

A revision of the Palaearctic Periscelidinae with notes on some New World species (Diptera: Periscelididae)

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Abstract – The statuses of *Periscelis annulipes* LOEW, 1858, *P. nigra* (ZETTERSTEDT, 1860) and *P. winnertzii* EGGER, 1862 as species are confirmed; *P. nigra minor* ssp. n. is described from Hungary. *Myodris* LIOY, 1864 is treated as a genus with *M. annulata* (FALLÉN, 1813), *M. chinensis* (L. PAPP et SZAPPANOS, 1997), *M. flinti* (MALLOCH, 1915) (Nearctic), *M. kabuli* (L. PAPP, 1988) and *M. piricercus* (CARLES-TOLRÁ et VERDUGO PÁEZ, 2009) as valid species. Some notes and genitalia figures are given also for the New World species of *Scutops* COQUILLETT, 1904. With 53 figures.

Key words – Periscelididae, Palaearctic, Nearctic, *Periscelis*, *Myodris*, *Periscelis nigra minor* ssp. n., *Scutops*.

INTRODUCTION

The family Pericelididae is a small dipterous family of somewhat less than 100 species (Pericelididae *sensu lato*), or only with ca. 35 species (Pericelididae *sensu stricto*). Its distinctness became obvious for dipterists early on: SCHINER (1863) separated them as the subfamily Periscelinae within the Muscidae, back then the latter family contained all the flies we now consider as Muscoidea. Later their affinities to the Drosophilidae were proposed. DUDA (1934) treated them as a separate family, but the numbering of the family indicates that they were placed within the Drosophilidae when LINDNER's series *Die Fliegen der paläarktischen Region* was launched in 1925. The delimitation and the taxa actually included in the family crystallized

much later. For instance, MCALPINE (1987) included only the genus *Periscelis* for the Nearctic region.

HENNIG (1969) formed the family Periscelididae in the modern sense through a discussion of some Neotropical genera. Their phylogeny and consequently their position in the system of Diptera have been much debated. BAPTISTA & MATHIS (1994) wrote: "... the sister group of Periscelididae is probably to be found within the families Aulacigastridae... or Neurochaetidae...", but we are afraid, their sister group may be found in the frame of a wider analysis only, analysing more families of the "acalyprates". PAPP (1984b) described Stenomicridae as a separate family. Since then views are split about their statuses as families, but at least subfamily rank is widely accepted for them. As a consequence, the main body of the family Periscelididae is named as either Periscelididae or Periscelidinae. In any case, the placement of *Planinasus* CRESSON, 1914 seems much more debatable.

This work is aimed at a species level revision, so it seems practical not to go into deeper phylogenetic discussion (e.g. whether species included in Periscelididae other than Stenomicridae can be kept together in a well-established family, or the questions about *Planinasus*). Nevertheless, it is advisable to summarise the diagnostic features of the subfamily Periscelidinae (or, Periscelididae *sensu stricto*), as follows:

Frons with a single fronto-orbital bristle pair, ocellar setae present, pedicel definitely cap-like over flagellomere 1, postpronotum with a well-developed seta, costal vein short, extended only to apex of R₄₊₅, apical section of vein Cu₁ lacking, consequently no cubital cell present, female 7th abdominal tergite and sternite fused into a ring (syntergosternite), which includes the 7th pair of spiracles. The male genitalia show an extremely wide range of variability. However, it seems obvious that the very characteristic synapomorphy of the genera *Periscelis* LOEW, 1858, *Myodris* LIOY, 1864, *Parascutops* MATHIS et PAPP, 1992 and *Scutops* COQUILLET, 1904, i.e. phallapodeme and hypandrium fused into a hood-like structure, must be a focal point, when limits of the family are established more firmly.

MATERIALS AND METHODS

The types and other material are deposited in the following collections:

HNHM = Hungarian Natural History Museum, Budapest, NMNH = National Museum of Natural History, Smithsonian Institution, Washington, NMW = Naturhistorisches Museum, Wien, ZMB = Zoologisches Museum, Berlin, ZMH = Zoological Museum of the University Helsinki, ZML = Museum of Zoology and Entomology, Lund University.

Preparation of the present manuscript has a rather long history, the longest in the career of the first author. Actually, it was initiated by some studies in the NMNH, when LP visited their collection based on a Short Term Visitor Award in October-November 1989. He studied the types of the European species (other than those in the HNHM) in 1990 (from the NMW, ZMB and ZML). LP prepared most of the figures in 1991. Then the work was dormant until 2009, when the junior author showed interest in the revision of the Palaearctic species and encouraged the first author to complete it.

The genitalia preparations were made using methods described in detail in PAPP (2008).

Not wanting to possibly interfere with (or inflict restriction on) any future revisional work on the extra-Palaearctic species, locality (label) data are given only for the Palaearctic species below. Handwritings are given between quotation marks, data or letters *not* included on labels are in square brackets. For revised types labels are numbered from top to bottom, in others data on labels are separated by a hyphen.

TAXONOMY

On the basis of the differentiating features found between *Periscelis* LOEW, 1858 and *Myodris* LIOY, 1864, we propose a generic status for *Myodris* (see below). The key to the genera below includes also two genera from the New World, its content may also underline the distinct position of *Myodris*.

Key to the holarctic genera of Periscelididae s. str. (based on male genitalia)

- | | | |
|---|---|---|
| 1 | Process between bases of surstylus and cercus lacking (Figs 22, 30, 33, 45, 53) | 2 |
| – | Process between bases of surstylus and cercus present (Figs 1, 4, 16) | 4 |

- 2 Cerci weakly sclerotised, sausage-like with short bristles only (Figs 45, 50). Surstyli symmetrical, short or indistinct (Figs 45–46, 53). Nearctic and Neotropical – *Scutops* COQUILLETT, 1904 3
- Cerci well sclerotised, longer than wide, becoming narrow apically, bearing several long setae and two stout, tooth-like setae apically (Figs 21, 27). Surstyli asymmetrical to some degree, narrow and acutely pointed at apex (e.g. Figs 34, 37). Holarctic *Myodris* LIOY, 1864
- 3 Surstylus indistinct, a small swelling on epandrium only (Figs 45–46). Postgonite bulbous (Figs 45, 48) *Scutops (Panamenia)* CURRAN, 1934
- Surstylus short but mostly distinct (Fig. 53). Postgonite though short but not bulbous (Figs 52–53) *S. (Scutops)* COQUILLETT, 1904
- 4 Cerci strongly sclerotised, ventral 2/3 long, narrow and parallel-sided, in lateral view curved anteriorly, long setae on base only (fig. 2, 3 of MATHIS & PAPP 1992); process between bases of cercus and surstylus short and digitiform. Ejaculatory apodeme (fig. 4 of MATHIS & PAPP 1992) very large, flat and wide. Postgonite reclinate, rather long. Genital pouch small, rather flat and pocket-like. Distiphallus comparatively short and well sclerotized. Mexico
Parascutops MATHIS et PAPP, 1992
- Cerci less strongly sclerotised, stout and not narrowed in ventral 2/3, with long bristles also apically (Figs 2, 16); process between bases of cercus and surstylus various but usually long. Ejaculatory apodeme usually smaller; if bigger, then never flat. Genital pouch various, distiphallus usually very long, ribbon-like (but in *P. nebulosa* HENDEL, 1916). Several biogeographic regions
Periscelis LOEW, 1858

Periscelis LOEW, 1858

Periscelis LOEW, 1858: 113. Type species: *Periscelis annulipes* LOEW, 1858: 118 (subsequent designation by STURTEVANT, 1923)

Parclioscena ENDERLEIN, 1936: 177. Type-species: *Periscelis winnertzii* EGGER, 1862: 780 (monotypy).

Periscelis annulipes LOEW, 1858
(Fig. 1)

Type material – Lectotype male (ZMB): 1) [8 × 3 mm, dirty white, handwritten] “Bresl. Scholz.” 2) Coll. H. Loew; 3) [red] Type; 4) [12 × 7 mm, dirty white with 5 pin-holes!] “*Periscelis annulipes* m.” [LOEW’s handwriting]; 5) [red margined with “Lectotypus” in red] “*Periscelis annulipes* Loew, 1858”; 6) Zool. Mus. Berlin. Paralectotypes (ZMB: 5 males, 1 female): same data as for LT, except label 4), instead: “*Periscelis annulipes* Loew Type” [handwriting of ?ENDERLEIN]; 1 male and 1 female on the same pin, 1 male with labels 1–3 only.

Other material – 1 female (HNHM): Körösmező [Yasinya, Ukraine, Zakarpat’ye], Kertész (on the reverse side) “1911.VI.24.” (with determination labels of K. KERTÉSZ and O. DUDA).

Redescription of lectotype – Body length 4.17 mm, wing length 4.38 mm, wing width 1.67 mm.

Frons dark greyish with yellow microtomentum. Face with 6 pairs of upcurved bristles (right side of LT with an additional long bristle ventrally). Scape chocolate, similarly to dorsal part of facial plate, proximal part of genae and occiput; ventral (larger) part of facial plate white (incl. a small proximal part of genae). Seven dorsal and 3 ventral rays on arista, flagellomere long quadrate with a blunt dorsal apex and with very long (max. 0.07 mm) cilia.

