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A key to the Palaearctic species of *Pherbellia* Robineau-Desvoidy, with descriptions of three new species (Diptera, Sciomyzidae)

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Abstract. Three new species of snail killing flies, *Pherbellia krivosheinae* sp.n., *P. ozerovi* sp.n. and *P. shatalkini* sp.n. from the Soviet Far East are described and compared with similar Palaearctic taxa of the genus. Distinguishing characters, including structures of the male genitalia, are discussed in detail and illustrated. A complete identification key to the all 49 Palaearctic species of *Pherbellia* is given.

Pherbellia Robineau-Desvoidy, 1830, belongs with its 49 species to the largest genera of the Palaearctic Sciomyzidae, the family of flies consisting of 172 species in the region. Several attemps have been made to delimit the subgenera or species groups (Steyskal, 1949, 1961, 1963, 1966; Rozkošný, 1964; Bratt et al., 1969) but a definite subgeneric classification of *Pherbellia* is missing. A comprehensive study of the Palaearctic species (Rozkošný, 1987), completed by a recent description of two new species (Rivosecchi, 1989) as well as recent discoveries of new Nearctic species (Orth et al., 1980; Orth & Steyskal, 1981; Orth, 1982, 1983, 1984, 1987), undoubtedly deepened our knowledge of taxonomically important characters including discrete structures of the male genitalia but also indicated the vast morphological diversity within the genus. Both these statements were fully supported by the morphology of the three species from the Far East described here.

Some of Palaearctic members of the genus show a wide distribution area, occurring also in North America (*P. albocostata, P. argyra, P. griseicollis, P. griseola, P. hackmani, P. nana, P. obscura,* and probably also *P. stylifera*) or penetrating even to the Oriental region (*P. cinerella* and *P. nana*). The fauna of the eastern part of the Palaearctic seems to be comparatively unknown and, at present, includes only a few endemic species of *Pherbellia*. In addition to *P. ditoma* described by Steyskal from Korea in 1956 only two further recently described species may be added: *P. koreana* from northern Korea (Rozkošný & Kozánek, 1989) and *P. orientalis* from Manchuria in China (Rozkošný & Knutson, 1991).

Thus the three new species described here from the Far East of the USSR extend remarkably the present knowledge of *Pherbellia* species in the eastern Palaearctic. Only one of them appears to be related to *P. ventralis* and, undoubtedly, belongs to the same species group. *P. ozerovi* sp.n. resembles *P. ditoma* with the stump veins on the wing and

P. shatalkini sp.n. is similar to *P. pilosa* owing to its hairy mesopleuron but this character barely represents actual evidence of a closer evolutionary relationship.

DESCRIPTIONS OF NEW SPECIES

Pherbellia krivosheinae **sp.n.**

D i a g n o s i s: A small species from the *P. ventralis* group, with a short mid-frontal triangle, a virtually bare arista and a bare mesopleuron. The male terminalia are specific.

M a l e (holotype): Head yellowish brown, occiput, orbits and mid-frontal triangle white-grey pollinose, narrow stripes along eye margins, parafacialia, face and genae whiter and dusted. Tip of mid-frontal triangle about in middle of distance between anterior margin of frons and anterior ocellus. Orbital plates pointed anteriorly, slightly longer than frontal triangle. Antennae yelowish brown, 3rd antennal segment and arista somewhat darker. Third segment short and round, almost circular, arista virtually bare, thickened in basal third. Palpi and proboscis light brown. All characteristic setae on head well developed: 2 frontoorbitals, 1 outer and 1 inner vertical, and 1 postocellar on each side. Frontoorbitals close each another, both beyond tip of frontal triangle.

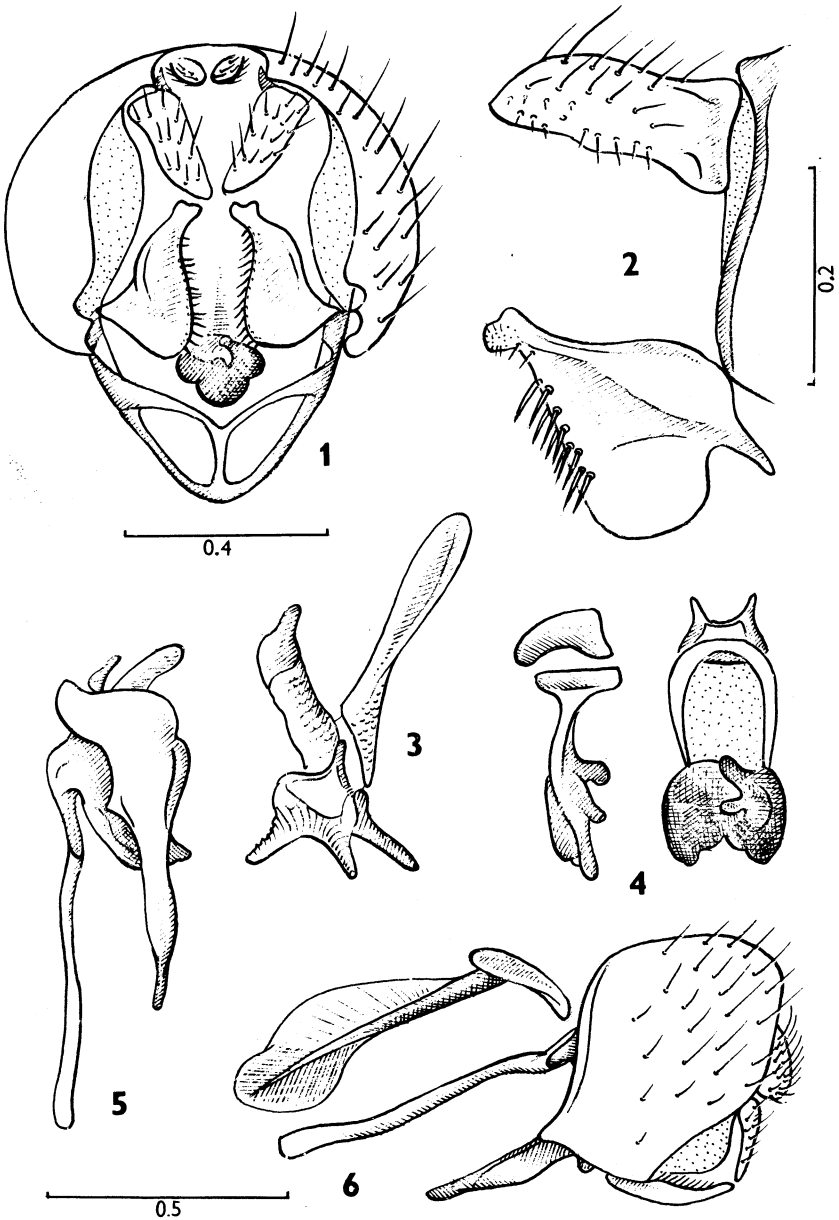
Thorax dull brown, more greyish pollinose on anterior margin, notopleurae and postalar calli. No distinct longitudinal stripes on mesonotum. Pleura mainly whitish grey pollinose to the same extent as occiput of head. All thoracic setae known in *Pherbellia* present: 1 humeral, 2 notopleural, 1 presutural, 1 supraalar, 2 postalars, 2 dorsocentrals, 1 prescutellar acrostichal, 2 scutellars, and 1 propleural on each side. Mesopleuron completely bare, pteropleuron with 7-8 equal fine setae, sternopleuron short haired.

