

## A Brief Synopsis of Palaearctic Genera of the Family Dolichopodidae (Diptera)

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**Grichanov I. Ya., Selivanova O. V. & Negrobov O. P. A Brief Synopsis of Palaearctic Genera of the Family Dolichopodidae (Diptera).**  
**Summary.** Key characters and notes on composition of 82 Palaearctic genera of Dolichopodidae s. str. and 5 genera of Microphorinae and Parathalassiinae are listed along with habitus illustrations of some typical and rare Palaearctic species.

Key words: Diptera, Dolichopodidae, genera, Palaearctic Region, synopsis.

**Гричанов И. Я., Селиванова О. В. и Негрбов О. П. Краткий обзор палеарктических родов семейства Dolichopodidae (Diptera).**  
**Резюме.** Рассмотрены диагнозы и состав 82 палеарктических родов семейства Dolichopodidae s. str. и 5 родов подсемейств Microphorinae и Parathalassiinae (часто рассматриваемых в качестве отдельных семейств). Даны рисунки и фотографии внешнего вида ряда типичных и редких видов.

Ключевые слова: Diptera, Dolichopodidae, роды, Палеарктика, обзор.

**Гричанов І. Я., Селиванова О. В. і Негрбов О. П. Короткий огляд палеарктичних родів родини Dolichopodidae (Diptera). Резюме.** Розглянуто діагнози та склад 82 палеарктичних родів родини Dolichopodidae s. str. та 5 родів підродин Microphorinae і Parathalassiinae (які часто розглядають як окремі родини). Наведено рисунки та світліни зовнішнього виду низки найбільш характерних та рідкісних представників більшості родів.

Ключові слова: Diptera, Dolichopodidae, роди, Палеарктика, огляд.

### Introduction

The Dolichopodidae s. str. fauna of the World is very large, with over 7400 described species belonging to 268 genera, including nearly 100 fossil species and 29 fossil genera (Grichanov, 2003–2011). The subfamilies Microphorinae and Parathalassiinae, which are included in an expanded concept of the Dolichopodidae (i.e. Dolichopodidae s. lat.), comprise about 100 species (including 13 fossil species) and 13 genera (*ibid.*). Sixty-six genera of Dolichopodidae s. str. were listed in The Catalogue of Palaearctic Diptera (Negrobov, 1991), of which many have been placed in synonymy, renamed or restored from synonymy by now. Since the publication of Negrobov's (1991) Catalog, which includes names published up until the end of 1982, a number of new Palaearctic genera of the family

have been described. Recently, Grichanov & Negrobov (2011) provided a revised checklist of Palaearctic genera of the family Dolichopodidae, which included 82 genera of Dolichopodidae s. str. and 5 genera of Microphorinae and Parathalassiinae. *Cymatopus* Kertész, 1901, was erroneously included in that list of Palaearctic genera. In the present paper, we give a brief synopsis of all Palaearctic genera along with habitus illustrations of some typical and rare species. Usually key characters of the subfamily rank are listed below in the generic diagnoses. Keys to subfamilies and genera will be published separately. Line drawings were made by Olga Selivanova from dry specimens; photos were taken by Igor Grichanov (except as noted).

**Dolichopodidae sensu stricto****Achalcinae*****Achalcus* Loew, 1857 (Fig. 1)**

There are 24 world species of *Achalcus*. Small-sized species;  $R_{4+5}$  and  $M_{1+2}$  slightly to distinctly divergent; 5 dorsocentral bristles; scape bare; arista-like stylus at least as long as first 3 antennal joints; uppermost 4–5 postocular bristles brownish to black; wing more than 2.5 times as long as wide; hind tibia with 3 anterodorsal and 3 posterodorsal bristles; hypandrium with smooth apex. A key to the 8 known Palearctic species (all from Europe) was provided by Pollet (1996). Recently an additional Palearctic species, *A. polleti* Negrobov et Selivanova, 2010, was described from the Russian Far East.

***Australachalcus* Pollet, 2005 (Fig. 2)**

There are 24 world species of *Australachalcus* including two from the Palearctic Region. The genus is separated from *Achalcus* Loew by the possession of 6 dorsocentral bristles, epandrial setae inserted at the base of the male



Fig. 1. *Achalcus cinereus* (Haliday, 1851).

epandrial lobe, and by the midventral bristle of the male surstylus with a terminal enlargement. Small-sized, dark-coloured species with thorax globular and wings distinctly darkened;  $R_{4+5}$  and  $M_{1+2}$  slightly to distinctly divergent; 6 dorsocentrals; fore tibia without basodorsal bristle; hind tibia with only 2 anterodorsal bristles; 6 pubescent abdominal segments. *A. melanotrichus* (Mik, 1878) larvae breed in rotholes of deciduous trees. Thus far, birch, elm, horse chestnut, lime tree, oak and poplar have been recorded as host trees (Pollet, 1996). *Australachalcus japonicus* Pollet et Stark, 2005 is only known from Japan; *A. melanotrichus* occurs in Europe.

**Diaphorinae*****Argyra* Macquart, 1834 (Fig. 3)**

This genus is largely Holarctic and Oriental, with more than 100 described species. About 40 species are known from the Palearctic Region. Two species were described from Ethiopia and Kenya, both lacking argyaceous tomentosity on body. Medium-sized species; occiput concave; antennal postpedicel pressed laterally, bladelike to subtriangular, with distinct apex and dorsal to dorsoapical arista-like stylus; costa extending beyond tip of  $R_{4+5}$ , ending at apex of vein  $M_{1+2}$ ; vein  $M_{1+2}$  unbroken; hind coxa with external vertical row of 3–4 setae decreasing in length ventrally; scape with dorsal setae (bare in some species). See keys by Parent (1938), Negrobov (Негробов, 1973), Wang & Yang (2004), Grichanov (2006 b, 2007).



Fig. 2. *Australachalcus melanotrichus* (Mik, 1878).

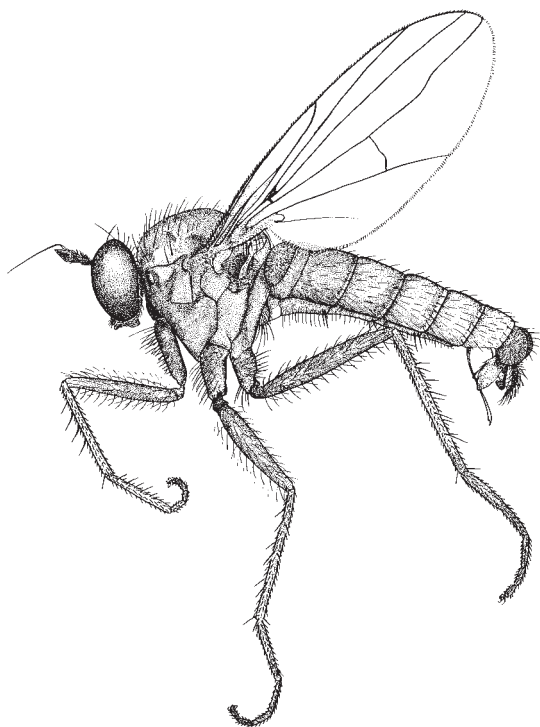


Fig. 3. *Argyra takagii* Negrobov & Satô, 2009

***Asyndetus* Loew, 1869 (Fig. 4)**

This cosmopolitan genus is defined (together with *Cryptophleps* Lichtwardt) by the synapomorphy of the broken and displaced vein M which readily distinguishes it from the closely related and probably ancestral genus *Diphorus*. *Asyndetus* can be common in littoral habitats, including arid coasts (Bickel & Sinclair, 1997). Some 100 species are described from all regions of the World. There

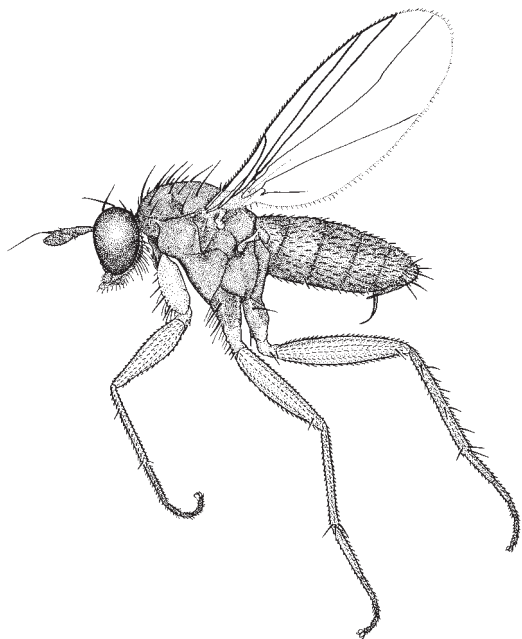


Fig. 4. *Asyndetus longicornis* Negrobov, 1973

are 23 species of Palearctic species of *Asyndetus*. Small to medium-sized (body length 1.5–4.5 mm); upper part of proepisternum with 2–4 fine setae; acrostichals usually present; male segment 8 often with strong projecting setae. A key to species was given by Negrobov (1973). Wang al. (2007) provided a key to males of the Chinese species.

***Chrysotus* Meigen, 1824 (Fig. 5)**

Some 320 species of *Chrysotus* have been described and the genus is known to occur in all zoogeographic regions. In the Palearctic Region this genus is represented by about 60 species. *Chrysotus* is close to *Achradocera* Becker, 1922, but differs in the following characters: male postpedicel globular, reniform or conoid with long subapical arista-like stylus; lower postocular surface with fine unmodified setae. Small-sized species; males and females with frons wider than face; face narrowing downward; eyes shortly haired; male eyes very narrowly separated or contiguous on face (sometimes widely separated), with facets enlarged toward face; propleuron with 2–3 bristles on lower part;  $R_{4+5}$  and  $M_{1+2}$  usually convex anteriorly and parallel apically. Negrobov, Tsurikov & Maslova (Negrobov, Цуриков и Маслова, 2000) provided a key to males of the Palearctic Region species of *Chrysotus*. The last key to males of Chinese species was published by Wang & Yang (2009).

***Cryptophleps* Lichtwardt, 1898 (Fig. 6)**

This is an Old World genus comprising one transpalearctic species, one species from West Africa, two

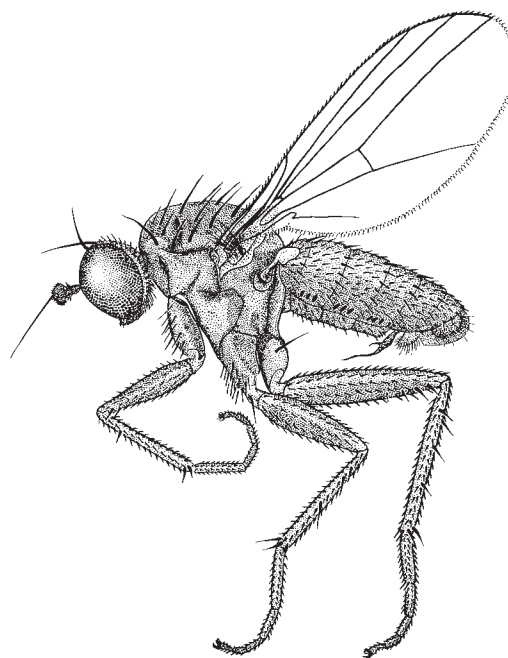


Fig. 5. *Chrysotus smithi* Negrobov, 1980





Fig. 6. *Cryptophleps kerteszi* Lichtwardt, 1898

from the Seychelles, four from Australia, and ten from western Pacific island groups. We have also examined material from Namibia and Saudi Arabia. The genus occurs in a variety of habitats, including tropical coastal mudflats, mangroves, rainforests, and temperate woodlands (Bickel, 2005). Small-sized species; costa not extending beyond tip of  $R_{4+5}$ ; distal vein  $M_{1+2}$  gently sinuate, broken or weakened, with distal section often displaced; vein  $R_{4+5}$  ending along distal anterior wing margin, well before wing apex; distal parts of  $R_{4+5}$  and  $M_{1+2}$  strongly diverging; upper part of proepisternum usually bare; acrostichals absent or microscopic; male segment 8 without strong setae.

#### *Diaphorus* Meigen, 1824 (Fig. 7)

Some 260 species of *Diaphorus* are described from the World, including about 40 from the Palearctic Region. Small- to medium-sized species; male eyes contiguous or narrowly separated on frons; face rather wide and parallel-sided; postpedicel rather small and short, usually wider than long; arista-like stylus with very short basal segment; acrostichals biseriolate; wing usually somewhat wedge-shaped, with greatest width before middle; male segment 8 with 4–8 strong bristles. A key to Palearctic species of *Diaphorus* males was provided by Negrobov, Selivanova & Maslova (Негробов, Селиванова и Маслова, 2007). The last key to males of Chinese species was published by Wang et al. (2006 a).

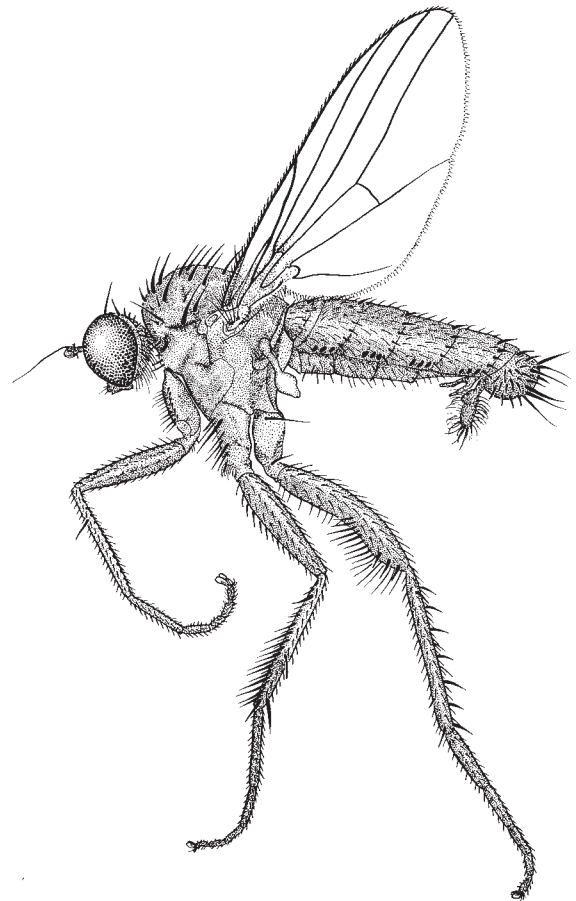


Fig. 7. *Diaphorus zlobini* Negrobov et Duchanina, 1987

#### *Falbouria* Dyte, 1980 (Fig. 8)

This monotypic genus is known from Azores. Occiput concave; antennae positioned at middle of head; antennal postpedicel pressed laterally, short, with distinct apex and preapical arista-like stylus; wing vein  $M_{1+2}$  nearly straight; male segment 7 short; Hind coxa with one external seta at basal quarter; scape bare.