Mesonotum and abdomen mainly grey, latter with lateral (proximal) silvery spots on tergites. Pleurae brownish grey. Thoracic chaetotaxy: 1 postpronotal, 2 notopleural, 1 supralar, 1 post-alar, 2 dorsocentral, 1 prescutellar acrostichal pair (cranially to posterior dc!) and 2 scutellar pairs, several short bristles on posterior margin of anepisternum, 4 katepisternals plus several short setae there.

Femora brown at least at middle, tibiae yellow with 2 wide dark brown rings subbasally and subapically. Tarsi yellow, 5th tarsomeres darkened. Fore femur with long bristles, mid tibia with a black ventro-apical seta of 0.13 mm.

Wings yellowish, veins ochre. Costal vein present to vein R₄₊₅, costal sections: from humeral to R₁ 1.52 mm, R₁ to R₂₊₃ 2.20 mm, R₂₊₃ to R₄₊₅ 0.22 mm. Subcosta short, apical part colourless and curved along a wide arc to costa, costal cell much shorter than subcostal cell (27:61). No hind crossvein, M colourless as a fold only; coloured on a short section distally to R-M.

Genitalia (Fig. 1): Cerci large with long setae (see on fig. 7 of DUDA 1934), surstyli robust long triangular and not much narrowed apically, process between bases of cercus and surstyli sub-triangular with several thin setulae, postgonites arcuately curved with blunt apex.

Distribution – Poland, South Ukraine, Finland, France. MÁCA (1981) did not know any additional localities (cf. PAPP 1984a).

Remarks – Dr. H. SCHUMANN (ZMB) sent us 7 specimens as types and wrote “Die 15 bei uns noch vorhandenen Exemplare der Typenserie von *P. annulipes* Loew gehören nach

den äußereren Merkmalen ebenfalls *P. annulipes* an. Übrigens sind alle Tiere mit dem gleichen Fundortetikett versehen.“ The first label on the above seven specimens are identical (it is almost sure that they are in SCHOLTZ’s handwriting). Nevertheless, there is only one specimen with label “*Periscelis annulipes m.*” (this specimen was selected as a lectotype), however this fact would not exclude the possibility that also the other specimens were type specimens (LOEW – as usual – wrote rather few labels of identification). However, there is one place in his original description (p. 118) where he wrote definitely about a single specimen (“bei dem beschriebenen Exemplare”). The introductory part of his original description says: “*Periscelis annulipes nov. sp. q.* – Alae vena transversa posteriore nulla. – Long. corp. $2\frac{1}{2}$ lin. – Patria: Silesia (Scholtz)”. Contrarily, the specimen with that unique label is a male. However, the genitalia of the *Periscelis* males are so small, their cerci are comparatively large, so we can understand now why he might have misidentified the sex of that specimen. Whether there was only one type specimen or a type series there are two possible explanations: 1) SCHOLTZ caught a single specimen only on the 9th of June, 1857, LOEW used this specimen only when describing *P. annulipes*, and in 1858 or later SCHOLTZ collected 21 other specimens at the same place and all those were labelled as the first one. 2) All those specimens were at LOEW’s hands in 1858 but he used only one for its description. It is quite sure that all the 22 specimens were preserved in LOEW’s collection and it was LOEW who pinned them together, i.e. LOEW identified all the 22 specimens.

Periscelis nigra (ZETTERSTEDT, 1860)
(Figs 2–6)

Asteia nigra ZETTERSTEDT, 1860: 6430.

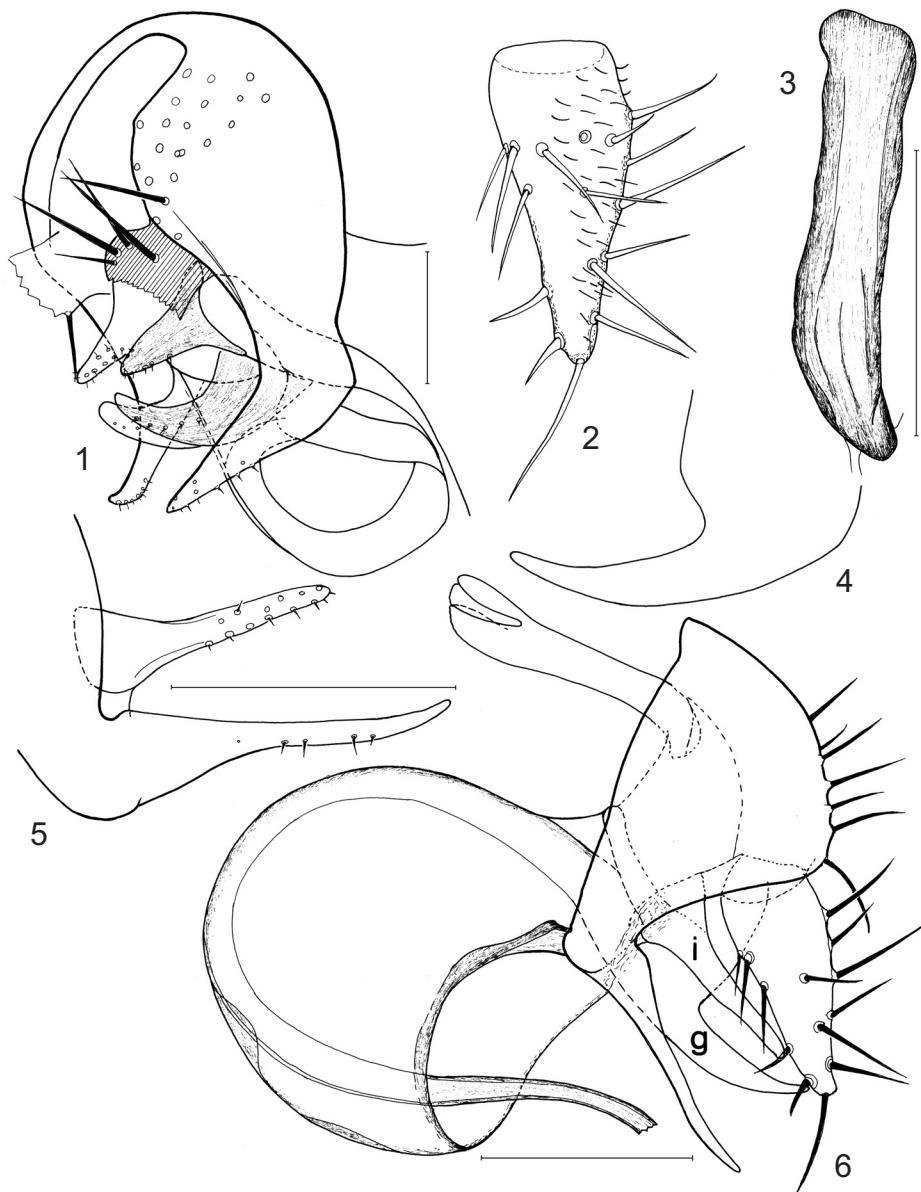
Type material – Syntype male (ZML, probably all labels with ZETTERSTEDT’s handwriting): 1) “Råb 25/6”; 2) “Suui Ulmi”; 3) “Asteia n. sp.”; 4) “*Asteia nigra* Zett. n. sp. ♂”. A damaged specimen: somewhat mouldy, right flagellomere, right fore and mid legs, left mid tarsus and left hind leg lost.

Other material – 1 male (ZMH): Jakobstad - Storå - 927. (postabdomen with genitalia preserved in a plastic microvial with glycerol, see Figs 2–6).

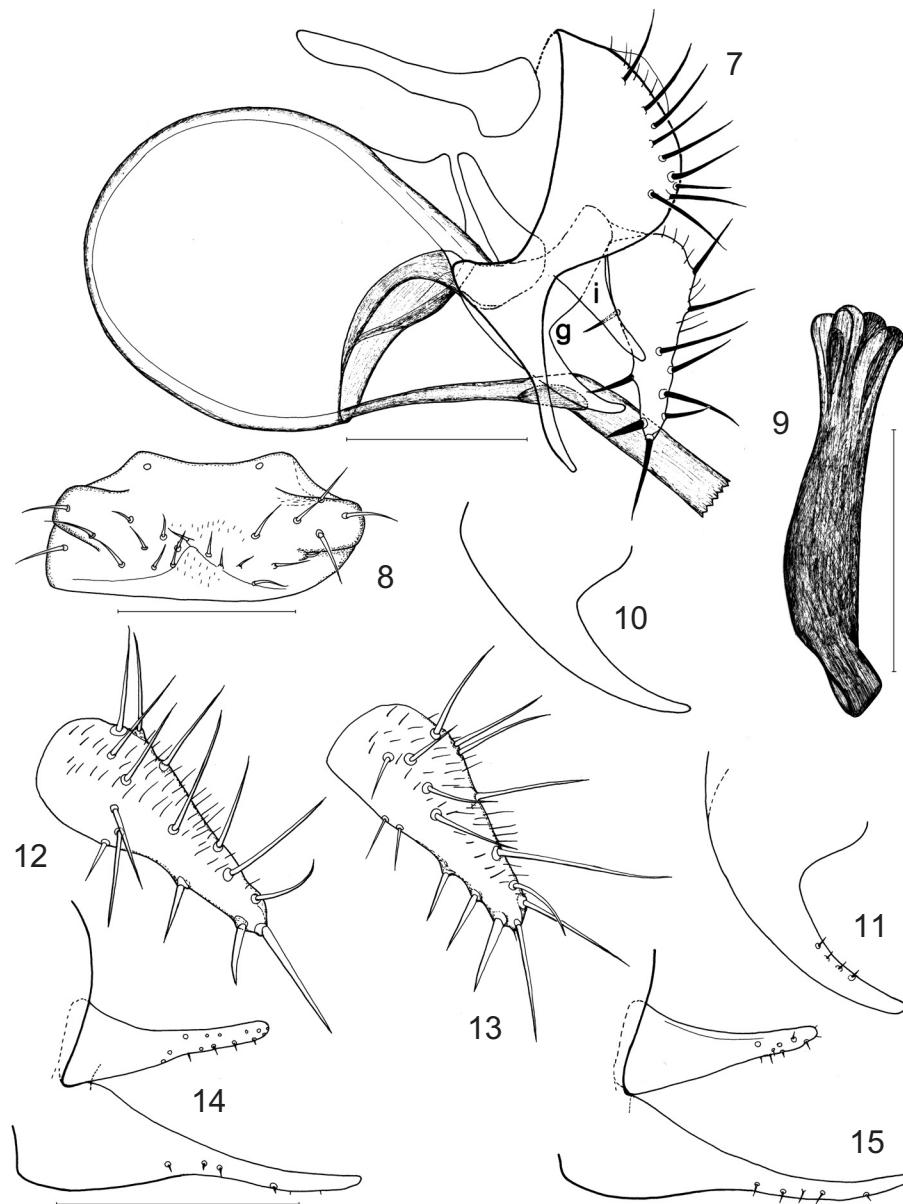
Redescription – Body length: 2.50 mm (syntype), 2.42 mm, wing length: 2.67 mm (syntype), 2.63 mm, wing width 1.12 mm (syntype), 1.12 mm.

