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Notes on *Docosia* Winnertz (Diptera: Mycetophilidae), with description of six new species from Central Asia and the first generic record from the Afrotropical region

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Abstract

Six new species of *Docosia* Winnertz are described from Central Asia and their terminalia illustrated, viz. *Docosia bartaki* sp. nov. (Uzbekistan), *D. blagoderovi* sp. nov. (Uzbekistan), *D. chinganica* sp. nov. (Uzbekistan), *D. distributa* sp. nov. (Turkmenistan, Kazakhstan), *D. koyentagi* sp. nov. (Turkmenistan) and *D. turkmenica* sp. nov. (Turkmenistan). A new record of *D. selini* Kurina from Uzbekistan and a key to *Docosia* species in Central Asia are provided. The number of *Docosia* species in Central Asia now totals 10. *Docosia gilvipes* (Haliday in Walker) is newly found in South Africa representing the first record of the genus from the Afrotropical region.

Key words: Diptera, Sciaroidea, fungus gnats, Mycetophilidae, *Docosia*, Central Asia, Afrotropical region, new species, key

Introduction

The last decade has been considered as a renaissance in taxonomy (e.g. Padial *et al.* 2010) which is reflected in the study of fungus gnats (Diptera: Mycetophilidae). New genera and dozens of new species are described yearly (for a complete bibliography see <http://sciaroidea.info/bibliography>). One of the most studied genera among mycetophilids, attracting continued attention, is *Docosia* Winnertz, 1863. According to characters in wing venation, the genus is traditionally placed in the subfamily Leiinae (cf. Sjøli *et al.* 2000), which is, however, challenged by recent molecular studies (Rindal *et al.* 2009). As usual in mycetophilids generally, the majority of characters used for the identification of *Docosia* species is found in their complex male terminalia (cf. Laštovka & Ševčík 2006).

A total of 70 extant species have so far been described: 49 from the Palaearctic region, including 33 from Europe (e.g. Chandler *et al.* 2006, Laštovka & Ševčík 2006, Ševčík & Laštovka 2008, Kurina & Ševčík 2011), 17 from the Nearctic region (Bechev 2000, Taber 2011, 2012), three from the Neotropical region (Edwards 1933, Oliveira & Amorim 2011) and one from the Oriental region (Ševčík 2010). The Nearctic region is, however, apparently understudied because the unpublished revision by the late Dr. P. Laštovka (in litt.) indicates 31 Nearctic species. No species of *Docosia* has yet been reported from the Afrotropical and Australasian regions.

In addition, 11 fossil species of *Docosia* have been described, mainly from the Baltic amber (Evenhuis 1994) but also from the Early Cretaceous of Transbaikalia (Blagoderov 1998). However, considering the wing characters (the terminalia are not preserved), the Cretaceous species more likely belong to the complex of genera around *Palaeodocosia* Meunier, 1904 and *Dziedzickia* Johannsen, 1909, which are difficult to separate one from another (cf. Ševčík *et al.* 2011). Blagoderov & Grimaldi (2004) suggested that the Transbaikalian species may belong to their new genus *Neodocosia*.

The fauna of *Docosia* of Central Asia and the eastern Palaearctic is still poorly known. Four species of *Docosia* have been recorded from Central Asian countries so far (Zaitzev 1994, Kurina 2006). Six species of *Docosia* are

described from China (Xu *et al.* 2003) but all these species are insufficiently described and some of them possibly belong to other genera.

The aim of this contribution is to describe new species from Central Asia, discuss their systematics, and provide a new key to Central Asian species, including new knowledge of the *Docosia* in the region. We also take the opportunity to publish an interesting finding of a series of *Docosia* specimens collected in South Africa, representing the first record of the genus from the Afrotropical region.

Material and methods

Material from Central Asia has been collected mainly by light trapping during recent expeditions by amateur lepidopterologists and supplemented by several previously sweep-netted specimens. The collecting method of the South African material is unknown. The Central Asian material originates from three countries, viz. Turkmenistan, Uzbekistan and Kazakhstan (for map of collecting localities see Fig. 1). All material was dry pinned on micropins or glued to a triangular card points. Dissected terminalia were detached and treated by a method described by Kurina (2003), before being placed into glycerine for detailed examination and illustration. After examination, terminalia were stored in glycerine in a plastic microvial attached to the same pin as the mounted specimen. Illustrations of the terminalia were prepared using a U-DA drawing tube attached to an Olympus CX31 compound microscope. The habitus photo (Fig. 2) is a composite of several images of a dry specimen taken at different focal lengths, using a Canon 7D camera in combination with Canon MP-E65 (F2.8 1-5×) lens, and combined using Helicon Focus 4.7 software (see also Kurina 2008a). Male terminalia are figured in three different positions: laterally, posteriorly and ventrally. The cerci, aedeagal complex, and tergite 9 were detached and figured separately to show the detailed structure and shape. Morphological terminology generally follows that of Søli (1997) while the term “retinacula” is used in accordance with Tuxen (1970: 323). All measurements are made in millimeters. Ranges are given for body length, wing length, and the mean for each of these values is provided. Measurements of holotypes are given in square brackets. The number of individuals measured is noted in parentheses.



FIGURE 1. Collecting localities of *Docosia* species in Central Asia. 1, Karakala (*D. distributa* **sp. nov.**); 2, Big Bakhcha River (*D. turkmenica* **sp. nov.**); 3, Carsanga (*D. koyentagi* **sp. nov.**, *D. blagoderovi* **sp. nov.**, *D. distributa* **sp. nov.**); 4, Takhtakaracha (*D. gilvipes*: cf. Zaitzev 1994: 256, erroneously noted to be in Turkmenistan); 5, Amankutan (*D. bartaki* **sp. nov.**); 6, Mekhnad (*D. chimganica* **sp. nov.**); 7, Chimgan (*D. chimganica* **sp. nov.**, *D. selini*); 8, Kapchagai (*D. distributa* **sp. nov.**); 9, Sogety Mts. (*D. agnesiana*, *D. selini*, *D. sogetensis*: cf. Kurina 2006); 10, Charyn Canyon (*D. selini*: cf. Kurina 2006); 11, Uch-Aral (*D. distributa* **sp. nov.**).

The following acronyms are used for depositories:

ASPC	coll. Allan Selin, Tallinn, Estonia (personal collection)
BMNH	Natural History Museum, London, United Kingdom
IZBE	Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences, Tartu, Estonia [former Institute of Zoology and Botany]
MBPC	coll. Miroslav Barták, Prague, Czech Republic (personal collection)
MNHN	Museum National d'Histoire Naturelle, Paris, France
SMOC	Silesian Museum, Opava, Czech Republic