#### *Melanostolus* Kowarz, 1884 (Fig. 9)

There are six Palearctic species of *Melanostolus*. Short, rather stocky species; occiput concave; male frons broad; eyes distinctly separated below antennae; antennae positioned above middle of face height; arista-like stylus usually dorsal; at least 5 pairs of dorsocentral bristles; hind femur without subapical setae; mid tibia without ventral setae; hypopygium with strong setae; hypopygial cercus mainly hidden. A key was provided by Negrobov (Негробов, 1984). Subsequently an additional Palearctic species, *M. negrobovi* Olejnicek et Bartak, 1999, was described from Uzbekistan.

#### *Nematoproctus* Loew, 1857 (Fig. 10)

The world fauna of *Nematoproctus* includes 15 described species, of which four occur in the Palearctic Re-



Fig. 8. *Falbouria acorensis* (Parent, 1933). Photo by Dr. Vladimir Blagoderov (London) with kind permission.  
 Fig. 9. *Melanostolus nigricilius* (Loew, 1871). Fig. 10. *Nematoproctus praeseectus* Loew, 1869. Fig. 11. *Trigonocera rivosana* Becker, 1902.

gion. Relatively long, slender species; male frons broad; eyes distinctly separated below antennae; antennae positioned above middle of face height; arista-like stylus dorsal; hypopygial cercus free; hind femur without subapical setae; mid tibia with at least one ventral seta. See Negrobov and Stackelberg (Негробов и Штакельберг, 1976) for a review of the Palearctic Region species.

#### ***Trigonocera* Becker, 1902 (Fig. 11)**

There are nine described Old World species of *Trigono-*

*cera* (Naglis, 1999; Grichanov & Mostovski, 2009). *Trigonocera rivosana* Becker, 1902, is recorded from Egypt, Cape Verde Is. and Taiwan. Small- to medium-sized species; frons narrow; face wide and parallel-sided; postpedicel large, usually with acute apex; arista-like stylus apical; 5–6 dorsocentrals, acrostichals biseriate; wing with large anal area; femora without preapical bristles; male tergum 6 bare, genitalia small, hidden within pregenital segments.



## Dolichopodinae

### *Argyrochlamys* Lamb, 1922 (Fig. 12)

This genus includes seven species recorded from the Afrotropics (Angola, Ghana, Sudan, Djibouti, Eritrea, Tanzania, Seychelles and Mauritius), the Oriental Region (Chagos Archipelago, Sri Lanka) and the southernmost part of the Palaearctic Region (two species from southern Egypt and Oman) (Grichanov, 2010 b). Species of *Argyrochlamys* are restricted to ocean beaches and are sometimes collected in crab burrows (e.g., *Ocypode* Lamarck, Ocypodidae); at present, their ecological role within these burrows is unknown (Grichanov, 2004; Brooks, 2005). Body medium-sized, non-metallic; head grey, with whitish pollen, wider than high, with frons and face broad in both sexes; frons distinctly wider than high; thorax yellow, pale-grey to dark grey or blackish with whitish-grey pollen; antennal stylus dorsal to apical, bare; 6 dorsocentrals, fifth pair usually strongly offset medially; vein  $M_{1+2}$  beyond crossvein dm-cu usually with strong anterior bend and strongly convergent with  $R_{4+5}$ ; dm-cu located at about half wing length; abdomen yellowish brown; hind basitarsus of male with elongate comma-shaped posterobasal projection; male genitalia with proctiger brushes absent; female oviscapt usually with a pair of strong protruding rod-like ventral lobes; if projections reduced, then setae of body and legs pale. A key to all species was provided by Grichanov (2010 b).



Fig. 12. *Argyrochlamys impudicus* Lamb, 1922

### *Dolichopus* Latreille, 1796 (Fig. 13–14)

*Dolichopus* includes 614 mainly Holarctic species, of which 270 occur in the Palaearctic Region. *Dolichopus afroingulatus* Grichanov, 2004, is the only endemic species from the continental Afrotropics, distributed from South Africa to Ethiopia. *Dolichopus* has many links with *Her-*

*costomus* Loew and *Lichtwardtia* Enderlein, differing from the former in the hind basitarsus bearing 1–3 strong setae above and the pteropleuron having a group of fine hairs in front of posterior spiracle, and differing from the latter in  $M_{1+2}$  being sigmatoid at middle of distal part, rarely with one stublike vein. Body medium- to large-sized. A Palaearctic key to males was published by Negrobov et al. (2005). Zhang & Yang (2008) provided a key to Chinese species. The last key to species of the *D. latipennis* group was published by Negrobov et al. (2009). The last key to males of species of the *D. planitarsis* group was published by Barkalov et al. (2009). Females of closely related Palaearctic species are often not easily discernible.

### *Ethiomyia* Brooks et Wheeler, 2005 (Fig. 15)

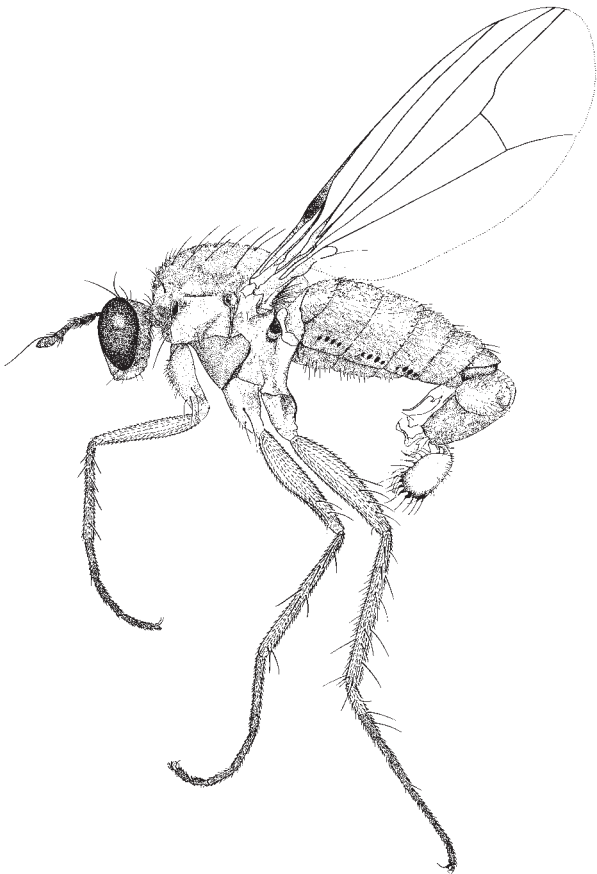
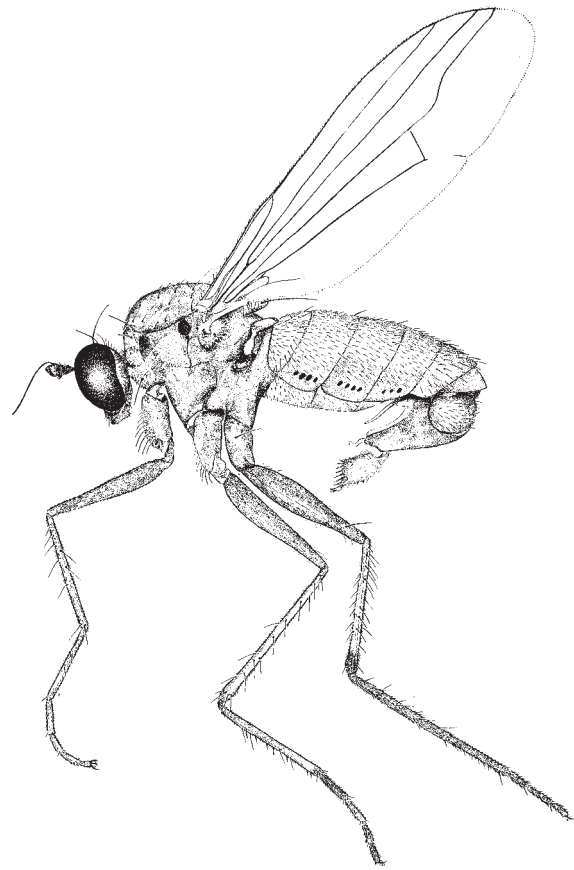
There are 2 Nearctic and 1 Palaearctic species of this genus. *Ethiomyia chalybea* (Wiedemann, 1817) occurs in Europe. Body medium-sized. Pteropleuron with cluster of fine hairs in front of posterior spiracle; vein M straight and subparallel with  $R_{4+5}$  beyond crossvein dm-cu; fore tibia lacking anterodorsal comb-like row of strong spine-like setae, with 1–3 strong posteroventral setae, male fore tibia with long apicoventral seta; male cercus large, rounded, pale with dark margin; margin with very long, fine setae; dorsal surstylus notched preapically on dorsal surface with keel-like projection across notch; posterodorsal part of postgonite absent or simple and digitiform. Brooks & Wheeler (2005) redescribed all three species and provided a key.

### *Gymnopternus* Loew, 1857 (Fig. 16)

Some 120 species of *Gymnopternus* are described from the World, including about 15 from the Palaearctic Region. Body medium-sized. Pteropleuron with cluster of fine hairs in front of posterior spiracle; vein M straight and subparallel with  $R_{4+5}$  beyond crossvein dm-cu; fore tibia usually with anterodorsal comb-like row of strong spine-like setae, usually lacking strong posteroventral setae, male fore tibia lacking long apicoventral seta; clypeus usually flat to weakly produced, proboscis not enlarged and projecting; male cercus variable; dorsal surstylus not notched preapically on dorsal surface; posterodorsal part of postgonite complex, broad, with a pair of dorsolateral lobes, often with secondary dorsal and lateral membranous lobes, and usually with a medioventral lobe. Palaearctic species were incorporated into keys to *Hercostomus* sensu lato by Stackelberg (1933), Parent (1938), and Negrobov et al. (2008). A key to western European species was provided by Pollet (1990).

### *Hercostomus* Loew, 1857 (Fig. 17)

Some 500 species of *Hercostomus* are described from the World, including about 130 from the Palaearctic Region. *Hercostomus*, as currently recognized, is still a polyphyletic assemblage of species, sharing many characters with the closest genera (Brooks, 2005). Body medium- to large-

Fig. 13. *Dolichopus latipennis* Fallén, 1823.Fig. 14. *Dolichopus mannerheimi* Zetterstedt, 1838Fig. 15. *Ethiomyia chalybea* (Wiedemann, 1817).Fig. 16. *Gymnopternus brevicornis* (Staeger, 1842).

sized. Thorax lacking distinct dark spot above notopleuron; mid femur with 1 strong posterior preapical about even with anterior preapical; hind femur with anterior seta positioned

at apex, usually not or slightly flattened laterally; wing rarely darkened in anterior half; wing vein  $M_{1+2}$  weakly sinuate, with flexion at basal third or at middle of distal part

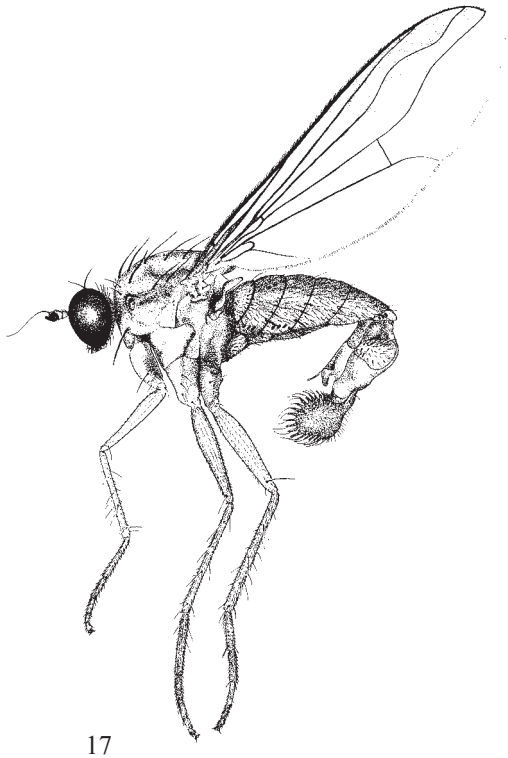


Fig. 17. *Hercostomus phoebus* Parent, 1927.

