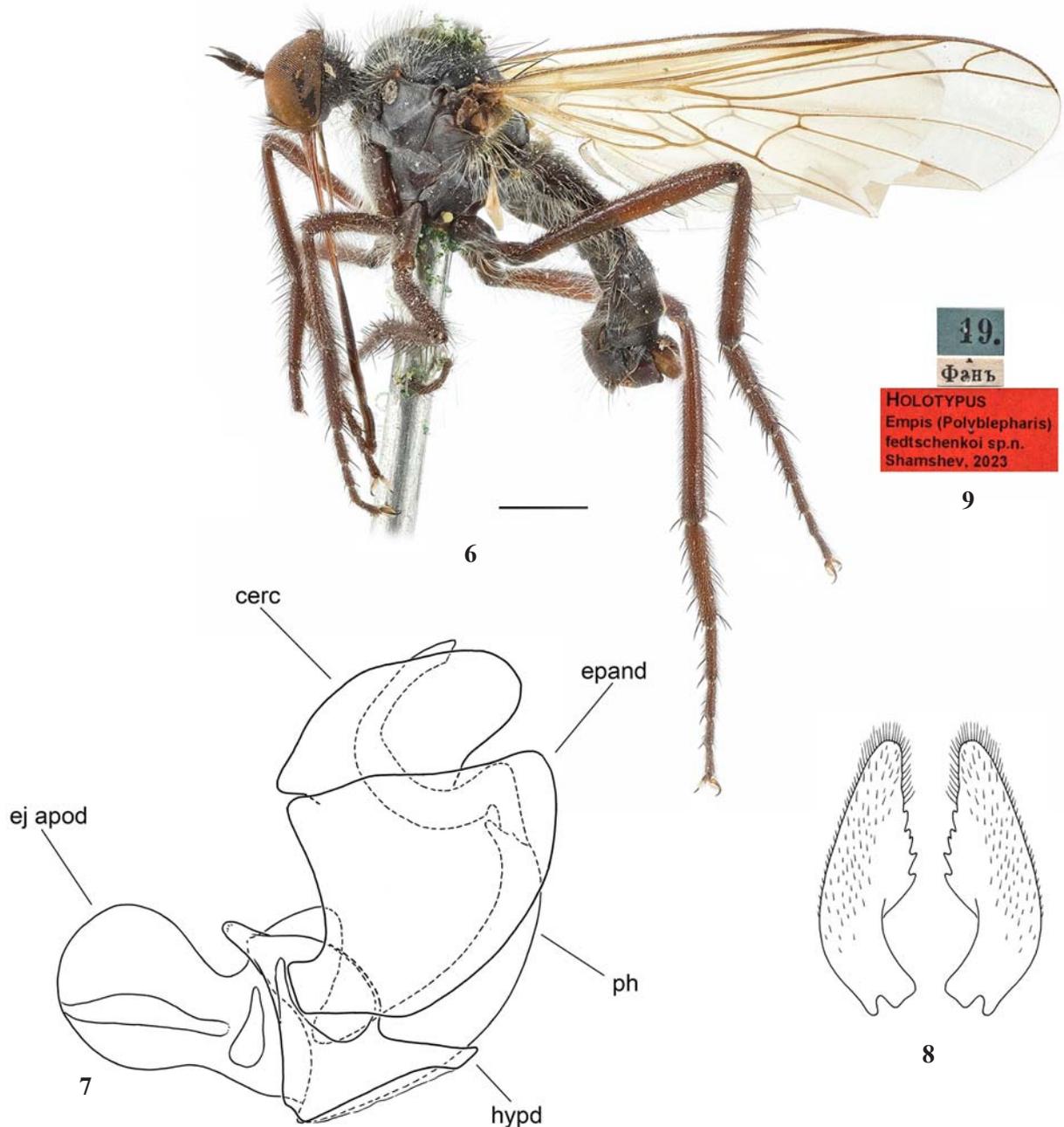
densely greyish pruinose; face on lower margin and entire clypeus shiny; head setation mostly black. Holoptic, upper ommatidia enlarged. Frons represented by very small subtriangular space just below ocellar triangle and somewhat larger space above antennae; bare. Face broad, bare. Ocellar setae undifferentiated; ocellar triangle with several subequally short, hair-like setae. Occiput covered with long, dense, fine setae (including postoculars); postgena with pale hair-like setae. Antenna with scape and pedicel light brown, postpedicel and stylus black; scape nearly 1.5X longer than subglobular pedicel, both with moderately long setulae; postpedicel 3X as long as basal width, with straight margins; stylus slightly longer than postpedicel basal width. Proboscis with labrum brownish yellow; nearly 1.5X longer than eye height; palpus short, yellowish to brownish yellow on about apical half, brownish towards base; bearing numerous long, black, fine setae.

Thorax almost entirely black in ground-colour, postalar tubercle somewhat yellowish brown translucent; mostly densely greyish pruinose; mesoscutum with some bluish green tinge, 4 distinct brown vittae (lateral vittae slightly broader). Prosternum with 3–4 long pale setae near apex on each side. Proepisternum with tuft of numerous, pale, fine setae on lower part and several similar setae on upper part. Antepronotum with several short to moderately long, strong, black setae dorsally and long, fine, pale setae laterally. Postpronotal lobe covered with pale, dense, long, fine setae; postpronotal seta undifferentiated, at most 1–4 black setae of the same robustness and length as surrounding pale setae. Mesonotal setae: acrostichals arranged in 4–5 irregular rows, long, fine, dense, usually intermixed black and pale anteriorly, absent on prescutellar depression, separated from dorsocentrals by narrow space; presutural dorsocentral setae multiserial and not separated from setae of presutural supra-alar space, similar to acrostichals, pale anteriorly at least near postpronotal lobe, postsutural dorsocentrals arranged in 2–3 irregular rows, sparser, becoming longer and stronger towards scutellum, 1–2 very long strong prescutellars; presutural supra-alar seta undifferentiated, at most 1–2 black setae of the same robustness and length as surrounding pale setae; 4 notopleurals, 1 postsutural supra-alar, 1 long and 1 minute postalar, 4 scutellars (setae of lateral pair slightly shorter); in addition, supra-alar space entirely covered with dense fine setae (similar to dorsocentrals and mostly pale before suture), numerous long, fine, pale setae on anterior half of notopleuron. Laterotergite with numerous paler setae. Anterior and posterior spiracles yellow.

Legs with coxae densely greyish pruinose, remaining podomeres subshiny; mostly black setose. Legs colour: entirely dark brown to black. Coxae and trochanters mostly with pale hair-like setae, a few black stronger setae (fore coxa sometimes only with pale setae). Fore femur bare along ventral face; with moderately long, fine setae anteroventrally (pale on about basal half); row of 5–7 strong antero-anteroventral setae; numerous fine, long (longer than femur width), mostly pale setae posteroventrally and posteriorly. Fore tibia with row of short, rather strong, anterodorsal setae; covered with long, dense, mostly fine setae posterodorsally and posteriorly (longest setae nearly 1.5X longer than tibia width, somewhat stronger near apex). Fore basitarsus slightly thickened towards base but not broader than fore tibia at apex, with 3–4 short strong anterodorsal setae; dense, intermixed fine and strong, long setae posterodorsally and posteriorly (as on fore tibia apically); anteroventral and posteroventral spine-like setae; long, strong setae of subapical circlet; tarsomere 2 with spinule-like anteroventral and posteroventral setulae. Mid femur with fine, moderately long setae ventrally (pale on about basal half), similar slightly longer setae near apex

posteriorly; whitish pubescent ventrally. Mid tibia with rows of long anterodorsal and posterodorsal strong setae (about 7 setae per row, longest setae nearly 1.5X longer than tibia width); 2–3 rather short anteroventral and row of similar posteroventral setae. Mid basitarsus slender; with several long, strong setae dorsally; anteroventral and posteroventral spine-like setae; tarsomere 2 with spinule-like anteroventral and posteroventral setulae. Hind femur slender; with 4–5 moderately long, anterodorsal setae near apex; fine setulae along ventral face; anteroventral and posteroventral setae

short, mostly fine, partly pale on basal part, slightly longer, strong anteroventral setae on about apical half (number and robustness variable); no whitish ventral pubescence. Hind tibia simple, slightly narrower near base; with rows of moderately long anterodorsal and posterodorsal setae; simple setulae ventrally; very short seta in posteroapical comb. Hind basitarsus slightly thickened towards base but not broader than hind tibia at apex; several long setae dorsally; tarsomeres 1–3 with short spine-like anteroventral and posteroventral setae ventrally (longer on basitarsus).