Key to males of *Docosia* species in Central Asia

1. Sc setose and ending free; terminalia as figured by Laštovka & Ševčík (2006: fig. 1) and Kurina (2008b: figs. 16–21). Uzbekistan *D. gilvipes* (Haliday in Walker 1856)
- Sc bare, ending in R₁ 2
2. Laterotergite setose 3
- Laterotergite bare 5
3. All coxae entirely blackish, only forecoxa occasionally somewhat paler to brownish. 4
- Coxae yellow with only bases infuscated. Ventroapical margin of gonocoxa emarginated with a bare finger-like medial process (Fig. 7b). Gonostylus with two subapical spines, more basal one much smaller and with clearly delimited basal body (Figs. 7a–c). Tergite 9 apically widening with slightly convex apical margin (Fig. 7d). Cercus with 10 combs of retinacula (Fig. 7e). Turkmenistan. *D. koyentagi* **sp. nov.**
4. Ventroapical margin of gonocoxite wavy with a sclerotized, bare, finger-like medial process and with lateral processes bearing four subapical spines each. Gonostylus bifid: ventral lobe bent posteriorly, without apical spine; dorsal lobe bent medially with subapical tubercle on medial margin. Tergite 9 subquadrate, basal margin with shallow medial incision. Cercus with 5 combs of retinacula (Kurina 2006: fig. 4). Kazakhstan *D. sogetensis* Kurina, 2006
- Ventroapical margin of gonocoxite deeply emarginated with a basally setose, finger-like medial process (Fig. 3b). Ventroapical margin of gonocoxite with gradually shortening spines from medial process laterally (Fig. 3c). Gonostylus bifid: ventral lobe medially swollen and with apical spine; dorsal lobe bent medially with three short basal spines on medial margin (Fig. 3a–c). Basal margin of tergite 9 with a deep incision (Fig. 3d). Cercus with 8 combs of retinacula (Fig. 3e). Uzbekistan *D. bartaki* **sp. nov.**
5. Ventroapical margin of gonocoxite without medial process but with a flange bearing short strong setae (Kurina 2006: fig. 3). Kazakhstan *D. agnesiana* Kurina, 2006
- Ventroapical margin of gonocoxite with medial process (e.g. Figs. 5b, 6b) and with (e.g. Fig. 6c) or without (e.g. Fig. 5c) an additional internal flange. 6
6. Ventroapical margin of gonocoxite with short, apically flattened or concave medial process bearing an aggregation of short setae (Fig. 5c) 7
- Ventroapical margin of gonocoxite with protruding medial process bearing modified setae or with setae located on internal flange (Figs. 4c, 6c, 8c). 8
7. Medial process of ventroapical margin of gonocoxite apically convex (Figs. 5b–c). Gonostylus with 6 subequal spines on apical half and with basal and medial extensions, the latter bearing 6 fine setae (Figs. 5a–c). Tergite 9 apically widening, without basal incision (Fig. 5d). Cercus with 10 combs of retinacula (Fig. 5e). Uzbekistan *D. chimganica* **sp. nov.**
- Medial process of ventroapical margin of gonocoxite apically emarginate. Gonostylus with three spines: the apical twice as long as the subapical which is longer than the basal. Gonostylus with only basal extension bearing short setulae. Tergite 9 apically widening and with basal incision. Cercus with 11 combs of retinacula (Kurina 2006: fig. 2). Kazakhstan, Uzbekistan . . . *D. selini* Kurina, 2006
8. Ventromedial projection on gonocoxite evenly tapering, bearing an aggregation of apically split megasetae (Figs. 4c, 8c) . . . 9
- Ventromedial projection on gonocoxite fin-like (Figs. 6b–c). Megasetae on internal flange of ventroapical margin of gonocoxite lanceolate (Fig. 6c). Gonostylus crescent, apically tapering with two narrow lobes, both with apical spines, ventrally (Figs. 6a–c). Tergite 9 suboval, with basal incision (Fig. 6d). Cercus with 11 combs of retinacula (Fig. 6e). Kazakhstan, Turkmenistan *D. distributa* **sp. nov.**
9. Ventromedial projection of gonocoxite wide, ventrolateral extensions narrow (Fig. 4c). Gonostylus suboval, apically somewhat tapering, ventrally with a geniculate spine on clearly delimited basal body and four short spines on a common basal body (Figs. 4a–c). Tergite 9 subquadrate with straight apical margin (Fig. 4d). Cercus with 13 combs of retinacula (Fig. 4e). Turkmenistan. *D. blagoderovi* **sp. nov.**
- Ventromedial projection of gonocoxite narrow, ventrolateral extensions wide (Fig. 8c). Gonostylus humpbacked, apically clearly tapering, bearing three spines on ventral side medially: apical two spines more prominent than basal one (Figs. 8a–c). Tergite 9 apically widening with concave apical margin (Fig. 8d). Cercus with 12 combs of retinacula (Fig. 8e). Turkmenistan. *D. turkmenica* **sp. nov.**



FIGURE 2. Habitus photo of *Docosia chimganica* sp. nov., holotype. Scale bar = 1mm.

The new species

Docosia bartaki sp. nov.

Figure 3.

Type material. Holotype. ♂, UZBEKISTAN, Amankutan, pasture, 39.19 N 66.55 E, 1300 m a.s.l., 23.v.1989 (M. Barták leg.) [SMOC, glued to a triangular card point]. **Paratypes.** 2♂♂, the same data as holotype [IZBE, MBPC, glued to a triangular card point].

Description. Male. Body length 2.35–2.55, 2.45 [2.45] mm (n=3).

Head black, slightly pruinose with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus brown, with pale setae. Mouthparts brown. Palpus light brown. Scape dark brown, pedicel brown with lighter apex, flagellomeres brown except first flagellomere basally lighter and all with short pale setae. Flagellomeres cylindrical, median flagellomeres about 1.6 times as long as broad, apical flagellomere conical, 2.6 times as long as broad at base.

All parts of thorax black with bristles and setae yellowish white. Mesonotum slightly pruinose. Scutellum with numerous setae, including a pair of marginal bristles and several weaker bristles along the margin. Antepronotum and proepisternum with bristles and setae. Upper part of antepronotum with two strong bristles, one of them crossing the neck. Laterotergite setose, other pleural parts bare. Halteres pale yellow.

Legs. All coxae entirely blackish brown. All trochanters brown. Forefemur yellow except basally slightly infuscated and dorsal and ventral margin narrowly brown. Mid- and hind femora light brown with laterally somewhat lighter. Foretibia yellow, apically thickened; mid- and hind tibiae brownish. Mid- and hind tibia with two apical black spinules between spurs. First tarsal segments yellowish, successive tarsal segments seem more brownish because of dense setae. Midtibia with 3 d, 3–4 a and 2–3 pv. Hind tibia with 14–16 d, 3–4 a, 5–6 av, 10 p

and 4 pv. Ratio of femur to tibia for fore-, mid- and hind legs: 1.12–1.44, 1.27 [1.25]; 1.04–1.19, 1.3 [1.17]; 0.82–0.95, 0.9 [0.93]. Ratio of tibia to basitarsus for fore-, mid- and hind legs: 1.43–1.54, 1.45 [1.54]; 1.50–1.55, 1.53 [1.53]; 1.90–1.94, 1.92 [1.91].

