

## THE FAMILY SCATHOPHAGIDAE (DIPTERA) OF THE CZECH AND SLOVAK REPUBLICS (WITH NOTES ON SELECTED PALAEARCTIC TAXA).

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Abstract. The family has been preliminarily divided into the following tribes: Cordilurini, Gymnomerini, Microprosopini, Hydromyzini, Cleigastrini, Amaurosomini, Delinini and Scathophagini. The following important characteristics are used for classification: the shape of the praegonite of males along with the number of bristles, the shape of the palpi along with the presence or the absence of bristles, the position of bristles on the thorax and on legs. Additional characters are used and combined in keys to the genera and species: the shape of 4<sup>th</sup> and 5<sup>th</sup> abdominal sternites and the shape of surstyli and cerci of males, the shape of 6<sup>th</sup> (5<sup>th</sup>) to 7<sup>th</sup> abdominal sternites as well as the shape of 8<sup>th</sup> abdominal sternites of females, including the number of bristles or thorns. Some taxonomical and nomenclatorial issues are discussed and four new species are described: *Gymnomera slovac* sp. n. and *Gymnomera tatraca* sp. n. from the Slovak Republic, *Hexamitocera martineki* sp. n. from the Czech Republic and *Gymnomera alpina* sp. n. from Austria. Two species i. e. *Cordilura impudica* (RONDANI, 1867) and *Cordilura similis* (SIEBKE, 1873) have been redescribed. Five new synonymies are established: *Cordilura fuscitibia* RONDANI, 1867 as a junior subjective synonyme of *Parallelomma albipes* (FALLÉN, 1819); *Clidogastra veratri* HENDEL, 1925 as a junior subjective synonyme of *Delina nigriceps* (BECKER, 1894); *Scathophaga horvathi* SZILÁDY, 1926 as a junior subjective synonyme of *Scathophaga taeniopa* (RONDANI, 1867); *Acerocnema tiefi* BECKER, 1894 as a junior subjective synonyme of *Acerocnema macrocera* (MEIGEN, 1826) and *Acerocnema pokornyi* BECKER, 1894 as a junior subjective synonyme of *Acerocnema macrocera* (MEIGEN, 1826). So far, the author has recorded 68 species in the Czech Republic and 54 species in the Slovak Republic.

■ Diptera, Scathophagidae, Palaearctis, Czech and Slovak Republics, taxonomy, keys, new species, new synonymies, faunistics, grid mapping.

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### Introduction

The purpose of the present paper is not only to facilitate the identification and geographical distribution of the species of Scathophagidae from the Czech and Slovak Republics but also to attempt a key to identification of the species of this family occurring in adjacent countries of Central Europe, i. e. Germany, Austria, Switzerland, Hungary and Poland. In the text are included some interesting data concerning discoveries of species in other countries; all specimens treated were identified or revised by the author. In the keys are also included the species, validity of which has been only recently confirmed as well as some northern species necessary for mutual comparison.

The family Scathophagidae in the Czech and Slovak Republics has never been summarily revised and published. The papers of earlier authors, e. g. Kowarz, Czižek, Landrock and Vimmer, were only of faunistic importance without the possibility of identifying individual species. This was confirmed by Šifner (1964b, 1965a), who revised the collections of Landrock and Czižek (deposited in Moravian Museum in Brno) and Vimmer (deposited in the National Museum in Prague), and compared their literary data with specimens in these collections. Some specimens are deposited in the National Museum in Prague and Naturhistorisches Museum in Vienna. The present study is thus the

first attempt to review the Czech and Slovak species of this family. For the present study, the following collections were thoroughly studied and revised: the National Museum (Prague), Moravian Museum (Brno), Silesian Museum (Opava), National Museum (Bratislava), Naturhistorisches Museum (Vienna), Naturhistorisches Museum in Admont (Strobl's coll.), Museum of Natural History (Budapest), Museum Lausanne, Šifner's private collection, partly also Zoologisches Museum (Berlin) and Zoological Institute of the Polish Academy of Sciences (Warsaw).

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I wish I were allowed to dedicate this work to the memory of my very dear ones: my son Milan and his wife Vlasta.

### Notes to the geographical distribution

Some 100 species of Scathophagidae occur in the Nearctic region (Vockeroth, 1965) and about 170 species in the Palaearctic region (Gorodkov, 1986). Only five species are described from southern hemisphere mostly at high altitudes in South America, in Africa and in the Oriental region as far south as to Malaya. One species, *Scathophaga stercorearia*, is cosmopolitan except for Australia.

The number of species identified in the individual countries varies widely and depends on the level of faunistic and taxonomic research. From France there are 102 species recorded (Séguy, 1934), 82 from Finland (Hackman, 1980), 42 from Norway (Ottesen, 1993; 29 in the Hardangervidda mountain plateau alone Nelson et Greve, 1997), 94 from Sweden (Hedström, 1991), 54 from British Isles (Chandler, 1998) 57 from Germany (Püchel, 1999), 45 from Switzerland (Merz et Bächli, 1998), 67 from Austria (Franz, 1989), 17 from Italy (Gorodkov et al., 1995) 30 from Hungary (Dély-Draskovits, 1981) and 74 from Poland (Draber-Moňko, 1991). From the Czech Republic there are 68 species recorded and 54 species from the Slovak Republic (Šifner, 1997a, 1999, 2000).

According to earlier authors, the Scathophagidae were considered to be a characteristic family of the northern part of the Palaearctic region. However, the putative data on a wide distribution of some species should be revised. Many northern or arctic species are circumpolar, holarctic, others occur also in northern parts of tundra, in forest-tundra and in taiga. In the arctic and very distinct zone, some species or genera are also endemic. Some species occur also in northern parts of the Oriental region (cf. Vockeroth, 1997). The eastern part of the Palaearctic region has not been investigated sufficiently and many new species and even genera may be discovered in the future. Only 16 species are described or mentioned from all of China by Chen (1940), Sun (1992, 1993) and Šifner (1999, 2002).

Some European or Central European species occur in the Mediterranean subregion not only in higher altitudes but also in lowlands, valleys of rivers, streams, shaded habitats on pastures, meadows and along running water. The mountain systems, such as the Alps, West and East Carpathians and Pyrenees are very important for the penetration of species in the east-west direction e. g. *Norellisoma alpestre* (SCHINER, 1864). Some mountain species are perhaps of the boreo-alpine distribution, but the possibility of independent evolution exists, particularly in such mountain species.

The basic lists by Kowarz (1894), Vimmer (1913 and

1930) and other faunistic notes of earlier authors are listed in the references. Some oldest and also some latest records from the territory of the Czech Republic and the Slovak Republic are those of Austrian, German or Hungarian entomologists (e. g. Mik, Handlirsch, Bergenstam, Zerny, Horvatowich, Mihályi, Tóth), and relevant specimens are deposited in the collections of Naturhistorisches Museum in Vienna (NMW) or Terészettudományi Museum in Budapest (TMB).

In the last decades the family has been intensively studied by the present author, both taxonomically and faunistically (see references). Other faunistic records are summarized in papers of the following authors: Barták (1995), Čepelák J. (1981, 1986a, b, 1989, 1991a, b, 1992a, b, 1993, 1994), Čepelák J. and Čepelák S. (1986, 1987, 1988, 1995), Dirlbek (1986a, b, 1987), Franz (1989), Chvála and Tyrner (1995), Křištofík (1988), Martinek (1994), Roháček (1995), Rozkošný (1980), Rozkošný and Vaňhara (1992, 1993a, b, 1995, 1997), Řehůřková (1988, 1991), Slamečková and Čepelák J. (1995), Vaňhara (1981, 1986), Vaňhara and Rozkošný (1997).

Voucher specimens for old faunistic records are deposited in NMW (14 species from the Czech Republic and 6 species from Slovakia) and TMB (2 species from the Czech Republic and 5 species from Slovakia). All localities of these species are marked in the text on faunistic records by “!” and with relevant abbreviations of the museum. Other old specimens from the present territory of the Slovak Republic (cf. Moczány, 1877, 1878); Thalhammer, 1899; Bartal, 1906; Brancsik, 1910; Aczél, 1939) collected in the 19<sup>th</sup> and in the 20<sup>th</sup> centuries and deposited in Museum in Budapest were totally destroyed in 1956.

### Notes to the biology of adults and larvae.

The adults are predaceous on insects or other invertebrates. Many species are common in bowery and moist habitats of various types and in different altitudes, inhabiting lowlands and mountain meadows, pastures, forest, litoral vegetation, marshes, peat bogs, etc.

Some larger species may be captured by individual netting. However, some adults (e. g. *Cordilura* spp.) hunt their prey among lower vegetation or bushes and may be driven away by the sweeping. Females oviposit into plant tissues, dung, water, underside of leaves and stems of different plants. Many larvae are predaceous, living in soil, in running water or sewage. Some larvae occur in cow, sheep, horse, dog, poultry and human excrements, feeding mostly as predators. The larvae are subcylindrical, usually tapering anteriorly but sometimes blunt, their cephalopharyngeal complex is well developed. The anterior spiracle is two-branched, with papillae, the posterior spiracle is on a short tube with three straight respiratory slits. The larval development is known only in a limited number of species (see paragraph). The species of the genus *Amaurosoma* are important pests living in flower heads of *Phleum* (Borg, 1959 and other authors). Brief information on some species was published by Smith (1989).

Quantitative samples may be obtained by sweeping, yellow pans or Malaise traps.

## Terminology and other notes

The terms and abbreviations in the text are as follows:

a) for the designation of chaetotaxy and some parts of the head and thorax

### Head

<i>ivs</i> inner vertical setae	<i>gns</i> genal setae
<i>ovs</i> outer vertical setae	<i>vbs</i> vibrissal setae
<i>pvs</i> postvertical setae	<i>scap</i> scapus
<i>fvit</i> frontal vitta	<i>ped</i> pedicellus
<i>frs</i> frontal setae	<i>fglm<sub>1</sub></i> first flagellomere
<i>ors</i> orbital setae	<i>artm<sub>1</sub></i> first aristomere
<i>ocs</i> ocellar setae	<i>artm<sub>2</sub></i> second aristomere
<i>ocps</i> occipital setae	<i>artm<sub>3</sub></i> third aristomere (arista)

### Thorax

<i>acs</i> acrostichal setae	<i>pas</i> postalar setae
<i>ass</i> apical scutellar setae	<i>phs</i> posthumeral setae
<i>bss</i> basal scutellar setae	<i>pras</i> prealar setae
<i>dcs</i> dorsocentral setae	<i>press</i> presutural setae
<i>diss</i> discal scutellar setae	<i>prpls</i> propleural setae
<i>hs</i> humeral setae	<i>prsts</i> prostigmal setae
<i>ias</i> intraalar setae	<i>sas</i> supraalar setae
<i>mspls</i> anepisternal setae	<i>scs</i> scutellar setae
<i>amspls</i> ant. anepisternal setae	<i>stpls</i> katepisternal setae
<i>ntpls</i> notopleural setae	

F<sub>1</sub> F<sub>2</sub> F<sub>3</sub> fore, mid and hind femora respectively

T<sub>1</sub> T<sub>2</sub> T<sub>3</sub> fore, mid and hind tibiae respectively

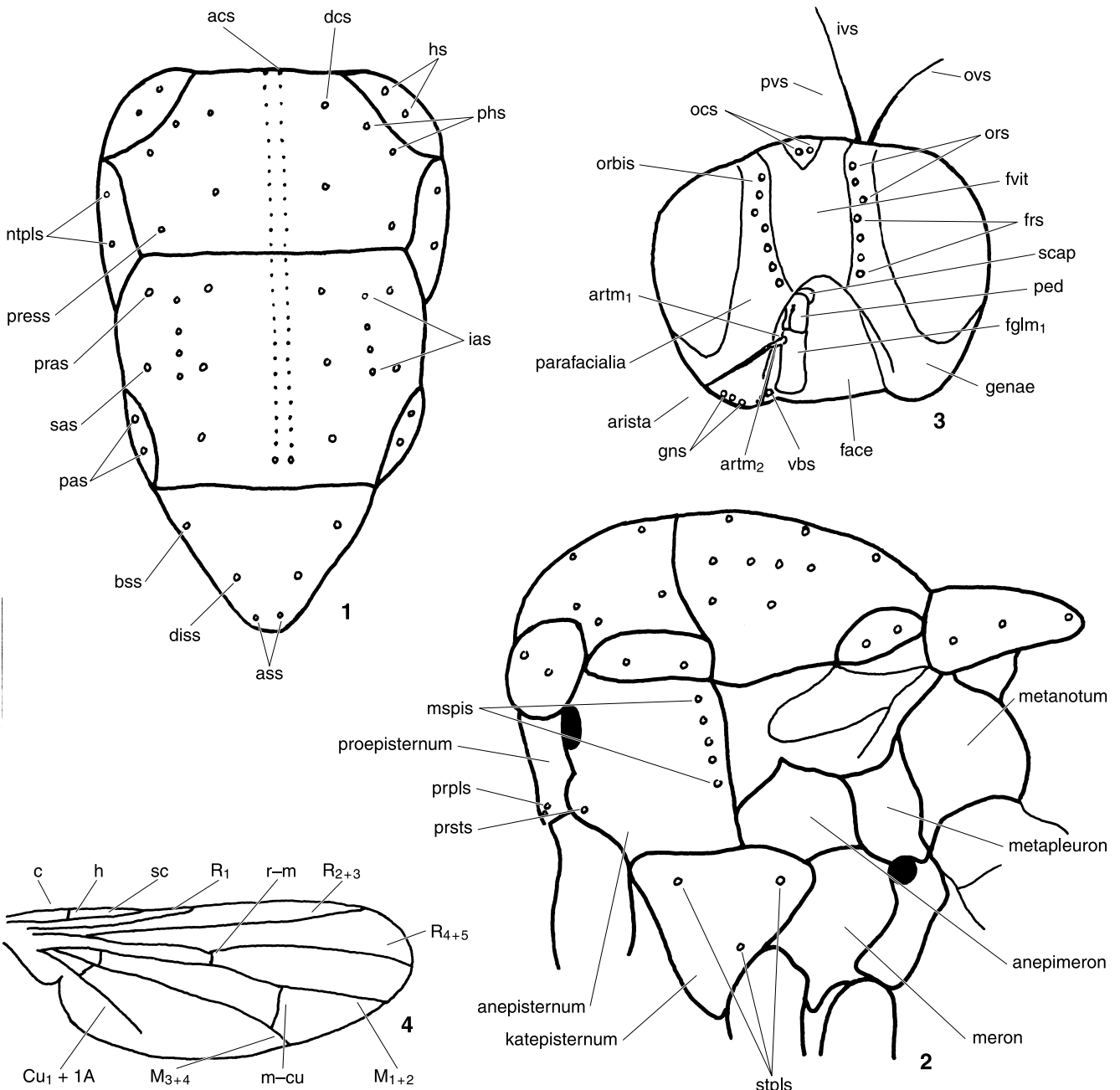


Fig. 1–4. 1 – Thorax in dorsal view. Chaetotaxy is indicated by setal position (schematically); 2 – Thorax in lateral view (schematically); 3 – Head in frontal view (schematically); 4 – Venation of wing (schematically).

b) to indicate the collections where the material examined is deposited:

NMP	National Museum, Dpt. of Entomology, Praha, CZ
MMB	Moravian Museum Brno, CZ
SMO	Silesian Museum Opava, CZ
PCS	Šifner's private collection, Praha, CZ
NMB	National Museum Bratislava, SK
NMW	Naturhistorisches Museum Wien, A
NMA	Naturhistorisches Museum Admont, Strobl's collection, A
TMB	Természttudományi Museum Budapest, H
ZMB	Zoologisches Museum Berlin, D
ZIM	Zoological Institute of the Polish Academy of Sciences, Warszawa, PL
ML	Museum Lausanne, CH

b) to indicate the origin of material examined from European or other countries:

A	Austria	IRQ	Iraq
BG	Bulgaria	H	Hungary
BiH	Bosna and Hercegovina	MNG	Mongolia
CND	Canada	N	Norway
CZ	Czech Republic	NL	Netherlands
CH	Switzerland	PL	Poland
DK	Denmark	RO	Romania
D	Germany	RUS	Russia
E	Spain	S	Sweden
F	France	SK	Slovak Republic
FIN	Finland	SLO	Slovenia
GB	Great Britain	TR	Turkey
GR	Greece	UA	Ukraine
HR	Croatia	YU	Yugoslavia
I	Italy		

c) the marks used for localities in grid squares (Zelený, 1972; Novák, 1989; Pruner and Míka, 1996) of maps of the Czech Republic and of the Slovak Republic:

- the localities confirmed by voucher specimens in collections
- × the localities based on literary data before 1960 and without voucher specimens in collections
- the localities based on literary data before 1960 and documented by the original specimens in collections or by specimens collected in these localities later on.

## Notes to the classification and diagnostic characters

The family **Scathophagidae** being also known as Cordyluridae (Schiner 1864, Hendel 1917, Stackelberg 1933, Sack 1937), Scopeumatidae (James 1950), Scatomyzidae (Becker 1894) and Scathophagidae (Séguy 1934 and 1952, Enderlein and Ringdahl 1936, Hackman 1956, Collin 1958, Gorodkov 1986 and others) includes more than 270 species in the holarctic region.

The suprageneric classification has been developed over a long period of time and the phylogeny has not been sufficiently clear until now. The earlier authors treated only taxa on the level of a genus; e. g. Fallén used three gener-

ic names (*Cordylura*, *Hydromyza*, *Scatomyza*), Zetterstedt five genera, Meigen only two, Robineau-Desvoidy seven, Macquart eight and Rondani altogether fifteen.

Schiner (1864a) for the first time divided the family into two subfamilies: Cordylurinae and Scatophaginae. In his monograph Becker (1894) created five „Unterabtheilungen“ or Stirps: Hydromyzinae, Scatophaginae, Norellinae, Clidogastrinae and Cordylurinae (for the taxon „Stirps“ used the ending – *ina*) and he himself proposed the following diagnostic characters: the shape of head, palpi, wings and the presence or absence of stigmatal and prothoracal bristles. Hendel (1917) accepted only three subfamilies: Cordylurinae, Scopeumatinae and Norellinae. Becker's concept was maintained by Séguy (1934, 1952) and Sack (1937). Hackman (1956) used the characters on the male hypopygium and recommended the division of 38 species into nine species groups. From the taxonomic point of view Nelson (1988) studied the prestomal teeth and proposed five distinct groups.

However, the system of these flies is fairly complicated at various taxonomic levels. Enderlein (1936) included the family Scatophagidae into a separate group Protomuscaria, being closely related to groups Acalyprata and Calyprata. Collin (1958) divided the family into two subfamilies: Delininae and Scatophaginae. Vockeroth (1965) integrated the family Scatophagidae into the family Anthomyiidae as a subfamily and divided it into two tribes: Scatophagini and Delinini.

The concept of Collin, namely two subfamilies, is contemporary and generally accepted (Gorodkov 1986 and Vockeroth 1987): the Delininae with 6<sup>th</sup> male abdominal tergite bare, fused with syntergite 7+8 and the propleuron bare and the Scatophaginae with 6<sup>th</sup> male abdominal tergite haired, always free from syntergite 7+8 and the propleuron haired.

Bernasconi (2000) used mitochondrial DNA as molecular markers for studying phylogenetic relationships among individual taxa of the Scathophagidae, with particular attention to the genus *Scathophaga*. The molecular data confirm the existence of a group consisting of the genera *Delina*, *Chylizosoma* and *Americina*. Phylogenetic relationships among the superfamily Muscoidea and other higher taxa or group based on mitochondrial DNA sequences were studied and discussed by Bernasconi et al. (2000a,b).

The molecular data did not confirm the separation into two subfamilies (the subfamily-groups – cf. Bernasconi et al., 1999); but did confirm the validity of separate taxa of the genera *Pogonota*, *Okeniella* and *Lasioscelus*, the two species *Scathophaga taeniopa* and *S. suilla* as a distinct taxa and confirm the identity of two species *Scathophaga inquinata* and *S. analis*.

New knowledge concerning mutual phylogenetic relationships of different levels can be expected in the future using special methods (e. g. serological ones or analysis of molecular data, i. e. analysis of mitochondrial DNA). The excellent study of Bernasconi and his co-workers concerning the family Scathophagidae (see list of references) and some other species has proved unambiguous usefulness of this method in solving problems connected with debatable

species. The basic problem of application of these methods is not in their use, but in the interpretation of the obtained data and relevant degree of their comparability with data obtained by traditional methods. At the same time it is necessary to continue collecting data on preimaginal stages, life cycles and ecological demands (including behavioural ones) of particular species. This information allows evaluation and formulation of criteria concerning these taxons.

The present status of the family **Scathophagidae** is reasonable and unambiguous with the following principal characters:

- head more or less spherical and eyes in both sexes widely separated
- frontal vitta wide in both sexes and without a pair of crossed bristles (mid frontal setae)
- lower calypter (squama alaris) greatly reduced, linear, i. e. with a straight posterior margin
- pedicel with distinct and complete dorsal longitudinal seam
- without fine hairs on underside of scutellum
- venation of wings nearly constant and without a strong costal spine at the end of the subcostal vein
- katepisternum with one to three bristles
- abdomen of males apically enlarged, of females cylindrical and apically narrowed
- the first and second tergites of the abdomen fused
- two pairs of gonapophyses

Autapomorphic characters (cf. Vockeroth, 1987) are as follows: head dichoptic in both sexes, lower calypter reduced, ventral surface of scutellum bare, meron bare and adults predaceous on insects and other invertebrates.

The morphological characters used in the text keys includes first of all the shape of the 4<sup>th</sup> and 5<sup>th</sup> abdominal sternites of males and the shape of the 6<sup>th</sup> to 8<sup>th</sup> abdominal sternites of females, the chaetotaxy of the head, thorax, etc.; only rarely the characters based on the colour were used.

My attempt at a natural system – in contrast to the check-list (Šifner, 1997) – of this family is based on the combination of some considerable morphological characters, e. g. the shape of 5<sup>th</sup> male abdominal sternite, the chaetotaxy of thorax and legs, the shape of palpi including their chaetotaxy as well as the morphological characters of some parts of male hypopygium, especially the shape of the praegonite including the number of bristles and the shape of surstyli. I placed, on the basis of these characters, the genera into 8 groups on the level of a tribe according to the following scheme (Fig. 5).

The tribe Cordilurini represents a distinct group; the male praegonite is well developed with distinct bristles of varying number and position. In the tribe Gymnomerini these bristles are strong and the praegonite is narrow, in the tribe Microprosopini and Hydromyzini the praegonite is smaller, enlarged to flattened with fine bristles. On the other hand, the male praegonite is also very developed and in some species narrow and with distinct but small bristles in the tribe Scathophagini. In the tribe Amaurosomini there is

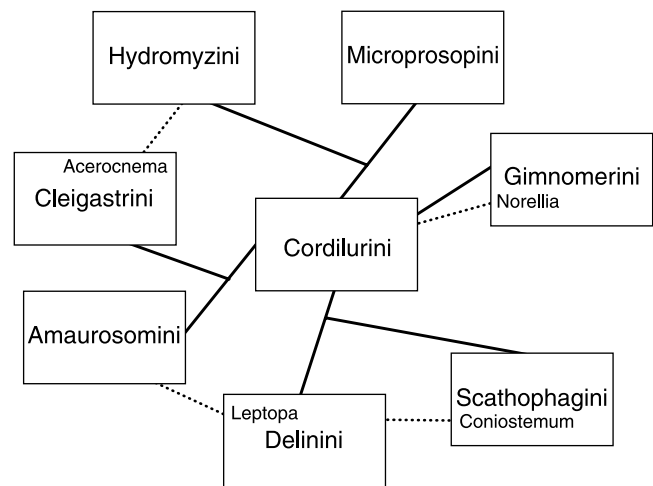


Fig. 5. Supposed relationships among the tribes.

the praegonite slightly arched with very fine bristles (which may even be absent), in the tribe Cleigastrini it is lengthened, straight and narrow, with very short bristles and in the tribe Delinini it is only very small, with very short and fine bristles.

### Key to tribes

1. Propleural and prostigmal bristles weakly developed, haired or lacking . . . . . 2
  - Propleural and prostigmal bristles distinctly developed 5
- 2(1) Propleural bristles poorly differentiated from the adjacent haired bristles . . . . . **Scathophagini**
  - Propleural bristles haired or lacking . . . . . 3
- 3(2) Palpi wide to flattened, praegonite of males short and wide . . . . . **Hydromyzini**
  - Palpi only slightly enlarged or narrowed. . . . . 4
- 4(3) Palpi narrowed and at most with small apical bristle, praegonite of males with long and strong bristles . . . . . **Gymnomerini**
  - Palpi slightly enlarged and apically with small bristles or haired, praegonite of males short and sometimes arched . . . . . **Microprosopini**
- 5(1) Palpi narrow and long, with bristles . . . . . 6
  - Palpi very short, with one to two short apical bristles or only haired, praegonite of males short and wide, with bristles . . . . . **Delinini**
- 6(5) Palpi only narrow with one to two long apical bristles or only with one short apical bristle . . . . . 7
  - Palpi narrow or slightly enlarged and always without apical bristles, praegonite always narrow and straight, with varying number of short bristles. . . . . **Cleigastrini**
- 7(6) Palpi with one to two long apical and sometimes also subapical bristles, praegonite of males wide with varying number of bristles . . . . . **Cordilurini**
  - Palpi with only short apical bristles, praegonite of males narrow and slightly arched . . . . . **Amaurosomini**

### Tribe **Cordilurini**

Praeonite of male very distinct and wide, with varying number of bristles, palpi narrow with one to two apical or subapical bristles, propleural and prostigmal bristles always distinct and always only with one katepisternal bristle, 7<sup>th</sup> female abdominal sternite is almost always divided into two to three partially or totally separate sclerites.

Genera from CZ and SK: *Cordilura* FALLÉN, 1810; *Scoliaphleps* BECKER, 1894; *Parallelomma* BECKER, 1894; *Phrosia* ROBINEAU-DESVOIDY, 1830; *Norellisoma* WAHLGREN, 1917.

Palaeartic genera: *Mixocordylura* HENDEL, 1909.

Nearctic genera: *Acicephala* COQUILLET, 1898; *Achaetella* MALLOCH, 1923; *Paratidia* MALLOCH, 1931; *Pseudacicephala* MALLOCH, 1931; *Snyderia* JAMES, 1955.

The genus *Norellisoma* is also placed in this tribe. The taxonomical value of principal characters, the strong anteroventral and posteroventral bristles arranged into two rows on femora on the fore legs of both sexes of the genus *Norellisoma* (or of the subfamily *Norellinae*) is ambiguous. In some nearctic species of the genus *Cordilura* e. g. *C. confusa* LOEW, 1863 and *C. ontario* CURRAN, 1929 and also in the Palaeartic species *C. ciliata* (MEIGEN, 1826), are similar but smaller bristles on fore femora nevertheless indistinctly differentiated from the adjacent haired bristles. From the taxonomical point of view, the following two species are very interesting: *Norellisoma agrion* SÉGUY, 1948 from Japan and *N. longiabdominum* (SUN, 1992) from China. The bristles on the fore femora are also smaller and more or less integrated in other adjacent bristles (the shape of the terminalia in both sexes are also very different). In my opinion, these two species represent a border-crossing type between the genus *Norellisoma* and *Cordilura*, probably on the level of a new genus.

The female of species *Mixocordylura longifacies* HENDEL, 1909 has on the 8<sup>th</sup> sternites the thorns in two rows and these sternites are fused with the 8<sup>th</sup> tergite likewise as in species of the genera *Norellia* and *Gymnomera*.

#### Key to genera of tribe **Cordilurini**

- First flagellomere conspicuously long and narrow, arista only short and haired . . . . . *Phrosia*
- First flagellomere short, arista of various type . . . . . 2
- 2(1) Vein R<sub>3+4</sub> S-shaped . . . . . *Scoliaphleps*
  - Vein R<sub>3+4</sub> and M<sub>1+3</sub> parallel . . . . . 3
- 3(2) Fore femora with double row of strong bristles ventrally . . . . . *Norellisoma*
  - Fore femora without strong bristles, at most with long haired bristles or small bristles ventrally . . . . . 4
- 4(3) Unicoloured dark or black species, arista plumose . . . . . *Cordilura*
- Highly variable in primary colour, yellowish to brown species, arista only widely plumose . . . . . *Parallelomma*

### Tribe **Gymnomerini**

Praeonite of male has very distinct and sometimes very long bristles, palpi narrow and at most with a very small apical bristle, propleural and prostigmal bristles are weakly developed, haired or missing, 8<sup>th</sup> female abdominal sternites fused with 8<sup>th</sup> tergite or both very close together.

Genera from CZ and SK: *Norellia* ROBINEAU-DESVOIDY, 1830; *Gymnomera* RONDANI, 1867.

Palaeartic genera: *Langechristia* OZEROV, 1999

Nearctic genera: *Bucephalina* MALLOCH, 1919; *Neogymnomera* MALLOCH, 1920.

#### Key to genera of tribe **Gymnomerini**

- 1. Fore femora with double row of strong bristles, fore tibiae with one ventral row of strong bristles . . . *Norellia*
- Fore femora and tibiae without those bristles . . . *Gymnomera*

### Tribe **Microprosopini**

Praeonite of male short and sometimes apically arched with or without short bristles, palpi slightly enlarged, never flattened, only with small bristles or haired, propleural and prostigmal bristles haired, fore tibiae interiorly with short spine-like bristles sometimes arranged totally or partially into two rows, lobes of 5<sup>th</sup> male abdominal sternite short.

Genera from CZ and SK: *Microprosopa* BECKER, 1894; *Trichopalpus* RONDANI, 1856; *Acanthocnema* BECKER, 1894; *Megaphthalmoides* RINGDAHL, 1936.

Palaeartic genera: *Allomyella* MALLOCH, 1923.

Nearctic genera: *Brooksiella* VOCKEROTH, 1995.

#### Key to genera of tribe **Microprosopini**

- Fore tibia interiorly and apically with a short spine bristle projecting at a right angle . . . . . *Acanthocnema*
- Fore tibia without such short bristle . . . . . 2
- 2(1) Fore tibia interiorly with two rows of very short bristles . . . . . *Microprosopa*
- Fore tibia interiorly with only short bristles or totally without . . . . . 3
- 3(2) Fore tibia interiorly with short bristles, first flagellomere apically widely rounded . . . . . *Megaphthalmoides*
- Fore tibia interiorly with a bare stripe without short bristles, first flagellomere in upper part acutely pointed . . . . . *Trichopalpus*

### Tribe **Hydromyzini**

Praeonite short, enlarged and at most with one short bristle, palpi wide to flattened, propleural and prostigmal bristles haired or lacking, lobes of 5<sup>th</sup> male abdominal sternite sometimes very complicated, with modified secondary lobes.

Genera from CZ and SK: *Hydromyza* FALLÉN, 1823; *Pogonota* ZETTERSTEDT, 1860; *Spaziphora*

RONDANI, 1856; *Chaetosa* COQUILLET, 1898; *Cosmetopus* BECKER, 1894; *Paracosmetopus* HACKMAN, 1956.  
 Palaearctic genera: *Ernoneura* BECKER, 1894; *Staeigeria* RONDANI, 1856; *Bostrichopyga* BECKER, 1894; *Okeniella* HENDEL, 1907; *Lasioscelus* BECKER, 1894; *Pleurochaetella* VOCKEROTH, 1965.

#### Key to genera of tribe **Hydromyzini**

- Palpi widely enlarged and flattened . . . . . 2
- Palpi lancet-like or narrow and greatly widened apically . 3
- 2(1) Five pairs of dorsocentral bristles . . . . . *Spaziphora*
- One pair (last) of dorsocentral bristles . . . . . *Hydromyza*
- 3(1) Palpi of both sexes narrow and widely widened apically, fore femora of males with two apophyses, females without apophyses . . . . . *Cosmetopus*
- Palpi only lancet-like . . . . . 4
- 4(3) One katepisternal bristle . . . . . 5
- Two katepisternal bristles, anterior twice to three times shorter than posterior . . . . . *Chaetosa*
- 5(4) Male cerci with long yellow haired bristles, fore femora of males ventrally with short bristles and one tuft of 5–7 strong bristles, female fore femora only with dark spine-like bristles . . . . . *Pogonota*
- Male cerci without bristles, fore femora of both sexes thickened and anteriorly with only dark spine-like bristles . . . . . *Paracosmetopus*

#### Tribe **Cleigastrini**

Praeonite distinctly narrow, straight or forked with one to four bristles, palpi narrow or slightly enlarged and always without long apical bristle, propleural and prostigmal bristles distinct, lobes of 5<sup>th</sup> male abdominal sternite bilobate.

Genera from CZ and SK: *Cleigastra* MACQUART, 1835; *Hexamitocera* BECKER, 1894; *Gonarcticus* BECKER, 1894; *Spathephilus* BECKER, 1894; *Acerocnema* BECKER, 1894; *Megaphthalma* BECKER, 1894.

Palaearctic genera: *Pselaphephila* BECKER, 1984.

Nearctic genera: *Synchysa* VOCKEROTH, 1995; *Peratomyia* VOCKEROTH, probably also *Dromogaster* VOCKEROTH, 1995 and *Huckettia* VOCKEROTH, 1995.

#### Key to genera of tribe **Cleigastrini**

- 1. Palpi broadened, first flagellomere long and wide, arista distinctly thickened beyond half of its length . . . *Acerocnema*
- Palpi only narrow or apically slightly broadened . . . 2
- 2(1) One or two katepisternal bristles . . . . . 3
- Three katepisternal bristles . . . . . 4
- 3(2) One katepisternal bristle, vein R<sub>1</sub> apically distinctly setose . . . . . *Megaphthalma*
- Two katepisternal bristles, vein R<sub>1</sub> bare, first flagellomere three to five times longer than wide . . . . *Hexamitocera*
- 4(2) Vein R<sub>1</sub> in apical half distinctly setose . . . *Cleigastra*
- Vein R<sub>1</sub> totally bare . . . . . 5
- 5(4) First flagellomere twice as long as wide, second aristomere distinctly prolonged, arista thickened beyond half of its length . . . . . *Gonarcticus*

- First flagellomere three times longer than wide, second aristomere not prolonged, arista thickened only basally . . . . . *Spathephilus*

#### Tribe **Amaurosomini**

Praeonite of male narrow, slightly arched and mostly with short bristles, palpi narrow and with short bristles, surstyli of males narrow and long, propleural and prostigmal bristles well developed.

Genera from CZ and SK: *Amaurosoma* BECKER, 1894; *Gonatherus* RONDANI, 1856; *Orthacheta* BECKER, 1894.

Palaearctic genera: *Mirolava* ŠIFNER, 1999

Nearctic genera: *Neorthacheta* VOCKEROTH, 1995.

#### Key to genera of tribe **Amaurosomini**

- 1. Wings darkened in anterior margin, two katepisternal bristles in posterior position . . . . . *Gonatherus*
- Wings distinctly hyaline, three katepisternal bristles, sometimes anterior katepisternal bristle very small or lacking . . . . . 2
- 2(1) Scutellum with two pairs of bristles . . . *Amaurosoma*
- Scutellum with one pair of bristles . . . . . *Orthacheta*

#### Tribe **Delinini**

Praeonite wide and short, with short or medium bristles, palpi very short with one to two bristles or only haired, propleural and prostigmal bristles distinct, lobes of 5<sup>th</sup> male abdominal sternite short.

Genera from CZ and SK: *Delina* ROBINEAU-DESVOIDY, 1830; *Micropselapha* BECKER, 1894; *Americina* MALLOCH, 1923a; *Leptopa* ZETTERSTEDT, 1838.

Nearctic genera: *Neochirosia* MALLOCH, 1917; *Plethochaeta* COQUILLET, 1901.

#### Key to genera of tribe **Delinini**

- First flagellomere very long and narrow (five times longer than wide) . . . . . *Micropselapha*
- First flagellomere not very long and narrow . . . . . 2
- 2(1) Posterior margin of eyes reniform, vibrissal callus very pointed, with a tuft of 8–11 bristles . . . . . *Leptopa*
- Posterior margin of eyes oval . . . . . 3
- 3(2) Humeral callus anteriorly with short bristles, palpi with two short bristles, apical and subapical . . . . . *Delina*
- Humeral callus anteriorly without short bristles, palpi with only one apical bristle . . . . . *Americina*

#### Tribe **Scathophagini**

Shape of male praeonite very different but always with bristles, palpi narrow and always without long apical or subapical bristles, propleural and prostigmal bristles haired and poorly differentiated from the adjacent haired bristles, 8<sup>th</sup>

female abdominal sternites always distinct and paired, always only one katapisternal bristle.

Palaeartic genera: *Scathophaga* MEIGEN, 1803; *Coniosternum* BECKER, 1894; *Ceratinostoma* MAEDE, 1885.

### Key to genera of tribe **Scathophagini**

Pleural (whole body of males) hair dense and long, surstyli always long and narrow, cerci haired, arista mostly long plumose, anterodorsal and posterodorsal rows of bristles on hind femora distinct . . . . . *Scathophaga*

Pleural hair in both sexes sparse and very short, surstyli always short, cerci not haired, arista always only bare, anterodorsal and posterodorsal rows of bristles on hind femora small and indistinct . . . . . *Coniosternum*

### Key to the Palaeartic genera of Scathophagidae

1. Propleural and prostigmal bristles distinctly developed 2
  - Propleural and prostigmal bristles small, haired or lacking . . . . . 25
- 2(1) One katapisternal bristle . . . . . 3
  - Two or three katapisternal bristles. . . . . 16
- 3(2) Palpi lancetlike . . . . . 4
  - Palpi narrow or apically slightly broadened . . . . . 5
- 4(3) Palpi with short black bristles, head in profile view more or less triangular, area between eyes slightly vaulted, cerci of males wide and shortly bristled . . . . . *Mixocordylura* HENDEL, 1909
  - Palpi without short bristles, head in profile view more or less spherical . . *Megaphthalmoides* RINGDAHL, 1936
- 5(3) Palpi narrow, with one or two apical bristles . . . . . 6
  - Palpi narrow or slightly broadened in apical third, apical bristle very weak . . . . . 13
- 6(5) First flagellomere long and very narrow . . . . . 7
  - First flagellomere short, mostly about twice longer than wide . . . . . 8
- 7(6) First flagellomere very narrow and six times longer than wide, vein R<sub>1</sub> apically bare . . . . . *Micropselapha* BECKER, 1894
  - First flagellomere narrow and three to four times longer than wide, R<sub>1</sub> apically setose . . . . . *Phrosia* ROBINEAU-DESVOIDY, 1830
- 8(6) Eyes reniform, vibrissal callus pointed, with a tuft of 8–11 bristles . . . . . *Leptopa* ZETTERSTEDT, 1838
  - Eyes not reniform but oval or rounded, vibrissal callus not pointed . . . . . 9
- 9(10) Fore femora with double row of strong ventral bristles . . . . . 10
  - Fore femora without rows of strong ventral bristles. . 11
- 10(9) Fore tibiae with double row of strong ventral bristles . . . . . *Norellisoma* WAHLGREN, 1917
  - Fore tibiae with only one row of strong ventral bristles . . . . . *Norellia* ROBINEAU-DESVOIDY, 1830
- 11(9) Vein R<sub>4+5</sub> S – shaped.. *Scoliaphleps* BECKER, 1894
  - Vein R<sub>4+5</sub> and M<sub>1+2</sub> parallel. . . . . 12
- 12(11) Dark to black species. . *Cordilura* FALLÉN, 1810

- Yellowish to brown species . . . . . *Parallelomma* BECKER, 1894
- 13(5) Fore tibiae interiorly and apically with one short spine-like bristle projecting in a right angle, palpi only haired . . . . . *Acanthocnema* BECKER, 1894
- Fore tibiae without short spine-like bristle . . . . . 14
- 14(13) First flagellomere narrow, arista short haired or bare . 15
  - First flagellomere wide, arista sparsely plumose . . . . . *Megaphthalma* BECKER, 1894
- 15(14) Arista distinctly thickened basally . . . . . *Mirolava* ŠIFNER, 1999
  - Arista not thickened basally. . *Americina* MALLOCH, 1923
- 16(2) Two katapisternal bristles . . . . . 17
  - Three katapisternal bristles . . . . . 19
- 17(16) Anterior margin of wings darkened . . . . . *Gonatherus* RONDANI, 1856
  - Anterior margin of wings not darkened . . . . . 18
- 18(17) First flagellomere very narrow, three to five times longer than wide . . . . . *Hexamitocera* BECKER, 1894
  - First flagellomere not very narrow, only twice longer than wide . . . . . *Amaurosoma* BECKER, 1894 partim
- 19(16) Palpi very short, shorter than half of proboscis . . . . . *Delina* ROBINEAU-DESVOIDY, 1830
  - Palpi longer . . . . . 20
- 20(19) First flagellomere narrow, three times longer than wide, interiorly white in varying degree . . . . . *Spathephilus* BECKER, 1894
  - First flagellomere only narrow. . . . . 21
- 21(20) One pair of scutellar bristles . . . . . 22
  - Two pairs of scutellar bristles . . . . . 24
- 22(21) Vein R<sub>1</sub> setose in apical half . . . . . *Cleigastra* MACQUART, 1835
  - Vein R<sub>1</sub> bare . . . . . 23
- 23(22) Palpi apically narrow, with fine yellow bristles, katapisternal bristle not always distinct, fore femora with varying number of short ventral bristles, praegonite of males always arched . . . . . *Amaurosoma* BECKER, 1894 partim
  - Palpi apically slightly enlarged, with short black bristles, praegonite of males flattened, with one bristle . . . . . *Pselaphophila* BECKER, 1894
- 24(21) First flagellomere anteriorly acutely pointed . . . . . *Orthacheta* BECKER, 1894
  - First flagellomere apically blunt or rounded . . . . . *Gonarcticus* BECKER, 1894
- 25(1) Palpi broadened to flattened, with very short bristles apically . . . . . 25
  - Palpi lancetlike, narrow, sometimes widely enlarged before end. . . . . 28
- 26(25) First flagellomere short, arista not thickened . . 27
  - First flagellomere long and wide, arista thickened beyond half of its length . . . . . *Acerocnema* BECKER, 1894
- 27(26) Five pairs of dorsocentral bristles . . . . . *Spaziphora* RONDANI, 1856
  - One pair of dorsocentral bristles . . . . . *Hydromyza* FALLÉN, 1819
- 28(25) Palpi of both sexes narrow but only widened apically . . . . . *Cosmetopus* BECKER, 1894



- Palpi lancetlike or narrow. . . . . 29
- 29(28) Palpi lancetlike. . . . . 30
- Palpi narrow . . . . . 41
- 30(29) One or one katapisternal bristle . . . . . 31
- Two katapisternal bristles, anterior bristle three times shorter than posterior one . . . *Chaetosa* COQUILLET, 1898
- 31(29) One katapisternal bristle. . . . . 32
- Without katapisternal bristle *Ernoneura* BECKER, 1894
- 32(31) Fore tibiae interiorly with one to two rows of very short bristles or without them . . . . . 33
- Fore tibiae with or without anterodorsal row of distinct bristles . . . . . 35
- 33(32) Fore tibiae interiorly with narrow stripe without bristles, first flagellomere in upper part acutely pointed . . . . . *Trichopalpus* RONDANI, 1856
- Fore tibiae interiorly with one or two rows of very short bristles . . . . . 34
- 34(33) Fore tibiae with two rows of very short bristles . . . . . *Microprosopa* BECKER, 1894
- Fore tibiae interiorly with only one row of very short bristles . . . . . *Allomyella* MALLOCH, 1923
- 35(32) Mid tibiae on basal half with four to five long and strong posterodorsal bristles, katapisternum long haired, wings darkened, veins R<sub>4+5</sub> and M<sub>1+2</sub> parallel and arched down . . . . . *Staegeria* RONDANI, 1856
- Mid tibiae without such bristles . . . . . 36
- 36(35) Fore femora of both sexes thickened, with short strong ventral bristles . . . . . 37
- Fore femora of both sexes not thickened . . . . . 38
- 37(36) Cerci of males with yellow long haired bristles, female 8<sup>th</sup> abdominal sternites long and wide . . . . . *Pogonota* ZETTERSTEDT, 1860
- Cerci of males without such bristles, female 8<sup>th</sup> abdominal sternites long and narrow . . . . . *Paracosmetopus* HACKMAN, 1956
- 38(36) Veins R<sub>4+5</sub> and M<sub>1+2</sub> parallel or entirely divergent . . . . . 39
- Veins R<sub>4+5</sub> and M<sub>1+2</sub> convergent or only apically divergent . . . . . 40
- 39(38) Veins R<sub>4+5</sub> and M<sub>1+2</sub> parallel at margin of wing, cerci and surstyli caudally widened with long haired bristles, first flagellomere two and half times longer than wide . . . . . *Okeniella* HENDEL, 1907
- Veins R<sub>4+5</sub> and M<sub>1+2</sub> divergent up to margin of wing, lateral margins of 3<sup>rd</sup> and 4<sup>th</sup> male abdominal sternites enlarged and with long hairs . . . . . *Pleurochaetella* VOCKEROTH, 1965
- 40(32) Veins R<sub>4+5</sub> and M<sub>1+2</sub> convergent, cerci and surstyli of males without long haired bristles . . . . . *Bostrichopyga* BECKER, 1894
- Vein R<sub>4+5</sub> and M<sub>1+2</sub> apically divergent, cerci and surstyli of males with long haired bristles . . . . . *Lasioscelus* BECKER, 1894
- 41(29) Propleural and prostigmal bristles poorly differentiated from adjacent hairs . . . . . 42
- Propleural and prostigmal bristles haired but distinct among adjacent hairs . . . . . 43

- 42(41) Palpi very long, almost as long as proboscis, covered with short black bristles, propleural and prostigmal bristles missing . . . . . *Ceratinostoma* MEADE, 1885
- Palpi long, narrow, apically with short dark and longer yellowish bristles . . . . . 44
- 43(42) Lateral parts of body densely and sometimes long haired, surstyli mostly always long and narrow, cerci haired . . . . . *Scathophaga* MEIGEN, 1803
- Lateral parts of body of both sexes sparsely and very shortly haired, surstyli short, cerci not haired . . . . . *Coniosternum* BECKER, 1894
- 44(42) Anterior margin of scutum with one pair of short spine-like bristles . . . . . *Gynomera* RONDANI, 1867
- Anterior margin of scutum without one pair of short spine-like bristles . . . . . *Langechristia* OZEROV, 1999

**Taxonomy and faunistics – keys, descriptions, review of taxa examined from Czech Republic, Slovak Republic and some Palaearctic species**

In the territory of the Czech and Slovak Republics altogether 33 genera of the family Scathophagidae have been identified.