Figs 6–9. *Empis (Polyblepharis) fedtschenkoi* Shamshev, **sp.n.**, male: 6 — holotype, habitus; 7 — hypopygium, setation of epandrium and cerci omitted; 8 — cerci; 9 — holotype labels; 6–7 — lateral view; 8 — dorsal view. Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar is 1 mm.

Рис. 6–9. *Empis (Polyblepharis) fedtschenkoi* Shamshev, **sp.n.**, самец: 6 — голотип, габитус; 7 — гипопигий, щетинки эпандрия и церок не указаны; 8 — церки; 9 — этикетки голотипа; 6–7 — сбоку; 8 — сверху. Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус. Шкала = 1 мм.

Wing membrane faintly brownish infuscate; entirely covered with microtrichia; veins mostly brownish, brownish yellow near base, well-sclerotized. Veins  $R_5$  and  $M_1$  divergent towards wing margin; radial fork acute;  $R_5$  meeting costa before wing apex;  $CuA+CuP$  (anal vein) complete (slightly weakened beyond middle). Cell  $dm$  moderately large, with strongly elongate apex; apical portion of  $M_4$  nearly 2.5X longer than its middle portion. Pterostigma pale brownish, very narrow. Basal costal seta absent. Anal lobe well-developed; axillary incision very acute. Squama yellow, pale fringed. Halter pale yellow.

Abdomen dark brown in ground colour; tergite 1 entirely densely greyish pruinose, tergites 2–5 shiny dorsally and greyish pruinose laterally (in addition, tergite 2 narrowly pruinose anteriorly); tergites 6 and 7 with spots of brown iridescent pruinosity dorsally, greyish pruinose laterally; sternites entirely greyish pruinose, slightly finer on sternite 8. Abdomen pale setose, only tergites 2–5 with strong yellow and sternite 8 with black posteromarginal setae; tergites 1–5 laterally and sternites (including sternite 1) covered with dense, long, fine setae. Pregenital segments: segment 6 unmodified; tergite 7 broadly concave posteriorly; sternite 7 with somewhat produced posterior corners; pleuron 7 with strongly sclerotised posterior margin covered with minute setulae; segment 8 with separated tergite and sternite; tergite 8 somewhat flattened, represented by two subtriangular sclerites separated mid-dorsally, with several short setae posteriorly; sternite 8 scoop-shaped, somewhat constricted anteriorly, with 2 subequal lateral projections on each side anteriorly (anterior projection close to upper margin).

Hypopygium (Fig. 7) moderately large; epandrium brown, subshiny; cerci brownish yellow (darker anteriorly); phallus yellowish brown. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella subtriangular (lateral view); with long, fine, pale setae more numerous closer to lower margin. Hyandrium separated from epandrium; mostly membranous, undivided, narrowly sclerotized along margin, with rounded apex; bare; gonocoxal apodeme small. Cerci (Fig. 8) separated with each other and from hyandrium; cercus elongate ovate (lateral view), shorter than epandrial lamella, without additional lobe dorsally, serrate on inner margin; with dark and pale setulae. Phallus almost entirely hidden; zigzag bent, strongly constricted beyond middle; basal portion thick, gently curved and becoming narrower distad; apical bend portion semicircular, nearly of uniform thickness, with its tip pointing to rear. Ejaculatory apodeme moderately large, extended far beyond basal curvature of phallus, with lateral wings.

**Female.** Similar to male except as follows. Eyes dichoptic, ommatidia equally small. Frons broad, parallel-sided. Ocellar triangle with 2 long, stronger and several short, fine setae. Occiput with somewhat sparser and stronger setae. Palpus mostly yellow, brownish near base. Postpronotal lobe and mesonotum with slightly shorter fine setae; postpronotal and presutural supra-alar setae usually more or less differentiated but only slightly stronger than surrounding fine setae. Legs generally shorter setose. Fore tibia with short fine setae posterodorsally and posteriorly. Fore basitarsus slender; only with simple setulae dorsally and posteriorly. Mid tibia with slightly shorter anterodorsal and posterodorsal setae; almost complete rows of similar anteroventral and posteroventral setae. Mid basitarsus without long setae dorsally. Hind femur flattened, somewhat convex dorsally and straight ventrally; with fringe of short, slightly flattened, short, dense setae almost over entire length dorsally and ventrally (setae finer near base), row of antero-

anteroventral moderately long setae. Hind tibia slightly flattened; with denser setulae dorsally and ventrally; rows of short anterodorsal and posterodorsal setae, 2–3 similar anteroventral setae on apical half. Hind basitarsus slender; without long setae dorsally. Abdomen with tergites 2–8 extensively shiny; tergite 1 entirely and tergites 2–6 narrowly laterally densely greyish pruinose; tergites covered with mostly short fine setae (longer on tergites 1–3 laterally), no stronger posteromarginal setae. Cercus brown, short, covered with dense, pale, erect setulae.

**DIFFERENTIAL DIAGNOSIS.** Within the key to the Palearctic species of *Polyblepharis* the new species would run to *Empis freidbergi* Chvála, 1999 known from Israel [Chvála, 1999]. Both species share a combination of holoptic eyes of the male, entirely black to brown legs, setose prosternum, pale setose laterotergite and undifferentiated postpronotal and presutural supra-alar setae. *Empis fedtschenko* sp.n. can be readily distinguished from *E. freidbergi* primarily by four mesoscutal vittae (versus three). In addition, the male of *E. fedtschenko* sp.n. has mostly yellowish to brownish yellow palpus (entirely black in the male of *E. freidbergi*).

Amongst species of *Polyblepharis* of the Middle Asia, setose prosternum was described only in *Empis alatauensis* Chvála, 1999. However, *E. alatauensis* differs from *E. fedtschenko* sp.n. primarily by distinct postpronotal and presutural supra-alar setae.

**ETYMOLOGY.** The specific name is a patronym in honour of the Russian naturalist and explorer Aleksey Pavlovich Fedtschenko (1844–1873).

**DISTRIBUTION.** Tajikistan, Uzbekistan.

*Empis (Polyblepharis) hirsutitarsis* Shamshev, sp.n.  
Figs 10–12.

**TYPE MATERIAL.** Holotype, ♂, labels as in Fig. 12, [Kyr-gyzstan] small bluish green label with red line and number 25. [= 25.vi.1871] [A. Fedtschenko] // [printed in Cyrillic, Russian, pre-1918 orthography] Jiptyk [alternative spelling Jiptik, ~ 39°36'N, 70°34'E, Pamir-Alay mountain system] (ZMMU).

Paratype. Same data as holotype (♂, dissected, ZISP).

**DIAGNOSIS.** Mid-sized (body length about 5.5 mm) species; male eyes holoptic; postpedicel 4X as long as basal width; labrum 1.5X longer than eye height, palpus brownish on apical 1/3; mesoscutum indistinctly vittate, acrostichal setae biserial, dorsocentrals uniserial, laterotergite with pale setae; femora extensively brownish to brownish yellow, basitarsus of all legs with long setae dorsally; abdomen pale setose, abdominal tergites 2–5 shiny, cerci yellow.