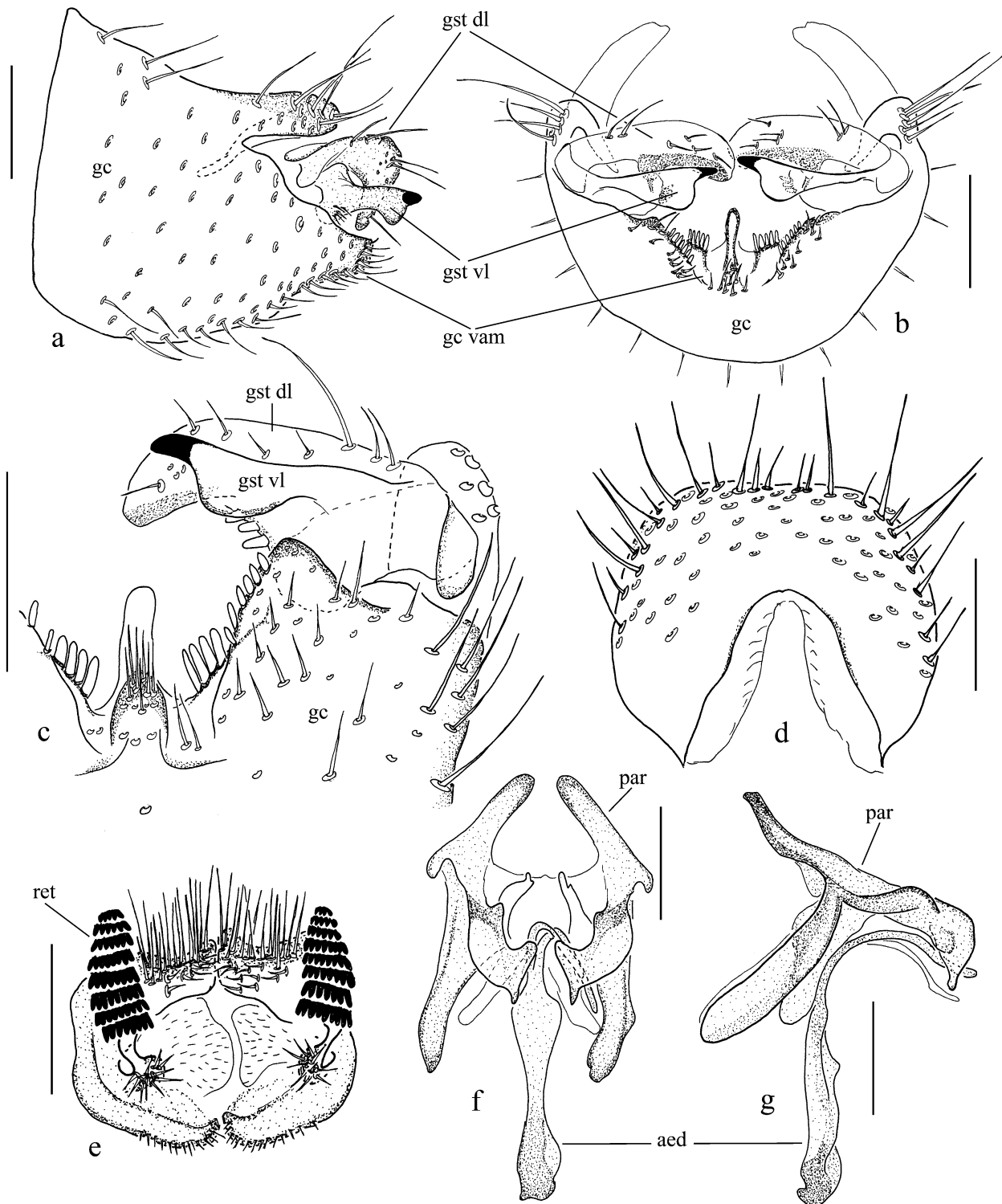


FIGURE 3. *Docosia bartaki* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite 9; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm. Abbreviations: aed = aedeagus; gc = gonocoxite; gc vam = ventroapical margin of gonocoxite; gst vl = ventral lobe of gonostylus; gst dl = dorsal lobe of gonostylus; par = paramere; ret = combs of retinacula.

Wing hyaline, length 2.52 mm (n=3). Costa, radial veins and r-m brown, other veins paler and M-stem very faint. Sc, R₄, bM-Cu, M-stem and basal half of A₁ bare; C, R₁, R₅ and r-m setose on both surfaces; M₁, M₂, cu-stem,

CuA₁, CuA₂ and apical half of A₁ setose on dorsal surface. Costa reaches 0.26–0.29, 0.283 [0.28] from R₅ to M₁. Sc ending in R, before the level of origin of M-stem. Anterior fork begins beyond the level of R₄. Posterior fork begins before anterior fork at level of middle of M-stem. R₁ 2.29–2.43, 2.37 [2.29] times as long as r-m, which is 0.88 times as long as M-stem.

Abdomen brown with sternites somewhat lighter. Terminalia (Fig. 3) dark brown. Tergite 9 subcircular, with deep basal incision. Ventroapical margin of gonocoxite deeply emarginated with a finger-like medial process and spines laterally. Gonostylus bifid; medially swollen ventral lobe bears an apical spine and medially bent dorsal lobe bears three short spines basally. Cercus with 8 combs of retinacula.

Female. Unknown.

Biology. Unknown.

Etymology. The species is named in honour of Prof. Miroslav Barták (Prague, Czech Republic) who collected the type material: genitive form.

Discussion. Within the Central Asian species *D. bartaki* forms a group with *D. sogetensis* and *D. koyentagi* because of the setose laterotergite. It resembles *D. sogetensis* in having entirely dark coxae and a bifid gonostylus. However, *D. bartaki* has the dorsal lobe of the gonostylus with basal spines on medial margin while *D. sogetensis* has a subapical tubercle. The medially swollen ventral lobe of the gonostylus has an apical spine while in *D. sogetensis*, it is without apical spine and bent posteriorly. The ventroapical margin of the gonocoxite in *D. bartaki* is deeply emarginated bearing spines while the margin is wavy with spines on submedial processes in *D. sogetensis* (cf. Kurina 2006: fig. 4b). In the key to European species (Laštovka & Ševčík 2006), *D. bartaki* and *D. sogetensis* would run to *D. carbonaria* Edwards, 1941, a mainly Mediterranean species which forms a group of several closely related species (cf. Chandler *et al.* 2006).

Docosia blagoderovi sp. nov.

Figure 4.

Type material. Holotype. ♂, TURKMENISTAN, Kugitang Mts., 50 km NE Carsanga, 1500 m a.s.l. sweeping, 28.iv.1989 (V. Blagoderov leg.) [BMNH, glued to a triangular card point]. **Paratype.** ♂, same as holotype except 29.iv.1989 (V. Blagoderov leg.) [BMNH, glued to a triangular card point].

Description. Male. Body length 3.2–3.3, 3.23 [3.3] mm (n=2).

Head black, with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus brown, with pale setae. Mouthparts brown. Palpus brown with two apical segments yellow. Scape dark brown, pedicel somewhat lighter, flagellomeres brown and with short pale setae. Flagellomeres cylindrical, median flagellomeres about 2.6 times as long as broad, apical flagellomere cylindrical, 3.7 times as long as broad at base.

All parts of thorax black with yellowish white bristles and setae. Mesonotum slightly pruinose. Scutellum with numerous setae, including two pairs of marginal bristles, one of them considerably stronger and several weaker bristles along the margin. Anteprenotum and proepisternum with bristles and setae. Upper part of anteprenotum with two strong bristles, one of them crossing the neck. Laterotergite and other pleural parts bare. Halteres yellow.

Legs. All coxae yellow with basal thirds brown. All trochanters brown. Forefemur yellow except ventral margin narrowly brown. Mid- and hind femora yellow. All tibiae yellow. First tarsal segments yellowish, successive tarsal segments seem more brownish because of dense setae. Midtibia with 4 d, 4 a and 6–7 pv. Hind tibia with 7–10 d, 12 a, and 3 av. Ratio of femur to tibia for fore-, mid- and hind legs: 1.15–1.16, 1.16 [1.16]; 0.93–0.97, 0.95 [0.93]; 0.78–0.93, 0.86 [0.78]. Ratio of tibia to basitarsus for fore-, mid- and hind legs: 1.19–1.27, 1.23 [1.19]; 1.27–1.40, 1.34 [1.27]; 1.46–1.76, 1.61 [1.46].

Wing hyaline, length 3.36–3.75, 3.56 [3.75] mm (n=2). Costa, radial veins and r-m brown, other veins paler and M-stem faint. Sc, R₄, bM-Cu, M-stem, basal half of cu-stem and basal third of A₁ bare; C, R₁, R₅ and r-m setose on both surfaces; M₁, M₂, apical half of cu-stem, CuA₁, CuA₂ and apical two third of A₁ setose on dorsal surface. Costa reaches 0.24–0.27, 0.26 [0.27] from R₅ to M₁. Sc distinctly ends in R, at the middle of bM-Cu. Anterior fork begins slightly before the level of R₄. Posterior fork begins before anterior fork at level of origin of r-m. R₁ 2.3–2.5, 2.4 [2.3] times as long as r-m, which is about as long as M-stem.

Abdomen brown with pale setosity, sternites somewhat lighter. Terminalia (Fig. 4) dark yellow. Tergite 9 slightly elongated with almost straight apical margin lacking basal incision. Ventroapical margin of the gonocoxite with a basally wide and tapering medial process bearing apically bifid megasetae, and with lateral narrow extensions. The gonostylus with a geniculate subapical spine and with four spines on a common basal body on the ventral surface. Cercus with 13 combs of retinacula.