Mesonotum and abdomen dark grey with light grey microtomentum, abdominal terga laterally with small silvery spots.

Frons dark (greyish brown), subshining. Facial plate with thick yellow microtomentum below antennae, dark brown and subshining at its narrowest part (“nose”), ventral part with thick light grey microtomentum. Facial plate with 1 pair of setae only. Genae dark brown. Distance of antennae less than half width of scape. Scape light brown dorsally, pedicel brown except for its light ochreous basal part, flagellomere vivid yellow. Ventral aristal rays (Jakobstad male, from apex to base): 0.05 mm, 0.057 mm, 0.07 mm, 0.053 mm.



Figs 1–6. Male terminalia of *Periscelis* spp. 1 = *P. annulipes* LOEW, 1858, sublateral view, right surstyli in widest extension (cerci “broken off” and hatched, right epandrial process and postgonite shaded). 2–6 = *Periscelis nigra* (ZETTERSTEDT, 1860): 2 = cercus laterally, 3 = ejaculatory apodeme dorsally, 4 = postgonite in widest extension, 5 = left surstyli and epandrial process in widest extension, 6 = genitalia in lateral view (g: postgonite, i: epandrial process). Scales: 0.1 mm for Figs 1–5, 0.2 mm for Fig. 6



Figs 7–15. Male terminalia of *Periscelis nigra minor* ssp. n. 7 = genitalia in lateral view (g: postgonite, i: epandrial process), 8 = pregenital sternite, 9 = ejaculatory apodeme dorsally, 10 = left postgonite in widest extension, 11 = same, another specimen, 12 = left cercus laterally, 13 = same, another specimen, 14 = left surstyli and epandrial process in widest extension, 15 = same, another specimen. Scales: 0.1 mm for Figs 7 and 9–15, 0.2 mm for Fig. 8

Five medium long dorsal rays, longest one 0.11 mm, i.e. much shorter than in other Palaearctic species of *Periscelis*. Upper orbital seta preceded by some short orbital hairs.

Mesonotum dark greyish brown with thick grey microtomentum. No prescutellar acrostichal pair, anepisternum with numerous bristles on dorsal half. Two katepisternal pair of bristles.

Wings light brownish. Veins light ochreous. Second costal section 1.34 mm, third section 0.17 mm only (syntype). Anterior crossvein proximal to apex of R_1 , not darkened. No posterior crossvein. Anal vein not reaching wing margin.

Femora dark, tibiae and tarsi ochreous, tibiae with 2 (subbasal and subapical) wide dark brown rings.

Male genitalia as in Figs 2–6, genital pouch not large. Cerci comparatively very large with strong bristles; apical seta on cercus nearly 3 times as long as subapical seta (Figs 2, 6). Surstylus (Figs 5–6) only 1.36 times as long as epandrial process (surstyler length: distance of its tip to base at inflexion point with epandrium; length of process: from base at lateral wall of epandrium to tip). Postgonite (Fig. 4) in profile very narrow. Ejaculatory apodeme (Fig. 3) robust, its apex hardly swollen, its base curved to the right when seen dorsally.

Distribution – Known from the north-western part of the European Russia, Sweden, Finland, Great Britain and Czech Republic (J. ROHÁČEK, *pers. comm.*), Germany (as *P. nigra* var. *schultzei* DUDA, 1934) and Hungary (*P. nigra minor* ssp. n.).

Remarks – Although the specimen from Jakobstad, which I dissected and illustrated, is not a type specimen, I have no doubt about the identity of this taxon.

Periscelis nigra minor ssp. n. (Figs 7–15)

Type material – Holotype male (HNHM): Budapest, Pest[szent]lőrinc, Péterhalmi erdő [forest], 1992.IV.26. - tölgy kicsorgó nedvéről [on oozing sap of an oak tree], BAJZA ZS.–PAPP L. Paratypes (HNHM): 4 males: same data, incl. 1 male: “fehér nyár kicsorgó nedvéről” [from oozing sap of a white poplar]; 2 males 2 females: ibid, szilfa kicsorgó nedvéről [on oozing sap of an elm tree], 1992.V.1., leg. PAPP L.; 2 males 1 female: ibid, szilfa sebéről [on wound of an elm tree], 1995.IV.23., leg. PAPP L.; 1 male: ibid, szilfák sebeiről, 1996.VI.1., leg. PAPP L.; 1 female: ibid, tölgy kifolyó nedvéről, 1992.VI.1., leg. PAPP L.

Other material – About 440 males and females: Budapest, Pest[szent]lőrinc, Péterhalmi erdő [forest], from end of April to June, on sap of deciduous trees, but mainly on *Ulmus*.

Description – Measurements in mm: body length: holotype 2.63, paratypes 2.17 to 2.83, wing length: holotype 2.54, paratypes 2.50 to 2.83, wing width: holotype 1.09, paratypes 1.07 to 1.17.

As for body characteristics it is very similar to the syntype *P. nigra*. The differential features are in the details of male genitalia: Pregenital sternite (Fig. 8) with slightly more exposed lateral swellings. Apical seta on cercus at most slightly more than 2 times (2.17) as

long as subapical seta (Figs 12–13). Surstylus (Figs 14–15) long and more slender, 1.60 times as long as epandrial process (surstyler length: distance of its tip to base at inflexion point with epandrium; length of process: from base at lateral wall of epandrium to tip); postgonite (Figs 10–11) less narrow in profile than that of *P. nigra*, particularly so subapically. Ejaculatory apodeme (Fig. 9) similar to that the type of *P. nigra*.

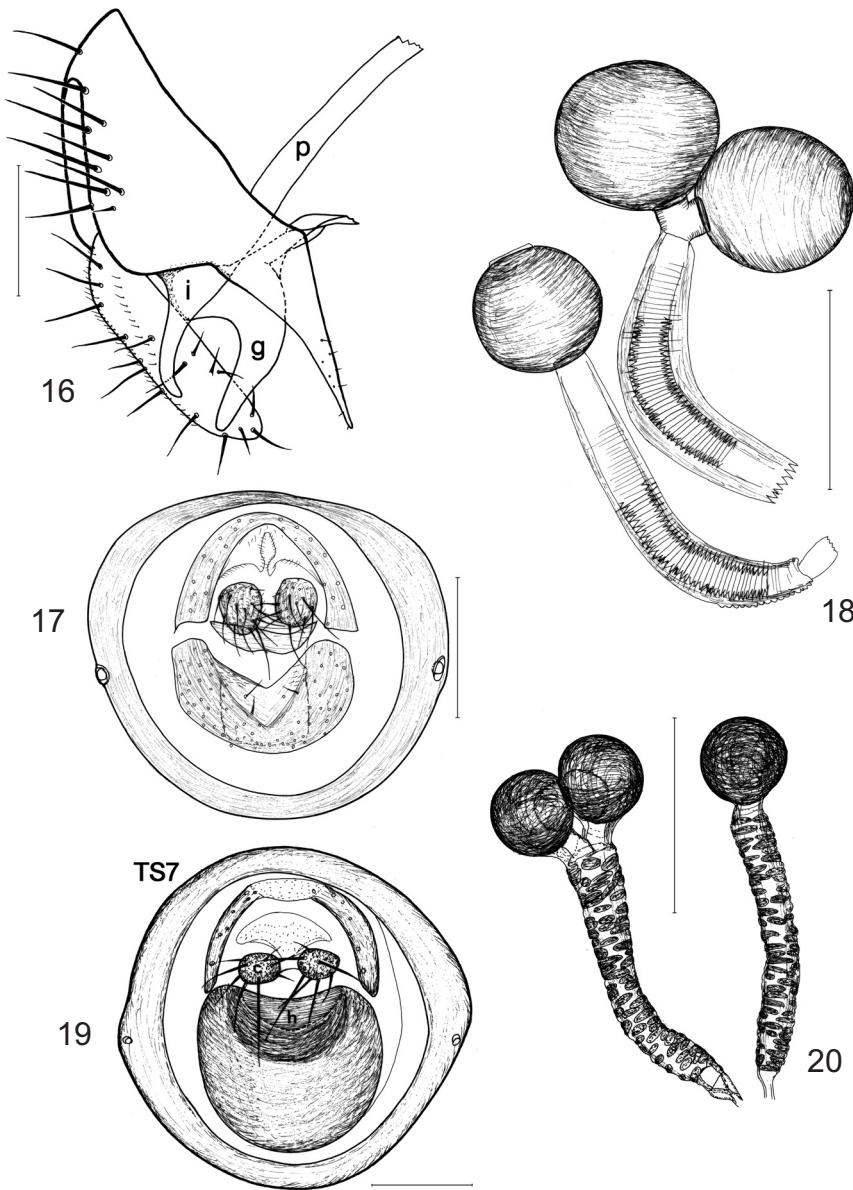
Discussion – Based on the differences found in the details of genital structures we think this population in Hungary would deserve a subspecific rank. Apical seta on its cercus is at most slightly more than 2 times (2.17) as long as subapical seta (Figs 12–13), in *P. n. nigra* that is nearly 3 times as long. Its surstylus (Figs 14–15) is long and more slender, 1.60 times as long as epandrial process, while only 1.36 times as long as epandrial process in *P. n. nigra*.