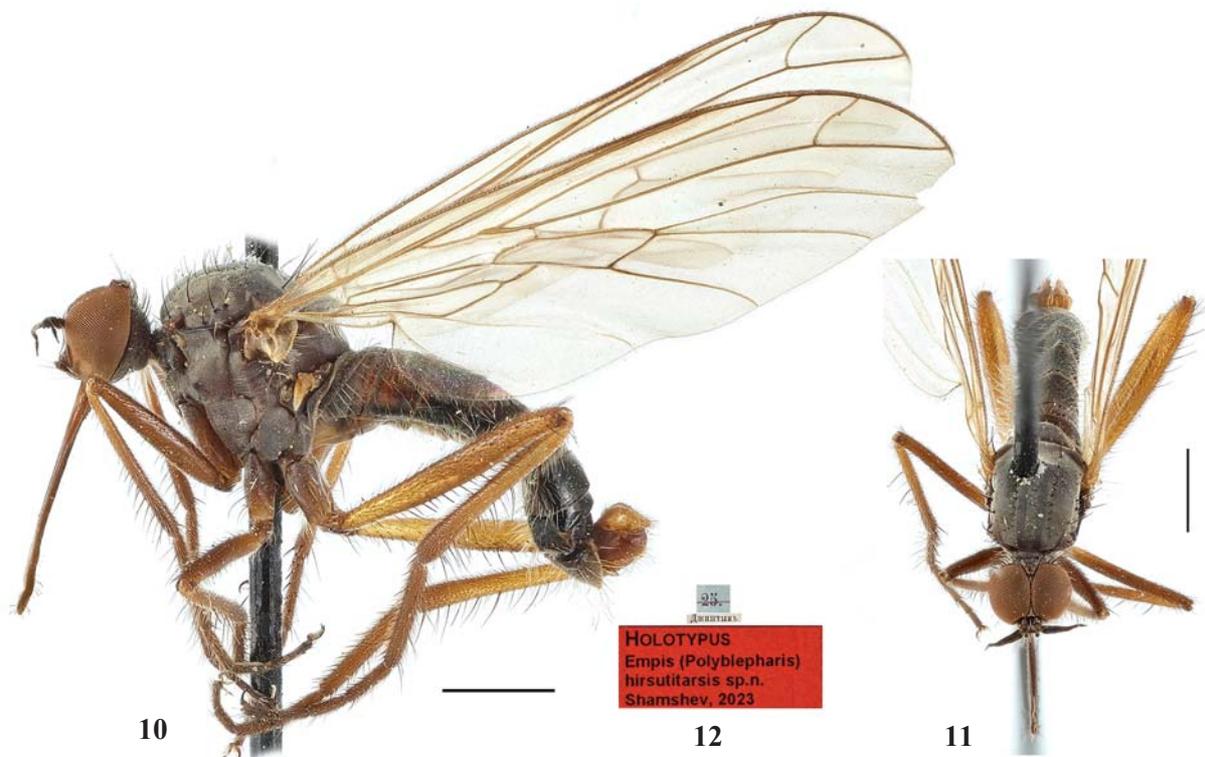
**DESCRIPTION.** Body length 5.4 mm, wing 6.1 mm (holotype). **Male** (Fig. 10). Head capsule regions black, mostly densely greyish pruinose, face along lower margin and clypeus shiny. Holoptic, upper ommatidia enlarged. Frons represented by very small subtriangular space just below ocellar triangle and somewhat larger space above antennae, bare. Face broad, bare. Ocellar setae black, long, fine. Postocular setae black, long and strong on upper portion and short on lower portion; occiput with almost regular transverse row of long, strong mostly black setae (some lateral setae brownish yellow to pale); postgena with pale, mostly fine setae. Antenna with scape and pedicel brownish, postpedicel and stylus black; scape nearly 1.5X longer than subglobular pedicel, both with short setulae; postpedicel 4X as long as basal width; stylus nearly 2X longer than postpedicel basal width. Proboscis with labrum brownish, paler apically; nearly 1.5X longer than eye height; palpus short, yellowish brown on about basal 2/3, brown on apical 1/3; bearing sparse, long, mostly pale, fine setae (1 dark subapical seta).

Thorax almost entirely brown in ground-colour, postalar tubercle somewhat yellowish brown translucent; mostly densely greyish pruinose and black setose (except noted); mesoscutum with 4 brownish, very indistinct vittae (Fig. 11). Prosternum bare. Proepisternum with tuft of pale, fine setae on lower part, bare on upper part. Anteprepronotum with 2–3 black, short, strong and 2–3 pale finer setae. Postpronotal lobe with 1 long, black seta and several pale and dark setulae anteriorly. Mesonotal setae: acrostichals irregularly biserial, short, fine, absent on prescutellar depression; dorsocentral setae uniserial, presuturals slightly longer than acrostichals, postsuturals becoming longer towards scutellum, 2 pairs of long, strong prescutellars; 1 long presutural supra-alar; 3 notopleurals, 1 postsutural supra-alar (with 1 short, fine seta anteriorly), 1 long and 1 minute postalar, 4 scutellars (setae of lateral pair slightly shorter); in addition, some pale setulae present on anterior half of notopleuron. Laterotergite with numerous pale to pale yellow setae. Anterior and posterior spiracles pale.

Legs with coxae densely greyish pruinose, remaining podomeres subshiny; mostly black setose, coxae with fine pale and stronger black setae. Legs colour: coxae and trochanters brownish; fore femur entirely brownish, mid femur mostly brownish (narrowly brownish yellow near base), hind femur yellowish on about basal 1/3 and rather brownish yellow on apical 2/3; fore and mid tibiae yellowish near base and becoming gradually darker towards brownish apex, hind tibia mostly yellowish (brownish at apex); tarsi brown. Coxae and trochanters with simple setae. All femora whitish pubescent ventrally (more distinct on mid and hind femora). Fore femur with rows of minute, fine anteroventral and similar, somewhat longer posteroventral setae. Fore tibia with rows of

anterodorsal and posterodorsal setae, which are short on about basal 1/3 and moderately long on about apical 2/3 (longest setae lightly longer than tibia width). Fore basitarsus slender; with moderately long setae dorsally (as fore tibia), scattered anteroventral and posteroventral spine-like, short setae; tarsomere 2 with slightly longer setulae dorsally, bearing anteroventral and posteroventral spinules. Mid femur with rows of minute anteroventral and posteroventral setulae, only 3–4 short posteroventral setae near extreme apex, row of short anterodorsal setae (more distinct closer to apex). Mid tibia with numerous long, strong anterodorsal and slightly finer posterodorsal setae (at least 1.5X longer than tibia width); simple setulae ventrally. Mid tarsus as fore tarsus but basitarsus with more numerous and somewhat longer anteroventral and posteroventral spine-like setae. Hind femur slightly broader on about apical 2/3 (anterior view), on middle slightly broader than mid femur (nearly 1.3X); with row of 5–6 anterodorsal setae on about apical 1/3; anteroventral setae stronger than posteroventrals, of different lengths, short closer to base and apex, moderately long on middle part (longest setae shorter than femur maximal width); spinules on ventral face; long fine setae posteroventrally (except subapical portion). Hind tibia simple; bearing numerous long anterodorsal and posterodorsal setae; simple setulae ventrally; no seta in posteroapical comb. Hind tarsus with similar setation to mid tarsus; basitarsus slightly thickened.

Wing membrane hyaline; entirely covered with microtrichia; veins mostly brownish, well-sclerotized (except noted). Veins  $R_5$  and  $M_1$  divergent towards wing margin; radial fork acute;  $R_5$  meeting costa before wing apex;  $CuA+CuP$  (anal vein) complete (slightly weakened beyond middle). Cell dm



Figs 10–12. *Empis (Polyblepharis) hirsutitarsis* Shamshev, sp.n., male, holotype: 10–11 — habitus; 10 — lateral view; 11 — dorsal view; 12 — labels. Scale bar is 1 mm.