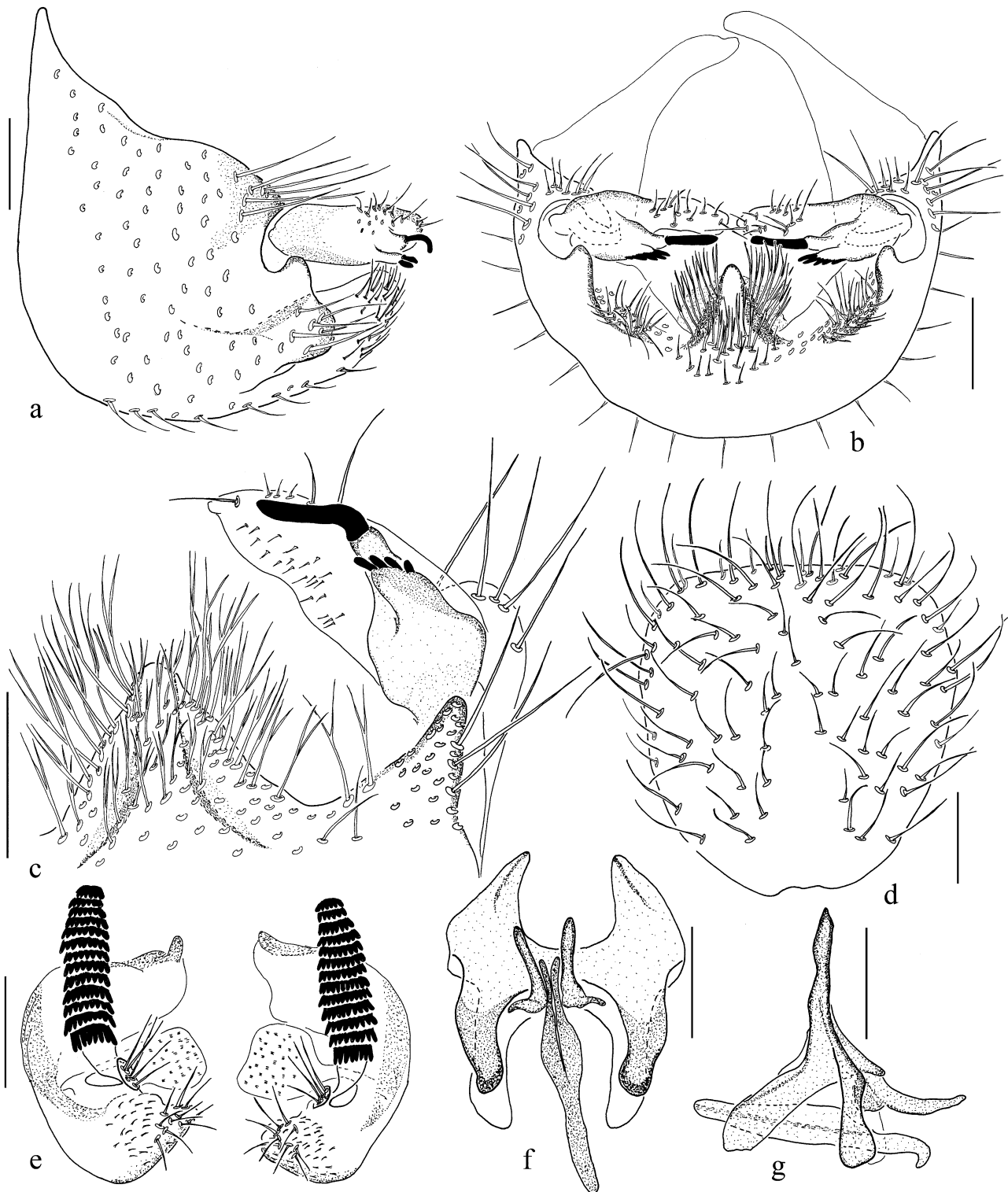


FIGURE 4. *Docosia blagoderovi* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite IX; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm.

Female. Unknown.

Biology. Unknown.

Etymology. The species is named in honour of Dr. Vladimir Blagoderov (BMNH, United Kingdom), the collector of the type material: genitive form.

Discussion. *Docosia blagoderovi* resembles *D. turkmenica* in the outline of the ventroapical margin of gonocoxite. Both species have a ventromedial projection with bifid megasetae. However, the projection of *D. blagoderovi* is basally wider and the ventrolateral extensions of gonocoxite are much narrower than in *D. turkmenica*. These two species belong to a group of almost indistinguishable *Docosia* species having a bare laterotergite and mostly yellow legs. The structure and peculiar setation on the posterior margin of the gonocoxites suggest their possible relationships with *D. distributa* **sp. nov.** and related Western Palearctic species (see discussion under *D. distributa*).

Docosia chimganica **sp. nov.**

Figures 2, 5.

Type material. Holotype. ♂, UZBEKISTAN, Chatkal Mts., Chimgan, 41°30'57,7"N 70°01'44,4"E, 1820 m a.s.l. light trap, 11.v.2008 (A. Pototski leg.) [IZBE, micropinned].

Paratypes. ♂, same as holotype [IZBE, micropinned]; 2♂♂, UZBEKISTAN, Chatkal Mts., Chimgan, 41°30'57,7"N 70°01'44,4"E, 1820 m a.s.l. light trap, 12.v.2008 (A. Selin leg.) [IZBE, micropinned]; ♂, Mekhnad close to Syr-Darja river, 41°01'03,5"N 68°36'28,7"E, light trap, 10.v.2008 (A. Selin leg.) [IZBE, micropinned].

Description. Male. Body length 3.02–3.25, 3.1 [3.02] (n=5).

Head black with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus dark brown, with pale setae. Mouthparts light brown. Palpus with first two segments brownish and remaining segments yellow. Scape, pedicel and all flagellomeres dark brown and with short pale setae. Flagellomeres cylindrical, median flagellomeres about 1.6 times as long as broad, apical flagellomere conical, 2.4 times as long as broad at base.

All parts of thorax black with yellowish white bristles and setae. Scutellum with numerous setae, including a pair of strong marginal bristles and several weaker marginal bristles not arranged to distinct pairs. Anteprepronotum and proepisternum with bristles and setae. Upper part of anteprepronotum with a strong bristle crossing the neck. Laterotergite and other pleural parts bare. Halteres yellow.

Legs. Coxae yellow except of mid- and hind coxae slightly brownish basally. Femora yellow, hind femur darkened apically. All trochanters brown. Tibiae yellow apart of hind tibia apically darkened and thickened with denser setosity. Tarsal segments seem more brownish because of dense setae. Midtibia with 5–6 a, 5–6 d, 1–3 av, 2–3 p and 3–5pv. Hind tibia with 13–15 a, 10–14 d, 3–4 av. Mid- and hind tibiae with two apicoventral spinules between spurs. Ratio of femur to tibia for fore-, mid- and hind legs: 1.15–1.43, 1.29 [1.20]; 1.00–1.28, 1.11 [1.28]; 0.75–0.82, 0.78 [0.76]. Ratio of tibia to basitarsus for fore-, mid- and hind legs: 1.11–1.50, 1.32 [1.50]; 1.15–1.54, 1.34 [1.15]; 1.58–1.86, 1.79 [1.73].

Wings hyaline, length 2.87–3.19, 2.98 [3.19] mm (n=5). Radial veins and apical half of r-m brown, other veins paler and M-stem very faint. Sc, R₄, bM-Cu, M-stem and basal half of cu-stem bare; C, R₁, R₅ and r-m setose on both surfaces; M₁, M₂, apical two third of cu-stem, CuA₁, CuA₂ and A₁ setose on dorsal surface. Costa reaches 0.30–0.36, 0.32 [0.36] from R₅ to M₁. Sc ending in R, slightly before the level of origin of M-stem. Anterior fork begins at the level of R₄ or a little before at the level of R₄. Posterior fork begins before anterior fork at level of middle of r-m. R₁ 2.3–2.7, 2.5 [2.3] times as long as r-m, which is 1.0–1.3, 1.1 [1.0] times as long as M-stem.