It is difficult to decide on its status, since *P. nigra* is known from Sweden, Finland, Great Britain and North European Russia only (cf. PAPP 1984a) and the type specimen of *P. nigra* var. *schultzei* DUDA is lost (from Leipzig, a locality well between Hungary and the above mentioned localities); see more below. We may add that while *P. n. nigra* seems to be a boreal species occurring also in high mountains in Europe, the subspecies lives in forests on sandy soil, which is rather hot in summer.

Remarks – The first specimen of this species was collected in April 1992, which later was designated as holotype. In May to June of the same year some additional specimens were captured (they were all collected by an aspirator on sap of deciduous trees. Later more than 450 specimens were acquired in the Péterhalmi forest belonging to a suburb of Budapest in the same way. In the periscelidid part of the Palaearctic Manual (MATHIS & PAPP 1998) the name of the here proposed subspecies was already mentioned (it was unavoidable, though we have never supported such a practice). And since the larvae also were collected in 1996, they were published in an article with life-habit data (PAPP 1998). We managed to find distinctive differences between the larvae of *Periscelis* (*P. nigra minor* and *P. winnertzii*) and those of the *Myodris* species (*M. annulata* and *M. kabuli*), and that key was included in the Manual chapter (MATHIS & PAPP 1998). We used the name *Periscelis nigra minor* also in that work. Now the subspecific name is validated by the present publication. However, much to our regret, the detailed descriptions of the larvae of *Periscelis winnertzii* and *Periscelis nigra minor* have not been published yet.

Periscelis winnertzii EGGER, 1862 (Figs 16–18)

Type material – Type specimen (holotype or syntype) (NMW): 1) “Austria” Alte Sammlung; 2) “Winnertzii” [SCHINER’s handwriting] det. Schiner; 3) [red] Type. See more in SCHINER (1863: p. 272). This is the only extant specimen in the Vienna Museum. Its identity (i.e. conspecificity with specimens in the HNHM) can be established, otherwise the specimen is in a poor state of preservation: ventral part of head, incl. a part of facial plate, left fore leg, ventral and some left lateral parts of thorax and all abdomen were eaten by *Anthrenus* larvae, *Anthrenus* hairs soiled the fly.



Figs 16–20. 16–18 = *Periscelis winnertzii* EGGER, 1862: 16 = male terminalia, lateral view (g: postgonite, i: epandrial process, p: distiphallus), 17 = female abdominal synsclerite and terminalia, caudally, 18 = spermathecae. 19–20 = *Myodris chinensis* (PAPP & SZAPPANOS, 1997) holotype female: 19 = female abdominal synsclerite and terminalia, caudally (TS7: synsclerite, c: cercus, h: hypoproct), 20 = spermathecae. Scales: 0.1 mm for Figs 16 and 18–20, 0.2 mm for Fig. 17

Other material – 1 male (ZMB): Bresl. Scholtz/Coll.H. Loew/Periscelis winnertzi Schin./Meronychina winnertzi (Egg.) det. Enderlein 1922/Zool. Mus. Berlin. Genitalia dissected in glycerol in plastic microvial. 4 males and 2 females (HNHM): [Nagy]Kapornak and Badacsony (Hungary) (see PAPP 1973). One of the males was dissected and its genitalia are depicted in Fig. 16. Newly collected material: 6 males, 15 females (HNHM): Szokolya: Vassfazék-v., Magas Tax alatt, 450 m, 1996. szept., leg. PAPP LÁSZLÓ és JÁNOS – fekete tölgyfáseb kicsorgó nedvéről [on outflowing sap of a black wound on an oak tree]. 1 female [with the pupal shell]: Szokolya, Királyrét, Szénpatak-v., 23 May 1996 – reared from a wound of a Quercus tree, 13th July 1996, leg. L. PAPP. 1 male: Kőszegi TK: Kőszeg, Hétforrás, patak fölött, 2002. júl. 10., leg. PAPP L.

Redescription – Antennae mostly yellow, pedicel chocolate (dark brown). Arista with 7–8 long dorsal rays and with 5 long ventral rays and with short rays between long ones. Head bristles (1 upper fronto-orbital, 1 ocellar, outer and inner verticals, 1 widely divergent postvertical) strong, ocellars emerge outside of ocellar triangle.

Thoracic bristles: 1 postpronotal, 2 notopleural, 1 supra-alar, 1 postalar, 2 dorsocentral, 2 scutellar pairs. No enlarged prescutellar acrostichals, 1 proepisternal (propleural), 2 katepisternal pairs. Anepisternum with short setae posteriorly.

Wing length 3.75 mm (type), wing width ca. 1.45 mm (wrinkled). Wings light brownish, veins sandy yellow. Also hind crossvein present.

Tibiae with 2 dark brown rings.

Outer features of abdomen similar to those of *P. annulipes*. Male genitalia (Fig. 16) characteristic with their long and broad cercus, which bears only medium long setae, surstyli long and much but evenly narrowed apically, epandrial process long and digitiform, unlike *annulipes* or *occidentalis*; postgonite rather large with blunt apex.

Female postabdomen (Fig. 17) with rather short 7th synsclerite, comparatively strong 8th tergite, distinct hypoproct and short cerci with short setae. Spermathecae (Fig. 18) are rather large (cf. Fig. 20), globular with thick ducts. Own ducts of paired spermathecae are extremely short, sclerotization of the duct's wall is not very strong but peculiar: outer wall is smooth, inner part with short transversely structured incrustations.

Distribution – Known from East Germany, France, Switzerland, Austria and Hungary (PAPP 1984a); later also the Netherlands was added.

Remarks – *P. winnertzii* is not particularly closely related to any of the other species. It is a characteristic *Periscelis* (*Periscelis*) with an additional (epandrial) pair of processes between bases of cerci and surstyli. Nevertheless, details of genital parts do not show any remarkable similarity (possible synapomorphy) with any of the known species. However, we do not think these features would justify a movement into another subgenus (if so then in *Parclioscena* ENDERLEIN, 1936).

Dr. RUTH LICHTENBERG-CONTRERAS (personal communication): “It has been identified by SCHINER as “winnertzii”. In spite of the use of winnertzii in the original description I am sure that this lettering is an error and that it must say “winnertzii”. JOHANN WINNERTZ was a “Kaufmann” in Krefeld according to “Index Litteraturae Entomologicae” by W. DERKSEN and U. SCHEIDING, which agrees also with the derivatio nominis in the original description.”

NOTES ON OTHER SPECIES OF *PERISCELIS**Periscelis kaszabi* L. PAPP, 1988

Type material – Holotype female (HNHM): Vietnam: Cuc phuong, Ninh binh, 12.V. [May] 1966, leg. TOPÁL.

Remarks – Extremely long branches on arista: dorsal rays (5) in basal half longer than flagellomere + pedicel combined. No setae on ventral part of facial plate (postfrons), contrarily to species of *Myodris*. One pair of long upcurved bristles at apex of face (i.e. at border of dorsal and ventral parts of face), like in *Stenomicra* COQUILLETT, 1900 or like in *P. nebulosa* HENDEL, 1916 (but latter species possess setae also on ventral part of facial plate).

Two katepisternals. Two pairs of strong dorsocentral setae. Wing without any pattern (light brownish), i.e. this species is not related to *Nothioscelis* MATHIS, 1993. M-M crossvein present.

It is surely not related to *Myodris*: no enlarged prescutellar acrostichal setae, short setae present on posterior margin of anepisternum, as in other species of *Periscelis* (*Periscelis*). This is the only true *Periscelis* species hitherto known from the Oriental region.

Unfortunately no male specimen of this interesting species has turned up so far. Its female holotype (HNHM) is from Vietnam, but despite all our efforts, finding it during our 2008 and 2010 collecting trips to Vietnam remained unsuccessful.