**Tribe Cordilurini**

**Genus *Cordilura* FALLÉN, 1810**

*Cordilura* FALLÉN, 1810: 15 (type species: *Musca pubera* LINNEAEUS, 1758 – by mon., misident.) (= *Cordylura rufimana* MEIGEN, 1826)

**General characters.** Body in primary colour dark, completely black, shiny and sometimes totally or partially grey dusted and strongly bristled, body-size 6–14 mm. Head more or less spherical with relatively short antennae, arista plumose, rarely bare, palpi predominantly dark, narrow, rarely enlarged in its central part, with a long apical or subapical bristle, vibrissal callus with one or more vibrissal bristles. Frontal vitta, parafrontals, parafacials, genae and face of various colour from yellow to black. All basal bristles used for distinguishing diagnoses as well as *ivs*, *ovs*, *ocs*, *ors*, *frs*, *vbs* and *gns* developed. Thorax generally dark, anepisternum sometimes partially, katapisternum always haired. Chaetotaxy of thorax: *acs* short, sometimes sparse or absent, *dcs* 5, *hs* 2, *pras* 1, *sas* 1, *ias* 1–2, *pas* 2, *scs* 2–4, *prpls* 1–2, *prsts* 1, *mspls* 2–7, *stpls* 1. Legs: F<sub>1</sub>–F<sub>3</sub> generally dark, T<sub>1</sub>–T<sub>3</sub> yellow, brown or black with distinct bristles. Wings hyaline, slightly yellowed or apically shadowed, veins R<sub>2+3</sub> and M<sub>1+2</sub> parallel, vein R<sub>1</sub> apically sometimes with short bristles. Abdomen of males strongly enlarged apically, 4<sup>th</sup> sternite of different form and specific for individual species, 5<sup>th</sup> sternite distinctly bilobate, the form of surstylus and praegonite of different form and are unambiguously used for differential diagnosis, the form of postgonite and epiphallus are uniform. Ab-

domen of females cylindrical and tapered, the 8<sup>th</sup> sternites extended and sometimes with short bristles, the 7<sup>th</sup> sternite is divided into three parts (except *Cordilura ciliata*): one central apodeme in a “daggerform” and two lateral parts more or less the form of symmetrical rectangular sclerites, the 6<sup>th</sup> sternite of different form and specific for individual species.

The genus was revised in North America by James (1955); the author included 26 species which he divided into 4 subgenera. Vockeroth (1965) broadened the subgeneric concept and quoted 42 species into 6 subgenera in the Nearctic region. Nowadays from the Palaearctic region there are recorded 41 species of the genus *Cordilura s. l.* (Gorodkov 1986, Sasakawa 1986, Sun 1993, Ozerov 1997). The status of three doubtful species is resolved as follows: *Cordylura ruficauda* ZETTERSTEDT, 1838 is a junior synonym of *Norellisoma spinimanum* (cf. Šifner 1995b), *Cordylura similis* SIEBKE, 1873 is a valid species (cf. Nelson, 1998) and *Cordilura impudica* RONDANI, 1867 is a valid species (cf. Chandler 1998). Wallace and Neff (1971) investigated the biology of 12 species which were found in the eastern United States. Sack (1937) described the species *Cordylura bezzi* from the Alps; this species was in subsequent years linked by Vockeroth (unpublished) with the genus *Bucephalina*. The voucher specimen (male) is deposited in the collection of the Zool. Museum in Berlin and it is designated in following way: **1.** The blue label with designation a Homotype, compared by J. R. V., 1956; **2.** The red label with designation “Typus”; **3.** The label with locality Livrio, 16. 6. 1900, Italien, VI., 76072, 1 male; **4.** The pink label with *Bucephalina (Neogimnamera) bezzi*, det. J. R. V., 1956 (J. R. Vockeroth, note of the author).

The larvae feed like stem miners in culms of several species of the genus *Carex* and *Scirpus* (Cyperaceae); only the larvae of *C. praeusta* LOEW feed in culms of *Juncus effusus* (Juncaceae). The biology of all palaearctic species is probably similar; they develop in *Carex* spp., hibernate as larvae or pupae which remain in basal part of the culm (near Prague, CZ, note of the author).

#### Key to species of genus *Cordilura*

1. Scutellum with one pair of strong bristles . . . . . 2
  - Scutellum with two pairs of strong bristles . . . . . 5
- 2(1) Scutellum bare . . . . . 3
  - Scutellum partly or totally haired . . . . . 4
- 3(2) Wings clear, all tibiae black, lobes of 5<sup>th</sup> male abdominal sternite slightly arched inwards (Fig. 27), 6<sup>th</sup> female abdominal sternite oval and basally with distinct projection (Fig. 30) . . . . *Cordilura picipes* (MEIGEN, 1826)
  - Wings apically darkened (females less distinct), all tibiae brown or yellow, lobes of the 5<sup>th</sup> male abdominal sternite straight (Fig. 55), 6<sup>th</sup> female abdominal sternite oval and caudally with distinct bristles (Fig. 58) . . . . . *Cordilura umbrosa* (LOEW, 1863)

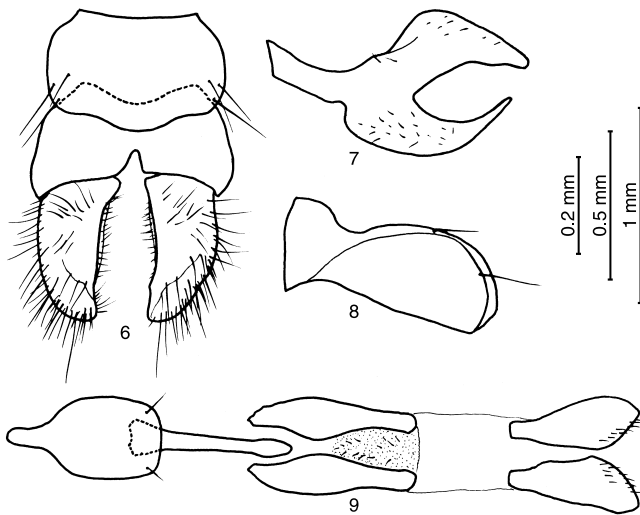
- 4(2) Arista distinctly plumose, wings apically darkened, all tibiae yellow . . *Cordilura impudica* (RONDANI, 1867)
  - Arista only basally shortly plumose and apically bare, wings hyaline, all tibiae dark . . . . . *Cordilura proboscoidea* (ZETTERSTEDT, 1838)
- 5(1) Palpi yellow . . . . . 6
  - Palpi black . . . . . 7
- 6(5) Pedicel and scapus yellow or brown, body black in primary colour and dense covering of grey dusted . . . . . *Cordilura picticornis* (LOEW, 1864)
  - Pedicel and scapus black, body not grey dusted . . . . . *Cordilura similis* (SIEBKE, 1873)
- 7(5) All femora and tibiae entirely black . . . . . 8
  - All femora black but apically yellow, all tibiae yellow to brown . . . . . 9
- 8(7) Thorax without acrostichal bristles, body shiny black, fore femur of male on under surface with long white hairs, surstylus wide, without a ventral lobe. (Fig. 19) . . . . . *Cordilura ciliata* (MEIGEN, 1826)
  - Thorax with acrostichal bristles, body only dark, fore femur of male without long white hairs, surstylus wide, with a minute ventral lobe (Fig. 15) . . . . . *Cordilura atrata* (ZETTERSTEDT, 1846)
- 9(7) Tarsi with black spots on under surface . . . . . 10
  - Tarsi without black spots on under surface . . . . . 11
- 10(9) Body in primary colour dark and grey dusted, surstylus wide, apically with a shallow notch (Fig. 11) . . . . . *Cordilura aemula* (COLLIN, 1958)
  - Body black in primary colour, with silver or whitish dusted stripe, surstylus wide with a deep apical notch (Fig. 40) . . . . . *Cordilura pubera* (LINNAEUS, 1758)
- 11(9) All tibiae yellow *Cordilura pudica* (MEIGEN, 1826)
  - Only fore tibiae yellow, mid and hind tibiae brown or black-brown . . . . . 12
- 12(11) First flagellomere twice longer than wide, surstylus unforked (Fig. 48) . . *Cordilura rufimana* (MEIGEN, 1826)
  - First flagellomere three times longer than wide, surstylus forked (Fig. 7) . . *Cordilura aberrans* (BECKER, 1894)

#### *Cordilura aberrans* (BECKER, 1894)

*Cordylura aberrans* BECKER, 1894: 91

Material examined: MNG 1 ♂ 1 ♀, N 1 ♂, RUS 1 ♂ 1 ♀.

Body-length 8–10 mm, dark. Head: ors 3, *frs* 5, *fvit* brown to dark, orbits dark, parafacials, genae and face whitish, *scap* and *ped* black, *fglm*<sub>1</sub> black, arista plumose, vibrissal callus with 3 bristles, palpi dark. Thorax: *acs* rare, *scs* 4 equal in size, *prpls* 1, *prsts* 1, anepisternum whitish dusted, katepisternum haired, F<sub>1–3</sub> back, T<sub>1</sub> yellow, T<sub>2–3</sub> dark-brown, tarsi yellow, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite twice wider than long and laterally with three distinct bristles, lobes of 5<sup>th</sup> sternite apically very narrowed, with distinct bristles (Fig. 6), surstylus deeply indented (Fig. 7), praegonite bilobate with two dorsal bristles (Fig. 8); female – 6<sup>th</sup> sternite basally very narrowed, distally with two distinct bristles, central apodeme



Figs 6–9. *Cordilura aberrans* (BECKER). 6 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 7 – surstylus; 8 – praegonite; 9 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 6, 9; Scale 0.5 mm: Fig. 7; Scale 0.2 mm: Fig. 8.

of 7<sup>th</sup> sternite basally enlarged, lateral sclerites caudally very narrowed, the area between sclerites slightly sclerotized, with very short bristles, 8<sup>th</sup> sternites apically enlarged, with two rows of short bristles (Fig. 9).

**Distribution:** The species is distributed in northern part of the Palaearctic region from Scandinavia (Norway) to the far east of Russia (Gorodkov, 1986), in Mongolia in particular recorded by Gorodkov (1986) and by Šifner (1975).

Not yet found in CZ and SK.

### *Cordilura aemula* (COLLIN, 1958)

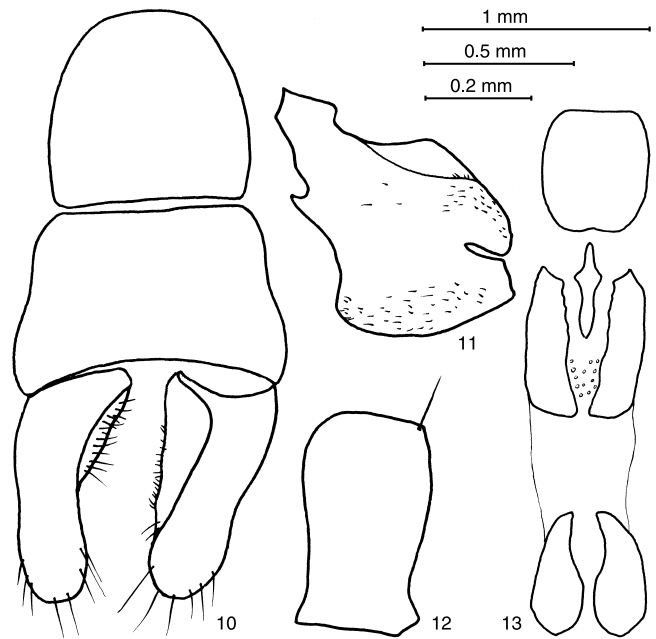
*Cordilura aemula* COLLIN, 1958: 43

**Material examined:** CZ 7 ♂♂ 4 ♀♀.

**Body-length** 10–12 mm, dark and grey on thorax and abdomen. **Head:** *ors* 3, *frs* 4, *fvit* yellowish brown, orbits dark, parafacials and genae yellow, face white, *scap* and *ped* black, *fglm*<sub>1</sub> black, arista plumose, palpi dark. **Thorax:** *acs* sparse and long, *ias* 2, *scs* 4 equal in size, *prpls* 1, *prsts* 1, *mspls* 4, anepisternum sparsely haired posteriorly, katapisternum totally yellow haired, F<sub>1–3</sub> black, T<sub>1–3</sub> yellow, tarsi with black spots on ventral surface. **Abdomen:** male – 4<sup>th</sup> sternite proximally oval, lobes of 5<sup>th</sup> sternite in basal inside with distinct short bristles (Fig. 10), surstylus wide and apically indented (Fig. 11), praegonite rectangular, with apical bristle (Fig. 12); female – 6<sup>th</sup> sternite wide, central apodeme of 7<sup>th</sup> sternite short, 8<sup>th</sup> sternites apically broadened without bristles (Fig. 13).

**Distribution:** The species is known only from Great Britain (its type localities), Estonia (Elberg, 1965) and the Czech Republic (Šifner, 1997b). Found in CZ by sweeping on a meadow with a growth of *Carex* spp.

**CZ:** 6650 Vráž u Písku.



Figs 10–13. *Cordilura aemula* (COLLIN). 10 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 11 – surstylus; 12 – praegonite; 13 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 10, 13; Scale 0.5 mm: Fig. 11; Scale 0.2 mm: Fig. 12.

### *Cordilura atrata* (ZETTERSTEDT, 1846)

*Cordilura atrata* ZETTERSTEDT, 1846: 2002

*Cordilura beringensis* MALLOCH, 1923: 198 (synmized by Vockeroth, 1965: 827)

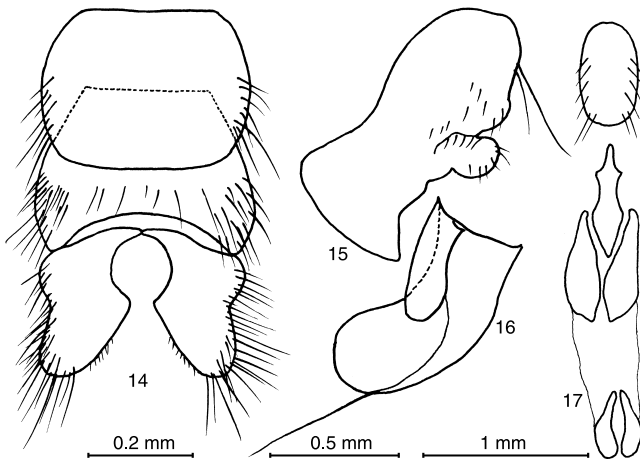
**Material examined:** CZ and SK 14 ♂♂ 10 ♀♀, FIN 1 ♂, RUS 1 ♂, CAN 3 ♂♂ 3 ♀♀.

**Body-length** 6–8 mm, dark. **Head:** *ors* 3, *frs* 4, *fvit* of male dark and of female brown, orbits dark, parafacials, genae and face yellow with whitish pollination, *scap* dark, *ped* brownish, *fglm*<sub>1</sub> apically rounded, arista plumose, palpi dark. **Thorax:** *acs* rare, *phs* 1 short, *hs* 2, *ias* 2, *scs* 4 equal in size, *prpls* 1, *prsts* 1, *mspls* 5 and four shorter in parallel rows, 4–5 bristles short in position *amspls*, katapisternum haired, F<sub>1–3</sub> and T<sub>1–3</sub> dark, tarsi on under side brown, R<sub>1</sub> bare or with very short bristles. **Abdomen:** male – 4<sup>th</sup> sternite with strong bristles laterally, lobes of 5<sup>th</sup> sternite short and apically narrowed (Fig. 14), surstylus wide and with a ventral lobe (Fig. 15), praegonite with a basal lobe and one very long dorsal bristle (Fig. 16); female – 6<sup>th</sup> sternite oval, central apodeme of 7<sup>th</sup> sternite broad and short, 8<sup>th</sup> sternites basally very narrowed without bristles (Fig. 17).

**Distribution** (Map 1).

Holarctic species was collected by sweeping on mountain meadows and peat-bogs and very rarely also in lowlands i. e. near Prague (Central Bohemia) or Lednice (South Moravia), (cf. Šifner, 1995b and 1999a).

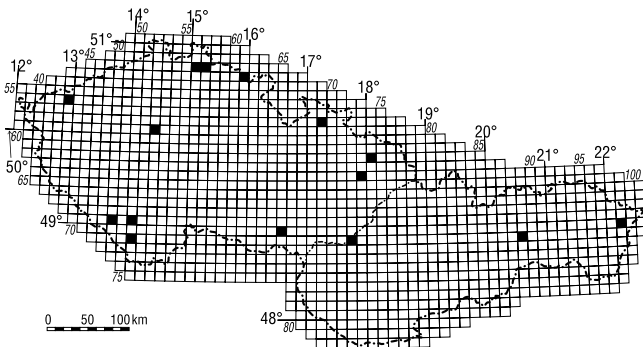
**CZ:** Literary data – Silesia, without localities (Pax, 1921).



Figs 14–17. *Cordilura atrata* (ZETTERSTEDT). 14 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 15 – surstylus; 16 – praegonite; 17 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 14, 17; Scale 0.5 mm: Fig. 15; Scale 0.2mm: Fig. 16.

Further localities: 5256 Bedřichov, 5257 Karlov, 5361 Rýchory, 5643 Nové Město, 5869 Domášov, 5953 Praha-Háje, 6274 Jistebník nad Odrou, 6473 Kojetín, 6947 Jezerní slat swamp, Kvilda, Teřevská slat swamp, 7047 Chalupská slat swamp, 7049 Spálenec, Libínské Sedlo near Prachatice, 7065 Vranovice, 7149 Černý Kříž.

SK: 7099 Vihorlat Mts., 7178 V. Javorina Mt., 7188 Stratená.



Map 1. The distribution of *Cordilura atrata* (ZETTERSTEDT).

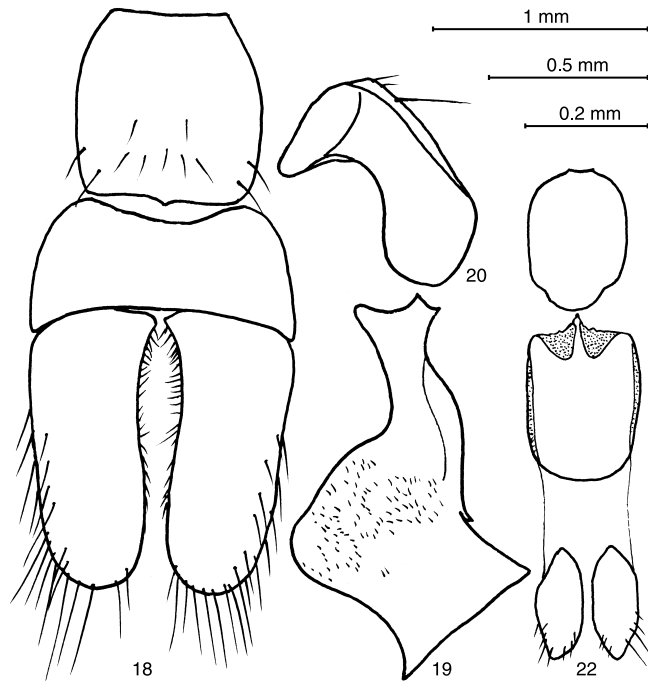
### *Cordilura ciliata* (MEIGEN, 1826)

*Cordylura ciliata* MEIGEN, 1826: 231

*Cordylura rubrifrontata* BECKER, 1894: 91 (synonymized by Šifner, 1977c: 397)

Material examined: CZ and SK 169 ♂♂ 171 ♀♀.

Body-length 8–14 mm, distinctly black and shiny. Head: *ors* 3, *frs* 4, *fvit* black, orbits, parafacials and genae black, face whitish pollinose, *scap*, *ped* and *fglm*<sub>1</sub> black, arista plumose, palpi black. Thorax: *acs* missing, *ias* 1, *sas* 1, *scs* 4, *prpls* 1, *prsts* 1, *mspls* 3–4, anepisternum bare, katepisternum haired, F<sub>1–3</sub> black and long, white ventral hairs in male, all tibiae and tarsi black. Abdomen: male – 4<sup>th</sup> sternite only



Figs 18–22. *Cordilura ciliata* (MEIGEN). 18 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 19 – surstylus; 20 – praegonite; 22 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 18, 21, 22; Scale 0.5 mm: 19; Scale 0.2 mm: Fig. 20.

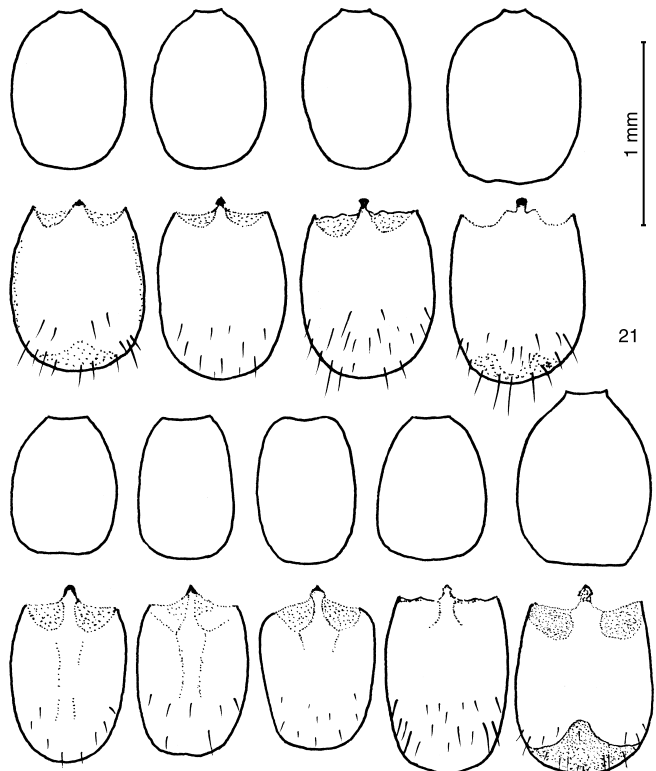
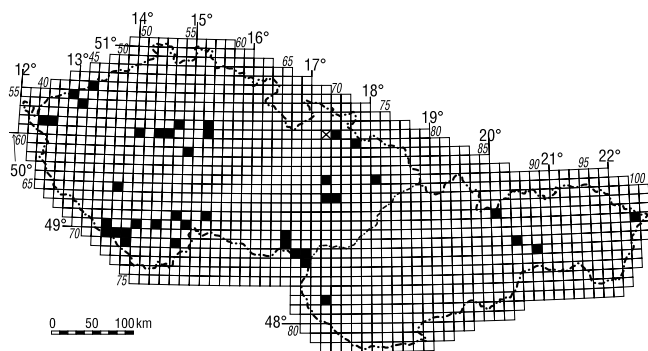


Fig. 21. – the variability of 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites.

slightly extended, lobes of 5<sup>th</sup> sternite wide and long (Fig. 18), surstylus wide and apically straight (Fig. 19), praegonite



Map 2. The distribution of *Cordilura ciliata* (MEIGEN).

apically broadened with three dorsal bristles (Fig. 20); female – 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite entire, central apodeme proximally slightly developed (Fig. 21), 8<sup>th</sup> sternites broad, with apical bristles of different sizes (Fig. 22).

**Distribution** (Map 2): Palearctic species is common in moist meadows containing growth of *Carex* spp., at various altitudes. Distribution is random in CZ and probably also in SK, maximal occurrence on lowlands in second part of July and in higher altitudes about 800–1000 m a.s.l. during August.

**CZ:** Data from literature – 5840 ! Frant. Lázně (NMW) (Vimmer, 1913), 5968 Velké Losiny (Czižek, 1908a).

**Further localities:** 5445 Kálek, 5543 Boží Dar-Myslivny, 5644 Jakubov, 5841 Čistá u Sokolova, 5854 Čelákovice, 5857–58 Žehuňský rybník pond, 5950 Chyňava, 5962 Praha-Braník, Praha-Krč, 5953 Praha-Milíčov, 5957 Velký Osek, 5970 Srkrbovice, 6072 Loděnice, 6155 Sázava, 6469 Grygov, 6548 Kadov, 6574 Zubří, 6669 Kojetín, 6670 Chropyně, 6854 Horusický rybník pond, 6857 Kunžak, 6947 Kvilda, Churáňov, Popelná, 6950 Nebahovy, 6952 Hluboká nad Vltavou, 6955 Stráž nad Nežárkou, 7047–48 Borová Lada, 7048 Malá niva, 7049 Spálenec, 7065 Strachotín, 7149 Mrtvý luh nature preserve, Kyselovský les forest, Černý Kříž, 7154 Jílovice, 7165 Dolní Věstonice, 7266 Valtice, Lednice, 7267 Tvrdonice, 7367 Lanžhot-Soutok.

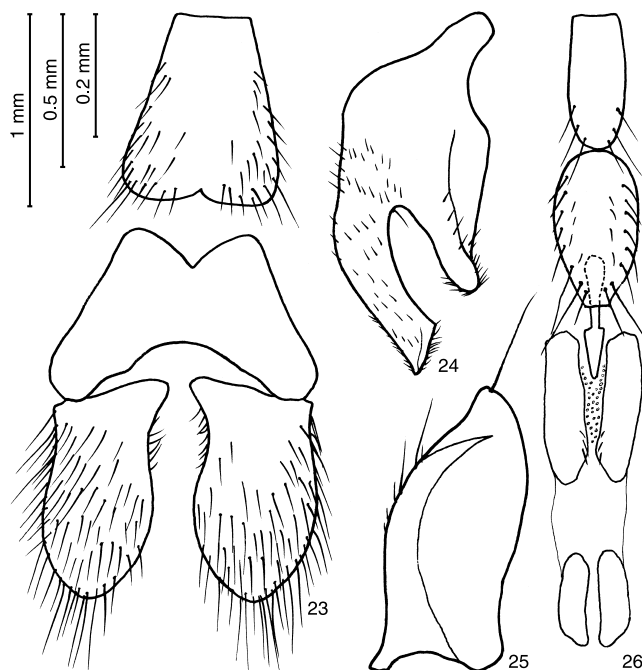
**SK:** 6785 Kondratova, 6886 Štrbské pleso, 6900 Nová Sedlica, 7188 Stratená, 7290 Úhorná, 7769 ! Sv. Jur (NMW), Šúr, 8278 Štúrovo.

### *Cordilura impudica* (RONDANI, 1867)

*Cordilura impudica* RONDANI, 1867: 97

**Material examined:** GB 1 ♂ 1 ♀.

Body-length 10 mm, dark. Head: *ivs* very long, *pvs* short, *ors* 3, *frs* 6, *fvit* brown to dark, orbits, parafacials and genae dark, covered with white dusted, face white, *scap* and *ped* dark, *fglm*<sub>1</sub> dark and 2.5 times longer than wide, arista plumose, vibrissal callus brown with 1 strong and 2 minute bristles, *gns* 5, palpi brown. Thorax: *acs* long, *ias* 2, without *sas*, *pas* 2 very long, *scs* 2 very long, scutellum densely haired, *prpls* 2, *prsts* 1, *mspls* 7, anepisternum sparsely haired, katepisternum entirely haired, F<sub>1-3</sub> dark and F<sub>1</sub> on



Figs 23–26. *Cordilura impudica* (RONDANI). 23 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 24 – surstylus; 25 – praegonite; 26 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 23, 26; Scale 0.5 mm: Fig. 24; Fig. 0, 2 mm: Fig. 25.

under surface with short whitish hairs, all tibiae and tarsi yellow, wings apically darkened, R<sub>1</sub> apically distinctly setose. Abdomen: male – 4<sup>th</sup> sternite rectangular, proximally narrowed and distally indented, lobes of 5<sup>th</sup> sternite with long bristles (Fig. 23), surstylus forked (Fig. 24), praegonite with six dorsal bristles of various size and with one very long apical bristle (Fig. 25); female – 6<sup>th</sup> sternite oval, very narrowed distally and with very strong bristles, central apodeme of 7<sup>th</sup> sternite extending across one third of 6<sup>th</sup> sternite, 8<sup>th</sup> sternites rectangular, slightly pointed apically without bristles (Fig. 26).

**Distribution:** The species was described by Rondani (1867) from the vicinity of Parma (“in agri parmensis planitie”). Sack (1937) treated it as a subspecies of *C. pudica* (MEIGEN, 1826). The classification as species was recently considered to be doubtful by Gorodkov (1986) but confirmed by Chandler (1998).

Not yet found in CZ and SK.

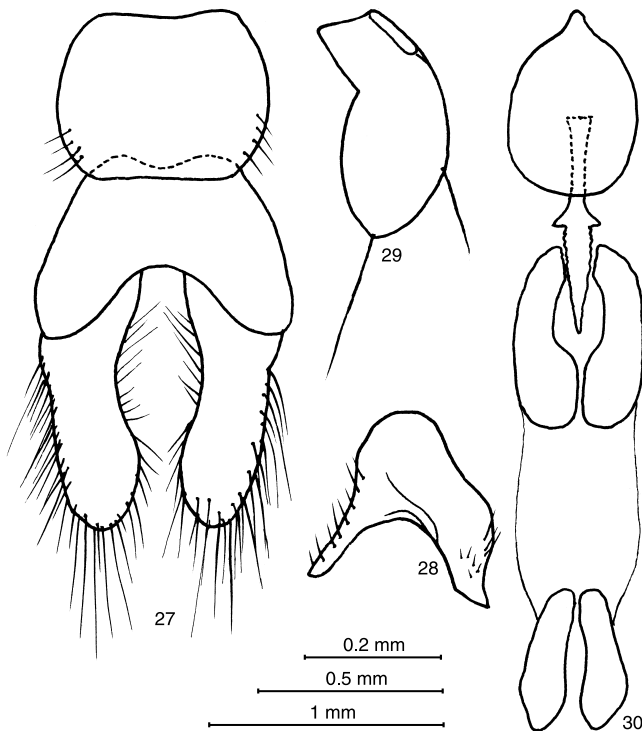
### *Cordilura picipes* (MEIGEN, 1826)

*Cordilura picipes* MEIGEN, 1826: 232

*Cordilura biseta* LOEW, 1864: 21 (synonymized by Pandellé, 1901: 322)

**Material examined:** CZ and SK 15 ♂♂ 12 ♀♀, MNG 1 ♂ 1 ♀, RUS 2 ♂♂ 2 ♀♀.

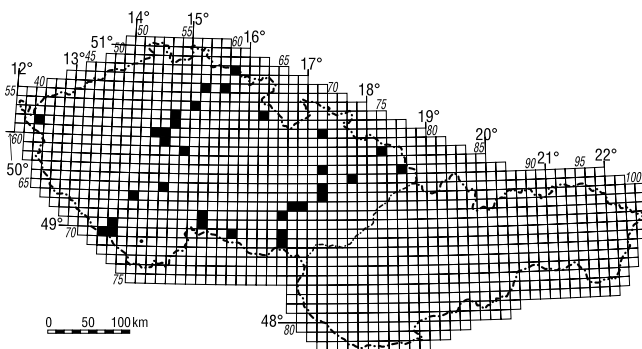
Body-length 6–8 mm, dark. Head: *ors* 3, *frs* 3, *fvit* black, orbits, parafacials and genae black, face white, *scap*, *ped* and *fglm*<sub>1</sub> black, *artm*<sub>1</sub> wide, *artm*<sub>2</sub> distinctly narrowed,



Figs 27–30. *Cordilura picipes* (MEIGEN). 27 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 28 – surstylus; 29 – praegonite; 30 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 27, 30; Scale 0.5 mm Fig. 29; Scale 0.2 mm Fig. 28.

arista plumose, palpi black. Thorax: *acs* sparse and only praescutellar distinct, *sca* 2, *asca*s only very short, *prpls* 1, *prsts* 1, *mspls* 5, anepisternum bare, katepisternum haired, F<sub>1–3</sub> and T<sub>1–3</sub> dark, tarsi brown, wings darkened, with distinct venation, R<sub>1</sub> apically setose. Abdomen: male – lobes of 5<sup>th</sup> sternite slightly arched inwards (Fig. 27), surstylus widely forked (Fig. 28), praegonite with small basal lobe and 1 dorsal and 1 apical bristle (Fig. 29); female – 6<sup>th</sup> sternite oval with distinct projection proximally, central apodeme of 7<sup>th</sup> sternite long, reaching half of 6<sup>th</sup> sternite, 8<sup>th</sup> sternite apically tapered, without bristles (Fig. 30).

Distribution (Map 3): The species is distributed sparsely in west and central Europe from the British Isles to central and southern parts of Russia (Gorodkov, 1986), occurring also in Mongolia (Šifner, 1975).



Map 3. The distribution of *Cordilura picipes* (MEIGEN).

In CZ and SK it is distributed only rarely in moist meadows with a growth of *Carex* spp.

CZ: Data from literature – 7151 Český Krumlov (Vimmer, 1913).

Further localities: 5260 Pančická louka meadow, 5457 Sedmihorky, 5459 Studenec, 5656 Jabkenice, 5754 Otradovice, 5763 Chábory, 5840 ! Frant. Lázně (NMW), 5854 Čelákovice, 5952 Praha-Krč, 5953 Praha-Háje, 5969 Praděd Mt., 6053 Kunice, 6155 Sázava, 6175 Martinov, 6369 Olomouc-Černovír, 6377 Komorní Lhotka, 6472 Ústí u Hranic, 6553 Nasavrky, 6569 Tovačov, 6650 Vráž u Písku, 6669 Kojetín, 6766 Brno-Hády, 6767 Vyškov, 6857 Kunžak, 6855 Brno, 6947 Jezerní slať swamp, 6957 Kaproun, 7047 Chalupská slať swamp, 7048 Malá niva nature preserve, 7060 Bítov, 7069 Strachotín, Vranovice, 7151 Boletice, 7165 Lednice, Nové Mlýny-Křivé jezero lake.

SK: Locality: 8278 Štúrovo.

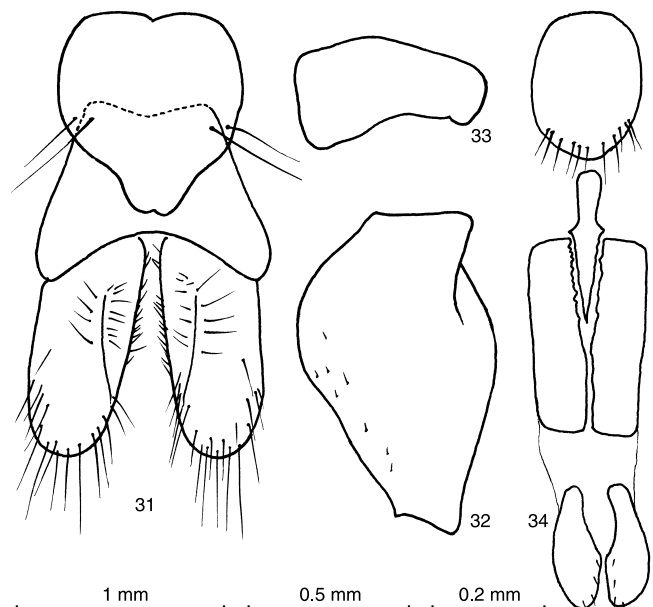
### *Cordilura picticornis* (LOEW, 1864)

*Cordylura picticornis* LOEW, 1864: 22

*Cordylura vierecki* CRESSON, 1918: 134 (synonymized by Vockeroth, 1965: 828)

Material examined: FIN 1 ♂ 1 ♀.

Body-length 10–12 mm, dark. *ors* 3, *frs* 4 in one row, exteriorly with three very short bristles, *fvit* yellow, orbits, parafacials, genae and face yellowish, *scap* and *ped* yellow, *fglm*<sub>1</sub> basally brown and apically dark, arista plumose, palpi yellow and medially broadened. Thorax: *acs* rare but distinct, *phs* 1, *pres* 1, *ias* 2, *pras* 1, *sas* 1, *pas* 1, *sca* 4 equal in size, *prpls* 1, *prsts* 1, *mspls* 5, anepisternum posteriorly haired, katepisternum entirely haired, F<sub>1–3</sub> dark and apically yellow, all tibiae and tarsi yellow, R<sub>1</sub> apically setose. Ab-



Figs 31–34. *Cordilura picticornis* (LOEW). 31 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 32 – surstylus; 33 – praegonite; 34 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 31, 34; Scale 0.5 mm: Fig. 32; Scale 0.2 mm: Fig. 33.

domen: male – 4<sup>th</sup> sternite distally indented with two long lateral bristles, lobes of 5<sup>th</sup> sternite wide (Fig. 31), surstylus wide and narrowed proximally (Fig. 32), praegonite without bristles (Fig. 33); female – 6<sup>th</sup> sternite oval with distinct distal bristles, central apodeme of 7<sup>th</sup> sternite relatively short, rectangular lateral sclerites of 8<sup>th</sup> sternite basally narrowed and apically enlarged, with short bristles (Fig. 34).

**Distribution:** Holarctic species belongs to the Arctic or Subarctic group of circumpolar species, also widely distributed in northern Russia (Gorodkov, 1986).

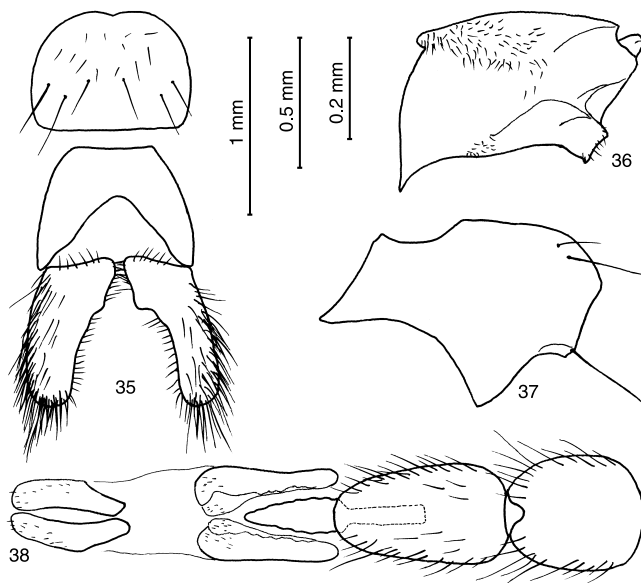
Not yet found in CZ and SK.

### *Cordilura proboscoidea* (ZETTERSTEDT, 1838)

*Cordilura proboscoidea* ZETTERSTEDT, 1838: 728

Material examined: S 1 ♂ 2 ♀♀.

Body-length 10 mm, dark. Head: *ivs* 1 very long, *ovs* haired, *pvs* short, *fvit* dark, parafrontals dark, parafacials, face and genae brown but white dusted, *scap* and *ped* dark, *fglm*<sub>1</sub> dark and in upper part acutely pointed, arista only basally short plumose and apically bare, vibrissal callus white dusted with one vibrissa and with together with 4–5 short bristles, palpi dark. Thorax: *acs* distinct and long, *dcs* 5, *hs* 1 long and 1–2 short, *pras* 1, *ias* 2, *sas* 1, *pas* 2, *scs* two pairs, *ntpls* 2, *mspls* 4, *prpls* 1, *prsts* 1, katapisternum haired, all legs dark-brown, in female black-brown, R<sub>1</sub> apically only sparsely setose. Abdomen: male – 4<sup>th</sup> sternite wider than long, sparsely haired, lobes of 5<sup>th</sup> sternite mediobasally enlarged, apically narrowed and laterally densely bristled (Fig. 35), surstylus wide and dorsoapically pointed (Fig. 36), praegonite wide and only basally narrowed, with three bristles, two laterodorsal and one apical (Fig. 37); female – 6<sup>th</sup> sternite long oval, proximally with distinct projection, central apodeme of 7<sup>th</sup>



Figs 35–38. *Cordilura proboscoidea* (ZETTERSTEDT). 35 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 36 – surstylus; 37 – praegonite; 38 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 35, 38; Scale 0.5 mm: Fig 36; Scale 0.2 mm: Fig. 37.

sternite reaching half of 6<sup>th</sup> sternite, lateral sclerites caudally enlarged and medially only slightly sclerotized and “fused”, with short setulae, 8<sup>th</sup> sternites proximally narrowed and slightly arched upwards (Fig. 38).

**Distribution:** Holarctic circumpolar species is known in Europe from Scandinavia and Northern territory of Russia (Gorodkov, 1986).

Not yet found in CZ and SK.

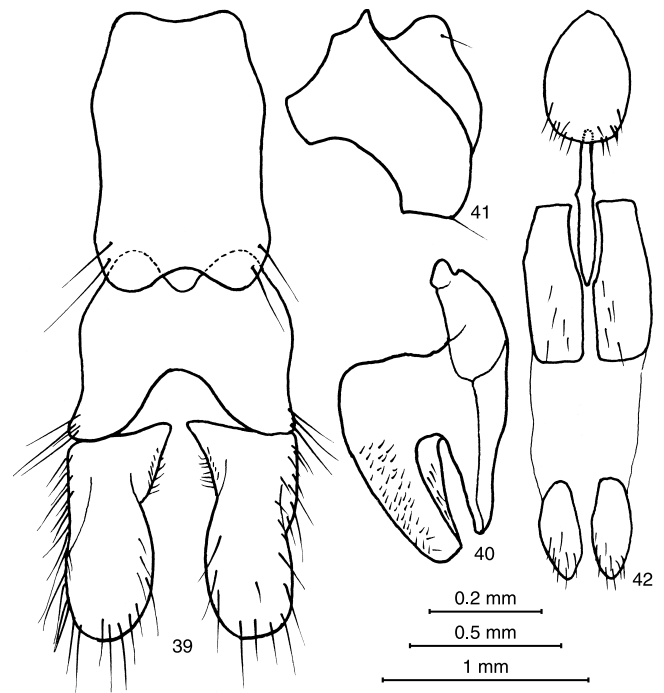
### *Cordilura pubera* (LINNAEUS, 1758)

*Musca pubera* LINNAEUS, 1758: 598

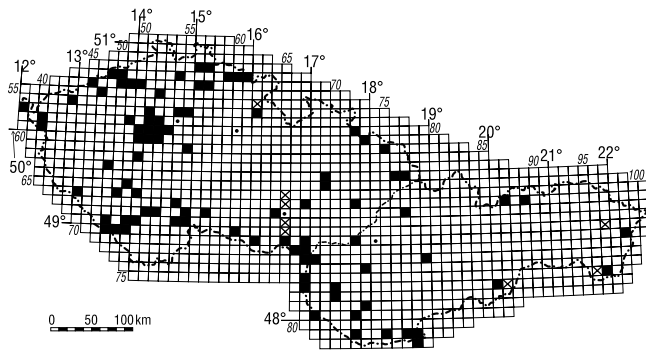
*Cordylura rufipes* MEIGEN, 1826: 323 (synonymized by Becker, 1905: 3)

Material examined: CZ and SK 215 ♂♂ 210 ♀♀.

Body-length 8–12 mm, dark and sometimes white dusted. Head: *ivs* twice longer than *pvs*, *ors* 3, *frs* 4, *fvit* between orbits dark, *scap* and *ped* black, *fglm*<sub>1</sub> black and apically slightly broadened, arista plumose, palpi dark. Thorax: *acs* sporadic, between *dcs* sometimes with silver or whitish stripe, *ias* 2, *scs* 4, *prpls* 1, *prsts* 1, anepisternum bare, katapisternum haired, F<sub>1–3</sub> dark, T<sub>1–3</sub> yellow tarsi with black spots on under surface, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite rectangular, distally and proximally indented, lobes of 5<sup>th</sup> sternite with long bristles (Fig. 39), surstylus apically deeply indented up to half of its length (Fig. 40), praegonite in basal and apical part with short bristles (Fig. 41); female – 6<sup>th</sup> sternite oval, proximally narrowed, central apodeme of the 7<sup>th</sup> sternite narrow, 8<sup>th</sup> sternites oval, apically slightly narrowed, with short bristles (Fig. 42).



Figs 39–42. *Cordilura pubera* (LINNAEUS). 39 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 40 – surstylus; 41 – praegonite; 42 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 39, 42; Scale 0.5 mm: Fig. 40; Scale 0.2 mm: Fig. 41.



Map 4. The distribution of *Cordilura pubera* (LINNAEUS).

**Distribution** (Map 4): The species is widely distributed in the whole Palearctic region, it is one of the common species of the genus *Cordilura* and it occurs in various habitats, especially on moist meadows with a growth of *Carex* spp. The species is univoltine or probable also bivoltine and it is commonly distributed in CZ and SK.

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 5952 Praha-Krč, 5662 Česká Skalice, 5950 Nižbor, 5860 Hradec Králové, 5854 Brandýs-Stará Boleslav, Čelákovice (Vimmer 1913), 6665 Vranov, 6865 Brno-Černovice (Czižek 1906, Landrock 1907a), 6965 Brno-Královo Pole (Czižek 1906), 6765 valley of Svratika river env. Jundrov, 6865 Holásecké rybníky ponds, Brno-Kartouzy (Landrock 1907a).