Abdomen blackish brown with sternites somewhat lighter. Terminalia (Fig. 5) brown with gonostyli lighter. The ventroapical margin of gonocoxite with flange bearing a medial bump with black spine-like blunt bristles. The gonostylus with two apical and three to four subapical black spines. Tergite 9 widening apically; apical margin slightly concave. Cercus with 10 combs of retinacula.

Female. Unknown.

Biology. Unknown.

Etymology. The species is named after the type locality—Chimgan Mountain in Tashkent Province, Uzbekistan.

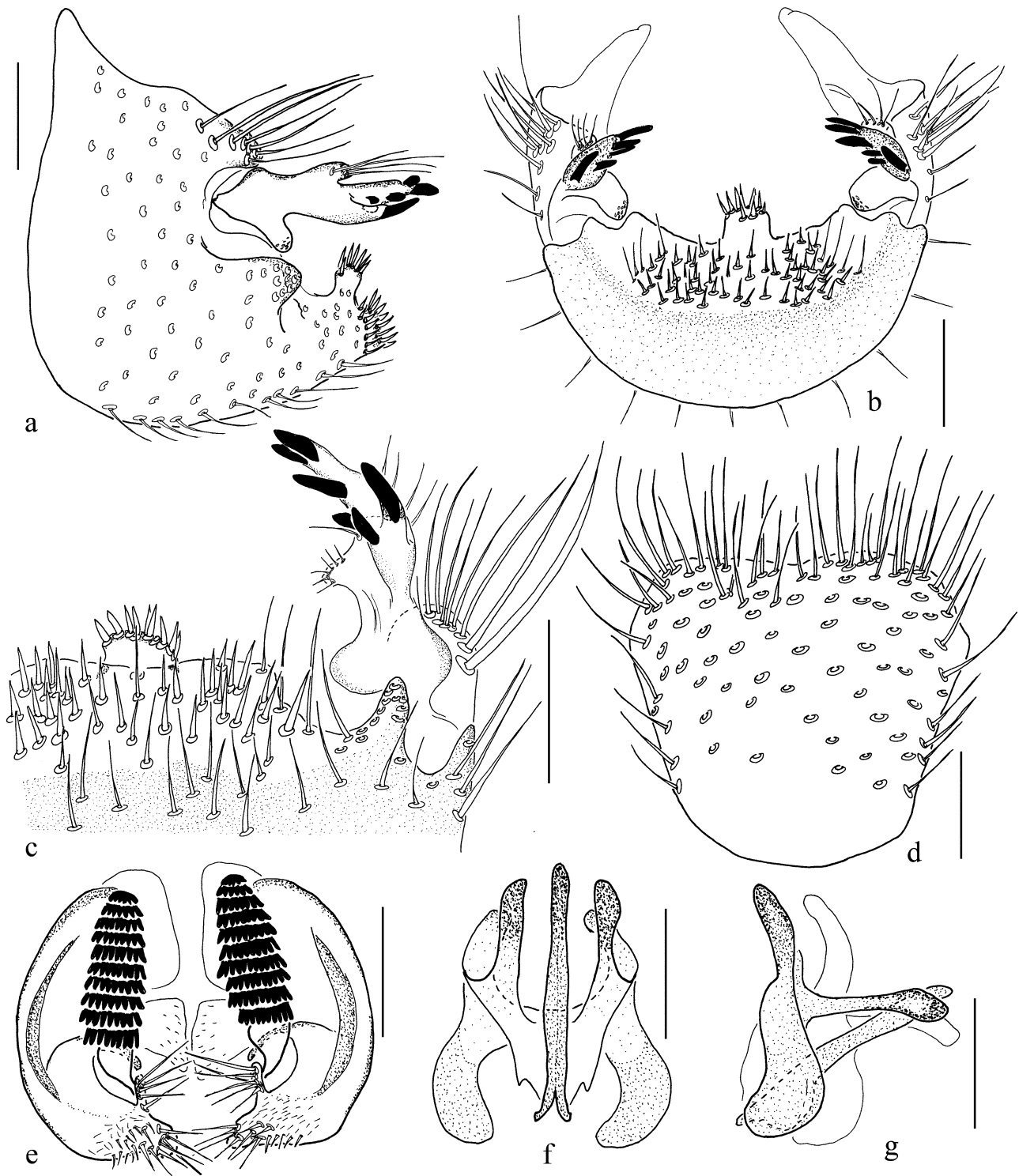


FIGURE 5. *Docosia chimganica* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite IX; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm.

Discussion. The species is close to *D. selini* Kurina, 2006, which is described from Kazakhstan but also found in the Chimgan area of Uzbekistan. *Docosia chimganica* markedly differs from *D. selini* in the shape of the gonostylus. In *D. chimganica*, the gonostylus has six subequal spines on its apical half and medial and basal extensions. The gonostylus of *D. selini*, on the other hand, has three spines and only a basal extension. The cercus has 10 combs of retinacula in contrast to 11 in *D. selini*. Considering the overall structure of the male terminalia,

both species are possibly related to the European *D. montana* Laštovka & Ševčík, 2006 and *D. matilei* Ševčík & Laštovka, 2008 but differ mainly in details of the gonostylus (cf. Laštovka & Ševčík 2006: fig. 10, Ševčík & Laštovka 2008: fig. 2).

***Docosia distributa* sp. nov.**

Figure 6.

Type material. Holotype. ♂, TURKMENISTAN, Karakala 3 km SW, Moon Mts., 38°26'55,8"N 56°12'53,2"E, 330 m a.s.l. light trap, 03.iv.2011 (A. Pototski leg.) [IZBE, micropinned]. **Paratypes.** ♂, TURKMENISTAN, Kugitang Mts., 50 km NE Carsanga, 1500 m a.s.l. sweeping, 28.iv.1989 (V. Blagoderov leg.) [BMNH, glued to a triangular card point]; ♂, KAZAKHSTAN, Kapchagai, 43°44'03,7"N 77°01'36,4"E, 535 m a.s.l. light trap, 21.v.2003 (A. Selin leg.) [IZBE]; ♂, KAZAKHSTAN, Uch-Aral, 46°23'48,3"N 80°42'56,5"E, light trap, 21.v.2004 (A. Selin leg.) [IZBE].

Description. Male. Body length 3.19–3.42, 3.33 [3.42] mm (n=4).

Head black, with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus dark brown, with pale setae. Mouthparts light brown. Palpus light brown with two apical segments yellow. Scape, pedicel and flagellomeres entirely dark brown or pedicel basally somewhat lighter. Flagellum with short pale setae. Flagellomeres cylindrical, median flagellomeres about 1.6 times as long as broad, apical flagellomere cylindrical, about two times as long as broad at base.

All parts of thorax black with yellowish white bristles and setae. Mesonotum slightly shining. Scutellum with numerous setae, including marginal bristles not arranged to distinct pairs. Anteprenotum and proepisternum with bristles and setae. Upper part of anteprenotum with two strong bristles, one of them crossing the neck. Laterotergite and other pleural parts bare. Halteres yellow.

Legs. Forecoxa brown on basal fifth to fourth, otherwise yellow. Mid- and hind coxae brown at basal third to half, otherwise yellow. All trochanters brown. Forefemur yellow except ventral margin narrowly brown. Mid- and hind femora yellow except hind femur apically infuscated. All tibiae yellow. First two tarsal segments yellowish, successive tarsal segments seem more brownish because of dense setae. Midtibia with 3–6 a, 4–5 d and 2–3 av. Hind tibia with 8–14 d, 10–13 a and 3–5 av. Ratio of femur to tibia for fore-, mid- and hind legs: 1.16–1.23, 1.19 [1.23]; 0.97–1.12, 1.04 [1.12]; 0.76–0.83, 0.80 [0.80]. Ratio of tibia to basitarsus for fore-, mid- and hind legs: 1.32–1.42, 1.39 [1.42]; 1.25–1.45, 1.36 [1.45]; 1.62–1.82, 1.73 [1.62].