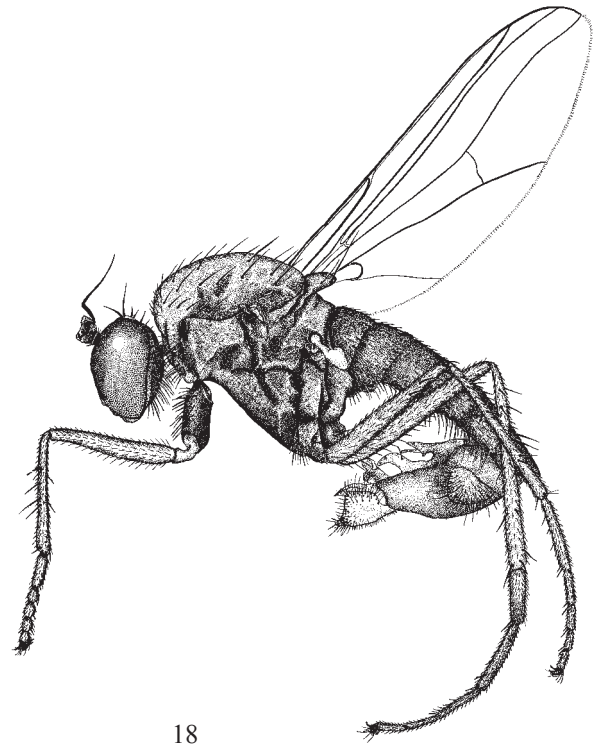


Fig. 18. *Muscidideicus praetextatus* (Haliday, 1855)

and sometimes with subapical flexion; antennal pedicel normal; epandrial lobe reduced to 1–2 setae; basiventral epandrial lobes and hypandrium forming a complex of entangled asymmetrical lobes; male cercus light or dark; female hemitergite 9+10 with 4 thick setae. Nectar-feeding is known in some species of *Hercostomus*. Keys to *Hercostomus* sensu lato were given by Stackelberg (1933) and Parent (1938), but these are outdated. Negrobov et al. (2008), Negrobov & Nechay (2009) and Negrobov и Нечай (2009) published keys to *Hercostomus* sensu lato, groups I, IV and V (sensu Parent). See also keys compiled for western Palearctic species by Grichanov (2006 b, 2007), for some Chinese species groups by Zhang & Yang (2007), Zhang et al. (2007, 2008).

#### ***Muscidideicus* Becker, 1917 (Fig. 18)**

*Muscidideicus* is monotypic and includes the European species, *M. praetextatus* (Haliday). See Stackelberg (1934) and Parent (1938) for diagnosis. Body medium-sized. Seven dorsocentrals; abdomen broad and flattened dorsoventrally; veins  $R_{4+5}$  and M subparallel and sinuous beyond crossvein dm-cu, male wing with pronounced convex curve in  $R_{4+5}$  and M and darkened apex; surface setae on mid and hind femora well-developed, nearly as strong as preapical setae; upper and lower propleuron with long dense hairs, prothoracic seta pale or brown; posterodorsal part of postgonite not developed.

#### ***Ortochile* Latreille, 1809 (Fig. 19)**

There are 3 European species. See Stackelberg (1934) for a redescription. *Ortochile* is considered monophyletic on the basis of a greatly elongated proboscis and the rounded lower margin of the clypeus (Brooks, 2005). Body medium-sized. Proboscis long and narrow, at least 1.5 times longer than height of head; palpus long and narrow, adjacent to proboscis; veins  $R_1$ ,  $R_{2+3}$  and  $R_{4+5}$  positioned close to anterior wing margin; vein M beyond crossvein dm-cu with weak anterior bend before middle, convergent with  $R_{4+5}$  and ending well above wing apex, close to apex of  $R_{4+5}$ . Adults of *Ortochile* are associated with flowers (in particular those of the family Asteraceae) and two species are known to feed on nectar.

#### ***Paraclius* Loew, 1864**

*Paraclius*, as currently recognized, is a polyphyletic assemblage of about 130 species (Brooks, 2005). Body medium-sized. Face of male very narrow and strongly converging below; face and clypeus broad in female with sides subparallel or convergent below; antennal stylus dorsal, near base, distal segment strongly pubescent; 5 dorsocentrals; section of  $M_{1+2}$  beyond crossvein dm-cu with strong, arcuate anterior bend beyond middle, strongly convergent with  $R_{4+5}$ ; hind femur wide and flat with anterior preapical near apex; hypopygium with elongate anterior apicoventral epandrial seta and distinctive elongate ventral surstylus; api-





Fig. 19. *Ortochile nigrocoerulea* Latreille, 1809.

coventral and basoventral epandrial lobes not developed; proctiger brush sometimes well-developed; male cercus lacking basolateral tail (New World *P. arcuatus* lineage). Three *Paraclius* species described from the Far East belong probably to the Afrotropical genus *Apelastoneurus* Grichanov, 2006.

#### ***Phalacrosona* Becker, 1922**

There are 5 described Oriental species, of which *P. zhenzhuristi* (Smirnov et Negrobov, 1979) was originally described from Japan (Zhang et al., 2009). This genus was synonymised with *Hercostomus* Loew (Brooks, 2005); but being quite distinct in morphology (Zhang & Yang, 2005 b; Zhang et al., 2009). Body with silvery colour, reduced thoracic setation (e.g., anterior acrostichals absent), broad face and clypeus with the lower margin rounded and extending beyond the lower eye margin; fore and/or mid tarsus modified in males; outer margin of antennal sockets distant from inner margin of eyes; hypopygium small.

#### ***Platyopsis* Parent, 1929**

*Platyopsis* includes the single species *P. maroccanus* (Parent, 1929) from Morocco and Algeria. See Stackelberg (1934) for redescription. *Platyopsis* is distinguished by the following combination of characters: face broad; clypeus strongly bulging and subequal in height to face; mid femur

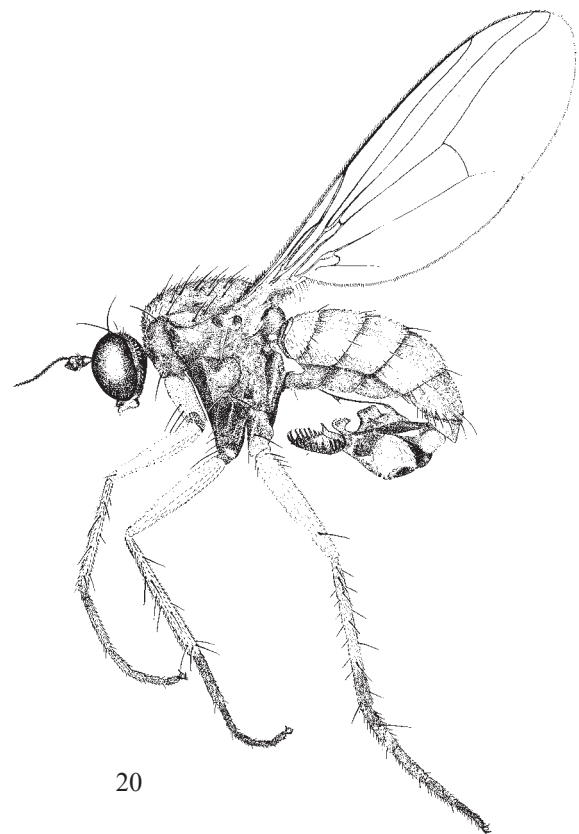


Fig. 20. *Poecilobothrus regalis* (Meigen, 1824).

with 2–4 anterior and 2 posteroventral preapical setae; hind femur with 2 anterodorsal preapical setae; hind basitarsus with 1 strong basiventral seta; distal section of  $M_{1+2}$  beyond crossvein dm-cu with weak anterior bend before middle (Brooks, 2005).

#### ***Poecilobothrus* Mik, 1878 (Fig. 20)**

This genus has 14 western Palearctic species. Body medium- to large-sized. Hind femur with anterior seta positioned at apex, usually not or slightly flattened laterally; wing vein  $M_{1+2}$  weakly sinuate, with flexion at basal third or at middle of distal part and sometimes with subapical flexion; antennal pedicel normal; epandrial lobe well developed; hypandrium simple, fused to epandrium laterally to middle; thorax with distinct dark spot above notopleuron; wing vein  $M_{1+2}$  irregularly sinuate, often with subapical flexion; wing distinctly darkened in anterior half along major veins; one strong posterior to posteroventral preapical seta on mid femur; hypandrium short conical, fused to epandrium laterally; male cercus dark; female hemitergite 9+10 with 5 thick setae. A key to 8 Mediterranean species was provided by Grichanov (2007).

#### ***Pterostylus* Mik, 1878**

This monotypic genus was synonymised with *Poecilobothrus* Mik (Brooks, 2005); but being quite distinct in

morphology (e.g., Negrobov (Негробов, 1979), considered *Lichtwardtia* Enderlein, 1912 as subgenus of *Pterostylus*). See Stackelberg (1934) for redescription. *Pterostylus aberrans* (Loew, 1871) is known from Tajikistan. Face moderately narrow, nearly parallel-sided, somewhat wider under antennae; ocellar tubercle weak; antenna located at about middle of head; postpedicel short, ovate, with nearly plumose arista-like stylus; thorax with distinct dark spot above notopleuron; lateral scutellars weak; mid and hind femora each with 1 preapical bristle; hind basitarsus shorter than tarsomere 2, having 1 strong seta above;  $R_{4+5}$  and  $M_{1+2}$  strongly convergent; male abdominal segments 6 and 7 short; male cercus mostly yellowish-white, short, oval, moderately incised distally.

#### *Setihercostomus* Zhang et Yang, 2005

Two species of this genus are known from Oriental China. *Setihercostomus setifacies* (Stackelberg, 1933) inhabits the Far East of Russia (Primorskii Territory). A species of *Setihercostomus* was recently recorded from Slovakia (Pollet, 2009). Small to middle-sized (body length 2.8–3.6 mm, wing length 2.5–3.1 mm). Eyes dichoptic; vertex flat; ocellar tubercle weak, with 2 strong ocellars and 6 short posterior hairs; verticals nearly as long as ocellars; postverticals distinctly shorter than verticals; male face narrowing downward; female face wide, nearly parallel-sided;

clypeus short and small (1/5 as long as combined length of face and clypeus), with a pair of strong bristles at middle; antennal scape haired dorsally, distinctly longer than pedicel; postpedicel distinctly longer than wide; arista-like stylus dorsal, minutely pubescent; antennal sockets narrowly separated, close to inner margin of eyes; 6 pairs of strong dorsocentrals (5th one divergent from dorsocentral row), close to acrostichal rows; lateral scutellars short and hair-like; pteropleuron with several fine hairs in front of posterior spiracle; hind coxa with 1 outer bristle at middle; hind femur thick (5–6 times longer than wide); mid and hind femora each with 1 preapical bristle; hind tarsomere 1 shorter than tarsomere 2; wing with  $R_{4+5}$  and  $M_{1+2}$  parallel apically;  $M_{1+2}$  ended near wing tip; male cercus rather large.

#### *Sybistroma* Meigen, 1824 (Fig. 21–22)

This genus contains 49 western and eastern Palearctic species and one species *S. bogoria* Grichanov described from Kenya (Grichanov, 2004). The genus has recently been expanded to include *Hypophyllus* Haliday, 1832, *Ludovicus* Rondani, 1843, *Nodicornis* Rondani, 1843 and some species of *Hercostomus* Loew (Brooks, 2005). Middle-sized (body length 3–5 mm); vertex somewhat flat; ocellar tubercle with 2 strong ocellars; verticals as long as or slightly shorter than ocellars, postverticals distinctly

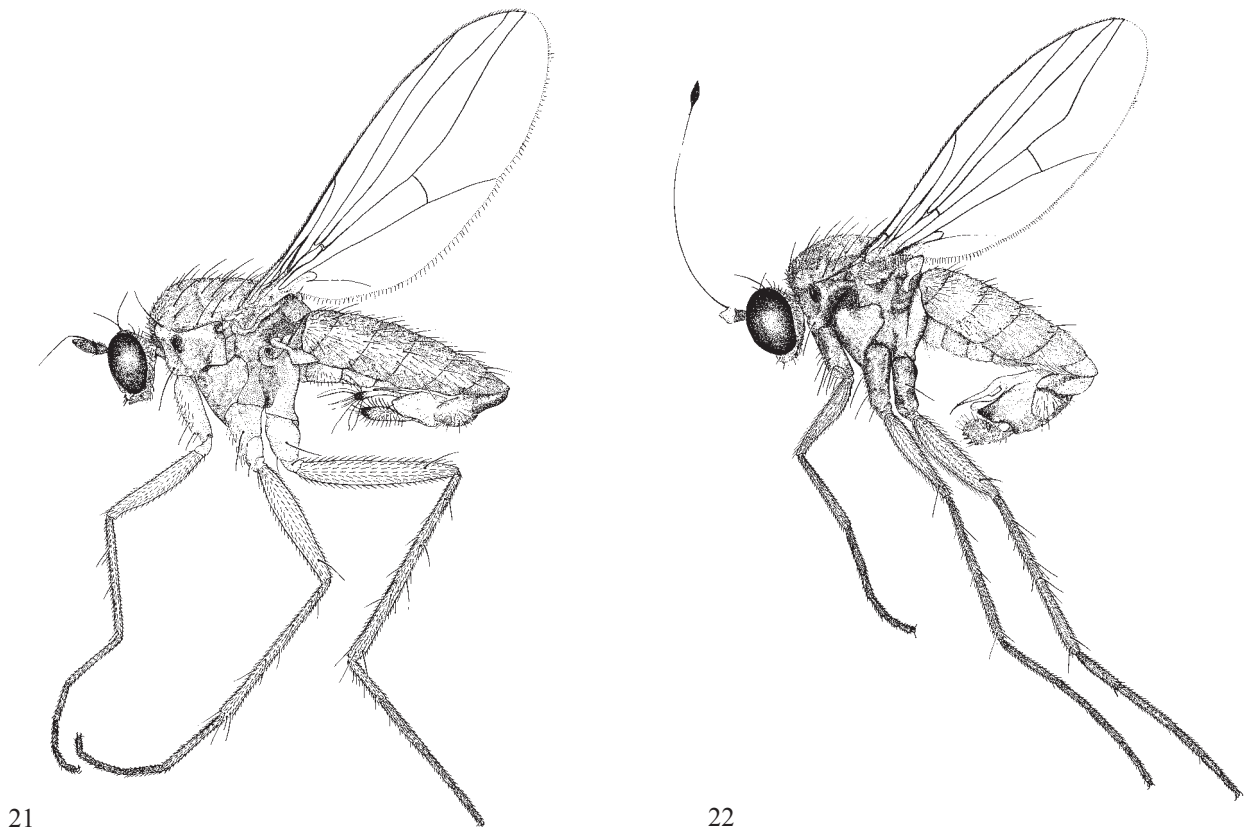


Fig. 21. *Sybistroma obscurella* (Fallén, 1823). Fig. 22. *S. transcaucasica* (Stackelberg, 1941).

shorter than verticals; face narrowing downward; eyes narrowly separated; clypeus short and small ( $1/7$ – $1/5$  as long as combined length of face and clypeus), contiguous to eyes laterally, with straight lower margin; not reaching lower margin of eyes; antennal scape haired dorsally, swollen; pedicel usually reduced; arista-like stylus 1–2 segmented, dorsal to subapical, nearly bare, longer than width of head; antennal sockets close to each other, close to inner margin of eyes; scutellum with 2 pairs of bristles, apical pair strong, lateral pair  $1/5$  as long as apical pair; pteropleuron without hairs in front of posterior spiracle; hind coxae with 1 outer bristle at middle; mid and hind femora each with 1 preapical bristle; hind femur slender, 8–9 times longer than wide; hind tarsomere 1 without dorsal bristle, shorter than tarsomere 2;  $M_{1+2}$  slightly curved towards  $R_{4+5}$ , distinctly ended before wing tip. A key to the 18 Mediterranean species was provided by Grichanov (2007). Yang & Saigusa (2001) and Zhang & Yang (2005 a) provided keys to Chinese species (as *Ludovicicus*).