Рис. 10–12. *Empis (Polyblepharis) hirsutitarsis* Shamshev, sp.n., самец, голотип: 10–11 — габитус; 10 — сбоку; 11 — сверху; 12 — этикетки. Шкала = 1 мм.

moderately large, with elongate apex; apical portion of  $M_4$  nearly 2.5X longer than its middle portion. Pterostigma brownish yellow, very narrow. Basal costal seta present, moderately long. Anal lobe well-developed; axillary incision acute but closer to 90°. Squama yellow, pale fringed. Halter pale yellow.

Abdomen long cylindrical, mostly brown, covered with pale to yellow setae; sternites 1–6 somewhat paler; sternite 8 rather yellowish brown, paler closer to posterior margin. Tergite 1 entirely faintly greyish pruinose; tergites 2–5 mostly shiny, narrowly faintly greyish pruinose anterodorsally; tergites 6–7 with brownish iridescent spot dorsally, shiny laterally; tergites covered with mostly fine setae longer laterally, tergites 1–3 with hardly distinguishable, slightly stronger posteromarginal lateral setae. Sternites faintly greyish pruinose; sternite 1 bare, remaining sternites with long, fine setae. Pregenital segments: segment 6 unmodified; tergite 7 broadly concave posteriorly; sternite 7 with somewhat produced posterior corners; large, isolated, convex sclerite near posterior margin of pleuron 7 (modified posterior part of pleuron?); segment 8 with separated tergite and sternite; tergite 8 represented by two subtriangular sclerites separated mid-dorsally, with several short setae posteriorly; sternite 8 scoop-shaped, somewhat constricted anteriorly, with 2 projections on each side (anterior projection close to upper margin, small; posterior projection large, subconical).

Hypopygium moderately large; epandrial lamella mostly brownish yellow, yellow along margins; cerci yellow; hypandrium brownish yellow; phallus with basal portion brownish yellow, curved apical portion yellow. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella subtriangular (lateral view), with broadly rounded apex; bearing brownish yellow to yellow fine setae more numerous along lower margin. Hypandrium separated from epandrium; mostly membranous, undivided, narrowly sclerotized along margin, with rounded apex; bare; gonocoxal apodeme small. Cerci separated with each other and from epandrium; cercus shorter than epandrial lamella, flattened dorsally forming additional lobe, serrate on inner margin in subapical portion; with dark setulae. Phallus almost entirely hidden; zigzag bent; very thick and gently curved on basal portion, strongly constricted beyond middle; apical flexible portion semicircularly bend, thickened proximally, with its tip pointing to rear. Ejaculatory apodeme moderately large, extended far beyond basal curvature of phallus, with lateral wings.

**Female.** Unknown.

**DIFFERENTIAL DIAGNOSIS.** The new species is most similar to *E. zimini* Shamshev, 2003 sharing extensively brownish legs, pale setae of the laterotergite and abdomen as well as shiny abdominal tergites 2–5 and yellow cerci. *Empis hirsutitarsis* sp.n. can be readily distinguished from *E. zimini* primarily by brownish palpi (versus pale yellow), indistinctly vittate mesoscutum (four more or less distinct dark vittae) and long setose fore and mid basitarsi.

**ETYMOLOGY.** The epithet refers to long setose tarsi in the new species

**DISTRIBUTION.** Kyrgyzstan.

*Empis (Polyblepharis) kazakhstanica* Chvála, 1999

Chvála, 1999: 178 (♂ and ♀), fig. 15. Type locality: Kazakhstan, Tian Shan, Talasskiy Alatau, Aksu-Dzhabagly, 1200m.

**MATERIAL EXAMINED.** **Uzbekistan.** Tashkent: 24.iii.1871 (2 ♂♂), 26.iii.1871 (3 ♀♀), 27.iii.1871 (4 ♂♂), 1.iv.1871 (4 ♂♂) [A. Fedtschenko].

**REMARKS.** This species was known only by a male and a female taken from Kazakhstan [Chvála, 1999].

**DISTRIBUTION.** Kazakhstan, Uzbekistan.

*Empis (Polyblepharis) mediasiatia* Chvála, 1999

Chvála, 1999: 188 (♂ and ♀), figs 23–24. Type locality: Kazakhstan, Tian Shan, Talasskiy Alatau, Aksu-Dzhabagly, 1200m.

**MATERIAL EXAMINED.** **Uzbekistan.** Tashkent, 11.iv.1871 [A. Fedtschenko] (1 ♂, 2 ♀♀); same locality, 8.iv.1871 [A. Fedtschenko] (2 ♂♂).

**DISTRIBUTION.** Kazakhstan, Uzbekistan.

*Empis (Polyblepharis) sogdiensis* Shamshev, sp.n.

Figs 13–17.

**TYPE MATERIAL.** Holotype, ♂, labels as in Fig. 17, [printed in Cyrillic, Russian] Ziddy [39°29'N 67°57'E], S skl. [=sklon, slope] Gissarsk. khr. [=Gissarskiy khrebet, Gissar Range], Taj. [=Tajikistan] 14.vi.44, Stackelberg (ZISP, INS\_DIP\_0000623).

**Paratypes.** **Tajikistan:** same data as holotype (7 ♂♂, 1 ♀, ZISP); same locality and collector as holotype, 15.vi.1944 (1 ♂, 1 ♀, ZISP); same locality and collector as holotype, 17.vi.1944 (1 ♂, 1 ♀, ZISP); Gofilabad, upper flow of Lyucheb River, 11.vii.1940, Gussakovskij (1 ♂, dissected, ZISP). **Uzbekistan:** Sangy Dzhuman [or Sangy-juman Pass], 25.v.1869 [A. Fedtschenko] (♂, ZMMU); Takhta-Karacha Pass, 70 km S of Samarkand, 3.vi.1984, Tanasijchuk (3 ♀♀, ZISP).

**DIAGNOSIS.** Rather large species (body about 7.5 mm); male eyes dichoptic; labrum nearly 2X longer than eye height; palpus brownish to yellowish brown, usually with yellow tip; mesoscutum indistinctly vittate, acrostichal setae biserial, dorso-central setae uniserial, scutellum with 2 setae, laterotergite with brown setae; legs with coxae and femora yellow; abdomen brown, tergites extensively shiny, only tergites 1–2 with posteromarginal setae; female similar to male, legs with simple setae.