**Further localities:** 5256 Královka Mt., 5257 Janov, 5347 Fláje, 5348 Duch 5354 Stráž pod Ralskem, 5359 Strážné, 5360 Pec pod Sněžkou, 5361 Horní Lysečiny, 5445 Kálek, 5448 Bílina, 5449 Kletečná Mt., 5450 Kunderovice, 5456 Poddoubí, 5457 Sedmihorky, 5546 Chomutov, 5552 Liběchov, 5643 Nové Město, 5738 Aš, 5751 Veltrusy, Kralupy, 5754 Stará Boleslav, Otradovice, 5755 Lysá nad Labem, 5762 Pulice, 5840 Frant. Lázně, 5849 Lány, 5851 Praha-Šárka, Černý Vůl, Okoř, 5852 Praha-Holešovice, Praha-Jenerálka, Roztoky u Prahy, 5854 Toušeň, Čelákovice, Jirny, 5856 Poděbrady, 5858–57 Žehuňský rybník pond, 5940 Cheb, 5950 Unhošť, Chyňava, 5951 Praha-Ruzyně, Praha-Vokovice, Praha-Liboc, 5952 Praha-Kunratice, 5953 Průhonice, Uhřetěves, Praha-Háje, 5960 Bohdaneč, 5972 Úvalno, 6050 Srbsko, 6051 Karlštejn, Dobříchovice, 6052 Davle, Praha-Komořany, 6054 Mnichovice, 6073 Uhlířov, 6155 Sázava, 6175 Martinov, 6250 Dobříš, 6348 Padrťské rybníky ponds, 6469 Olomouc-Černovír, 6477 Muřinkový vrch Mt., 6476–77 valley of Ostravice river, valley of Řička river, 6549 Blatná, 6569 Tovačov, 6644 Nové Chalupy, 6648 Velký Bor, 6650 Písek, Vráž u Písku, 6754 Soběslav, 6767 Vyškov, 6772 Fryšták, 6851 Dívčice, 6852 Purkarec, Temelín, 6855 Jindř. Hradec, 6857 Kunžak, 6864 Omnice u Brna, 6865 Střelice, 6947 Kvilda, 6949 ! Prachatice (NMW), 6950 Nebahovy, 6954 Velký Tisý – water edge with vegetation, 6955 Stráž nad Nežárkou, 7047 Borová Lada, Chalupská slat swamp, 7048 Lenora, 7049 Spálenec, 7060 Vranov, 7162 Znojmo, 7165 Dolní

Věstonice, 7167 Podivín, 7267 Tvrdonice, 7367 Lanžhot-Soutok.

**SK:** Literary data – 7097 Brehov (Kowarz, 1883; Thalhammer, 1899), 7174 Trenčín (Bartal, 1906), 7596 Slovenské Nové Mesto (Kowarz, 1883; Thalhammer, 1899), 7687 Kamenný Most (Bartal, 1906).

**Further localities:** 6787 Zelené pleso mountain lake, 6789 Podolíneč, 7172 Velká Javorina Mt, 7174 Trenčín, 7199 Podhorod', 7368 Sekule, 7379 Kremnica, 7473 Moravany, 7567 Velké Leváre, 7597 Král. Chlmec, 7667 ! Jakubov, ! Záhorská Nová Ves (NMW), 7670 Červ. Kameň, 7686 Rimavská Sobota, 7769 Šúr, Sv. Jur, 7873 Šafa, 7968 Rusovce, 7972 Králov Brod, 8172 Velký Meder (Čalovo), 8175 Martovce, 8177 Gbelce, 8178 Kováčovské kopce (Kováčov Hills), 8278 Štúrovo.

### *Cordilura pudica* (MEIGEN, 1826)

*Cordylura pudica* MEIGEN, 1826: 231

*Cordylura geniculata* ZETTERSTEDT, 1846: 1997 (synonymized by Gorodkov, 1986: 15)

*Cordylura alberta* CURRAN, 1929: 132 (synonymized by Vockeroth, 1965: 828)

**Material examined:** CZ and SK 32 ♂♂ 26 ♀♀.

**Body-length** 10–12 mm, dark. Head: *ors* 3, *frs* 3, *fvit* brown, orbits black, farafacials, genae and face yellowish, *scap*, *ped* and *fglm*<sub>1</sub> dark, arista plumose, vibrissal callus with 5 bristles, palpi black and medially slightly enlarged. Thorax: *acs* distinct, *phs* 1, *press* 1, *ias* 2, *sas* 1, *scs* 4 equal in size, humeral callus anteriorly haired, *prpls* 2, *prsts* 1, *mspls* 4, anepisternum and katepisternum haired, F<sub>1–3</sub> dark and apically yellow-brown, all tibiae and tarsi brown to yellow-brown, wings slightly yellowish, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite minute with two bristles, 5<sup>th</sup> sternite broad, lobes apically slightly broadened, with distinct bristles (Fig. 43), surstylus apically narrow (Fig. 44), praegonite bilobate with two bristles and basally with a distinct lobe (Fig. 45); female – 6<sup>th</sup> sternite oval, distinctly short bristled, central apodeme of 7<sup>th</sup> sternite short, 8<sup>th</sup> sternites basally slightly narrowed, with fine bristles apically (Fig. 46).

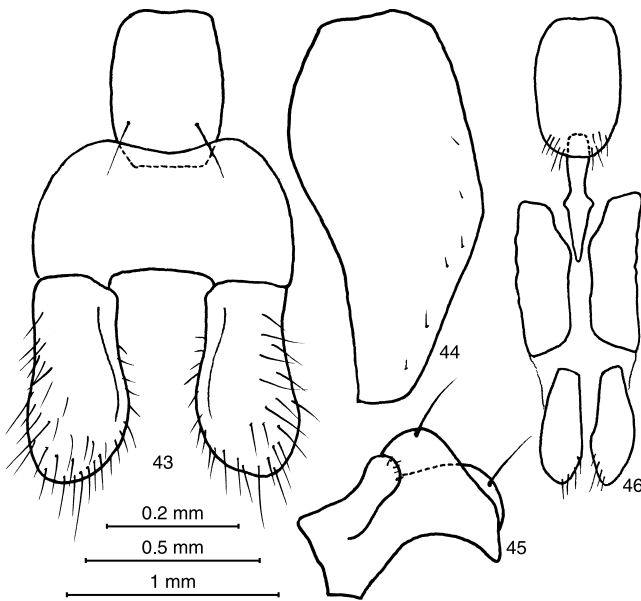
**Distribution** (Map 5): Holarctic species is widely distributed in all of Europe. In CZ and SK it is distributed sparsely and locally on meadows with a growth of *Carex* spp.

**CZ:** Literary data – 5860 Hradec Králové (Vimmer, 1913), 6665 Adamov (Czižek, 1908a).

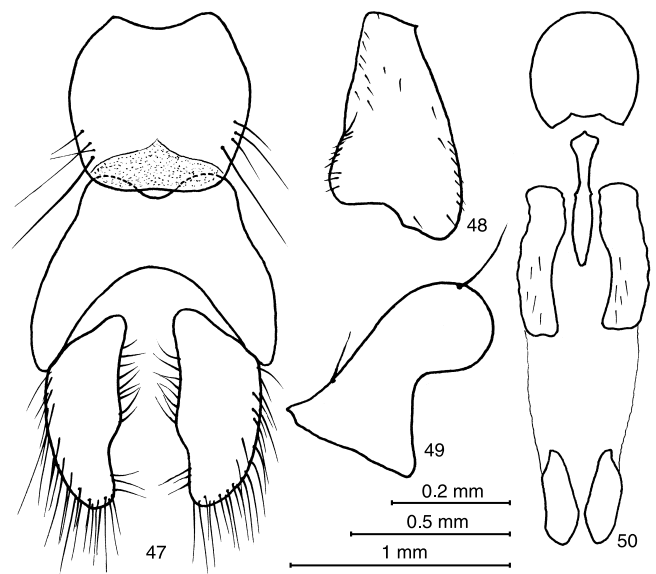
**Further localities:** 5254 Jablonné, 5257 Karlov, 5260 Obří důl valley, 5353 Zahrádky, 5445 Kálek, 5448 Bílina, 5556 Kost, 5643 N. Město, 5854 Frant. Lázně, 5940 Cheb, 5950 Unhošť, 5952 Praha-Kunratice, 5953 Praha-Háje, 5968 Velké Losiny, 6475 Trojanovice, 6544 Františkov, 6574 Zubří, 6744 ! Hamry (NMW), 6767 Vyškov, 6947 Churáňov, Kvilda, Jezerní slat swamp, 6957 Kaproun, 7047–48 Chalupská slat swamp, 7049 Spálenec, 7148 Dobrá, 7266 Lednice.

**SK:** Locality – 7290 Úhorná.

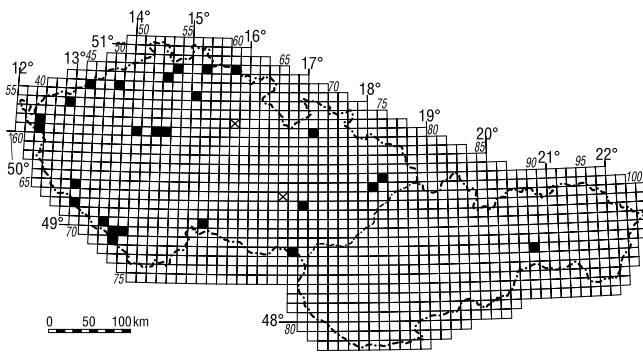




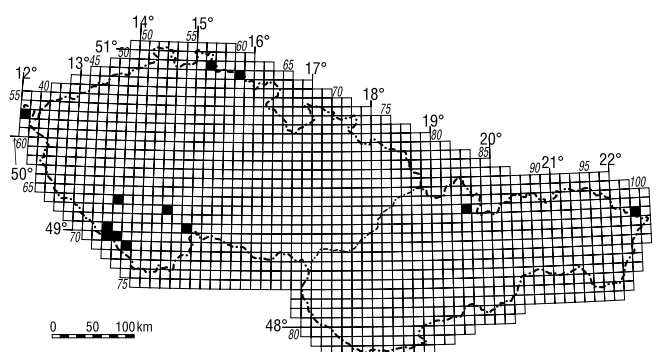
Figs 43–46. *Cordilura pudica* (MEIGEN). 43 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 44 – surstylus; 45 – praegonite; 46 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 43, 46; Scale 0.5 mm: Fig. 44; Scale 0.2 mm: Fig. 45.



Figs 47–50. *Cordilura rufimana* (MEIGEN). 47 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 48 – surstylus; 49 – praegonite; 50 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 47, 50; Scale 0.5 mm: Fig. 48; Scale 0.2 mm: Fig. 49.



Map 5. The distribution of *Cordilura pudica* (MEIGEN).



Map 6. The distribution of *Cordilura rufimana* (MEIGEN).

### *Cordilura rufimana* (MEIGEN, 1826)

*Cordilura rufimana* MEIGEN, 1826: 232

*Anthomyza incerta* ZETTERSTEDT, 1838: 690 (synonymized by Schiner, 1864b: 73)

*Cordilura tibialis* ZETTERSTEDT, 1838: 725 (synonymized by Séguéy, 1952: 37)

Material examined: CZ and SK 101 ♂♂ 96 ♀♀, RUS 3 ♂♂ 2 ♀♀.

Body-length 8–10 mm, dark. Head: *ors* 4, *frs* 4, *fvit* brown, orbits, parafacials and genae yellow, face white, *scap* and *ped* black, *fglm*<sub>1</sub> black and 1, 5 times longer than wide, arista plumose, palpi dark. Thorax: *acs* distinct only praescutellar, *scs* 4 equal in size, *prpls* 2, *prsts* 1, anepisternum partly haired, katepisternum entirely haired, F<sub>1–3</sub> black, T<sub>1–3</sub> dark-brown, tarsi yellow-brown, R<sub>1</sub> apically setose. Abdomen: male – 4<sup>th</sup> sternite basally indented, apically slightly sclerotized and laterally with long bristles, lobes of 5<sup>th</sup> stern-

ite apically narrowed, with distinct bristles (Fig. 47), surstylus short and apically with a distinct projection (Fig. 48), praegonite medially narrowed and dorsally with two bristles (Fig. 49); female – 6<sup>th</sup> sternite oval, with a distinct notch caudally, central apodeme of 7<sup>th</sup> sternite short and enlarged basally, 8<sup>th</sup> sternites enlarged, without bristles (Fig. 50).

Distribution (Map 6): Holarctic species, in the Palearctic region of Scandinavia, according to Hackman (1956) “one of the common species of the genus...”, in northern parts of Russia and in western Siberia it was registered by Gorodkov (1986), in the British Isles by Chandler (1998). In the mountains of Central Europe it was mentioned by Sack (1937) and by Gorodkov (1986).

The species was collected in CZ commonly on moist meadows (above 700 m a.s.l.) and bogs in lowlands, and very rarely near peat-bogs with a growth of *Carex* spp.; in SK only two localities have been discovered.

**CZ:** Localities – 5157 Jizerka Mt., Na Čihadlech, 5260 Pančická louka meadow, 5738 ! Aš (3. 6. 1870, 1 female, Kowarz leg, 1872, NMW), 6648 Velký Bor, 6753 Borkovická blata swamp, 6947 Kvilda, Churáňov, Jezerní slaf swamp, 6955 Stráž nad Nežárkou, 7047 Chalupská slaf swamp, 7048 Malá niva nature preserve, Borová Lada, 7149 Pěkná.

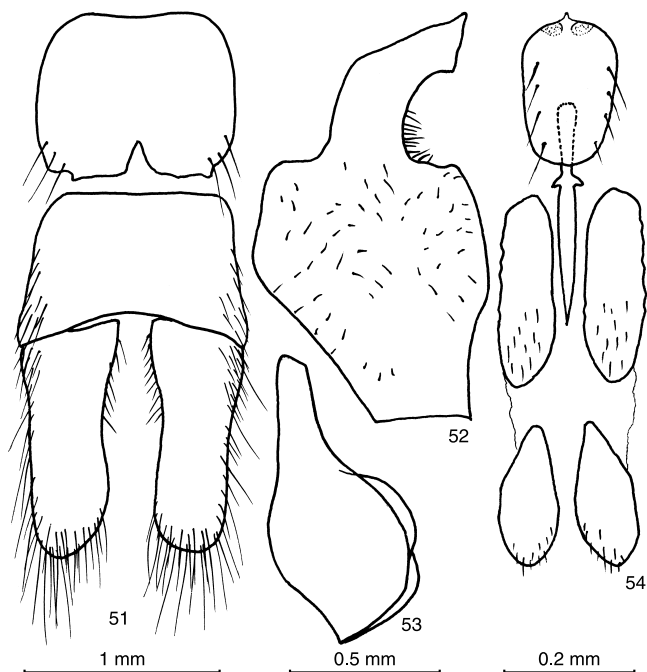
**SK:** Localities – 6783 Zuberec, 6800 Ruské.

***Cordilura similis* (SIEBKE, 1873)**

*Cordylura similis* SIEBKE, 1873: 88

Material examined: GB 1 ♂ 1 ♀ (loc. Grantown-on-Spey, det. M. Nelson).

Body-length 10–12 mm, dark. Head: *ors* 3, *frs* 5, *fvit* reddish and in upper part dark, orbits black and whitish dusted, parafacials, genae and face white, *scap* black, *ped* dark-brown, *fglm*<sub>1</sub> black and twice longer than wide, arista plumose, palpi brown. Thorax: *acs* distinct, *ias* 2, without *sas*, *scs* 4, *prpls* 2, *prsts* 1, *mspls* 3, anepisternum posteriorly haired, katepisternum entirely haired, F<sub>1–3</sub> dark and apically yellowish, all tibiae and tarsi yellow, R<sub>1</sub> apically setose. Abdomen: male – 4<sup>th</sup> sternite more or less square, distally indented, lobes of 5<sup>th</sup> sternite long (Fig. 51), surstylus wide, distally straight (Fig. 52), praegonite without bristles (Fig. 53); female – 6<sup>th</sup> sternite oval, proximally with a minute projection, central apodeme of 7<sup>th</sup> sternite very long and reaching to the second third of lateral sclerites, 8<sup>th</sup> sternites wide, apically with short bristles (Fig. 54).



Figs 51–54. *Cordilura similis* (SIEBKE). 51 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 52 – surstylus; 53 – praegonite; 54 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 51, 54; Scale 0.5 mm Fig. 52; Scale 0.2 mm: Fig. 53.

**Distribution:** The species *C. similis* was described by Siebke in Norway (loc. Aamond). It is closely related to *Cordilura picticornis* LOEW, 1864 differing from the other British species by its yellow palp. The pupae were collected in Scotland by Nelson from *Carex aquatilis* (cf. Nelson, 1998). Gorodkov (1986) regards *C. similis* as a doubtful species. The series of representative specimens of both sexes was taken by sweeping in Norway near Aamond (leg. Dr. Greve).

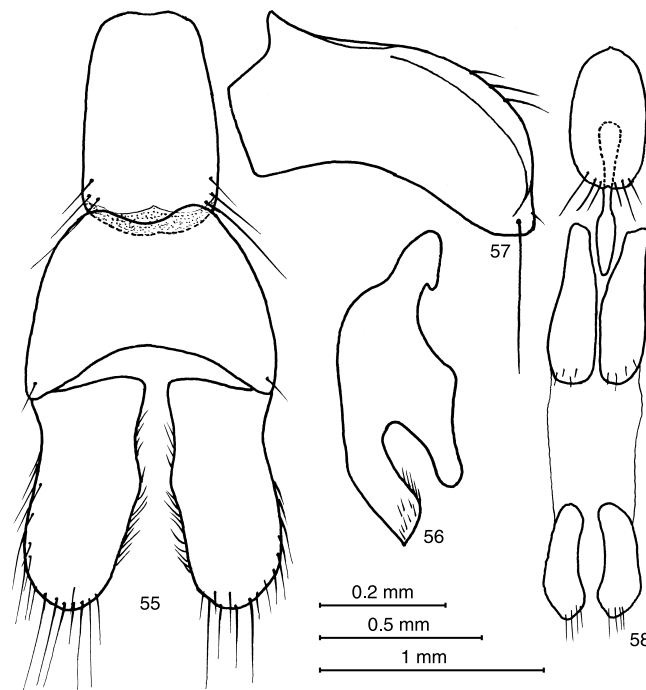
Not yet found in CZ and SK.

***Cordilura umbrosa* (LOEW, 1873)**

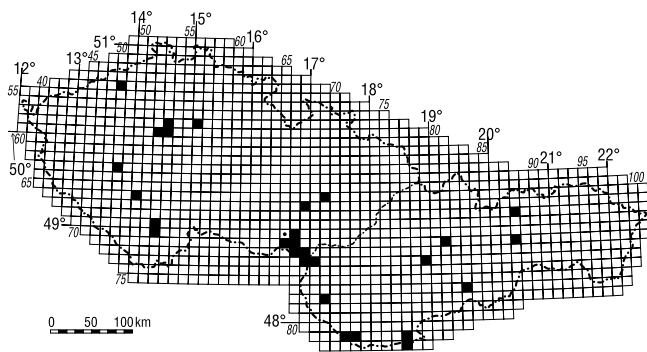
*Cordylura umbrosa* LOEW, 1873: 246

Material examined: CZ and SK 55 ♂♂ 41 ♀♀.

Body-length 10–12 mm, dark. Head: *ors* 3, *frs* 4, *fvit* black, orbits and genae dark, parafacials and face white, *scap* and *ped* black, *fglm*<sub>1</sub> black and twice longer than wide, vibrissal callus with 6 bristles, arista distinctly plumose, palpi dark. Thorax: *acs* distinct, *ias* 1, *pas* 2, *scs* 2 very long, scutellum sparsely haired, F<sub>1–3</sub> black, all tibiae and tarsi brown, wings apically darkened, R<sub>1</sub> with short bristles. Abdomen: male – 4<sup>th</sup> sternite rectangular, with three distinct bristles laterally, lobes of 5<sup>th</sup> sternite straight (Fig. 55), surstylus forked to one-third of its length (Fig. 56), praegonite with three bristles dorsally and with one very long bristle and with one very short bristle apically (Fig. 57); female – 6<sup>th</sup> sternite oval, with distinct bristles apically, central apodeme reaching half of 6<sup>th</sup> sternite, 8<sup>th</sup> sternites slightly arched upwards, with fine bristles apically (Fig. 58).



Figs 55–58. *Cordilura umbrosa* (LOEW). 55 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 56 – surstylus; 57 – praegonite; 58 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 55, 58; Scale 0.5 mm: Fig. 56; Scale 0.2 mm: Fig. 57.



Map 7. The distribution of *Cordilura umbrosa* (LOEW).

Distribution (Map 7): The original description by Loew (1873) was based on a single male from Losonc type-locality (at present 7683 Lučenec in SK). The male is deposited in ZMB with the designation "Type", No. 11398, 1 male, leg. Kowarz, with the separate label by Loew's handwritten designation *Cordylura umbraculata* Lw. and it was designated by Vockeroth as a lectotypus. The designation has not yet been published.

The species is distributed, according to Sack (1937), in Central Europe, Séguy (1952) quoted it in Central and Western Europe including the British Isles, in the South European territory and in Kazakhstan it was mentioned by Gorodkov (1986). Chandler (1998) synonymized *C. umbrosa* with the species *Cordilura impudica* RONDANI, 1867.

In CZ and SK it is distributed commonly on moist meadows with a growth of *Carex* spp.

**CZ:** Literary data – Strachotín (Landrock 1910a)

Further localities: 5448 Litvínov, 5854 Brandýs nad Labem, Čelákovice, 5856 Kostelní Lhota, 5952 Praha-Kunratice, 5953 Praha-Milíčov, 6348 Padržské rybníky ponds, 6650 Vráž u Písku, 6669 Kojetín, 6767 Pístovice u Vyškova, 6952 Hluboká nad Vltavou, 7052 České Budějovice, 7065 Strachotín, Vranovice, 7066 Velké Němčice, 7165 Dolní Věstonice, 7166 Rakvice, 7266 Valtice, Hlohovec, Lednice, 7267 Břeclav, 7367 Lanžhot, Lanžhot-Soutok.

**SK:** Literary data – 7683 ! Lučenec (Loew, 1873; ZMB).

Further localities: 6888 Spišská Belá, 7180 Králova Studňa Mt., 7188 Stratená, 7368 Sekule, 7379 Kremnica, 7683 Lučenec, 7769 Šúr, Pezinok, 8171 Gabčíkovo, 8172 Veľký Meder (Čalovo), 8177 Gbelce, 8277 Mužla.

### Genus *Scoliaphleps* BECKER, 1894

*Scoliaphleps* BECKER, 1894: 98 (type species: *Cordylura ustulata* ZETTERSTEDT, 1838 – by orig. des.)

General characters: Body dark, haired, weakly bristled. Head spherical, antennae short, palpi yellow and longly haired without strong apical bristle, vein  $R_{2+3}$  S shaped, wings apically darkened. Abdomen: 5<sup>th</sup> male sternite

bilobate, surstylus short and forked, 7<sup>th</sup> female sternite divided into three part.

Ringdahl (1936) described in the specimens of *S. ustulata* a new subspecies *hyalinipennis* which he later (1951) considered a separate species. Hackmann (1956) records *S. ustulata* commonly in Lapland and rarely in Central and Southern Finland. Gorodkov (1986) on the other hand recognised the species *hyalinipennis* only as a subspecies of *S. ustulata*. *S. hyalinipennis* has been quoted in England by Nelson (1992a), in Sweden by Ringdahl (1951). Morphological differences between both species (with reference to Vockeroth, cf. Nelson, 1992a) included the following: bare pteropleuron in *S. ustulata* and fine erect pale hairs on pteropleuron in *S. hyalinipennis*, and a number of short bristles on the apical half of vein  $R_1$ .

Specimens from various localities of the Czech Republic were collected in body-size from 8 to 12 mm. Little specimens (including two specimens from Scotland) correspond in size to the species *S. hyalinipennis*. The characters on terminalia of both sexes as well as the number of short bristles on vein  $R_1$  do not make it possible to distinguish between the two species.

### *Scoliaphleps ustulata* (ZETTERSTEDT, 1838)

*Cordylura ustulata* ZETTERSTEDT, 1838: 727

*Cordylura melanacra* LOEW, 1873: 277 (synonymized by Šifner, 1977c: 397)

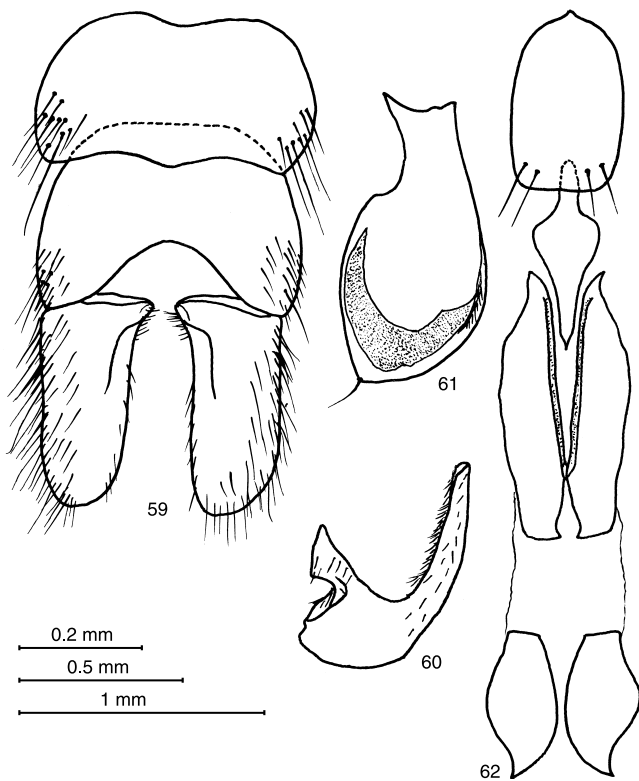
Material examined: CZ and SK 19 ♂♂ 14 ♀♀, FIN 1 ♀, GB 2 ♂♂ 1 ♀.

Body-length 8–12 mm, dark. Head: ors 3, *frs* 6, *fvit* yellow-brown, orbits dark, parafacials, genae and face yellow, *scap*, *ped* and *fglm*<sub>1</sub> black, arista plumose, palpi yellow and bilaterally long haired, medially slightly broadened, vibrissal callus with one vibrissa together with 6–8 shorter bristles. Thorax: *acs* long and multiplied, *dcs* 5, *hs* 1, *press* 1, *pr*<sub>1</sub> 1, *ias* 1, *sas* 1, *scs* 4, *ntpls* 2, without *prpls* and *prsts*, *mspls* 1, *stpls* 1, anepisternum and katepisternum long haired,  $F_{1-3}$  dark and haired,  $T_{1-3}$  and tarsi yellow to brown, wings apically darkened,  $R_1$  bare. Abdomen: male – 4<sup>th</sup> sternite very wide, with distinct and long bristles laterally, lobes of 5<sup>th</sup> sternite wide and straight (Fig. 59), surstylus short and forked (Fig. 60), praegonite, with microscopic setulae dorsally and one apical bristle (Fig. 61); female – 6<sup>th</sup> sternite more or less rectangular, basally with minute projection, with four strong bristles caudally, central apodeme of 7<sup>th</sup> sternite short, medially sometimes asymmetrically broadened, lateral sclerites irregularly sclerotized medially and basally, 8<sup>th</sup> sternites wide and apically pointed upwards (Fig. 62).

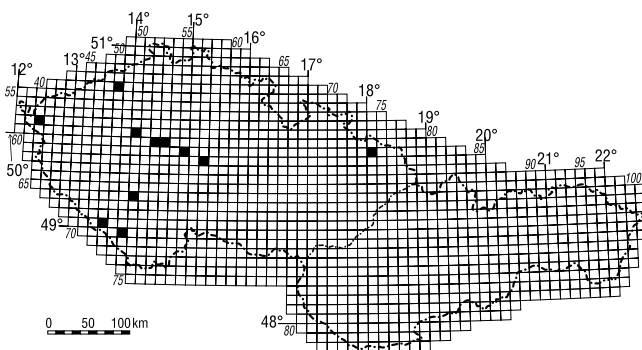
Didtribution (Map 8): Holarctic species, in CZ collected by sweeping on a growth of *Carex* spp., it has not yet been found in SK.

**CZ:** Literary data – Silesia (Schlesien), without locality (Loew, 1873).

Further localities: 5448 Bílina, 5840 Frant. Lázně, 5950 Chyňava, 6052 Praha-Písnice, 6053 Kunice,



Figs 59–62. *Scoliphleps ustulata* (ZETTERSTEDT). 59 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 60 – surstylus; 61 – praegonite; 62 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 59, 62; Scale 0.2 mm: Fig. 60; Scale 0.2 mm: Fig. 61.



Map 8. The distribution of *Scoliphleps ustulata* (ZETTERSTEDT).

6155 Sázava, 6174 ! Háj u Opavy (NMW), 6257 Bohdanečský rybník pond, 6650 Vráž u Písku, 6947 Kvilda, Jezerní slať swamp, 7049 Libinské Sedlo.

#### Genus *Phrosia* ROBINEAU-DESVOIDY, 1830

*Phrosia* ROB.-DESV., 1830: 668 (type species: *Phrosia scirpi* ROB.-DESV., 1830: 669 – by mon. des.) (= *Ocyptera albilabris* FABRICIUS, 1805)

General characters: Body dark, weakly bristled and with yellow legs. Head spherical with very long first

flagellomere, arista pubescent, palpi yellow, with a subapical bristle. Abdomen: 5<sup>th</sup> male sternite bilobate, surstylus long, 7<sup>th</sup> female sternite divided in three parts.

The genus *Phrosia* is classified by Gorodkov (1986) into the subfamily *Deliniinae*. Nowadays, molecular data (cf. Bernasconi et al., 2000a, b) have confirmed relationships to genus *Cordilura*.

#### *Phrosia albilabris* (FABRICIUS, 1805)

*Ocyptera albilabris* FABRICIUS, 1805: 315

*Phrosia scirpi* ROBINEAU-DESVOIDY, 1830: 669 (synonymized by Neuhaus, 1886: 240)

Material examined: CZ and SK 28 ♂♂ 17 ♀♀

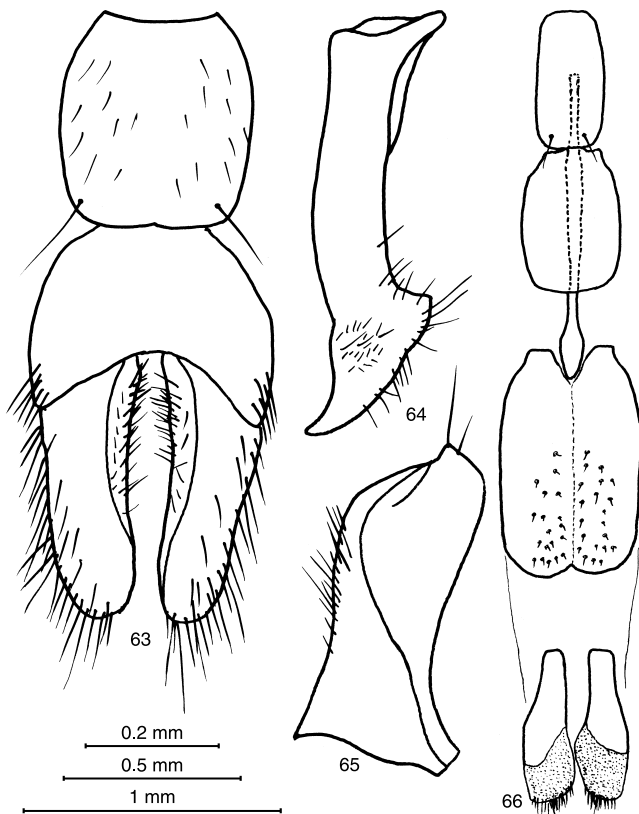
Body-length 8–10 mm, dark. Head: *ors* 3, *frs* 5, *fvit* black, orbits and genae black, parafacials and face yellow but white dusted, *scap* black, *ped* basally black, anteriorly yellow-brown, *fglm*<sub>1</sub> black and 3 to 4 times longer than wide, arista yellow and pubescent, palpi yellow, vibrissal callus with one distinct vibrissa together with 1–2 very short bristles. Thorax: *acs* sparse and only praesutural pair long, *dcs* 4 (2 + 2), *hs* 1, *ias* 1, *pras* 1, *pas* 1, *diss* 2 and *ass* very short, *prpls* 2, *prsts* 1, *mspls* 1 together with 3–4 very short bristles, anepisternum sparsely haired, katepisternum bare, all legs yellow, tarsi brown, wings sometimes darkened apically, vein R<sub>1</sub> bare.

Abdomen: male – 4<sup>th</sup> sternite oval, basally slightly indented, with two long bristles apically, lobes of 5<sup>th</sup> sternite long and straight (Fig. 63), surstylus narrowed, broadened and pointed apically (Fig. 64), praegonite with microscopic setulae dorsally and with two apical bristles (Fig. 65); female – centrale apodeme of 7<sup>th</sup> sternite very long, widened distally and reaching half of 5<sup>th</sup> sternite, lateral sclerites indistinctly fused, and with microscopic setulae medially, 8<sup>th</sup> sternites slightly sclerotized and with fine bristles apically (Fig. 66).

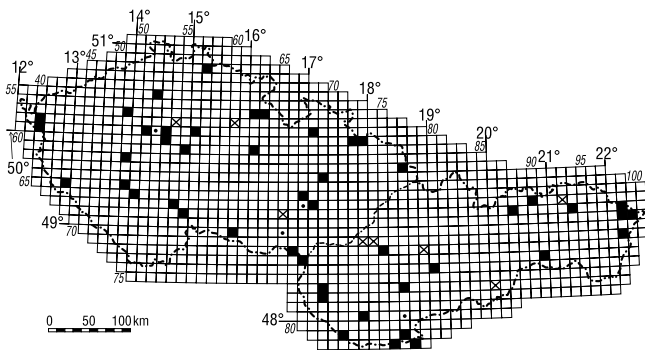
Distribution (Map 9): Palearctic species widely distributed from all Europe to Mongolia (Gorodkov, 1974a, b and Šifner, 1975). In CZ and SK it is found on moist meadows and swamps, watersides of ponds etc. Its life cycle is unknown. According to Hackman (1956) the larvae mine in leaves of *Liliaceae*, by Sack (1937) in *Polygonatum* spp.

CZ: Literary data – 5960 Hradec Králové, 5952 Praha-Krč (Vimmer, 1906, 1913), 5854 Brandýs nad Labem-Stará Boleslav (Vimmer, 1913), 6865 Brno-Černovice, 7060 Vranov nad Dyjí (Czižek, 1906), 7065 Strachotín, 6767 Hlubočany (Landrock, 1907a, b).

Further localities: 5257 Smržovka, 5552 Liběchov, 5749 Zichovec, 5762 Pulice, Chropotínský háj nature preserve, 5763 Chábory, 5840 Frant. Lázně, 5850 Smečno, 5853 Praha-Liboc, 5854 Čelákovice, 5856 Poděbrady, 5940 Cheb, 5951 Praha-Řepy, 5952 Praha-Prokopské údolí, Praha-Císařská louka, Praha-Kunratice, 5953 Praha-Háje, 5956 Pečky, 5968 Velké Losiny, 5969 Praděd Mt., 6053 Kunice, 6072 Zlatníky nad Odrou, 6073 Uhlířov, 6155 Sázava, 6162 Hluboká nad Vltavou, 6249 Jince, 6377 Komorní Lhotka,



Figs 63–66. *Phrosia albilabris* (FABRICIUS). 63 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 64 – surstylus; 65 – praegonite; 66 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 63, 66; Scale 0.5 mm: Fig. 64; Scale 0.2 mm: Fig. 65.



Map 9. The distribution of *Phrosia albilabris* (FABRICIUS).

6469 Holice u Olomouce, 6543 ! Domažlice (NMW), 6650 Vráž u Písku, 6667 Vyškov, 6754 Řípec, 6767 Hlubočany, 6865 Brno-Černovice, Brno-Komárov, 6955 Stráž nad Nežárkou, 7060 ! Vranov n. Dyjí (NMW), 7065 Strachotín, 7266 Lednice, Nesyt – břehové porosty, 7367 Lanžhot-Soutok.

**SK:** Literary data – 7174 Trenčín, 6793 Bardějov (Thalhammer, 1899), 7193 Brestov (Moczáry, 1877), 7299 Sohrance (Thalhammer, 1899; Moczáry 1877), 7977 Tekovské Lužany, 7486 Rybník (Aczél, 1939).

Further localities: 6789 Podolíneč, 6888 Spišská

Belá, 6894 Kochanovce, 6899 Zvala, 6999 Stakčín, 6900 Zboj, 7199 Podhorod, 7275 Lútov, 7369 Borský Mikuláš, 7391 Zádiel, 7480 Zvolen, 7669 Vinosady, 7677 Hronský Beňadik, 7769 Sv. Jur, 7972 Král. Chlmeč, 7977 Želiezovce, 8171 Gabčíkovo, 8177 Kamenín, 8276 Chotín, 8278 Štúrovo.

### Genus *Parallelomma* BECKER, 1894

*Parallelomma* BECKER, 1894: 94 (type species: *Cordylura albipes* FALLÉN, 1819: 9 – by orig. des.)

**General characters:** Body yellow in primary colour, weakly bristled, scutum in varying degrees of dark, abdomen dark primarily in females, body-size 5–8 mm. Head spherical, antennae short, arista plumose, palpi narrow and always yellow, legs yellow, surstyli of males long, 7<sup>th</sup> female abdominale sternite divided into three parts.

#### Key to species of genus *Parallelomma*

- Fglm<sub>1</sub> yellow, vein R<sub>1</sub> microscopically setose, male surstyli long and apically distinctly forked (Fig. 68), central apodeme of 7<sup>th</sup> female abdominal sternite long (Fig. 70) . . . . . *Parallelomma albipes* (FALLÉN, 1819)
- Fglm<sub>1</sub> in apical half dark, vein R<sub>1</sub> bare, male surstyli long and apically only slightly forked (Fig. 72), central apodeme of 7<sup>th</sup> female abdominal sternite short (Fig. 74) . . . . . *Parallelomma fuscipes* (ZETTERSTEDT, 1838)

### *Parallelomma albipes* (FALLÉN, 1819)

*Cordylura albipes* FALLÉN, 1819: 9

*Cordylura bilineata* MEIGEN, 1838: 340 (synonymized by Neuhaus, 1886: 240)

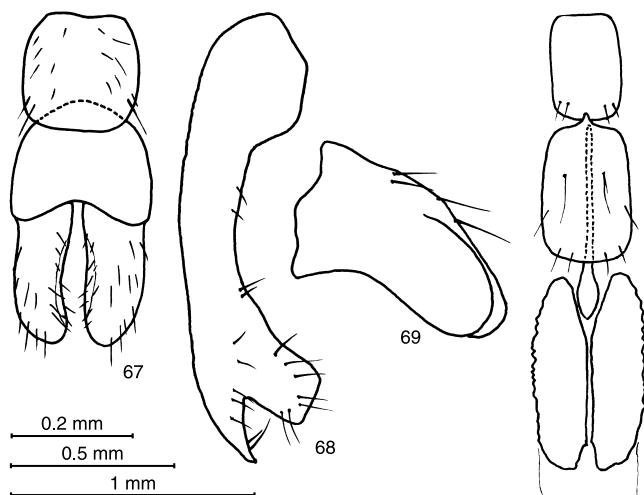
*Parallelomma hispanica* CZERNY et STROBL, 1909: 247 (synonymized by Šifner, 1977c: 398)

*Mosina filipes* ROBINEAU-DESVOIDY, 1830: 673 (synonymized by Neuhaus, 1886: 240)

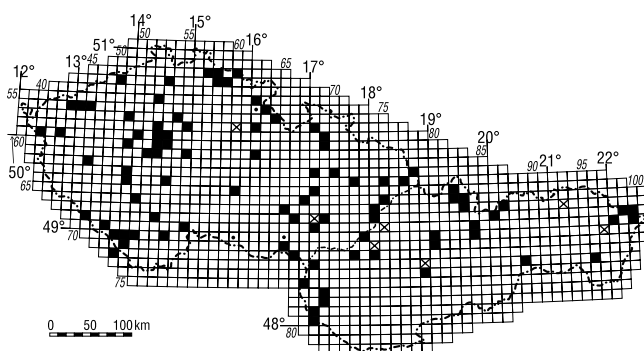
**Material examined:** CZ and SK 145 ♂♂ 128 ♀♀.

Body-length 5–8 mm, yellow in primary colour, scutum in colour very variable from yellow to dark, abdomen dark primarily in females. Head: *ors* 2–3, *frs* 4–5, *fvit* brow, orbits, parafacials, genae and face yellow, *vbs* 1, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista plumose and dark, palpi yellow, with subapical bristle. Thorax: *acs* very sparse, *dcs* 4–5, *ias* 2 short, *sas* 1, *pas* 2, *scs* 2, *prpls* 2, *prsts* 1, *mspls* 1–2, *stpls* 1, anepisternum and katapisternum bare or sparsely haired, all legs yellow, F<sub>1</sub> with a row anteroventral long bristles, R<sub>1</sub> setose. Abdomen: male – 4<sup>th</sup> sternite more or less square, with black bristles, lobes of 5<sup>th</sup> sternite wide and straight (Fig. 67), surstylus distinctly forked apically (Fig. 68), praegonite bilobate apically, with four bristles dorsally (Fig. 69); female – 6<sup>th</sup> sternite rectangular, with a short projection basally, central apodeme long and narrow and broadened apically, 8<sup>th</sup> sternites apically pointed upwards and entirely bare (Fig. 70).

**Distribution** (Map 10): Palearctic species is dis-



Figs 67–70. *Parallelomma albipes* (FALLÉN). 67 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 68 – surstylus; 69 – praegonite; 70 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 67, 70; Scale 0.5 mm: Fig. 68; Scale 0.2 mm: Fig. 69.



Map 10. The distribution of *Parallelomma albipes* (FALLÉN).

tributed from all of Europe to Siberia. In CZ and SK it is a very common species and the specimens are collected by sweeping on meadows (also with a growth of *Carex* sp.), watersides of ponds, bush vegetation, etc. According to a very old record by Kaltenbach (1874) the larva mines in the leaves of orchids.

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 6562 Česká Skalice, 5860 Hradec Králové (Vimmer, 1913), 6865 Brno-Černovice, 7060 Vranov nad Dyjí (Czižek, 1906), 7065 Strachotín (Landrock, 1907a, b).

Further localities: 5257 Josefův Důl, 5258 Harrachov, 5260 Modrý důl valley, 5348 Duchcov, 5353 Zahrádky, 5358 Poniklá, 5359 Vítkovice, 5552 Račice, Liběchov, 5562 Studnice, 5643 Nové Město, 5644 Jakubov, 5645 Úhošť, 5662 Halín, 5663 Sněžné, 5749 Zichovec, 5754 Dvorce u Lysé n. L., Skorkov, Hlavenec, Lysá nad Labem, 5762 Pulice, 5763 Chábory, 5764 Deštné, 5852 Praha-Troja, Praha-Bohnice, 5855 Kostomlaty nad Labem, 5862 Nové Město nad Metují, Týniště nad Orlicí, 5868 Kouty n.

Desnou, 5940 Cheb, 5942 Kladská, 5950 SPR Vůznice-Benešův luh valley, 5952 Praha-Krč, 5953 Praha-Háje, 5969 Praděd Mt., Vysoké Hole, 6049 Broumy, 6052 Davle, Praha-Zbraslav, 6053 Štířín, Struhařov, Velké Popovice, 6070 Bítov, 6151 Kytín, 6152 Rabyně, Bojovské údolí, 6155 Sázava, 6162 Hluboká nad Vltavou, 6245 Plzeň, 6349 Rožmitál, 6368 Náměšť na Hané-Terčino údolí valley, 6370 Hrubá Voda, 6378 Nýdek, 6449 Vacíkov, 6453 Libenice, 6472 Teplice nad Bečvou, 6476 Staré Hamry, 6477 Horní Lomná, 6560 Rudolec, 6568 Vranovice, 6650 Vráž u Písku, 6667 Vyškov, 6675 Velké Karlovice-Tišňavy, 6744 ! Hamry (NMW), 6765 Bílovice nad Svitavou, Moravský kras, 6845 Pancíř Mt., 6852 Nová Ves u Dříteneš, Poměšice, 6865 Brno-Černovice, 6869 Buchlov, 6874 Horní Lideč, 6947 Popelná, 6955 Stráž nad Nežárkou, 6968 Ždánice, 7048 Malá niva nature preserve, 7049 Spálenec, 7050 Miletínky, 7053 České Budějovice, 7060 Vranov n. Dyjí, 7065 Strachotín, 7073 Žitková, 7149 Mrtvý luh u Volar, 7165 Pavlovské vrchy-Kotelná, Křivé jezero lake, 7248 ! Trístoličník Mt. (NMW), 7266 Lednice, Valtice-Nesyt.

**SK:** Literary data – 6793 Bardejov (Thalhammer, 1899), 7097 Brehov (Kowarz, 1883), 7174 Trenčín, 6975 Beluša (Brancsik, 1910), 7379 Kremnica (Aczél, 1939).

Further localities: 6582 Námestovo, 6682–83 Oravská priehrada, 6783 Zuberec, 6787 Dolina siedmich prameňov, Skal. vrata, 6886 ! Mengusovská dolina valley (TMB), Furkotská dolina valley, 6899 Zvala, 6800 Ruské, 6984 Pribylina, 6998 Snina, 6999 Stakčín, 6900 Ruský Potok, Nová Sedlica, 7080 Ploská Mt., 7084 Stanišovská, 7180 Kráľova Studňa Mt., 7272 Čachtice, 7274 Pohronský Inovec, 7368 Kúty, 7389 Rožňava, 7396 Trebišov, 7479 Záhorie, 7567 ! Jakubov (NMW), 7669 Píla, 7769 Šúr, Pezinok, 7867 Devínska Kobyla Mt., 7968 Bratislava.

### *Parallelomma fuscipes* (ZETTERSTEDT, 1838)

*Cordylura fuscipes* ZETTERSTEDT, 1838: 726

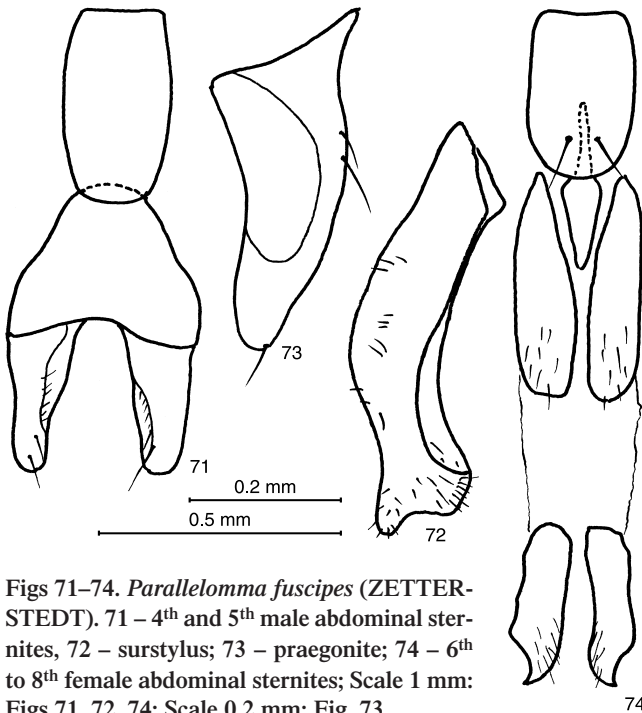
*Cordylura dispar* ZETTERSTEDT, 1846: 2012 (synonymized by Ringdahl, 1936: 162)

*Cordylura fuscitibia* RONDANI, 1867: 98 **syn. n.**

Material examined: N 1 ♂ 1 ♀, A 2 ♂♂, USA 3 ♂♂ 2 ♀♀.