### *Tachytrechus* Haliday, 1851 (Fig. 23)

There are 154 described species of *Tachytrechus*, of which 30 occur in the Palaeartic Region. Middle-sized (body length 3–5 mm); eyes dichoptic; vertex distinctly concaved; ocellar tubercle distinct; hind basitarsus without setae above; several strong anterodorsal setae in apical half of the hind femur in addition to the true anterior subapical

seta; face narrowed under antennae and somewhat widened towards clypeus; clypeus long and wide ( $1/3$  as long as total length of face and clypeus), convex, reaching or beyond lower margin of eyes, visible in lateral view; postpedicel usually short and suboval; stylus short and bare; wing vein  $M_{1+2}$  usually with gentle curvature before the middle of distal part, then running towards  $R_{4+5}$  and reaching costa far before the tip of wing. A key was provided by Stackelberg (1941). See also key by Grichanov (2007).

### Hydrophorinae

#### *Acymatopus* Takagi, 1965

There are 6 species of *Acymatopus* distributed in Japan, the Kurile Islands and Palaeartic China. Small-sized species. Postpedicel with setulae; male fore basitarsus ventrodistally membranous; secondary setulae present on lateral portions of mesonotum and in dorsocentral rows; no distinct male mesonotal pollinose markings; male fore metatarsus not ventroproximally lobate. A key to species was provided by Masunaga et al. (2005).

#### *Anhydrophorus* Becker, 1917 (Fig. 24)

This monotypic genus is known from Spain and North Africa. See Negrobov (1978) for a redescription of *A. cinereus* (Fabricius, 1805). Body large-sized. Mesonotum

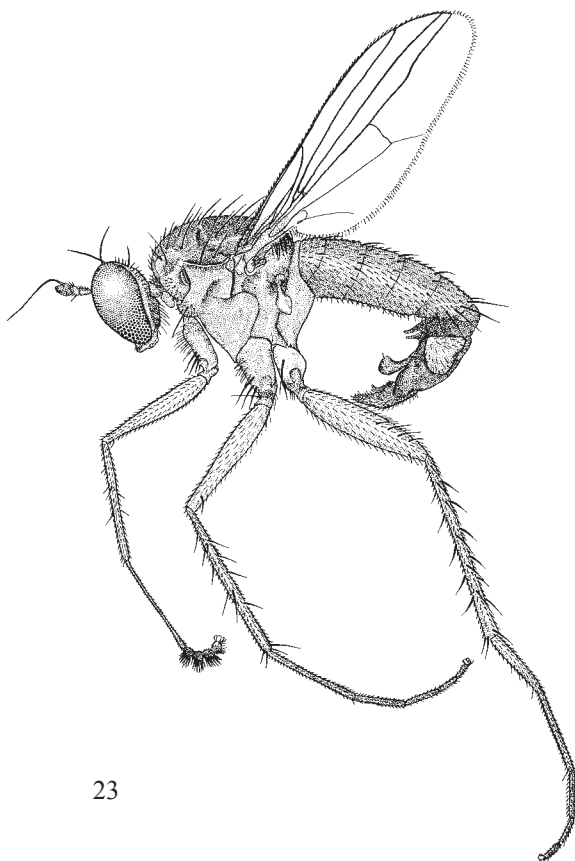


Fig. 23. *Tachytrechus vinogradovi* Stackelberg, 1941. Fig. 24. *Anhydrophorus cinereus* (Fabricius, 1805).



with small setae; no more than one pair of dorsocentrals; acrostichals present, in two rows; arista-like stylus subapical; postpedicel oval, without dorso-apical excavation; male terga 6 and 7 greatly reduced; hypopygium mostly concealed.

#### *Aphrosylus* Haliday, 1851 (Fig. 25)

Twenty-four of the 31 described species of *Aphrosylus* are found mainly in the western Palaearctic Region (mainly from the Mediterranean region). Small-sized species. Labellum usually hook-shaped in lateral view; arista-like stylus apical; fore tibia at apex with distinct erect spinose seta; male hind basitarsus simple, without strong seta. A key to species was provided by Negrobov (1979).

#### *Conchopus* Takagi, 1965

There are 24 world species distributed in Japan mainly (15 species), the Kurile Islands, Palaearctic China, Taiwan and the Hawaiian Islands. There is an introduced species, *C. borealis* Takagi, which occurs in North America (Masunaga al. 1999) and in South America (Brooks & Cumming, 2009). Postpedicel with setulae; male fore basitarsus ventrodistally membranous. The following diagnosis is for the *rectus* group. Small- to medium-sized dolichopodid flies (2.0–5.5 mm); body black in ground color, tinged with



Fig. 25. *Aphrosylus venator* Loew, 1857.

green; mesonotum with inverted Y-shaped black marking on dense gray-white pollinose ground; proboscis shorter than eye height; conspicuous black and white markings on male mesoscutum; thoracic pleura with setulae just in front of posterior spiracle; wing venation usually modified; fore femur with small subapical tubercle on ventral surface, and fore tarsomere 2 with some long anterodorsal setae in male. The species of exclusive of the *rectus* group are diagnosed as follows. Proboscis as long as or longer than eye height; male fore femur lacking subapical process ventrally; male fore metatarsus lacking ventral tubercle between apical swelling and basal lobe; male fore second tarsomere lacking long anterodorsal setae; posterior notopleural bristle present; thoracic pleura lacking seta in front of posterior spiracle; female postabdomen telescoped, polished, and with pair of posterolateral setae on each tergum and sternum (Masunaga al. 2005). A key to Palaearctic species was provided by Takagi (1965).

#### *Coracocephalus* Mik, 1892

This genus includes 2 species from the Austrian Alps. See Negrobov (1979). Size about 2.5 mm. Proboscis long, about as long as head height (male) or half as long as head height (female); antennal postpedicel short, rounded or oval, with either apical or dorsal arista; posterior mesonotum flattened; 5–7 dorsocentrals; acrostichals absent; legs practically simple, with normal setation;  $R_{4+5}$  and  $M_{1+2}$  parallel, convergent at apex; crossvein dm-cu longer than distal section of  $CuA_1$  vein; hypopygium partly concealed; male cercus short.

#### *Diostracus* Loew, 1861

The Palaearctic Region includes 21 of the 88 known species of *Diostracus*. The genus is characterized by the following combination of characters: body dark and stout, medium- to large-sized; palpus enlarged, loosely applied on proboscis; proboscis bulky; acrostichal setae absent; 4–6 dorsocentral bristles; sutural and postsutural bristles sometimes absent; middle and hind coxae without bristle on the outer side; wing elongate and wide; costa ended beyond the tip of wing; crossvein dm-cu longer than distal section of  $CuA_1$  vein. The adults are usually found on wet rocks in mountainous areas, or stones in streams and waterfalls at high altitude. A key to Palaearctic species of the genus was provided by Negrobov (1978). A key to 14 Japanese species was given by Masunaga (2000). The last key to males of the 21 known Chinese species was published by Zhu et al. (2007).

#### *Epithalassius* Mik, 1891 (Fig. 26)

This genus is mainly Mediterranean, with seven species commonly occurring on sandy beaches near the sea coast. Nevertheless, *E. africanus* Parent, 1930, is described from the environs of Brazzaville, far from the Ocean. The



Fig. 26. *Epithalassius susmani* Grichanov, 2008.

species is known from a female that does not entirely correspond to generic concept of *Epithalassius*, being also the only non-maritime species in the genus. Body medium-sized. Labellum normal in lateral view, without long protruding hypopharynx; antennal postpedicel bisegmented; stylus dorsoapical or strictly subapical; prescutellar depression developed; wing crossvein dm-cu located just behind level of  $R_1$ ; abdomen without strong posterior marginal setae on terga; hypopygium small; epandrial lobes well developed, bearing strong apical setae; cercus bilobate. A key to known species was provided by Grichanov (2008).

#### ***Eucoryphus* Mik, 1869**

This genus includes two species from the Alps. See Negrobov (1979) for their redescription. *Eucoryphus* is close to *Coracocephalus* Mik. Size about 2.5 mm. Proboscis short, not more than half as long as head height; 1 short vertical seta; antennal postpedicel with long processes (male) or with distinct excision (female); arista-like stylus dorsal; posterior mesonotum flattened; 6 dorsocentrals; acrostichals absent; 4 scutellars;  $R_{4+5}$  and  $M_{1+2}$  almost parallel; crossvein cu longer than distal section of  $CuA_1$  vein; hypopygium partly concealed; male cercus short.

#### ***Hydrophorus* Fallén, 1823 (Fig. 27)**

*Hydrophorus* includes 119 species, of which 43 occur in the Palearctic Region. Body medium- to large-sized. Head with distinct cheek; antennal postpedicel with apical incision; scutellum usually with 2 pairs of scutellar bristles; fore femur distinctly swollen, with ventral spines; fore tibia with a row of ventral bristles. A key to species was provided by Negrobov (1977).

#### ***Lagodechia* Negrobov et Tsurikov, 1996 (Fig. 28)**

This monotypic genus is known from the Caucasus (Georgia) and is closely related to *Diostracus* Loew (Negrobov et Tsurikov, 1996). suture indistinct or hardly marked



Fig. 27. *Hydrophorus cinipunctus* Negrobov, 1975.

at eye margin; vertical bristle present; antennal scape with dorsal projection; pedicel convex anteriorly; postpedicel elongate-ovate; arista-like stylus dorsal; posterior mesonotum flattened; 6–7 dorsocentrals; setae absent; scutellum with 2 pairs of setae; hind coxa without strong seta; subcosta reduced;  $R_{4+5}$  and  $M_{1+2}$  parallel at apex; 3rd and 4th abdominal segments with strong black spines; body 5.0–6.5 mm.

#### ***Liancalus* Loew, 1857 (Fig. 29)**

The Palearctic Region includes 6 of the 19 described species of *Liancalus*. This genus is uniquely characterised by a fingerlike projection on the proepimeron. Body large-sized. Scutellum usually with 3 pairs of bristles; hind femora cylindrical; hind tarsomeres 1–2 much elongated, subequal in length; males and often females with wing veins variously modified, but  $M_{1+2}$  without double right angle bend; crossvein dm-cu distinctly oblique, much longer than distal section of  $CuA_1$  vein. See Negrobov (1978) for key and redescriptions of the two West Palearctic species. A key to the six known East Asian species was provided by Masunaga (2001).



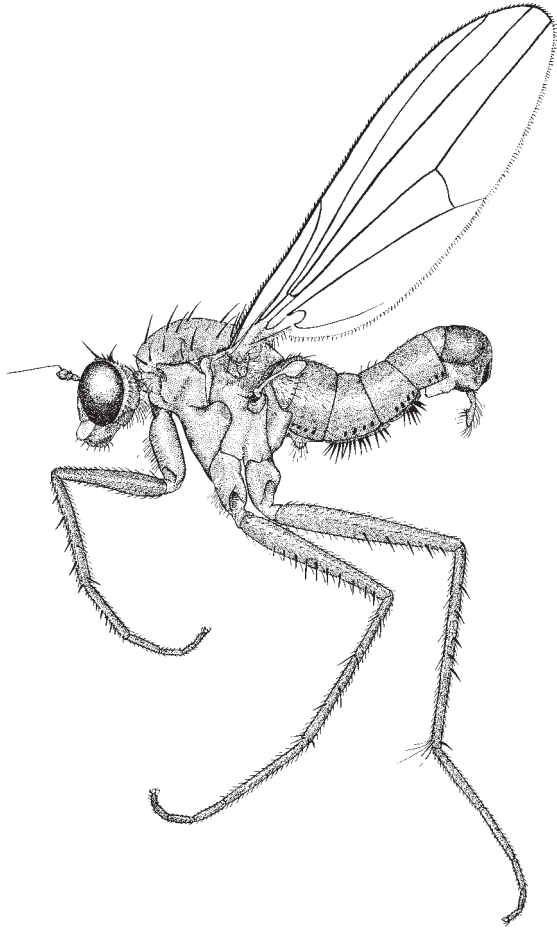


Fig. 28. *Lagodechia spinulifera* (Negrobov et Tsurikov, 1988).

***Machaerium* Haliday, 1832**

This genus includes three western Palearctic species. Body medium-sized. Facial suture indistinct or hardly marked at eye margin; postpedicel usually elongate in male, shorter in female, bulbous at base and abruptly narrowed distally, with acute apex; stylus apical or strictly sub-apical; acrostichal setae in two regular rows; hind coxa with 2 erect black outer bristles;  $R_{4+5}$  and  $M_{1+2}$  parallel at apex;  $M_{1+2}$  weakly sinuate. See Parent (1938) and Maslova & Negrobov (2006) for redescrptions and key to species.