Legs mainly brown, dorsal sides of fore femora slightly darker. Fore femora somewhat swollen in comparison with other two pairs. All coxae densely whitish pollinose. Fore coxae with 2 strong setae at anterior margin, all tibiae with distinct dorsal preapical seta, mid-femur with anterior middle seta and hind femur with 2 anterodorsal setae.

Wings slightly pale brown infuscate, only 3rd costal cell (beyond subcosta) distinctly yellow and both cross-veins inconspicuously infumate. Posterior cross-vein straight, squamae whitish with pale fringe, halteres yellow.

Abdomen brown, narrow posterior margins of terga paler. Male genitalia resemble those of *P. ventralis* (and other species of this group) but both parts of gonostyli and gonites largely different. Anterior part of gonostylus unusually narrowed towards apex and provided with usual row of strong setae along inner margin. Pregonite and postgonite narrow, the latter comparatively long. Aedeagus with short projections on basiphallus, ejaculatory apodeme long and dilated in middle and proximal part (Figs 1-6).

F e m a l e (paratype): Very similar to male, only mesonotum including scutellum more greyish pollinose. A bare longitudinal stripe in middle of mesonotum more distinct than in male. Upper half of mesopleuron rather brown, pteropleuron with 5-7 short



Figs 1-6: *Pherbellia krivosheinae* sp.n. 1 - andrium in ventral view, 2 - posterior and anterior part of gonostylus, 3 - pregonite and postgonite, 4 - aedeagus in lateral and ventral view, 5 - inner copulatory organ in lateral view, 6 - andrium in lateral view. Scales in mm.

setae. Darkening along posterior cross-vein more distinct than in male. Abdomen more uniformly brown, abdominal terga 5 and 6 with distinctly elongate marginal setae.

Length: body 3.5 mm, wing 3.7 mm.

Derivatio nominis: The species is named in a honour of Dr Marina Krivosheina, a Soviet dipterist, who collected the type material in the Amur area of the USSR.

Holotype (♂): USSR, Amur area, Zeya, 26. vi. 1982 (M. Krivosheina leg.). Preserved in the Zoological Museum, Moscow State University.

Paratype (♀): the same locality label as in holotype, preserved in the same collection.

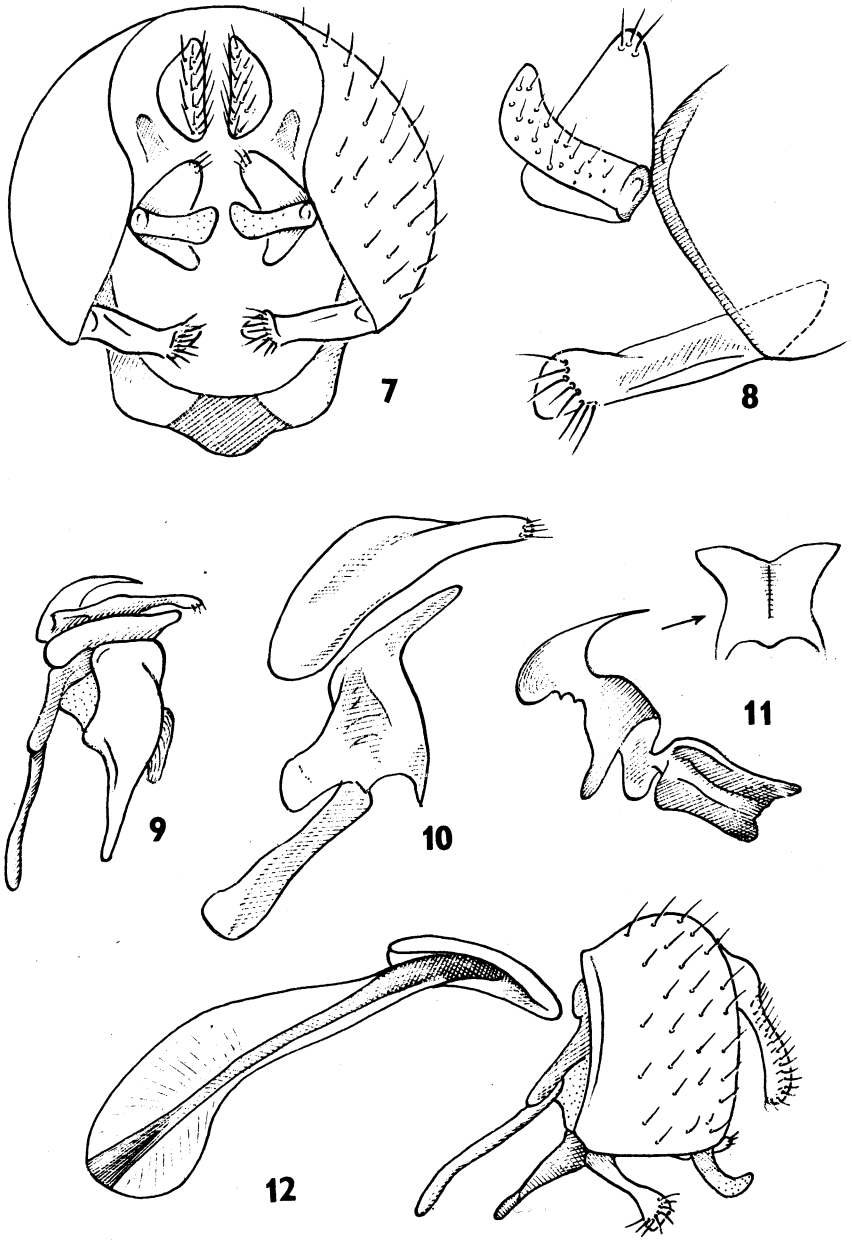
Discussion: There are two closely related species groups of *Pherbellia* characterized by a fairly uniform anterior part of gonostylus bearing an inner row of conspicuous setae, viz. *P. ventralis* group and *P. scutellaris* group (cf. Rozkošný & Kozánek, 1989). In the larger species of the *P. scutellaris* group the basiphallus has a simply rounded or pointed dorsal projection and the ejaculatory apodeme has a rod-like proximal part without any dilatation. *P. krivosheinae* sp.n. displays, as other members of the *P. ventralis* group, two symmetrical and pointed projections on the basiphallus and its ejaculatory apodeme is conspicuously dilated in the middle and proximal parts. Virtually the same type of the inner copulatory organ is known from the Holarctic species *P. obscura* (Ringdahl, 1948), Palaearctic *P. ventralis* (Fallén, 1829), Nearctic *P. subtilis* Orth & Steyskal (in Orth et al., 1980) and *P. suspecta* Orth & Steyskal, 1981. In particular, *P. krivosheinae* sp.n. differs from all these species by the shape of the anterior surstylus being conspicuously narrowed towards posterior end and by the form of the relatively slender gonites (as far as they have been examined). There are no doubts that it represents a very original species differing from all the known Palaearctic as well as Nearctic members of this species group.