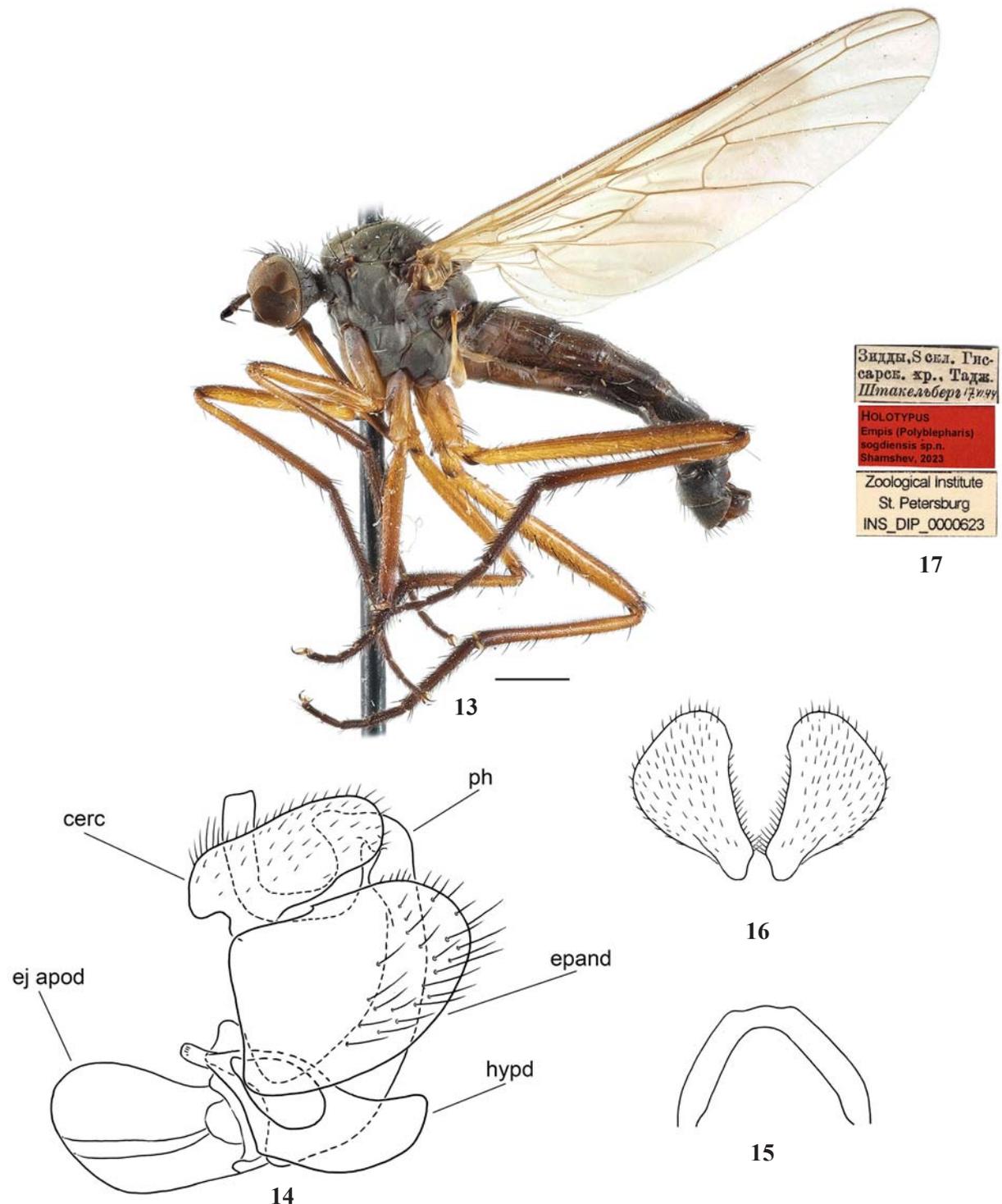
**DESCRIPTION.** Body length about 7.5 mm, wing 6.9–7.1.

**Male** (Fig. 13). Head capsule regions mostly densely greyish pruinose; face on lower margin and clypeus shiny; head setation mostly black. Dichoptic, ommatidia equally small. Frons on middle part nearly as broad as distance between inner margins of posterior ocelli, slightly divergent just below ocellar triangle and above antennae; with marginal setulae. Face broad, bare. Ocellar setae long, strong, laterocline; two pairs of posterior setulae. Occiput with row of postocular setae, including 3–5 long setae on upper portion and short, slender setae on lower portion; transverse row of long, strong setae; postgena with pale hair-like setae. Antenna with scape and pedicel light brown, postpedicel and stylus black; scape nearly 2X longer than subglobular pedicel, both with short setulae; postpedicel 3.8–4X as long as basal width, with straight margins; stylus nearly 2X shorter than postpedicel basal width. Proboscis with labrum mostly yellowish, usually brownish yellow near base; nearly 2X longer than eye height; palpus short, brownish to yellowish brown, usually with yellow tip; bearing scattered pale fine setae, 1 subapical seta usually dark.

Thorax almost entirely brown in ground-colour, postpronotal lobe and postalar tubercle somewhat yellowish brown translucent; mostly densely greyish pruinose; mesoscutum in dorsal view mostly densely brownish grey pruinose, with some traces of darker vittae between acrostichal and dorso-central setae only near anterior margin; thoracic setation black. Prosternum bare. Proepisternum with 5–6 brownish to pale setae on lower part, bare on upper part. Antepronotum with 7–8 short, spine-like setae dorsally. Postpronotal lobe bearing 1 long and 2–3 shorter setae (with a few additional setulae). Mesonotal setae: acrostichals irregularly biserial, very short, scattered (6–7 per row), absent on prescutellar depression; dorso-central setae uniserial, presutural dorso-centrals similar to but slightly longer than acrostichals, post-sutural dorso-central setae becoming longer towards scutellum, 2 pairs of prescutellars longest and strongest; 1 long, strong presutural supra-alar, 4 notopleurals, 1 postsutural

supra-alar, 1 long and 1 minute postalar, 4 scutellars (setae of lateral pair very short, fine). Laterotergite with 4–5 strong brownish setae and, usually, 2–3 fine, paler setae. Anterior and posterior spiracles yellow.

Legs with coxae faintly greyish pruinose, remaining podomeres subshiny; black setose. Legs colour: coxae and trochanters yellow (sometimes fore coxa slightly darkened near base anteriorly); femora yellow to brownish yellow



Figs 13–17. *Empis (Polyblepharis) sogdiensis* Shamshev, **sp.n.**, male: 13 — habitus, holotype; 14 — hypopygium; 15 — hypandrium; 16 — cerci; 17 — holotype labels; 13–14 — lateral view; 15 — ventral view; 16 — dorsal view. Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar is 1 mm.

Рис. 13–17. *Empis (Polyblepharis) sogdiensis* Shamshev, **sp.n.**, самец: 13 — габитус, голотип; 14 — гипопигий; 15 — гипандрий; 16 — церки; 17 — этикетки голотипа; 13–14 — сбоку; 15 — снизу; 16 — сверху. Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус. Шкала = 1 мм.

(somewhat darker closer to apex dorsally); tibiae yellow near base, becoming gradually darker towards apex, brownish on apex; tarsi brown. Coxae and trochanters with simple setae. Fore femur bare ventrally. Fore tibia covered with short setulae; bearing 2–3 short anterodorsal and 2–3 similar posterodorsal setae (besides circlet of subapical setae; number, position and robustness variable). Fore basitarsus slender, with short, strong setae ventrally. Mid femur whitish pubescent ventrally; with minute anteroventral and posteroventral setulae; 1 long strong seta near apex anteriorly. Mid tibia with 2–3 anterodorsal, 1 dorsal near base and 2–3 posterodorsal setae; dense, fine setulae ventrally. Mid tarsomeres 1–3 with short spine-like setae ventrally (longer on basitarsus). Hind femur slender, only slightly broader than mid femur; whitish pubescent ventrally; with rows of short strong anteroventral and longer posteroventral setae; dense spinule-like setulae over entire ventral face; 1 long strong seta near apex anteriorly. Hind tibia slender; with 2–3 anterodorsal and 3–4 posterodorsal setae; erect fine setulae ventrally; very short seta in posteroapical comb. Hind basitarsus slender; tarsomeres 1–3 with short spine-like setae ventrally (longer on basitarsus).

Wing membrane faintly infusate; entirely covered with microtrichia; veins yellowish brown, well-sclerotized. Veins  $R_3$  and  $M_1$  strongly divergent toward wing margin; radial fork acute;  $R_5$  meeting costa before wing apex;  $CuA+CuP$  (anal vein) complete (slightly weakened closer to wing margin). Cell  $dm$  moderately large, with strongly elongate apex; apical portion of  $M_4$  nearly 2X longer than its middle portion. Pterostigma pale brownish, very narrow. Basal costal seta absent. Anal lobe well-developed; axillary incision 90°. Squama yellow, pale fringed. Halter pale yellow.