***Orthoceratium* Schrank, 1803 (Fig. 30)**

Two species are known from the West Palearctic, of which *O. lacustre* (Scopoli, 1763) is recorded from Tanzania. See Negrobov (1979) for redescrptions. Body large-sized. Scutellum with 2 pairs of bristles; hind femora flat; wing veins unmodified except  $M_{1+2}$  with two right angle bends in male, moderately sinuous in females.

***Paralleloneurum* Becker, 1902**

This genus includes 2 Oriental species, of which *P. cilifemoratum* Becker, 1902, is known from Egypt. See Ne-



Fig. 29. *Liancalus virens* (Scopoli, 1763).

grobov (1979) and Grootaert & Meuffels (1998) for redescrptions. Small species (1.5 mm); 4 dorsocentrals; acrostichals absent; scutellum with 1 pair of strong bristles; arista-like stylus dorsal; all tibiae without apical setae; wing hyaline;  $R_{2+3}$ ,  $R_{4+5}$ , and  $M_{1+2}$  straight and parallel; male cercus short.

***Peodes* Loew, 1857 (Fig. 31)**

There are 2 described European species. See Negrobov (1979) for their redescrption. Body medium-sized. Face narrow, not wider than ocellar tubercle, divided into epistome and clypeus by transversal suture; antennal postpedicel with dorsal arista-like stylus; acrostichal setae uniseriate at least in anterior part; scutellum with 1 pair of strong bristles; fore femur and tibia without strong spiniform ventral bristles; posterior crossvein dm-cu shorter than distal part of  $CuA_1$ ; hypopygium globular, free, with long undivided surstylus.

***Rhynchoschizus* Dyte, 1980**

This monotypic genus is known from Albania. See Negrobov (1979) for a redescrption of *R. imbellis* (Parent, 1927). Size about 3.0 mm; facial suture indistinct; antennal postpedicel short, rounded-triangular, with apical arista-like stylus; proepisternum with 1 strong seta; posterior mesonotum flattened; mesonotum with ordinary bristles; 5 dorsocentrals; acrostichal setae biseriate; scutellum with 4 bristles; legs simple, long and slender; hind femur with 1



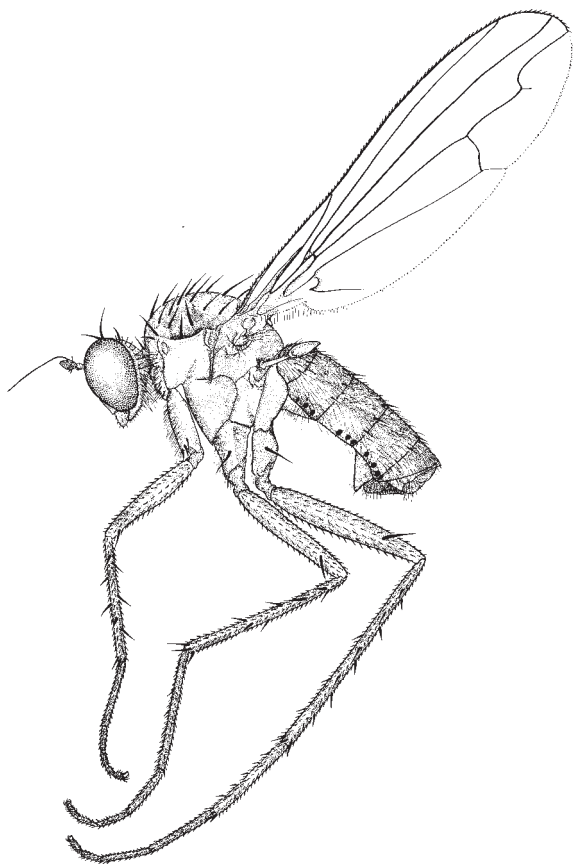


Fig. 30. *Orthoceratium lacustre* (Scopoli, 1763).

preapical bristle;  $R_{4+5}$  and  $M_{1+2}$  parallel; dm-cu longer than distal part of  $CuA_1$ ; male cercus knife-shaped.

#### ***Scellus* Loew, 1857 (Fig. 32)**

There are 23 Holarctic species of *Scellus*. Body medium- to large-sized. Face wide, wider than ocellar tubercle, divided into epistome and clypeus by transversal suture; vertical bristle short; antennal stylus dorsal; 5–6 pairs of dorsocentral bristles; acrostichal setae absent; fore femur and tibia with strong and long ventral spines; male abdomen behind segment IV with long remarkable appendices; hypopygium sessile. The last key to the 10 known Palearctic species was provided by Negrobov (1978). Subsequently *S. sinensis* Yang, 1998, was described from China (Xinjiang).

#### ***Sphyrotarsus* Mik, 1874 (Fig. 33)**

This Palearctic genus contains five European, one Caucasian and one Pamiran species. Body medium- to large-sized. Face wide, wider than ocellar tubercle, divided into epistome and clypeus by transversal suture; vertical bristle present; antennal pedicel with straight anterior margin; antennal stylus dorsal; acrostichal setae absent; 5–6 pairs of dorsocentral bristles; scutellum with 6 bristles; fore femur and tibia without long ventral spines; hypopygium

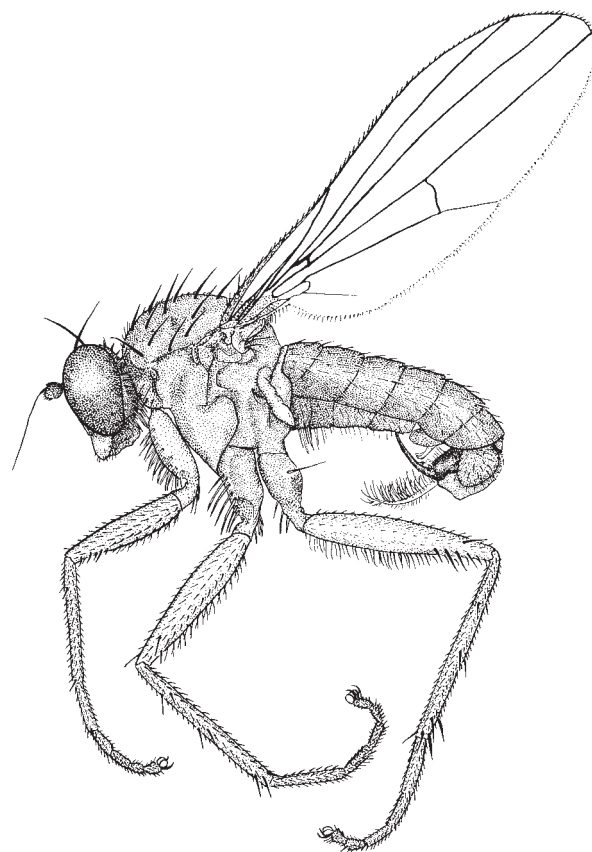


Fig. 31. *Peodes forcipatus* Loew, 1857.

sessile. A key was provided by Negrobov (1978). A subgenus was founded for one Tajik (Pamir) species, *S. (Takagia) stackelbergi* Negrobov, 1965.

#### ***Teneriffa* Becker, 1908**

This monotypic genus is known from Canary Is. and Madeira. *Teneriffa spicata* Becker, 1908, is close to *Aphrosylus* Haliday and both share a hook-shaped labellum in lateral view, with generally protruding hypopharynx, differing in arista-like stylus dorsal; fore tibia without spinose seta at apex; male hind basitarsus curved, with strong seta. See Negrobov (1978) for a redescription.

#### ***Thambemyia* Oldroyd, 1956**

*Thambemyia* includes 2 Palearctic species (from Japan and China) and 3 Oriental species. Postpedicel with setulae; male fore basitarsus ventrodistally membranous; posterior notopleural bristle absent; thoracic pleura with setae in front of posterior spiracle; female postabdomen (sixth and seventh segments) exposed and extensively setose. A subgenus was founded for one Japanese species, *T. (Prothambemyia) japonica* Masunaga, Saigusa et Grootaert, 2005. A key to species was provided by Masunaga et al. (2005).

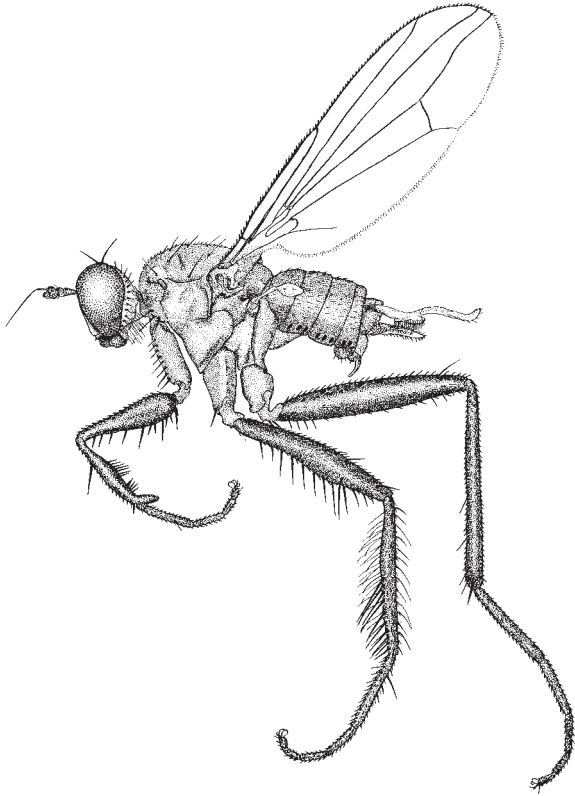


Fig. 32. *Scellus gallicanus* Becker, 1909.

#### ***Thinophilus* Wahlberg, 1844 (Fig. 34)**

Nineteen of the 120 described species of *Thinophilus* occur in the Palaearctic Region. *Thinophilus indigenus* Becker, 1902 has a broad distribution including the southern Palaearctic, Oriental and Afrotropical Regions. Body small-to large-sized. Acrostichals absent; 4–6 dorsocentrals; scutellum with 2 or 4 strong bristles; arista-like stylus dorsal, rarely apical (males) or subapical (females); tibia usually with strong setae;  $M_{1+2}$  usually curved. The last keys were provided by Negrobov (1979) and Grichanov (1997 b).

#### **Medeterinae**

#### ***Asioligochaetus* Negrobov, 1966**

This monotypic genus is known from arid territories of Turkmenistan and Kazakhstan. See Negrobov & Stackelberg (1972) for a redescription. *Asioligochaetus vlasovi* (Stackelberg, 1937) is known from females only. Size about 2.0 mm; wing venation *Systemus*-like, with  $R_1$  reaching dm-cu level, and  $M_{1+2}$  convex behind dm-cu towards posterior wing margin, subapically bowed; wing milky-white, brownish along major veins, entirely brownish between  $R_{4+5}$  and  $M_{1+2}$  (Negrobov & Stackelberg, 1971: Fig. 172); postpedicel short-triangular, with apical stylus; postoculars small, not seriate, arranged in irregular lateral tuft; acrostichals ab-



Fig. 33. *Sphyrotarsus argyrostomus* Mik, 1874.



Fig. 34. *Thinophilus indigenus* Becker, 1902.

sent; dorsocentrals 3 pairs; scutellum with one pair of bristles; fore tibia with one and mid tibia with 3 long apical setae, one of them nearly as long as mid basitarsus.

#### ***Cyrturella* Collin, 1952**

This monotypic genus includes the European species *C. albosetosa* (Strobl, 1909). Body size about 1 mm; acrostichals absent; lateral scutellars reduced to short hairs or lost; legs entirely devoid of strong setae; hind coxa with 1 outer bristle; hind basitarsus nearly as long as next segment; distal sections of veins  $M_{1+2}$  and  $R_{2+3}$  somewhat converging;  $M_{1+2}$  recurved at apex; hypopygial foramen left basolateral (Parent, 1938).

***Dolichophorus* Lichtwardt, 1902 (Fig. 35)**

The genus *Dolichophorus* was considered the sister taxon of the *Medetera aberrans* + *melanesiana* species groups (Bickel, 1987). Bickel supposed that these groups could be placed within *Dolichophorus*. Grichanov (1997 a) considered the *aberrans* group as part of the Pantropical genus *Saccopheronta* Becker and supposed that *melanesiana* group should be separated in an independent genus of Medeterinae. Grichanov (2009 b) found three species of *Dolichophorus* in the Afrotropical Region in addition to three Palaeartic species and supposed that *Medetera maai* Bickel, 1987, described from Malaysia belongs to *Dolichophorus*. Size 1.5 to 3.0 mm; body usually shining, weakly pollinose; fore coxa with long anteroapical spine or hook of cilia, shorter in females; at least fore and hind coxae yellow; male fore tarsomeres 1 and 3 usually modified, with remarkable apical setae or processes, rarely simple, but with slightly thickened tarsomeres 1–4;  $R_{4+5}$  and  $M_{1+2}$  weakly convergent, almost subparallel. A key to the six known species was published by Grichanov (2009b).

***Medetera* Fischer von Waldheim, 1819 (Fig. 36)**

The Palaeartic Region includes about 160 of the 330 described species of *Medetera*. Tiny to medium-sized flies (1.2–5 mm). Fore coxa with short anteroapical setae not forming spine or hook; all coxae dark or only fore coxa yellow, rarely fore and hind coxae yellow; body rarely shining;  $R_{4+5}$  and  $M_{1+2}$  strongly convergent; dm-cu distinctly shorter than or (rarely) equal to maximum distance between  $R_{4+5}$  and  $M_{1+2}$ ; apical part of  $CuA_1$  usually less than 2.5 times longer than dm-cu; male anterior tarsus simple, rarely

with elongate hairs; if  $R_{4+5}$  and  $M_{1+2}$  weakly convergent, then dm-cu distinctly shorter than maximum distance between  $R_{4+5}$  and  $M_{1+2}$ . Negrobov & Stackelberg (1972) published a key that incorporated all the Palaeartic Region species of *Medetera* then known. A key to the known 15 Japanese species was provided by Masunaga & Saigusa (1998). A key to species of the *M. senicula* group was provided by Grichanov (2010 a). See also keys compiled for western Palaeartic species by Grichanov (2006 b, 2007).