Pherbellia ozerovi sp.n.

Diagnosis: A species with elongated mid-frontal stripe almost reaching anterior margin of frons and 1-2 short stump veins beyond the posterior cross-vein on the wings. Male genitalia specific.

Male (holotype): Frons chiefly reddish yellow, mid-frontal stripe, orbits and occiput densely greyish pollinose. Mid-frontal stripe pointed anteriorly and almost reaching anterior margin of frons. Antenna brown, greater part of 3rd antennal segment dark, almost black, sub-oval, about 1.5 times longer than broad. Arista very short but distinctly haired. Parafacialia and genae whitish pollinose, face slightly more brownish. Proboscis and palpi brown. Setae on head as in *P. krivosheinae* sp.n. but somewhat stronger. Fronto-orbital setae not close each other, anterior of them placed almost in middle between anterior margin of frons and posterior fronto-orbital.

Thorax densely grey dusted with 2-4 brown longitudinal stripes on mesonotum and more brownish upper pleura. Notopleura distinctly paler, scutellum as deeply grey



Figs 7-12: *Pherbellia ozerovi* sp.n. 7 -andrium in ventral view, 8 - posterior and anterior part of gonostylus, 9 - inner copulatory organ in lateral view, 10 - pregonite and postgonite, 11 - aedeagus in lateral view and epiphallus in ventral view, 12 - andrium including ejaculatory apodeme in lateral view.

pollinose as mesonotum. Thoracic setae as in *P. krivosheinae* sp.n. though relatively stronger. Notopleura completely bare, pteropleuron with 5 equal short setae, sternopleuron short haired.

Legs brown, only fore legs darker, almost black except for yellowish dusted coxae. Setae on legs as in *P. krivosheinae* sp.n.

Wing membrane slightly brownish infuscate, 3rd costal cell yellow. Two stump veins on medial vein beyond posterior cross-vein regularly distinct. Both cross-veins as well as stump veins brownish infumate. Squamae and halteres pale brown, squamal fringe whitish.

Abdomen subshining brown, sparsely but distinctly grey dusted. Posterior margins of terga narrowly yellow. Male genitalia very specific: anterior part of gonostylus slender, with transverse preapical row of setae; posterior part of gonostylus bipartite, consisting of subtriangular inner part and stripe-like outer part. Both gonites well developed, postgonite elongated and haired apically. Aedeagus with distinct although low epiphallus, ejaculatory apodeme unusually long and massive, about twice as long as aedeagal apodeme (Figs 7-12).

Female (paratype): Very similar to male. Brownish spot between base of antenna and margin of eye (orbito-antennal spot) usually conspicuous brown. Often only 3-4 pteropleural setae developed. Number of stump veins on wing may be reduced (often asymmetrically) but always at least one on every wing. Brown longitudinal stripes on mesonotum less distinct than in male but obvious.

Length: body 3.5-3.8 mm, wing 3.8-4.0 mm.

Derivatio nominis: The species is named in a honour of Dr Andrei L. Ozerov, a Soviet dipterist, who collected the holotype in the Maritime Territory of the USSR.

Holotype (♂): USSR, Southern Maritime Territory, SE Ussuriisk, 4.vi.1985 (A. Ozerov leg.). Preserved in the Zoological Museum, Moscow State University.

Paratypes (26 ♂, 11 ♀): USSR, Amur area, Zeya, 23.vi.1978 1 ♀, 22.vi.1979 1 ♀, 15.viii.1979 2 ♂, 16.viii.1979 2 ♂, 1 ♀, 17.viii.1979 1 ♂, 29.viii.1981 1 ♂, 1.ix.1981 2 ♂, 2 ♀, 26.viii.1981 1 ♂, 21.vi.1982 1 ♀, 24.vi.1982 2 ♂, 25.vi.1982 1 ♂, 5.vii.1982 1 ♂ (all A. Ozerov leg.). Preserved in the Zoological Museum, Moscow State University.

Discussion: Distinct stump veins on the wing are found in four other Palaearctic species: *P. argyrotarsis* (Becker), *P. ditoma* Steyskal, *P. mikana* (Hendel), and *P. priscillae* Knutson & Freidberg. *P. argyrotarsis* is confined to the Canary Islands and the male genitalia of this species are characterized by the unique rod-like and serrate pregonites (cf. Rozkošný, 1987). *P. ditoma* was described from Korea and its male genitalia are known only from the simplified lateral view published by Steyskal (1956). *P. mikiana* seems to be a morphologically isolated species with unusual peglike structures on the anterior part of the gonostylus. *P. priscillae* is known only from Israel and its ejaculatory apodeme is, like that of *P. argyrotarsis*, relatively short (about as long as the aedeagal apodeme) and rod-like in the proximal part. However, *P. ozerovi* sp.n. bears an extremely long ejaculatory apodeme about three times longer than the andrium and conspicuously dilated in its proximal part (Fig. 12). The relative size of the

ejaculatory apodeme found in this species appears to be unique within the family. Apart from the fact that the discrete structures have not been examined, there are conspicuous differences in the shape of both parts of gonostyli between *P. ditoma* and the new species. Consequently, *P. ozerovi* sp.n. represents a taxonomically isolated species and the present knowledge of its morphology does not enable any suggestion concerning its relationships.

Pherbellia shatalkini sp.n.

D i a g n o s i s : Somewhat larger than *P. ozerovi* sp.n., with only short mid-frontal triangle and without any stump vein on wings. Posterior half of mesopleuron densely haired. Male genitalia specific.