Wing hyaline, length 2.90–3.70, 3.20 [3.06] mm (n=4). Costa, radial veins and r-m brown, other veins paler and M-stem faint. Sc, R₄, bM-Cu, M-stem, basal third of cu-stem and basal fourth of A₁ bare; C, R₁, R₅ and r-m setose on both surface; M₁, M₂, apical two third of cu-stem, CuA₁, CuA₂ and apical three fourth of A₁ setose on dorsal surfaces. Costa reaches 0.22–0.27, 0.24 [0.27] from R₅ to M₁. Sc distinctly ends in R, before the origin of M-stem. Anterior fork begins at the level of R₄. Posterior fork begins before anterior fork at the middle (or slightly beyond) of r-m. R₁ 2.4–2.8, 2.5 [2.5] times as long as r-m, which is about as long as M-stem.

Abdomen brown with pale setae, sternites somewhat lighter. Terminalia (Fig. 6) yellow with gonocoxite somewhat darker. Ventroapical margin of gonocoxite with a stick-like medial process and with lateral setose extensions. Internal flange of ventroapical margin of gonocoxa with sabre-like megasetae medially. Gonostylus with two narrow lobes, with apical spines, ventrally. Tergite 9 slightly elongated with convex apical margin and with small basal incision. Cercus with 11 combs of retinacula.

Female. Unknown.

Biology. Unknown.

Etymology. The name refers to the wide distribution of this species in Central Asia.

Discussion. Among Central Asian species, *D. distributa* forms a group with *D. blagoderovi* and *D. turkmenica* because of the outline of the ventroapical margin of gonocoxite. All three species have a prominent medial process and lateral extensions. *Docosia distributa* has lanceolate megasetae on the internal flange of the ventroapical margin of the gonocoxite while *D. blagoderovi* and *D. turkmenica* have apically split megasetae on the medial process itself. Tergite 9 is apically convex while it is concave in *D. turkmenica* and almost straight in *D. blagoderovi*. The cercus has 11 combs of retinacula instead of 12 and 13 in *D. turkmenica* and *D. blagoderovi*, respectively. *Docosia distributa* also remarkably resembles two Western Palaearctic species, namely *D. helveola*

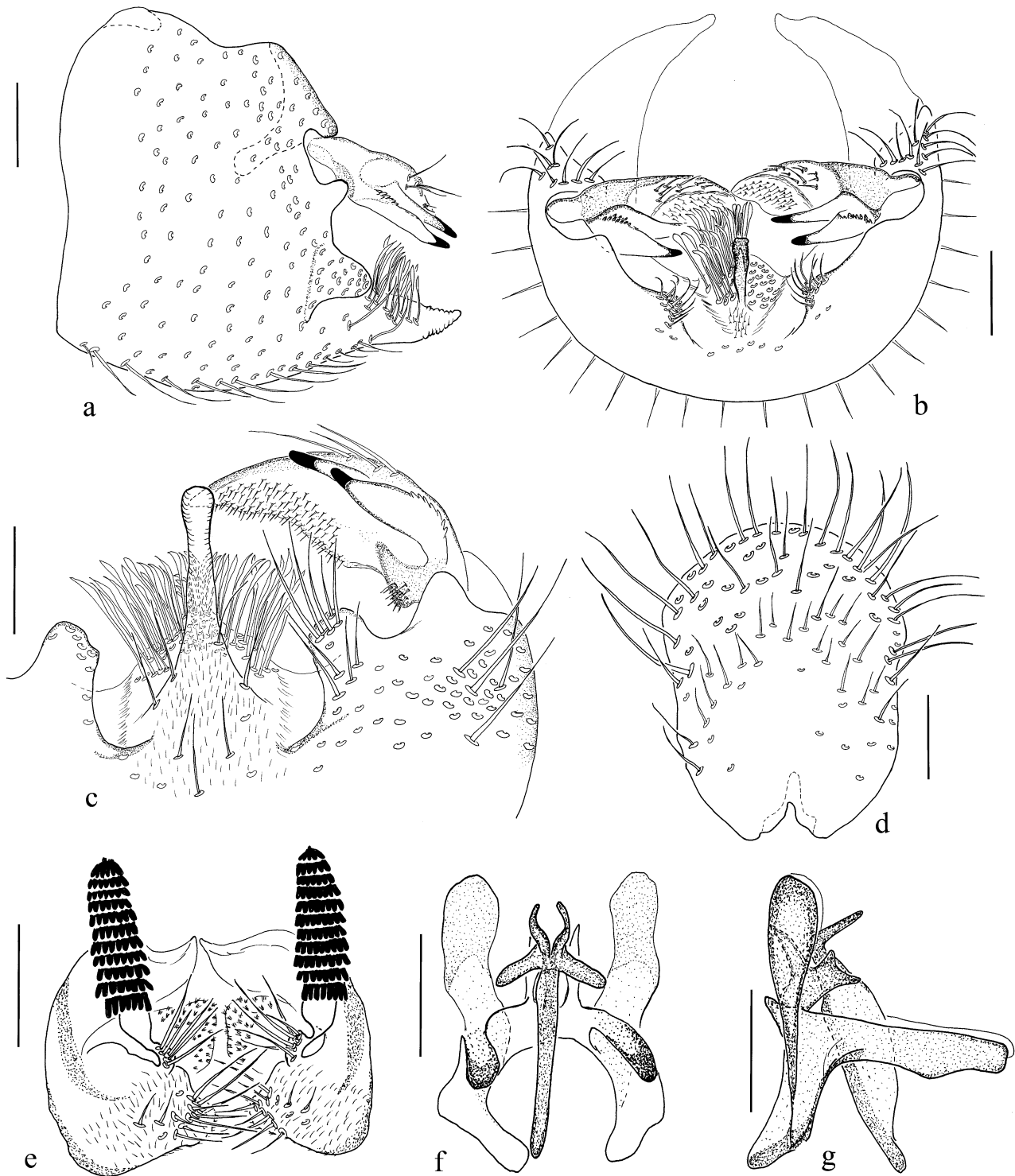


FIGURE 6. *Docosia distributa* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite IX; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm.

Chandler, 1994 from Israel and *D. muelleri* Plassmann, 1986 from Sweden (cf. Chandler 1994, Plassmann 1986). *Docosia distributa* differs from *D. helveola* mainly in the shape of tergite 9, in the slender ventromedial projection of gonocoxite and in the number of combs of retinacula on the cercus (11 in *D. distributa* and 14 in *D. helveola*). *Docosia muelleri* is not sufficiently described and is reliably known only from the male holotype. It is possible that the species figured by Zaitzev (1994: fig. 81, 9) as *D. moravica* Landrock, 1916 actually represents *D. muelleri*.

This view is also supported by Dr. J. Jakovlev (pers. comm. to JŠ) who recently collected this species in northern Europe. Comparing the figure of the genitalia published by Zaitzev (1994: 81, 9) with *D. distributa* (Fig. 6c), both species differ mainly in the shape of ventrolateral extensions of the gonocoxite. In *D. moravica* sensu Zaitzev, these extensions are narrow and almost as long as the ventromedial projection but distinctly shorter and wider than those of both *D. distributa* and *D. helveola*.

***Docosia koyentagi* sp. nov.**

Figure 7.

Type material. Holotype. ♂, TURKMENISTAN, Kugitang Mts., 50 km NE Carsanga, 1500 m a.s.l. sweeping, 28.iv.1989 (V. Blagoderov leg.) [BMNH, glued to a triangular card point].

Description. Male. Body length 2.5 mm (n=1).