***Systemus* Loew, 1857 (Fig. 37)**

Until recently this genus was known from the Holarctic Region only. New Palaeartic, Australian, Afrotropical, Neotropical and Oriental species were described during the last decades. Presently 28 species are known in the World. Size usually 2 to 3 mm; postocular bristles simple;  $R_{4+5}$  and  $M_{1+2}$  subapically bowed; distal sector of  $R_{4+5}$  and  $M_{1+2}$  with flexion; posterior pair of acrostichals distinctly larger than preceding pair and offset laterally; usually 6 strong dorsocentrals; antenna sexually dimorphic; male antennal pedicel not reduced; male postpedicel elongate, swollen at base, tapering, with apical or strictly dorsoapical stylus; male 7th abdominal segment with tergum and sternum distinct, long, forming peduncle for hypopygium; dorsal and ventral arms of surstylus usually fused, with emargination at apex, or only ventral arm broad; epandrial lobe usually reduced to 2 pedunculate setae; female terga 9+10 divided medially into 2 hemitergites, each bearing a row of 4 spines. A key to all the species then known was provided by Steyskal (1970). The last key to the known 10 Palaeartic species of *Systemus* was published by Negrobov (2005).



Fig. 35. *Dolichophorus kerteszi* Lichtwardt, 1902 (female).

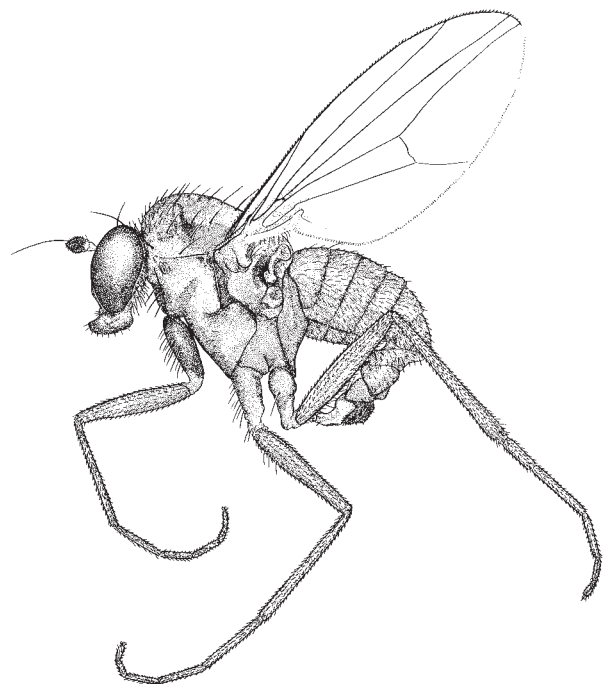


Fig. 36. *Medetera adjaniae* Gosseries, 1989.





Fig. 37. *Systemus scholtzi* (Loew, 1850).



Fig. 38. *Thrypticus bellus* Loew, 1869.

#### ***Thrypticus* Gerstäcker, 1864 (Fig. 38)**

Of the 90 described species of *Thrypticus*, 23 occur in the Palearctic Region. Small species;  $R_{4+5}$  and  $M_{1+2}$  behind mid wing parallel to apex;  $M_{1+2}$  without flexion; usually 5 or fewer dorsocentrals; antenna usually similar in male and female; male postpedicel usually short, rounded; acrostichal setae present; hind coxa with 2 lateral setae; body coloration usually bright metallic green; female oviscapt blade-like, sclerotized, narrow in dorsal view; male 7th abdominal segment with tergum and sternum fused or sternum greatly reduced; male surstylus strongly deflexed dorsally, usually lying conformably with similarly deflexed, oblong-shaped cerci. A key was provided by Negrobov & Stackelberg (1971).

#### **Neurigoninae**

##### ***Neurigona* Rondani, 1856 (Fig. 39)**

There are 157 described species worldwide including about 40 from the Palearctic Region. Two records of unidentified females from the Afrotropics (Seychelles and Central Africa) have been published (Grichanov, 2010 c). Antenna yellow or brownish; thorax usually yellow, sometimes with metallic green spot(s), rarely wholly metallic green; acrostichals biseriata; legs yellow, mid and hind femora without anterior preapical bristle; wing anal vein usually well developed, reaching wing margin. Male genitalia large and mostly exposed; surstylus very large and broad, partly covering cercus, divided into two partly overlapping arms; cercus with broad base. last key to Palearctic species of the genus was published by Negrobov & Fursov

(Негробов и Фурсов, 1988). Wang, Chen & Yang (2010) compiled a key to males of the 25 species known from Chinese mainland. A key to western Palearctic species was provided by Grichanov (2010c). *Neurigona zhangae* Wang, Yang Grootaert, 2006 (**recomb. nov.**), was incorrectly transferred to *Viridigona* Naglis, 2003 (Wang et al., 2010).

##### ***Oncopygius* Mik, 1866 (Fig. 40)**

This genus includes three European species, of which *O. formosus* Parent, 1927, inhabits Taiwan (Parent, 1938). Body dark pubescent; antennal stylus apical or subapical; acrostichal setae uniseriate in at least anterior part; legs slender; hind femur without subapical seta; mid tibia with 1 apicoventral spur; hind basitarsus shorter than next segment; dm-cu at least as long as distal part of  $CuA_1$ ; hypopygium free, pedunculate. The last key was published by Grichanov (2007).

#### **Peloropecodinae**

##### ***Acropsilus* Mik, 1878 (Fig. 41)**

*Acropsilus* comprises 30 described species, of which three occur in the Palearctic Region *A. niger* (Loew, 1869) inhabits Europe and North Africa; *A. brevitulus* (Parent, 1937) described from the Afrotropical region occurs in Israel; *A. igori* Negrobov, 1984 was described from Tajikistan. Ulrich (1981) and Bickel (1998) considered *Acropsilus* incertae sedis, rejecting its placement in Peloropecodinae and Grichanov (1998) associated the genus with the Diaphorinae. Yang et al. (2006) followed Ne-

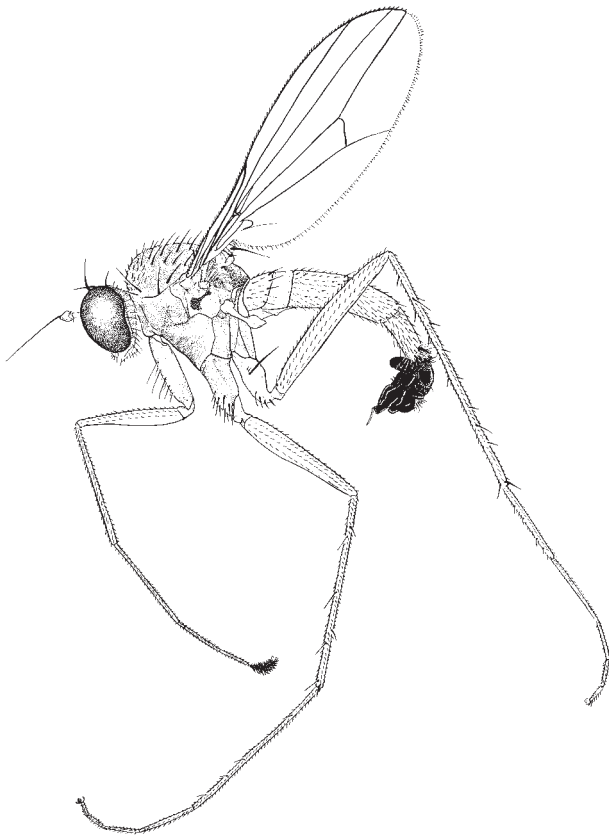


Fig. 39. *Neurigona pseudolongipes* Negrobov, 1987.

grobov (1991), placing it in the Peloropeodinae. Small species; body less than 2 mm, mostly black; bristles on head and thorax dark; posterior slope of mesonotum slightly flattened but not depressed; acrostichal setae absent; veins  $R_{4+5}$  and  $M_{1+2}$  more or less parallel; hind basitarsus distinctly shorter than 2nd tarsomere; male cercus usually white-ivory coloured and subtriangular, and bearing pale setae; female clypeus with 4 setae. Grichanov (2007) provided a key to Mediterranean species.

#### ***Chrysotimus* Loew, 1857 (Fig. 42–43)**

There are 71 world species including 15 from the Palearctic Region. Small-sized species. Body mostly light green, shining metallic; female often having some yellow abdominal terga; head and thorax with yellow bristles; postpedicel small; hind femur with true subapical bristle; male hind basitarsus sometimes with several black short ventral bristles at base; male mid basitarsus at least as long as tarsomeres 2–4 combined; hypopygium small, usually concealed. Keys to Palearctic species were provided by Negrobov (Herpo6ov, 1978 6) and Wang et al. (2005).

#### ***Fedtshenkomyia* Stackelberg, 1927 (Fig. 44)**

This monotypic genus is known from the mountains of Tajikistan. It is close to *Chrysotimus* Loew and *Guzeriplia*



Fig. 40. *Oncopygius magnificus* Loew, 1873.



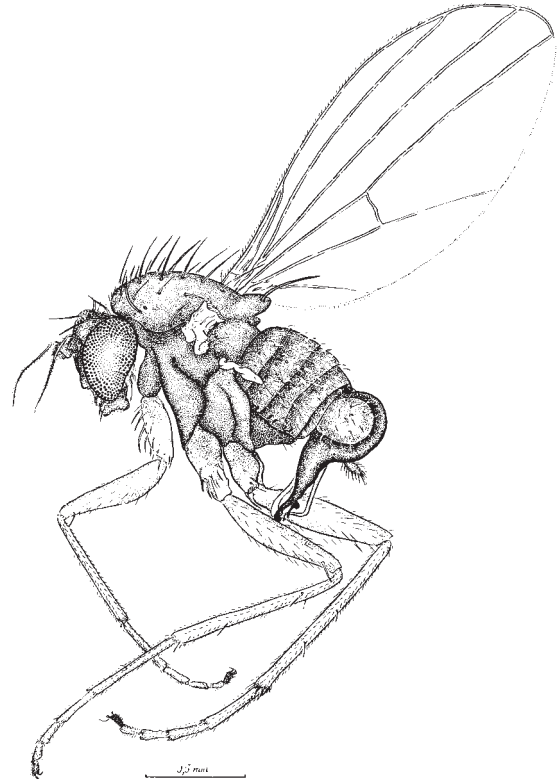
Fig. 41. *Acropsilus niger* (Loew, 1869).

Negrobov (Herpo6ov, 1978 6). Small species; acrostichal setae absent; hypopygium large, yellow, nearly as long as abdomen.

#### ***Guzeriplia* Negrobov, 1968 (Fig. 45)**

This genus is probably endemic to the Caucasus, with 2 described species (Herpo6ov, 1978 6). Small species; body mostly light green, metallic shining; head and thorax with yellow bristles; antennal stylus dorsal; acrostichal setae distinct, biseriate; hind femur with true subapical bristle; apical section of  $CuA_1$  longer than basal section; hypopygium large, nearly as long as abdomen.



Fig. 42. *Chrysotimus molliculus* (Fallén, 1823) (male).Fig. 43. *Chrysotimus molliculus* (Fallén, 1823) (female).Fig. 44. *Fedtshenkomyia chrysotymoides* Stackelberg, 1927Fig. 45. *Guzeriplia chlorina* Negrobov, 1968***Micromorphus* Mik, 1878 (Fig. 46–47)**

There are 12 described Palaearctic species of 28 world ones. Minute species; acrostichal setae absent; arista-like stylus dorsal; scutellum with only one pair of setae; hind

femur with true subapical bristle; male hind basitarsus without basal spur curved upward; crossvein dm-cu rather short, at least 4 times shorter than apical part of  $CuA_1$ ; hypopygium sessile. A key to Palaearctic species was provided by Negrobov (2000).





Fig. 46. *Micromorphus shamshevi* Negrobov, 2000, habitus.

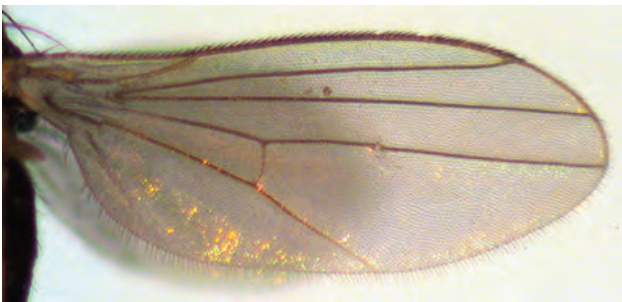


Fig. 47. *Micromorphus shamshevi* Negrobov, 2000 (wing).



Fig. 48. *Peloropeodes acuticornis* (Oldenberg, 1916).

#### *Nepalomyia* Hollis, 1964

This genus is mainly Oriental with 65 known species, of which four are known from the Nearctic, two from the

Afrotropics and two from the Palearctic Region (China and the Russian Far East). Body minute to small-sized; upper occiput distinctly concave; male face distinctly narrowed downward; arista-like stylus apical or subapical, inserted in notch of postpedicel; acrostichals distinct, usually biseriate; scutellum with 2 pairs of bristles, lateral pair very short and hair-like; crossvein dm-cu at most 2–3 times shorter than apical part of CuA<sub>1</sub>; male with symmetrical claws on fore tarsus; male mid coxa without apical spine of glued cilia; abdomen as long as thorax; hypopygium sessile, rather large and mostly exposed.