Present status: *Periscelis kaszabi* L. PAPP, 1988

Periscelis (Periscelis) schultzei DUDA, 1934

Remarks – Described as a var. of *P. nigra*. DUDA's drawing (1934: Textfig. 10) is a good caricature. With some extraction we can recognize some basic features: DUDA's *schultzei* is surely closely related to *P. nigra*. Much to our regret it is impossible to decide on its status (a good species close to *nigra*, a subspecies of *nigra* or a junior synonym of *nigra*), because the only type specimen is lost (H. SCHUMANN, personal communication).

Present status: a species *incertae sedis* in *Periscelis*, without any implication on whether it is an infrasubspecific name or not.

Myodris LIOY, 1864

Myodris LIOY, 1864: 1103. Type species: *Notiphila annulata* FALLÉN, 1813: 250 (original designation).

Meronychia ENDERLEIN, 1914: 327 (*Meronychia* ENDERLEIN, 1917: 72, error). Type species: *Notiphila annulata* FALLÉN, 1813: 250 (monotypy).

Microperiscelis OLDBERG, 1914: 37. Type species: *Notiphila annulata* FALLÉN, 1813: 250 (subsequent designation by STURTEVANT 1923).

Remarks – The diagnostic features of the adult flies in the genus can be summarised as follows:

Ventral part of facial plate (postfrons) with 4–5 pairs of strong black (in *M. annulata* pale ochre) bristles, as long as or longer than first peristomal pair. Posterior margin of anepisternum without setae (but present in *M. chinensis*). Wings with M-M crossvein always present.

In the male genitalia the process between bases of surstyli and cercus is lacking. Cerci well sclerotised, longer than wide, becoming narrow apically, bearing several long setae and two stout, tooth-like setae apically. Surstyli asymmetrical to some degree, narrow and acutely pointed at apex. Phallapodeme and hypandrium form a large hood-like structure (genital pouch).

Name not even mentioned in a number of works, e.g. MCALPINE (1987), PAPP (1984a). Later it was accepted as a subgenus of *Periscelis*; actually PAPP (1984a) grouped its species under the subgeneric name *Microperiscelis* OLDENBERG, 1914, which is obviously a junior objective synonym of *Myodris* LIOY, 1864. Now we think, considering all the characteristic differences which were found in the structure of the male genitalia and in the features of their larvae (see MATHIS & PAPP 1998: p. 289), that it deserves a full generic rank. Detailed descriptions with a key to distinguish the larvae of *Periscelis* and *Myodris* will be published in a forthcoming paper (see also above, in the Remarks of *Periscelis nigra* ssp. n.).

Key to species of *Myodris* LIOY, 1864

- 1 Posterior margin of anepisternum with short setae dorsally. Mesonotum and scutellum shiny, dark brownish grey (except for humeral callus). Halteres yellow. N China
M. chinensis (L. PAPP et SZAPPANOS, 1997)
- Posterior margin of anepisternum without setae. Mesonotum and scutellum microtomentose and lighter 2
- 2 Mesonotum and pleura evenly dark grey. Halteres darker brownish grey. Ventral rays of arista definitely shorter than opposite dorsal rays. Male cercus pyriform (Fig. 39). Dark subbasal part of hind tibia much longer than medial light part. Inter-crossvein section of M just 1.5 times as long as M-M crossvein. Spain
M. piricercus CARLES-TOLRÁ et VERDUGO PÁEZ, 2009

- Mesonotum light grey microtomentose with a distinct acrostichal and a pair of dorsocentral darker stripes. Pleura also with lighter parts, particularly so for ventral parts of anepisternum and katepisternum. Halteres light, yellowish. Ventral rays on arista about as long as opposite dorsal rays. Male cercus otherwise shaped. Dark subbasal part of hind tibia usually shorter than medial light part 3

- 3 Dorsal rays on arista (5) shortened evenly anteriad. 3 ventral rays of arista as long as opposite dorsal rays. Male cercus (Fig. 27) with short and blunt apical thorns. Surstyli (Figs 31–32) more stout. Postgonite boat-shaped (Fig. 29). Discal cell long, inter-crossvein section of M just 2 times as long as M-M crossvein or even longer. Nearctic
M. flinti (MALLOCH, 1915)

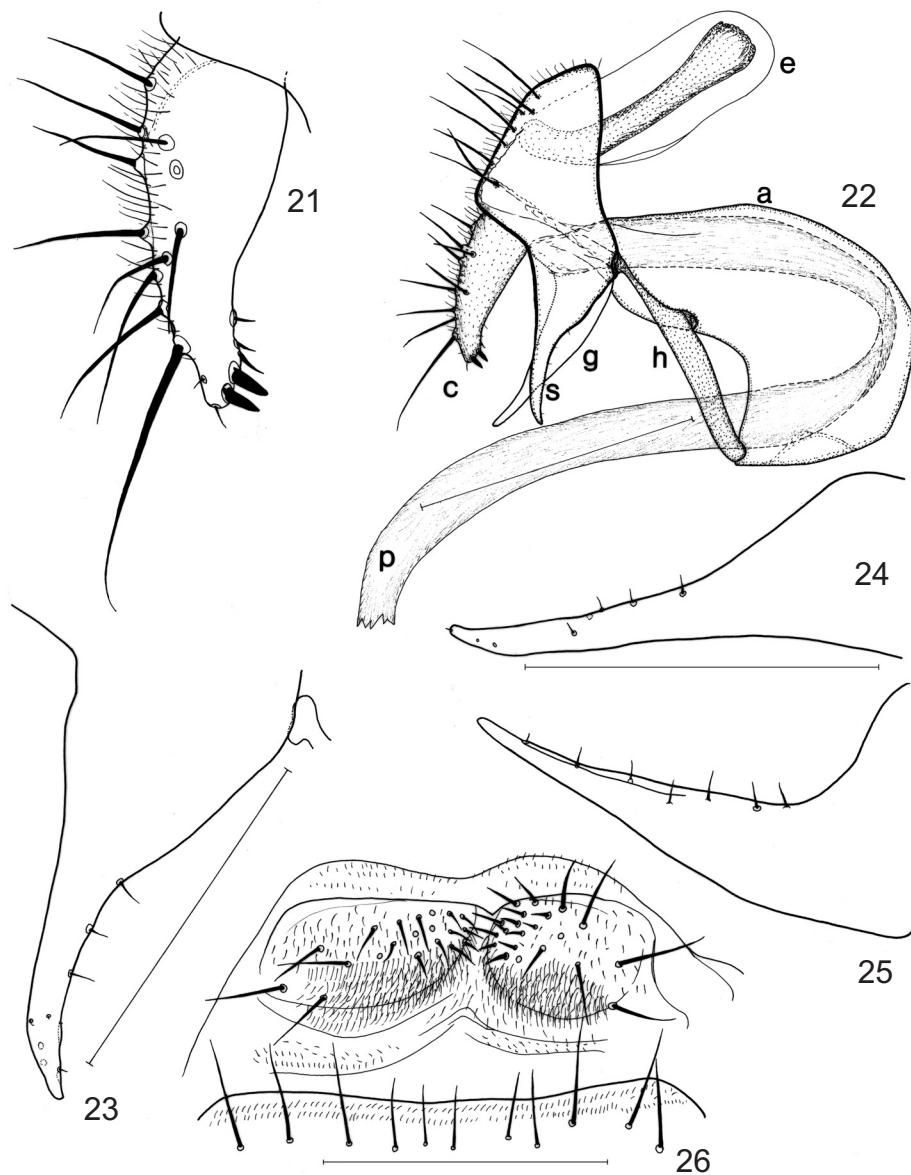
- Dorsal rays on arista long in basal half (4), interruptedly shorter in apical half (1–2 rays). Usually only 2 long ventral rays on arista as long as opposite dorsal rays. Male cercus (Figs 21, 35) with longer and sharper apical thorns. Surstyli (Figs 23–24, 34, 37) narrowed to very narrow. Postgonite beaky or evenly attenuating apically (Figs 25, 36). Discal cell usually shorter 3

- 3 Apical thorns of cercus separated (Fig. 21). Surstyli only slightly asymmetrical (Figs 23–24). Postgonite evenly attenuating apically (Fig. 25). W Palaearctic
M. annulata (FALLÉN, 1813)

- Apical thorns of cercus close to each other (Fig. 35). Surstyli strongly asymmetrical, left surstylus much longer (Figs 34, 37). Postgonite comparatively wide, beaky i.e. narrow only at apex (Fig. 36). Afghanistan
M. kabuli (L. PAPP, 1988)

Myodris annulata (FALLÉN, 1813)
(Figs 21–26)

Type material – One syntype (?sex) (ZML): 1) [label with Fallén's handwriting] “Notiphila annulata Fall [illegible letter] Mu”; 2) 53; 3) Collin 1955; 4) [red margined] Ztt 53. “Notiphila annulata F. Syntype” G. Bächli det 1989. [A damaged specimen: antennae, right fore and hind tarsi, right mid leg and abdomen lost.]



