

Linzer biol. Beitr.	52/1	731-757	31.7.2020
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***Scathophaga karmazini* nov.sp., a new species from Austria, with a key to *Scathophaga* species from Central Europe (Diptera, Scathophagidae)**

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Abstract: *Scathophaga karmazini* nov.sp. is described from Austria. A key distinguishing the species of the genus *Scathophaga* MEIGEN, 1803 from Central Europe is provided and diagnostic characters of all species are illustrated. *Scathophaga merdaria* (FABRICIUS, 1794) is confirmed as a valid species and it is distinguished from *Scathophaga stercoraria* (LINNAEUS, 1758) by the morphological characters. *Scathophaga bohemiae* ŠIFNER, 2000 is confirmed as junior synonym of *Scathophaga analis* (MEIGEN, 1826). From the Central Europe 16 valid species of the genus *Scathophaga* are so far mentioned.

Key words: Diptera, Scathophagidae, taxonomy, *Scathophaga*, new species, new synonymy, Central Europe, Palearctic region.

Introduction

The genus *Scathophaga* (MEIGEN, 1803) (type species *Musca merdaria* (FABRICIUS, 1794)) is a widely distributed genus which comprises approximately 50 species in the Palearctic Region; in the Central Europe 14 species were confirmed by ŠIFNER (2008) and one more species was described by ŠIFNER (2011). Hereby, *Scathophaga merdaria* (FABRICIUS, 1794) is restituted as a valid species and *Scathophaga karmazini* nov.sp. is described in this paper. The genus *Scathophaga*, in the existing conception, is distinguished from others by the following characters: (i) fore tibia without anteroventral bristles; (ii) proepisternum and anepisternum covered completely or almost completely with setae which are poorly differentiated from adjacent hairs; (iii) katepisternum with one strong and long bristle; (iv) postmetacoxal bridge absent. The larvae are predaceous in plant detritus or in excrements of vertebrates, adults are also predaceous. They are abundant in the environs of excrements and on vegetation of fields, pastures, humid meadows, forests etc. from lowlands to high mountains. Noteworthy, the genus *Scathophaga* is not monophyletic according to molecular study by BERNASCONI et al. (2000a, b, 2001). This is confirmed also by the heterogeneity in certain morphological characters e.g. in the shape of male abdominal sternite 5 with the lobes, or submedial processes only, in the shape of male pregonite or by female abdominal sternites, particularly of sternite 7. However, the suggested changes do not concern the species treated here.

Material and methods

The area of the Central European countries is given in alphabetical order as follows: Austria (A), Czech Republic (CZ), Germany (G), Hungary (H), Poland (P), Slovakia (SK) and Switzerland (SW). In the text of comments, I provide descriptions of the followings characters, important for exact determination: for male abdominal sternites 5 or 4(3), cerci and surstyli in caudal view, and pregonite; for females abdominal sternites 8 to 6–5(4).

All localities from the Czech Republic are accompanied in the abbreviations by grid mapping codes (EHRENBERGER & HAMANN 1965) according to ZELENÝ (1972) and PRUNER & MÍKA (1996). For common species only the specimen(s) used for drawings is cited.

The following acronyms of collections are used in the text:

FSPC František Šifner private collection (will be deposited in the collection of National Museum, Praha, Czech Republic).
NHMW Narturhistorisches Museum, Wien, Austria.

Taxonomy

Scathophaga karmazini nov.sp. (Figs 1–4)

Material examined: Holotype: 1♂, Austria, Hohe Tauern Mts., Stubnerkogel Mt., 2240 m a.s.l., 27.vii.2001, Šifner leg. Allotype: 1♀, the same data as holotype. Paratypes: 5♂♂, 5♀♀, the same data as holotype. The voucher specimens of all mentioned species are deposited in the author's private collection.

Description. Body length 6 to 8 mm, ground colour dark brown. *Head.* Four frontal bristles, three orbital bristles, frontal vitta yellowish brown, face genae yellow and white dusted, scape and pedicel brown, first flagellomere dark brown, arista plumose, distinct vibrissae in addition to 2–3 short bristles, palpi yellow. *Thorax.* Acrostichal bristles fine, 2 + 3 dorsocentral bristles, two scutellar apical bristles, wings hyaline to pale yellow brown, other characters standard for the genus.

Abdomen. Male. Submedial processes of sternite 5 straight, each with one distinct fine bristle, lateral parts of sternite prolonged, with long fine bristles, sternite 4 enlarged caudally, sternite 3 rectangular, without distinct bristles (Fig. 1), surstyli straight, pointed, with a promontory apically, cerci long, in upper part with long fine bristles (Fig. 2), pregonite pointed apically, with very long apical seta, in addition to one long and 3–4 short setae dorsally (Fig. 3). Female. Abdominal sternite 7 long with fine bristles caudally, sternites 6 and 5 rectangular with distinct bristles caudally, sternite 4 more or less square (Fig. 4).

Differential diagnosis. See the key below.

Etymology. I dedicate this species to my friend, forester Pavel Karmazín living in Chyňava 86, born in Jablonec nad Nisou, Czech Republic.

Distribution. Known only from Austria (this paper).

***Scathophaga analis* (MEIGEN, 1826) (Figs 5–8)**

= *Scathophaga bohemiae* ŠIFNER, 2000: 35, **nov.syn.**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Praha, Šeberovský rybník, pond (5953), 1♂, 1♀, 7.x.1997, Šifner leg. (FSPC).

D i a g n o s i s . Male. The submedial processes of abdominal sternite 5 very short with a distinct incision medially, dorsal lateral part of sternite widened (this part is very variable), sternite 4 almost quadrate, sternite 3 more or less rectangular and covered with short bristles (Fig. 5), surstyli long, arched and pointed, cerci in upper part with long hairs and fine bristles (Fig. 6), pregonite with two apical bristles of equal size (Fig. 7).

Female. Abdominal sternite 7 distinctly enlarged caudally, sternites 6 to 4 oval (Fig. 8).

C o m m e n t s . The original description of *S. analis* is in Latin and accompanied by very brief text in German, both based on colour characters only. Analogical is a description of the nearest species, *S. inquinata* (MEIGEN, 1826); based on these texts it is impossible to determine these two species reliably. SÉGUY (1952) considered *S. analis* as a valid species, GORODKOV (1986) treated it as a synonym of *S. inquinata*; this opinion was accepted by ŠIFNER (2008). BERNASCONI et al. (2001) consider *S. analis* as a doubtful species, possibly a synonym of *S. inquinata*. Nowadays, based on the considerable number of specimens for comparison including the type of *S. bohemiae* ŠIFNER, 2000, I state that *S. bohemiae* is a junior synonym of *S. analis* (MEIGEN, 1826). The basic diagnostic characters on terminalia of *S. analis* are: *male* – (i) submedial processes of sternite 5 distinctly short, (ii) pregonite with two setae apically (Fig. 7); *female* – abdominal sternite 7 long and distinctly enlarged caudally, covered with long bristles caudally, sternites 6 to 4 oval without distinct bristles (Fig. 8).

D i s t r i b u t i o n . Confirmed only in Austria, Czech Republic and Poland (ŠIFNER 2018).

***Scathophaga cineraria* (MEIGEN, 1826) (Figs 9–12)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Krkonoše Mts., Obří důl, valley (5260), 15.viii.1963, 1♂, 1♀, 15.viii.1963, Šifner leg. (FSPC)

D i a g n o s i s . Male. The abdominal sternite 5 wide and with long hairs, submedial processes are not developed, only distinct is an incision medially, sternite 4 sclerotized caudally (Fig. 9), surstyli short with long hairs (Fig. 10), pregonite wide with long apical bristle and with 10 to 4 bristles of different length latero-dorsally (Fig. 11).

Female. The abdominal sternite 7 narrow and distally with six to eight bristles caudally, sternite 6 slightly enlarged caudally with four bristles, sternite 6 oval with short bristles caudally (Fig. 12).

C o m m e n t s . The original description and all published data confirm the validity of this species.

D i s t r i b u t i o n . All of Central European countries (ŠIFNER 2018).

***Scathophaga furcata* (SAY, 1823) (Figs 13–16)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Beskydy Mts., Lysá hora Mt. (6476), 21.vii.1971, 1♂, 1♀, Šifner leg. (FSPC).

D i a g n o s i s . Male. The submedial processes of sternite 5 slightly arched inwards,

sternite 4 oval, sternite 3 quadrate (Fig. 13), surstyli pointed and arched apically, cerci dorsoapically haired (Fig. 14), pregonite arched apically, with one apical seta and three setae dorsally, one of them very short (Fig. 15).

Female. The abdominal sternite 7 divided into three separate sternites, sternite 6 round, with three pairs of bristles caudally, sternite 5 distally narrowed with two bristles caudally (Fig. 16).

C o m m e n t s . This species is commonly respected as a valid species, though in the older papers it is mentioned as a synonym of *Scathophaga squalida* (MEIGEN, 1826).

D i s t r i b u t i o n . All of Central European countries (ŠIFNER 2018).

***Scathophaga inquinata* (MEIGEN, 1826) (Figs 17–20)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Praha, Milíčovský rybník, pond (6053) 10.v.1999, 1♂, 1♀, Šifner leg. (FSPC).

D i a g n o s i s . Male. The submedial processes very short, lateral part of sternite 5 long haired latero-caudally, sternites 4 to 2 distinctly rectangular and covered with short bristles (Fig. 17), distyli long and pointed, cerci in upper part long haired (Fig. 18), pregonite with three apical bristles (Fig. 19).

Female. The abdominal sternite 7 distinctly narrowed caudally, in apical part covered with long fine bristles (Fig. 20).