Body-length 5–8 mm, yellow. Head: *ors* 2, *frs* 3, *fvit* yellow, orbits, parafacials, genae and face yellow but white dusted, *scap* and *ped* yellow, *fglm*<sub>1</sub> in apical half dark, arista dark and plumose, palpi yellow, with a subapical bristle. Thorax: *acs* distinct, *dcs* 5, *ias* 2, *hs* 2, *ntpls* 2, *prpls* 2, *prsts* 1, *mspls* 3, *stpls* 1, anepisternum and katepisternum sparsely haired, all legs yellow, tarsi brown, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite rectangular, apically rounded, lobes of 5<sup>th</sup> sternite apically narrowed (Fig. 71), surstylus only slightly forked (Fig. 72), praegonite dorsally with two bristles and apically with one bristle (Fig. 73); female – 6<sup>th</sup> sternite rectangular, rounded apically, with two discal bristles, central apodeme short, lateral sclerites in apical half setose, 8<sup>th</sup> sternites pointed apically upwards, with short fine bristles (Fig. 74).

Distribution: Holarctic species, in Finish Lapland



Figs 71–74. *Parallelomma fuscipes* (ZETTERSTEDT). 71 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites, 72 – surstylus; 73 – praegonite; 74 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; Scale 1 mm: Figs 71, 72, 74; Scale 0.2 mm: Fig. 73.

rather common species but very rare further south (Hackman 1956), in Sweden quoted from Lapland, arctic to high-boreal species (Ringdahl, 1951). The characters of *Cordylura fuscitibia* are in the limits of a variability of the characters of *Parallelomma fuscipes*.

Not yet found in CZ and SK.

### Genus *Norellisoma* WAHLGREN, 1917

*Norellisoma* WAHLGREN, 1917: 148 (type species: *Cordylura spinimana* FALLÉN, 1819 – by subsequent des. by Vockeroth, 1965: 827)

*Norellisoma* WAHLGREN, 1917: 148 (as genus *Norellisoma* HENDEL, 1910)

*Norellisoma* HENDEL, 1910: 308 (Nomen nudum, without type species designation, in Vockeroth, 1965: 827)

*Norellisoma* HENDEL, 1910: 2 (error).

**General characters:** Body dark to yellow. Primary colour of some parts of body variable, primarily of thorax, femora and yellowish genitalia of males. Head spherical, palpi yellow, fore femora with double rows of strong bristles, bristles of inner row are short, fore tibiae with double rows of strong and long bristles, mid and hind femora only sometimes with fine anteroventral bristles apically. Anepisternum and katepisternum partly or entire haired. Abdomen of males enlarged apically, the shape of 4<sup>th</sup> sternites specific for individual species, 5<sup>th</sup> sternite always bilobate, surstyli arched. Abdomen of females cylindrical and tapered caudally, 7<sup>th</sup> sternite lengthwise partly or entirely divided in two sclerites, 8<sup>th</sup> sternites with varying number of thorns.

Praeimaginal stages, with the exception of larva and puparium of *N. spinimanum* (cf. Gercke, 1882) have not been described. Larvae probably develop in leaves and stems of

various species of the genus *Rumex*: *Norellisoma spinimanum*, in leaves of *R. aquaticus* (cf. Gercke, 1882) and *R. obtusifolius* (cf. Disney, 1976), *N. lesgiae* in leaves of *R. alpinus* (cf. Gorodkov, 1989), and *N. mireki* also in leaves of *R. alpinus* (Dr. Ceianu, personal com.). Nelson (in Nelson and Šifner, 2000) recorded *N. flavicorne* from leaves of *Filipendula ulmaria* and described the oviposition, eggs, mines and all larval instars. The species *N. insulare* described by Ozerov (1993) on Kunashir Island commonly found on *Filipendula camtschatica* in areas of Hokkaido island (Japan), may be their host plant (written communication by Dr. Hironaga, 1999).

All described species are Palearctic, with the exception of *N. spinimanum* which may also be found in the Nearctic region. Nowadays, the 17 species of the genus *Norellisoma* have been mentioned, recently described or redescribed (Gorodkov 1986, Sun 1992, Ozerov 1993, Šifner 1995, 1999, Nelson et Šifner 2000).

### Key to species of genus *Norellisoma*

1. Body and legs yellow to brown . . . . . 2
  - Body except fore legs dark coloured . . . . . 3
- 2(1) Thorax with a dark stripe on pleura (at females often indistinct) and with a dark stripe along dorsocentral bristles . . . . . *Norellisoma alpestre* (SCHINER, 1864)
  - Thorax without a dark stripe on pleura and with a dark stripe only between dorsocentral bristles (often indistinct) . . . . . *Norellisoma spinimanum* (FALLÉN, 1819)
- 3(1) Femora and coxae darkened, tibiae yellow to brown . . . . . *Norellisoma femorale* (LOEW, 1864)
  - Femora yellow to brown with dark longitudinal stripes of various extent, coxae dark or yellow . . . . . 4
- 4(3) All femora always yellow . . . . . 5
  - Mid and hind femora always dark, fore femora yellow to brown . . . . . 9
- 5(4) Body-length from 8 to 12 mm . . . . . 6
  - Body-length from 4 to 7 mm . . . . . 7
- 6(5) First flagellomere yellow, lobes of 5<sup>th</sup> male abdominal sternite always wide and haired (Fig. 99), 7<sup>th</sup> abdominal sternite of female entirely divided into two sclerites (Fig. 101) 8<sup>th</sup> abdominal sternite of female with two wide apical thorns (Fig. 102) . . . . . *Norellisoma nervosum* (MEIGEN, 1826)
  - First flagellomere dark-brown, lobes of 5<sup>th</sup> male abdominal sternite narrowed apically and slightly arched outwards (Fig. 103), 7<sup>th</sup> abdominal sternite of female only partly divided into two sclerites (Fig. 105), 8<sup>th</sup> abdominal sternite of female with ten thorns into two convergent rows (Fig. 106) . . . . . *Norellisoma seguyi* ŠIFNER, 1973
- 7(6) Lobes of 5<sup>th</sup> male abdominal sternite bilobate without additional projections (Fig. 87), 7<sup>th</sup> female abdominal sternite caudally with long bristles (Fig. 89) . . . . . *Norellisoma lituratum* (WEIDEMANN in MEIGEN, 1826)
  - Lobes of 5<sup>th</sup> male abdominal sternite bilobate, with additional projections, 7<sup>th</sup> female abdominal sternite without long bristles caudally . . . . . 8

- 8(7) Lobes of 5<sup>th</sup> male abdominal sternite widened apically, with a distinct projection postlaterally (Fig. 95), 7<sup>th</sup> female abdominal sternite with sparse short bristles (Fig. 97) . . . . . *Norellisoma mirusae* ŠIFNER, 1974
- Lobes of 5<sup>th</sup> male abdominal sternite not widened apically and with distinct projection ventrally (Fig. 83), 8<sup>th</sup> female abdominal sternite with eight short bristles in two rows (Fig. 85) . . . . .  
. . . . . *Norellisoma flavicorne* (MEIGEN, 1826)
- 9(4) Lobes of 5<sup>th</sup> male abdominal sternite long and narrowed apically, 4<sup>th</sup> male abdominal sternite wider than long and medially distinctly indented (Fig. 115), 6<sup>th</sup> female abdominal sternite more or less square, enlarged caudally and sparsely bristled (Fig. 117) . . . . .  
. . . . . *Norellisoma sylviae* ŠIFNER, 1999
- Lobes of 5<sup>th</sup> male abdominal sternite short and arched apically, 6<sup>th</sup> female abdominal sternite more or less oval . . . . . 10
- 10(9) All coxae dark, all femora with dark stripes dorsally, 4<sup>th</sup> male abdominal sternite enlarged laterally and haired (Fig. 91), 8<sup>th</sup> female abdominal sternite with nine thorns in two convergent rows (Fig. 94) . . . . .  
. . . . . *Norellisoma mireki* ŠIFNER, 1977
- Fore coxae yellow, mid and hind coxae dark, 4<sup>th</sup> male abdominal sternite square and bristled laterally (Fig. 111), 8<sup>th</sup> female abdominal sternite with seven thorns in its apical half (Fig. 114) . *Norellisoma striolatum* (MEIGEN, 1826)

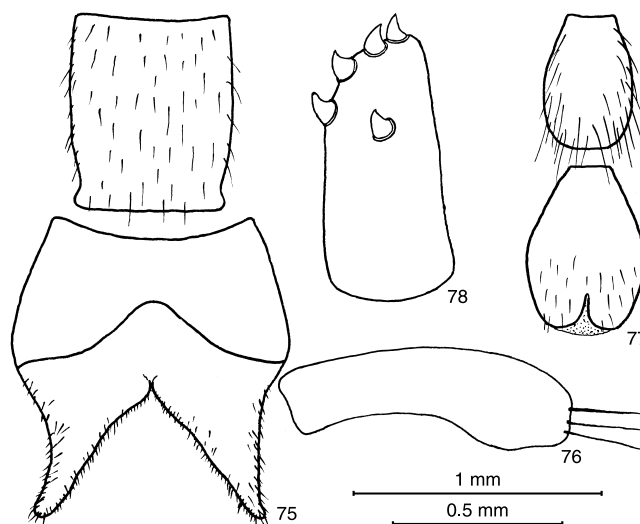
***Norellisoma alpestre* (SCHINER, 1864)**

*Norellia alpestris* SCHINER, 1864: 6  
*Norellia bertei* RONDANI, 1867: 101 (synonymized by Becker, 1905: 13)

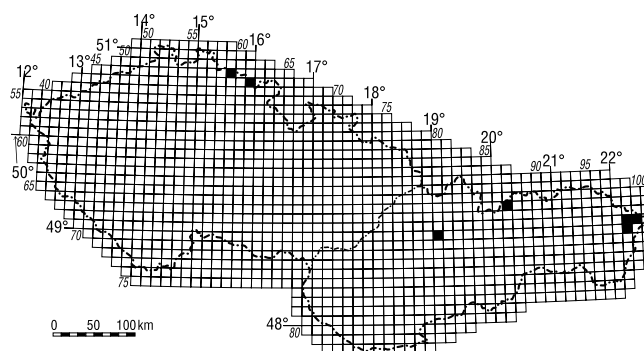
Material examined: CZ and SK 6 ♂♂ 2 ♀♀, A 1 ♂ 1 ♀, CH 6 ♂♂ 5 ♀♀, I 2 ♂♂ 1 ♀, RO 1 ♂, PL 1 ♂ 4 ♀♀.

Body-length 8–10 mm, yellow at most yellow-brown. Head: *ors* 2, *frs* 2, *fvit* yellow, orbits, parafacials, genae and face yellow, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista dark and pubescent, one vibrissa together with 4–5 very short bristles, palpi yellow. Thorax: yellow with a dark stripe on pleurae (at females sometimes indistinct) and with a dark stripe along row of *dcs*, *acs* only 2–3 pairs prescutellar, *dcs* 5, *hs* absent, *pras* 1, *ias* only 6–8 setulae in area, *sas* 1, *pas* 2, *scs* 1 pair very long, *prpls* 1–2, *mspls* 1–2, *stpls* 1, all legs yellow, wings hyaline and veins conspicuously dark. Abdomen: male – yellowish to brown, 4<sup>th</sup> sternite rectangular, shortly bristled, lobes of 5<sup>th</sup> sternite very narrow apically, slightly arched outwards, with short bristles (Fig. 75), praegonite straight with three apical bristles (Fig. 76); female – 6<sup>th</sup> sternite oval and long bristled, 7<sup>th</sup> sternite enlarged caudally and slightly sclerotized, two sclerites only partly divided and sparsely bristled (Fig. 77), 8<sup>th</sup> sternite with five thorns, four marginal and one submarginal (Fig. 78).

Distribution (Map 11): The species distributed in Europe (Gorodkov, 1986), it was collected in Alps, in Krkonoše



Figs 75–78. *Norellisoma alpestre* (SCHINER). 75 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 76 – praegonite; 76 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 78 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 75, 77; Scale 0.5 mm: Figs 76, 78.



Map 11. The distribution of *Norellisoma alpestre* (SCHINER).

Mts, in the West and East Carpathians etc. (cf. Becker, 1894; Strobl, 1900; Bezzi, 1918; Séguy, 1934; Gorodkov, 1986; Draber-Moňko, 1991; Šifner, 1995b). The species is very rare in CZ and SK at high altitudes of over 1200–1400 m a.s.l.

**CZ:** Localities – 5259 Světlý vrch Mt. – Švédský Kříž, 5361 Rýchory Mts – Sokolka.

**SK:** Localities – 6999 Stakčín, 6900 Ruský Potok, 7080 Ploská Mt., 7099 Snina, 6787 Bujačí vrch Mt.

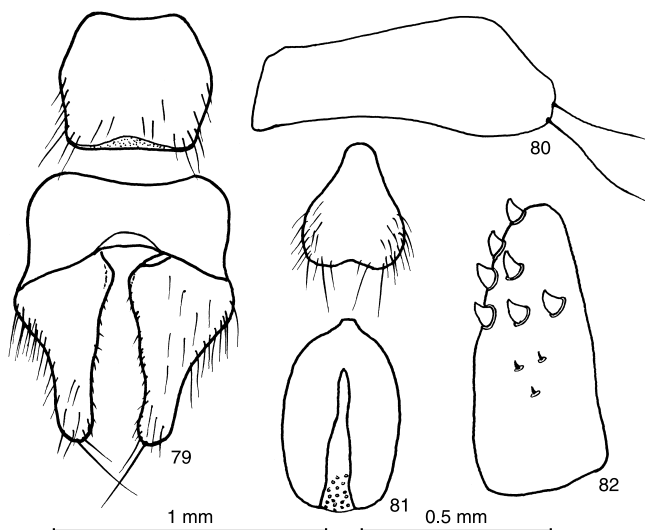
***Norellisoma femorale* (LOEW, 1864)**

*Cordylura femoralis* LOEW, 1864: 18

Material examined: SK 2 ♂♂ 2 ♀♀, A 1 ♀.

Body-length 6–8 mm, dark. Head: *ors* 2, *frs* 3, *fvit* brown, upper half of orbits dark, parafacials face and genae yellow but white dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> and pubescent arista black, one vibrissa together with 4–5 weak and short bristles, palpi yellow. Thorax: dark and grey dusted, *acs* very rare, *dcs* 5, *hs* 1, *press* 1, *ias* 3 very short, *sas* 1, *pas* 2, *diss* 1 pair long, *ass* 1 pair very short, *ntpls* 2, with-





Figs 79–82. *Norellisoma femorale* (LOEW). 79 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 80 – praegonite; 81 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 82 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 79, 81; Scale 0.5 mm: Figs 80, 82.

out *prpls* and *prsts*, *mspls* 2–3, *stpls* 1, all femora black, only F<sub>1</sub> and F<sub>2</sub> apically brown, all tibiae brown, wings darkened apically, veins brown. Abdomen: male – 4<sup>th</sup> sternite more or less hexagonal and bristled laterally, lobes of 5<sup>th</sup> sternite long and narrowed apically (Fig. 79), praegonite wide, with two apical bristles (Fig. 80); female – 6<sup>th</sup> sternite very indented proximally, bristled laterally, 7<sup>th</sup> sternite partly divided into two sclerites, with little sclerites medially and caudally (Fig. 81), 8<sup>th</sup> sternite with seven thorns, four marginal and three submarginal (Fig. 82).

**Distribution:** The species has been found in France, Austria and Switzerland (Gorodkov, 1986).

In CZ it has not yet been collected, in SK it was collected only at one locality (cf. Šifner, 1995b).

**SK:** Locality – 6901 Stuzica.

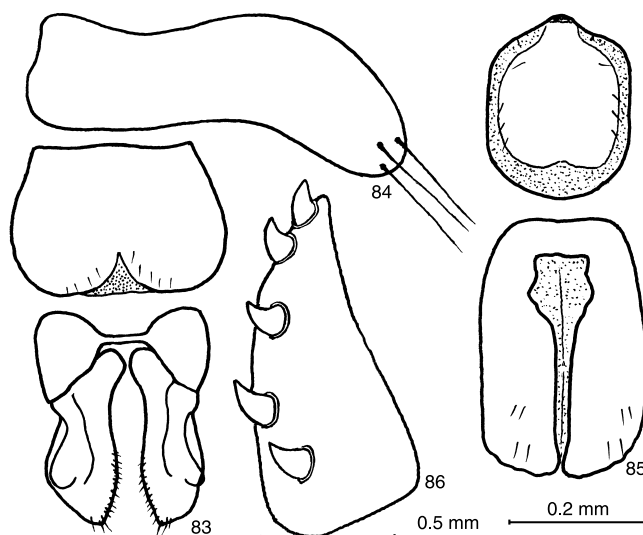
### *Norellisoma flavicorne* (MEIGEN, 1826)

*Cordylura flavicornis* MEIGEN, 1826: 238 (382: printing error)

*Cordylura spinigera* ZETTERSTEDT, 1838: 733 (synonymized by Becker, 1905: 14)

**Material examined:** GB 2 ♂♂ 2 ♀♀.

Body-length 5–7 mm, dark. Head: *ors* 2, *frs* 2, *fvit* yellow-orange, orbits, parafacials, genae and face yellow but white dusted, frontal triangle and back part of head black, one distinct vibrissa together with 2–3 short and weak bristles, *scap* and *ped* yellow, *fglm*<sub>1</sub> in male entirely yellow and in female in apical half dark, arista pubescent and dark, palpi yellow. Thorax: dark and apically shiny, *acs* only rare and irregular, *dcs* 5, *hs* 1, *press* 1, *ias* 2 very short, *pras* 1, *sas* 1, *pas* 2, *scs* 1 pair, *prpls* 1 long, *prsts* 1 short, *mspls* 1, *stpls* 1, all legs yellow. Abdomen: male – 4<sup>th</sup> sternite wider than long, apically indented and slightly sclerotized, body of 5<sup>th</sup> sternite very narrow centrally, with short bristles medially on the lobes and



Figs 83–86. *Norellisoma flavicorne* (MEIGEN). 83 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 84 – praegonite; 85 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites, 86 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 83, 85; Scale 0.5 mm: Figs 84, 86.

with a projection ventrally (Fig. 83), praegonite wide and straight with two apical bristles and one lateroapical bristle (Fig. 84); female – 6<sup>th</sup> sternite oval and slightly sclerotized marginally, 7<sup>th</sup> with short bristles in two rows (Fig. 85), 8<sup>th</sup> sternite with five marginal thorns (Fig. 86).

**Distribution:** The validity of this species has been problematic; according to Becker (1894) this species has been considered identical with *Norellisoma lituratum* (MEIGEN): “...wahrscheinlich ist sie identisch mit *Nor. lituratum* M ...”. Later authors, Stackelberg (1933) and Draber-Moňko (1991), recognise the existence of this species, however, without exact data. Séguy (1952) synonymized *Norellisoma flavicorne* and both other species *Cordylura opaca* LOEW, 1864 and *Cordylura spinigera* ZETTERSTEDT, 1838 with *Norellisoma lituratum* (WEIDEMANN in MEIGEN, 1826). Collin (1958) recognises *N. falvicorne* in Great Britain. Morge (1976) confirmed the existence of one male in Meigen’s collection in Paris. Gorodkov (1986) quoted the species as a synonym of *N. lituratum*. Nelson and Šifner (2000) redescribed and confirmed the validity of *Norellisoma flavicorne* (MEIGEN, 1826) with distinguishable characteristics.

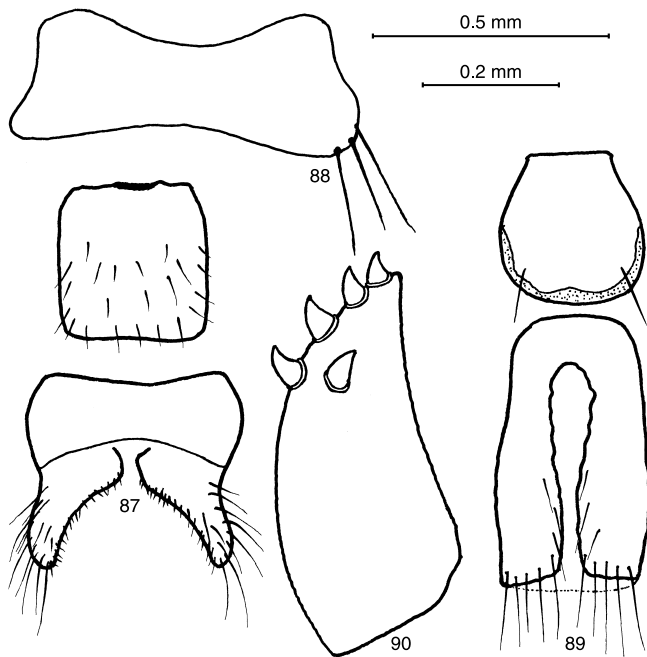
The species have not been collected in CZ and SK.

### *Norellisoma lituratum* (WEIDEMANN in MEIGEN, 1826)

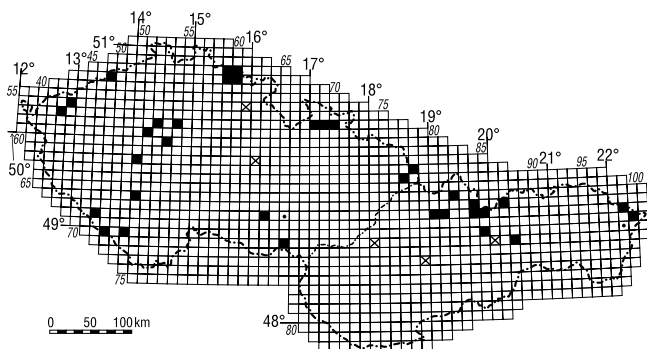
*Cordylura liturata* WEIDEMANN in MEIGEN, 1826: 238

*Cordylura opaca* LOEW, 1864: 19 (synonymized by Becker, 1905: 13)

**Material examined:** CZ and SK 57 ♂♂ 61 ♀♀, A 2 ♂♂ 4 ♀♀, D 1 ♂, PL 2 ♂♂, CH 1 ♀, RO 1 ♂, I 1 ♀, SLOV 1 ♀.



Figs 87–90. *Norellisoma lituratum* (WIEDEMAN im MEIGEN). 87 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 88 – praegonite; 89 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 90 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 87, 89; Scale 0.5 mm: Figs 88, 90.



Map 12. The distribution of *Norellisoma lituratum* (WIEDEMAN in MEIGEN).

Body-length 4–6 mm, dark. Head: *ors* 1, *frs* 1, *fvit* yellow, orbits, parafacials, genae and face yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista dark and pubescent, one vibrissa together with 4–5 very weak bristles, palpi yellow. Thorax: dark, *acs* very sparse, *dcs* 5, *hs* 1, *press* 1, without *ias*, *pras* 1, *sas* 1, *pas* 2, *ass* 1 pair, *prpls* 1–2, without *prsts*, *mspls* 1 and 2–3 very weak, *stpls* 1, all legs including coxae yellow, wings hyaline. Abdomen: male – 4<sup>th</sup> sternite almost square, lobes of 5<sup>th</sup> sternite short and narrowed apically, with short bristles medially (Fig. 87), praegonite wide, with three bristles apically (Fig. 88); female – 6<sup>th</sup> sternite enlarged caudally and slightly sclerotized, with two distinct bristles, 7<sup>th</sup>

sternites only fused proximally, with long bristles caudally (Fig. 89), 8<sup>th</sup> sternite with five thorns, four marginal and one submarginal (Fig. 90).

**Distribution** (Map 12): The species is distributed from all of Europe to West Siberia and Mongolia (Gorodkov, 1986). In CZ and SK it was collected rarely in various meadows habitats (cf. Šifner, 1995).

**CZ:** Literary data – 5662 Česká Skalice (Vimmer, 1913), 6865 Brno-Černovice (Czižek, 1907; Landrock, 1910a).

Further localities: 5259 Kotel, 5260 Obří důl valley, Modrý důl valley, Úpské rašeliniště nature preserve, Růžová hora Mt., 5347 Fláje, 5349 Vítkovice, 5360 Pec pod Sněžkou, 5643 Nové Město, 5742 Jelení, 5852 Praha-Đáblice, 5854 Čelákovice, 5868 Kouty nad Desnou, 5869 Velká Kotlina, 5870 Vrbno, 5951 Praha-Liboc, 6053 Kunice-Hůra, 6250 Dobříš, 6378 Košariska, 6477 Horní Lomná, Muřinkový vrch Mt., 6650 Vraž u Písku, 6846 Křemelná Mt., 6863 Oslavany, valley of Oslava river, 6865 Brno-Černovice, 7047 Borová Lada, 7049 Spálenec, 7165 Pavlovské vrchy-Turold.

**SK:** Literary data – 7099 Sninský kameň Mt., (Kowarz, 1883; Thalhammer, 1899), 7174 Trenčín (Brancsik, 1910), 7186 Červená Skala (Kowarz, 1883), 7379 Kremnica (Aczél, 1939).

Further localities: 6682 Oravská priehrada, 6784 Roháčské pleso mountain lake, 6787 Bujačí vrch Mt., Červená Hlina, Dolina Siedmich prameňov, 6880 Stoh Mt., Stohové polany meadows, 6881 Stankovany, 6884 Jarníčka dolina valley, Žiarska dolina valley, Račkova dolina valley, 6885 Podbanské, 6899 Zvala, 6900 Ruský Potok, Nová Sedlica, 7085 ! Malá Vápenica (TMB), 7099 Snina, 7188 ! Dobšiná (TMB).

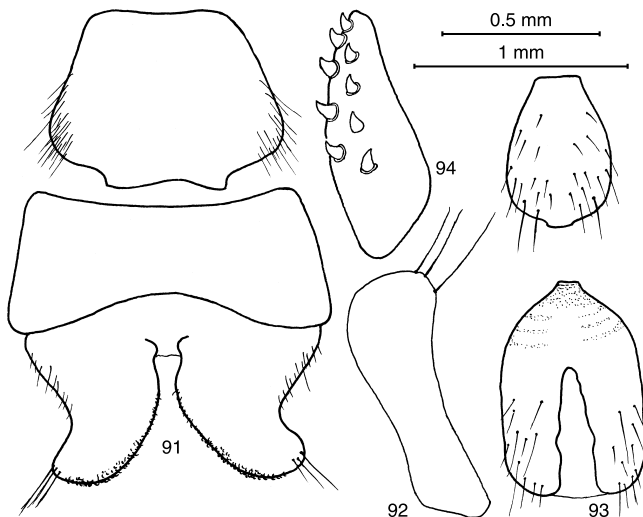
### *Norellisoma mireki* ŠIFNER, 1977

*Norellisoma mireki* ŠIFNER, 1977c: 398

Material examined: RO 4 ♂♂ 2 ♀♀.

Body-length 10–12 mm, dark. Head: *ors* 2–3, *frs* 4–5, *fvit* in upper half red-brown, orbits brown to dark, parafacials, genae and face yellow but white dusted, *scap* and *ped* yellow, *fglm*<sub>1</sub> dark, arista pubescent, one vibrissa, palpi yellow. Thorax: *acs* rare, *dcs* 5, *hs* 1, *phs* 1, *ias* 3, *sas* 2, *pas* 1 very long, *scs* 1 pair, *ntpls* 2, *prpls* 1, *mspls* 2, *stpls* 1, anepisternum posteriorly and katepisternum entirely haired, all femora with dark stripes dorsally, wings yellowish with dark veins. Abdomen: male – 4<sup>th</sup> sternite enlarged laterally, haired, very indented caudally, lobes of 5<sup>th</sup> sternite short and slightly arched outwards (Fig. 91), praegonite with three apical bristles (Fig. 92); female – 6<sup>th</sup> sternite more or less oval, with a wide and short projection caudally, 7<sup>th</sup> sternite deeply divided into two sclerites, slightly sclerotized proximally and in its lower part bristled (Fig. 93), 8<sup>th</sup> sternite with nine thorns, five marginal and four submarginal, both rows convergent (Fig. 94).

**Distribution:** The species was only collected in Calimani Mts in Rumania (cf. Šifner, 1977c and 1995b).



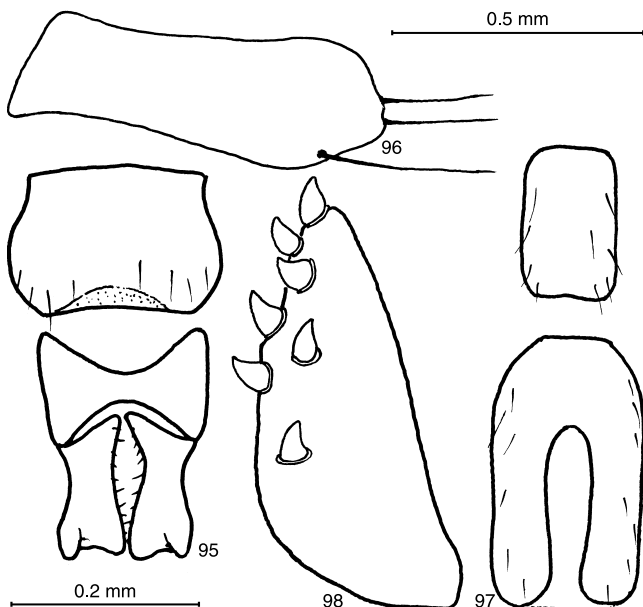
Figs 91–94. *Norellisoma mireki* ŠIFNER. 91 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 92 – praegonite; 93 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 94 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 91, 93; Scale 0.5 mm: Figs 92, 94.

### *Norellisoma mirusae* ŠIFNER, 1974

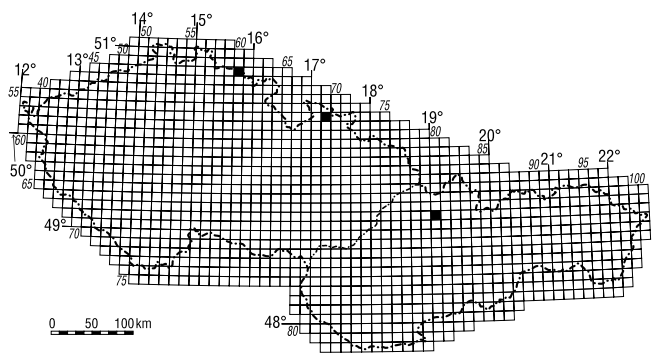
*Norellisoma mirusae* ŠIFNER, 1974: 101

Material examined: CZ and SK 7 ♂♂ 2 ♀♀, CH 1 ♂, 1 ♀.

Body-length 4–6 mm, dark. Head: *ors* 2, *frs* 2, *fvit* yellow, orbits dark, parafacials, genae and face yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista dark and pubescent, one vibrissa together with 3–4 very short bristles, palpi yellow. Thorax: dark, *acs* distinct, *dcs* 5, *press* 1, without *ias*,



Figs 95–98. *Norellisoma mirusae* ŠIFNER. 95 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 96 – praegonite; 97 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 98 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 95, 97; Scale 0.5 mm: Figs 96, 98.



Map 13. The distribution of *Norellisoma mirusae* ŠIFNER.

*pras* 1 *sas* 1, *pas* 2, *scs* 1 pair, *ntpls* 2, *prpls* 1–2, *prsts* 1 weak, *mspls* 1–2 weak, *stpls* 1, all legs yellow, veins of wings dark. Abdomen: male – dark, 4<sup>th</sup> sternite very wide, lobes of 5<sup>th</sup> sternite widened apically and with a distinct postlateral projection apically, with short and sparse bristles medially (Fig. 95), praegonite wide, with two apical and one subapical bristles (Fig. 96); female – 6<sup>th</sup> sternite rectangular, 7<sup>th</sup> sternite partly divided (Fig. 97), 8<sup>th</sup> sternite with seven thorns, four marginal and three submarginal (Fig. 98).

Distribution (Map 13): The species has been collected only in Central Europe (cf. Šifner, 1995b) over a wide range of altitudes, it was also found in Germany (Püchel, 1999).

**CZ:** Localities – 5260 Obří důl valley, 5769 Rejvíz, nature preserve.

**SK:** Locality – 6880 Štefanová – Stoh Mt.

### *Norellisoma nervosum* (MEIGEN 1826)

*Cordylura nervosa* MEIGEN, 1826: 234

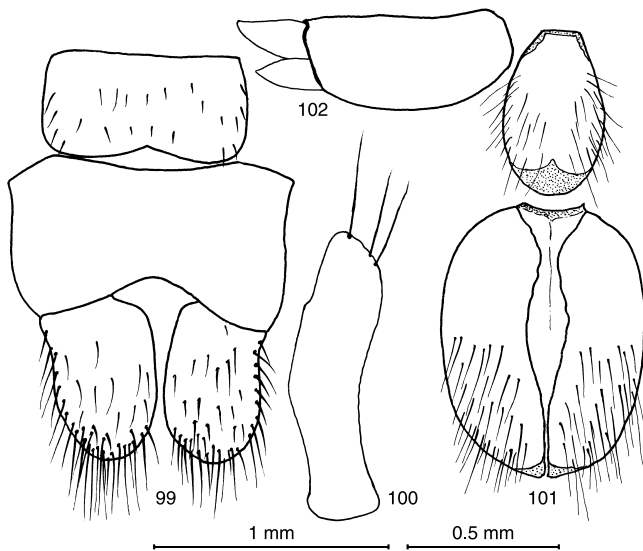
*Clidogastra flaviceps* VIMMER, 1937: 29 (synonymized by Šifner, 1964b: 142)

*Clidogastra flaviceps* VIMMER, 1947: 249 (synonymized by Šifner, 1995b: 113)

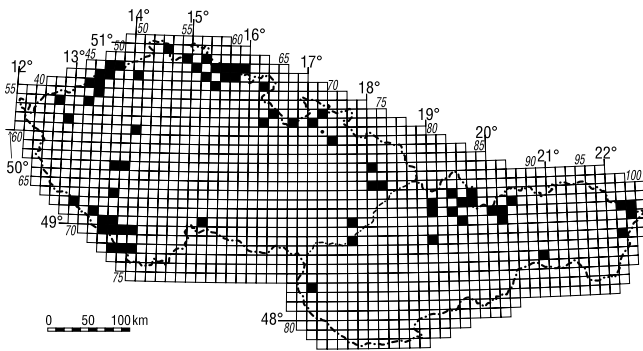
Material examined: CZ and SK 173 ♂♂ 164 ♀♀, A 3 ♂♂ 2 ♀♀, RO 2 ♂♂, D 3 ♂♂ 1 ♀, PL 5 ♂♂, I 1 ♂.

Body-length 10–12 mm, dark. Head: *ors* 2, *frs* 3, *fvit* yellow to brown, orbits on upper half dark, parafacials, genae and face yellow, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista dark and plumose, one vibrissa, palpi yellow and sometimes with very short black bristles apically. Thorax: dark, *acs* very rare and distinct only prescutellars, *dcs* 5, *hs* 1, *ias* indistinct, *pras* 1, *sas* 1, *pas* 1, *scs* 2 pairs (*ass* short), *prpls* and *prsts* only, *ntpls* 2, *mspls* 1–2, *stpls* 1, all legs yellow, wings with dark veins. Abdomen: male – 4<sup>th</sup> sternite very wide, indented caudally, 5<sup>th</sup> sternite wide with very wide lobes, with long haired bristles (Fig. 99), praegonite with three apical bristles (Fig. 100); female – 6<sup>th</sup> sternite oval, slightly sclerotized caudally, 7<sup>th</sup> sternite divided into two sclerites (Fig. 101), 8<sup>th</sup> sternite with two large apical thorns (Fig. 102).

Distribution (Map 14): The species is widely distributed in Central Europe (cf. Šifner, 1995b), in CZ and



Figs 99–102. *Norellisoma nervosum* (MEIGEN). 99 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 100 – praegonite; 101 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 102 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 99, 101; Scale 0.5 mm: 100, 102.



Map 14. The distribution of *Norellisoma nervosum* (MEIGEN).

SK, was commonly collected at high altitudes above 600–700 m a.s.l., only very rarely in lowlands.

**CZ:** Literary data – 5969 Praděd Mt. (Stein, 1873; Czižek, 1907, 1909).

Further localities: 5053 Lány u Jiřkova, 5155 Václavice, 5157 Olivetská hora Mt., 5247 Karlov, 5248 Moldava, 5256 Kristiánov, Bedřichov, 5258 Harrachov, Nové Město nad Metují, 5259 Špindlerův Mlýn, Labská louka meadow, Kotelné jámy, Kotel Mt., 5260 Růžová hora Mt., Modrý důl valley, Obří důl valley, Luční louka meadow, Pančická louka meadow, Pomezní boudy chalets, 5261 Horní Albeřice, 5346 Brandov u Nové Vsi, 5347 Fláje, 5350 Svádov, 5357 Návarov, 5359 Vítkovice, 5360 Pec pod Sněžkou, Černá hora Mt., 5445 Hora Sv. Šebestiána, 5446 Boleboř, 5458 Nová Paka, 5463 Teplice nad Metují, 5546 Chomutov, 5642 Horní Blatná, 5645 Úhošť, 5764 Deštné, Vrchmezí Mt., 5769 Rejvíz, 5843 Teplička u Karlových Varů, 5863 Obora u Dlouhé Vsi, 5866 Horní Lipka, 5868 Ramzová-Šerák, Kouty nad Desnou, 5950 SPR

Vůznice-Benešův luh valley, Chyňava, 5969 Praděd Mt., 6070 Bruntál, 6348 Praha Mt., Padrtské rybníky ponds, 6349 Rožmitál pod Třemšínem, 6374 Morava u Nového Jičína, 6574 Bystřička, 6575 Radhošť Mt., Petrovy kameny, 6648 Velký Bor, 6744 ! Hamry (NMW), 6846 Čenkova Pila, 6947 Kvilda, Churáňov, 6948 Popelná, 6957 Filipov, 6972 Luhačovice, 7047 Chalupská slat swamp 7048 Malá niva, 7049 Spálenec, 7050 Miletínky, 7249 Plechý Mt., 7248 ! Třístoličník Mt. (NMW), 7250 Černá.

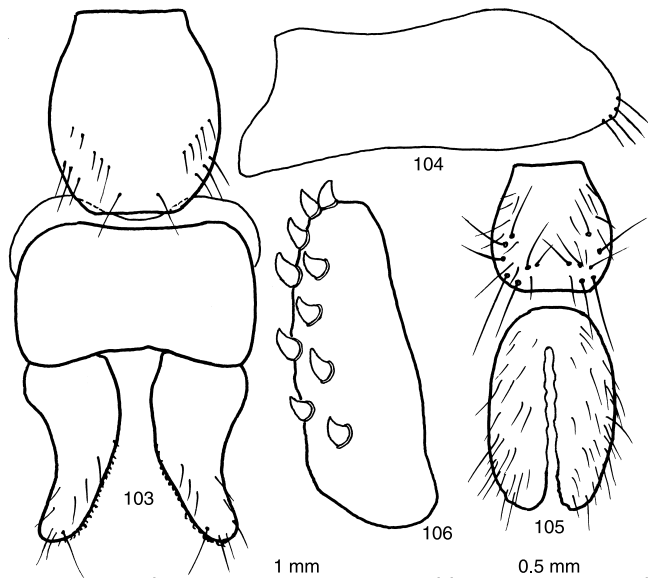
**SK:** 6682 Oravská priehrada, 6684 Suchá Hora, 6780 Štefanová, Vrátna dolina valley, 6783 Zuberec, 6784 Červená Hlina, Roháčská dolina valley, Roháčské plesá, 6787 Muráň Mt., Dolina Siedmich prameňov, Javorová dolina valley, 6880 Šrámková nature preserve – M. Fatra Mts, Stoh Mt., 6882 Velký Choč Mt., 6886 Štrbské pleso lake, 6887 Starý Smokovec, 6899 Zvala, 6800 Ruské, 6983 Demänová, Lip-tovský Ján, 6987 ! Poprad (TMB), 6900 Nová Sedlica, 7172 Veľká Javorina Mt., 7180 Križna Mt., 7199 Remetské Hámre, 7391 Zádiel, 7668 Turecký vrch Mt.

### *Norellisoma seguyi* ŠIFNER, 1973

*Norellisoma seguyi* ŠIFNER, 1973: 214

Material examined: YU 5 ♂♂ 6 ♀♀, A 1 ♂ 1 ♀.

Body-length 8–10 mm, dark. Head: *ors* 2, *frs* 3, *fvit* yellow, orbits dark-brown, parafacials, genae and face yellow, *scap* and *ped* yellow to brown, *fglm*<sub>1</sub> and arista dark-brown and pubescent. Thorax: dark and grey dusted, *acs* rare, *dcs* 5, *hs* 1–2, *ias* 3 short, *pras* 1, *sas* 1, *pas* 1, *mspls* 3–4, *spls* 1, *ass* 1 pair, *diss* 1 pair and 2, 5 times longer than *ass*, all legs yellow, wings hyaline, with yellow veins. Abdomen: male – 4<sup>th</sup> sternite more or less oval, bristled laterally, lobes



Figs 103–106. *Norellisoma seguyi* ŠIFNER. 103 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 104 – praegonite; 105 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 106 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 103, 105; Scale 0.5 mm: 104, 106.

of 5<sup>th</sup> sternite narrowed apically and slightly arched outwards, interiorly with small hook-straped spines (Fig. 103), praegonite wide, apically narrowed with four short bristles (Fig. 104); female – 6<sup>th</sup> sternite enlarged laterally, with strong bristles, 7<sup>th</sup> sternite very deeply indented, with bristles (Fig. 105), 8<sup>th</sup> sternite with ten thorns, six marginal and four submarginal, both rows convergent (Fig. 106).

**Distribution:** The species is described from the Balkan region (cf. Šifner, 1973 and 1995b), one finding in Austria (see Strobl's collection in Admont).

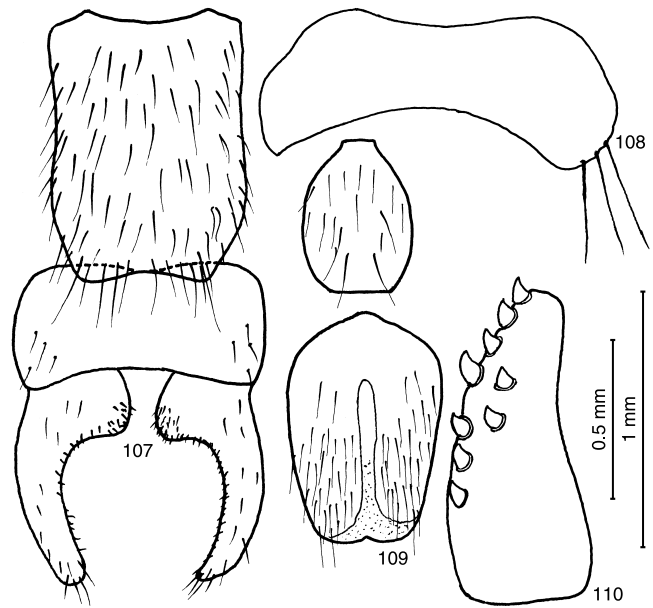
***Norellisoma spinimanum* (FALLÉN, 1819)**

- Cordylura spinimana* FALLÉN, 1819: 7
- Cordylura armipes* MEIGEN, 1826: 234 (synonymized by Šifner, 1995b: 115)
- Cordylura flava* ROSER, 1840: 59 (synonymized by Becker, 1905: 13)
- Cordylura flavicauda* MEIGEN, 1826: 235 (synonymized by Becker, 1905: 13)
- Cordylura zetterstedti* GIMMERTHAL, 1846: 104 (synonymized by Šifner, 1995b: 115)
- Cordylura zetterstedti* GIMMERTHAL, 1847: 190 (synonymized by Šifner, 1995b: 115)
- Norellia occidentalis* MALLOCH, 1919: 311 (synonymized by Vockeroth, 1965: 827)
- Norellia roserii* RONDANI, 1866: 101 (synonymized by Becker, 1905: 13)
- Norellia septentrionalis* HENDEL, 1930: 2 (synonymized by Vockeroth, 1965: 827)
- Musca semiflava* PANZER, 1798: 19 (synonymized by Schiner, 1864b: 73 and later Neuhaus, 1886: 241)

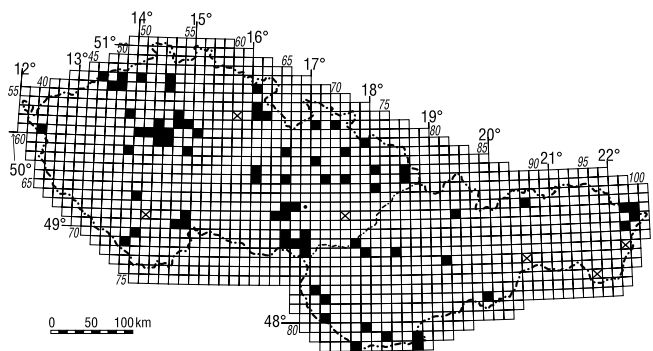
**Material examined:** CZ and SK 145 ♂♂ 109 ♀♀, A 11 ♂♂ 3 ♀♀, CH 1 ♂ 1 ♀, H 16 ♂♂ 12 ♀♀, D 2 ♂♂ 1 ♀, RUS 3 ♂♂ 1 ♀, CR 1 ♂, SLO 1 ♂, N 1 ♀.