Figs 21–26. Male terminalia of *Myodris annulata* (FALLÉN, 1813). 21 = right cercus laterally, 22 = genitalia in lateral view (a: derivative of aedeagal apodeme, c: cercus, e: ejaculatory apodeme, g: postgonite, h: hypandrium, p: distiphallus, s: surstyli), 23 = left surstyli in widest extension, 24 = right surstyli in widest extension, 25 = right postgonite in widest extension, 26 = pregenital sternite ventrally. Scales: 0.1 mm for Figs 21 and 23–26, 0.2 mm for Fig. 22

Other material – Two males and one female (ZML, from Zetterstedt's collection) from "Wadstena", "Ostrog" and "St.19/6". All the three specimens badly damaged. One male (ZMB) Winnertz - Coll. H. Loew - Meronychia annulata (Fall.) ♂ - Zool. Mus. Berlin. Genitalia dissected in plastic microvial. One female (ZMB) Bresl. Scholtz - Coll.H. Loew - Zool. Mus. Berlin. Hungary (HNHM): nearly 100 specimens from several localities in Hungary.

Selected characters – Arista also with small rays, strong prescutellars and a small propleural bristle pair present, anepisternum bare, wing veins yellow, apex of R_1 slightly proximal to anterior crossvein.

Wing length: 2.54 mm (syntype).

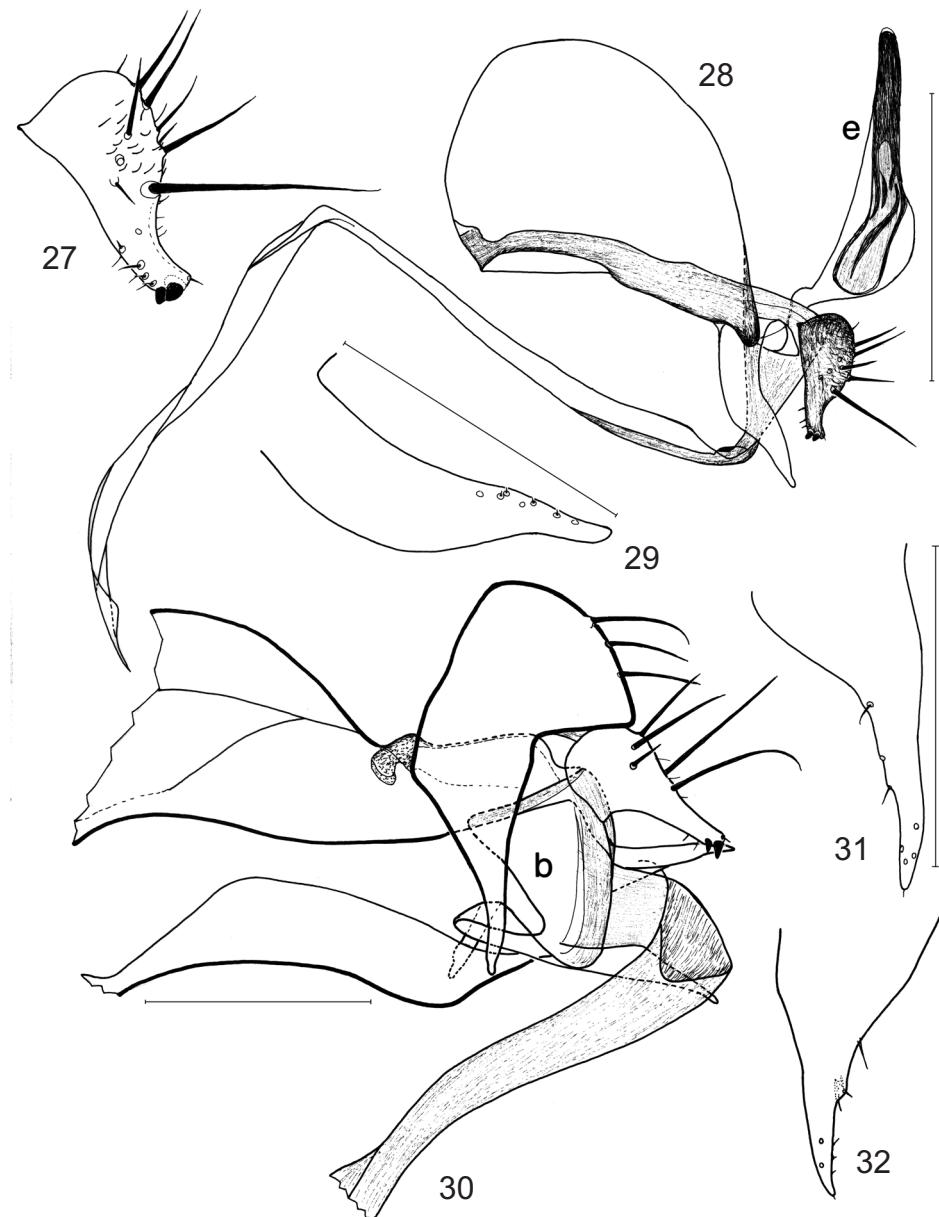
Male genitalia: Pregenital sternite ventrally with a pair of swellings (Fig. 26). Cerci (Figs 21–22) large and narrowed apically, there with 2 distant thorns, longest bristle on cercus placed subapically; surstyli nearly symmetrical (Figs 23 vs. 24) much longer than in *flinti*; postgonite evenly attenuating apically (Fig. 25); genital pouch (Fig. 22) medium-sized, derivative of aedeagal apodeme and hypandrium though fused, well discernible; distiphallus ribbon-like and very long.

Distribution – Reported from several European countries in PAPP (1984a), since then a number of new records, e.g. from France.

Myodris chinensis (L. PAPP et SZAPPANOS, 1997)
(Figs 19–20)

Type material – Holotype female (HNHM; in a good state of preservation, postabdomen with spermathecae in a plastic microvial with glycerol pinned under the specimen): China [P. R. of]: Charbin, on wounds of *Populus* sp., 16 June 1996, leg. B. Darvas. The species has not been collected elsewhere.

Remarks – It is a peculiar small but robust species (PAPP & SZAPPANOS 1997: fig. 1): the only one in *Myodris* with short setae on the dorsal posterior margin of anepisternum. Spermathecae with long thick ducts, which sclerotised as a melanised cylindrical wall composed of brown small platelets, are also very characteristic (Fig. 20). In their original paper (PAPP & SZAPPANOS 1997) noticed a relationship to *Periscelis* based on the setae on anepisternum, but neither the fine structure of female postabdomen (Fig. 19, cf. Fig. 17), nor the spermathecae corroborate this assumption. It is a matter of course that only a study on the male genitalia will solve the problem. For the time being we feel that it is better to put in the genus *Myodris*.



Figs 27–32. Male terminalia of *Myodris flinti* (MALLOCH, 1915). 27 = left cercus laterally, 28 = genitalia without epandrium and surstyli in lateral view (e: ejaculatory apodeme), 29 = left postgonite in widest extension, 30 = genitalia in a subventral-lateral view (b: base of phallus), 31 = right surstylius in widest extension, 32 = left surstylius in widest extension.

Scales: 0.1 mm for Figs 27, 29 and 31–32, 0.2 mm for Figs 28 and 30

Myodris flinti (MALLOCH, 1915)
(Figs 27–32)

Phorticoides flinti MALLOCH, 1915: 87.

Material studied – Types and specimens are in the NMNH, Washington, five specimens in the NHNM.

Selected characters – Male genitalia: Genital pouch (Fig. 28) similar to that of *M. annulata*, i.e. semiglobular; cerci (Fig. 27) with 2 short and blunt apical thorns (bases meet), longest bristle of cercus far from apex; surstyli (Figs 31–32) stouter than those of *M. annulata* or *M. kabuli*, surstyli not symmetrical, left surstylus shorter; postgonite boat-shaped (Fig. 29). Distiphallus very long (Fig. 28) weakly sclerotised in its whole length but basally, apex pointed.

Distribution – A Nearctic species, widespread in Canada and in the U.S.A.

Myodris kabuli (L. PAPP, 1988)
(Figs 33–38)

Periscelis (Microperiscelis) kabuli L. PAPP, 1988: 274.