C o m m e n t s . The original description of *S. inquinata* is based similarly as in *S. analis* on the colour characters. However, all available data show that it is a valid species. The basic diagnostic characters are on the terminalia: the short submedial processes of sternite 5 short (Fig. 17) and pregonite with three apical bristles (Fig. 18) in male; the abdominal sternite 7 distinctly narrowed caudally (Fig. 20) in female.

D i s t r i b u t i o n . All of Central European countries except Switzerland (ŠIFNER 2018).

***Scathophaga intermedia* (WALKER, 1849) (Figs 21–24)**

M a t e r i a l e x a m i n e d : CANADA: Payne Bay, Que., 20.vii. 1958, 1♂; the same locality, 27.vii.1958, 1♀, Mac Dougall leg., J.R.Vockeroth det as *S.intermedia* (FSPC).

D i a g n o s i s . Male. The abdominal sternite 5 with lobes slightly arched outside with one caudal bristle, sternites 4 and 3 rectangular without distinct bristles (Fig. 21), cerci with two rows of short bristles, surstyli slightly arched (Fig. 22), pregonite narrow, with one seta dorsally (Fig. 23).

Female. Sternites 7 and 6 more or less oval with distinct bristles, sternite 6 slightly scerotised marginally, sternite 5 pointed caudally (Fig. 24).

C o m m e n t s . The species is mentioned by GORODKOV (1986) from the Palaearctic Region, namely from Russia (Far East). In Central Europe it was recorded from Poland only (DRABER-MOŃKO 1991). Here presented original data and figures are based on voucher specimens from Canada; they are deposited in the author's collection.

D i s t r i b u t i o n . Recorded only in Poland (ŠIFNER 2018).

***Scathophaga jizerensis* ŠIFNER, 2004 (Figs 25–28)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Jizerské hory Mts., peat bog, 5.vi. - 14.viii.2002, 1♂, 1♀, Vonička & Preisler leg., paratypes (FSPC).

D i a g n o s i s . Male. The submedial processes of sternite 5 distinct, narrow and slightly arched outside, sternites 4 and 3 more or less rectangular, with long hairs laterally (Fig. 25), cerci and distyli almost equal in size, upper part of cerci with very long hairs (Fig. 26), pregonite with one long apical bristle and dorsally with six setae of which the fore three can be longer (Fig. 27).

Female. The abdominal sternite 7 oval, long and bristled only caudally, sternites 6 and 5 with long bristles latero-caudally (Fig. 28).

C o m m e n t s . The species was described by present author from the Jizerské hory Mts. (Northern Bohemia); in other areas of the Central Europe it was not so far discovered.

D i s t r i b u t i o n . Known only in the Czech Republic (ŠIFNER 2004).

***Scathophaga litorea* (FALLÉN, 1819) (Figs 29–32)**

M a t e r i a l e x a m i n e d : SWEDEN: Abisko, 1930, 1♂ 1♀, F. Šifner det. as *S. litorea* (FSPC).

D i a g n o s i s . Male. The abdominal sternite 5 with lobes narrowed apically, medially with short and dense bristles, sternites 4 and 3 oval (Fig. 29), cerci long with long bristles, surstyli pointed (Fig. 30), pregonite with one apical and one lateral setae (Fig. 31).

Female. The abdominal sternite 7 quadrate, sternite 6 rectangular and slightly narrowed distally, these sternites without distinct bristles (Fig. 32).

C o m m e n t s . The data and figures are based from voucher specimens from Scotland (Nelson det.); they are deposited in author's collection.

D i s t r i b u t i o n . Known only in Germany (PÜCHEL 1999) and Poland (DRABER-MOŃKO (1991), other data from the Central Europe are still unpublished.

***Scathophaga lutaria* (FABRICIUS, 1794) (Figs 33–36)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Chyňava, 30.ix.2014, 1♂ 1♀, Šifner leg. (FSPC).

D i a g n o s i s . Male. The abdominal sternite 5 without the submedial processes and with long hairs laterally, medially with a minute incision (Fig. 33), surstyli narrowed and pointed, cerci with hairs (Fig. 34), pregonite with four setae apically (Fig. 35).

Female. The abdominal sternite 7 long, pointed caudally and haired, sternite 6 enlarged caudally, with distinct bristles (Fig. 36).

C o m m e n t s . This species is respected by the available data as a valid species.

D i s t r i b u t i o n . All Central European countries (ŠIFNER 2018).

***Scathophaga merdaria* (FABRICIUS, 1794) (Figs 37–40)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Chyňava, 6.xi.2002, 1♂, 30.xi.2002, 5♀♀, Šifner leg.; Šumava Mts., Smrčina Mt., 5.iv.–4.v.2007, 4♂♂, Liška leg. (FSPC).

D i a g n o s i s . Male. The submedial processes of sternite 5 wide, lateral parts of sternite elongate, narrow, and long haired, sternite 4 wide but distally weakly narrowed, sternite 3 rectangular wide, of equal size as sternite 4 (Fig. 37), surstyli wide basally, arched and pointed apically, cerci densely haired (Fig. 38), pregonite narrow, with one seta laterally and one seta apically (Fig. 39).

Female. The abdominal sternite 7 divided into three separate sclerites which vary in shape, all connected by hyaline membrane, sclerite 6 and 5 more or less quadrate, with distinct bristles (Figs 40 a, b, c, d).

C o m m e n t s . This species and its nearest relative, *S. stercoraria* (LINNAEUS, 1758), were mentioned by MEIGEN (1826) as two separate species based especially on the colour characters. SCHINER (1864) also regarded both species as separate species. BECKER (1894) suggested the number and position of the acrostichal bristles as a distinguishing character. SZILADY (1926, 1943) and STACKELBERG (1933) present two rows of the acrostichal bristles in *S. merdaria* and more rows of these in *S. stercoraria* as their basic distinguishing character. The other authors, for example SACK (1937), SÉGUY (1952) and GORODKOV (1986) interpreted *S. merdaria* as a synonym or a variety of *S. stercoraria*; an analogical approach was adopted by ŠIFNER (2008). Nowadays, in my opinion, *S. merdaria* and *S. stercoraria* are two separate species, which is I confirm by the study of a considerable number of specimens for the comparison. The basic differences between these species are apparent from the text and the figures (cf. Figs 37–40: *S. merdaria* and Figs 49–62: *S. stercoraria*) and they are also applied in the key.

D i s t r i b u t i o n . Probably in all Central European countries, so far confirmed from Czech Republic on following localities: Jizerka (5158); Horní Maxov (5257); Krkonoše Mts., Labská bouda (5259); Poniklá (5338); Žacléř (5361); Boží Dar (5543); Vintřov (5742); Řevničov (5848); Lazy, Lesný (5941); Kladská, Bečov (5942); Horní Bezděkov, Chyňava (5950); Praha, Šeberovský rybník pond (5952); Vysoká, Tachovská Huť, Tři Sekery (6041); Mamerníky, Mariánské Lázně (6042); Skryje (6048); Broumov (6141) (FSPC).

***Scathophaga moraviensis* ŠIFNER, 2011 (Figs 41–44)**

M a t e r i a l e x a m i n e d : CZECH REPUBLIC: Hrubá Vrbka (7170), Čertoryje, Malaise trap, 25.v.2010, 1♂, 1♀ (holotype, allotype), Chvojka leg. (FSPC).

D i a g n o s i s . Male. The abdominal sternite 5 more or less semi-circular, the submedial processes weakly developed, sternite 4 wide, narrowed distally, sternite 3 rectangular (Fig. 41), surstyli almost straight, only weakly arched and pointed, cerci in upper part long haired (Fig. 42), pregonite wide with one long seta and one short seta apically (Fig. 43).

Female. The abdominal sternite 7 wide with a caudal incision, sternite 6 with a promotory distally and always one bristle laterally, sternite 5 oval with two bristles latero-caudally (Fig. 44).

C o m m e n t s . This species was described from Moravia (eastern part of the Czech Republic) and nowadays, it was discovered in further on localities in Bohemia and Moravia: Chyňava (5950), Šumava Mts. Jezerní Mt. (6845), Řevničov (5848) (ŠIFNER, in litt.).

D i s t r i b u t i o n . Known only in Czech Republic (ŠIFNER 2011).

***Scathophaga pictipennis* (OLDENBERG, 1923) (Figs 45–48)**

Material examined: CZECH REPUBLIC: Šumava Mts., Malá nivá (7048), 1♂, 19.v.1999; Krkonoše Mts. (5259), louka, meadow, 21.vi.1966, 1♀, Šifner leg. (FSPC).

Diagnosis. Male. The abdominal sternite 5 with two distinct lobes which are apically pointed and bristled, sternite 4 quadrate, sternite 3 oval and sternite 2 rectangular (Fig. 45), surstyli slightly arched, cerci wide and narrowed caudally, both densely haired (Fig. 46), pregonite enlarged apically, with two setae (Fig. 47).

Female. The abdominal sternite 7 wide caudally, sternite 6 to 4 oval (Fig. 48).

Comments. In the male of this species sternite 5 with lobes; these lobes are developed among Central European species only in *S. litorea* and *S. intermedia*; among the northern species they occur in *S. apicalis* (CURTIS, 1835), *S. calida* (HALIDAY, 1832), *S. islandica* (BECKER, 1894), and newly described *S. simaceki* ŠIFNER, 2018 from Svalbard (Norway) (ŠIFNER 2018) and *S. yakutica* OZEROV, 2017 from Russia (Yakutia) (OZEROV 2017). OZEROV (2017) in this connection states: “*S. pictipennis* together with *S. yakutica* form a separate group of species, its taxonomic position still remains unclear”. I confirm in this connection only that in all other species of *Scathophaga* in its present concept the sternites 5 are of a different shape or not developed.