**Body-length** 8–10 mm, yellow-brown to brown. **Head:** *ors* 2, *frs* 3, *fvit*, orbits, parafacials, genae and face yellow, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista dark and pubescent, one vibrissa together with 4–6 very short bristles, palpi yellow. **Thorax:** yellow to brown sometimes with a dark stripe along *dcs*, *acs* sparse, *dcs* 5, *hs* 1, *press* 1, *ias* 1–2 very short, *pras* 1, *sas* 1, *pas* 2, *ntpls* 2, *prpls* and *prsts* absent, *mspls* 2–4, *stpls* 1, legs yellow to brown. **Abdomen:** male – 4<sup>th</sup> sternite rectangular, slightly narrowed and shortly bristled apically, lobes of 5<sup>th</sup> sternite slightly arched inwards, with small additional lobes and with black spines mediobasally, median margin of lobes with small and sparse bristles (Fig. 107), the size of additional lobes and the number of spines is very variable, praegonite with four bristles (Fig. 108); female – 6<sup>th</sup> sternite oval, proximally narrowed and shortly bristled, 7<sup>th</sup> sternite slightly divided into two sclerites (Fig. 109), 8<sup>th</sup> sternite with seven to nine thorns, position and size very variable (Fig. 110).

**Distribution (Map 15):** Holarctic species is widely distributed, with variable coloration (cf. Šifner, 1995b). Larvae develop in leaves of *Rumex aquaticus* and most likely also in other species of the genus *Rumex*.



**Figs 107–110. *Norellisoma spinimanum* (FALLÉN).** 107 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 108 – praegonite; 109 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 110 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 107, 109; Scale 0.5 mm: Figs 108, 110.



**Map 15. The distribution of *Norellisoma spinimanum* (FALLÉN).**

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 5860 Hradec Králové, 6767 Hlubočany (Landrock, 1910a), 6851 Protivín (Vimmer, 1913), 6865 Brno-Černovice, 6871 Bílovice (Czižek, 1907).

**Further localities:** 5346 Mníšek, 5348 Duchcov, 5350 Svádov, 5353 Zahradky, 5447 Most, 5448 Bílina, 5453 Doksy, 5462 Skalka, 5662 Dobruška, Běstiny u Dobrušky, 5749 Zichovec, 5754 Hlavenec, 5762 Pulice-Halín, 5763 Chábory, 5852 Roztoky u Prahy, Praha-Čimický háj, Praha-Suchdol, Praha-Bohnice, Praha-Holešovice, 5854 Čelákovice, Brandýs nad Labem, 5855 Kostomlaty, 5868 Kouty nad Desnou, 5870 Vrbno, 5940 Cheb, 5950 Chyňava, Unhošť, 5951 Praha-Ruzyně, 5952 Praha-Krč, 5953 Praha-Miličov, Praha-Háje, 5956 Pečky, 6052 Davle, Písnice, 6053 Kunice, 6073 Otice, Opava, 6149 Cerhenice, 6155 Samopše, Sázava, 6165 Uhlířské Janovice, 6171 Dvorce, 6268 Chomu-

tov-Přovice, 6362 Sněžné, 6374 Příbor, 6377 Komorní Lhotka, Třinec, 6462 Nové Město na Moravě, 6465 Culov u Kunštátu, 6469 Olomouc, 6471 Lipník nad Bečvou, 6478 Dolní Lomná, 6574 Bystřička, 6650 Vráž u Písku, 6765 Bílovice nad Svitavou, 6766 Brno-Hády, 6767 Vyškov, Hlubočany, 6855 Jindřichův Hradec, 6864 Popůvky, Ivančice, 6865 Střeblice, Brno-Černovice, 6954 Třeboň, 6955 Stráž nad Nežárkou, 7050 Miletínky, 7065 Strachotín, 7067 Kobylí, 7149 Kyselovský les forest, 7165 Sedlec u Mikulova, Dolní Věstonice, Klentnice, Mušov, 7166 Nové Mlýny-Křivé jezero, Lednice, 7167 Podivín, 7267 Břeclav.

**SK:** Literary data – 7297 Michalovce (Thalhammer, 1899), 7389 Rožňava (Fritsch, 1875; Thalhammer, 1899), 7596 Slov. Nové Mesto (Thalhammer, 1899).

Further localities: 6789 Podolínec, 6882 Sokolče, 6899 Zvala, Stakčín, 6800 Ruské, 6900 Ruský Potok, Nová Sedlica, 7099 Vihorlat Mts-Morské oko, 7172 V. Javorina Mt., 7273 N. Mesto nad Váhom, 7376 Partizánské, 7481 Pstruša, 7668 Turecký vrch Mt., 7769 ! Sv. Jur (NMW), Šúr, Pezinok, 7785 Hajnáčka, 7969 Šamorín, 8073 Kolárovo, 8175 Martovce, 8178 Kováčovské kopce hills, 8271 Medvedov, 8278 Štúrovo.

### *Norellisoma striolatum* (MEIGEN, 1826)

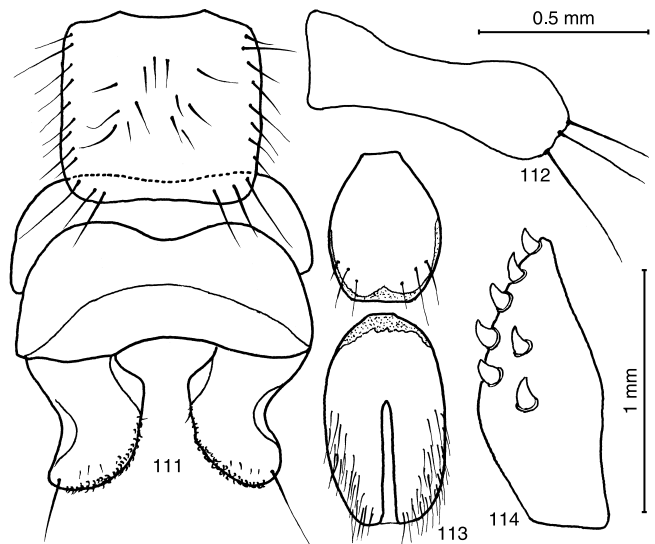
*Cordylura striolata* MEIGEN, 1826: 235

Material examined: CZ and SK 83 ♂♂ 36 ♀♀, A 6 ♂♂, I 2 ♂♂ 3 ♀♀, CH 6 ♂♂ 6 ♀♀, RO 1 ♂ 1 ♀, PL 1 ♂.

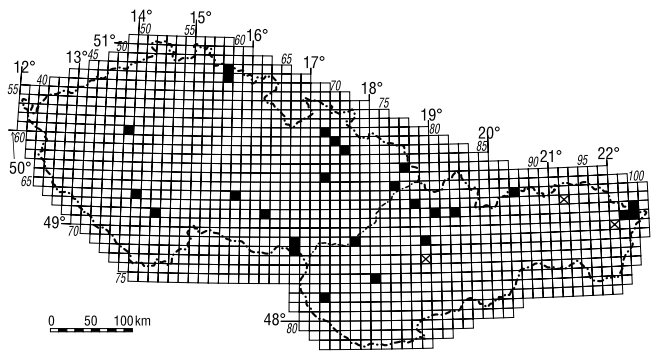
Body-length 7–10 mm, dark. Head: *ors* 2, *frs* 2, *fvit* yellow-red, orbits in upper half dark, parafacials, genae and face yellow, *scap* and *ped* yellow, *fglm*<sub>1</sub> yellow with dark, arista pubescent, one vibrissa together with 3–4 short weak bristles, palpi yellow. Thorax: dark, *acs* only very sparse, *dcs* 5, *hs* 1, *press* 1, *ias* 2–3 very short or absent, *pras* 1, *sas* 2, *pas* 2, *scs* 1 pair, *prpls* 1–2 yellow and haired, *prst* indistinct, *mspls* 1, *stpls* 1, all coxae yellow, mid, hind and sometimes also fore femora with a dark stripes or only darkened apically. Abdomen: male – 4<sup>th</sup> sternite more or less square, with strong bristles laterally, lobes of 5<sup>th</sup> sternite short and medial margin with short spines (Fig. 111), praegonite in apical half enlarged, with three bristles (Fig. 112); female – 6<sup>th</sup> sternite more or less oval, caudally slightly sclerotized, 7<sup>th</sup> sternite deeply divided into two sclerites, (Fig. 113), 8<sup>th</sup> sternite with seven thorns in apical half, four marginal and three submarginal (Fig. 114).

Distribution (Map 16): This palaeartic species is distributed not only from all of Europe to South territory of Russia (cf. Gorodkov, 1986), but it was also collected in China (Sun, 1992). In CZ and SK it was found in lowlands as well as in mountains, but sporadically.

**CZ:** 5259 Labská louka meadow, 5359 Vítkovice, 5949 Zbečno, 5969 Velká Kotlina, 6070 Karlovec, 6171 Slezská Harta, 6377 Třinec, 6469 Grygov, 6576 Javořina Mt., Tanečnice Mt., 6650 Vráž u Písku, 6660 Bransouze, 6852 Purkarec, 6863 Mohelno, 7166 Pavlovské vrchy-Klausen, 7266 Lednice.



Figs 111–114. *Norellisoma striolatum* (MEIGEN). 111 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 112 – praegonite; 113 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 114 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 111, 113; Scale 0.5 mm: Figs 112, 114.



Map 16. The distribution of *Norellisoma striolatum* (MEIGEN).

**SK:** Literary data – 6793 Bardejov, 7198 Vihorlat (Thalhammer 1899), 7379 Kremnica (Aczél 1939).

Further localities: 6688 Vyšné Ružbachy, 6880 valley of Stohový potok brook, Vrátna dolina valley, nature preserve Šrámková – M. Fatra Mts., 6778 Sulava, 6882 Velký Choč Mt., 6800 Ruské, 6999 Stakčín, 6900 Ruský Potok, Nová Sedlica, 7172 V. Javorina Mt., 7279 Turček, 7574 Hrašková lúka meadow, 7769 Pezinok.

### *Norellisoma sylviae* ŠIFNER, 1999

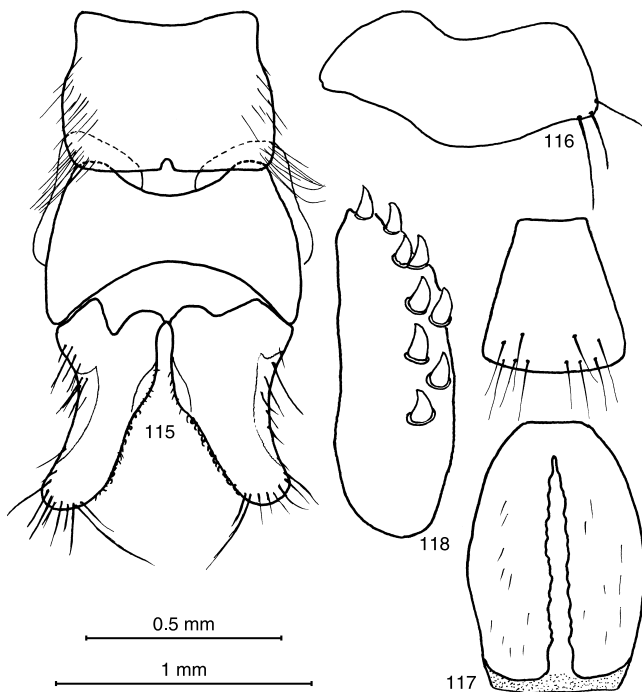
*Norellisoma sylviae* ŠIFNER, 1999b: 56

Material examined: BG 1 ♂ 1 ♀.

Body-length 10 mm, dark. Head: *ors* 3, *frs* 4–5, *fvit* yellow, orbits dark, parafacials, genae and face yellow, *scap* and *ped* yellow, *fglm*<sub>1</sub> dark, arista pubescent, one vibrissa together with several fine and yellow bristles, palpi yellow. Thorax: dark but grey dusted, *acs* sparse, *dcs* 5, *hs* 2, *press* 1, *ias* 3

very short, *pras* 1, *sas* 1, *pas* 2, *diss* 1 pair long, *ass* very short, *prpls* 1 haired, without *prsts*, *ntpls* 2 *mspls* 2 long and 2 weak, *stpls* 1, anepisternum posteriorly and katepisternum entire haired, F<sub>1</sub> yellow, F<sub>2</sub> and F<sub>3</sub> with a narrow dark stripe dorsally, all tibiae and tarsi yellow. Abdomen: male – 4<sup>th</sup> sternite wider than long, lobes of 5<sup>th</sup> sternite straight and slightly arched outwards and slightly broadened basally (Fig. 115), cerci long, praegonite wide, tapered apically, with three bristles (Fig. 116); female – 6<sup>th</sup> sternite more or less square, enlarged caudally and sparsely bristled, 7<sup>th</sup> sternite very deeply indented and slightly sclerotized caudally (Fig. 117), 8<sup>th</sup> sternite with nine thorns (Fig. 118).

**Distribution:** Only one male of the species has been found in Bulgaria (Šifner, 1999b). In this work I am describing also the female: this female was originally denoted as a female of species *N. seguyi* (Bulgaria, loc. Rila planina, leg. Lauterer – cf. Šifner, 1995b).



Figs 115–118. *Norellisoma sylviae* ŠIFNER. 115 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternite; 116 – praegonite; 117 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites; 118 – 8<sup>th</sup> female abdominal sternite. Scale 1 mm: Figs 115, 117; Scale 0.5 mm: 116, 118.

### Tribe Gymnomerini

#### Genus *Norellia* ROBINEAU-DESVOIDY, 1830

*Norellia* ROB.-DESV., 1830: 673 (type species: *Norellia pseudonarcisi* ROB.-DESV., 1830: 676 – by mon. des.) (= *Cordylura spinipes* MEIGEN, 1826)

*Acantholena* RONDANI, 1856: 101 (type species: *Acantholena maculipennis* RONDANI, 1856: 101 – by orig. des.) (= *Cordylura spinipes* MEIGEN, 1826)

**General characters:** Fore femora with a double row of strong bristles, fore tibiae only with one row of

strong bristles in both sexes, mid and hind femora with several anteroventral bristles in distal half arranged in two rows, wings apically darkened. Cerci of males straight and only slightly arched in lateral view.

#### *Norellia spinipes* (MEIGEN, 1826)

*Cordylura spinipes* MEIGEN, 1826: 237

*Norellia pseudonarcisi* ROBINEAU-DESVOIDY, 1830: 673 (synonymized by Becker, 1905: 14)

*Acantholena maculipennis* RONDANI, 1856: 101 (synonymized by Becker, 1905: 14)

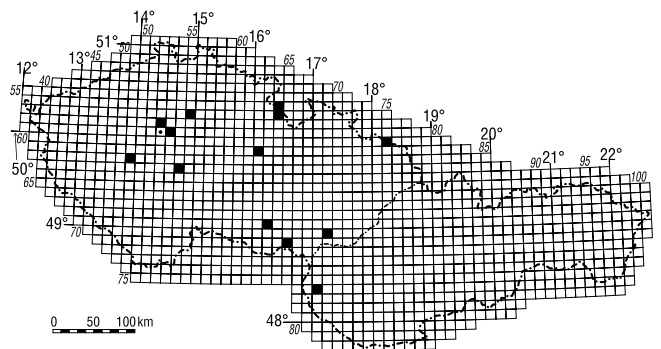
*Cordylura melaleuca* LOEW, 1873: 245 (synonymized by Becker, 1905: 14)

*Acantholena longipennis* SÉGUY, 1932: 152 (synonymized by Sack, 1937: 71)

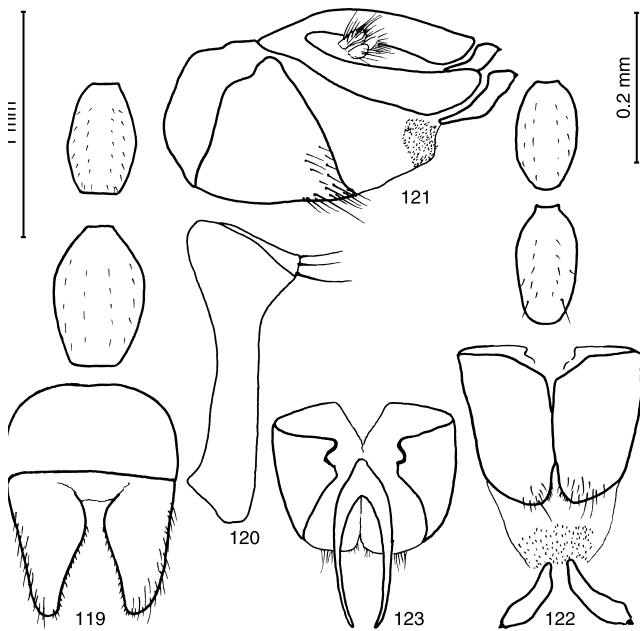
**Material examined:** CZ and SK 11 ♂♂ 6 ♀♀, H 1 ♀, TR 1 ♂, I 1 ♂ 1 ♀, CH 1 ♂ 2 ♀♀, GR 2 ♀♀, E 1 ♀.

**Body-length** 8–10 mm, body primarily yellow. Upper half of occiput, part of scutum and abdomen shiny black dorsally. Head: spherical, *ivs* 1, *ovs* short, *pvs* missing, *ors* 1–2, *frs* 3–4, *fvit* yellow, orbits, parafacials, genae, face and lower part of occiput yellow, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista black and pubescent, vibrissal callus with one vibrissa together with one short bristle, without *gns*. Thorax: *acs* missing, *dcs* 2 pairs (presutural and prescutellar), *hs* 1 very short, *ias* 1, *sas* 1, *pas* 1, *ntpls* 2 (first very short), *prpls* 1, *prsts* missing, *mspls* 1, *stpls* 1, anepisternum and katepisternum bare, all legs yellow, wings darkened apically. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternites more or less oval, very sparsely bristled (short bristles in four rows), lobes of 5<sup>th</sup> sternite straight, bristled laterally, with short spine-like bristles medially (Fig. 119), praegonite with three apical bristles (Fig. 120); female – 5<sup>th</sup> sternite oval, 6<sup>th</sup> sternite narrowed proximally, 7<sup>th</sup> sternite fused with 7<sup>th</sup> tergite and bristled caudo-medially, 8<sup>th</sup> sternite slightly broadened caudally, with a small apical thorn (Figs 121–123).

**Distribution** (Map 17): Larvae develop in leaves of daffodils (*Narcissus pseudonarcissus*) (cf. Robineau-Desvoidy, 1830). The life cycle was described in detail by Ciampolini (1957); the origin of the materials is *N. tazetta* and *N. bulbocodium*. Previously, a single observation of pupae was described in bulbs of *Leucojonum* sp. (Ritzema Bos,



Map 17. The distribution of *Norellia spinipes* (MEIGEN).



Figs 119–123. *Norellia spinipes* (MEIGEN). 117 – 3<sup>th</sup> to 5<sup>th</sup> male abdominal sternites, 120 – praegonite; 121 – female terminalia (lateral view); 122 – female terminalia with 8<sup>th</sup> sternites (ventral view); 123 – female terminalia without 8<sup>th</sup> sternites (dorsal view). Scale 1 mm: Figs 119, 121, 122, 123. Scale 0.2 mm: Fig. 120.

1927; De Meijere, 1940), other observations included only *Narcissus* sp. (Kabos, 1954; de Jong, 1985; Godfrey, 1989 and others). Jong (1985) re-examined the specimens from the Netherlands, redescribed *Norellia tipularia* (FABRICIUS, 1794) and determined the specific differences between species *N. tipularia* and *N. spinipes*. According to available data, type of the *tipularia* species is not in the collection of Fabricius (Ziemsens, 1964). *Norellia tipularia* may be found in France and most of Europe, *N. spinipes* occurs in Great Britain, the Netherlands and in France (de Jong, 1985). Differential characters in both species, especially the shape of surstyli and cerci of males, are in my opinion unrelated to variability; the praegonite of males is constant with three bristles. I did not find differences on females' terminalia either (dissect females were without spermathecae).

**CZ:** Literary data – 5952 Praha-Braník (Vimmer, 1922).

Further localities: 5664 Šerlichův mlýn mill nr. Deštné, 5755 Lysá nad Labem, 5764 Deštné, 5852 Praha-Troja, Roztoky u Prahy, 5952 Praha-Prokopské údolí, 5953 Praha-Háje, 6075 Šilhěřovice, 6162 Předhradí, 6249 Jince, 6354 Popovice, 6963 Mor. Krumlov, 7069 Strážnice, 7165 Pavlovské vrchy hills, 7668 Turecký vrch hill.

### Genus *Gymnomera* RONDANI, 1867

*Gymnomera* RONDANI, 1867: 135 (type species: *Cordylura tarsea* FALLÉN, 1819 – by orig. des.)

*Paragymnomera* HENDEL, 1930b: 80 (type species: *Cordylura dorsata* ZETTERSTEDT, 1838 – by orig. des.)

*Cochliarium* BECKER, 1894: 183 (type species: *Cordylura cuneiventris* ZETTERSTEDT, 1846 – by orig. des.)

*Rhopochilus* ENDERLEIN, 1936: 136 (type species: *Cochliarium lasiostoma* BECKER, 1894 – by mon. des.)

**General characters:** Body very weakly bristled, very variable in primary colour, two to five pairs of dorsocentral bristles, fore part of scutum with one pair of spine-like bristles, humeral callus with fine bristles anteriorly, the praegonite of males with strong and long bristles, 8<sup>th</sup> sternites of females fused with 8<sup>th</sup> tergite.

In the Palaearctic region four species have been mentioned by Gorodkov (1986), Šifner (1977) reduced the number to three species because the species *G. mellina* (BECKER, 1900) is a junior subjective synonym of *G. dorsata* (ZETT.) (cf. also Šifner, 1977). Vockeroth (1965) recorded five Nearctic species. The genus *Cochliarium* BECKER is distinguishable from the genus *Gymnomera* RONDANI, above all, by the number of dorsocentral bristles (cf. Hackman, 1956).

Ozerov (1999) separated a new genus *Langechristia* from the genera *Gymnomera* and *Cochliarium* on the basis of the following characters: the presence of 3 to 5 frontal bristles, the presence of postsutural interalar bristles and the absence of short spine-like bristles (erect bristles) on the anterior margin of scutum. In this genus three new species *L. ziegleri*, *L. amica* and *L. speciosa* were described by Ozerov (1999) in the Far East of Russia.

In my opinion, the number of dorsocentral bristles is not constant and from the taxonomic point of view unacceptable; moreover, at all species of both genera (i. e. *Gymnomera* and *Cochliarium*) one pair of little spine-like bristles is on the anterior margin of scutum. Currently, molecular data also have confirmed the identity of both genera (cf. Bernasconi et al., 2000a, b).

Rydén (1933) observed larvae of *G. hirta* HENDEL in the flowers of *Pedicularis scerptrum-carolinum* (Scrophulariaceae); the species *G. hirta* is considered by Hackman (1956) as an arctic to high-boreal species. Neff (1968) investigated the biology of species *G. cerea* (COQUILLET, 1908) and *G. insurata* (MALLOCH, 1920) in North America. Both sexes are predaceous on small insects and are active in spring during the plant's flowering period. Larva of *G. insurata* feed the flower of three species of *Penstemon* (*hirsutus*, *digitalis* and *calycosus*), *G. cerea* feed the ovules and capsule of *Pedicularis canadensis*. Life cycles of other species have not yet been described.

### Key to species of genus *Gymnomera*

1. Vein R<sub>1</sub> bare . . . . . 2
- Vein R<sub>1</sub> in apical half with varying number of long or short setulae . . . . . 3
- 2(1) Lobes of 5<sup>th</sup> abdominal sternite of male haired, with a short spines laterally (Figs 138–139), praegonite of male short, wide, with six bristles (Fig. 141), 7<sup>th</sup> abdominal sternite of female not divided, oval caudally and bristled (Fig. 142) . . . . . *Gymnomera dorsata* (ZETTERSTEDT, 1838)
- Lobes of 5<sup>th</sup> abdominal sternite of male not haired, with



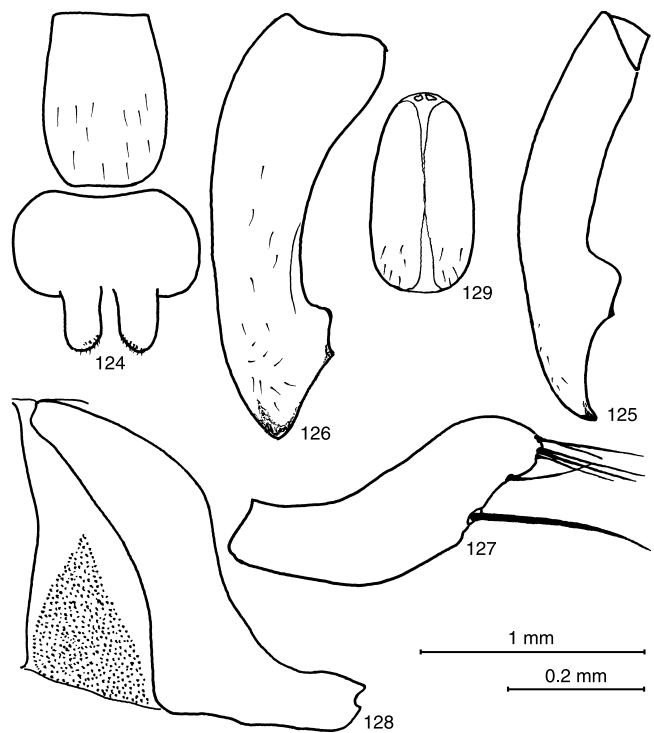
- short spines only caudally (Fig. 124), praegonite of male arched, with seven bristles (Fig. 127), 7<sup>th</sup> abdominal sternite of female partly divided, with two separate sternites proximally (Fig. 129) . . . . . *Gymnomera alpina* sp. n.
- 3(1) Vein R<sub>1</sub> in apical half with long setulae . . . . . 4  
 – Vein R<sub>1</sub> in apical half with short setulae or at most with two bristles at end of costa vein . . . . . 5
- 4(3) Palpi yellow . . . . . 5  
 . . . *Gymnomera cuneiventris* (ZETTERSTEDT, 1846)  
 – Palpi dark . . . *Gymnomera castanipes* (BECKER, 1894)
- 5(3) Vein R<sub>1</sub> in apical half with short setulae . . . . . 6  
 – Vein R<sub>1</sub> apical half with two setulae at end of costa vein . . . . . 8
- 6(5) First flagellomere dark. . . . . 7  
 – First flagellomere yellow, praegonite of male with four apical bristles, 7<sup>th</sup> abdominal sternite of female broadened proximally (Fig. 148) . . . . .  
 . . . . . *Gymnomera hirta* (HENDEL, 1930)
- 7(6) Praegonite of male narrow with four distinct bristles apically (Fig. 157), 7<sup>th</sup> abdominal sternite of female narrowed proximally (Fig. 158) . . . . .  
 . . . . . *Gymnomera tarsea* (FALLÉN, 1819)
- Praegonite of male enlarged basally, with four apical bristles, first and second bristles very indistinctly separated (Fig. 162) . . . . . *Gymnomera tatrica* sp. n.
- 8(5) Lobes of 5<sup>th</sup> abdominal sternite of male pointed and arched exteriorly (Fig. 150), praegonite of male with four apical and two subapical bristles (Fig. 153) . . . . .  
 . . . . . *Gymnomera slovacica* sp. n.

***Gymnomera alpina* sp. n.**

**Description:** Type material: Holotype, male: Austria, Grossglockner N., alpine meadow, 47. 06N/12. 43E, 2250 m a. l. s., 31. 7. 1988, Barták leg.; Allotype, female, the same data; other material: one male, the same data (all in PCS).

Body-length 5–7 mm, brown in primary colour, pleura brown, scutum black but yellow dusted. Head: *ors* 2, *frs* 2, *fvit* yellow-brown, parafrontals brown and in upper half dark, face and genae yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> yellow-brown, arista pubescent and black, vibrissal callus yellow with one weak vibrissa together with 2 short bristles, palpi yellow and sparsely haired. Thorax: *acs* distinct, *dcs* 4–5 (prescutellar strong), *hs* 2 (anterior bristle very weak), *press* 1, without *ias*, *sas* 2, *pas* 2, *scs* 2 pairs equal in size, *ntpls* 2, *prpls* and *prsts* 1 haired, *mspls* 1 strong and 4–5 haired, *stpls* 1, anepisternum posteriorly and katepisternum sparsely haired, all legs yellow, R<sub>1</sub> bare.

Abdomen: male – 4<sup>th</sup> sternite caudally rounded and sparsely shortly haired, 5<sup>th</sup> sternite wide, lobes straight and narrow, with short spine-like bristles caudally (Fig. 124), surstylus wide basally, centrally narrowed, broadened apically, with a distinct lateral thorn (Figs. 125–126), praegonite with seven bristles, lower bristle very strong and long (Fig. 127); female – 7<sup>th</sup> sternite entire, with two indicate separate sclerites (Fig. 127); female terminalia with two projections caudally (Fig. 129).



**Figs 124–129. *Gymnomera alpina* sp. n.** 124 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 125 – surstylus (caudal view); 126 – surstylus (latero-caudal view); 127 – praegonite; 128 – female terminalia (lateral view); 129 – 7<sup>th</sup> female abdominal sternite. Scale 0.5 mm: Figs 124, 125, 126, 128, 129; Scale 0.2 mm: Fig. 127.

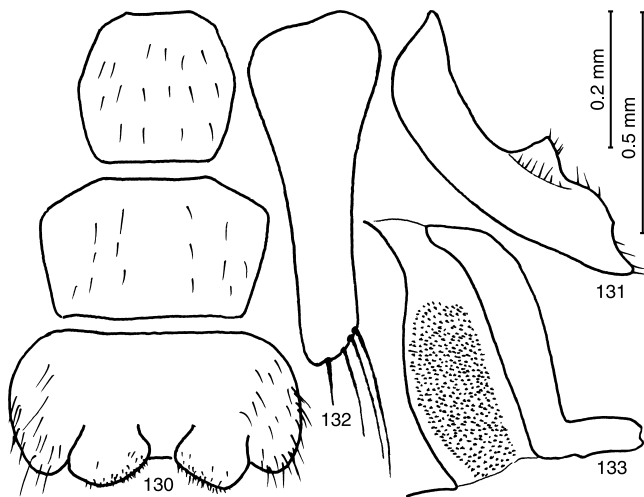
***Gymnomera castanipes* (BECKER, 1894)**

*Cochliarium castanipes* BECKER, 1894: 185

**Material examined.** SK 2 ♂♂ 1 ♀, A 2 ♂♂.

Body-length 4 mm, dark in primary colour. Head: *ors* 2, *frs* 2, *fvit* brown, orbits shining black, parafacials dark but weakly yellowish dusted, face brown, *scap*, *ped* and *fglm*<sub>1</sub> dark, arista thickened basally and pubescent, palpi dark, vibrissal callus with 5–6 bristles, *gns* 4–5 distinctly developed. Thorax: dark, *acs* sparse, *dsc* 2 (praesutural weak), *hs* 1, *ntpls* 2, *sas* 2, *pas* 2, *scs* 2 pairs equal in size, *prpls* 1, *prsts* 1 weak, *mspls* 2, *stpls* 1, anepisternum posteriorly and katepisternum entire haired, legs yellow, all tarsomeres darkened, R<sub>1</sub> apically setose. Abdomen: male – 4<sup>th</sup> sternite wide and hexagonal, 5<sup>th</sup> sternite wide, bristled laterally, lobes distinct and shortly bristled medially (Fig. 130), surstylus broadened and pointed apically, with sparse bristles (Fig. 131), praegonite narrow, with four bristles (Fig. 132); female terminalia with a small but distinct protuberance ventrally (Fig. 133).

**Distribution:** This Central European species was described in Switzerland by Becker (1894), Strobl (1898) confirmed the incidence in eastern Alps, identical data were quoted by Bezzi (1918); Strobl's collection contains two males (locality: Scheiblstein, Styrian Alps and locality: Sirbitzkogel Mt.).



Figs 130–133. *Gymnomera castanipes* (BECKER). 130 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 131 – surstylus; 132 – praegonite; 133 – female terminalia (lateral view). Scale 0.5 mm: Figs 130, 131, 133; Scale 0.2 mm: Fig. 132.

Not yet found in CZ, in SK it was recorded by Šifner (1978b).

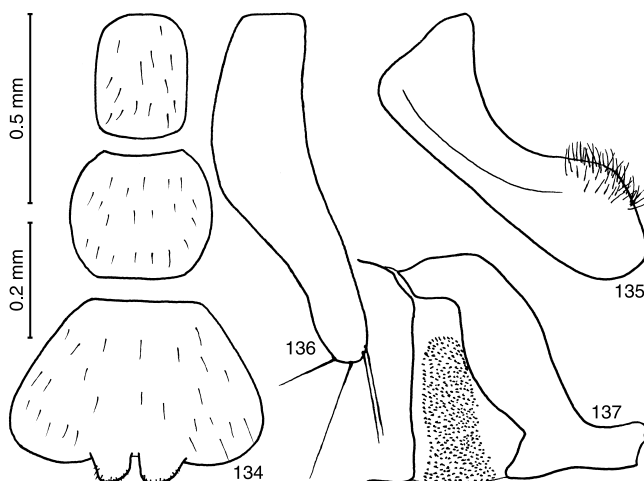
**SK:** Localities – 6886 (Slepé pleso above Štrbské pleso), Račkova dolina valley; 6880 Stoh Mt., 6787 Predné Medodoly.

#### *Gymnomera cuneiventris* (ZETTERSTEDT, 1846)

*Cordylura cuneiventris* ZETTERSTEDT, 1846: 2020

Material examined. FIN 1 ♂ 1 ♀.

Body-length 4 mm, shiny dark to black in primary colour. Head: *ors* 2, *frs* 2, *fvit* black and in upper half yellow-brown, orbits black but in upper half yellow dusted,



Figs 134–137. *Gymnomera cuneiventris* (ZETTERSTEDT). 134 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 135 – surstylus; 136 – praegonite; 137 – female terminalia (lateral view). Scale 0.5 mm: Figs 134, 135, 137; Scale 0.2 mm: Fig. 136.

parafacials, face and genae brown, *scap*, *ped* and *fglm*<sub>1</sub> dark, arista pubescent and in basal third distinctly thickened, vibrissal callus with three strong bristles together with 4–6 weak bristles, palpi yellow. Thorax: dark, *acs* multinumerous, *dcs* indistinct, *hs* 1, *ntpls* 2 very weak, *sas* 1, *pas* 2, *scs* 2 pairs equal in size, *mspls* 2, *prpls* 1, *prsts* 1, *stpls* 1, anepisternum and katepisternum sparsely haired, legs yellow, all tarsomeres darkened, wings yellowish, R<sub>1</sub> setose. Abdomen: male – 4<sup>th</sup> sternite concave proximally, lobes of 5<sup>th</sup> sternite very small, with short and sparse spine-like bristles caudally, all abdominal sternites only shortly and sparsely bristled (Fig. 134), surstylus broadened apically and laterally haired (Fig. 135), praegonite narrow, with four bristles (Fig. 136); the female terminalia with a distinct sharp and small processus apically (Fig. 137).

**Distribution:** The arctic species in Sweden and Finland (Hackman, 1956), it was recorded in the north territory of Russia by Gorodkov (1986).

Not yet found in CZ, in SK was collected in one locality 7674 Zobor-Párovské háje, (Čepelák J. and Čepelák S, 1991); this material was not revised by the author.

#### *Gymnomera dorsata* (ZETTERSTEDT, 1838)

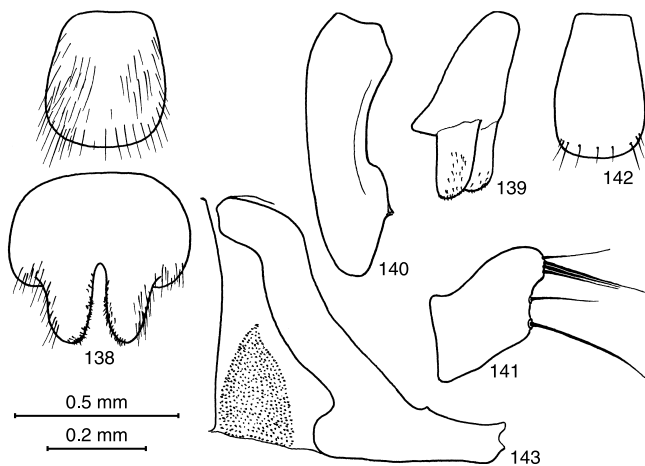
*Cordylura dorsata* ZETTERSTEDT, 1838: 735

*Gymnomera mellina* BECKER, 1894: 57 (synonymized by Šifner, 1977c: 397)

Material examined. S 3 ♂♂ 2 ♀♀, GB 1 ♂ 1 ♀, CH 11 ♂♂ 9 ♀♀ (coll. ZMB, loc. St. Moritz, det. Becker).

Body-length 5–6 mm, brown to brown-yellow. Head: *ocs* short, occiput with sparse short bristles, *ors* 2, *frs* 2, *fvit* and orbits yellow, parafacials, face and genae yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista pubescent and brown, palpi yellow, haired in lower side, vibrissal callus yellow with one vibrissa. Thorax: scutum yellow, darkened dorsally, *scs* sparse, *dcs* 4, *hs* 1, *press* 1, *ias* 2 very short, *sas* 1, *pas* 2, *scs* 2 pairs equal in size, *ntpls* 2, *prpls* 1 haired, *mspls* 1 and 2–3 haired, *stpls* 1, anepisternum and katepisternum sparsely haired, all legs yellow, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite oval and slightly broadened caudally and with long hairs, lobes of 5<sup>th</sup> sternite straight, haired laterally, with short spines medially and partly exteriorly from lateral view (Fig. 138, 139), surstylus broadened apically, with a distinct lateral thorn (Fig. 140), praegonite short and wide with six long bristles (Fig. 141); female – 7<sup>th</sup> sternite, convex caudally and bristled (Fig. 142), female terminalia distinctly indented caudally, with a little prominence dorsally (Fig. 143).

**Distribution:** The species is distributed in northern Europe, in northern territory of Russia and in the Alps (Gorodkov, 1986) and according to Hackman (1956) it is considered a high-boreal species. This species was recorded by Becker (1894) in Switzerland (St. Moritz) and in Italy (South Tirol); recently, it has been confirmed in Switzerland by Marz and Bächli (1998).



Figs 138–143. *Gymnomera dorsata* (ZETTERSTEDT). 138 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 139 – 5<sup>th</sup> male abdominal sternite (lateral view); 140 – surstylus; 141 – praegonite; 142 – female terminalia (lateral view); 143 – 7<sup>th</sup> female abdominal sternite. Scale 0,5 mm: Figs 138, 139, 140, 143; Scale 0.2 mm: Figs 141, 142.

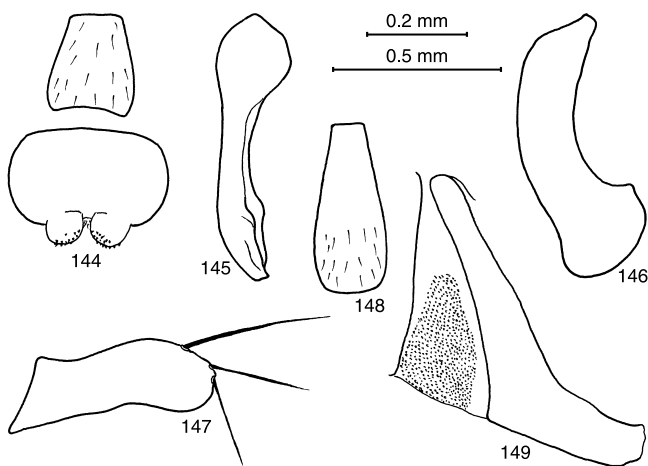
### *Gymnomera hirta* (HENDEL, 1930)

*Gymnomera hirta* HENDEL, 1930a: 79

Material examined. FIN: 1 ♂ 1 ♀.

Body-length 5–6 mm, yellow. Head: *ocs* very weak, ocellar triangle brown, orbits, parafacials, face and genae yellow, *fvit* yellow-brown, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista pubescent and brown, two vibrissae together with 3–4 very weak bristles, palpi yellow and narrow in lower part long and yellow haired.

Thorax: *acs* sparse, *dcs* 5, *hs* 1 weak, *sas* 2, *pas* 2, *scs* 2 pairs equal in size, without *prpls* and *prsts*, *mspls* 1–2 together with 3–4 short bristles, *stpls* 1, anepisternum and katepisternum sparsely haired, all legs yellow, R<sub>1</sub> apically



Figs 144–149. *Gymnomera hirta* HENDEL. 144 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 145 – surstylus; 147 – praegonite; 148 – female terminalia (lateral view); 149 – 7<sup>th</sup> female abdominal sternite. Scale 0.5 mm: Figs 144, 145, 146, 149; Scale 0.2 mm: Figs 147, 148.

distinctly setose. Abdomen: male – 4<sup>th</sup> sternite slightly broadened and concave caudally, very sparsely and shortly haired, lobes of 5<sup>th</sup> sternite very short, oval, with short sparse spines (Fig. 144), surstylus broadened apically, with an indistinct thorn in caudal view (Figs 145–146), praegonite with three long bristles (Fig. 147); female – 7<sup>th</sup> sternite very long, slightly broadened caudally, shortly and sparsely bristled (Fig. 148), female terminalia, with only an indistinct protuberance caudally (Fig. 149).

Distribution: The species was recorded in northern Finland and Sweden and it is considered a high-boreal species (Hackman 1956), it was also recorded in the northern territory of Russia (Gorokov, 1986).

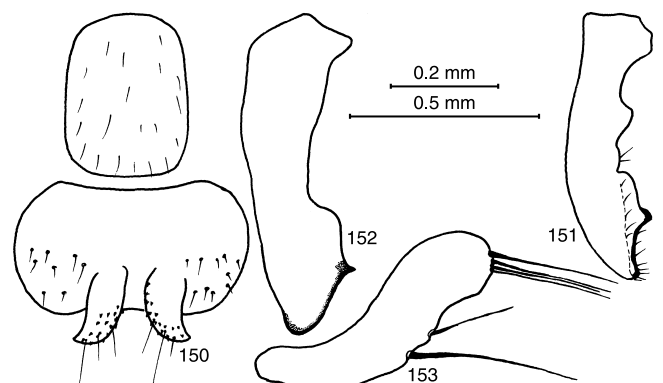
### *Gymnomera slovakia* sp. n.

Type material: Holotype, male: Slovakia, Vysoké Tatry Mts, Popradské pleso mountain lake, 1500–1600 m a.s.l., 3. 7. 1969, Mihályi leg. (in PCS); paratype, male, the same data, deposited in Budapest (TMB); both males were previously identified by author as *G. dorsata* (see Šifner, 1986).

Description: Body-length 6 mm, pleurae brown, scutum dark. Head: *ors* 2, *frs* 2, *fvit* yellow, orbits, parafacials, face and genae yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista bare and dark, vibrissal callus with one weak vibrissa together with 1–2 very short and weak bristles, palpi yellow, with yellow hairs apically. Thorax: *acs* distinct, *dcs* 5, *hs* 1, *press* 1, without *ias*, *sas* 2, *pas* 2, *scs* 2 pairs equal in size, *ntpls* 2, *prpls* and *prsts* missing, *mspls* 1, *stpls* 1, anepisternum and katepisternum entire haired, all legs yellow, R<sub>1</sub> with only two short bristles apically. Abdomen: male – 4<sup>th</sup> sternite more or less rectangular and very sparsely haired, 5<sup>th</sup> sternite wide, with very short bristles basally, lobes narrow, slightly arched exteriorly and pointed, with spine-like bristles and sparsely long haired (Fig. 150), surstylus broadened apically, with a distinct thorn (Figs 151–152), praegonite with six bristles (Fig. 153).

Female: unknown.

Name derivation. Derived from the name Slovakia.



Figs 150–153. *Gymnomera slovakia* sp. n. 150 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 151 – surstylus (caudal view); 152 – surstylus (latero-caudal view); 153 – praegonite. Scale 0.5 mm: Figs 150, 151, 152; Scale 0.2 mm: Fig. 153.

## *Gymnomera tarsea* (FALLÉN, 1819)

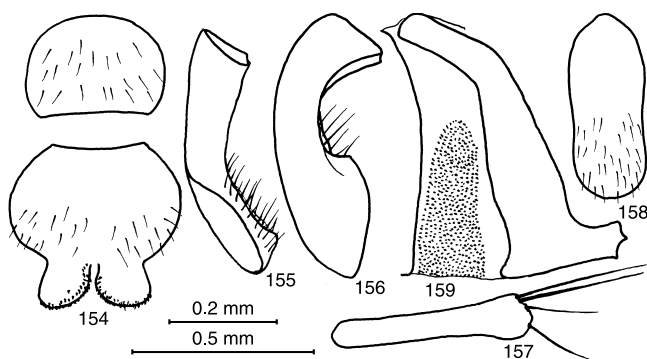
*Cordylura tarsea* FALLÉN, 1819: 8

Material examined. GB 1 ♂ 1 ♀, FIN 2 ♂♂ 3 ♀♀, S 1 ♂ 1 ♀.

Body-length 6–7 mm, yellow-brown in primary colour. Head: *ors* 2, *frs* 2, *fvit* brown, orbits in upper half brown, parafacials, face and genae brown but white dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> dark, arista dark and pubescent, vibrissal callus with one vibrissa together with 2–3 very short and weak bristles, palpi yellow and apically haired. Thorax: *acs* very sparse, *dcs* 4–5, *hs* 2–3, *press* 1, *sas* 2, without *ias*, *pas* 2, *scs* 2 pairs equal in size, *ntpls* 2, *mspls* 1–3, *stpls* 1, *prpls* and *prsts* missing, all legs yellow, tarsomere of all legs dark, wings yellowish, R<sub>1</sub> with 4–6 black setulae apically. Abdomen: male – 4<sup>th</sup> sternite wide, concave proximally, lobes of 5<sup>th</sup> sternite oval, with short spine-like bristles medially and caudally (Fig. 154), surstylus broadened apically, with long bristles interiorly (Figs 155, 156), praegonite narrow, with four long bristles apically (Fig. 157); female – 7<sup>th</sup> sternite long, slightly broadened laterally and in caudal half shortly haired (Fig. 158), the female terminalia with a central distinct projection caudally (Fig. 159).

Distribution: The species has been recorded in southern and central Finland (Hackman, 1956), in the northern and central territory of Russia (Gorodkov, 1986), in the British Isles (Chandler, 1998) and in Germany but with question mark (see Püchel, 1999); the following specimens are deposited in NMW: Wunstnei, Schleswig-H., 13. 5. 1893, 1 male, Franzenstein, 3. 6. 1893, 1 female, coll. Mik. Ringdahl (1951) considers *G. tarsea* a high-boreal species.