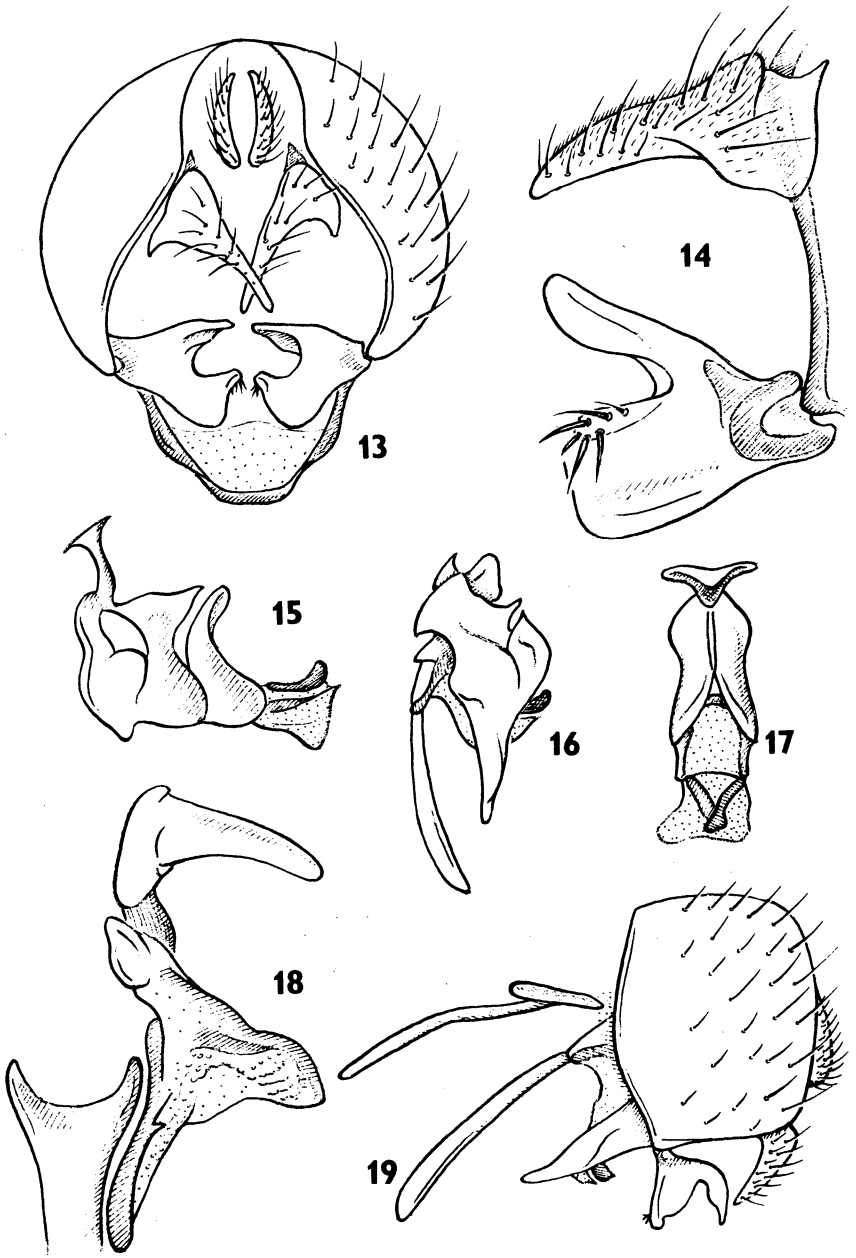
M a l e (holotype): Frons dull yellow, distinctly narrowed towards anterior margin. Mid-frontal triangle, orbits and occiput densely greyish dusted, parafacialia, face and genae yellowish white. Tip of mid-frontal triangle reaching middle of distance between anterior margin of frons and anterior ocellus, about as long as orbits. Antenna as in *P. ozerovi* sp.n., i.e. 3rd segment oval and darkened, arista very short haired. Palpi yellow, proboscis brown. Setae on head strong and complete (cf. *P. krivosheinae* sp.n.), anterior margin of frons.

Thorax dark, mostly densely grey dusted including scutellum, mesonotum with 2 pairs of brown, not too conspicuous, longitudinal stripes. Pleura also predominantly grey, only propleuron paler and upper posterior corner of mesopleuron brown. Thoracic setae strong and complete (cf. *P. krivosheinae* sp.n.), though prescutellar acrostichals only weak. Mesopleuron in upper and posterior parts densely haired, usually about 3 hairs along posterior margin elongated. Pteropleuron with 2 strong setae and several (4-8) hairs. Sternopleuron covered with hairs as in other species of *Pherbellia.*

Legs dark brown but all femora densely greyish pollinose. Setae on legs as in *P. krivosheinae* sp.n.

Wing membrane brownish infuscate, darkening along cross-veins virutally indistinct. Posterior cross-vein conspicuously straightened. Squamae including marginal fringe whitish, halteres yellow.

Abdomen dark brown and densely grey dusted. Posterior margins of terga contrasting yellow. Marginal setae distinctly longer than other pubescence, especially on terga 4 and 5. Male genitalia showing original form of gonostyli as well as gonites and aedeagus. Anterior part of gonostylus with stripe-like projection and group of setae on inner corner. Basiphallus bearing a distinct epiphalpus, postgonite elongate but without any hairs on tip. Ejaculatory apodeme without proximal dilation (cf. Figs 13-19).



Figs 13-19: *Pherbellia shatalkini* sp.n. 13 - andrium in ventral view, 14 - posterior and anterior part of gonostylus, 15 - aedeagus in lateral view, 16 - inner copulatory organ in lateral view, 17 - aedeagus in ventral view, 18 - pregonite and postgonite, 19 - andrium in lateral view.

Female (paratype): Frons somewhat broader than in male, not tapered anteriorly. Two median dark stripes on mesonotum broader and more conspicuous. Parafacialia and face yellow rather than yellowish white. Posterior cross-vein slightly sinuate. Posterior margins of abdominal terga pale but greyish rather than yellow.

Length: body 4.0 mm, wing 4.2-4.8 mm.

Derivatio nominis: the species is named in a honour of Dr Anatolii I. Shatalkin, a Soviet dipterist who collected the type material in the Amur area of the USSR.

Holotype (♂): USSR, Amur area, Zeya, 13.ix.1981 (A. Shatalkin leg.). Preserved in the Zoological Museum, Moscow State University.