Distribution. Only known in Austria, Czech Republic, Germany and Slovakia (ŠIFNER 2018).

***Scathophaga stercoraria* (LINNAEUS, 1758) (Figs 49–52)**

Material examined: CZECH REPUBLIC: Olomouc (6469), meadow, 1♂, 1♀, 10.iv.1959, Šifner leg. (FSPC).

Diagnosis. Male. The submedial processes of sternite wide, the lateral parts of sternite elongated only moderately, sternites 4 and 3 rectangular (Fig. 49), surstyli wide basally, arched and pointed apically (Fig. 50), pregonite narrow with two long setae: apical and latero-dorsal (Fig. 51).

Female. The abdominal sternite 7 divided into three separate sclerites: two lateral sclerites connected by hyaline membrane and one distal sclerite predominantly of roughly circular shape; this sclerite resembles a separate sternite. Sclerites 6 and 5 are more or less oval with two distinct bristles latero-caudally (Figs 52 a, b, c, d).

Distribution. Widely distributed, virtually Holarctic species known in all Central European countries (ŠIFNER 2018).

***Scathophaga suilla* (FABRICIUS, 1794) (Figs 53–56)**

Material examined: CZECH REPUBLIC: Dobruška (5763), 20.viii.1960, 1♂, 1♀, Martinek leg. (FSPC).

Diagnosis. Male. The submedial processes of abdominal sternite 5 straight, long haired laterally, sternite 4 oval, sternite 3 distally narrowed (Fig. 53), cerci in upper part with long hair-like setae, surstyli slightly arched and on inner side bristled (Fig. 54), pregonite with one long apical seta and dorsally with six setae (Fig. 55).

Female. The abdominal sternite 7 divided into two separate sclerites, sternites 6 and 5 more or less rounded (Fig. 56).

Distribution. All Central European countries except Hungary (ŠIFNER 2018).

***Scathophaga taeniopa* (RONDANI, 1867) (Figs 57–60)**

Material examined: CZECH REPUBLIC: Jierské hory Mts., Jizerka (5158), 1♂, 1♀, 22.vi.2006, Šifner leg. (FSPC). SWITZERLAND: Oberwald VS, 1♂, 1♀, 13.vi.–5.viii.1975, G. Bächli leg. (FSPC).

Diagnosis. Male. The submedial processes of abdominal sternite 5 distinct and straight, its lateral parts prolonged, with long and fine bristles, sternite 4 and 3 oblong, with long hairs (Fig. 57), cerci and surstyli with long hairs (Fig. 58), pregonite with one apical seta and seven setae dorsally (Fig. 59).

Female. The abdominal sternite 7 with a caudal notch, distally narrowed and sclerotized, sternites 6 and 5 with two bristles latero-caudally, sternites 8 narrow and very long (Fig. 60).

Distribution. Only known from Austria, Czech Republic, Poland and Switzerland (ŠIFNER 2018).

***Scathophaga vlastae* ŠIFNER, 2000 (Figs 61–63)**

Material examined: SLOVAKIA: Zádielská dolina, valley, 21.ix.1962, 1♂ (holotype), Šifner leg. (FSPC).

Diagnosis. Male. The abdominal sternite 5 with an incision medio-caudally, otherwise more or less rectangular and with long hairs latero-caudally (Fig. 61), surstyli short, cerci wide basally and caudally with long hairs (Fig. 62), pregonite very narrowed apically, with three setae dorsally (Fig. 63).

Female. Unknown.

Comments. This species was discovered in Eastern Slovakia as a single male.

Distribution. Known only in Slovakia (ŠIFNER 2000, 2018).

Key to Central European species of the genus *Scathophaga* MEIGEN, 1803

- 1 Arista bare.....2
- Arista plumose or pubescent6
- 2 Male abdominal sternite 5 with two inconspicuous submedial processes or sternite 5 with only an incision medially.3
- Male abdominal sternite 5 with distinct lobes4
- 3 Male surstyli long (Fig. 14), male pregonite with four setae (Fig. 15), female abdominale sternite 7 divided into three separate sclerites (Fig. 16).....*S. furcata* (SAY, 1823)
- Male surstyli very short (Fig. 62), male pregonite with three setae dorsally (Fig. 63)*S. vlastae* ŠIFNER, 2000
- 4 Lobes of male sternite 5 arched outside, medially with short bristles (Fig. 21), male pregonite with one dorsal seta (Fig. 23), female abdominal sternite 7 long and oval*S. intermedia* (WALKER, 1849)
- Lobes of male abdominal sternite 5 straight5
- 5 Lobes of male sternite 5 medially without short bristles (Fig. 45), male pregonite with two setae apically (Fig. 47), female abdominal sternite 7 long and enlarged caudally (Fig. 48).....*S. pictipennis* OLDENBERG, 1923
- Lobes of male abdominal sternite 5 medially with short bristles (Fig. 29), male pregonite with one apical seta and one lateral seta (Fig. 31), female abdominal sternite 7 quadrate (Fig. 32).....*S. litorea* (FALLÉN, 1819)
- 6 Male abdominal sternite 5 submedially only with an incision.....7

- Male abdominal sternite 5 with two submedial processes8
- 7 Male abdominal sternite 5 rounded and long haired (Fig. 33), male pregonite with four setae apically (Fig. 35), female abdominal sternite 7 pointed caudally (Fig. 36).
..... *S. lutaria* (FABRICIUS, 1794)
- Male abdominal sternite 5 angular laterally and with long bristles (Fig. 9), male pregonite wide with one apical seta and 10–14 setae of different length dorsally (Fig. 11), female abdominal sternite 7 long, narrowed distally, with six to eight bristles caudally (Fig. 12). *S. cineraria* (MEIGEN, 1826)
- 8 Submedial processes of male abdominal sternite 5 not prolonged elongate.....9
- Submedial processes of male abdominal sternite 5 distinctly elongated11
- 9 Male pregonite with three setae apically (Fig. 19), male surstyli straight and pointed (Fig. 18), female abdominal sternite 7 narrowed caudally and covered with fine bristles (Fig. 20)..... *S. inquinata* (MEIGEN, 1826)
- Male pregonite with two setae apically10
- 10 Male abdominal sternite 4 very wide and narrowed distally (Fig. 41), male surstyli long, straight and pointed (Fig. 42), male pregonite with one short and one long setae apically (Fig. 43), female abdominal sternite 7 with an incision caudally (Fig. 44).....
..... *S. moraviensis* ŠIFNER, 2011
- Male abdominal sternite 4 quadrate (Fig. 5), male surstyli weakly arched and pointed (Fig. 6) male pregonite with two setae of equal size apically (Fig. 7), female abdominal sternite 7 enlarged caudally (Fig. 8)..... *S. analis* (MEIGEN, 1826)
- 11 Acrostichal bristles numerous, forming more than two rows; lateral parts of male sternite 5 short (Fig. 49), male pregonite with one long seta apically and one long seta dorsally (Fig. 51), female abdominal sternite 7 divided into three separate sclerites, two lateral sclerites connected by hyaline membrane, distal sternite is independent (Figs 52a–d). *S. stercoraria* (LINNAEUS, 1758)
- Acrostichal bristles in two distinct rows.....12
- 12 Lateral part of male sternite 5 long (Fig. 37), male pregonite with one seta apically and one seta laterally (Fig. 39), male surstyli basally arched, cerci densely haired (Fig. 38), female abdominal sternite 7 divided into three separate sclerites connected by hyaline membrane (Figs 40a–d)..... *S. merdaria* (FABRICIUS, 1794)
- Lateral part of male sternite 5 short and weakly sclerotized.....13
- 13 Male surstyli straight and pointed14
- Male surstyli arched and pointed.....15
- 14 Male pregonite with one seta apically and six setae dorsally (Fig. 55), sternites 4 and 5 oval, female abdominal sternite 7 divided into two separate sclerites (Fig. 56)
..... *S. suilla* (FABRICIUS, 1794)
- Male pregonite with one seta apically and seven setae dorsally (Fig. 59), sternites 4 and 5 rectangular, female abdominal sternite 7 oval and in one piece (Fig. 60).
..... *S. taeniopa* (RONDANI, 1867)
- 15 Male abdominal sternite 4 long, rectangular (Fig. 25), male pregonite with one seta apically and six setae dorsally (Fig. 27), female abdominal sternite 7 in one piece, long and bristled caudally (Fig. 28)..... *S. jizerensis* ŠIFNER, 2004
- Male abdominal sternite 4 enlarged caudally (Fig. 1), male pregonite with one long seta apically and 5 long setae and in addition to 3–4 short setae dorsally (Fig. 3), female abdominal sternites 7 and 6 narrow and weakly bristled (Fig. 4). *S. karmazini* **nov. sp.**

Acknowledgements

I wish to express my sincerest thanks to Jan Máca (Veselí nad Lužnicí, Czech Republic), to Petr Kment (National Museum Praha, Czech Republic) for critical comments on the manuscript and to my son Mirek for his continuing technical help.