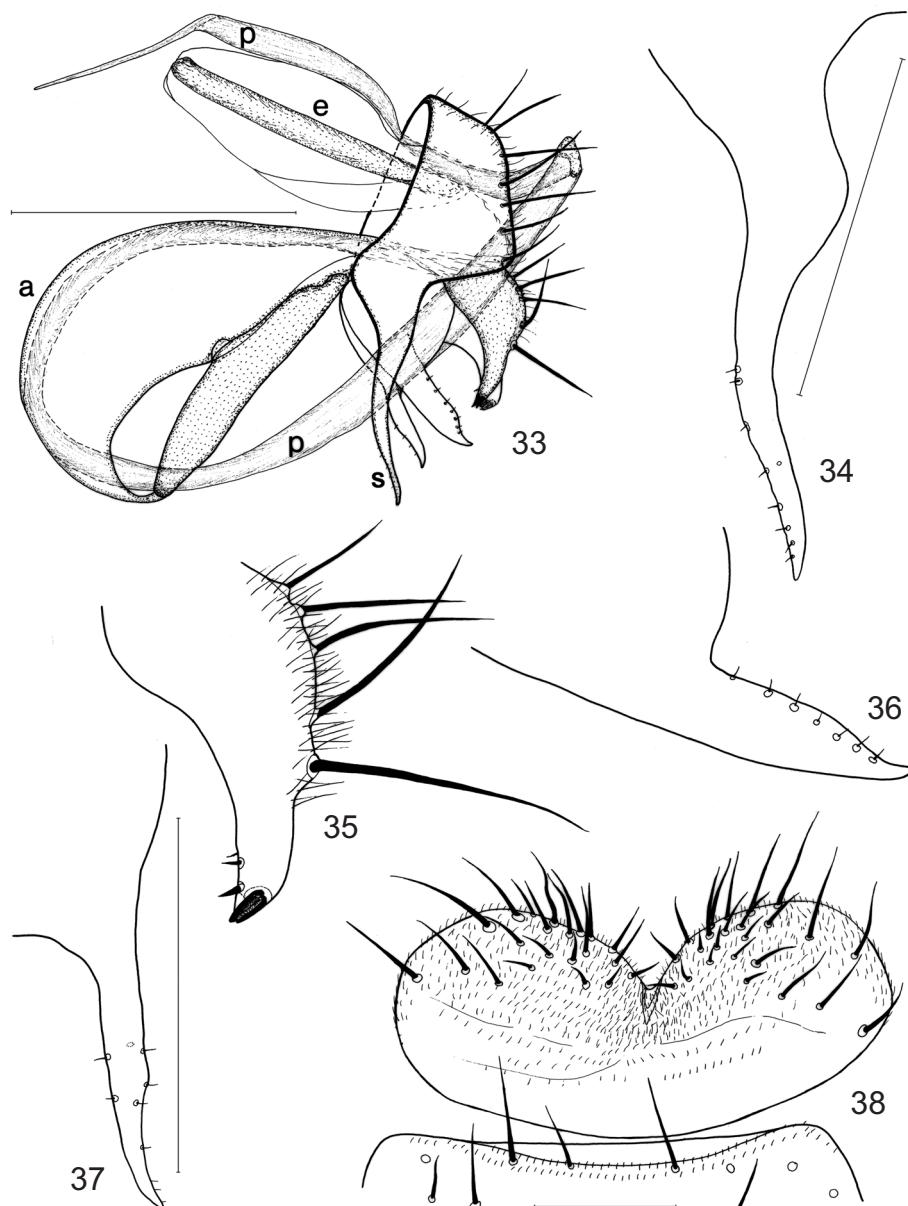
Type material – Holotype male (HNHM): Afghanistan: Kabul, Aliabad, University park, 1800 m, 1–2. 6. 1974, No. 143a, [legit] L. Papp; 5 male and 3 female adult paratypes and 1 L2 and 7 L3 larval paratypes (HNHM): as given by Papp (1988: 276–7).

Selected characters – Pregenital (6th) sternite (Fig. 38) weakly sclerotised, formed by two soft pads bearing medium-long setae. Male genitalia are similar to those of *M. annulata*: apical thorns of cercus close to each other (Fig. 35), longest bristle of cercus distant from apex like in *M. flinti* and unlike in *M. annulata*; surstyli strongly asymmetrical, left surstylus much longer (Figs 34, 37); postgonite comparatively wide, beaky i.e. narrow only at apex (Fig. 36). Distiphallus very long (Fig. 33) with a thin apical part.

Distribution – Hitherto known from Afghanistan only.

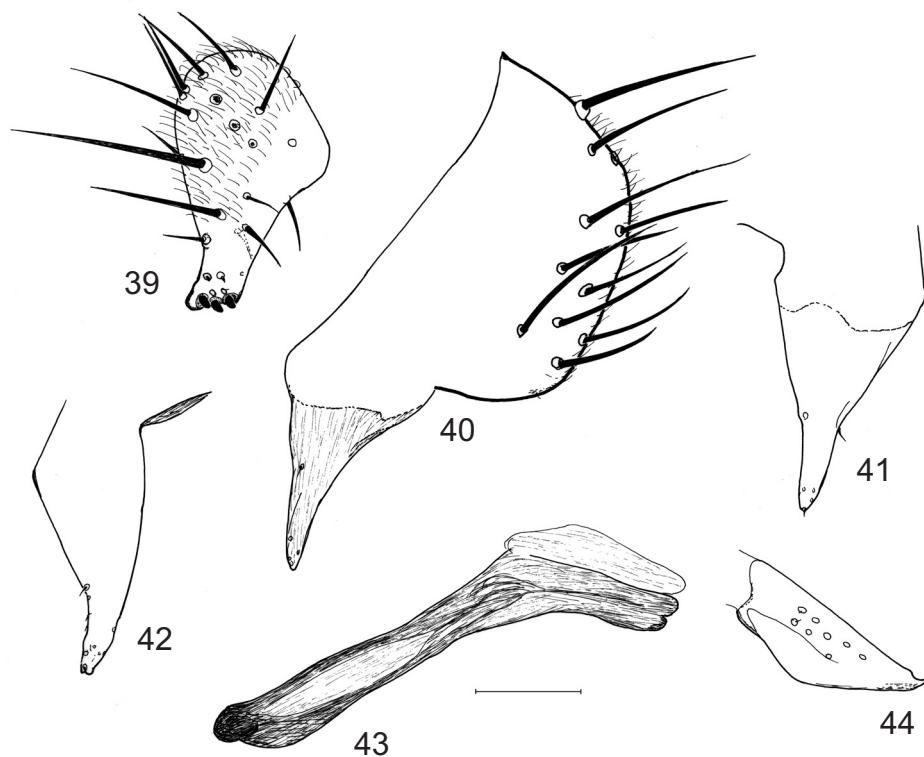
M. piricercus CARLES-TOLRÁ et VERDUGO PÁEZ, 2009
(Figs 39–44)

Type material – Paratype male (from Dr. M. CARLES-TOLRÁ's collection donated to the HNHM, where it has been minutely pinned and postabdomen with genitalia prepared, depicted and preserved in a plastic microvial with glycerol): Spain: Cádiz, Los Barrios (UTM.30STF61), 9.6.2009, flight interception trap near Valdinfierro stream, approx. 150 m, A. VERDUGO PÁEZ.

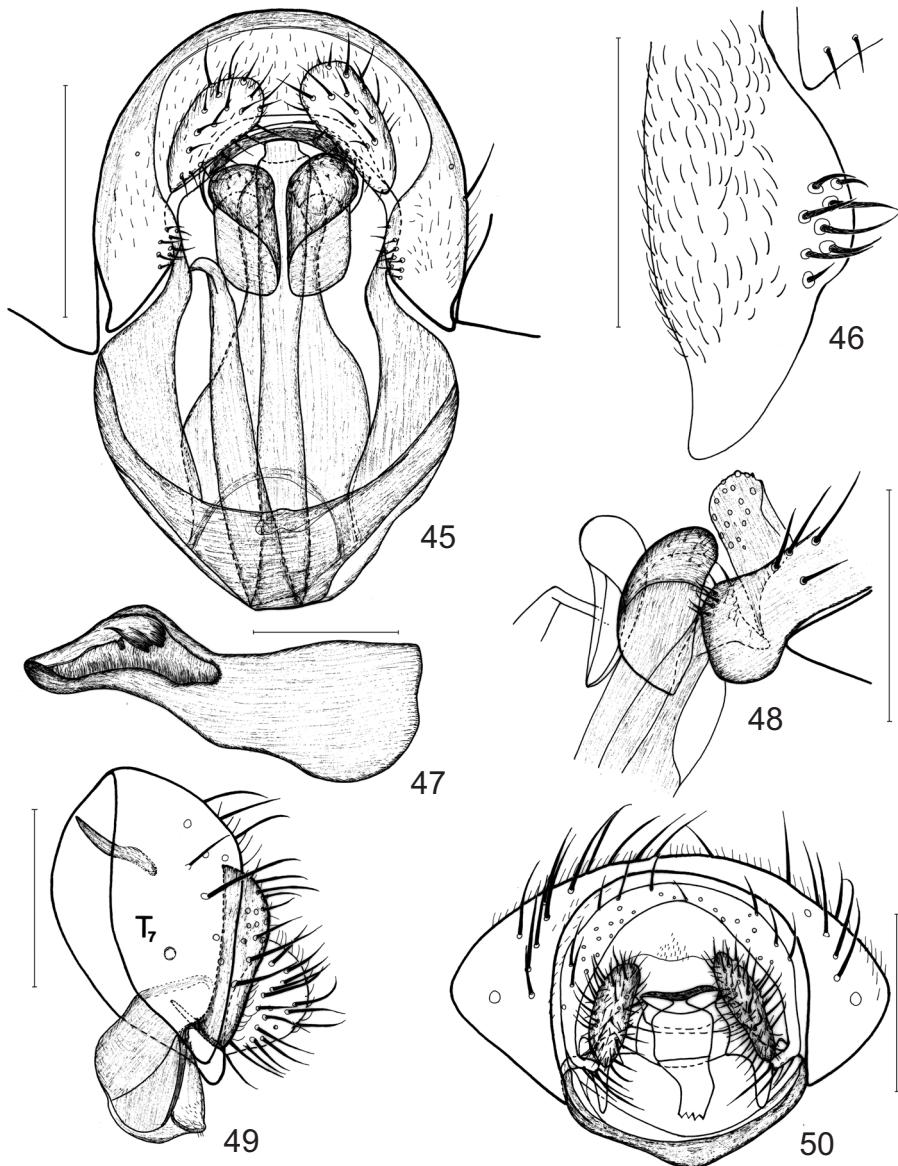


Figs 33–38. Male terminalia of *Myodris kabuli* (L. PAPP, 1988). 33 = genitalia in lateral view (a: derivative of aedeagal apodeme, e: ejaculatory apodeme, p: distiphallus, s: surstyli), 34 = left surstylus in widest extension, 35 = left cercus laterally, 36 = left postgonite in widest extension, 37 = right surstylus in widest extension, 38 = pregenital sternite ventrally. Scales: 0.2 mm for Fig. 33, 0.1 mm for Figs 34–38

Selected characters – Differentiating external morphological characters as given in the key above. Male genitalia are with a number of unique features. Pregenital (6th) sternite (CARLES-TOLRÁ & VERDUGO PÁEZ 2009: fig. 1a-b) rather quadratic and less formed by two soft pads bearing medium-long bristles, as in the related species (cf. Figs 26, 38). Male genitalia are structurally similar to those of *M. annulata*: but details are distinctly different: cercus (Fig. 39) pyriform with 3 apical thorns, longest cercal seta distant from apex like in *M. flinti* and unlike in *M. annulata*; epandrium (Fig. 40) semi-globular; surstyli less strongly asymmetrical, left surstylus broader than right surstylus when seen in their widest extension (Figs 42 vs. 41); postgonite rather broad (Fig. 44) with narrow apex (seen also on fig. 3d of CARLES-TOLRÁ & VERDUGO PÁEZ 2009); ejaculatory apodeme (Fig. 43) robust, slightly ventrally curved proximally.