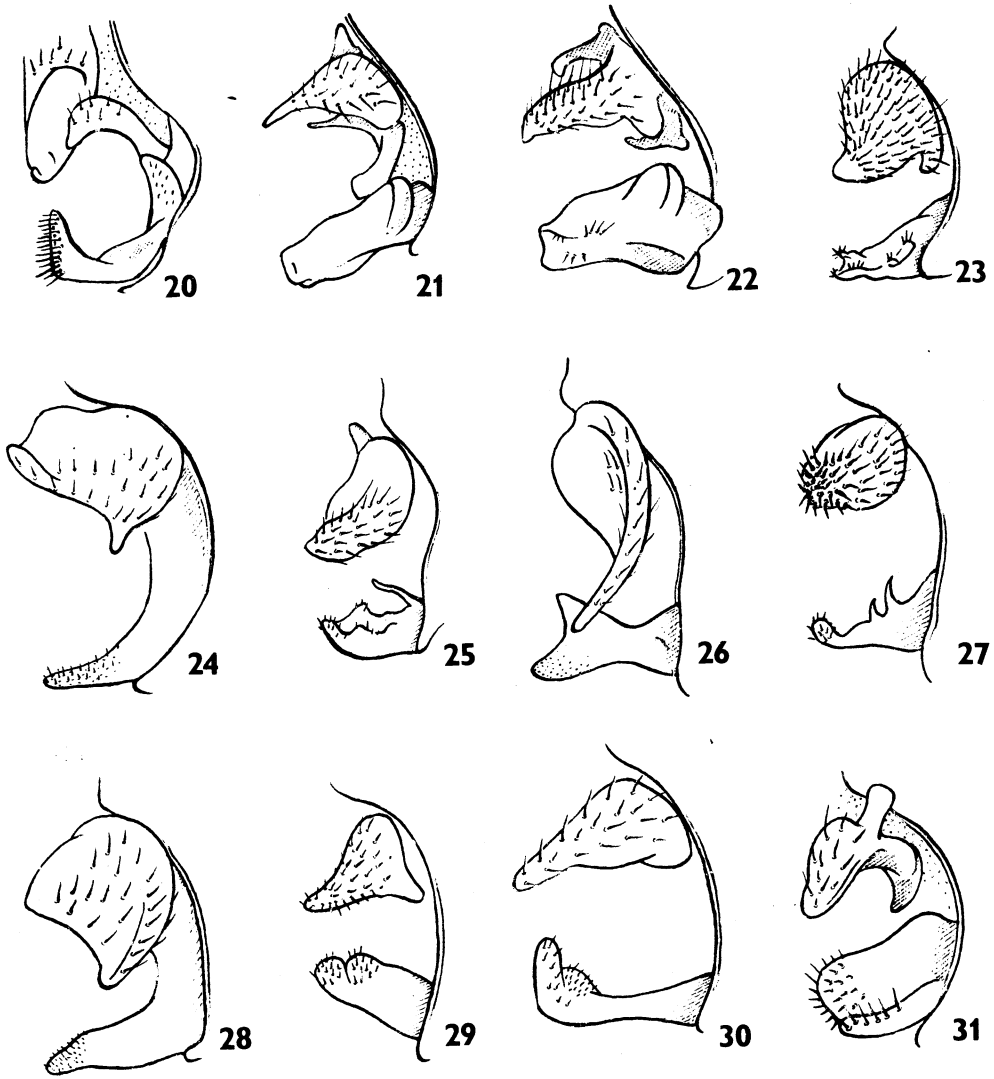
Paratypes (3 ♂, 2 ♀): the same locality label as in holotype, 21.vi.1978 2 ♂, 10.vii.1978 1 ♂, 7.vii.1981 1 ♀, 8.vii.1981 1 ♀ (all A. Shatalkin leg.). Preserved in the Zoological Museum, Moscow State University.

Discussion: A predominantly haired mesopleuron has been found in a few Palaearctic species of *Pherbellia: P. mikiana* (Hendel), *P. czernyi* (Hendel) and *P. pilosa* (Hendel). In addition, *P. mikiana* possess an elongated mid-frontal triangle as *P. ozerovi* sp.n. and its male genitalia are very unique bearing short, peglike setae on the anterior part of gonostyli and, in the latter, resembling some common species of the genus *Colobaea* (cf. Rozkošný, 1987). *P. czernyi* and *P. pilosa* appear to be related and form the *P. pilosa* species group. However, *P. shatalkini* sp.n., apart from its haired mesopleuron, is unlikely to belong to this group. It lacks characteristically elongated cerci present in both species under discussion and its basiphallus is distinctly higher and unusually enlarged; also the gonites are shaped differently. As a consequence, it must be stated that the relationships of *P. shatalkini* sp.n. to other species within the genus *Pherbellia* remain unknown, as in the preceding species *P. ozerovi* sp.n.

Key to the Palaearctic species of *Pherbellia* Robineau-Desvoidy

1	Wing with reticulate pattern (Plate I, Figs 4,6) * or extensively spotted (Plate I, Fig. 9)	2
–	Wings with less extensive dark pattern or without it	4
2(1)	Costal and apical margin of wing dark (Plate I, Fig. 6) (Europe, Submediterranean) ..... *P. limbata* (Meigen, 1830)	
–	Costal and apical margin of wing at least partly pale	3
3(2)	Wing membrane with reticulate pattern (Plate I, Fig. 4) (eastern Europe and Palaearctic Asia) ..... *P. clathrata* (Loew, 1874)	
–	Wing membrane with pattern of blackish spots (Plate I, Fig. 9) (Holarctic with a separate subspecis in North America) ..... *P. schoenherri* (Fallén, 1826)	
4(1)	Mesopleuron covered with hairs at least over its posterior half	5
–	Mesopleuron at most with 1-2 rows of hairs along posterior margin	8
5(4)	Mid-frontal stripe reaching anterior margin of frons; apical portion of M_{1+2} with short stump vein (Plate I, Fig. 7) (Europe, Mediterranean) ..... *P. mikiana* (Hendel, 1900)	

* Plate I will be found at the end of this issue



Figs 20-31: *Pherbellia* spp., posterior and anterior parts of gonostyli. 20 - *P. czernyi* (Hend.), 21 - *P. austera* (Meig.), 22 - *P. majuscula* (Rond.), 23 - *P. priscillae* Knuts. & Freidb., 24 - *P. argyrotarsis* (Beck.), 25 - *P. hermonensis* Knuts. & Freidb., 26 - *P. dubia* (Fall.), 27 - *P. albicarpa* (Rond.), 28 - *P. knutsoni* Verb., 29 - *P. lutheri* Rozk., 30 - *P. pallidicarpa* (Rond.), 31 - *P. steyskali* Rozk. & Zuska.

– Mid-frontal stripe much shorter; apical portion of M_{1+2} without stump vein 6

6(5) Fore coxa without seta above middle; fore basitarsus contrasting white; male gonostylus as in Fig. 20 (western and central Europe)..... *P. czernyi* (Hendel, 1902)

– Fore coxa with a seta above middle; fore basitarsus never contrasting white 7

7(6) Fore basitarsus as dark as rest of tarsus; male genitalia as in Figs 13-19 (USSR, Amur area) ..... *P. shatalkini* sp.n.