Abdomen brown in ground colour, segments 1–3 slightly paler, tergites 6–7 somewhat yellow translucent posteriorly; tergites extensively shiny, tergite 1 entirely, tergites 2–6 narrowly anteriorly very faintly greyish pruinose (sometimes pruinosity inconspicuous on tergites 3–6), tergites 6–7 with golden brown iridescent spots; sternites mostly faintly greyish pruinose, sternites 2–6 with some shiny space becoming gradually smaller from sternite 2 to sternite 6. Abdominal setation greatly reduced; tergites covered with very short, hair-like, pale setae, only tergites 1 and 2 with long, strong, black posteromarginal setae; sternite 1 bare, sternites 2–6 mostly with very short, pale, hair-like setae, sternites 7–8 with black setae including long strong posteromarginals. Pregenital segments: segment 6 unmodified; tergite 7 broadly concave posteriorly; sternite 7 with somewhat produced posterior corners; small isolated sclerite just beyond posterior margin of pleuron 7; segment 8 with separated tergite and sternite; tergite 8 somewhat flattened, represented by two subtriangular sclerites separated mid-dorsally, with several short setae posteriorly; sternite 8 scoop-shaped, somewhat constricted anteriorly, with 2 lateral projections on each side anteriorly (anterior small projection close to upper margin; posterior projection larger, slightly concave apically), deep rounded concavity between projections.

Hypopygium (Fig. 14) moderately large; epandrial lamella mostly brown, narrowly yellowish brown along lower margin, subshiny; hypandrium brown, bare; cercus brown; phallus yellowish brown. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella rather subtriangular (lateral view), with rounded apex; bearing black setae more numerous and longer along lower margin. Hypandrium (Fig. 15) separated from epandrium; mostly membranous, undivided, narrowly sclerotized along margin; with two small notches on truncate apex (ventral view); bare; gonocoxal apodeme small. Cerci (Fig. 16) separated with each other and

from epandrium; cercus elongate ovate in lateral view, rather subtriangular in dorsal view; shorter than epandrial lamella, with hardly distinguishable additional lobe dorsally, smoothed on inner margin; with black setulae. Phallus almost entirely hidden; zigzag bent, strongly constricted beyond middle; basal portion thick, gently curved and becoming narrower distad; apical portion semicircular, nearly of uniform thickness, with its tip pointing to rear. Ejaculatory apodeme moderately large, extended far beyond basal curvature of phallus, with lateral wings.

**Female.** Similar to male except as follows. Frons slightly broader, almost parallel-sided. Mid tibia with 1 anteroventral seta. Hind tibia with 1 anteroventral seta on apical half; with simple setulae ventrally. Mid femur with 2–3 short, strong anterodorsal and row of 3–6 short anteroventral setae; no posteroventral setae and ventral spinules. Abdominal tergites shiny, except faintly pruinose tergite 1 and anterior margin of tergite 2. Cercus brownish, very short, with scattered setulae.

**DIFFERENTIAL DIAGNOSIS.** The new species is most similar to *E. uzbekistanica* Chvála, 1999 (known from Uzbekistan) sharing dichoptic eyes of the male and extensively yellow legs (including coxae). *Empis sogdiensis* sp.n. differs from *E. uzbekistanica* primarily by brown abdomen, 4 scutellar setae and black posteromarginal setae on tergites 1 and 2 only. In *E. uzbekistanica* the abdomen is yellow, the scutellum bears only 2 setae and posteromarginal setae are present on tergites 1–5.

**ETYMOLOGY.** The epithet refers to the name of an ancient civilization in present-day Tajikistan and Uzbekistan, Sogdia (or Sogdiana).

**DISTRIBUTION.** Tajikistan, Uzbekistan.

#### *Empis (Polyblepharis) tajikistanica* Chvála, 1999

Chvála, 1999: 209 (♂ and ♀), figs. 28, 29. Type locality: Tajikistan, Hissar Range, Varzob River, 1700–2200 m.

**MATERIAL EXAMINED.** **Uzbekistan:** Sangy Dzhuman [or Sangy-juman Pass], 25.v.1869 [A. Fedtschenko] (1 ♂, 1 ♀).

**REMARKS.** This species was known only by the type material taken from Tajikistan and Uzbekistan [Chvála, 1999].

**DISTRIBUTION.** Tajikistan, Uzbekistan.

#### *Empis (Polyblepharis) turkestanica* Shamshev, sp.n. Figs 18–23.

**TYPE MATERIAL.** Holotype, ♂, labels as in Fig. 23, [**Uzbekistan**] [printed in Cyrillic, Russian] Tashkent / 25.iv.[1]925 / Dobzhansky // aryk Bos-su (ZISP, INS\_DIP\_0000624).

**Paratypes.** **Uzbekistan:** same data as holotype (4 ♂♂, 15 ♀♀, ZISP); Tashkent 22.iv.1925 Dobzhansky (6 ♂♂, 15 ♀♀, ZISP); same locality, [A. Fedtschenko]: 25.iii.1871 (2 ♂♂, 4 ♀♀, ZMMU), 26.iii.1871 (2 ♂♂, 2 ♀♀, ZMMU), 27.iii.1871 (2 ♂♂, 5 ♀♀, ZMMU), 28.iii.1871 (2 ♂♂, 2 ♀♀, ZMMU), 1.iv.1871 (4 ♂♂, 9 ♀♀, ZMMU), 2.iv.1871 (1 ♀, ZMMU), 3.iv.1871 (2 ♂♂, ZMMU), 10.iv.1871 (2 ♀♀, ZMMU), 11.iv.1871 (1 ♀, ZMMU); same locality, 11.iv.1923, E. Smirnov (1 ♂, ZMMU); same locality, 4.iv.1929, B. Rohdendorf (1 ♂, ZISP); same locality, 17.iv.1929, L. Zimin (1 ♀, ZISP); Tashkent, environs of Min-Bulak, 7.vi.1922, N. Kuznetsov (1 ♂, ZISP); same locality, 15.vi.1922, N. Kuznetsov (1 ♂, ZISP); Kuram Ridge, environs of Angren, 1100 m, 18.iv.1958, Sychevskaya (1 ♂, 2 ♀♀, ZISP); Ugam Ridge, 20 km S Khumsan, 1200 m, 16-17.v.1963, Sugonyaev (3 ♂♂, ZISP); Pskem Ridge, near Nayan, 3000 m, 23-25.v.1963, Gurjeva (4 ♂♂, 1 ♀, ZISP); Karzhan-Tau Ridge, 5 km N of Khumsan, 12.v.1963, Sugonyaev (1 ♂, 3 ♀♀, ZISP). **Kazakhstan.** Chak-pak, village Vysokoe, 960 m, 6.v.1907, A. Jacobson // coll. A. Semenov-Tian-Shansky (2 ♂♂, 1 ♀, ZISP). Aksu-Zhabagly Nature Reserve, 24.v.1965, L. Zimina (1 ♂, 1 ♀ on one pin, ZMMU); same locality and collector, 14.v.1965 (1 ♂, ZMMU), 14.v.1965 (2 ♀♀, ZMMU), 21.v.1965 (1 ♂, ZMMU), 23.v.1965 (1 ♂, 3 ♀♀, ZMMU), 11.vi.1966 (2 ♂♂, 1 ♀, ZMMU), 26.v.1966 (1 ♀, ZMMU), 30.v.1966 (1 ♂, ZMMU); same locality,

30.vi.1977, A. Shatalkin (8 ♂♂, 3 ♀♀, ZMMU). **Kyrgyzstan.** Kyrk-Kichiktau Mts., 27.v.1925, Dobzhansky (1 ♂, ZISP); Aktash, 30.iv.1925, Dobzhansky (2 ♂♂, 3 ♀♀, ZISP); Mikhaylovka, valley of Kugart River, 25.v.1925, Dobzhansky (1 ♂, ZISP); shore of Kugart-su River, 8.v.1925, Dobzhansky (1 ♀, ZISP); Chatkal Nature Reserve, 2000 m, 9.vi.1963, Gurjeva (2 ♂♂, ZISP); Kamchik Pass, 2300 m, Kuram Ridge, 18.vi.1966, V. Zaitsev (1 ♂, ZISP); Chatkal Ridge, Sary-Chilek, 2000m, 29.v.1952, Zhelokhovtsev (5 ♂♂, 4 ♀♀, ZMMU); Chatkal Ridge, Arkit, 6.vi.1952, Zhelokhovtsev (1 ♀, ZMMU).