Zusammenfassung

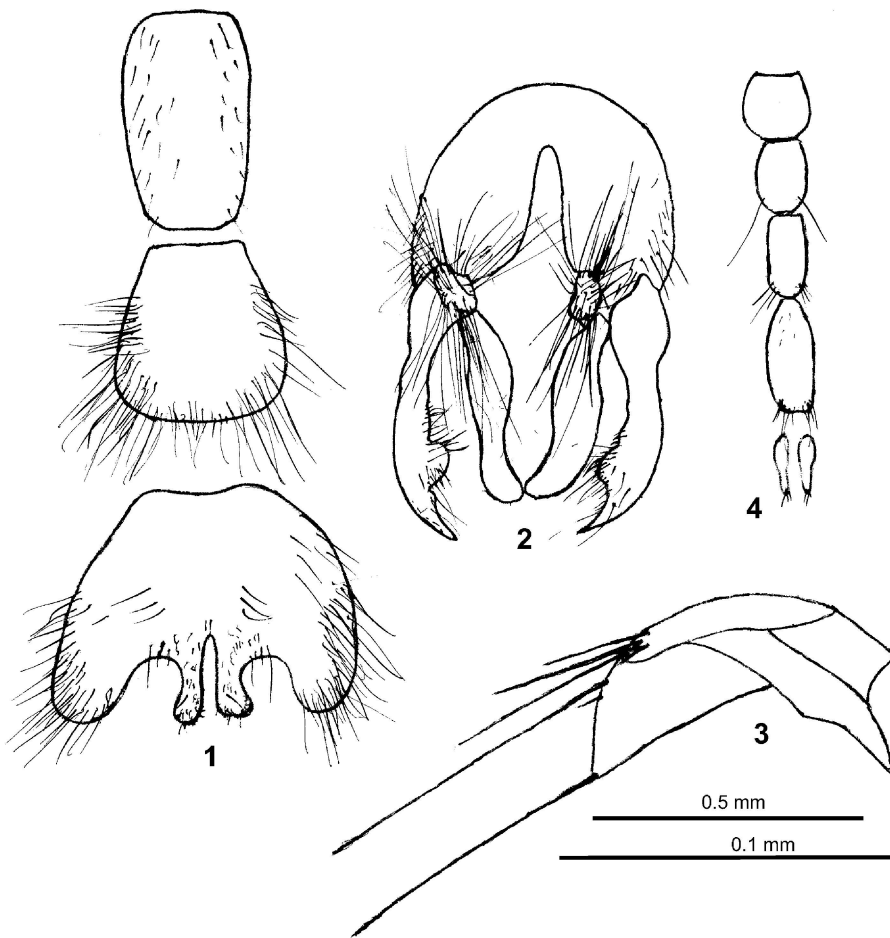
Eine neue Art, *Scathophaga karmazini* nov.sp., wird aus Österreich beschrieben. Diese neue Art unterscheidet sich von weiteren Arten der Gattung *Scathophaga* MEIGEN, 1803 aus Mitteleuropa. Die Art *Scathophaga merdaria* (FABRICIUS, 1794) wird als gültige Art bestätigt, da sie sich morphologisch von *Scathophaga stercoraria* (LINNAEUS, 1758) unterscheidet. Die Art *Scathophaga bohemiae* ŠIFNER, 2000 ist ein jüngeres Synonym zu *Scathophaga analis* (MEIGEN, 1826). Gegenwärtig gibt es in Mitteleuropa 16 bestätigte und valide Arten der Gattung *Scathophaga* (MEIGEN, 1826).

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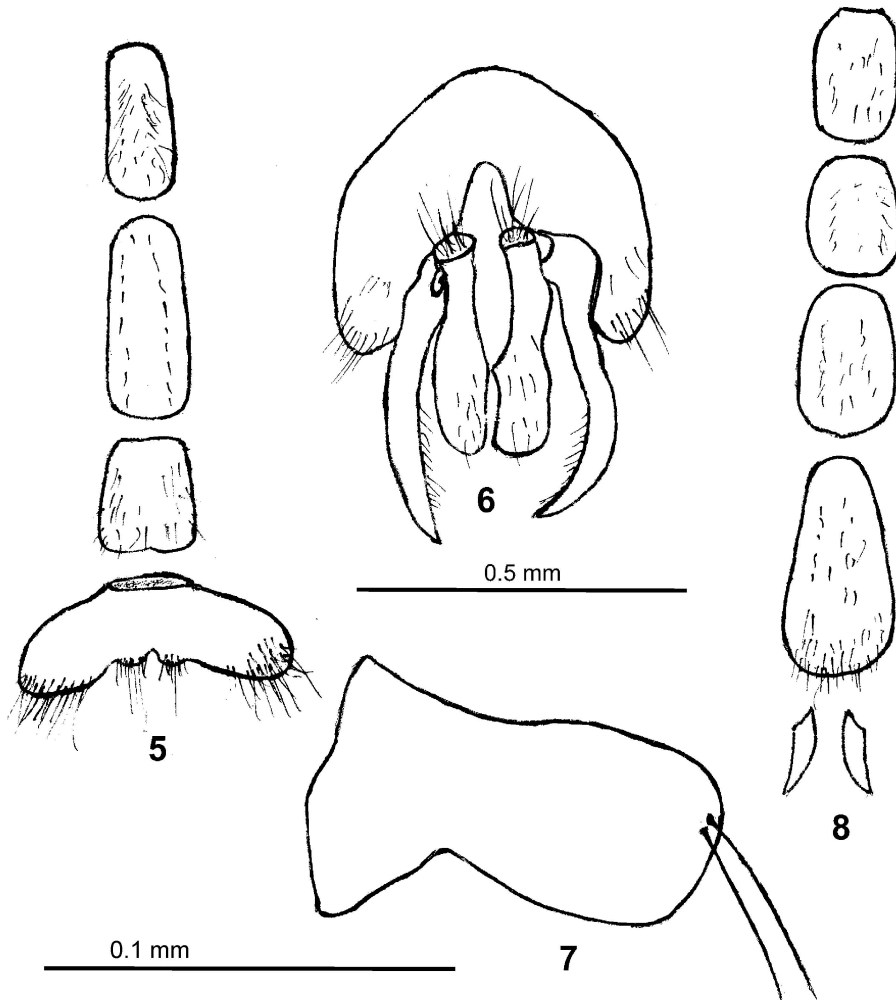
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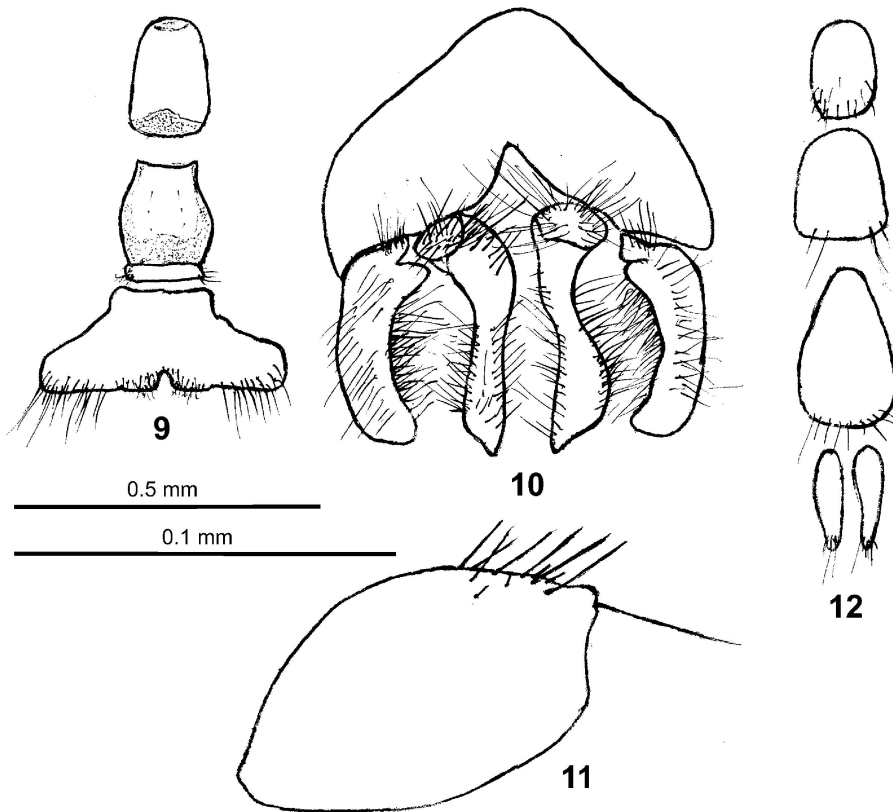
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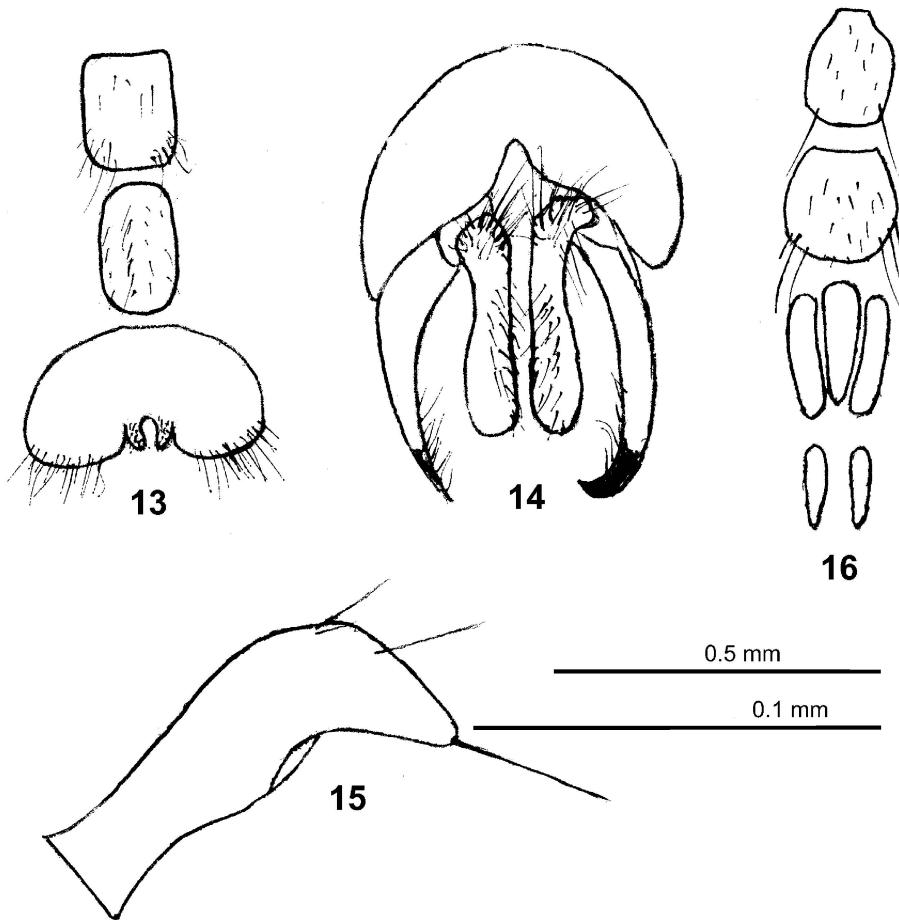
Figs 1-4. *Scathophaga karmazini* nov.sp. (1) male abdominal sternites 5 to 3; (2) male cerci and surstyli (caudal view); (3) left pregonite; (4) female abdominal sternites 8 to 4. Scale bars: 0.5 mm (Figs 1, 2, 4); 0.1 mm (Fig. 3).