#### *Peloropeodes* Wheeler, 1890 (Fig. 48)

This genus includes 29 described species, of which two are known from Europe (Parent, 1938). Body small-sized; male face distinctly or strongly narrowed downward; one longer dorsal seta on antennal pedicel; arista-like stylus dorsal; usually six pairs of dorsocentral bristles; acrostichal setae in two regular rows; one strong and one hairlike intraalar setae, one strong propleural seta; male with asymmetrical claws on fore tarsus; male mid coxa usually with apical spine of glued cilia; male hind tarsus simple; crossvein dm-cu straight, positioned at middle of wing, forming right angles with M<sub>1+2</sub> and CuA<sub>1</sub>, at most 2–3 times shorter than apical part of CuA<sub>1</sub>; abdomen as long as thorax, with reduced 5–6th sterna; hypopygium sessile.

#### *Pseudoxanthochlorus* Negrobov, 1977

This monotypic genus includes *P. micropygus* Negrobov, 1977, from the Far East of Russia (Primorskii Territory). Body small, almost entirely yellow; male face gradually narrowed downward; mesonotum with 4 pairs of dorsocentrals; acrostichals absent; scutellum with 2 pairs of bristles, lateral pair very short and hair-like; postpedicel small, with dorsoapical arista-like stylus; hind femur with true subapical bristle; male hind basitarsus with several short ventral bristles at base; hypopygium partly concealed; dorsal and ventral lobes of surstylus fused almost to apex (Negrobov, 1977).

#### *Vetimicrotes* Dyte, 1980 (Fig. 49)

There are 3 described species: one from south-eastern Europe, one from a desert territory of Uzbekistan and one from saline Baskunchak Lake in Astrakhan region of Russia (Grichanov, 2011). Small species; postpedicel large, with short subapical stylus; pedicel with large inner projection; 6 pairs of strong dorsocentrals; acrostichals biseriate; M<sub>1+2</sub> with inconspicuous curvature in distal part; dm-cu close to wing base; hypopygium large, elongate-oval; abdomen with bent-under last segments. A key is provided by Grichanov (2011).

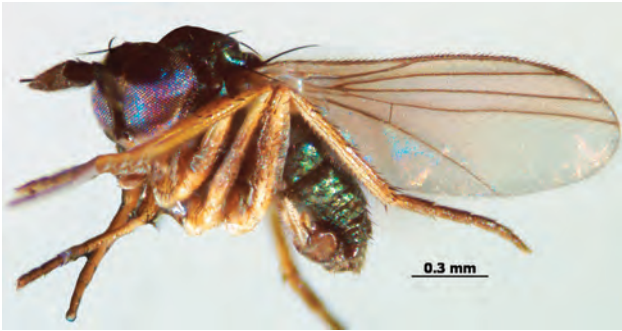


Fig. 49. *Vetimicrotes baskunchakensis* Grichanov, 2011.

## Rhaphiinae

### *Rhaphium* Meigen, 1803 (Fig. 50)

*Rhaphium* comprises about 200 described species including 90 from the Palearctic Region. Body small to large-sized (1.5–5.7 mm). Upper part of proepisternum in front of anterior spiracle with long hairs; postpedicel triangular, and usually much longer than basal width; arista-like stylus strictly apical; male cercus often elongate; veins M and R<sub>4+5</sub> often slightly bowed with respect to each other. A key to the Palearctic Region species of the genus was provided by Negrobov (1979). Negrobov (Негробов, 1986) published a key to Palearctic and Nearctic species of the *R. nasutum* group, Wang et al. (2005) compiled a key to Palearctic and Oriental *Rhaphium* species found in mainland China, and Negrobov & Grichanov (2010) published a key to the Palearctic Region species of the *R. crassipes* group.

## Sciapodinae

### *Amblypsilopus* Bigot, 1888

Bickel (1994) restored this genus that now accommodates about 320 species known from all parts of the continental tropics and subtropics and from adjacent islands. Four Palearctic species have been referred to *Amblypsilopus*. All are eastern Palearctic species, being probably derived from the Orient. *Amblypsilopus* is not strongly defined, and it represents a large pan-tropical genus which is possibly polyphyletic (Bickel, 1994). Body usually appearing delicate, with elongate legs; vertex distinctly excavated; male vertical bristle usually weak and reduced; female vertical bristle always strong; male clypeus narrowed and distinctly free from eye margin; female clypeus always adjacent to sides of eyes; pedicel with short dorsal and ventral bristles; postpedicel usually subrectangular to subtriangular; arista-like stylus usually distinctly dorsal, and rarely longer than head width, or if apical or dorsoapical, then always with following characters: male arista-like stylus rarely with apical flag; tibial chaetotaxy often weak, es-



Fig. 50. *Rhaphium flavilabre* Negrobov, 1979.

pecially in males; acrostichals biseriate, usually with 3–6 pairs, never sexually dimorphic. 4–5 paired dorsocentrals, male usually with anterior dorsocentrals weak and hair-like; 2 paired scutellars, lateral pair weak and short. Femora almost always without strong ventral bristles; major dorsal bristle in mid tibia usually present in females but absent in males; male hind tarsomeres 3–5 sometimes flattened ventrally and padlike; wing usually hyaline, but sometimes with apical maculations; crossvein dm-cu straight and usually forming right angle with vein M; hypandrium asymmetrical, with narrow left lateral arm; aedeagus with dorsal angle; epandrial lobe with 2 strong apical bristles; surstylus often with large ventral lobe and digitiform dorsal projection; cercus various.

### *Chrysosoma* Guérin-Méneville, 1831

There are 237 described world species (inhabiting Old World tropics mainly). Oriental *C. globiferum* is known from just inside Palearctic China, being the single Palearctic species (Zhu & Yang, 2005; Yang et al., 2006: Plate XXIV, habitus). This sciapodine genus is close to *Plagiozopelma* Enderlein, 1912, differing in following characters: vertex and frons usually with pruinosity; male frons often with hairs on lateral slope; male scape rarely swollen and vaselike; pedicel often with long ventral and dorsal setae; fore coxa without strong lateral spine-like setae. Body often stout, large; vertex strongly excavated in both sexes; strong postvertical seta present, in line with postocular bristles; male frons usually with group of fine setae or with

weak vertical seta; female frons with strong vertical bristle; postpedicel of both sexes usually elongate triangular; apical arista-like stylus, much longer than width of head; acrostichals developed as 3–5 strong pairs; male usually with 2 strong posterior dorsocentrals and weak hair-like anterior dorsocentrals; female usually with 5 strong dorsocentrals; lateral scutellar bristles weak, even lost; fore femur usually with strong ventral bristles; fore tibia usually with strong dorsal chaetotaxy; wing usually hyaline but sometimes with brown maculations; crossvein dm-cu usually sinuate, sometimes externally convex or bowed; if crossvein dm-cu straight, it makes an acute angle with M; hypandrium with narrow left lateral arm; aedeagus with dorsal angle; epandrial lobe with 2 strong apical bristles; surstylus usually with large ventral lobe and digitiform dorsal projection; cercus mostly forked.

### *Condylostylus* Bigot, 1859

The genus includes about 300 species, being mainly Pantropical with an extremely high diversity in the Neotropical Region and reaching to the southern Palaeartic Region in the Far East (Bickel, 1994). Two or three species are known from Japan, of which one was also recorded from the Kurile Islands. Two more species were found in both Palaeartic and Oriental provinces of China, including *C. luteicoxa* Parent, 1929 (Yang et al., 2006: Plate XXV, habitus). Frons of both sexes with raised setose mound bearing strong vertical seta; M beyond  $M_2$  usually sharply recurved

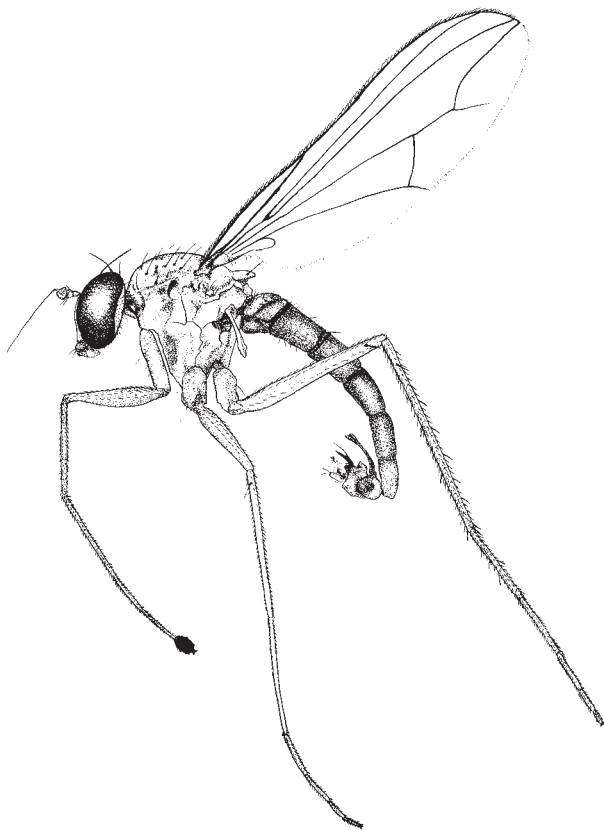


Fig. 51. *Sciapus paradoxus* Negrobov et Shamshev, 1986

basally; both pairs of scutellar bristles long; wing often with dark brown bands, sometimes enclosing clear window; arista-like stylus dorsal to dorsoapical; pedicel with long dorsal and ventral setae; both sexes with 4–5 strong dorsocentrals; hypopygium often rather small.

### *Mesorhaga* Schiner, 1868

There are 96 world species of *Mesorhaga* including 6 Palaeartic species known from the Far East of Russia, Japan, Korea and China (Bickel, 1994). Hind femur only with anterior preapical bristle; propleuron without strong ventral setae; Vein  $M_2$  absent, without fold or indication on membrane; dorsocentral bristles strong in both sexes; arista-like stylus usually dorsal; strong vertical seta present in both sexes; clypeus adjacent to margin of eyes.

### *Sciapus* Zeller, 1842 (Fig. 51)

This genus contains 70 Holarctic species including 55 from the Palaeartic Region and one species described from Ghana. Hind femur with distinct anterior preapical bristle (absent in some Palaeartic species); propleuron without strong ventral setae; male cerci either free and simple or forming unpaired ventral projection (Organ X). *Sciapus* needs revision in the Palaeartic Region. See keys compiled for western Palaeartic species by Parent (1938), Meuffels & Grootaert (1990) and Grichanov (2006 b, 2007).

### Sympycninae

#### *Anepsiomyia* Bezzi, 1902 (Fig. 52)

This monotypic genus is known from Europe. Scape with hairs above; postpedicel more than twice as long as high, tapering to a rounded tip; arista-like stylus almost basal; fore femur and tibia finely spinose beneath; body shining black, 2.0–2.5 mm in length. See Parent (1938) for a redescription.



Fig. 52. *Anepsiomyia flaviventris* (Meigen, 1824).



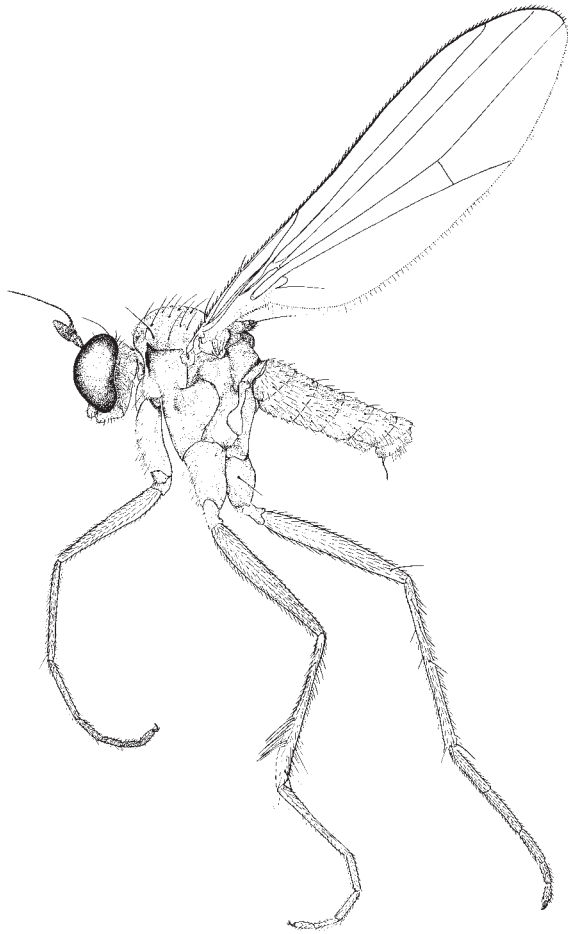


Fig. 53. *Campsicnemus barbitibia* Stackelberg, 1947.

#### ***Campsicnemus* Haliday, 1851 (Fig. 53)**

The genus numbers about 280 species with an extremely high diversity of endemic species in the Hawaiian Islands and French Polynesia (Evenhuis, 2009). The Palaearctic Region fauna of *Campsicnemus* totals 37 species. Two species were described from central Africa, one from South Africa, being also recorded from Namibia; three Palaearctic species were found on St. Helena (introduced?). Tiny to medium-sized flies; face narrow in middle, extending downward; antennal arista-like stylus dorsal; usually 4, rarely 5 dorsocentral bristles; acrostichal setae absent or uniseriate;  $R_{4+5}$  and  $M_{1+2}$  more or less parallel; hind femur with subapical bristle; male legs usually modified and ornamented, rarely simple; female abdomen flattened dorsoventrally. The last Palaearctic key to males was provided by Grichanov (2009a). Females of closely related Palaearctic species are often not discernible.

#### ***Ceratopos* Vaillant, 1952**

This monotypic genus is known from Algeria. *Ceratopos seguyi* Vaillant, 1952, has the pedicel surrounded by the postpedicel on the median side, and as noted by Vaillant (1952), it is close to *Syntormon*, but differs in having the



Fig. 54. *Chaetogonopteron nectarophagum* (Curran, 1924).

male eyes joined across the face, and a sinuate and unusually angled crossvein dm-cu in both sexes.