– Fore basitarsus yellowish brown, paler than rest of tarsus; male gonostylus as in Fig. 49 (Submediterranean in Europe, Near East, Soviet Central Asia)..... *P. pilosa* (Hendel, 1902)

8(4) Mesopleuron with hairs along posterior margin 9

– Mesopleuron entirely bare 15

9(8) Costal margin of wing darkened; fore basitarsus contrasting white (China, Manchuria) ..... *P. orientalis* Rozkošný & Knutson, 1991

– Costal margin of wing not darkened; fore basitarsus yellow or dark brown as rest of tarsus 10

10(9) Anterior margin of wing whitish, veins Sc, R_1 and R_{2+3} contrasting yellow Plate I, Fig. 1) (Holarctic)..... *P. albocostata* (Fallén, 1820)

– Anterior margin of wing not whitish, all veins of the same colour 11

11(10) Arista moderately long plumose, longest hairs distinctly shorter than greatest width of 3rd antennal segment; fore femur and tibia usually dark brown; cross-veins infuscated; male gonostylus as in Fig. 37 (Holarctic)..... *P. griseola* (Fallén, 1820)

– Arista long plumose, longest hairs reaching greatest width or 3rd antennal segment; fore legs yellowish brown; cross-veins barely infuscate; gonostylus not as above 12

12(11) Hind tibia with 1-2 additional lateral preapical setae between anteroventral and anterodorsal seta; posterior part of gonostylus subtriangular (Fig. 21) (Eurasian)..... *P. austera* (Meigen, 1830)

– Hind tibia without lateral preapical setae; posterior part of gonostylus of different shape 13

13(12) Fore coxa with 5-6 strong setae on anterior margin, at least two setae above midle; posterior part of gonostylus with two curved basal processes (Fig. 22) (central Europe: Czechoslovakia, Hungary and Italy) (syn. *P. hungarica* Rozkošný,1972; cf. Rivosecchi, 1987)..... P. majuscula (Rondani, 1868)

– Fore coxa usually with 3 strong setae, only one seta above middle; posterior part of gonostylus differently shaped 14

14(13) Third antennal segment only slightly tapered towards apex, at least some aristal hairs longer than width of 3rd antennal segment; posterior part of gonostylus characteristically curved, with thin inner process (Fig. 36) (Eurasian)..... *P. dorsata* (Zetterstedt, 1846)

– Third antennal segment almost conical, aristal hairs at most as long as basal width of 3rd antennal segment; posterior part of gonostylus not strongly curved and without inner process (Fig. 38) (Eurosiberian and mainly boreal in Europe)..... *P. obtusa* (Fallén, 1820)

15(8) Middle and hind femora and tibiae with brownish rings before apices 16

– Middle and hind femora and tibiae without brownish rings 17

16(15) Wing only slightly darkened along costal margin and at cross-veins; larger species (3.6-5.3 mm) (European)..... *P. annulipes* (Zetterstedt, 1846)

– Wing with a brownish pattern consisting of an incomplete transverse stripe before apex and several isolated spots (Plate I, Fig. 8); small species (2.0-3.5 mm) (Holarctic)..... *P. nana* (Fallén, 1820)

17(15) Vein M_{1+2} with 1-2 stump veins in distal section (Plate I, Fig. 2) 18

– Wing without stump veins in distal section (Plate I, Fig. 10) 21

18(17) Mid-frontal triangle shorter than half distance between anterior ocellus and anterior margin of frons; male gonostylus as in Fig. 23 (Israel)..... *P. priscillae* Knutson & Freidberg, 1983

– Mid-frontal triangle longer than half distance between anterior ocelus and anterior margin of frons; male gonostylus of another form 9

19(18) Costal margin of wing distinctly infuscate (Plate I, Fig. 2): fore basitarsus contrasting white; male gonostylus as in Fig. 24 (Canary Islands)..... *P. argyrotarsis* (Becker, 1908)

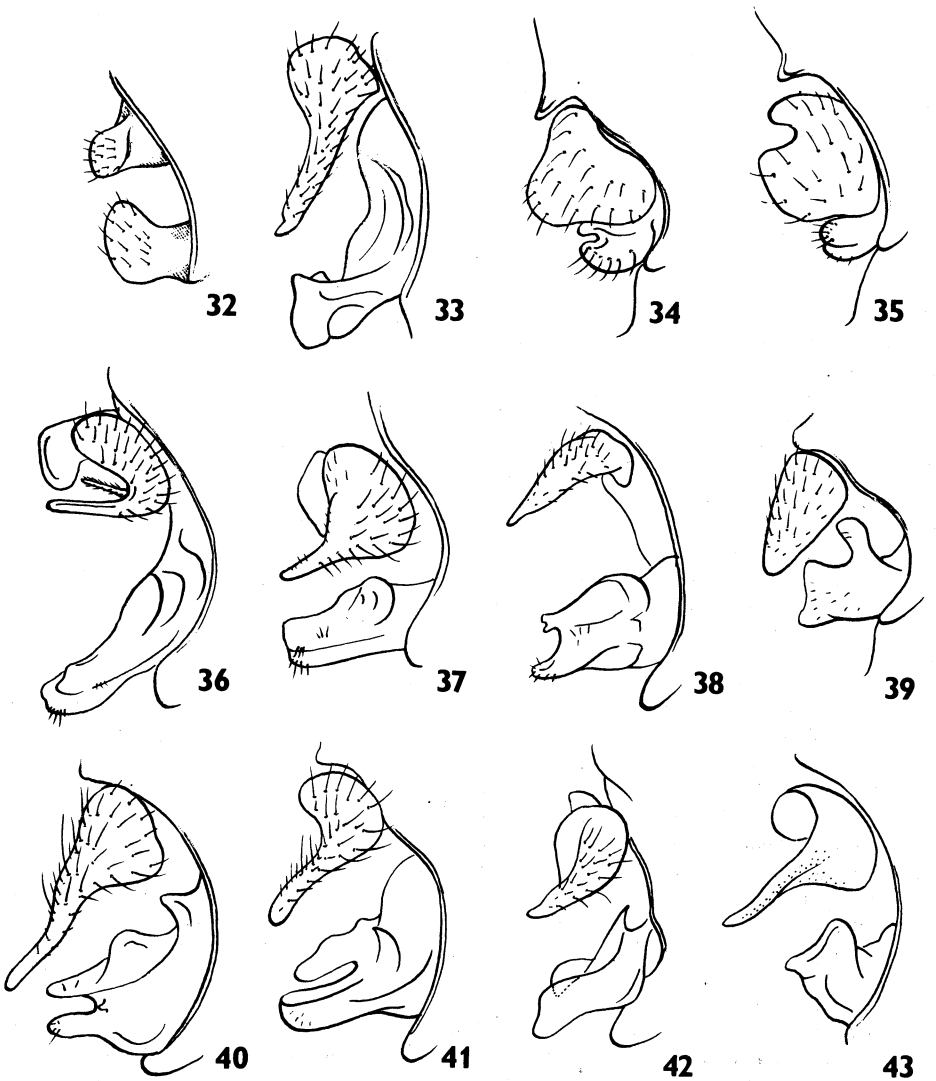
– Costal margin of wing not infuscate; fore basitarsus completely or predominantly dark 20

20(19) Fore basitarsus completely dark brown; posterior part of gonostylus bipartite (Figs 7-8) (USSR, Far East)..... *P. ozerovi* sp.n.