**ADDITIONAL MATERIAL EXAMINED. Uzbekistan.** Tashkent, [A. Fedtschenko]: 25.iii.1871 (1 ♀), 27.iii.1871 (1 ♀), 28.iii.1871 (1 ♀), 5.iv.1871 (1 ♂), 10.iv.1871 (2 ♀♀), 1.iv.1871 (1 ♀), 2.iv.1871 (2 ♀♀) (mostly eaten by dermestids).

**DIAGNOSIS.** Mid-sized species (body length 6–6.5 mm); eyes dichoptic, palpus black; postpronotal lobe shiny on outer side; acrostichal and presutural dorsocentral setae very short, the former biserial, the latter uniserial, presutural supra-alar seta present; femora entirely black; hind femur strongly thickened, hind tibia geniculate; abdominal tergites extensively shiny.

**DESCRIPTION.** Body length 5.9–6.6 mm, wing 6.0–6.4 mm. **Male** (Fig. 18). Head with occiput, postgena and gena densely greyish pruinose; ocellar triangle subshiny, clypeus shiny, frons and face (except shiny lower margin) densely brownish pruinose; head setation mostly black. Dichoptic, ommatidia equally small. Frons broad, nearly as broad as distance between outer margins of posterior ocelli, almost parallel-sided, with marginal setulae. Face broader than frons, bare. Ocellar setae long, strong. Postocular setae long, strong on upper portion and very short on lower portion; occiput with almost regular transverse row of long, strong setae (more numerous laterally); postgena with yellowish, mostly fine setae. Antenna with scape and pedicel brownish, postpedicel and stylus black; scape nearly 2X longer than subglobular pedicel, both with short setulae; postpedicel 3–3.5X as long as basal width; stylus long, only slightly shorter than postpedicel. Proboscis with labrum brownish, paler apically; nearly 2X longer than eye height; palpus short, black; bearing sparse, long, black, fine setae.

Thorax almost entirely black in ground-colour, postalar tubercle somewhat yellowish brown translucent; mostly densely greyish pruinose and black setose (except noted); postpronotal lobe shiny on outer side; mesoscutum (Fig. 19) with 4 brown vittae (median vittae usually more distinct). Prosternum bare. Proepisternum with tuft of 4–5 strong setae and usually a few pale fine setae on lower part, bare on upper part (rarely 1 black fine seta present). Antepronotum with 5–6 short, spine-like setae. Postpronotal lobe with 7–10 strong, moderately long setae anteriorly (number, length, robustness and position variable); postpronotal seta usually nearly as long as longest anterior setae (sometimes slightly longer). Mesonotal setae: acrostichals irregularly biserial, mostly very short and fine (2 anteriormost setae spine-like and somewhat longer), absent on prescutellar depression; dorsocentral setae uniserial, presuturals similar to acrostichals, postsuturals becoming longer towards scutellum, 2 pairs of long, strong prescutellars; 1 fine presutural intra-alar (sometimes absent), 1 moderately long presutural supra-alar; 3 notopleurals, 1 postsutural supra-alar, 1 long and 1 minute postalar, 4 scutellars (setae of lateral pair slightly shorter); in addition, a few setulae present on anterior half of notopleuron. Laterotergite with 3–5 strong, long and a few short, fine setae (at least 3 strong setae always black, fine setae varying from black to pale). Anterior and posterior spiracles brownish.

Legs with coxae densely greyish pruinose, remaining podomeres subshiny; black setose. Legs colour: coxae, tro-

chanters, femora and tarsi entirely dark brown; fore tibia mostly brown, brownish yellow near base; mid and hind tibiae extensively yellow, narrowly brownish on apex. Coxae and trochanters with simple setae. Fore femur with row of anteroventral setae, which are moderately long, spine-like on apical 1/2 to 2/3 and short, fine closer to base; row of short, fine posteroventral setae; short, strong setae closer to apex anteriorly. Fore tibia with row of 5–6 short, strong anterodorsal and 2–3 similar posterodorsal setae closer to apex; ventral setulae somewhat longer on about basal half. Fore basitarsus slender, mostly covered with simple setulae; with short, strong, anteroventral and posteroventral setae. Mid femur without whitish ventral pubescence; with row of short setae on about apical half anteriorly; rows of anteroventral and posteroventral, short, mostly strong setae (shorter and finer near apex); covered with spinule-like setulae on ventral surface; 1 short, strong anterior subapical seta. Mid tibia with reduced setulae (denser ventrally); 3–4 short, spine-like anterodorsal, 1 dorsal near base and 1–2 posterodorsal setae on basal half. Mid tarsus as fore tarsus. Hind femur strongly thickened, nearly 2X broader than mid femur; with moderately long, spine-like anteroventral and posteroventral setae; dense spines on ventral face; 1 short, strong anterior subapical seta. Hind tibia geniculate, slightly arcuate (anterior view); with reduced setulae; bearing 4–5 short setae of different robustness dorsally; sparse erect setulae ventrally; very short, fine seta in posteroapical comb. Hind basitarsus slightly thickened; setation as in fore basitarsus.

Wing membrane faintly brownish infuscate; entirely covered with microtrichia; veins mostly brownish, brownish yellow near base, well-sclerotized (except noted). Veins  $R_5$  and  $M_1$  strongly divergent towards wing margin; radial fork acute;  $R_5$  meeting costa before wing apex;  $CuA+CuP$  (anal vein) complete but slightly weakened beyond middle. Cell  $dm$  moderately large, with elongate apex; apical portion of  $M_4$  nearly 3X longer than its middle portion. Pterostigma absent. Basal costal seta absent. Anal lobe well-developed; axillary incision obtuse. Squama yellow, pale fringed. Halter pale yellow.