#### ***Chaetogonopteron* De Meijere, 1914 (Fig. 54)**

This genus comprises 77 mainly Oriental, but also some Palaearctic and Australasian species. Afrotropical *Chaetogonopteron nectarophagum* (Curran, 1924) shows some extent of colour variability and appears to be widely distributed in many countries of Africa and on adjacent islands, reaching the southern Palaearctic and western Orient (Grichanov, 2006 a). This species belongs to a rich Oriental species group having two basal segments of male hind tarsus shortened and the 2nd segment of the hind tarsus bearing apicoventral worm-like process (clidium). Thorax and abdomen usually partly or mostly yellow in *Chaetogonopteron* males and females.

#### ***Lamprochromus* Mik, 1878 (Fig. 55)**

There are 12 Holarctic species including 9 from the Palaearctic Region. Body small, often yellow-brown to black; antennal arista-like stylus dorsal; mesonotum with two large velvety black lateral spots; four pairs of dorsocentral bristles; acrostichal setae in two regular rows; hind femur with true subapical bristle. A key to species was provided by Negrobov & Chalaya (Негробов и Чалая, 1988).

#### ***Micropygus* Bickel et Dyte, 1989**

This genus is known from New Zealand and includes 16 species. *Micropygus vagans* Parent, 1933, has been introduced into the Palaearctic Region (Britain, Ireland) (Chandler, 2004: Page 14, habitus). Dark greenish flies, 2 to 3 mm in length; wing often fumose with whitish spot at crossvein dm-cu; mesonotum with flat mid-posterior slope; acrostichals absent; male fore tibia with a strong preapical anteroventral seta; postvertical setae in line with postocular series.



Fig. 55. *Lamprochromus bifasciatus* (Macquart, 1827).

### ***Suschania* Negrobov, 2003**

This monotypic genus is known from the Far East of Russia (Primorskii Territory), being very close to *Teuchophorus* Loew *sensu* Meuffels and Grootaert (2004); nevertheless, it was described with prescutellar depression on mesonotum. *S. stackelbergi* Negrobov differs from most Palaeartic *Teuchophorus* species in its simple wing costa and almost simple legs; it differs from *Micropygus* in hyaline wing and uniseriate acrostichals (Negrobov, 2003).

### ***Sympycnus* Loew, 1857 (Fig. 56)**

Twenty-six of the 273 described species of *Sympycnus* occur in the Palaeartic Region. Usually small species; antennal scape bare; distal inner margin of pedicel straight; acrostichals distinct, even though sometimes small; usually six, rarely 5 pairs of strong dorsocentral bristles; metepimeron without hairs; mesonotum without black or brown lateral spots; segments of fore tarsus usually simple or shortened, rarely ornamented with remarkable hairs; two basal segments of hind tarsus not shortened; male hind basitarsus rarely ornamented with remarkable setae or hairs; 2nd segment of male hind tarsus never having worm-like process; male 3rd segment of the same tarsus shorter than 2nd, often bearing one or more modified setae; 4th tarsomere usually longer and thinner than 3rd, often polished; male surstyli usually projected, usually fused with each other, being also fused at base with epandrium; epandrial seta, if present, never long and pedunculate; female face usually narrow; clypeus rarely bulging (*S. simplicipes* Becker, 1908). A key was provided by Parent (1938).

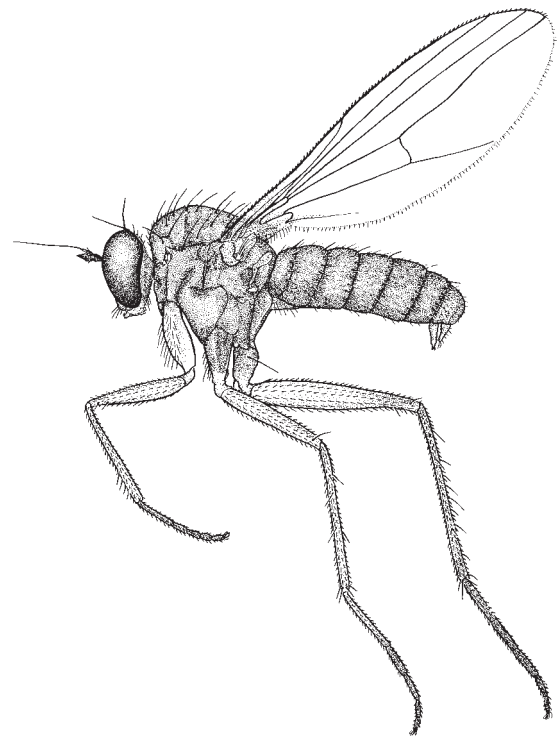


Fig. 56. *Sympycnus simplicitarsis* Becker, 1900  
***Syntormon* Loew, 1857 (Fig. 57)**

*Syntormon* includes about 100 species, of which 50 occur in the Palaeartic Region. Usually small species; postpedicel distinctly elongated, rarely short, with a finger-like apical inner process projected into basal inner concavity; arista-like stylus apical or subapical; male tarsi often modified and/or ornamented. A key was provided by Negrobov (Negrobov, 1975). See also the key compiled for western Palaeartic species by Grichanov (2007). The last key to males of Chinese species was published by Wang et al. (2008).

### ***Telmaturgus* Mik, 1874 (Fig. 58)**

This genus comprises seven species including one from Europe. See Parent (1938) for redescription. Small species; occiput convex; face narrowed gradually downward; female clypeus strongly convex; antennal stylus dorsal, lanceolate at apex in male, long pubescent in female; mesonotum with 4 pairs of dorsocentral bristles; acrostichal setae uniseriate.

### ***Teuchophorus* Loew, 1857 (Fig. 59)**

This genus contains 115 mainly Oriental species and one species described from Namibia, but also some Nearctic and Australasian species. The Palaeartic Region fauna of *Teuchophorus* totals about 20 species. Body small-sized; thoracic pleura dark; frons broad, narrowing towards antennae. In male, eyes often contiguous on face for a short distance; postpedicel more or less triangular; arista-like stylus dorsal; 5–6 pairs of strong dorsocentrals; acrostichals unis-



Fig. 57. *Syntormon zelleri* (Loew, 1850).



Fig. 59. *Teuchophorus spinigerellus* (Zetterstedt, 1843).

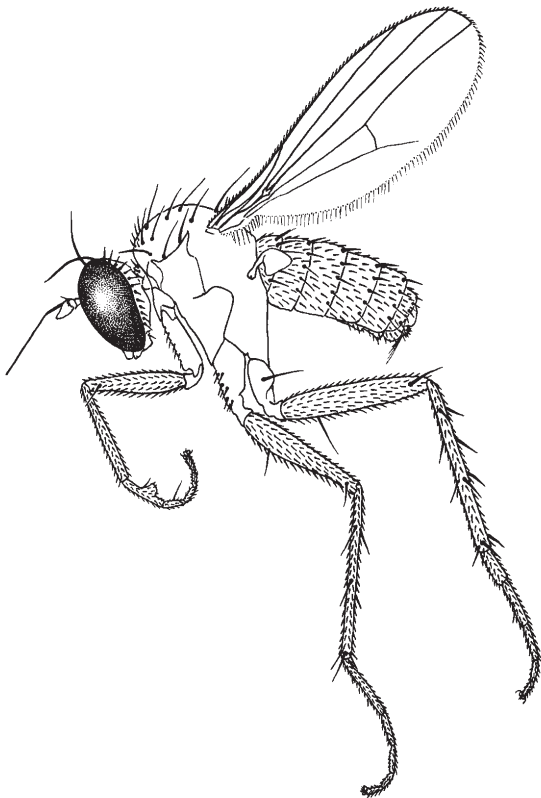


Fig. 58. *Telmaturgus tumidulus* (Raddatz, 1873).

eriate or absent (exceptionally irregularly biseriate); male legs often modified and (or) adorned; male wing usually with costal callus (stigma) between tips of  $R_1$  and  $R_{2+3}$ ; crossvein dm-cu joining  $CuA_1$  at distinctly oblique angle; apical section of M turned up immediately after dm-cu. A key to Palearctic

species by Negrobov, Grichanov and Shamshev (Негробов, Гричанов и Шамшев, 1984) was translated from Russian into English and updated by Pollet & Kechev (2007) and Naglis (2009). The last key to males of Chinese species was published by Wang et al. (2006 b).

### Xanthochlorinae

#### *Xanthochlorus* Loew, 1857 (Fig. 60)

There are 14 species of *Xanthochlorus* known from the Palearctic Region, one from the Nearctic Region and one from Afrotropics (Madagascar). The genus can be easily separated from others by the yellow or brownish thorax and abdomen. Body less than 3.5 mm; dorsal postcranium feebly concave; mesonotum with flat mid-posterior slope;  $R_{2+3}$  and  $M_{1+2}$  nearly straight and parallel behind dm-cu; hind coxa with 1 outer bristle at basal 1/3; anterior preapical bristles on the mid and hind femora absent; dorsal bristles on the slender fore tibia absent; male abdominal tergum 6 rectangular in lateral view, bearing hairs or bristles; male segment 7 small. Female abdominal segments 6–7 enlarged, visible, and normally sclerotized, wholly covered with hairs (just like tergum 5); hemitergites longer than wide, widely separated, without thick spines. A key to all the Holarctic species then known was provided by Negrobov (Негробов, 1978 a). Chandler & Negrobov (2008) published a key to West Palearctic species of *Xanthochlorus* including two new species, and Wang et al. (2008) presented a key to three recently described Chinese species of the genus.



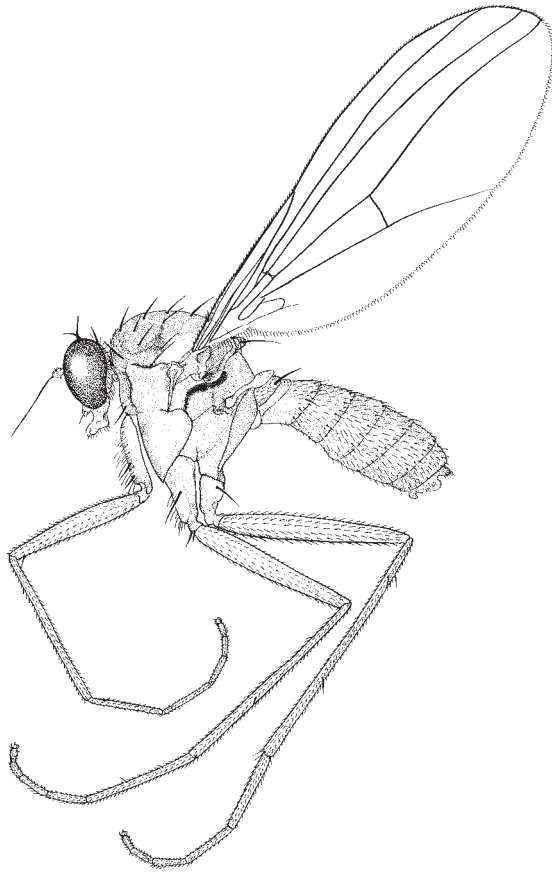


Fig. 60. *Xanthochlorus lucidulus* Negrobov, 1978

#### Genera having disputable position (Dolichopodidae sensu lato)

##### Microphorinae

###### *Microphor* Macquart, 1827

There are 32 mainly Holarctic species (with 14 Palaeartic, one Oriental and one Australian species). See remarks under the closest *Schistostoma* Becker. The most recent keys were provided by Chvála (1986) and Shamshev (Шамшев, 1992, 1995).

###### *Schistostoma* Becker, 1902

The genus currently includes 21 species distributed in the northern hemisphere mainly (Palaeartic — 15; Nearctic — 3; Afrotropical — 3) (Chvála, 1987; Шамшев, 1993, Shamshev & Sinclair, 2006). Species of this genus are quite small, greyish flies occurring in southern areas and inhabiting sandy biotopes. The number of scutellar bristles is a distinct character, which occurs in both sexes and can be utilised for distinguishing *Schistostoma* (1 or 2 pairs) from *Microphor* Macquart (3 or 4 pairs) anywhere in the world. This is quite valuable, considering that the male and female

genitalia also appear to be distinct for each genus. The last keys were given by Chvála (1987) and Shamshev (Шамшев, 1993).

##### Parathalassiinae

###### *Microphorella* Becker, 1909

*Microphorella* includes 11 Holarctic species, four from Southeast Asia and one from Australia (Chvála, 1988; Gatt, 2003; Shamshev, 2003). In the Palaeartic Region, one species is known from the Far East (Kuriles) and five occur in the Mediterranean region. The genus includes very small greyish flies inhabiting river banks, wet stones and other places near fresh-water reservoirs. The European species subgroup may be a monophyletic lineage on the base of the greatly modified pregenital segments in the male (Shamshev & Grootaert, 2004). A key to Palaeartic species was provided by Chvála (1988).

###### *Parathalassius* Mik, 1891

There are 6 world species (Palaeartic — 3; Nearctic — 3). In the Palaeartic Region, one is known from the Mediterranean region and 2 from the Russian Far East (Kuriles). Species of the genus are small greyish flies inhabiting sandy biotopes of the sea coast. Shamshev (1998) provided a key to the world species.

###### *Thalassophorus* Saigusa, 1986

One species, *T. spinipennis* Saigusa, is known from Japan. This parathalassiine genus superficially resembles aphrosyline dolichopodids having sucker-like mouth parts with flattened palpi, short labrum and rather fleshy labella, a pair of strong orbital bristles at middle of frons, slender legs, cuneiform wings, and 3–4 strong upright bristles on basal portion of costa (Saigusa, 1986).

##### Acknowledgements

The authors express sincere gratitude to Dr Vladimir Blagoderov (London) who provided photos of the holotype *Falbouria acorensis*. Dr Scott E. Brooks (Ottawa) kindly commented on the manuscript. Paper was supported by the grant of the Russian Foundation for Basic Research (РФФИ) N 11-04-01051-a to Oleg P. Negrobov.

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