– Fore basitarsus blackish except pale yellow basal ring; posterior part of gonostylus simple (Korea) ..... *P. ditoma* Steyskal, 1956

21(17) Wing with a distinct dark pattern, at least costal margin darkened (Plate I, Figs 3, 5, 8) 22

– Wing without dark pattern 24



Figs 32-43: *Pherbellia* spp., posterior and anterior parts of gonostyli. 32 - *P. alpina* (Frey), 33 - *P. argyra* Verb., 34 - *P. brunnipes* (Meig.), 35 - *P. stackelbergi* Elberg, 36 - *P. dorsata* (Meig.), 37 - *P. griseola* (Fall.), 38 - *P. obtusa* (Fall.), 39 - *P. pallidiventris* (Fall.), 40 - *P. griseicollis* (Beck.), 41 - *P. sordida* (Hend.), 42 - *P. hackmani* Rozk., 43 - *P. stylifera* Rozk.

22(21) Dark costal margin extnding onto wing apex; mid-frontal stripe strap-like, reaching anterior margin of frons 23

– Dark costal margin continuing as a short transverse stripe, apex of wing clear (Plate I, Fig. 10); mid-frontal stripe tapered, ending before anterior margin of frons (Afghanistan and Oriental region) ..... *P. terminalis* (Walker, 1858)

23(21) Wing without isolated spots (Plate I, Fig. 3) (Palaearctic and Oriental).. *P. cinerella* (Fallén, 1820)
– Wing with several isolated spots (Plate I, Fig. 5) (Madeira).....*P. inclusa* (Wollaston, 1858)
24(21) Third antennal segment contrasting black, at least in apical half.....25
– Third antennal segment unicolorous, reddish yellow to brown 28
25(24) Orbito-antennal spot present 26
– Orbito-antennal spot absent 27
26(25) Thorax grey, abdomen contrasting yellow; anterior part of gonostylus stout, with a basal projection (Fig. 25) (Israel, Turkey).....*P. hermonensis* Knutson & Freidberg, 1983
– Body brownish; anterior part of gonostylus conspicuously curved, long and slender (Fig. 52) .....*P. kugleri* Knutson, 1985
27(25) Posterior part of gonostylus leaf-shaped (Fig. 26) (Eurasian).....*P. dubia* (Fallén, 1820)
– Posterior part of gonostylus not leaf-shaped, with a hook-like tip (Fig. 51) (Italy)..... .....*P. garganica* Rivosecchi, 1989
28(24) Arista short plumose, aristal hairs much longer than arista is broad at base.....29
– Arista pubescent, aristal hairs barely longer than arista is broad at base 30
29(28) Anterior part of frons silvery or whitish pruinose; prescutellar acrostichal present; posterior part of gonostylus with long setae (Fig. 33) (Holarctic).....*P. argyra* Verbeke, 1967
– Anterior part of frons without pale pruinosity; prescutellar acrostichals absent; posterior part of gonostylus without setae (France).....*P. goberti* (Pandellé, 1902)
30(28) Mid-frontal stripe longer than half distance between anterior ocellus and anterior margin of frons, sometimes even reaching anterior margin of frons 31
– Mid-frontal stripe shorter than half distance between anterior ocellus and anterior margin of frons 37
31(30) Upper posterior margin of sternopleuron with several longer upwardly-directed setae; abdomen brown and yellow, transversely striped 32
– Upper posterior margin of sternopleuron without setae; abdome unicolorous, yellowish or greyish brown.....33
32(31) Row of small hairs along lower frontal eye-margin absent; posterior part of gonostylus rounded on inner side (Fig. 34) (Eurasian).....*P. brunnipes* (Meigen, 1838)
– Row of small hairs along lower frontal eye-margin present, with at least several hairs distinct between anterior orbital seta and base of antennae; posterior part of gonostylus pointed on inner side (Fig. 35) (Eurasian).....*P. stackelbergi* Elberg, 1965
33(31) Abdomen yellow; anterior part of gonostylus long and slender (Figs 27-30).....34
– Abdomen brown, greyish pruinose; anterior part of gonostylus short and rounded (Fig. 32) (Eurasian).....*P. alpina* (Frey, 1930)
34(33) Anterior part of gonostylus with 1-2 pointed processes at base (Fig. 27) (Europe, Submediterrannean; Israel).....*P. albicarpa* (Rondani, 1868)
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35(34) Posterior part of gonostylus broad, subquadrate (Fig. 28) (Europe, Atlantic) ....*P. knutsoni* Verbeke, 1967
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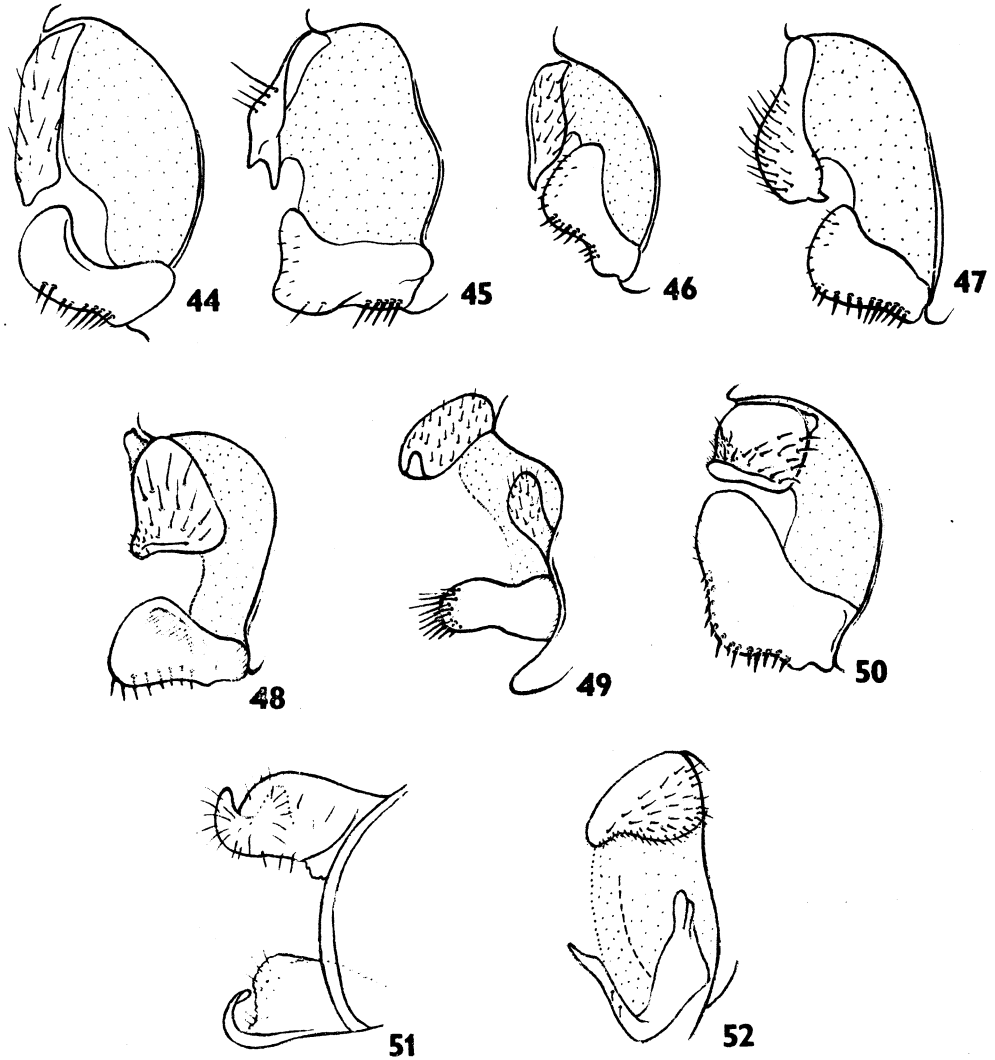
36(35) Orbito-antennal spot present; posterior part of gonostylus stout and pointed apically (Fig. 29) (USSR, Black Sea coast).....*P. lutheri* Rozkošný, 1982
– Orbito-antennal spot absent; posterior part of gonostylus gradually tapered and rounded apically (Fig. 30) (Europe, absent in North).....*P. pallidicarpa* (Rondani, 1868)
37(30) Cheek as high as or higher than half height of eye 38
– Cheek lower than half height of eye.....39
38(37) Cheek as high as half height of eye; arista distinctly pubescent; posterior part of gonostylus hook-like in lateral view, anterior part bifid (Fig. 40) (Holarctic).....*P. griseicollis* (Becker, 1900)
– Cheek higher than half height of eye; arista virtually bare; posterior part of gonostylus elongate-conical, anterior not bifid (Fig. 42) (Holarctic).....*P. hackmani* Rozkošný, *1982*