Head black with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus blackish brown, with pale setae. Mouthparts dark yellow. Palpus yellowish, with two apical segments paler. Scape dark brown, pedicel brown with yellowish apical part, first flagellomere basally yellowish, rest of flagellomeres brown and with short pale setae. Flagellomeres basally and apically slightly constricted, median flagellomeres about 1.6 times as long as broad, apical flagellomere conical, 2.14 times as long as broad at base.

All parts of thorax black with yellowish white bristles and setae. Scutellum with numerous setae, including two pairs of marginal bristles, one of them considerably stronger and several weaker bristles along the margin. Anteprepronotum and proepisternum with bristles and setae. Upper part of anteprepronotum with two strong bristles, one of them crossing the neck. Laterotergite setose, other pleural parts bare. Halteres yellow.

Legs. Midlegs, except coxae and trochanters, missing. Fore- and hind coxae yellow with basal fifths infuscated. Femora yellow with forefemur brown from underneath of basal fourth. All trochanters brown. Fore- and hind tibia yellow, apically thickened. Hind tibia with three apical black spinules between spurs. First and second tarsal segments yellowish, successive tarsal segments seem more brownish because of dense setae. Hind tibia with 13 a, 15 d, 3 av. Ratio of femur to tibia for fore- and hind legs: 1.13; 0.82. Ratio of tibia to basitarsus for fore- and hind legs: 1.41; 1.81.

Wing hyaline, length 3.12 mm (n=1). Costa, radial veins and r-m brown, other veins paler and M-stem faint. Sc, R₄, bM-Cu, M-stem, basal third of cu-stem and basal two third of A₁ asetose; C, R₁, R₅ and r-m setose on both surfaces; M₁, M₂, apical two third of cu-stem, CuA₁, CuA₂ and apical third of A₁ setose on dorsal surface. Costa reaches 0.26 from R₅ to M₁. Sc distinctly ends in R, at the level of origin of M-stem. Anterior fork begins at the level of R₄. Posterior fork begins before anterior fork at level of middle of r-m. R₁ 2.34 times as long as r-m, which is 0.9 times as long as M-stem.

Abdomen brown with sternites lighter. Terminalia (Fig. 7) light brown. Ventroapical margin of gonocoxite emarginated with a bare finger-like medial process. Gonostylus with basal setae bearing extension and with two subapical spines: more basal spine much smaller and with clearly delimited basal body. Tergite 9 widening apically, without basal incision; apical margin slightly convex. Cercus with 10 combs of retinacula.

Female. Unknown.

Biology. Unknown.

Etymology. The species is named after the type locality in Kugitang Nature Reserve. “Koyentag” is the Turkmen name for “Kugitang” and means “almost impassable mountains”.

Discussion. Among Central Asian species *D. koyentagi* forms a group with *D. sogetensis* and *D. bartaki* because of the setose laterotergite, but differs from both in having yellow coxae. The bare finger-like medial process on the ventroapical margin of the gonocoxite resembles that of *D. sogetensis* but the latter has an additional lateral spines bearing processes (see Kurina 2006: fig. 4b). *Docosia koyentagi* have the gonostylus with two subapical spines and cercus with 10 combs of retinacula while *D. sogetensis* lacks spines and has five combs.

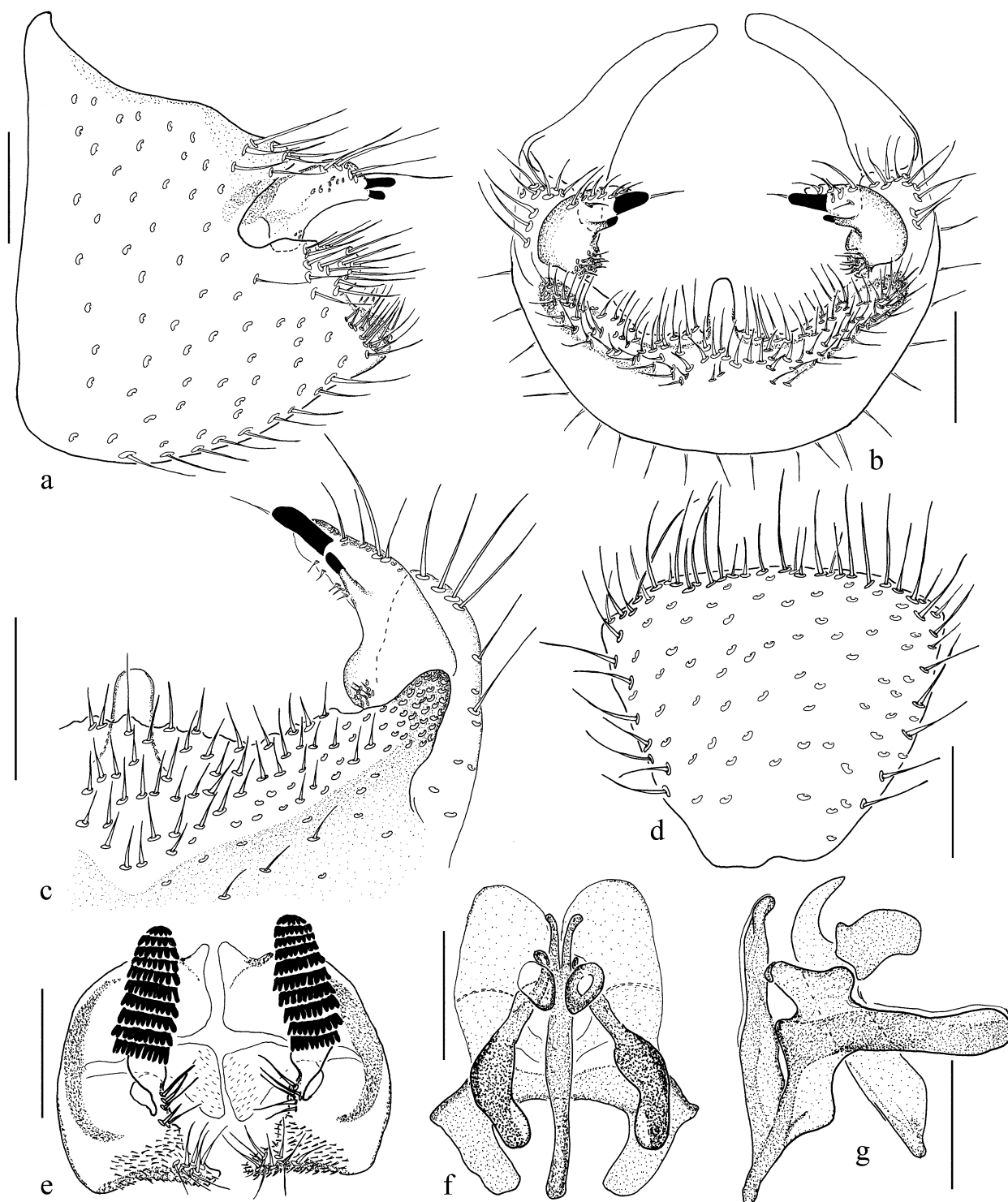


FIGURE 7. *Docosia koyentagi* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite IX; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm.

***Docosia turkmenica* sp. nov.**

Figure 8.

Type material. Holotype. ♂, TURKMENISTAN, Central Kopet-Dag Mts., Big Bakhcha River, 38°09'13,9" N 57°36'16,6"E, 780 m a.s.l., light trap, 05.iv.2011 (A. Pototski leg.) [IZBE, micropinned].

Description. Male. Body length 3.00 mm (n=1).

Head black with numerous pale setae. Three ocelli, with laterals separated from eye margins by a distance less than their own diameter. Clypeus dark brown, with pale setae. Mouthparts brown. Palpus light brown, with two apical segments yellow. Scape and pedicel blackish brown, flagellomeres brown with short pale setae. Flagellomeres cylindrical, median flagellomeres about 2.3 times as long as broad, apical flagellomere elongated conical, 4.2 times as long as broad at base.