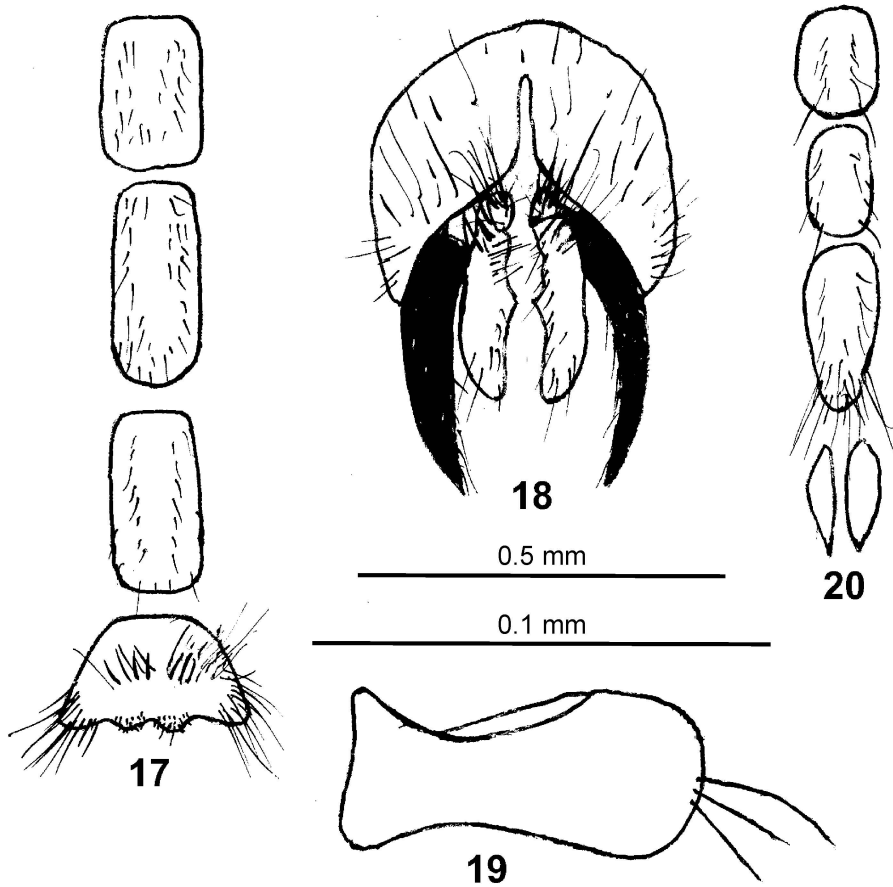
Figs 5-8. *Scathophaga analis* (MEIGEN, 1826). (5) male abdominal sternites 5 to 2; (6) male cerci and surstyli (caudal view); (7) right pregonite; (8) female abdominal sternites 8 to 4. Scale bars: 0.5 mm (Figs 5, 6, 8); 0.1 mm (Fig. 7).



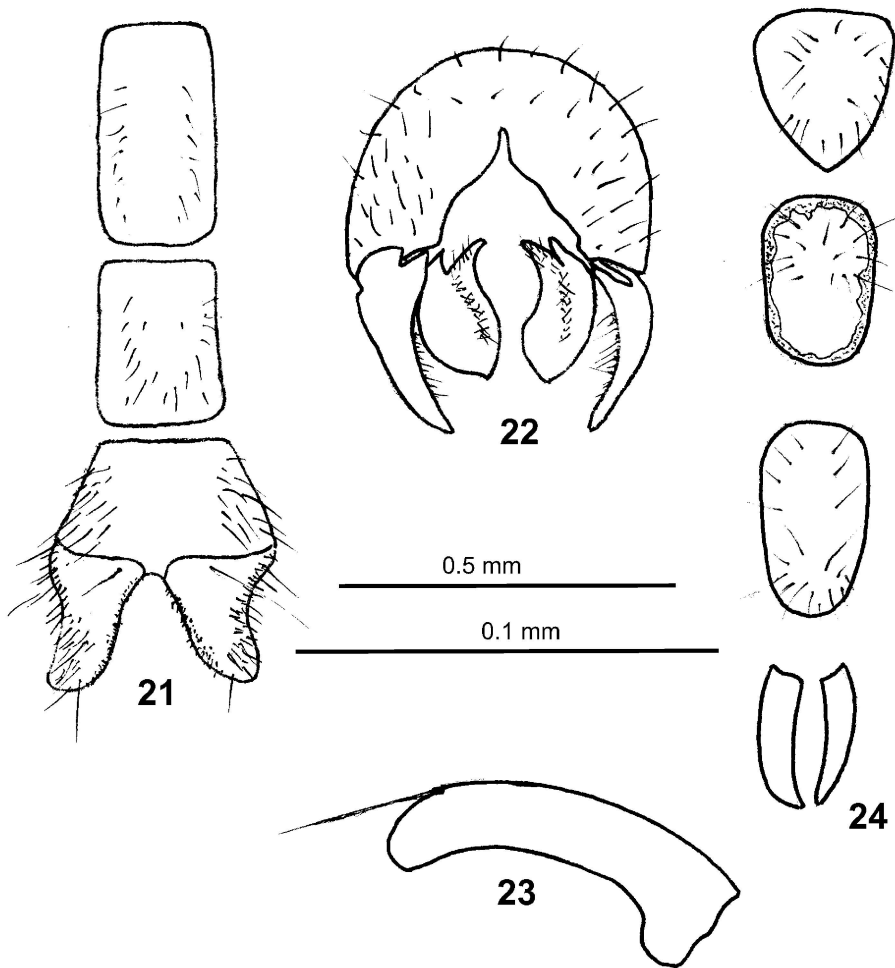
Figs 9-12. *Scathophaga cineraria* (MEIGEN, 1826). (9) male abdominal sternites 5 to 3; (10) male cerci and surstyli (caudal view); (11) right pregonite; (12) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 9, 10, 12); 0.1 mm (Fig. 11).



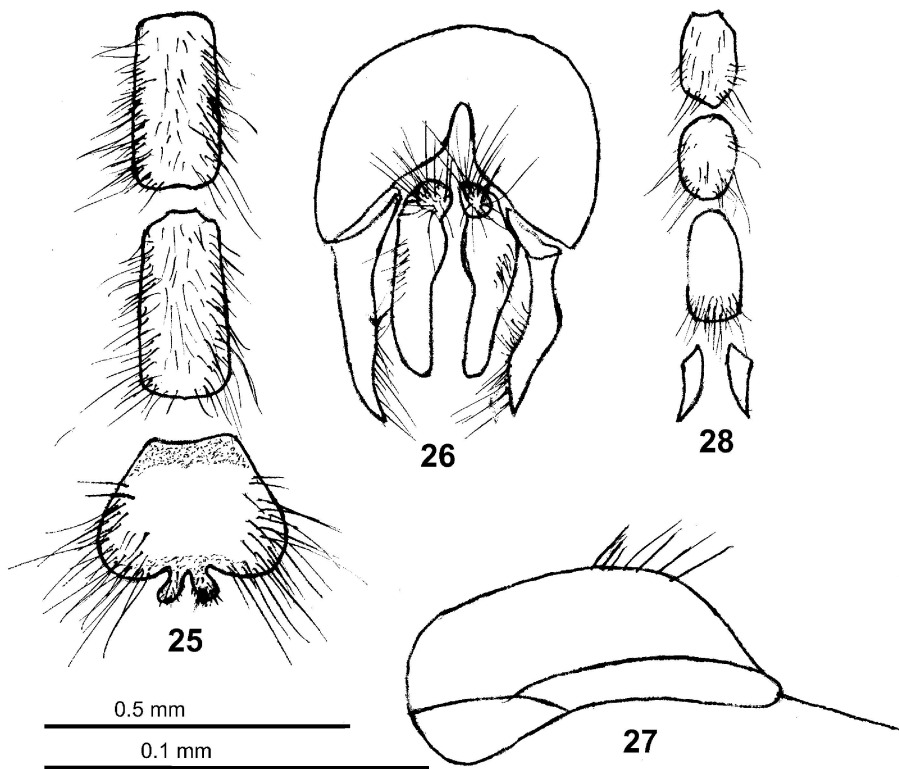
Figs 13-16. *Scathophaga furcata* (SAY, 1823). (13) male abdominal sternites 5 to 3; (14) cerci and surstyli (caudal view); (15) right pregonite; (16) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 13, 14, 16); 0.1 mm (Fig. 15).