Figs 44-52: *Pherbellia* spp., posterior and anterior parts of gonostyli. 44 - *P. obscura* (Ringd.), 45 - *P. ventralis* (Fall.), 46 - *P. rozkosnyi* Verb., 47 - *P. scutellaris* (Ros), 48 - *P. koreana* Rozk. & Koz., 49 - *P. pilosa* (Hend.), 50 - *P. silana* Riv., 51 - *P. garganica* Riv., 52 - *P. kugleri* Knut. (Fig. 51 adapted from Rivosecchi, 1989, and 52 from Knutson, 1985).

39(37) Inner angle of eye almost rectangular in frontal view; male sternum 5 with two tubercles at posterior margin and anterior part of gonostylus with stripe-like process (Fig. 39); female with snow-white transverse stripe on lower half of face and parafacialia in frontal view (Europe)..... *P. pallidiventris* (Fallén, 1820)

– Inner angle of eye distinctly obtuse in frontal view; male sternum 5 without tubercles and anterior part of gonostylus without stripe-like process; female without snow-white transverse stripe on lower part of head 40

40(39) Thorax yellow, pleura mainly shining; posterior part of gonostylus long and slender (Fig. 43) (boreal in Europe) ..... *P. stylifera* Rozkošný, 1982

– Thorax brown or greyish pollinose; if rarely yellow then pleura not mainly shining; posterior part of gonostylus not long and slender 41

41(40) Posterior part of gonostyllus with characteristic process on upper hind margin (Fig. 31) (central Europe) ..... *P. steyskali* Rozkošný & Zuska, 1965

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42(41) Pteropleuron with 6-9 fine, short and equal setae, small species (2.8-4.0 mm) 43

– Pteropleuron with longer or inequal setae (usually two setae longer than other); larger species (4.2-6.0 mm) 46

43(42) Occiput, pleura and fore legs deeply bluish-grey, abdomen contrasting yellow 44

– Body differently coloured, fore legs and abdomen chiefly brown 45

44(43) Posterior part of male gonostylus slender and bifid apically (Fig. 45) (Europe) ..... *P. ventralis* (Fallén, 1820)

– Posterior part of male gonostylus broad and sub-oblong, not bifid apically (Fig. 50) (Spain, Italy, Czechoslovakia) ..... *P. silana* Rivosecchi, 1989

45(43) Mesonotum and pleura densely brown pruinose; anterior part of gonostylus not tapered towards apex (Fig. 44) (Holarctic) ..... *P. obscura (Ringdahl, 1948)*

– Mesonotum on sides and greater part of pleura whitish grey pruinose; anterior part of gonostylus conspicuously tapered towards apex (Figs 1-2) (USSR, Far East) ..... *P. krivosheinae* sp.n.

46(42) Middle and hind femora distinctly darker than tibiae, greyish pruinose; posterior part of gonostylus leaf-shaped, broad distally (Fig. 48) (Korea) ..... *P. koreana* Rozkošný & Kozánek, 1989

– Femora barely darker than tibiae; posterior part of gonostylus narrower and mostly pointed apically 47

47(46) Tip of hind femur without dark spots; anterior part of gonostylus without strong and long setae (Fig. 41) (Europe) ..... *P. sordida* (Hendel, 1902)

– Tip of hind femur usually with dark spots on inner and outer sides; anterior part of gonostylus with strong and long setae (Figs 46-47) 48

48(47) Posterior part of gonostylus gradually tapered towards apex (Fig. 46) (Europe, absent in south) ..... *P. rozkosnyi* Verbeke, 1967

– Posterior part of gonostylus conspicuously dilated before tip (Fig. 47) (Eurasian) ..... *P. scutellaris* (Roser, 1840)

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