Not yet found in CZ and SK.



Figs 154–159. *Gymnomera tarsea* (FALLÉN). 154 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternite; 155 – surstylus (caudal view); 156 – surstylus (lateral view); 157 – praegonite; 158 – 7<sup>th</sup> female abdominal sternite; 159 – female terminalia. Scale 0.5 mm: Figs 154, 155, 156, 159; Scale 0.2 mm: Figs 157, 158.

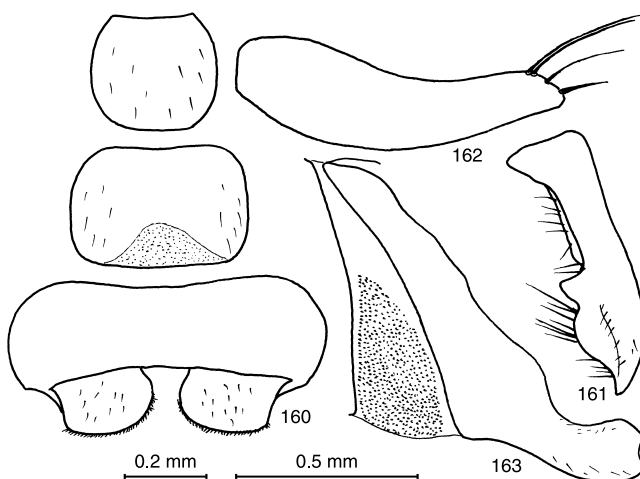
## *Gymnomera tatrica* sp. n.

Type material: Holotype, male: Slovakia, 6786–87 Vysoké Tatry Mts, Javorová dolina valley, meadow, 49.

11N/20. 11E, 1700 m a.s.l., 13. 8. 1985, Barták leg.; allotype, female: Slovakia, Malá Fatra Mts, 6780 Chleb Mt., 13. 6. 1976, Máca leg. (all in PCS).

Description: Body-length 4 mm, dark in primary colour. Head: *ors* 2, *frs* 2, *fvit* black and in upper half brown, orbits black, parafacials, face and genae dark-brown, *fglm*<sub>1</sub> black, arista black and shortly pubescent, vibrissal callus dark, with one vibrissa together with 4–5 weak bristles, palpi dark. Thorax: dark, *acs* multinumerous, *dcs* 2, *hs* 1, *ntpls* 2, *sas* 2, *pas* 2, *scs* 2 pairs equal in size, *prpls* 1, *prsts* 1 haired, *mspls* 1, *stpls* 1, anepisternum and katepisternum entirely covered with long hairs, legs yellow, all tarsomeres darkened, F<sub>1</sub> weakly darkened dorsally, R<sub>1</sub> setose apically. Abdomen: male – 4<sup>th</sup> sternite wide, more or less rectangular and slightly sclerotized caudally, 5<sup>th</sup> sternite wide, lobes distinct and with short bristles caudally (Fig. 160), surstylus broadened and with long bristles apically (Fig. 161), praegonite narrowed apically, with four bristles (Fig. 162); female terminalia slightly broadened and distinctly indented apically (Fig. 163).

Name derivation. Derived from the name Tatra Mts.



Figs 160–163. *Gymnomera tatrica* sp. n. 160 – 3<sup>th</sup> to 5<sup>th</sup> male abdominal sternites; 161 – surstylus; 162 – praegonite; 163 – female terminalia. Scale 0.5 mm: Figs 160, 161, 163; Scale 0.2 mm: Fig. 162.

## Tribus: Microprosopini

### Genus *Megaphthalmoides* RINGDAHL, 1936

*Megaphthalmoides* RINGDAHL, 1936: 179 (type species: *Cordylura unilineata* ZETTERSTEDT, 1838 – by orig. des.)

General characters. Body yellow to brown in primary colour, weakly bristled, body-size 6–8 mm. Head spherical, legs with short black setulae, anepisternum and katepisternum entirely and anepimeron only anteriorly with black hairs.

***Megaphthalmoides unilineatus***  
(ZETTERSTEDT, 1838)

*Gordylura unilineata* ZETTERSTEDT, 1838: 727

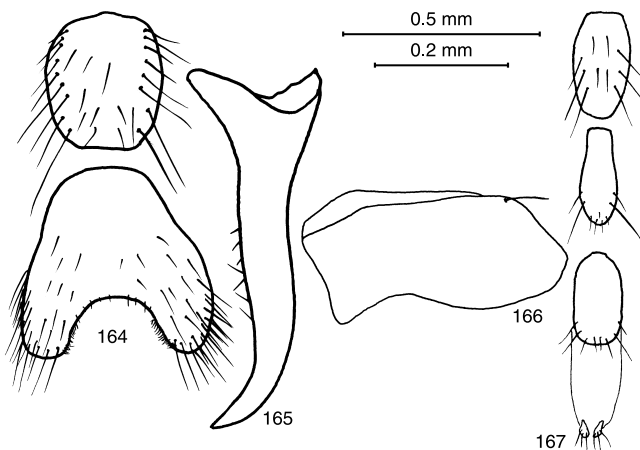
Material examined: CZ and SK: 29 ♂♂, 32 ♀♀.

Body-length 5–8 mm, brown in primary colour, scutum with a dark stripe between dorsocentral bristles. Head: *ors* 2, *frs* 3, *fvit* brown, orbits, parafacials, genae and face yellow but white dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> black and only brown basally, arista brown and pubescent, palpi brown, slightly enlarged, with short black bristles. Thorax: *acs* distinct, *dcs* 5, *ias* 1, *press* 1, *sas* 1, *pas* 2, *scs* 4 equal in size, *ntpls* 2, *prpls* 2, *prsts* 1 very short, *mspls* 3, *stpls* 1, all legs yellow, tarsi dark, wings hyaline, R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite oval and bristled, 5<sup>th</sup> sternite with processes laterally, with very short fine hairs medially (Fig. 164), surstylus long, narrow, arched apically inwards and pointed (Fig. 165), praegonite wide, with one dorsal bristle (Fig. 166); female – 8<sup>th</sup> sternites very small, with three short haired bristles, 7<sup>th</sup> sternite oval, 6<sup>th</sup> narrowed basally (Fig. 167).

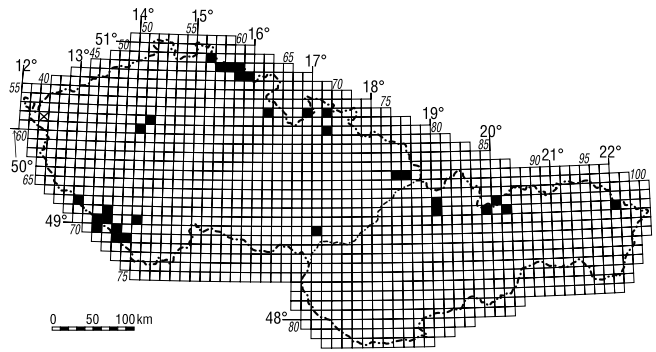
Distribution (Map 18): Palaearctic species (Gorodkov, 1986), high-boreal and boreo-alpine species (Ringdahl, 1951), northern species (Hackman, 1956). In the Czech Republic it was collected in mountains and hills (central Bohemia), very rarely in lowlands (near Prague).

**CZ:** Literary data – 5840 Frant. Lázně (Vimmer, 1913).

Further localities: 5157 Jizera Mt., Jizerská louka meadow, 5258 Mumlava, 5259 Kotelní jámy, 5260 Obří důl valley, Modrý důl valley, Pomezní boudy, 5346 Brandov; 5360 Pec pod Sněžkou, Černá hora Mt., Javor Mt.; 5361 Rýchory Mts., meadow; 5763 Chábory, 5767 Králický Sněžník Mt.; 5769 Rejvíz, 5851 Praha-Šárka, 5950 Chrštenice, 5969 Praděd Mt., 6476 Lysá hora Mt., 6477 Muřinkový vrch hill, 6744 ! Hamry (NMW), 6847 Sedlo, 6946 Modrava, 6947 Churáňov, Jezerní slat swamp, 6950 ! Prachatice



Figs 164–167. *Megaphthalmoides unilineatus* (ZETTERSTEDT). 164 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 165 – surstylus; 166 – praegonite; 167 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 164, 165, 167; Scale 0.2 mm: 166.



Map 18. The distribution of *Megaphthalmoides unilineatus* (ZETTERSTEDT).

(NMW), 7046 Roklanská slat swamp, 7048 Malá niva meadow, Velká niva meadow, Soumarský Most, Lenora, Boubín Mt., 7069 Strážnice, 7149 Černý Kříž nr. Stožec, 7248 ! Třístoličník (NMW).

**SK:** Localities – 6786 Javorová dolina valley, 6885 Tichá dolina valley, 6887 Velká Studená dolina valley, Skalnaté plešo lake, ! Tatranská Lomnica (TMB), 6780 valley of Stohový potok brook, 6880 Stoh Mt., 6900 Nová Sedlica.

**Genus *Acanthocnema* BECKER, 1894**

*Acanthocnema* BECKER, 1894: 136 (type species: *Cordylura nigrimana* ZETTERSTEDT, 1846 – by orig. des.)

*Clinoceroides* HENDEL, 1917: 36 (type species: *Cordylura glaucescens* LOEW, 1864 – by orig. des.)

General characters: Body dark, palpi enlarged without a subapical bristle, antennae short, arista bare or pubescent, fore tibiae with a strong ventroapical spine projecting almost at right angle. Wings without spots, propleural bristle only haired, abdomen of males only slightly enlarged apically, 5<sup>th</sup> sternite bilobate, 7<sup>th</sup> sternite of females partly fused with 7<sup>th</sup> tergite.

The genus was sometimes divided into two genera or subgenera: *Acanthocnema* s. str. and *Clinoceroides* according to the proclinate or lateroclinate position of orbital bristles.

Seguy (1952) quoted four species in Europe and three species in the Nearctic region which was confirmed by Vockeroth (1977) and Gorodkov (1986) who quoted three Palaearctic species only. Suwa (1986) described one species in Nepal, two species in Japan, providing a detailed analysis of the characteristics of all species. In the Palaearctic region, five species were mentioned; two in Europe (Šifner, 1974 and Andersson, 1997) and three in Asia (Suwa, 1986).

**Key to species of genus *Acanthocnema***

1. Body dark *fglm*<sub>1</sub> 1.5 times longer than wide and black in both sexes, surstylus of male narrowed apically and with long hairs (Fig. 109), 8<sup>th</sup> abdominal sternite of female with one short apical bristle (Fig. 171) . . . . . *Acanthocnema glaucescens* (LOEW, 1864)

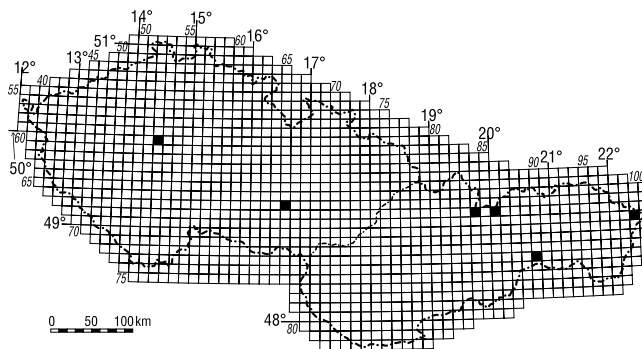
- Body yellow to brown,  $fglm_1$  3 times longer than wide, male brown, female dark, surstylus of male broadened apically and with long hairs (Fig. 173), 8<sup>th</sup> abdominal sternite of female with only setulae (Fig. 175) . . . . .  
 . . . *Acanthocnema nigrimana* (ZETTERSTEDT, 1846)

***Acanthocnema glaucescens* (LOEW, 1864)**

*Cordylura glaucescens* LOEW, 1864: 23  
*Acanthocnema latipennis* BECKER, 1894: 138 (synonymized by Šifner, 1974: 100)  
*Acanthocnema nigripes* RINGDAHL, 1936: 175 (synonymized by Hackman, 1956: 28)

Material examined. CZ and SK 10 ♂♂ 11 ♀♀, A 11 ♂♂ 10 ♀♀, S 1 ♂, YU 6 ♂♂ 1 ♀.

Body-length 5–6 mm, dark. Head: *ors* 3–4, *frs* 3–4, *fvit* black, orbits and face dark, parafacials and genae dark and white dusted, vibrissal callus brown with one strong vibrissa together with 3–4 very short bristles, *scap* and *ped* dark, *fglm<sub>1</sub>* dark and 1.5 times longer than wide, arista slightly thickened basally and bare, palpi of males yellow to brown, of females only dark, palpi in both sex enlarged centrally and with long hairs. Thorax: *acs* fine, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 1, *sas* 1, *pas* 2, *scs* 2 pairs equal in size, *prpls* 1, *prsts* 1 haired, *mspls* 3–4, *stpls* 1, anepisternum posteriorly and katepisternum entire sparsely haired, all legs dark, wings slightly darkened. Abdomen: male – 4<sup>th</sup> sternite more or less rectangular, slightly sclerotized apically, with short setulae, lobes of 5<sup>th</sup> sternite short and arched inwards, with long hairs laterally (Fig. 168), surstylus narrowed apically, with long hairs dorsolaterally (Fig. 169), praegonite arched without bristles (Fig. 170); female – 6<sup>th</sup> sternite more or less circular, 7<sup>th</sup> sternites in basal half fused with 7<sup>th</sup> tergite, 8<sup>th</sup>



**Map 19. The distribution of *Acanthocnema glaucescens* (LOEW).**

sternites triangular, with one short bristle apically (Fig. 171).

Nelson (1992b) mentioned larvae found in egg masses of caddis flies and described in detail the individual instars of larvae and pupa. Larvae live undoubtedly in swift streams (Vockeroth, 1967), in clean stream waters and on wet stones of rivers and brooks in mountains and foothills (Rozkošný, 1980). Adults of *A. glaucescens* may be found sitting down on the sides of stones in streams, similar behaviour noted by Suwa (1986), all information was summarized by Andersson (1997).

Distribution (Map 19).

**CZ:** Localities – 6053 Kunice; 6765 Moravský kras – Skalní mlýn, Moravský kras – Býčí skála.

**SK:** Localities – 6884 Račkova dolina valley, 6886 Bielowodská dolina valley; 6900 Nová Sedlica; 7390 Hrhov.

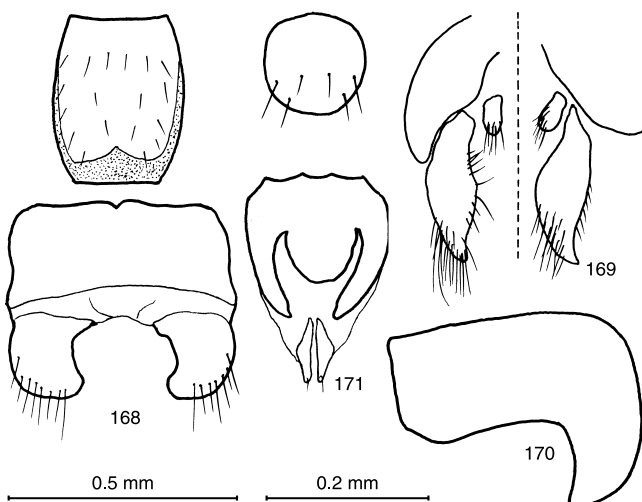
***Acanthocnema nigrimana* (ZETTERSTEDT, 1846)**

*Cordylura nigrimana* ZETTERSTEDT, 1846: 2040  
*Hydromyza tiefi* MIK, 1884: 252 (synonymized by Becker, 1894: 137)

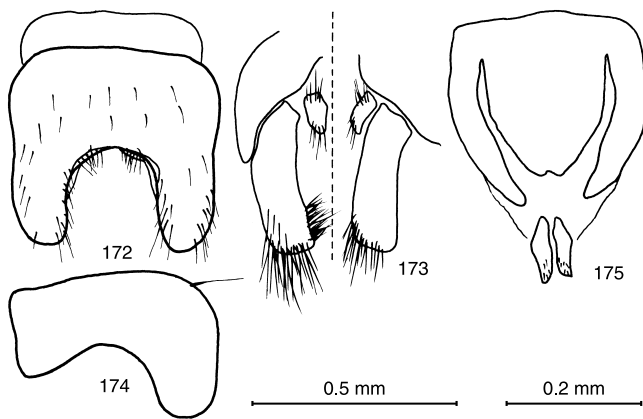
Material examined. A 2 ♂♂ 2 ♀♀, S 1 ♂ 1 ♀.

Body-length 6–8 mm, brown-yellow. Head: *ors* 3–4, *frs* 2–3, *fvit* brown-yellow, upper half of orbits sometimes also black, parafacials, face and genae brown and white dusted, vibrissal callus brown-yellow with one vibrissa together with two wide and 5–6 very short bristles, *scap* and *ped* brown, *fglm<sub>1</sub>* brown and 3 times longer than wide, arista pubescent basally, palpi enlarged and yellow, with white hairs. Thorax: *acs* fine, *dcs* 5, *hs* 2, *ias* 3, anterior weak, *pas* 2, *sas* 2, *scs* 2 pairs equal in size and without additional short bristles, *ntpls* 2, *prpls* 1 haired, *stpls* 1, anepisternum posteriorly and katepisternum sparsely haired, all legs yellow-brown, wings slightly darkened. Abdomen: male – lobes of 5<sup>th</sup> sternite narrow and long (Fig. 172), surstylus broadened apically with long hairs (Fig. 173), praegonite arched, with short bristles dorsally (Fig. 174); female – 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite only basally fused with 7<sup>th</sup> tergite, 8<sup>th</sup> sternites triangular, with setulae (Fig. 175).

Distribution: Adults may be found in the same cir-



**Figs 168–171. *Acanthocnema glaucescens* (LOEW). 168 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 169 – cercus and surstylus (caudal and lateral views); 170 – praegonite; 171 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 168, 169, 171; Scale 0.2 mm: Fig. 170.**



Figs 172–175. *Acanthocnema nigrimana* (ZETTERSTEDT). 172 – 5<sup>th</sup> male abdominal sternite, 173 – cercus and surstylus (caudal and lateral views); 174 – praegonite; 175 – 7<sup>th</sup> and 8<sup>th</sup> female abdominal sternites. Scale 0.5 m: Figs 172, 173, 175; Scale 0.2 mm: Fig. 174.

cumstances as *A. glaucescens*; their bionomics are probably similar, adults are collected by sweeping over stones in running streams, this species is distributed in northern Europe, in Poland and Austria (Andersson, 1997). It has not yet been found in CZ and SK.

### Genus *Trichopalpus* RONDANI, 1856

*Trichopalpus* RONDANI, 1856: 100 (type species: *Cordylura fraterna* MEIGEN, 1826 – by orig. des.)

*Paramicroprosopa* RINGDAHL, 1936: 169 (type species: *Microprosopa subarctica* RINGDAHL, 1936 – by orig. des.) (= *Cordylura obscurella* ZETTERSTEDT, 1846)

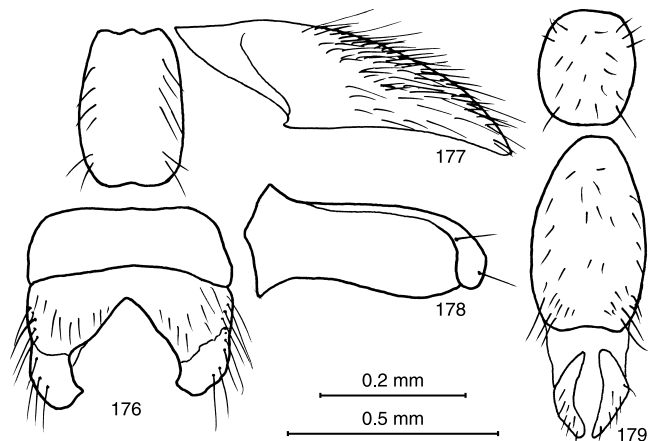
General characters: Body dark, head more or less spaerical, antennae short, *fglm*<sub>1</sub> anteriorly concave and pointed dorsally, palpi mildly broadened with one or two subapical bristles, scutellum with two pairs bristles and one pair shorter and fine in discal position.

### *Trichopalpus fraternus* (MEIGEN, 1826)

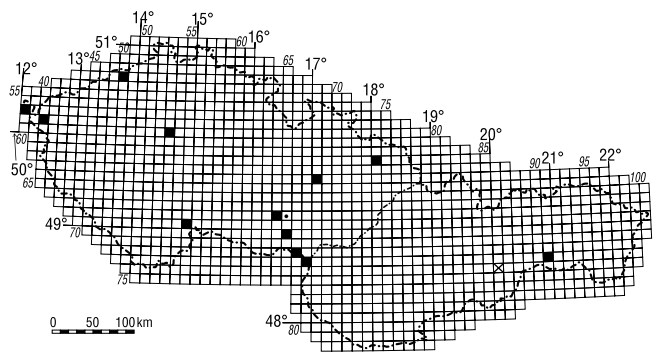
*Cordylura fraterna* MEIGEN, 1826: 243

Material examined. CZ and SK 11 ♂♂, 23 ♀♀.

Body-length 5–7 mm, dark. Head: *ivs* 1 very long and straight, *ors* 3, *frs* 3, *fvit* dark, orbits dark, parafacials, face and genae brown but slightly white dusted, *scap* and *ped* black, *fglm*<sub>1</sub> black, concave and pointed anteriorly, in females inside basally brown, arista broadened basally, vibrissal callus with two vibrissae together with 5–6 weak bristles, *gns* 4–5 long, palpi broadened and yellow. Thorax: *acs* distinct, *des* 5, *hs* 2, *phs* 1, *press* 1, *ias* 2, *sas* 2, *pas* 2, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 3–4, *stpls* 1, anepisternum posteriorly and katepisternum entirely sparsely haired, legs dark, femora sometimes yellowish apically, wings hyaline. Abdomen: male – 4<sup>th</sup> sternite more or less rectangular, 5<sup>th</sup> sternite very wide, lobes short and lateral-



Figs 176–179. *Trichopalpus fraternus* (MEIGEN). 176 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 177 – surstylus; 178 – praegonite; 179 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 176, 177, 179; Scale 0.2 mm: Fig. 178.



Map 20. The distribution of *Trichopalpus fraternus* (MEIGEN).

ly bristled (Fig. 176), surstylus wide basally, pointed apically, with haired bristles dorsally (Fig. 177), praegonite with a small lobe and two short bristles apically (Fig. 178); female – 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite very long and narrowed basally, 8<sup>th</sup> sternites triangular, with sparse short bristles (Fig. 179).

Distribution (Map 20): Biology of this species is unknown. Nelson (1995) observed the pupae in winter in coot's nests (*Fulica atra*) and described left anterior spiracle with papillae and the left mouth hook of third larva instar. Rozkošný (pers. com.) has found a floating puparium in debris on waterside of a lake near Brno (Moravia). Hackman (1956) recorded attraction of adults to UV light.

**CZ:** Literary data – 6865 Brno-Komárov (Landrock, 1910 b).

Further localities: 5348 Duchcov, 5738 Aš, 5840 Frant. Lázně, 5953 Praha-Kunratice, 6274 Jistebník, 6468 Studenec, 6864 Popůvky u Brna, 6865 Brno-Komárov, 6955 Stráž nad Nežárkou, 7065 Strachotín, 7362 Soutok-nature preserve Cahnov.

**SK:** Literary data – 7486 Rybník (Aczél, 1939).

Further locality: 7391 Zádiel.

Genus *Microprosopa* BECKER, 1894

*Microprosopa* BECKER, 1894: 147 (type species: *Cordylura haemorrhoidalis* MEIGEN, 1826 – by orig. des.)

General characters: Body dark, head more or less cubical, antennae short, arista bare, fore tibiae with small short dark spines ventrally in two longitudinal rows, palpi enlarged, vibrissal callus less distinct, abdomen of males strongly enlarged apically.

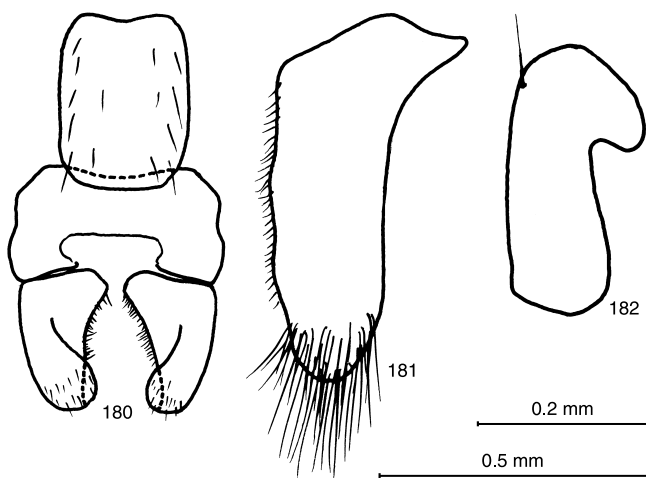
Key to species of genus *Microprosopa*

- 1 Two pairs of scutellar bristles . . . . . 2
- One pair of scutellar bristles, surstylus of male narrowed apically, with short bristles dorsoapically (Fig. 192), 8<sup>th</sup> abdominal sternite of female enlarged apically (Fig. 194) . . . *Microprosopa pallidicauda* (ZETTERSTEDT, 1838)
- 2(1) Antennae yellow, palpi whitish, surstylus of male broadened lengthwise and apically with long fine hairs (Fig. 181) . . . . . *Microprosopa bartaki* ŠIFNER, 1999
- Antennae dark, femora entirely yellow or partly dark, all tibiae yellow to brown . . . . . 3
- 3(2) Femora and all tibiae entirely yellow, surstylus of male rounded apically and narrowed, with bristles apically (Fig. 184), 8<sup>th</sup> abdominal sternite of female wide, pointed apically, with a small sclerotized black stripe medioapically (Fig. 186) . . . . . *Microprosopa haemorrhoidalis* (MEIGEN, 1826)
- Femora partly dark, in apical quarter yellow to brown, all tibiae yellow, surstylus of male pointed, with very short bristles (Fig. 188), 8<sup>th</sup> abdominal sternite of female pointed (Fig. 190) . . . . . *Microprosopa hoherlandti* ŠIFNER, 1981

*Microprosopa bartaki* ŠIFNER, 1999

*Microprosopa bartaki* ŠIFNER, 1999b: 58

Material examined. CZ 1 ♂, A 2 ♂♂.



Figs 180–182. *Microprosopa bartaki* ŠIFNER. 180 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 181 – surstylus; 182 – praegonite. Scale 0.5 mm: Figs 180, 181; Scale 0.2 mm: Fig. 182.

Body – 6–8 mm, dark. Head: *ors* 3, *frs* 3, *fvit* brown, upper half of orbits dark, parafacials, face and genae yellow, *scap*, *ped*, and *fglm*<sub>1</sub> yellow, arista bare and black, vibrissal callus yellow with two vibrissae together 3–4 very short bristles, palpi enlarged and whitish. Thorax: dark, *acs* very sparse, *dcs* 5, *hs* 1, *press* 1, *ias* 2 very short, *sas* 1, *pas* 2, *scs* 2 pairs, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 1, *stpls* 1, legs yellow-brown. Abdomen: male – 4<sup>th</sup> sternite rectangular, lobes of 5<sup>th</sup> sternite straight, slightly arched apically inwards, interior basal part of lobes with short bristles (Fig. 180), surstylus broadened, with long fine hairs apically (Fig. 181), praegonite arched, with short antero-dorsal bristle (Fig. 182); female unknown hitherto.

Distribution: This species was collected only in two localities: in Šumava Mts. and in the Schladminger Tauern (Austria) on moist mountain meadows.

CZ: Locality – 6947 Jezerní slaf swamp.

*Microprosopa haemorrhoidalis* (MEIGEN, 1826)

*Cordylura haemorrhoidalis* MEIGEN, 1826: 237

*Cordylura melanura* ZETTERSTEDT, 1838: 731 (synonymized by Becker, 1894: 149)

*Cordylura pallipes* ZETTERSTEDT, 1838: 732 (synonymized by Becker, 1894: 149)

*Cordylura lividipes* ZETTERSTEDT, 1846: 2042 (synonymized by Becker, 1894: 149)

*Cordylura volucricaput* WALKER, 1849: 977 (synonymized by Vockeroth, 1965: 977)

*Cordylura trisetata* MALLOCH, 1920: 286 (synonymized by Vockeroth, 1965: 977)

Material examined. CZ 5 ♂♂ 4 ♀♀, CAN 3 ♂♂ 3 ♀♀.

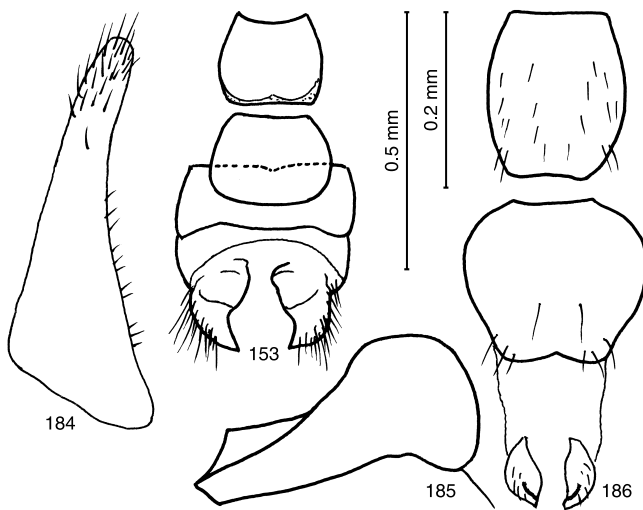
Body-length 6–8 mm, dark. Head: *ors* 3, *frs* 3, *fvit* wide and dark, orbits, parafacials and genae dark, face brown and grey dusted, *scap*, *ped*, *fglm*<sub>1</sub> dark, arista bare, two vibrissae together with 4–5 fine bristles, lower part of occiput with long yellow hairs, palpi yellow. Thorax: dark, *acs* sparse but distinct, *dcs* 4–5, *hs* 2, *press* 1, *ias* 2 short, *sas* 1, *pas* 2, *scs* 2 pairs, *prpls* 2 fine, *prsts* 1 fine, *ntpls* 2, *mspls* 1–3, *stpls* 1, anepisternum and katepisternum with long yellow hairs, legs yellow. Abdomen: male – 4<sup>th</sup> and 5<sup>th</sup> sternites wider than long, lobes of 5<sup>th</sup> sternite arched inwards and pointed (Fig. 183), surstylus narrowed and rounded apically (Fig. 184), praegonite in apical half wide, with one apical bristle (Fig. 185); female – 7<sup>th</sup> sternite wide, slightly indented caudally, 8<sup>th</sup> sternites short, wide, pointed apically, with a sclerotized black stripe medioapically (Fig. 186).

Distribution (Map 21): Holarctic species, in Europe found in the Alps (Gorodkov, 1986), in CZ collected in Jeseníky Mts. In SK it has been recorded according to literary data in Kremnica Mts.

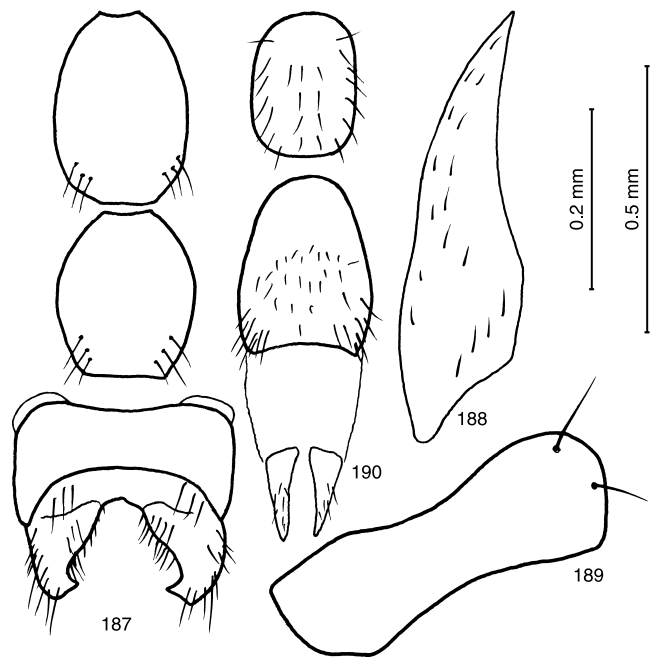
CZ: Locality – 5257–60 ! Krkonoše (on original label Riesengebirge), 1. 9., No. 49436, 1 male, det. Vockeroth (ZMB), 5869 valley of Bílá Opava river.

SK: Literary data – 72 – 7379 Kremnica (Aczél, 1939).

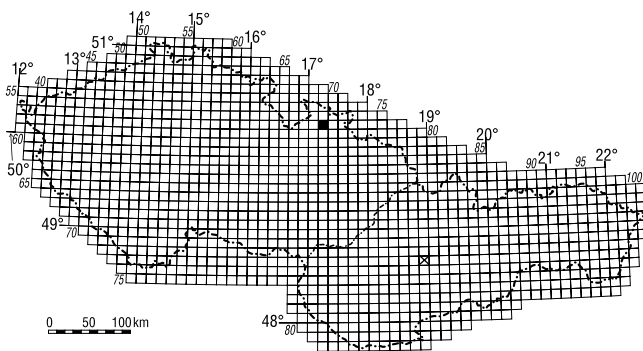




Figs 183–186. *Microprosopa haemorrhoidalis* (MEIGEN). 183 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 184 – surstylus; 185 – praegonite; 186 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 183, 184, 186; Scale 0.2 mm: Fig. 185.



Figs 187–190. *Microprosopa hoberlandti* ŠIFNER. 187 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 188 – surstylus; 189 – praegonite; 190 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 187, 188, 190. Scale 0.2 mm: Fig. 189.



Map 21. The distribution of *Microprosopa haemorrhoidalis* (MEIGEN).

***Microprosopa hoberlandti* ŠIFNER, 1981**

*Microprosopa hoberlandti* ŠIFNER, 1981: 96

Material examined. CZ and SK 2 ♂♂ 2 ♀♀, H 8 ♂♂ 9 ♀♀.

Body-length 5–7 mm, dark. Head: *ors* 4–5, *frs* 3, *fvit* brown, orbits in upper half dark, parafacials, face and genae brown, *scap*, *ped* and *fglm<sub>1</sub>* black, arista bare, two vibrissae together with 3–4 short bristles, *gns* short, palpi yellow. Thorax: dark with grey dusted, *acs* distinct, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 2, *pas* 2, *scs* 2 pairs, *prpls* 2, *prsts* 1, *mspls* 2–4, *stpls* 1. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternites oval, lobes of 5<sup>th</sup> sternite slightly arched inwards, (Fig. 187), surstylus pointed, with very short bristles (Fig. 188), praegonite wide, with two apical bristles (Fig. 189); female – 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite enlarged caudally and bristled laterally, 8<sup>th</sup> sternites long, apically pointed, with short bristles (Fig. 190).

Distribution: This species was described from Iran,

in the last decade it was confirmed also in the Czech Republic and in Hungary (cf. Šifner, 1997b, 1999a). The basic color of legs of adults of both sexes is very variable.

**CZ:** Locality – 7165 Strachotín.

**SK:** Locality – 7467 Závod.

***Microprosopa pallidicauda* (ZETTERSTEDT, 1838)**

*Cordylura pallidicauda* ZETTERSTEDT, 1838: 733

Material examined. CZ and SK 12 ♂♂ 15 ♀♀, RUS 2 ♂♂ 2 ♀♀, USA 1 ♀, A 1 ♂.

Body-length 8–10 mm, dark. Head: *ors* 3, *frs* 2–3, *fvit* red-brown, orbits yellow-brown, parafacials, face and genae yellow but white dusted, *scap* and *ped* dark, *fglm<sub>1</sub>* black with arista bare, occiput in lower part with long hairs, palpi enlarged and with long yellow hairs ventrally. Thorax: dark, *acs* distinct, *dcs* 4–5, *hs* 2, *phs* 1, *press* 1, *ias* 1–3, *sas* 2, *pas* 2, *scs* 1 pair, *prpls* 1 distinct, *prsts* 1 fine, *ntpls* 2, *mspls* 2–3, *stpls* 1, anepisternum and katepisternum entirely haired, legs yellow, vein of wings distinctly dark. Abdomen: male – 4<sup>th</sup> sternite wider than long and very sparsely bristled, 5<sup>th</sup> sternite wide (Fig. 191), surstylus narrowed apically, with short bristles dorsoapically (Fig. 192), praegonite wide, with short lateral bristle (Fig. 193); female – 6<sup>th</sup> sternite more or less rectangular, concave caudally, 7<sup>th</sup> sternite long, narrowed and bristled caudally, 8<sup>th</sup> sternites broadened, pointed, distinctly sclerotized lateroapically (Fig. 194).

Distribution (Map 22): Holarctic species is common-

Tribus *Hydromyzini*

Genus *Pogonota* ZETTERSTEDT, 1860

*Pogonota* ZETTERSTEDT, 1860: 6333 (type species: *Cordylura hirculus* ZETTERSTEDT, 1838 – subsequent des. by Becker, 1894) (= *Cordylura barbata* ZETTERSTEDT, 1838)

General characters: Body dark, weakly bristled, antennae short, posterior part of genae and lower part of occiput with a “beard” of very long hairs (in females less developed), fore femora in both sexes slightly thickened, abdomen of males with tufts of conspicuous and long yellow hairs on the fused anal cerci.

Becker (1894) quoted two species *P. barbata* (ZETTERSTEDT) and *P. hirculus* (ZETTERSTEDT) but later *P. hirculus* (= *hircus*) was synonymized with a dark form of *P. barbata* (cf. Hackman, 1956). Two separate species are also mentioned by Sack (1937).

*Pogonota barbata* (ZETTERSTEDT, 1838)

*Cordylura barbata* ZETTERSTEDT, 1838: 734

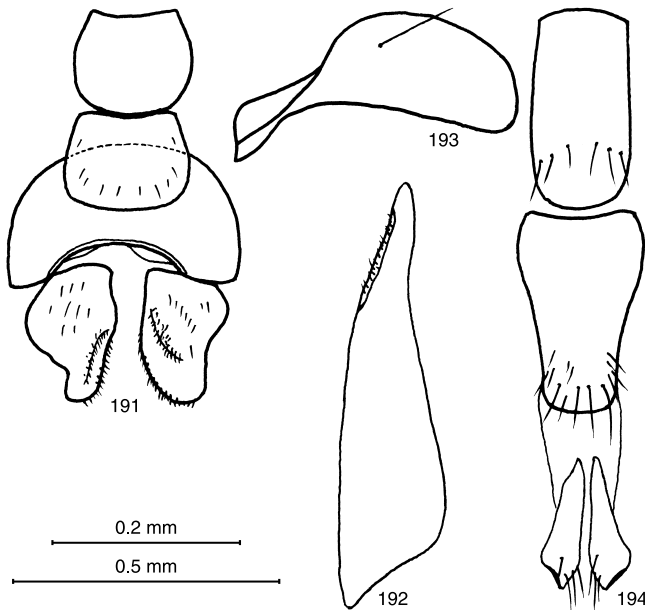
*Cordylura hirculus* ZETTERSTEDT, 1838: 735 (synonymized by Hackman, 1956: 64)

*Cordylura sponsa* ZETTERSTEDT, 1838: 735 (synonymized by Becker, 1905: 15)

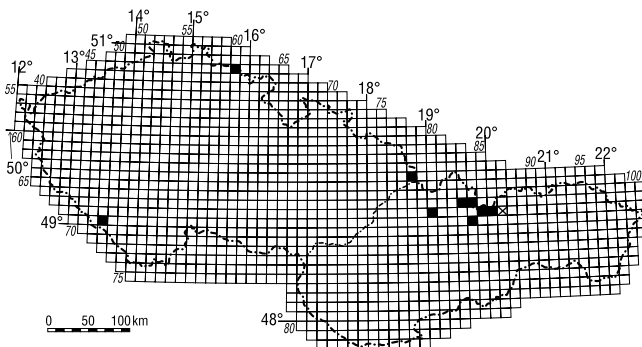
*Amaurosoma kličkai* VIMMER, 1937: 118 (synonymized by Šifner, 1964b: 148)

Material examined. CZ 1 ♀, PL 2 ♂♂ 3 ♀♀, FIN 1 ♂, N 1 ♀, MNG 1 ♂.

Body-length 8–10 mm, dark. Head: *ors* 3, *frs* 3–4, *fvit* yellow-brown, orbits in upper half dark, parafacials, face and genae yellow-brown, *scap* brown (in female dark), *ped* dark and brown apically (in female dark), *fglm*<sub>1</sub> dark with a small upper horn, arista bare and thickened in basal third, vibrissal callus yellow with one vibrissa together with 5–6 shorter bristles, palpi yellow, long and slightly enlarged in apical half. Thorax: dark, *acs* very sparse, *dcs* 5, *press* 1, *ias* 1–2 very short, *sas* 1–3, *pas* 2, *scs* 2 pairs equal in size, *prpls* and *prsts* missing, *ntpls* 2, *mspls* 1–2, *stpls* 1, anepisternum posteriorly and katepisternum entirely haired, all legs yellow to brown, F<sub>1</sub> of male thickened, with long and strong bristles of various length ventrally and ending with one tuft of 5–7 strong bristles, F<sub>1</sub> of female ventrally with only dark spine-like bristles, T<sub>1</sub> of male with small short dark spines in two longitudinal rows, T<sub>1</sub> of female with same dark spines. Wings: in male R<sub>2+3</sub> bilaterally with short freely ending veins in apical half; between R<sub>4+5</sub> and M<sub>1+2</sub>, except cross-vein r-m, sometimes two supplementary cross-veins. In female the venation is normal. Abdomen: male – 4<sup>th</sup> sternite bilobate bilaterally, 5<sup>th</sup> sternite with modified lobes projecting ventrally (Fig. 195–196), praegonite enlarged apically, slightly arched without bristles (Fig. 197); female – 6<sup>th</sup> sternite oval and bristled caudally, 7<sup>th</sup> sternite caudally tapered and haired, spermathecae spherical (Fig. 198).



Figs 191–194. *Microprosopa pallidicauda* (ZETTERSTEDT). 191 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 192 – surstylus; 193 – praegonite; 194 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 191, 192, 194; Scale 0.2 mm: Fig. 193.



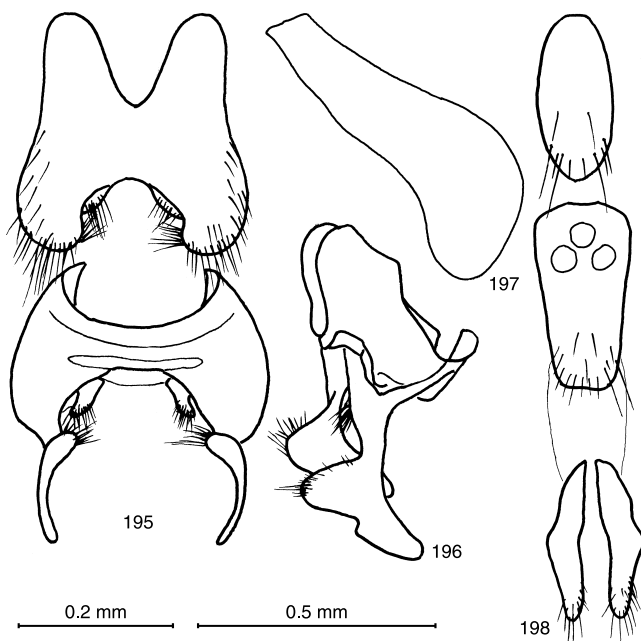
Map 22. The distribution of *Microprosopa pallidicauda* (ZETTERSTEDT).

ly distributed on lake and sea shores with *Scirpus* and *Carex* vegetation (Hackman, 1956), in northern parts of Europe to Far East of Russia (cf. Gorodkov, 1986), in central Europe e. g. in Šumava Mts., in the Alps, in Krkonoše Mts., in West Carpathians etc. The life cycle and larvae are unknown, adults were collected rarely on mountain meadows in CZ and SK.

**CZ:** Locality – 5260 Modrý důl valley, Růžová hora Mt., Pančická louka meadow, 6475 Muřínkový vrch hill, 6947 Kvilda.

**SK:** Literary data – 6887 Studenovodská dolina (Holdhaus, 1912).

Further localities: 6783 Zuberec; 6886 Bielovodská dolina valley, 6885 Tichá dolina valley, 6784 Roháčska dolina valley, 6786–87 Javorová dolina valley, 6880 Stohové poľany meadows, 6984 Pribylina.



Figs 195–198. *Pogonota barbata* ZETTERSTEDT. 195 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 196 – 5<sup>th</sup> male abdominal sternite (lateral view); 197 – praegonite; 198 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermathecae. Scale 1 mm: Figs 195, 196, 198; Scale 0.2 mm: Fig. 197.

This species was quoted by Becker (1894) in central Europe on “Kohlfurter Moor in Schlesien” (currently peat-bogs near Węgliniec, Śląsk, southern Poland); the following specimens from this period are documented in ZMB and in NMW: 25. 6., 1 ♀, No. 31798, 18. 7., 1 ♂, No. 41490 (ZMB) and 25. 6., 1 ♂, No. 31798, 21. 6., 2 ♀♀, without No. (NMW), all det. Becker. Draber-Moňko (1991) confirmed *P. barbata* in Poland but only by literary data. In CZ it was confirmed in central Bohemia by Šifner (1964b), it has not yet been found in SK.

### Genus *Paracosmetopus* HACKMAN, 1956

*Paracosmetopus* HACKMAN, 1956: 26 (type species: *Paracosmetopus helleni* HACKMAN, 1956 – by orig. des.)

**General characters:** General characteristics of the genus and species were modified according to the original description and completed by the characteristics of the female. Antennae short, arista bare, *fglm*<sub>1</sub> rounded apically, palpi lancetlike, with bristles marginally, back part of genae with a “beard” of dense hairs, F<sub>1</sub> thickened, with ventral small dark spines, T<sub>1</sub> of male with a ventral projection.

Hackman (1956) described this genus and species based on a single male from the Kola Peninsula, one female was described in the Czech Republic by Šifner (1999b).