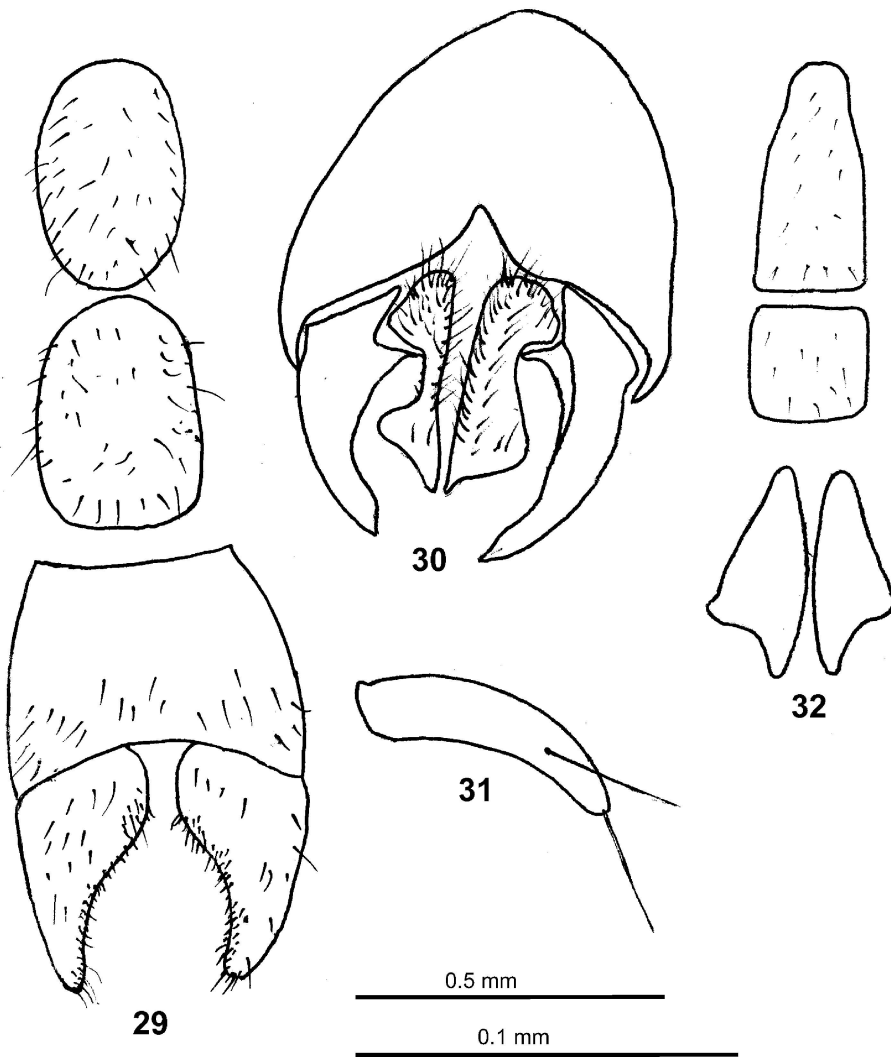
Figs 17-20. *Scathophaga inquinata* (MEIGEN, 1826). (17) male abdominal sternites 5 to 2; (18) cerci and surstyli (caudal view); (19) right pregonite; (20) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 17, 18, 20); 0.1 mm (Fig. 19).



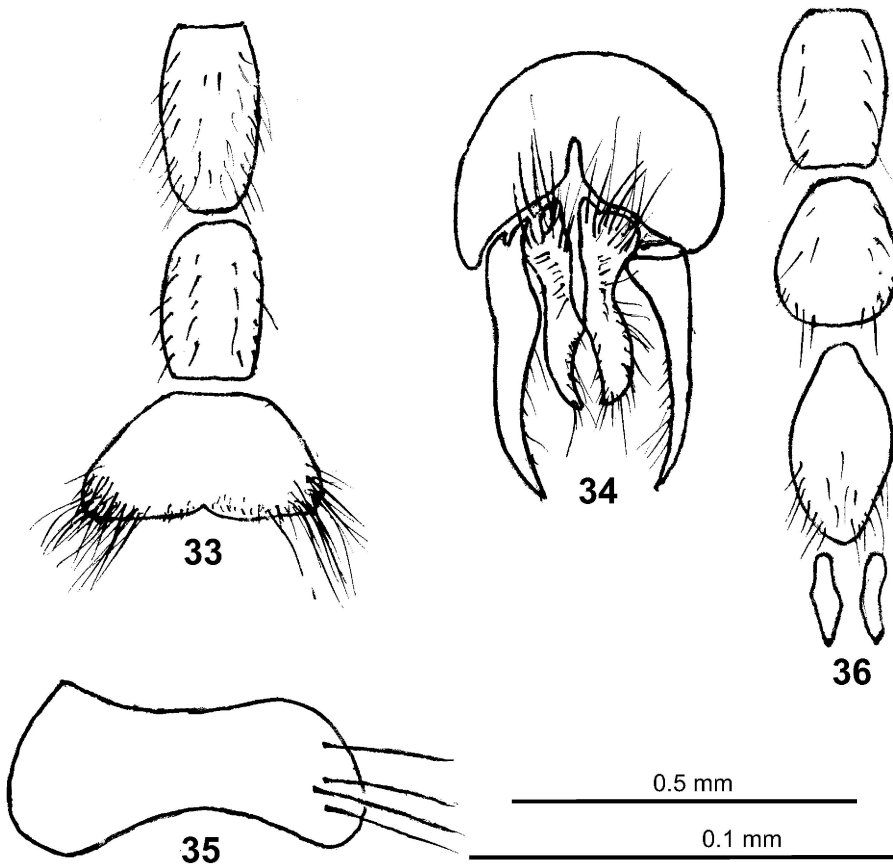
Figs 21-24. *Scathophaga intermedia* (WALKER, 1849). (21) male abdominal sternites 5 to 3; (22) cerci and surstyli (caudal view); (23) left pregonite; (24) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 21, 22, 24); 0.1 mm (Fig. 23).



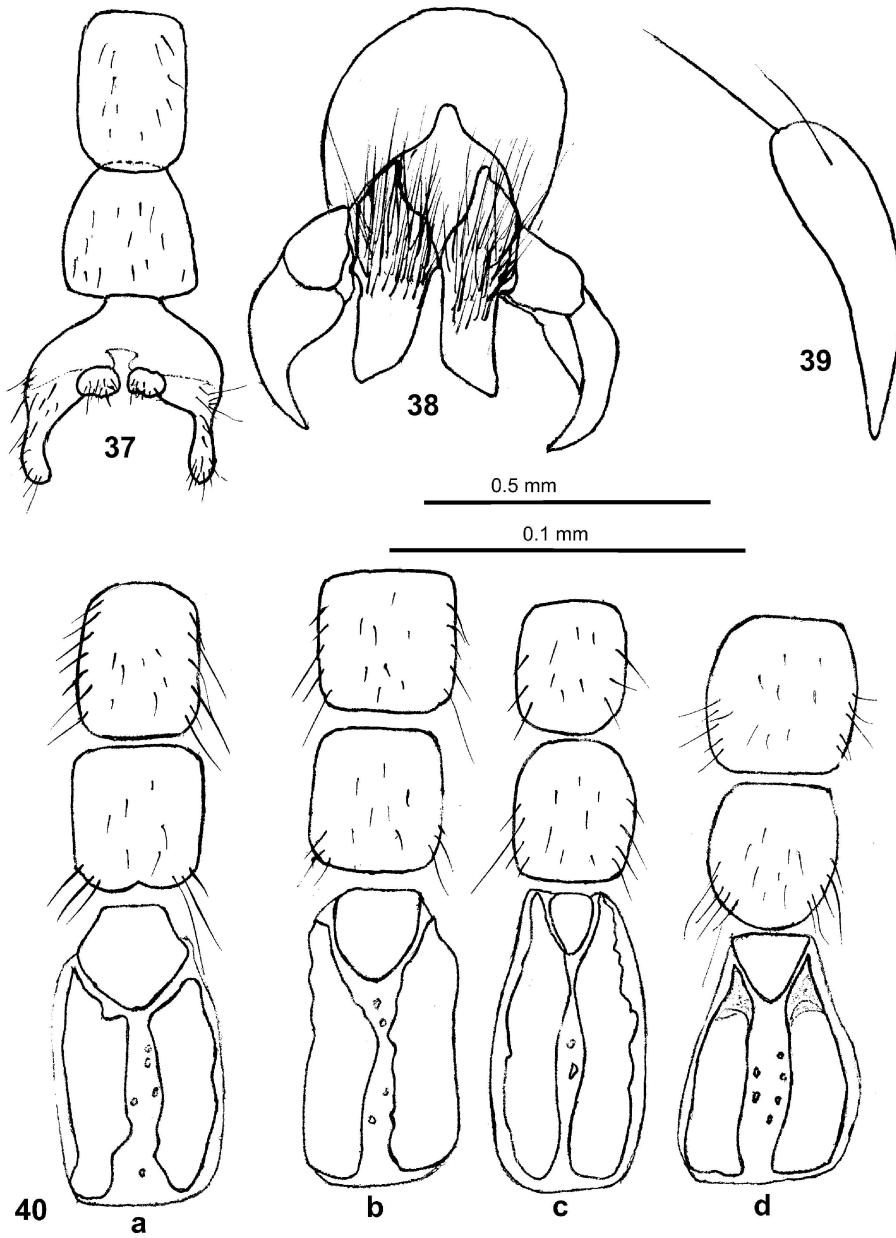
Figs 25-28. *Scathophaga jizerensis* ŠIFNER, 2004. (25) male abdominal sternites 5 to 3; (26) cerci and surstyli (caudal view); (27) right pregonite; (28) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 25, 26, 28); 0,1 mm (Fig. 27).