Figs 39–44. Male terminalia of *Myodris piricercus* (CARLES-TOLRÁ et VERDUGO PÁEZ, 2009), paratype. 39 = right cercus in broadest (subventral) view, 40 = epandrium and left surstylus, true lateral view, 41 = right surstylus in broadest view, 42 = left surstylus in broadest view, 43 = ejaculatory apodeme in lateral view, 44 = postgonite in widest extension. Scale: 0.1 mm for all



Figs 45–50. Male terminalia of *Scutops* spp. 45–48 = *S. (Panamenia) chapmani* (CURRAN, 1934): 45 = genitalia in ventral view, 46 = apex of epandrium with “surstyli” in widest extension, 47 = ejaculatory apodeme in widest extension (subdorsal view), 48 = postgonites, right cercus and apex of epandrium in subventral view, in widest extension of the right postgonite. 49–50 = *S. (Scutops)* sp.: 49 = tergite 7 and genitalia in lateral view (T_7 : tergite 7 with 7th spiracle), 50 = same, caudal view (most of the epandrial bristles omitted). Scales: 0.2 mm for Figs 45–46, 0.1 mm for Figs 47–50

NOTES ON SOME NEW WORLD GENERA

See STURTEVANT (1954) for the old literature and several items in MATHIS' works (e.g. BAPTISTA & MATHIS 1994, MATHIS & RUNG 2004) for the recent ones.

Scutops (Panamenia) chapmani (CURRAN, 1934)
(Figs 45–48)

Panamenia chapmani CURRAN, 1934: 323.

Remarks – It was described from the Barro Colorado Is., Canal Zone, Panama. Types and specimens in the NMNH.

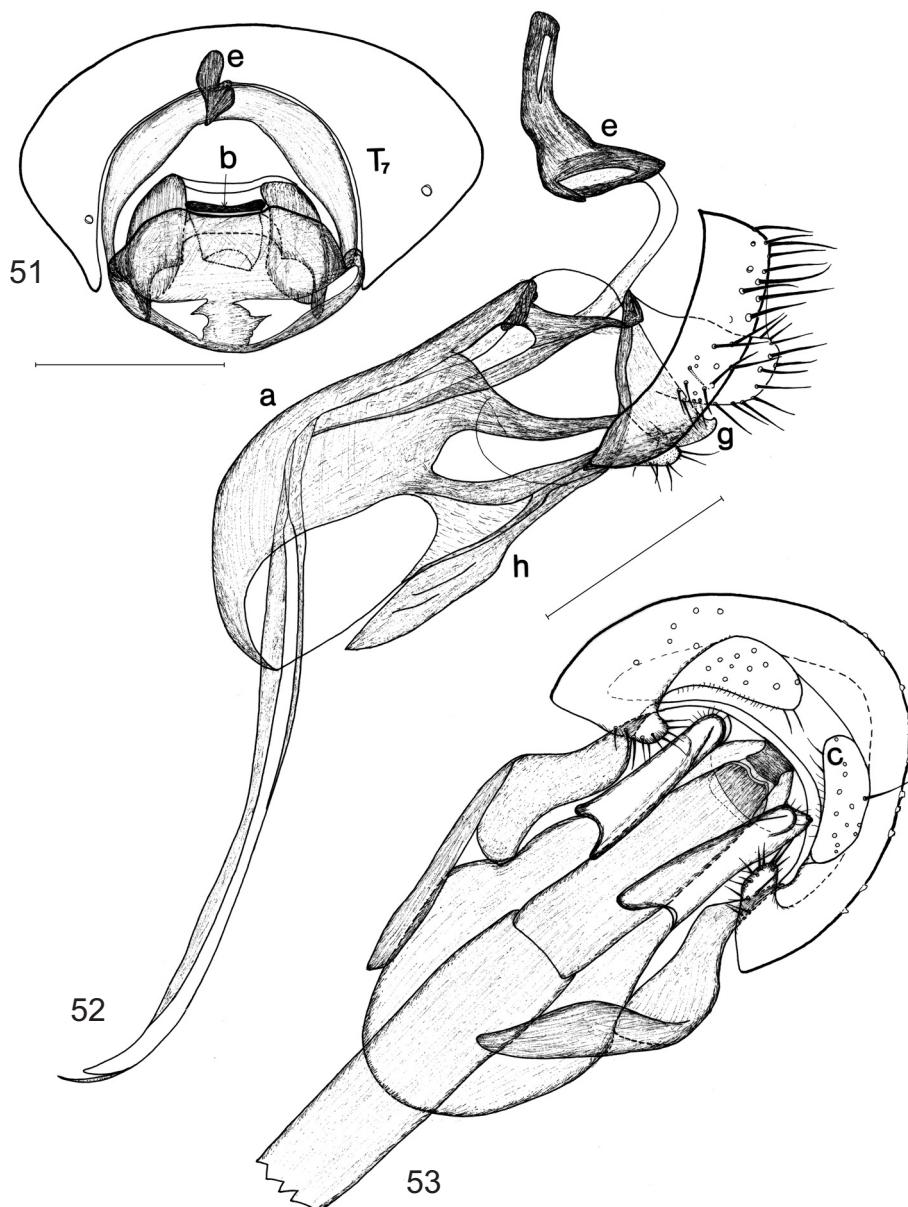
Male postabdomen: 6th sternite simple, transverse quadrate (ca. half as long as wide) with short bristles only. Genitalia (Fig. 39) comparatively small, genital pouch not longer than height of epandrium and largely hidden under tergite 7; epandrium comparatively very small (short); cerci (Fig. 45) very small like in *S. flavithorax*, and weakly sclerotised; surstyli minute, hardly discernible and weakly sclerotised (Figs 45–46), surstyli form a small lobe on epandrium only; postgonite (Figs 45, 48) small, bulbous with minute hairs, its form is similar to an asymmetrically torn thumb of glove; ejaculatory apodeme (Fig. 47) small if compared to that of the *Periscelis* species but comparable to that of *S. fascipennis*, strongly asymmetrical (seen in widest extension at a subdorsal view). Distiphallus rather short (Fig. 45) thin and weakly sclerotised.

We think this species deserves to be in its own subgenus, i.e. *Panamenia* CURRAN, 1934 is to be kept at subgeneric rank.

Scutops sp. (undescribed species)
(Figs 49–51)

Remarks – A species from South America (NMHN), whose genitalia are depicted in order to call attention to their peculiarities. Male genitalia comparatively rather small. Cerci laterally placed, distant from each other, with short bristles only. No definite surstyli but ventral apex of epandrium swollen anteriad (Fig. 49), bearing long setae there. Postgonites (Figs 50–51) most laterally placed; ejaculatory apodeme very small (Figs 49, 51), distiphallus rather short. Genital pouch very small dish-shaped, half as long as height of tergite 7 (Fig. 50), some parts colourless, not sclerotised (membranous).

The function of surstyli in *Periscelis* has been transferred to the postgonites in *Scutops* or at least partly so.



Figs 51–53. Male terminalia of *Scutops* spp. 51 = *Scutops* sp., subventral view (T_7 : tergite 7 with 7th spiracle, b: base of phallus, e: ejaculatory apodeme). 52–53 = *S. (Scutops) fascipennis* COQUILLETT, 1904: 52 = genitalia in lateral view (a: derivative of aedeagal apodeme, e: ejaculatory apodeme, g: postgonite, h: hypandrium), 53 = genitalia in ventral view (c: cercus). Scales: 0.1 mm for all

Scutops fascipennis COQUILLET, 1904
(Figs 52–53)

Scutops fascipennis COQUILLET, 1904: 97.

Remarks – It was described from Nicaragua, known also from Costa Rica. Types and specimens in the NMNH.

Male genitalia: though genitalia small (cf. scale of Fig. 52), genital pouch elongated, derivative of aedeagal apodeme and hypandrium only partly fused, i.e. hypandrial arms more or less free apically (Fig. 53); cerci distant from each other with medium long bristles; surstyli short and broad bearing several short setae; base of phallus embraced by a pair of low processes with very long base (? all these are postgonites), caudal apex (true postgonites) blunt with minute setulae; ejaculatory apodeme (Fig. 52) with very broad base. Distiphallus very long, ribbon-like, apex pointed.

*

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