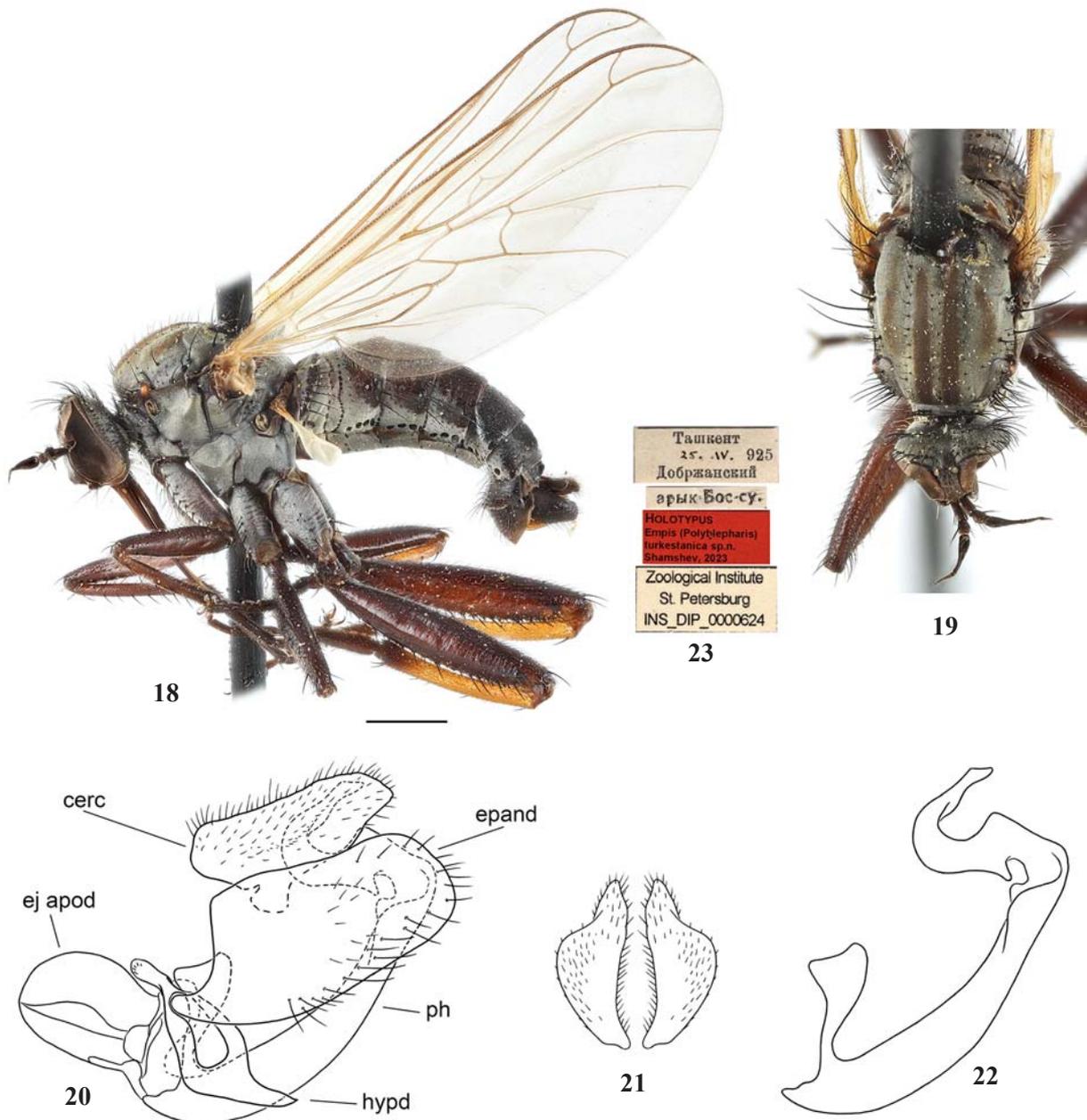
Abdomen black to dark brown in ground colour. Tergite 1 shiny along posterior margin; tergites 2–5 extensively shiny, narrowly densely grey pruinose along anterior margin and somewhat broader laterally; tergites 6 and 7 with brownish grey iridescent spot dorsally, shiny laterally; tergite 8 hidden by tergite 7; tergites with greatly reduced setation, mostly covered with sparse, fine, black setulae; tergites 1–5 with long, strong, black posteromarginal setae laterally. Sternites 1–6 densely grey pruinose, sternites 7–8 subshiny; sternite 1 bare, sternites 2–6 with sparse black and pale setulae; sternites 7–8 black setose, with moderately long posteromarginal setae. Pregenital segments: segment 6 unmodified; tergite 7 broadly concave posteriorly; sternite 7 with somewhat produced posterior corners; small, isolated sclerite just beyond posterior margin of pleuron 7; segment 8 with separated tergite and sternite; tergite 8 somewhat flattened, represented by two subtriangular sclerites separated mid-dorsally, with several short setae posteriorly; sternite 8 scoop-shaped, somewhat constricted anteriorly, with 3 lateral projections and concavity between them (anterior projections small; posterior projection large, subglobular).

Hypopygium (Fig. 20) moderately large; epandrial lamella and cerci dark brown; hypandrium pale brown; phallus mostly yellow, curved slender apical portion dark brown. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella rather subrectangular (lateral view); with short, fine, black setae, more numerous along lower margin. Hypandrium separated from epandrium; mostly mem-

branous, undivided, narrowly sclerotized along margin, with rounded apex; bare; gonocoxal apodeme small. Cerci (Fig. 21) separated with each other and from epandrium; cercus elongate ovate (lateral view), slightly shorter than epandrial lamella, with additional lobe dorsally, smoothed on inner margin; with dense black setulae. Phallus (Fig. 22) almost entirely hidden; zigzag bent, strongly constricted beyond middle; basal portion thick, gently curved and becoming narrower distad (lateral view); apical, bend portion broader proximally, its subapical part slender, with tip pointing to rear. Ejaculatory apodeme moderately large, extended far

beyond basal curvature of phallus, with lateral wings.

**Female.** Similar to male except as follows. Fore tibia with 6 anterodorsal, 2 posterodorsal, 4–5 finer anteroventral and 4–5 posteroventral setae. Mid femur with minute anteroventral and posteroventral setae. Mid tibia with 4 anterodorsal, 1 dorsal near base, 2 posterodorsal, 2–3 anteroventral and 2 posteroventral setae. Abdominal tergites 2–5 somewhat broader pruinose laterally; only tergites 1–3 with strong posteromarginal setae; sternite 6 faintly pruinose, tergite 6 entirely shiny, segments 7–10 shiny; cercus black, long, slender, with scattered setulae.



Figs 18–23. *Empis (Polyblepharis) turkestanica* Shamshev, **sp.n.**, male: 18–19 — habitus, holotype; 20 — hypopygium; 21 — cerci; 22 — phallus; 23 — holotype labels; 18, 20, 22 — lateral view; 19, 21 — dorsal view. Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus. Scale bar is 1 mm.

Рис. 18–23. *Empis (Polyblepharis) turkestanica* Shamshev, **sp.n.**, самец: 18–19 — габитус, голотип; 20 — гипопигий; 21 — церки; 22 — фаллус; 23 — этикетки голотипа; 18, 20, 22 — сбоку; 19, 21 — сверху. Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус. Шкала = 1 мм.

**DIFFERENTIAL DIAGNOSIS.** The new species resembles very much the species of the *E. albicans* group sensu Chvála [1999] occurring in stepper regions of Central Europe and the European part of Russia. The new species can be readily distinguished from all species of this group primarily by black palpus. Amongst species of *Polyblepharis* known from Middle Asia, the new species is most similar to *E. saltans* Engel, 1946. The new species differs from *E. saltans* primarily by partly shiny postpronotal lobe, presence of a presutural supra-alar seta and by entirely dark brown femora (in *E. saltans* all femora are brownish yellow on apex).

**ETYMOLOGY.** The epithet refers to the name of a historical region, where the new species was collected, partly coinciding with an area now commonly called Central Asia or Middle Asia.

**DISTRIBUTION.** Kazakhstan, Kyrgyzstan, Uzbekistan.

*Empis (Polyblepharis) zimini* Shamshev, 2003

Shamshev, 2003: 24 (♂ and ♀), figs. 9–12. Type locality: Uzbekistan, NW Bukhara, Yargak, tributary of Chatyrchy.

**MATERIAL EXAMINED.** **Uzbekistan:** Zeravshan Valley, 3.iv.1869 [A. Fedtschenko] (1 ♂, 4 ♀♀); same locality, 25.iv.1869 [A. Fedtschenko] (1 ♀); Samarkand, 11.iv.1869 [A. Fedtschenko] (3 ♂♂, 2 ♀♀); same locality, 17.iv.1869 [A. Fedtschenko] (1 ♀); Keles, 22.iv.1871 [A. Fedtschenko] (1 ♀).

**REMARKS.** The species has been known only from the type series.

**DISTRIBUTION.** Uzbekistan.

*Empis (Polyblepharis) sp. 1*

**MATERIAL EXAMINED.** **Tajikistan.** Varzaminor [alternative spelling Varzimanor, now Ayni], 9.vi.1869 [A. Fedtschenko] (1 ♀, ZMMU).

**REMARKS.** This new species is represented by single specimen (female). It was not named and described due to the absence of the male. The species can be readily distinguished from all other members of *Polyblepharis* by a combination of the following characters: halter with brown knob; palpus brown; thorax with four vittae, black setose, acrostichal setae biserial, dorsocentral setae uniserial; legs entirely brown.

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