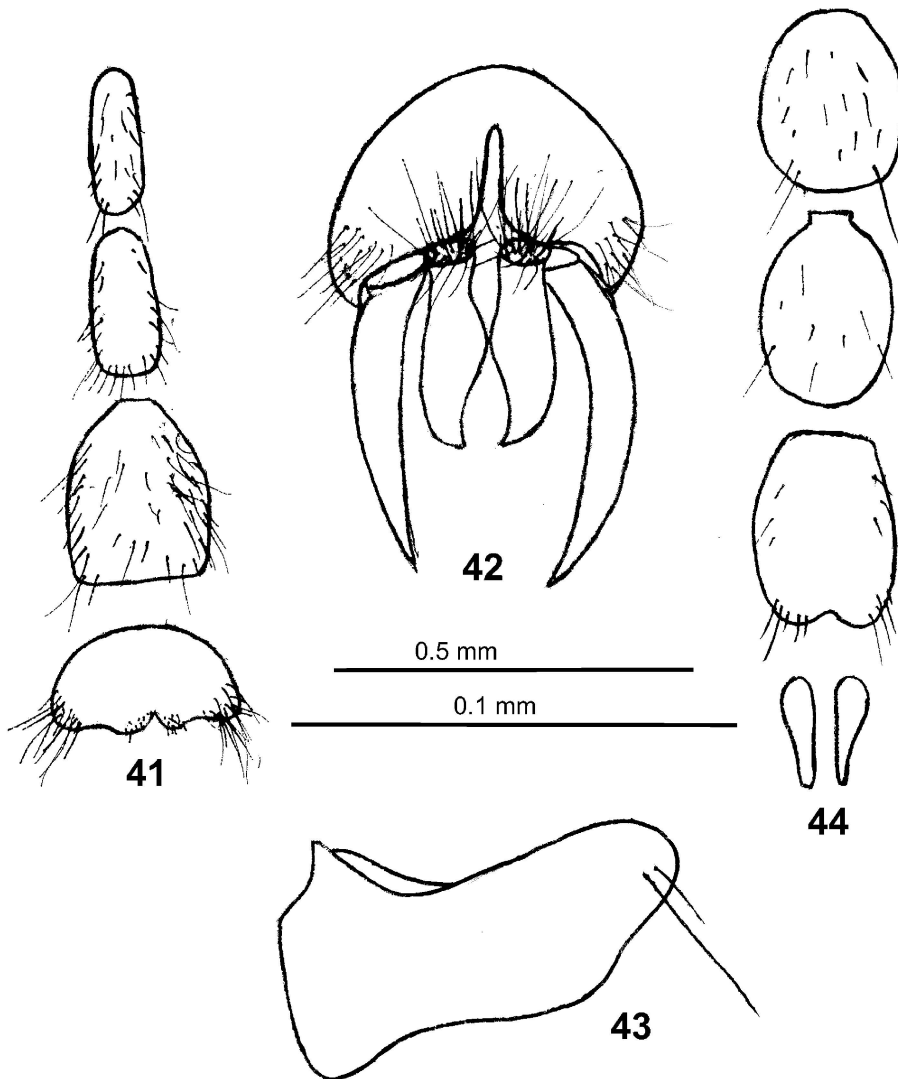
Figs 29-32. *Scathophaga litorea* (FALLÉN, 1819). (29) male abdominal sternites 5 to 3; (30) cerci and surstyli (caudal view); (31) right pregonite; (32) female abdominal sternites 8 to 6. Scale bars: 0.5 mm (Figs 29, 30, 32); 0.1 mm (Fig. 31).



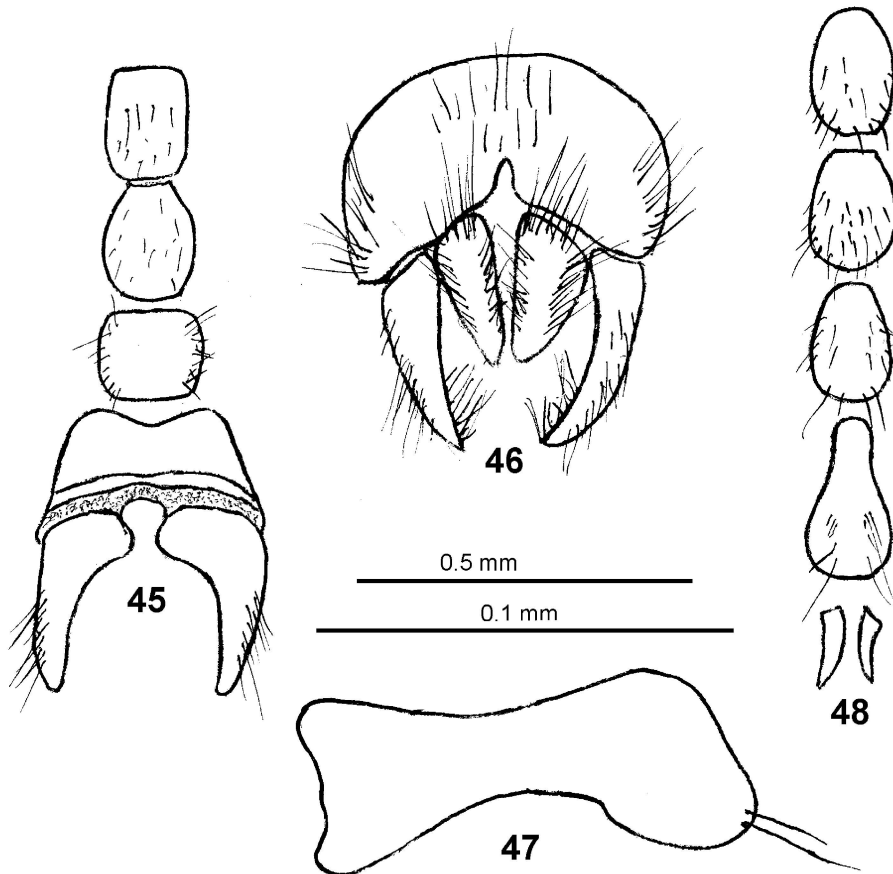
Figs 33-36. *Scathophaga lutaria* (FABRICIUS, 1794). (33) male abdominal sternite 5 to 3; (34) cerci and surstyli (caudal view); (35) right pregonite; (36) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 33, 34, 36); 0.1 mm (Fig. 35).



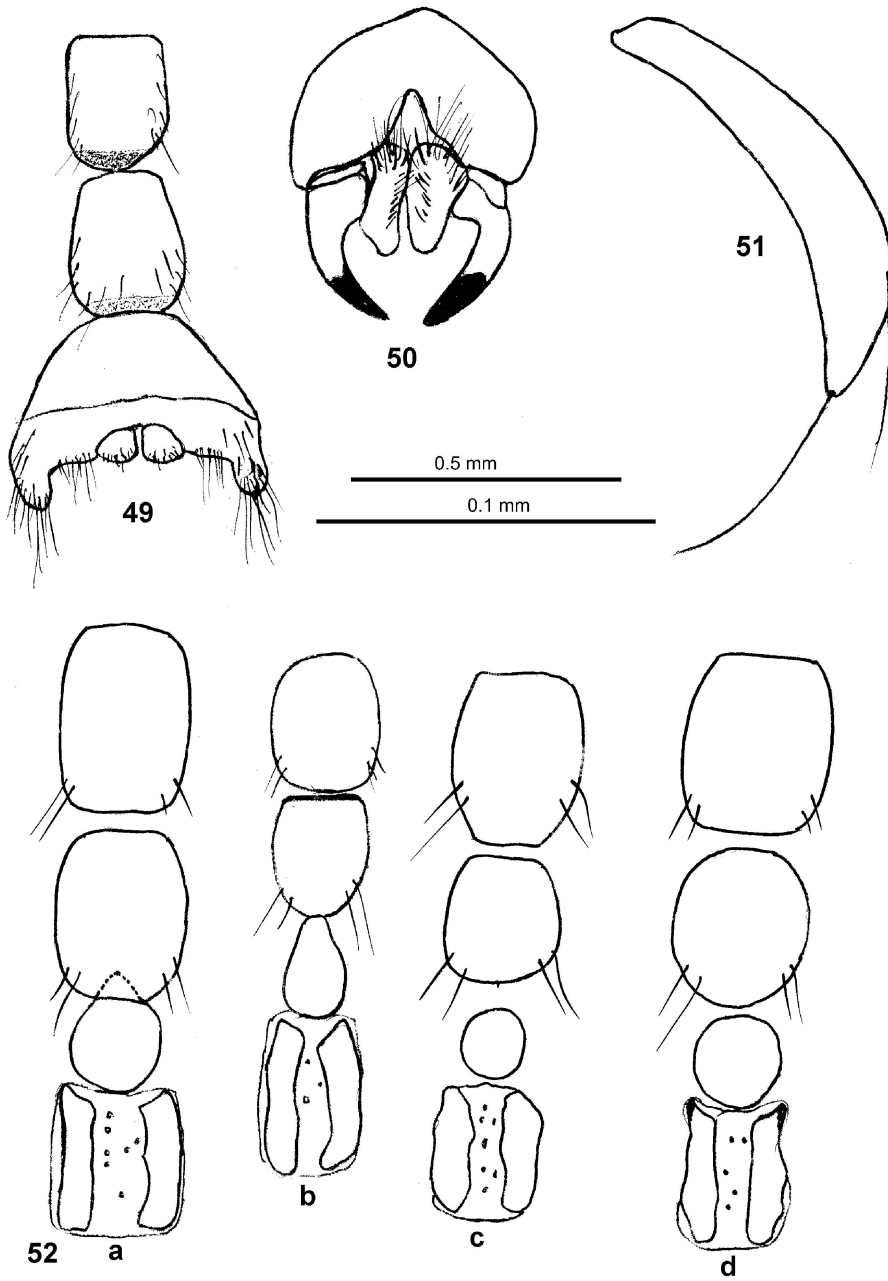
Figs 37-40. *Scathophaga meridaria* (FABRICIUS, 1794). (37) male abdominal sternite 5 to 3; (38) cerci and surstyli (caudal view); (39) left pregonite; (40a,b,c,d) the shape of the female abdominal sternites 7 to 5; Scale bars: 0.5 mm (Figs 37, 38, 40a,b,c,d); 0.1 mm (Fig. 39).