### *Paracosmetopus helleni* HACKMAN, 1956

*Paracosmetopus helleni* HACKMAN, 1956: 26

**Material examined.** CZ 1 ♀.

Body-length 6 mm, dark. Head: front straight, *fvit* and orbits orange-yellow and in upper half dark, ocellar triangle grey, eyes rounded, face whitish, genae grey, all bristles and hairs yellowish, vibrissal callus with two strong bristles, *ped* red-brown, *fglm*<sub>1</sub> black, arista bare and thickened in basal third, palpi yellow and lancetlike. Thorax: grey, anepimeron bare, 1 pair of scutellar bristles, all legs yellow, F<sub>1</sub> thickened, with dark spines ventrally, T<sub>1</sub> with a projection ventrally, F<sub>2</sub> with rows of bristles anterodorsally and anteroventrally, T<sub>1</sub> with very long and strong bristles dorsally, wings yellowish, veins R<sub>2+3</sub> and R<sub>4+5</sub> ending parallelly. Abdomen: male – dark grey and yellowish dusted, praegonite wide, with one short bristle; female – 6<sup>th</sup> sternite more or less oval, 7<sup>th</sup> sternite rectangular and sparsely bristled caudally, 8<sup>th</sup> sternites narrow, very long, with short bristles in caudal half (Fig. 199).

This species is distributed in the northern territory of Russia (cf. Hackman, 1956, Gorodkov, 1986). In CZ it was collected in the vicinity of a peat-bog near a pond at 680 m a.s.l.

**CZ:** Locality – 6757 Klátovec.



Fig. 199. *Paracosmetopus helleni* HACKMAN. The shape of the 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites.

### Genus *Chaetosa* COQUILLET, 1898

*Chaetosa* COQUILLET, 1898: 163 (type species: *Cordylura punctipes* MEIGEN, 1826 – by orig. des.)

**General characters.:** Body dark, weakly bristled, head spherical, eyes oval, *fglm*<sub>1</sub> twice longer than wide,

palpi slightly broadened with one long subapical bristle. Two katapisternal bristles, fore bristle shorter, abdomen of males slightly broadened apically.

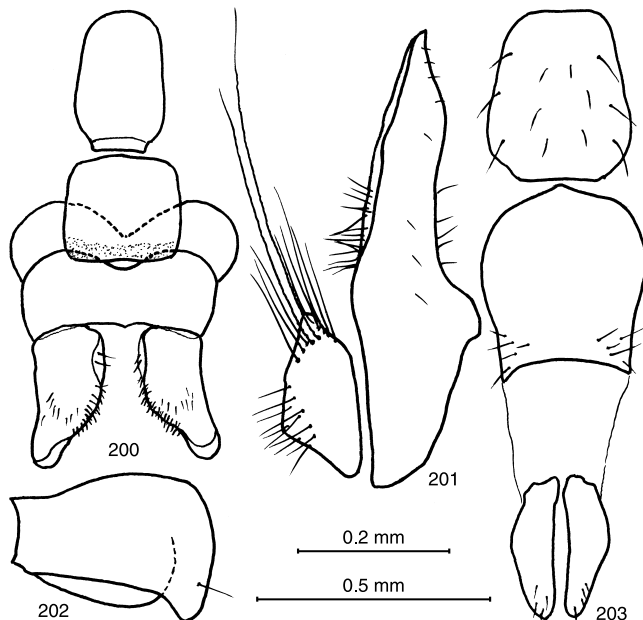
***Chaetosa punctipes* (MEIGEN, 1826)**

*Cordylura punctipes* MEIGEN, 1826: 239

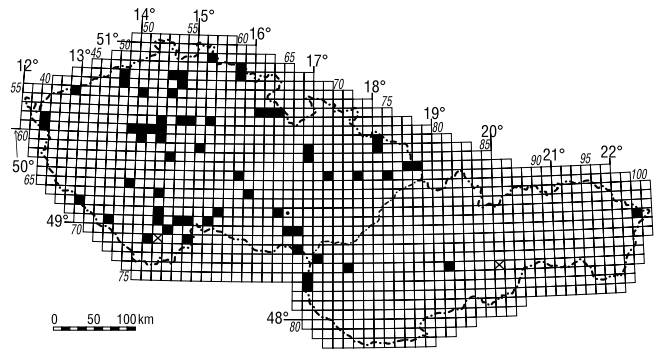
Material examined. CZ and SK 112 ♂♂ 95 ♀♀.

Body-length 5–6 mm, dark. Head: *ivs* 1 straight, *ovs* 1 arched exteriorly, *pvs* 1 short, *ors* 3, *frs* 3–4, *fvit* of male yellow, of female upper part dark, orbits, parafacials, face and genae yellow to brown, *fglm<sub>1</sub>* of male yellow, of female dark-brown, in upper part acutely pointed, palpi yellow with subapical black bristle. Thorax: *acs* very sparse, *dcs* 5, *hs* 2, *phs* 1, *ias* 1–2, *sas* 1, *pas* 2, *scs* 2 pairs equal in size, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 3–4, *stpls* 2, anepisternum posteriorly sparsely haired, katapisternum bare. Abdomen: male – 3<sup>rd</sup> sternite oval, 4<sup>th</sup> more or less square, lobes of 5<sup>th</sup> sternite narrowed apically and bristled medially (Fig. 200), surstylus long and pointed apically, cercus with very long bristles caudally (Fig. 201), praegonite wide, with a short bristle lateroapically (Fig. 202); female – 6<sup>th</sup> sternite enlarged caudally, 7<sup>th</sup> sternite wide, with a projection basally, 8<sup>th</sup> sternites long and shortly bristled apically (Fig. 203).

Distribution (Map 23): This holarctic species is distributed in Europe from Iceland to Far East of Russia (cf. Gorodkov, 1986). The larvae are probably phytophagous (“larvae in *Graminae*” – cf. Hackman, 1956), life cycle is unknown. In CZ and SK this species may be found on moist meadows, watersides of ponds, in lowlands as well as in mountains (1400 m a. l. s.).



Figs 200–203. *Chaetosa punctipes* (MEIGEN). 200 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 201 – cercus and surstylus (lateral view); 202 – praegonite; 203 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 200, 201, 203; Scale 0.2 mm: Fig. 202.



Map 23. The distribution of *Chaetosa punctipes* (MEIGEN).

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 7152 Velešín (Vimmer, 1913).

Further localities: 5157 Na Čihadlech, 5260 Luční louka meadow, Pančická louka meadow, 5348 Duchcov, 5353 Zahrádky, 5354 Noviny pod Rálskem, 5360 Černá hora Mt. 5448 Bílina, 5456 Boseň, 5543 Boží Dar; 5550 Budyně nad Ohří, 5553 Kokořínský důl valley, 5762 Semechnice u Opočna, Podchlumí, 5763 Halín, Chábory, 5764 Jelenka Mt., 5840 Soós env. Františkovy Lázně, 5852 Praha-Troja, Praha-Holešovice, Praha-Podbaba, 5854 Nový Vestec, Toušeň, Čelákovice, Stará Boleslav, 5855 Milčice, 5857 Žehuňský rybník pond, 5940 Cheb, 5949 Žloutkovice, 5950 Chyňava, 5951 Praha-Ruzyně, 5952 Praha-Kunratice, 6050 Srbsko, Stradonice, 6052 Praha-Modřany, 6074 Dolní Benešov, 6156 Uhlířské Javornice, 6167 Třeština, 6174 Bítov, 6253 Ládví, 6268 Litovel, 6377 Trinec, 6378 Nýdek, 6460 Věžnice, 6469 Olomouc, 6472 Ústí, 6476 Staré Hamry, 6852 Purkarec, 6858 Mrákotín, 6864 Popůvky u Brna, 6865 Brno, 6947 Kvilda, 6952 Hluboká nad Vltavou, 6954 Stará Hlína u Třeboně, 6957 Kaproun, 7053 Zvíkov, 7065 Strachotín, 7066 Hustopeče, 7151 Boletice, 7155 Františkov, 7266 Valtice, Nesyt pond.

**SK:** Literary data – 7486 Rybník u Levice (Aczél, 1939).

Further localities: 6900 Nová Sedlica, 7368 Sekule, 7471 Dobrá Voda, 7481 Pstruša, 7567 Velké Leváre, 7667 ! Jakubov (NMW).

**Genus *Cosmetopus* BECKER, 1894**

*Cosmetopus* BECKER, 1894: 144 (type species: *Cordylura dentimana* ZETTERSTEDT, 1838 – by orig. des.)

General characters: Body primarily dark and grey dusted, head spherical, palpi long without long bristle, fore tibiae of female slightly broadened apically, with two rows of short and dark spine-like bristles in apical half, in apical half both rows less distinct, fore femora of male with two ventral apophyses fitting in a notch on the tibia.

According to Andersson (1974) was recorded as a northern European species, only *C. longus* (WALKER, 1849) is a holarctic species, *C. ringdahli* ANDERSON, 1974 is distributed in Northern Scandinavia and the *C. dentimanus* species may be found in Scandinavia and in central Europe.

*Cosmetopus dentimanus* (ZETTERSTEDT, 1838)

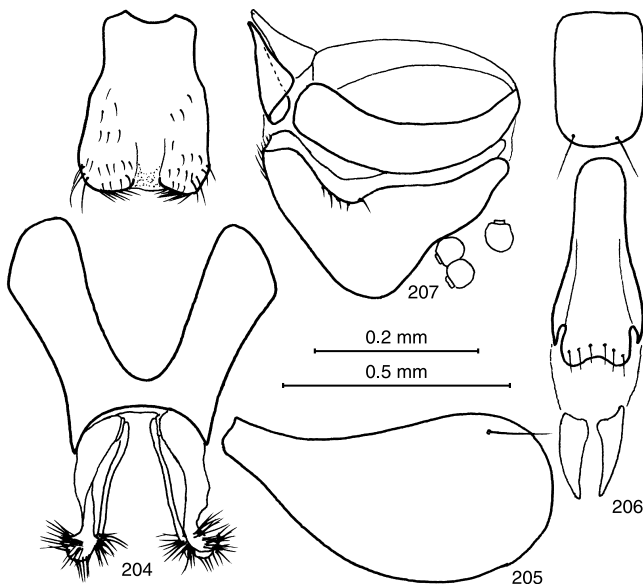
*Cordylura dentimana* ZETTERSTEDT, 1838: 730  
*Cordylura fulvipes* ZETTERSTEDT, 1838: 732 (synonymized by Andersson, 1974: 95)

Material examined. CZ 1 ♀, MNG 1 ♂, S 1 ♂ 1 ♀.

Body-length 7–8 mm, dark. Head: *ivs* arched slightly inwards, *ovs* 1, *pvs* 1, *ors* 3, *frs* 2, *fvit* yellow, orbits dark, parafacials, face and genae yellow, *scap* and *ped* yellow, *fglm<sub>1</sub>* dark, arista bare, vibrissal callus with two vibrissae, palpi long, with short bristles apically, legs yellow. Thorax: *acs* distinct, *dcs* 5, *hs* 2, *phs* 1, *pas* 1, *ias* 1 short, *scs* 2 pairs, *sas* 2, *pas* 2, *ntpls* 2, without *prpls* and *prsts*, *mspls* 1, *stpls* 1, anepisternum and katepisternum with sparse yellow hairs. Abdomen: male – 4<sup>th</sup> sternite more or less rectangular, with two laterocaudal lobes projecting ventrally, 5<sup>th</sup> sternite with lobes projecting ventrally (Fig. 204), praegonite widely flattened with one laterodorsal bristle (Fig. 205); female – 6<sup>th</sup> sternite rectangular, concave caudally, with two bristles laterally, 7<sup>th</sup> sternite wide, spermathecae almost spherical and basally narrowed, 8<sup>th</sup> sternites pointed apically, without bristles (Figs 206–207).

Distribution: The species has been found in Switzerland: St. Moritz, 1 male (Becker, 1894), in Sweden and Norway (Andersson, 1974). It was collected as a very rare species in Finland (cf. Hackman, 1956). In CZ it has been mentioned on moist meadow in Šumava Mts. (cf. Šifner, 1997b). The species is probably boreo-alpine in distribution.

CZ: Locality – 7049 Spálenec.



Figs 204–207. *Cosmetopus dentimanus* (ZETTERSTEDT). 204 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 205 – praegonite; 206 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; 207 – 7<sup>th</sup> and 8<sup>th</sup> female abdominal sternites with spermathecae (lateral view). Scale 0.5 mm: Figs 204, 206, 207; Scale 0.2 mm: Fig. 205.

Genus *Spaziphora* RONDANI, 1856

*Spaziphora* RONDANI, 1856: 79 (type species: *Cordylura hydromyzina* FALLÉN, 1819 – by orig. des.)  
*Spathiophora*, emend.

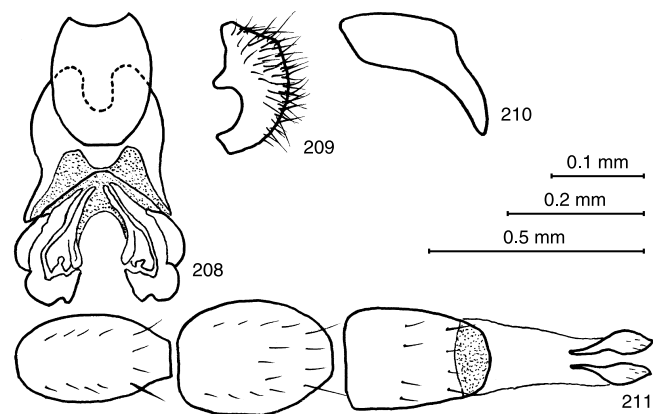
General characters: Body dark, weakly bristled and with dense short hairs, head more or less spherical and frontally wide, antennae short, palpi broadened in apical half, scutellum with two pairs of bristles equal in size, femora apically and tibiae entirely yellow, abdomen of males broadened caudally.

*Spaziphora hydromyzina* (FALLÉN, 1819)

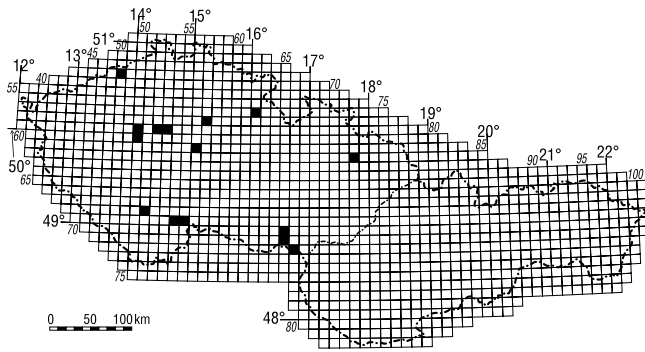
*Cordylura hydromyzina* FALLÉN, 1819: 7  
*Cordylura albitarsis* ZETTERSTEDT, 1838: 728 (synonymized by Becker, 1894: 160)  
*Hydomyza falleni* SCHINER, 1864: 14 (synonymized by Becker, 1894: 160)  
*Spathiophora facscipes* BECKER, 1894: 160 (synonymized by Hackman, 1956: 59)

Material examined. CZ 157 ♂♂ 139 ♀♀.

Body-length 8–12 mm, dark. Head: spherical, *ors* 2–3, *frs* 5, *fvit* and orbits in upper half dark, parafacials, genae and face brown, *scap* and *ped* dark, *fglm<sub>1</sub>* brown to black and pointed apically, arista bare and thickened basally, vibrissal callus with two vibrissae together with 6–7 shorter bristles, palpi yellow, broadened, with sparse short bristles. Thorax: *acs* distinct and multinumerous, *dcs* 5, *ias* 2, *press* 1, *sas* 1, *pas* 2, *scs* 4 equal in size, *hs* 2, *ntpls* 2, *prpls* 2, *prsts* 1 only haired, *mspls* 3–4, *stpls* 1, anepisternum and katepisternum haired, F<sub>1</sub> yellow apically, F<sub>2</sub> and F<sub>3</sub> slightly broadened, yellow-brown basally, wings with dark veins. Abdomen: male – 4<sup>th</sup> sternite oval and widely indented basally, 5<sup>th</sup> sternite with modified lobes (Fig. 208), surstylus very short, arched and densely shortly haired on dorsal side (Fig. 209), praegonite very narrowed and pointed apically (Fig. 210); female – 5<sup>th</sup>



Figs 208–211. *Spaziphora hydromyzina* (FALLÉN). 208 – 4<sup>th</sup> and 8<sup>th</sup> female abdominal sternites; 209 – surstylus; 210 – praegonite; 211 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 208, 211; Scale 0.2 mm: Fig. 209; Scale 0.1 mm: Fig. 210.



Map 24. The distribution of *Spaziphora hydromyzina* (FALLÉN).

and 6<sup>th</sup> sternites oval, 7<sup>th</sup> sternite straight basally and slightly sclerotized apically, 8<sup>th</sup> sternites very narrowed basally, with very short setulae apically (Fig. 211).

Distribution (Map 24): Graham (1939) described preimaginal stages and studied biology of adults. Larvae develop in water with very high content of organic matter and low oxygen content, in standing water with organic sediments. They attack small aquatic larvae i. e. chironomids, psychodids etc. (Séguy, 1952) and devour algal and fungal growth (Andersson, 1997). Adults hunt and eat small sclerotized insects, especially small flies.

This palaearctic species is distributed throughout all of Europe, including Ireland and the British Isles to western Siberia (Gorodkov, 1986), also recorded by Gorodkov (1974) in Mongolia. In CZ rare, but it is common in some localities, it has not yet been found in SK.

**CZ:** Literary data – 5260 Luční bouda (Vimmer, 1906, 1908, 1913).

Further localities: 5260 Luční louka meadow, Úpské rašeliniště peat-bog, 5348 Duchcov, 5762 Podchlumí u Dobrušky, 5857–58 Žehuňský rybník pond, 5950 Unhošť, 5952 Praha-Braník, 5953 Praha-Milíčovský rybník pond, 6050 Srbsko, 6156 Uhlířské Janovice, 6272 Větrkovice, 6851 Dívčice, 6858 Mrákotín, 6954 Velký Tisý pond, 6955 Stráž nad Něžárkou, 7065 Strachotín, 7165 Dolní Věstonice, 7266 Valtice, Nesyt pond.

### Genus *Hydromyza* FALLÉN, 1823

*Hydromyza* FALLÉN, 1823: 1 (type species: *Musca livens* FABRICIUS, 1794 – by mon. des.)

*Nupharia* ROBINEAU-DESVOIDY, 1830: 785 (type species: *Nupharia rivularis* ROB.-DESV., 1830 – by mon. des.) (= *Musca livens* FABRICIUS, 1794)

General characters: Body grey in primary colour, all bristles very short, only the last pair of *dcs* longer, 5<sup>th</sup> male abdominal sternite very complicated.

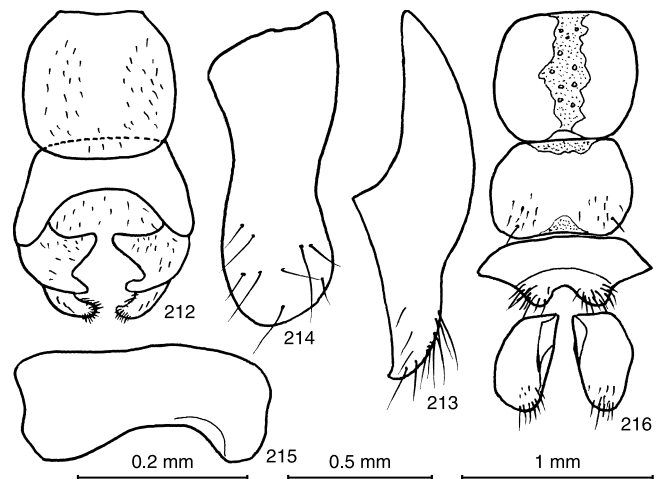
### *Hydromyza livens* (FABRICIUS, 1794)

*Musca livens* FABRICIUS, 1794: 345

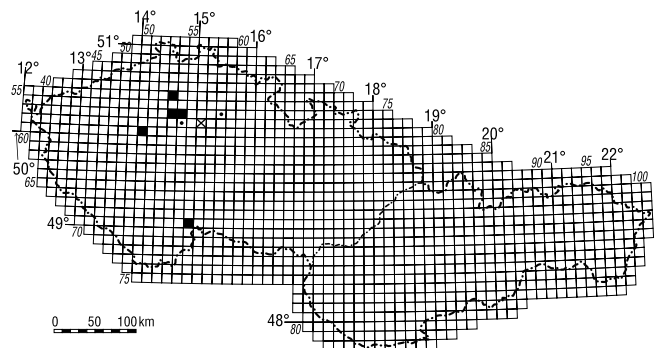
*Nupharia rivularis* ROBINEAU-DESVOIDY, 1830: 785 (synonymized by Becker, 1905: 15)

Material examined. CZ 48 ♂♂ 25 ♀♀.

Body-length 8–10 mm, dark, grey dusted laterally. Head: higher than long, *ivs* very short, *ors* 1–2 very short, *frs* 3–4 very short, *fvit* brown to black, orbits black, parafacials, face and genae brown but white dusted, *scap* and *ped* black, *fglm*<sub>1</sub> short and rounded apically, arista bare and thickened basally, one vibrissa together with 3–5 very short bristles, *gns* 3–4 fine, palpi yellow, enlarged. Thorax: *acs* very short, *dcs* very short and only the last pair longer, *ias* very short, *sas* 3, *pas* 2, *mspls* 3, *acs* 1 pair, anepisternum posteriorly and katepisternum entirely haired, F<sub>1</sub>–F<sub>3</sub> dark and brown apically, T<sub>1</sub>–T<sub>3</sub> partly dark, tarsi yellow, F<sub>3</sub> apically with 3–4 short anterodorsal and 4 anteroventral bristles. Abdomen: male – 4<sup>th</sup> sternite wide, lobes of 5<sup>th</sup> sternite compound, lower lobe bristled (Fig. 212), surstylus



Figs 212–216. *Hydromyza livens* (FABRICIUS). 212 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 213 – surstylus (caudal view); 214 – surstylus (lateral view); 215 – praegonite; 216 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 1 mm: Figs 212, 216; Scale 0.5 mm: Figs 213, 214; Scale 0.2 mm: Fig. 215.



Map 25. The distribution of *Hydromyza livens* (FABRICIUS).

pointed dorsoapically, with haired bristles (Fig. 213, 214), praegonite wide and slightly arched apically (Fig. 215); female – 5<sup>th</sup> to 7<sup>th</sup> sternites wide, 5<sup>th</sup> weakly sclerotized medially, 7<sup>th</sup> with a pointed lateral processes, 8<sup>th</sup> sternites wide, with projecting processes medially and bristled apically (Fig. 216).

**Distribution** (Map 25): The biology and life cycle were described in detail by Brock van der Velde (1983). Larvae mine in leaves of *Nuphar*-species, eating the parenchyme of the leaf and producing mine galleries, pupae hibernate in the petiole. Adults are predacious, capture small insects and consume nectar in flowers. Copulation takes place on the surface of leaves and flowers. This species may be found in Czech and Slovak Republics especially on vegetation of *Nuphar lutea* and *N. pumila*, producing one to two generations during one year.

**CZ:** Literary data – 5758 Nový Bydžov (Vimmer, 1924), 5854 Čelákovice, 5856 Poděbrady (Vimmer, 1922).

**Further localities:** 5553 Kokořínský důl valley, 5753 Lobkovice, 5754 Lysá nad Labem, 5758 Oseček u Nymburka, 5854 Čelákovice, St. Boleslav, 5950 Chyňava, 6955 Stráž nad Nežárkou.

### Tribe Cleigastrini

#### Genus *Pselaphephila* BECKER, 1894

*Pselaphephila* BECKER, 1894: 122 (type species: *Pselaphephila loewi* BECKER, 1894 – by mon. des.)

**General characters:** Body dark in primary colour, distinctly grey dusted and strongly bristled, antennae wide, palpi enlarged, three katapisternal bristles, 5<sup>th</sup> male abdominal sternite bilobate.

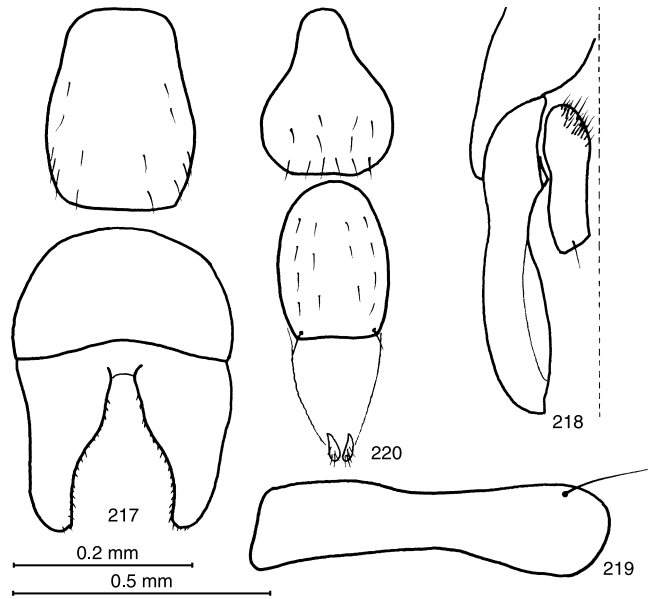
#### *Pselaphephila loewi* BECKER, 1894

*Pselaphephila loewi* BECKER, 1894: 123

**Material examined.** MNG 1 ♂ 10 ♀♀.

Body-length 4–5 mm, dark, grey dusted. Head: more or less spherical, frons projected, eyes oval, *ivs* very long, *ovs* very short, *ors* 3, *frs* 3, *fvit* yellow-brown to brown in upper half, *scap* and *ped* black, *fglm*<sub>1</sub> black, wide and centrally enlarged, *artm*<sub>2</sub> cylindrical, arista bare, palpi yellow with yellow and black haired bristles, one vibrissa together with 3–4 short bristles. Thorax: *acs* sparse, long and distinctly paired, *dsc* 5, *hs* 2 with spine-like short bristles anteriorly, *phs* 1, *pr*<sub>1</sub> 1, *ias* 2, *sas* 2, *pas* 1 very long, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 4–5, *stpls* 3. Abdomen: male – 4<sup>th</sup> and 5<sup>th</sup> sternites very sparsely bristled, lobes of 5<sup>th</sup> sternite narrow, with very short bristles medially (Fig. 217), surstylus straight and pointed, without bristles, cercus shortly bristled basally (Fig. 218), praegonite striped, with a lateroapical bristle (Fig. 219); female – 6<sup>th</sup> sternite pearly, 7<sup>th</sup> sternite wide and concave proximally, all sternites sparsely bristled, 8<sup>th</sup> sternites very small, with short hairs (Fig. 220).

**Distribution:** This holarctic species was originally



Figs 217–220. *Pselaphephila loewi* BECKER. 217 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 218 – cercus and surstylus (caudal view); 219 – praegonite; 220 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 217, 218, 220; Scale 0.2 mm: 219.

described by Becker (1894) from Poland (“Schlesien und Posen”) and it is distributed only locally in the Far East of Russia and in North America – from Alberta to New Brunswick (cf. Gorodkov, 1986), it was recorded by Šifner (1975) in Mongolia, it has not yet been found in CZ and SK.

#### Genus *Acerocnema* BECKER, 1894

*Acerocnema* BECKER, 1894: 154 (type species: *Cordylura breviseta* ZETTERSTEDT, 1846 – by orig. des.) (= *Cordylura macrocera* MEIGEN, 1826)

**General characters.:** Body black, polished and very weakly bristled, head spherical and frontally wide, antennae short, palpi broadened, scutum long haired, all legs yellow.

The uncertain species *A. paradoxopyga* from Russia (Novaja Zemlja) was described by Stackelberg (1952).

#### *Acerocnema macrocera* (MEIGEN, 1826)

*Cordylura macrocera* MEIGEN, 1826: 241

*Cordylura latipalpis* MEIGEN, 1826: 241 (synonymized by Becker, 1905: 17)

*Cordylura breviseta* ZETTERSTEDT, 1846: 2022 (synonymized by Becker, 1905: 17)

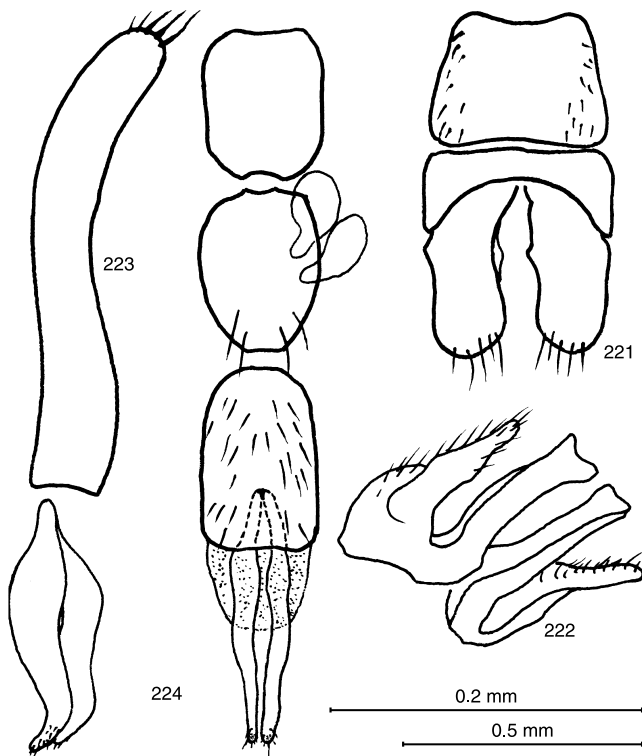
*Cordylura magnicornis* ZETTERSTEDT, 1846: 2032 (synonymized by Becker, 1894: 17)

*Acerocnema tiefi* BECKER, 1894: 155 **syn. n.**

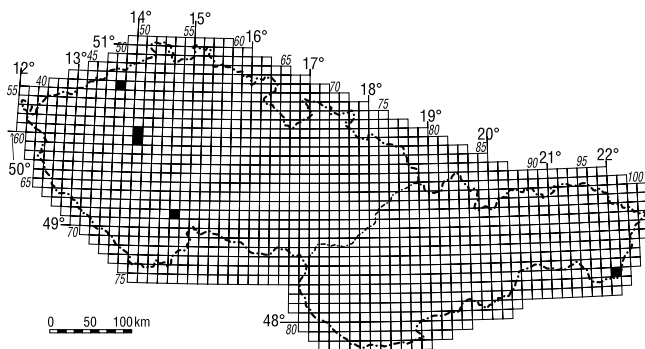
*Acerocnema pokorny* BECKER, 1894: 157 **syn. n.**

**Material examined.** CZ and SK 3 ♂♂ 3 ♀♀.

Body-length 5–6 mm, dark and black shiny, *ivs* 1 long, *ors* 3, *frs* 5–6, *fvit* wide and yellow, orbits dark, parafacials,



Figs 221–224. *Acerochnema macrocera* (MEIGEN). 221 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 222 – cerci; 223 – praegonite; 224 – female terminalia with spermathecae (ventral and lateral views). Scale 0.5 mm: Figs 221, 222, 224; Scale 0.2 mm: Fig. 223.



Map 26. The distribution of *Acerochnema macrocera* (MEIGEN).

face and genae yellow, *scap* and *ped* black, *fglm*<sub>1</sub> black, wide and rounded apically, arista very thickened, yellow basally, pubescent apically, palpi yellow and widely broadened, with short sparse setulae, one short vibrissa together with 3–4 weak bristles. Thorax: all bristles yellow and very weak, *acs* distinct and haired, *dcs* 5 haired, humeral callus haired and with 2 *hs*, *ias* haired but distinct, *sas* 1, *pas* 2, *scs* 4, *prpls* 2 haired, *ntpls* 2, *mspls* 3–4, *stpls* 1, anepisternum and katepisternum only posteriorly haired, all legs yellow, veins of wings yellow. Abdomen: male – 4<sup>th</sup> sternite trapezoid-shaped, 5<sup>th</sup> sternite narrowed medially, lobes straight, wide and sparsely bristled apically (Fig. 221), cerci dis-

tinctly forked (Fig. 222), praegonite narrow, slightly arched, with five very short and strong bristles apically (Fig. 223); female – 5<sup>th</sup> to 7<sup>th</sup> sternites more or less rectangular and sparsely bristled, 8<sup>th</sup> sternites atypical, fused basally and arched apically upwards, with short bristles (Figs. 224).

**Distribution** (Map 26): This very rare palaeartic species has so far been found only in Europe, in Denmark, Poland, Hungary (Gorodkov, 1986) and Germany (Püchel, 1999). Specimens from the following countries are deposited in NMW: Austria, loc. Hainburg 7. 4. 1918, 2 ♂♂; *ibid.*, 2. 4. 1920, 1 ♀, all leg. Zerny; Hungary, loc. Loreto, 19. 3. 1916, 4 ♂♂, leg. Zerny; Poland, Schlesien (=Słask), without locality and data, 1 ♂, F. Hendel; Italy, loc. Pavia, 4. 1891, 1 ♀, M. Bezzi; Germany, Kiel, without data, 1 ♂, coll. Wiedemann. In CZ it has been found only in four localities, in SK in one locality. Its life cycle and larvae are unknown.

The synonymy of *Acerochnema tiefi* BECKER and *A. pokornyi* BECKER is based on comparison of the original description of both mentioned species and on a comparison of their characters with the species *A. macrocera* (MEIGEN); all characters are in the limits of variability of the characters of *Acerochnema macrocera* (MEIGEN).

**CZ:** Literary data – 57(58) 39–40 Chebsko (in original text Egerland) (DallaTorre, 1878).

**Further localities:** 5448 Bílina, 5950 Dřevíč nr. Nižbor, 6050 Koda, 6854 Vekov.

**SK:** Locality – 7598 Biel.

### Genus *Megaphthalma* BECKER, 1894

*Megaphthalma* BECKER, 1894: 105 (type species: *Scatomyza pallida* FALLÉN, 1819 – by orig. des.)

**General characters:** Body brown or yellow-brown in primary colour, weakly bristled, scutum in different extent dark, second aristemere broad and long, legs yellow, wings hyaline. Abdomen brown, 5<sup>th</sup> sternite bilobate, surstylus long, female sternites small, with short black bristles.

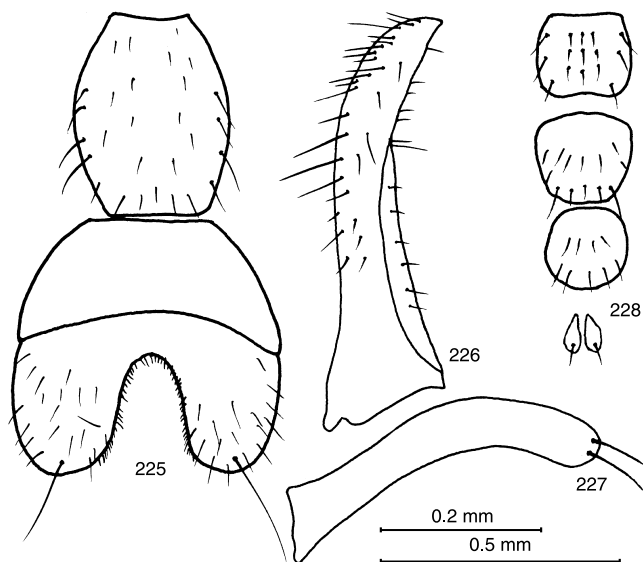
### *Megaphthalma pallida* (FALLÉN, 1819)

*Scatomyza pallida* FALLÉN, 1819: 8

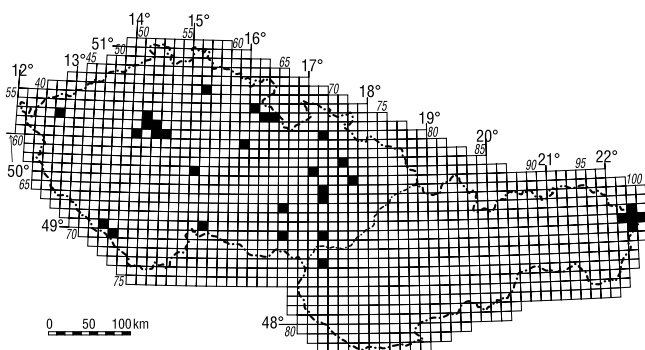
**Material examined.** CZ and SK 12 ♂♂ 23 ♀♀.

**Body-length** 5–8 mm, brown in primary colour. Head: *ors* 3, *frs* 3–4, orbits, parafacials, genae, face and *fvit* yellow-brown, only face white dusted, *scap* and *ped* yellow-brown, *fglm*<sub>1</sub> dark, wide, slightly enlarged and rounded apically, arista sparsely plumose, palpi yellow, with short black bristles, vibrissal callus with one vibrissa together 1–2 very short bristles, *gns* 1. Thorax: *acs* distinct, *dcs* 5, *hs* 2, *phs* 1, *ias* 2, *sas* 2, *pas* 2, *scs* 2 very long, *ntpls* 2, *prpls* 2, *prts* 2, *prsts* 1, *mspls* 3–5, *stpls* 1, anepisternum posteriorly haired, katepisternum bare. Legs yellow, tarsi dark, wings hyaline, vein R<sub>1</sub> setose apically. Abdomen: male – 4<sup>th</sup> sternite oval, lobes of 5<sup>th</sup> sternite short, with short haired bristles medially, with one long bristle apically (Fig. 225), surstylus long, narrow and arched inwards (Fig. 226), prae-





Figs 225–228. *Megaphthalma pallida* (FALLÉN). 225 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 226 – surstylus; 227 – praegonite; 228 – 4<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 225, 226, 228; Scale 0.2 mm: Fig. 227.



Map 27. The distribution of *Megaphthalma pallida* (FALLÉN).

gonite narrow, slightly arched, with two bristles apically (Fig. 227); female – all sternites wide with short bristles, 8<sup>th</sup> sternites diminutive, with one haired bristle apically (Fig. 228).

**Distribution** (Map 27): Holarctic species, only a subspecies *americana* MALLOCH, 1924 (cf. Vockeroth, 1965) in the Nearctic region. In CZ and SK it is distributed rarely in meadows from lowlands to mountains. Its life cycle is unknown.

**CZ:** Localities – 5457 Sedmihorky, 5662 Dobruška, 5742 ! Karlovy Vary (ZMB), 5751 Veltrusy, 5763 Chábory, 5764 Vrchneží Mt., 5851 Praha-Šárka, 5852 Roztoky u Prahy, Praha Bohnice, Praha-Šárka, 5950 Chrustenice, 5952 Praha-Krč, 5953 Praha-Háje, 5969 Praděd Mt., 6061 Chroustovice, 6276 Žermanice, 6356 Mnichovice, 6368 Střeň, 6472 Hranice, 6570 Troubky, 6670 Chropyně, 6765 Bílovice nad Svitavou, 6946 Křemelná near Prášíly, 6957 Kaproun, 7048 Boubín Mt., Velká niva meadow, Malá niva meadow, 7065 Strachotín, 7069 Vracov.

**SK:** Localities – 6800 Ruské, 6999 Stakčín, 6900 Ruský Potok, 6901 Nová Sedlica, 7000 Ubľa; 7369 Borský Mikuláš.

### Genus *Spathephilus* BECKER, 1894

*Spathephilus* BECKER, 1894: 121 (type species: *Cordylura breviventris* LOEW, 1873 – by orig. des.)

*Monochaeta* BECKER, 1894: 87 and 186 (type species: *Cordylura breviventris* LOEW, 1873 – by orig. des.); junior homonym of *Monochaeta* BRAUER et BERGENSTAMM, 1890 (cf. Gorodkov, 1986)

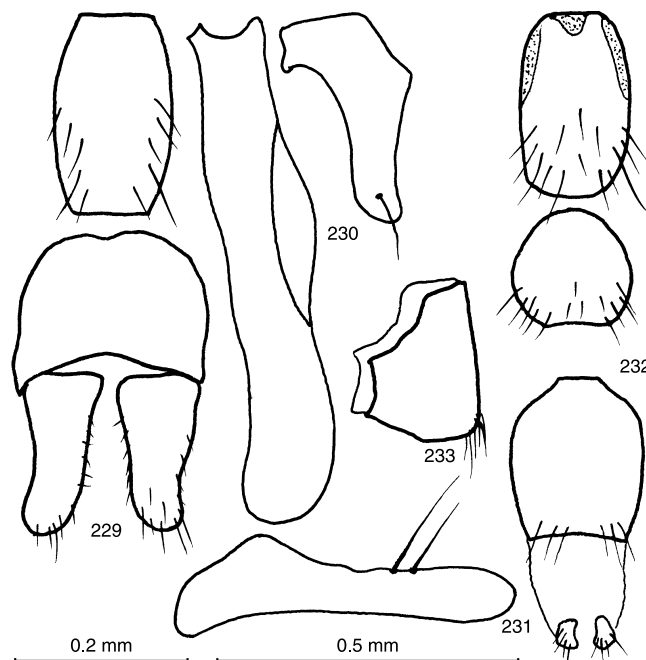
**General characters:** Body dark, weakly bristled. Head higher than wide, antennae black and long, *fglm*<sub>1</sub> 3 times longer than wide and interiorly white in varying shades, eyes distinctly rounded anteriorly, palpi slightly broadened apically.

### *Spathephilus breviventris* (LOEW, 1873)

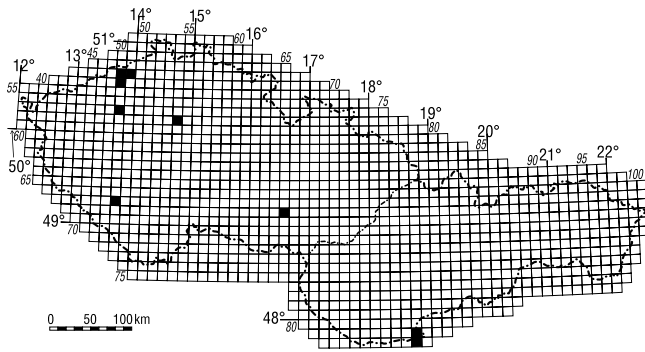
*Cordylura breviventris* LOEW, 1873: 250

**Material examined.** CZ and SK 24 ♂♂ 21 ♀♀, A 1 ♀, H 1 ♀.

**Body-length** 5–6 mm, dark. Head: *ivs* 1, *ovs* 1, *ors* 3–4, *frs* 4–5, *fvit* brown to red-brown, orbits black, parafacials, face and genae brown, one black vibrissa together with 3–4 weak yellow bristles, *scap* dark, *ped* dark and sometimes interiorly whitened, *fglm*<sub>1</sub> twice longer than wide, arista thickened basally and pubescent. Thorax: *acs* distinct, *dcs* 5, *hs* 1 and



Figs 229–233. *Spathephilus breviventris* (LOEW). 229 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 230 – cercus and surstylus (lateral view); 231 – praegonite; 232 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; 233 – 7<sup>th</sup> female abdominal sternite (lateral view). Scale 0.5 mm: Figs 229, 230, 232, 233; Scale 0.2 mm: Fig. 231.



Map 28. The distribution of *Spathephilus breviventris* (LOEW).

humeral callus with short bristles anteriorly, *ias* 2, *sas* 1, long, *pas* 2, *scs* 1 pair, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 4–5, *stpls* 3. Abdomen: male – 4<sup>th</sup> sternite more or less rectangular, lobes of 5<sup>th</sup> sternite sometimes very narrowed apically (Fig. 229), surstylus long, slightly broadened and arched apically, cercus with one distinct bristle apically (Fig. 230), praegonite straight, with two bristles dorsally (Fig. 231); female – 5<sup>th</sup> sternite long, basally slightly sclerotized, 6<sup>th</sup> short, oval, 7<sup>th</sup> sternite very broadened laterally and upwards, 8<sup>th</sup> sternites short, wide with short setulae (Figs 232–233).

**Distribution** (Map 28): This species is known only in Central Europe (CZ, SK, H, A – cf. Šifner 1968, 1978b, 1997a). Its life cycle and larvae are not known, larvae probably phytophagous or saprophagous, adults were collected on moist meadows.

**CZ:** Localities – 5348 Duchcov, 5447 Most, 5448 Bili-na, 5748 Markvarec, 5854 N. Vestec, Toušeň, 6748 Mladotice, valley of Střela river, 6865 Brno-Komárov.

**SK:** Localities – 8178 Modrý vrch Mt.; 8278 Štúrovo.

### Genus *Cleigastra* MACQUART, 1835

*Cleigastra* MACQUART, 1835: 384 (type species: *Cordylura apicalis* MEIGEN, 1826 – subsequent des. by Westwood, 1840: 144)

*Ctenopogon* RONDANI, 1856: 100 (type species: *Cordylura apicalis* MEIGEN – by orig. des.)

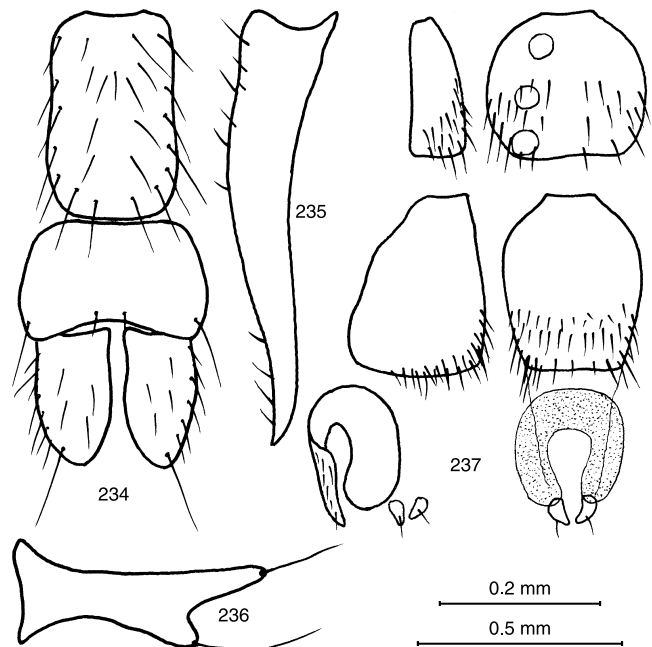
**General character:** Body dark, distinctly bristled, antennae long, arista bare or pubescent, arista in males sometimes sharply creased upwards, *fglm*<sub>1</sub> 2, 5 times longer than wide and pointed dorsoapically, palpi in apical third distinctly bristled, one pair scutellar bristles, three katepisternal bristles, femora apically black. In the Palaearctic region only one species was described: *Cleigastra apicalis* (MEIGEN). The species *Cleigastra subnigripes* KARSCH, 1887 was described from eastern Africa, however, no specimen is known to exist. Hedström (1991) described two unnamed species (*Cleigastra* sp. B and *C. sp. A*) based on the different position of bristles (one or two rows) and their number on apical half of vein R<sub>1</sub>. In my opinion, both characteristics fall within limitations of variability; likewise with colour of scutum or any part of body.