All parts of thorax black with yellowish white bristles and setae. Mesonotum shining. Scutellum with numerous setae, including marginal bristles not arranged in distinct pairs. Anteprepronotum and proepisternum with bristles and setae. Upper part of anteprepronotum with two strong bristle, one of them crossing the neck. Laterotergite and other pleural parts bare. Halteres yellow.

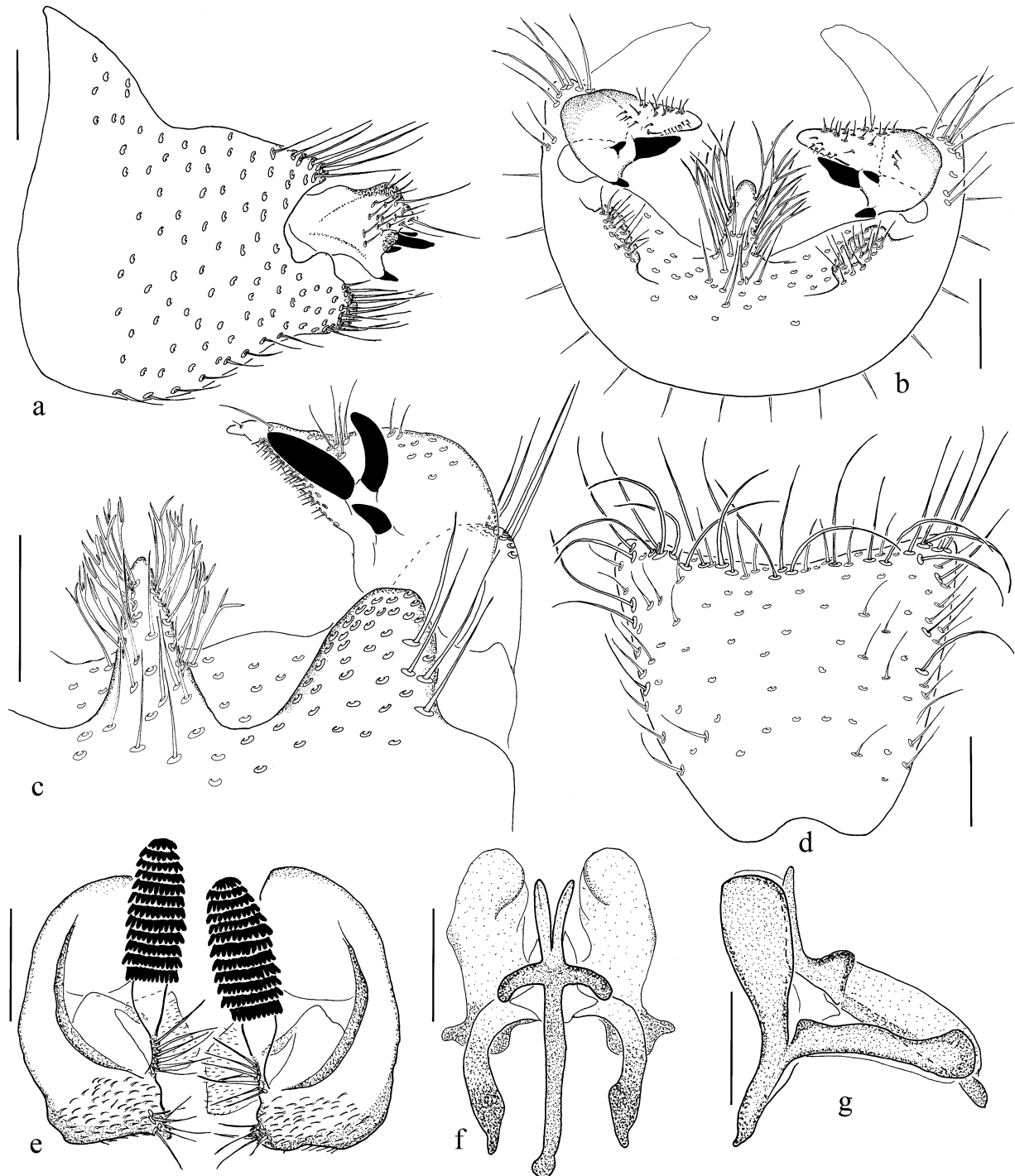


FIGURE 8. *Docosia turkmenica* sp. nov., male terminalia. a, lateral view; b, posterior view; c, ventral view of gonostylus; d, dorsal view of tergite IX; e, dorsal view of cerci; f, ventral view of aedeagal complex; g, lateral view of aedeagal complex. Scale bar = 0.1 mm.

Legs. Forecoxa basally infuscated; midcoxa brown in basal fifth; hind coxa brown in basal third. Femora yellow, fore- and midfemur ventrally brown. All trochanters brownish. Tibiae yellow, foretibia apically thickened. Mid- and hind tibiae with two apicoventral spinules between spurs. Tarsal segments seem brownish because of dense setae. Midtibia with 6 a, 5 d, 8 pv and 3 p. Hind tibia with 14 a, 13 d, 4 av. Ratio of femur to tibia for fore-, mid- and hind legs: 1.6; 1.09; 0.82. Ratio of tibia to basitarsus for fore-, mid- and hind legs: 1.05; 1.48; 1.82.

Wings hyaline, length 3.51 mm. Radial veins and apical half of r-m brown, other veins paler and M-stem very faint. Sc, R₄, bM-Cu, M-stem, basal third of cu-stem and basal third of A₁ asetose; C, R₁, R₅ and r-m setose on both surface; M₁, M₂, apical two third of cu-stem, CuA₁, CuA₂ and apical two third of A₁ setose on dorsal surfaces. Costa reaches 0.34 from R₅ to M₁. Sc distinctly ends in R, before the level of origin of m-stem. Anterior fork begins slightly before the level of R₄. Posterior fork begins before anterior fork at level of middle of r-m. R₁ 2.9 times as long as r-m, which is 1.1 times as long as M-stem.

Abdomen brown with setae pale. First segment somewhat darker. Terminalia (Fig. 8) dark brown with gonostyli lighter. Ventroapical margin of gonocoxite with bifid megasetae bearing medial projection and wide lateral extensions. The gonostylus with three spines on ventromedial side. Tergite 9 widening apically; apical margin concave. Cercus with 12 combs of retinacula.

Female. Unknown.

Biology. Unknown.

Etymology. The name refers to the occurrence of the species in Turkmenistan.

Discussion. *Docosia turkmenica* is close to *D. blagoderovi* in sharing the general outline of male terminalia. See discussion under the latter for further details.

New records

Docosia gilvipes (Haldy in Walker, 1856)

During a study visit to MNHN in Paris JŠ found a series of specimens collected in South Africa and labelled in 1982 by the late Prof. Loïc Matile as “*Docosia* undescr. sp.”. After careful study of terminalia, independently accomplished by both authors, they proved to belong to *Docosia gilvipes*, a species widely distributed in the Palaearctic region (cf. Zaitzev 1994, Chandler 2011) but not recorded beyond it so far. The question remains if this is a case of a recent introduction.

Material. SOUTH AFRICA. 20♂♂ 22♀♀, RSA Natal, 15km WSW, Est. Court, Cathedral, Peak For. Sta., 1700 m, 21.-31.xii.1979 (S. et J. Peck leg.) [MNHN, micropinned].

Docosia selini Kurina, 2006

Known so far from its type localities in Charyn Canyon and Sogety Mountains in Kazakhstan (see Kurina 2006).

Material. UZBEKISTAN. 3♂♂, Chimgan 41°30'57,7" N 70°01'44,4"E, 1820 m a.s.l. 12.v.2008, at light (A. Selin leg.) [2 in ASPC; 1 in IZBE, micropinned]; 1♂, Mekhnad, Syr-Darja riv. 41°01'03,5" N 68°36'28,7"E, 10.v.2008, at light (A. Selin leg.) [IZBE, micropinned].

Acknowledgements

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