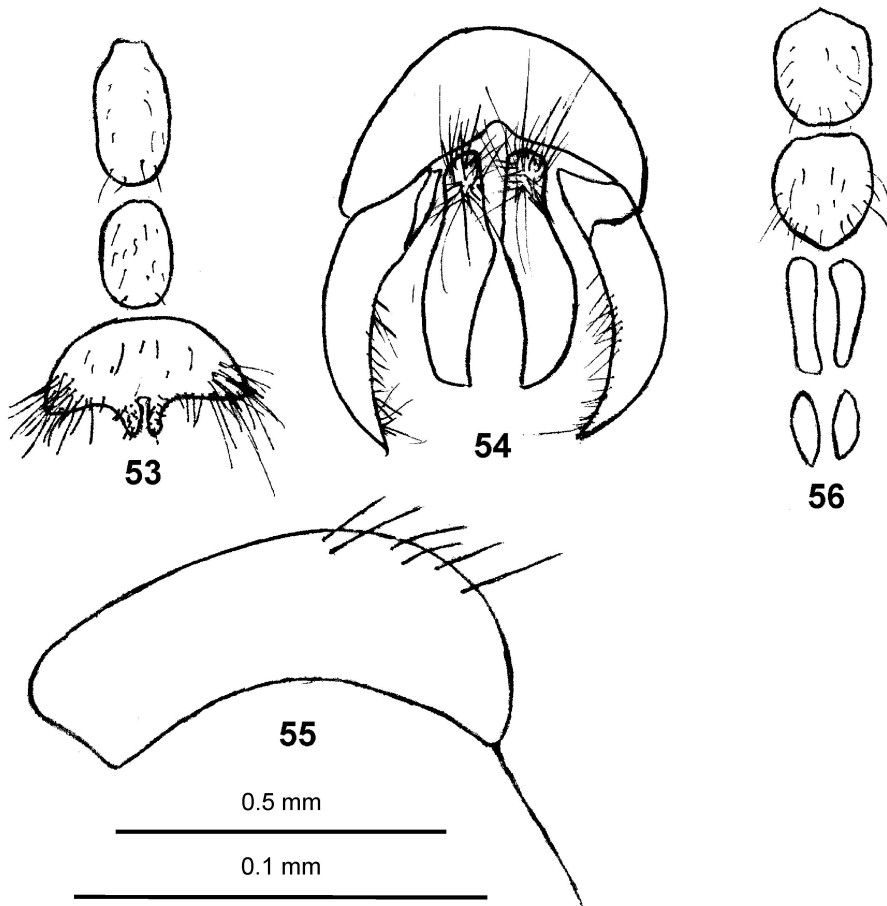
Figs 41-44. *Scathophaga moraviensis* ŠIFNER, 2011. (41) male abdominal sternites 5 to 2; (42) cerci and surstyli (caudal view); (43) right pregonite; (44) female abdominal sternites 8 to 5; Scale bars: 0.5 mm (Figs 41, 42, 44); 0.1 mm (Fig. 43).



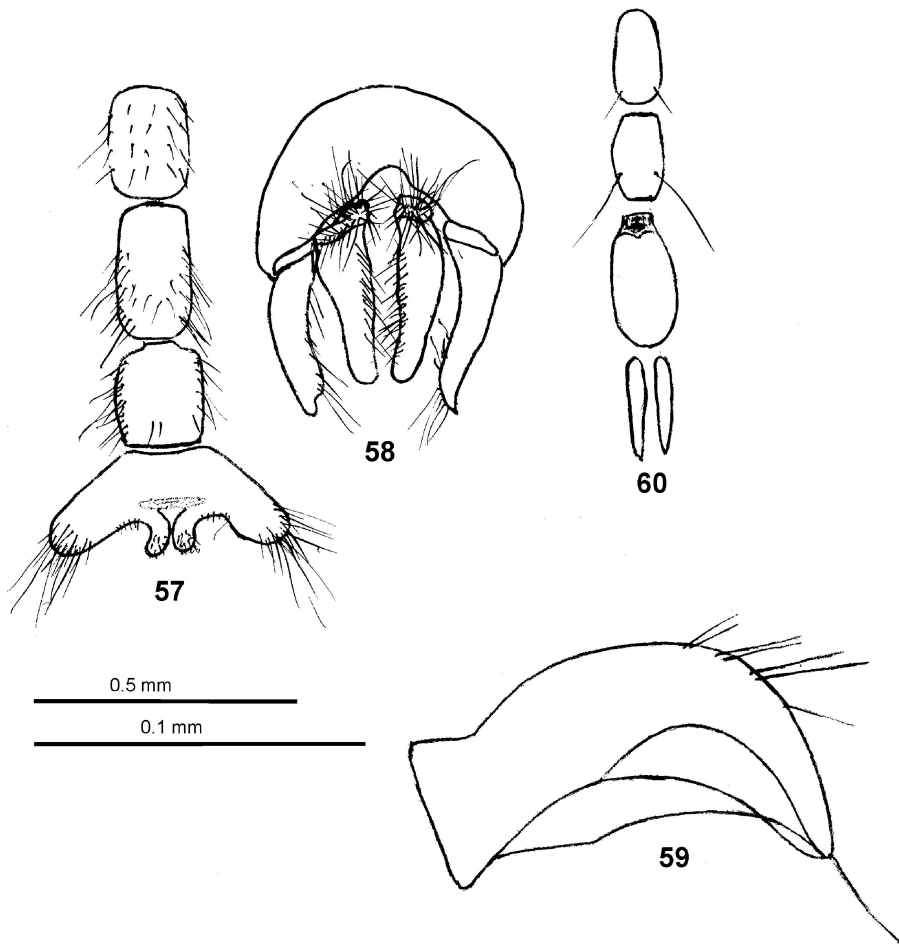
Figs 45-48. *Scathophaga pictipennis* (OLDENBERG, 1923). (45) male abdominal sternites 5 to 2; (46) cerci and surstyli (caudal view); (47) right pregonite; (48) female abdominal sternites 8 to 3. Scale bars: 0.5 mm (Figs 45, 46, 48); 0.1 mm (Fig. 47).



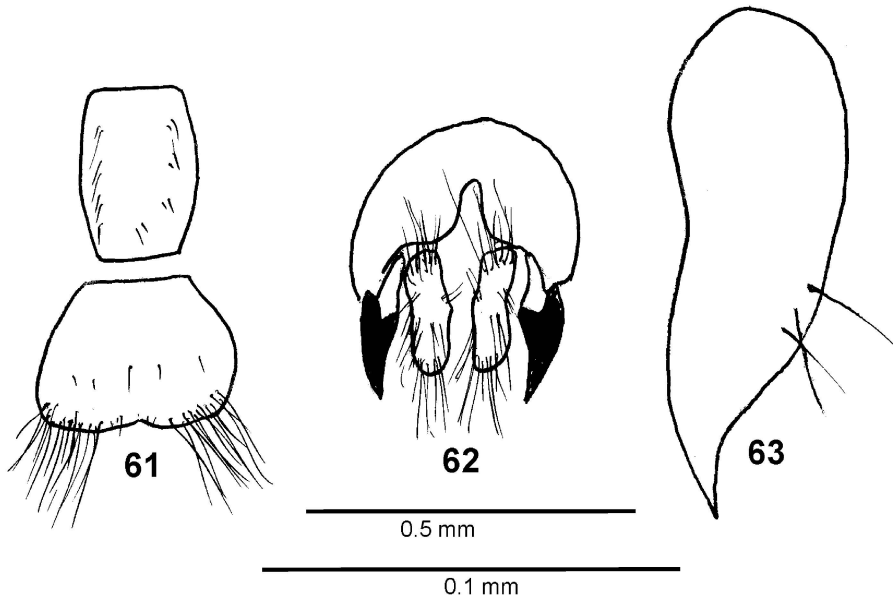
Figs 49-52. *Scathophaga stercoraria* (LINNAEUS, 1758). (**49**) male abdominal sternites 5 to 3; (**50**) cerci and surstyli (caudal view); (**51**) right pregonite; (**52a,b,c,d**) the shape of female abdominal sternites 7 to 5. Scale bars: 0.5 mm (Figs 49, 50, 52a,b,c,d); 0.1 mm (Fig. 51).



Figs 53-56. *Scathophaga suilla* (FABRICIUS, 1794). (53) male abdominal sternites 5 to 3; (54) cerci and surstyli (caudal view); (55) right pregonite; (56) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 53, 54, 56); 0.1 mm (Fig. 55).



Figs 57-60. *Scathophaga taeniopa* (RONDANI 1867). (57) male abdominal sternites 5 to 2; (58) cerci and surstyli (caudal view); (59) right pregonite; (60) female abdominal sternites 8 to 5. Scale bars: 0.5 mm (Figs 57, 58, 60); 0.1 mm (fig. 59).



Figs 61-63. *Scathophaga vlastae* ŠIFNER, 2000. (61) male abdominal sternites 5 to 4; (62) cerci and surstyli (caudal view); (63) right pregonite. Scale bars: 0.5 mm (Fig. 61, 62); 0.1 mm (Fig. 63).