### *Cleigastra apicalis* (MEIGEN, 1826)

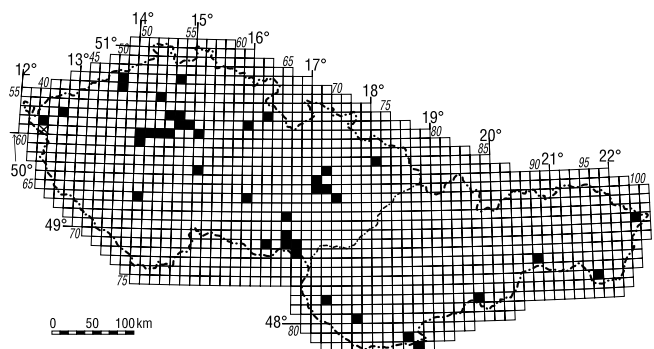
*Cordylura apicalis* MEIGEN, 1826: 236

**Material examined.** CZ and SK 89 ♂♂ 81 ♀♀, RUS 2 ♂♂ 3 ♀♀, IRQ 1 ♀ (loc.: Mosul, edge of a river, in PCS).

Body-length 6–8 mm, dark. Head: in profile an irregular trapezoid, *ivs* 1 straight, *pvs* 1 short, *ovs* 1 arched exteriorly, *ors* 2, *frs* 3–4, *fvit* black, orbits back, parafacials, face and narrow genae brown but white dusted, vibrissal callus brown, with one very long vibrissa together with 1 longer and 3–4 weak bristles, *gns* 3–4, palpi yellow without subapical bristle. Thorax: entirely black, *acs* sparse, *dcs* 5, humeral callus with 2 bristles and haired anteriorly, *ias* 2–3, *pras* 1, *sas* 1, *pas* 2, *scs* 1 pair, *prpls* 2, *prsts* 1, *mspls* 3–4, *stpls* 3, anepisternum and katepisternum bare, legs yellow-brown, F<sub>1</sub> with a dark stripe dorsally (sometimes not very distinct), F<sub>2</sub> and F<sub>3</sub> dark to



Figs 234–237. *Cleigastra apicalis* (MEIGEN). 234 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 235 – surstylus; 236 – praegonite; 237 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermathecae (ventral and lateral views). Scale 0.5 mm: Figs 234, 235, 237; Scale 0.2 mm: Fig. 236.



Map 29. The distribution of *Cleigastra apicalis* (MEIGEN).

black apically, tarsomeres dark, wings sometimes darkened, vein R<sub>1</sub> always setose apically. Abdomen: male – 4<sup>th</sup> sternite rectangular, lobes of 5<sup>th</sup> sternite wide, slightly narrowed apically, with long bristle (Fig. 234), surstylus long, narrow and apically pointed (Fig. 235), praegonite bilobate, with one apical bristle on every lobe (Fig. 236); female – 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite very enlarged upwards, with strong bristles, 7<sup>th</sup> tergite bilobate caudally and shifted backwards below 8<sup>th</sup> sternites, 8<sup>th</sup> sternites very diminutive (Fig. 237).

**Distribution** (Map 29): The palaeartic species is widely distributed in eastern Fennoscandia and in Central Europe (Hackman, 1956), it may be found also in Sweden (Hedstrom, 1991) and in the British Isles (Chandler, 1998). In the Czech and Slovak Republics it was collected on a growth of reeds and on moist meadows near ponds. Larvae have been found in galls of *Lipara* sp. (Chloropidae) on reeds (*Phragmites australis*). They are predators of *Lipara* larvae and have been recorded on a caterpillar of the Fen Wainscot Moth – *Chordes brevilinea* (Fenn, 1864), fam. Noctuidae (cf. Colyer et Hammond, 1951 and Hackman, 1956), Kaltenbach (1874) noted larvae on *Typha* sp. (Typhaceae).

**CZ:** Literary data – 5940 Cheb (Vimmer, 1913).

Further localities: 5348 Duchcov, 5351 Noviny pod Rálskem, 5448 Bílina, 5552 Liběchov, Račice, 5742 K. Vary; 5753 Lobkovice, 5754 Lysá nad Labem, 5763 Cháboř, 5840 Soós env. Fr. Lázně; 5854 Stará Boleslav, Čelákovice, 5855 Milčice, 5861 Běleč nad Orlicí; 5950 Unhošť, 5951 Praha-Liboc, 5952 Praha-Kunratice, Praha-Milíčov, Praha-Háje, 5953, Průhonice, 5956 Pečky; 6050 Srbsko, 6274 Jistebník nad Odrou, 6356 Mnichovice, 6369 Chomutov-Přovice, 6468 Studenec, 6568 Vranovice, 6569 Tovačov, Ivaň, 6650 Vráž u Písku, 6661 Stránecká Zhoř, 6670 Chropyně, 6865 Brno-Černovice, 7065 Strachotín, 7162 Znojmo, 7165 Dolní Věstonice, 7166 Nové mlýny-Křivé jezero lake, 7266 Lednice.

**SK:** Localities – 6900 Nová Sedlica, 7390 Hrhov, 7596 Somotor, 7769 ! Sv. Jur (NMW), Šúr; 7784 Fiľakovo, 7972 Král. Brod, 8177 Gbelce, Kamenín, 8278 Štúrovo.

### Genus *Hexamitocera* BECKER, 1894

*Hexamitocera* BECKER, 1894: 107 (type species: *Cordylura loxocerata* FALLÉN, 1826 – by orig. des.)

**General characters:** Body black shiny in primary colour, head more or less cubical, frons very projected, antennae very long, humeral callus anteriorly bristled, palpi long and stripe-like without an apical bristle.

#### Key to species of genus *Hexamitocera*

- First flagellomere three to four times longer than wide, apically not narrow, palpi with short black bristles apically . . . . . *Hexamitocera loxocerata* (FALLÉN, 1826)
- First flagellomere five times longer than wide, apically narrow, palpi without short black bristles apically . . . . . *Hexamitocera martineki* sp. n.

### *Hexamitocera loxocerata* (FALLÉN, 1826)

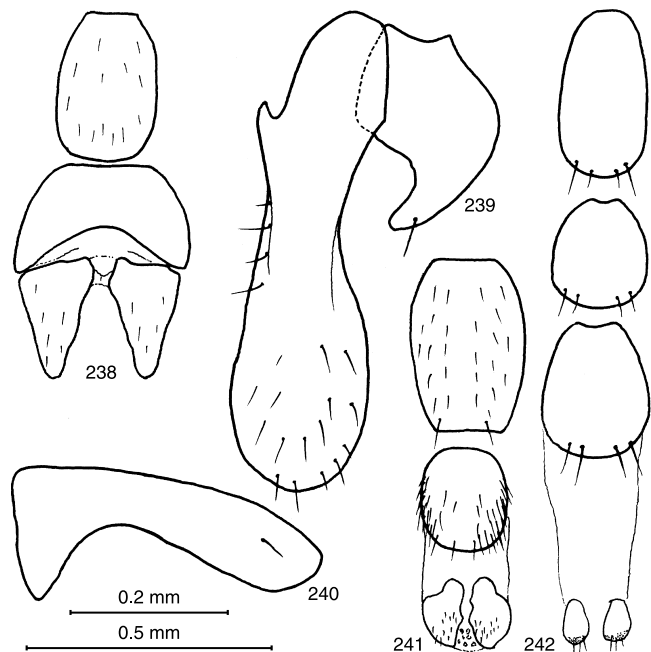
*Cordylura loxocerata* FALLÉN, 1826: 12

*Cordylura longifrons* ZETTERSTEDT, 1838: 729 (synonymized by Becker, 1905: 6)

**Material examined.** FIN 2 ♂♂, 1 ♀.

Body-length 6–8 mm, black shiny. Head: *ivs* 1 arched inwards, *ovs* 1, *pvs* 1 short, *ors* 2–3, *frs* 4–5, *fvit* yellow or also in upper half black, upper half of orbits black, parafacials, face and genae white dusted, vibrissal callus only with 3–4 short bristles, *scap* and *ped* dark-brown, *fglm*<sub>1</sub> black and 3 to 4 times longer than wide, with yellow setulae, *artm*<sub>1</sub> short, *artm*<sub>2</sub> elongate and enlarged apically, arista in first third to half thickened and bare, palpi yellow. Thorax: *acs* sparse, *dcs* 4, *hs* 1, *pras* 1, *sas* 1, *pas* 2, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 1–3, *diss* 1 pair long, *ass* 1 pair haired and crossed, *stpls* 2, all legs yellow, F<sub>2</sub> and F<sub>3</sub> sometimes black apically, wings along veins darkened. Abdomen: male – 4<sup>th</sup> sternite long and rounded caudally, lobes of 5<sup>th</sup> sternite wide basally and narrow apically, without distinct bristles (Fig. 238), surstylus broadened apically, cercus pointed apically, arched, with one bristle (Fig. 239), praegonite narrow, with short bristle lateroapically (Fig. 240); female – 6<sup>th</sup> sternite long and sparsely bristled, 7<sup>th</sup> oval, with haired bristles laterally, 8<sup>th</sup> sternites short, wide, slightly fused mediocaudally, with short setulae (Fig. 241).

**Distribution:** This holarctic species is distributed through all of Fennoscandia and Sweden, but not common-



Figs 238–241. *Hexamitocera loxocerata* (FALLÉN). 238 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 239 – cercus and surstylus; 240 – pragonite; 241 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Fig. 242. *Hexamitocera martineki* sp. n. The shape of the 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 238, 239, 241, 242; Scale 0.2 mm: Fig. 240.

ly (Hackman, 1956), it may be found in all of Europe (Sack, 1937; Gorodkov, 1986). The life cycle and larvae are not known, only Frost (1932) noted larvae of other nearctic species *H. tricineta* (LOEW) mining in leaves of *Smilacina racemosa*. It has not yet been found in CZ and SK.

### *Hexamitocera martineki* sp. n.

**Type material:** Holotype, female: Czech Republic, Boh. centr., Praha-Šárka, 9. 6. 1971, Martinek leg. (in PCS). The female was originally identified and quoted as a species *H. loxocerata* (cf. Šifner, 1997a).

**Description:** Body-length 5 mm, black shiny in primary colour. Head: *ivs* 1 upright, *ovs* 1 arched exteriorly, *pvs* 1 short, *ors* 2, *fvit* yellow-brown and black basally, upper half of orbits black, parafacials, face and genae yellow-brown but white dusted, vibrissal callus with one vibrissa, *gns* 1 very distinct, reaching to half of length of vibrissa, *scap* and *ped* dark, *fglm<sub>1</sub>* five times longer than wide and narrowed apically, *artm<sub>1</sub>* short, *artm<sub>2</sub>* enlarged apically, arista basally thickened and bare, palpi yellow, apically striped, without short dark bristles. Thorax: *acs* sparse, *dcs* 5, *hs* 1, *pras* 1, *sas* 1, *pas* 2, *ntpls* 2, *prpls* 1, *prts* 1 weak, *mspls* 4, *diss* 1 pair long, *aps* 1 pair very short, *stpls* 2, all legs yellow, F<sub>3</sub> slightly darkened apically, all tarsomeres darkened. Abdomen: female – 5<sup>th</sup> to 7<sup>th</sup> sternites more or less oval, with two pairs bristles caudally, 8<sup>th</sup> sternites short, wide, with three short haired bristles caudally (Fig. 242). Male hitherto unknown.

**Name derivation.** Derived from name of first collector and Czech dipterologist Doc. Ing. V. Martinek, CSc. (Dobruška, CZ).

### Genus *Gonartcticus* BECKER, 1894

*Gonartcticus* BECKER, 1894: 103 (type species: *Scatomyza antennata* ZETTERSTEDT, 1838 – by orig. des.)

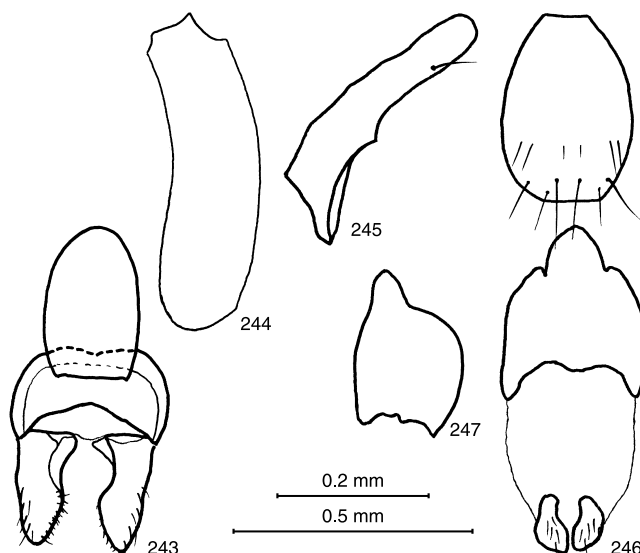
**General characters:** Body grey and slightly shiny, eyes small and rounded, palpi without apical bristle, one strong vibrissa, *fglm<sub>1</sub>* narrow, arista bare, frontal bristles in two rows.

#### *Gonartcticus abdominalis* (ZETTERSTEDT, 1846)

*Cordylura abdominalis* ZETTERSTEDT, 1846: 2080

**Material examined.** CZ and SK 4 ♂♂ 3 ♀♀.

Body-length 5 mm, grey in primary colour and slightly shiny. Head: *ivs* 1 long, *ovs* arched exteriorly, *fvit* in upper half black, in lower half yellowish, *ors* 3, *frs* 3 very distinct in first row, in parallel row 3–4 fine bristles, orbits dark, face and genae yellow-brown, one vibrissa, *scap* and *ped* dark, *fglm<sub>1</sub>* three times longer than wide, arista bare and thickened beyond half of its length, *artm<sub>2</sub>* distinctly long, palpi yellow, narrow, without apical bristle. Thorax: *acs* distinct but sparse, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 1, *sas* 2, *pas* 2, *scs* 1 pair very long, *ntpls* 2, *prpls* and *prsts* only haired, *mspls* 3–4 haired, *stpls* 3, anepisternum and katapisternum bare, all legs yellow, *wings* hyaline, R<sub>1</sub> bare. Abdomen:



Figs 243–247. *Gonartcticus abdominalis* (ZETTERSTEDT). 243 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 244 – surstylus; 245 – praegonite; 246 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; 247 – 7<sup>th</sup> female abdominal sternite (lateral view). Scale 0.5 mm: Figs 243, 244, 246, 247; Scale 0.2 mm: Fig. 245.

male – 4<sup>th</sup> sternite oval proximally, lobes of 5<sup>th</sup> sternite slightly pointed and sparsely bristled (Fig. 243), surstylus wide, rounded apically (Fig. 244), praegonite with one subapical and lateral short bristle (Fig. 245); female – 6<sup>th</sup> sternite more or less oval and bristled caudally, 7<sup>th</sup> sternite widened laterally, with a projection proximally, 8<sup>th</sup> sternites distinctly bristled (Figs 246–247).

**Distribution:** The species is considered a high-boreal species by Ringdahl (1951), according to Gorodkov (1986) it is distributed in northern Europe and in northern territory of Russia. Not yet found in SK.

**CZ:** Localities – 5348 Duchcov, 5447 Most, 5448 Bílina, 6650 Vráž u Písku, 7149 Kyselovský les forest.

### Tribus Amaurosomini

#### Genus *Amaurosoma* BECKER, 1894

*Amaurosoma* BECKER, 1894: 109 (type species: *Cordylura flavipes* FALLÉN, 1819 – by orig. des.)

*Nanna* BECKER in STROBL, 1894: 78 (type species: *Cordylura flavipes* FALLÉN, 1819 – des. by Vockeroth, 1965: 830)

**General characters:** Body dark black or shiny black in primary colour, sometimes grey dusted, body size 5–8 mm. Head: more or less spherical, first flagellomere broad, arista always bare and in different extent thickened, palpi yellow and always without distinct apical or subapical bristles. Chaetotaxy of head and thorax standard, always one pair of scutellar bristles, one to two vibrissae together with 2–5 short bristles. The number of katapisternal bristles varies from 1 to 3 bristles, sometimes haired or missing. Humeral callus with distinct short bristles anteriorly. Femora:

ra of all legs yellow, brown, entirely or partly darkened or black. Wings hyaline, both cross-veins not darkened, veins  $R_{4+5}$  and  $M_{1+2}$  always parallel,  $R_1$  always without setulae in apical half, always one pair scutellar discal bristles.

The genus *Amaurosoma* was described in the monograph by Becker (1894) with the designation *Cordylura flavipes* FALLÉN as a type species. From the context of the introduction of Becker's work, it is evident that the manuscript of the work was finished in 1893 (the preface is dated October 15, 1893). Strobl (1894) published simultaneously with this work a study which was edited in the volume during the year 1893 (Vol. No. 30 – see the title page of this journal). In the work the author himself included three species of Becker's genus *Amaurosoma*, i. e. *A. flavipes* (FALL.), *A. armillata* (ZETT.) and *A. cinerella* (ZETT.) into the genus *Clidogastra* MACQ. as a subgenus *D. Nanna* BECKER (*D. Nanna* BECKER, see p. 78). From the text of this basic study (chapter I: Gruppe *Cordylurinae*, p. 77) and from Strobl's other works (1898, 1900, 1910) these facts follow:

Becker made only a revision of all above-named species and he is not the author or even co-author of this work.

The only author of the work is Dr. G. Strobl.

Both works have the same date, i. e. 1894. Data regarding the priority of Strobl's work in 1894, cited by Michaelsen in 2001 are not conclusive.

Validation of the name *Nanna* STROBL, 1894 made by Vockeroth in 1965 contradicts the Art. No. 12 of the Code. Vockeroth's work (1964) is not a true revision, in the sense of the Art. No. 24 of the Code, but it is only the text of "A Catalogue of the Diptera ...". Present valid interpretation of the name is: *Nanna* STROBL, 1894: 78, nomen nudum.

In his subsequent publications Dr. G. Strobl fully respects (or does so with some notes) the genus *Amaurosoma* BECKER:

- Strobl (1898), p. 181: "*Amaurosoma flavipes* FALL. (Str. II. 78 als *Nanna* fl. BECK. i. litt.)"
- Strobl (1900), p. 616: "*Amaurosoma* BECKER"
- Strobl (1910), p. 254: "Zu (*Amaurosoma* BECKER. = *Nanna* BECK. in litt.)"
- From Strobl's afore-mentioned publications (i. e. from 1898, 1900 and 1910) it is evident that he had Becker's manuscript in his hands. It is not only probable but nearly certain that both Strobl and Becker were in contact, either personally or by correspondence. Notes "in litt." or "i. litt." confirm the existence of Becker's manuscript. The meaning of the abbreviation "Mon." is not clear. It could be understood as a "monograph" or "monographic", i. e. referring to the work of Becker (1894).
- The use of the name *Nanna* BECKER in Strobl, 1894 (cf. Vockeroth, 1965 including the other authors) is incorrect. The correct interpretation of this problem was expressed by Püchel (1999) who considers the genus *Nanna* as a new synonym of the genus *Amaurosoma* BECKER, 1894. Becker (1894) quoted 17 species of the genus *Amaurosoma* including 7 new species and these data were accepted by Sack (1937). Hackman (1956) noted 11 species in Eastern Fennoscandia, in the Nearctic re-

gion 9 species by Vockeroth (1965) and in the Palearctic region 22 species by Gorodkov (1986) are quoted. The larvae of all species are phytophagous and several Palearctic species are important pests of flower heads of *Phleum* (Borg 1959, Raatakainen et Vasarainen 1972, 1975 and other authors); the damage to this plant was described from Central Europe again in second half of the 19<sup>th</sup> century in the vicinity of Kraków (Nowicki, 1874).

#### Key to species of genus *Amaurosoma*

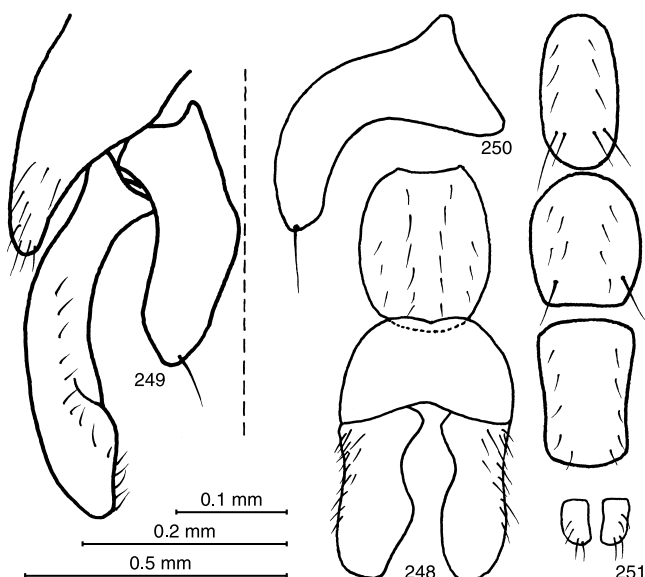
1. Femora yellow and at most with a dark stripe on surface of fore femora. . . . . 2
  - Femora partly or entirely dark . . . . . 7
- 2(1) Fore femora interiorly with one anteroventral short black bristles, *fglm*<sub>1</sub> long and narrow . . . . .
  - . . . . . *Amaurosoma brevifrons* (ZETTERSTEDT, 1838)
  - Fore femora interiorly with more than one anteroventral short black bristles . . . . . 3
- 3(2) Fore femora interiorly with at most 8 anteroventral short black bristles . . . . . 4
  - Fore femora interiorly with more than 8 anteroventral short black bristles . . . . . 6
- 4(3) Second aristemere distinctly long, arista thickened more than half of its length . . . . .
  - . . . . . *Amaurosoma articulatum* BECKER, 1894
  - Second aristemere not distinctly long, arista thickened only basally . . . . . 5
- 5(4) Sclerotized cross-protuberance on interior side of male surstylus (Fig. 281), 6<sup>th</sup> abdominal sternite of female rounded (Fig. 283) . . . . .
  - . . . . . *Amaurosoma puberulum* BECKER, 1894
  - Without sclerotized cross-protuberance on interior side of male surstylus of (Fig. 273), 6<sup>th</sup> abdominal sternite of female very broad and slightly indented distally (Fig. 275) *Amaurosoma leucostoma* (ZETTERSTEDT, 1846)
- 6(3) Arista thickened basally . . . . .
  - . . . . . *Amaurosoma minutum* BECKER, 1894
  - Arista thickened to half of its length . . . . .
    - . . . . . *Amaurosoma flavipes* (FALLÉN, 1819)
- 7(1) Fore femora without anteroventral short black bristles on interior side . . *Amaurosoma inerme* BECKER, 1894
  - Fore femora at most 10 anteroventral short black bristles on interior site . . . . . 8
- 8(7) Femora entirely dark . . . . .
  - . . . . . *Amaurosoma tibiellum* (ZETTERSTEDT, 1838)
  - Femora yellow-brown basally and apically . . . . . 9
- 9(8) Femora yellow-brown basally and apically, cercus of male with three distinct bristles (Fig. 261), praegonite of male without bristles (Fig. 262), 7<sup>th</sup> abdominal sternite of female rectangular with lateral bristles (Fig. 263) . . . . .
  - . . . . . *Amaurosoma fasciatum* (MEIGEN, 1826)
  - Femora yellow-brown only apically, cercus of male with one apical bristle (Fig. 249), praegonite of male with one apical bristle Fig. 250), 7<sup>th</sup> abdominal sternite of female rectangular, narrowed, without distinct bristles (Fig. 251) . . . *Amaurosoma armillatum* (ZETTERSTEDT, 1846)

***Amaurosoma armillatum* (ZETTERSTEDT, 1846)**

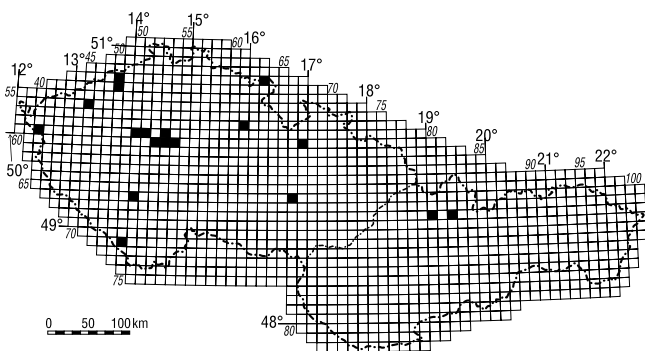
*Cordylura armillata* ZETTERSTEDT, 1846: 2069

Material examined. CZ and SK 38 ♂♂ 29 ♀♀.

Body-length 5–6 mm. Head: *fvit* in lower half yellow – brown, in upper half dark to black, *ors* 3, *frs* 4, orbits black but white dusted, parafacials, face and genae yellow-brown, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened to half of its length, palpi yellow, slightly broadened apically, in lower part with fine and yellow hairs. Thorax: *ias* short, *prpls* 1, *prsts* 1, *stpls* 3, all femora yellow-brown apically, F<sub>1</sub> with 3–4 short black bristles interiorly. Abdomen: male – 4<sup>th</sup> sternite oval (Fig. 248), surstylus broadened caudally, cercus broad, narrowed, with one apical bristle caudally (Fig. 249), praegonite short with one apical bristle (Fig. 250); female – 7<sup>th</sup> sternite rectangular and slightly narrowed caudally, 6<sup>th</sup> sternite wide, straight caudally, with one distinct bristle laterally (Fig. 251).



Figs 248–251. *Amaurosoma armillatum* (ZETTERSTEDT). 248 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 249 – cercus and surstylus (caudal view); 250 – praegonite; 251 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 248, 251; Scale 0.2 mm: Fig. 249; Scale 0.1 mm: Fig. 250.



Map 30. The distribution of *Amaurosoma armillatum* (ZETTERSTEDT).

Distribution (Map 30): European species (Gorodkov, 1986), the life cycle, damage, control and ecology in Finland has been summarized by Raatakainen and Vasarainen (1972, 1975), including literary references regarding these issues.

The species is collected on meadows in both lowlands and higher elevations in CZ and SK.

**CZ:** Localities – 5438 Duchcov, 5363 Teplice nad Metují, 5448 Bílina, 5645 Úhošť, 5861 Běleč nad Orlicí, 5940 Cheb, 5950 Chyňava, 5951 Praha-Ruzyně, 5953 Praha-Háje, 6052 Praha-Písnice, 6053 Kunice, 6054 Mirošovice, 6067 Nové Chaloupky, 6650 Vráž u Písku, 6661 Stránecká Zhoř, 7149 Kyselovský les forest.

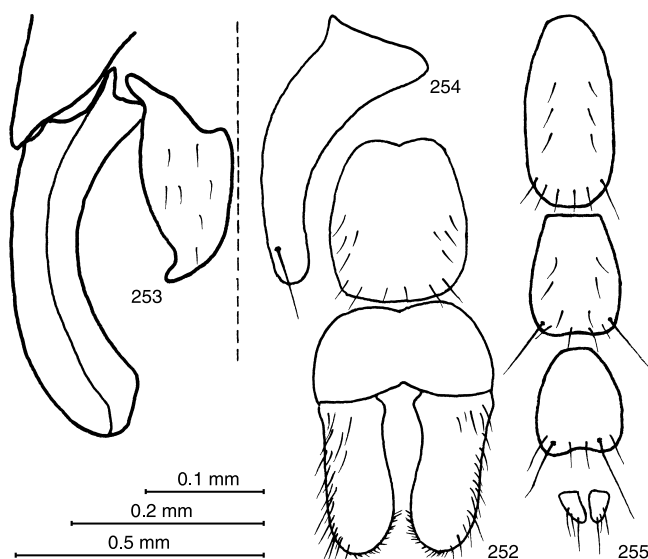
**SK:** Localities – 6880 Stoh Mt., 6882 Sokolče.

***Amaurosoma articulatum* BECKER, 1894**

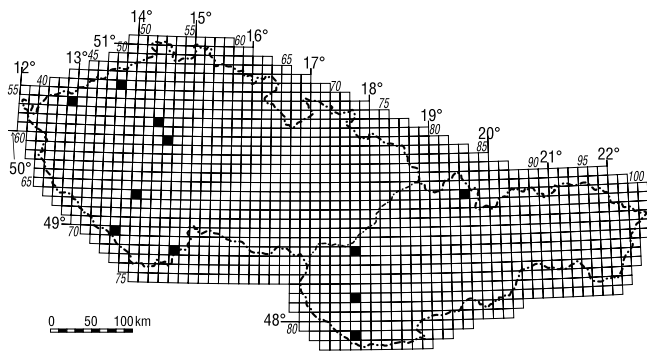
*Amaurosoma articulatum* BECKER, 1894: 117

Material examined. CZ and SK 27 ♂♂ 31 ♀♀.

Body-length 5–6 mm. Head: *fvit* dark and in lower quarter yellowish, *ors* 2, *frs* 3, orbits dark, parafacials, face and genae yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> dark to black, second aristemere cylindrical and three times longer than wide, arista thickened to beyond half of its length, palpi yellow, narrow and slightly arched. Thorax: *ias* very short, *prpls* 1 very weak, *prsts* 1 very weak, *stpls* 3, all femora yellow to brown, F<sub>1</sub> with 5–8 short black bristles on interior side. Abdomen: male – 4<sup>th</sup> sternite oval, indented proximally (Fig. 252), surstylus slightly arched without distinct bristles, cercus wide, very narrow apically and arched outwards (Fig. 253), praegonite slightly arched, with one lateroapical bristle (Fig. 254); female – 5<sup>th</sup> sternite long and



Figs 252–255. *Amaurosoma articulatum* BECKER. 252 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 253 – cercus and surstylus (caudal view); 254 – praegonite; 255 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; Scale 0.5 mm: Figs 252, 255; Scale 0.2 mm: Fig. 253; Scale 0.1 mm: Fig. 254.



Map 31. The distribution of *Amaurosoma articulatum* BECKER.

oval, 6<sup>th</sup> and 7<sup>th</sup> sternites indented caudally, with distinct bristles (Fig. 255).

Distribution (Map 31): The species is distributed in Europe and in northern, European part of Russia (Gorodkov, 1986). The species was originally described from southern Poland. Its incidence in CZ is very rare, it has not yet been found in SK.

**CZ:** Localities – 5448 Bílina, 5643 Nové Město v Krušných horách, 5862 Praha-Bohnice, 6053 Kunice, 6650 Vráž u Písku, 7048 Malá niva meadow, 7254 Nové Hradky.

**SK:** Localities – 6683 Trstená, 6899 Zvala, 7272 Čachtice, 7772 Báb, 8172 Velký Meder (Čalovo).

### *Amaurosoma brevifrons* (ZETTERSTEDT, 1838)

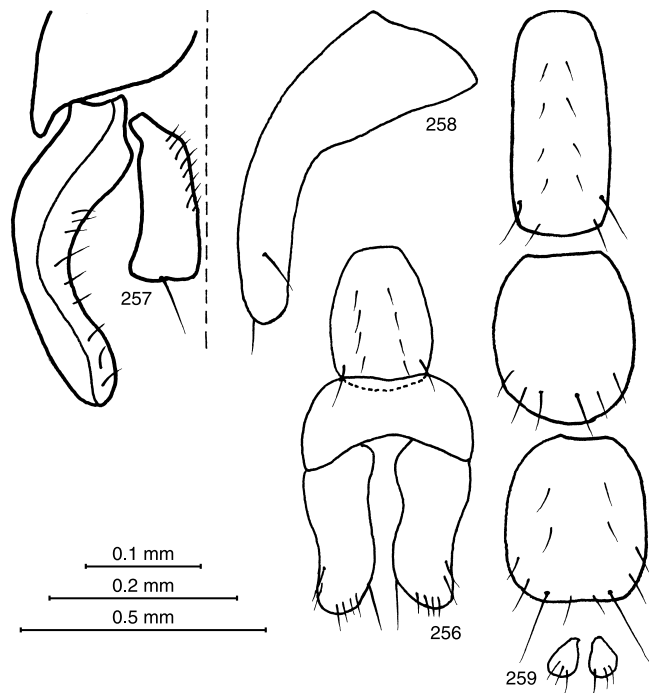
*Cordylura brevifrons* ZETTERSTEDT, 1838: 729

Material examined. CZ and SK 19 ♂♂ 17 ♀♀.

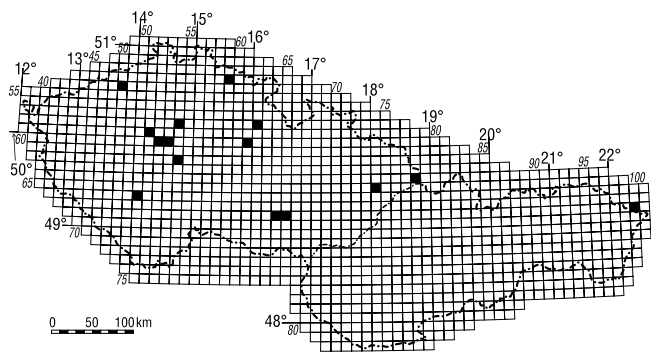
Body-length 5–6 mm. Head: *fvit* black and in lower third yellowish to brown, *ors* 3, *frs* 3, orbits dark to black and white dusted, parafacials, face and genae whitish, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened to half of its length, palpi distinctly yellow, one vibrissa and 3–4 very weak bristles. Thorax: hind bristle of *hs* very long, *ias* very short, *prpls* 2 (fore very long), *prsts* 1 very weak, *mspls* 3–4 very weak, *stpls* 3, all femora yellow to brown but also sometimes darkened, *F*<sub>1</sub> in basal third with one short black bristle interiorly. Abdomen: male – 4<sup>th</sup> sternite oval with one distinct bristle caudally (Fig. 256), surstylus wide, arched and with a row of sparse bristles on interior side, cercus long with distinct bristle apically (Fig. 257), praegonite with one apical and one lateroapical bristle (Fig. 258); female – 7<sup>th</sup> and 6<sup>th</sup> sternites more or less oval, with distinct bristle caudally, 5<sup>th</sup> sternite long and narrow (Fig. 259).

Distribution (Map 32): The species is probably distributed throughout Europe and in territories of Russia (Gorodkov, 1986). In CZ, it was collected locally, in SK it is known from one locality.

**CZ:** Localities – 5359 Vrchlabí, 5448 Bílina, 5854 Čelákovice, 5862 Petrovice u Týniště nad Orlicí, 5951 Praha-Liboc, 6052 Měchenice-Bojovské údolí valley, 6053 Ku-



Figs 256–259. *Amaurosoma brevifrons* (ZETTERSTEDT). 256 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 257 – cercus and surstylus (caudal view); 258 – praegonite; 259 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 256, 259; Scale 0.2 mm: Fig. 257; Scale 0.1 mm: Fig. 258.



Map 32. The distribution of *Amaurosoma brevifrons* (ZETTERSTEDT).

nice, 6061 Chroustovice, 6254 Benešov u Prahy, 6478 Dolní Lomná, 6574 Bystřička, 6650 Vráž u Písku, 6864 Popůvky, 6865 Brno-Černovice, Brno-Komárov.

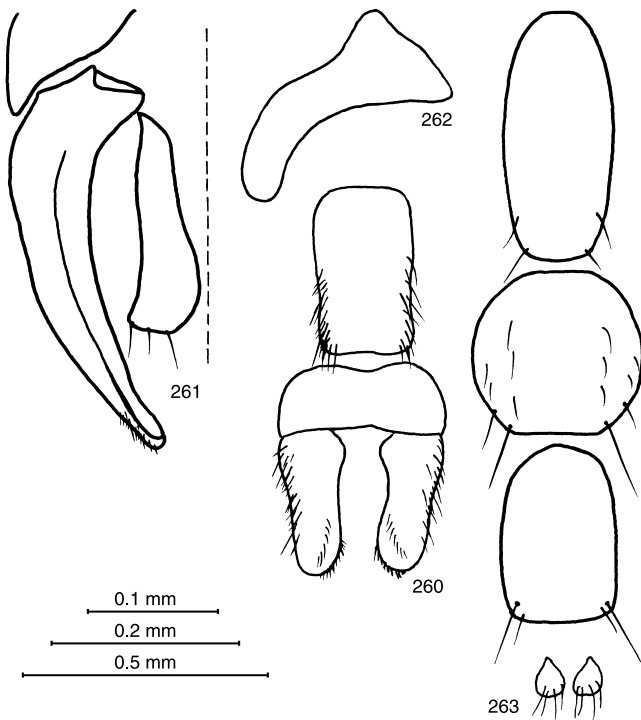
**SK:** Locality – 6800 Ruské.

### *Amaurosoma fasciatum* (MEIGEN, 1826)

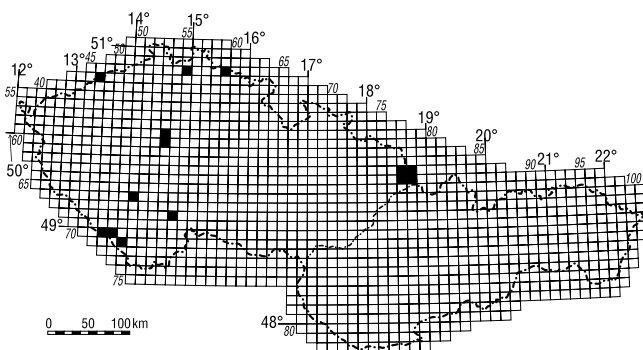
*Cordylura fasciata* MEIGEN, 1826: 238

Material examined. CZ and SK 11 ♂♂ 8 ♀♀.

Body-length 5–6 mm. Head: black and in lower third brown, *ors* 3, *frs* 3–4, orbits dark to black, parafacials, face and genae brown, *scap*, *ped* black *fglm*<sub>1</sub> black with a small upper horn, arista thickened beyond half of its length, palpi



Figs 260–263. *Amaurosoma fasciatum* (MEIGEN). 260 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 261 – cercus and surstylus (caudal view); 262 – praegonite; 263 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 260, 263; Scale 0.2 mm: Fig. 261; Scale 0.1 mm: Fig. 260.



Map 33. The distribution of *Amaurosoma fasciatum* (MEIGEN).

yellow. Thorax: *ias* 2, *prpls* 1–2, *prsts* 1, *stpls* 3, all femora yellow-brown apically and basally, F<sub>1</sub> with 8–10 short black bristles interiorly. Abdomen: male – 4<sup>th</sup> sternite rectangular, twice longer than wide and shortly bristled laterally (Fig. 260), surstylus only slightly arched, narrow apically, cercus with three distinct bristles (Fig. 261), praegonite short without a bristle (Fig. 262); female – 7<sup>th</sup> sternite rectangular, convex proximally, 6<sup>th</sup> sternite oval and wide, 5<sup>th</sup> sternite oval, all sternites with distinct bristles caudally (Fig. 263).

Distribution (Map 33): The species is distributed very sporadically in Scandinavia (Hackman, 1956), it is distributed in Central Europe and in the northern territory of

Russia (Gorodkov, 1986). In CZ it has been collected in only a few locations, it has not yet been found in SK.

**CZ:** Localities – 5255 Ještěd Mt., 5259 Sněžné jámy, 5346 Brandov, 5953 Praha-Milčovský rybník pond, 6053 Kunice, 6377 Ostrý Mt., 6378 Nejdek, 6477 Muřinkový vrch hill, 6478 Dolní Lomná, 6650 Vraž u Písku, 6854 Veselí nad Lužnicí, 7047 Borová Lada, 7048 Malá niva meadow, 7149 Kyselovský les forest.

### *Amaurosoma flavipes* (FALLÉN, 1819)

*Cordylura flavipes* FALLÉN, 1819: 9

*Cleigastra frontalis* MACQUOART, 1835: 387 (synonymized by Becker, 1894: 114)

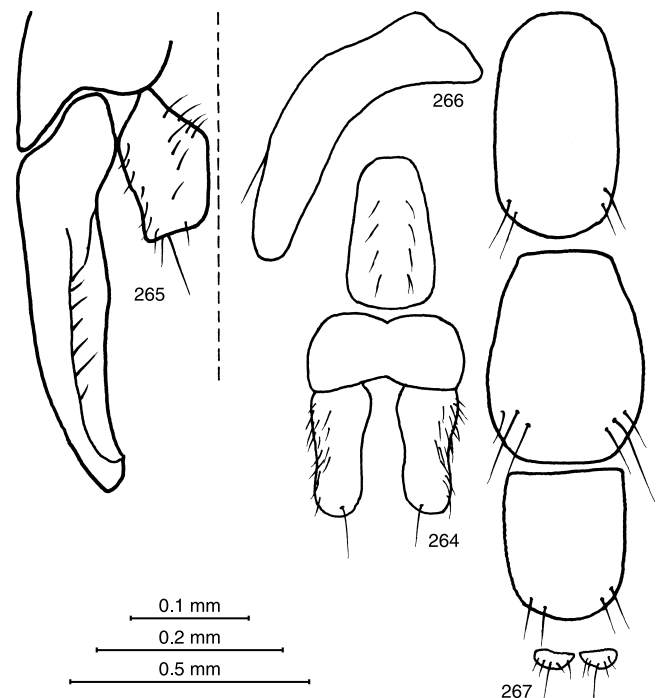
*Cordylura trilineata* MEIGEN, 1838: 341 (synonymized by Gorodkov, 1986: 18)

*Amaurosoma multisetosum* HACKMAN, 1956: 16 (synonymized by Šifner, 1975: 220)

*Amaurosoma kamtschatkense* HENDEL, 1930: 9 (synonymized by Šifner, 1977c: 398)

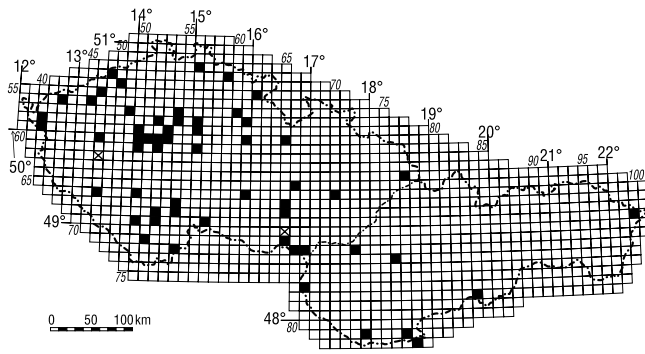
Material examined. CZ and SK 122 ♂♂ 98 ♀♀.

Body-length 5–8 mm. Head: *fvit* yellow to yellow–brown, *ors* 3, *frs* 3–4, orbits in upper half dark, parafacials, face and genae yellow but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened to half of its length, palpi yellow. Thorax: *ias* 2 short, *prpls* 1–2, *prsts* 1, *stpls* 3, all femora yellow, F<sub>1</sub> sometimes with a dark dorsal stripe and with 9–14 short black bristles on interior side, F<sub>2</sub> sometimes with 5–7 analogous bristles. Abdomen: male – 4<sup>th</sup> sternite rect-



Figs 264–267. *Amaurosoma flavipes* (FALLÉN). 264 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 265 – cercus and surstylus (caudal view); 266 – praegonite; 267 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 264, 267; Scale 0.2 mm: Fig. 265; Scale 0.1 mm: Fig. 266.





Map 34. The distribution of *Amaurosoma flavipes* (FALLÉN).

angular, narrow and slightly broadened caudally (Fig. 264), surstylus narrow caudally, cercus short and wide (Fig. 265), praegonite with one dorsal bristle (Fig. 266); female – 6<sup>th</sup> sternite wide, oval, with three distinct bristles laterocaudally, 7<sup>th</sup> sternite rounded caudally, with two distinct bristles laterally (Fig. 267).

Distribution (Map 34): Very common palaeartic species, larva of this species is known as a pest of *Phleum pratense* (Poaceae). The life cycle, damage, control and ecology have been described in detail by Raatakainen and Vasarainen (1972, 1975). It is commonly distributed in CZ and SK.

**CZ:** Literary data – 6246 Zábělá u Plzně (Vimmer 1913), 7065 Strachotín (Landrock 1910a).

Further localities: 5256 Bedřichov, 5347 Klíny u Litvínova, 5359 Vítkovice, 5448 Bílina, 5546 Chomutov; 5562 Česká Skalice, 5642 Horní Blatná, 5645 Kadaň, 5749 Zichovec, 5754 Stará Boleslav; 5760 Hradec Králové, 5840 Františkovy Lázně, 5852 Praha-Troja, Praha-Holešovice, Roztoky u Prahy, 5854 Káraný, Čelákovice, Toušeň, Nový Vestec, 5856 Kostelní Lhota, 5861 Běleč nad Orlicí, 5940 Cheb, 5950 Dřevíč u Nižbora, 5953 Průhonice, Praha-Háje, Praha-Dubeč, 5956 Pečky, 6046 Mladotice, 6050 Srbsko, Koda, 6051 Karlštejn, 6052 Davle, Měchenice, Dolní Břežany, Praha-Písnice, 6053 Štířín, Kunice, 6061 Chroustovice, 6065 Petrovice, 6150 Hostomice, 6152 Rabyně, 6156 Uhlířské Janovice, 6477 Muřínkový vrch hill, 6566 Mor. Kras-Šošůvka, 6646 Vracov, 6650 Vráž u Písku, 6661 Stránecká Zhoř, 6754 Soběslav, 6765 Adamov; 6852 Purkarec, 6854 Vlkov, 6865 Brno-Černovice, 6950 Žitná, 6952 Hluboká nad Vltavou, 6957 Filipov, 7151 Krasetín, 7165 Strachotín, 7254 Nové Hrady, 7266 Lednice-Apollo, 7267 Pohansko.

**SK:** Localities – 6400 Nová Sedlica, 7272 Čachtice, 7376 Partizánske, 7667 Jakubov, 7784 Fiľakovo, 8172 Veľký Meder (Čalovo), 8177 Kamenín, 8278 Štúrovo.

### *Amaurosoma inerme* BECKER, 1894

*Amaurosoma inerme* BECKER, 1894: 119

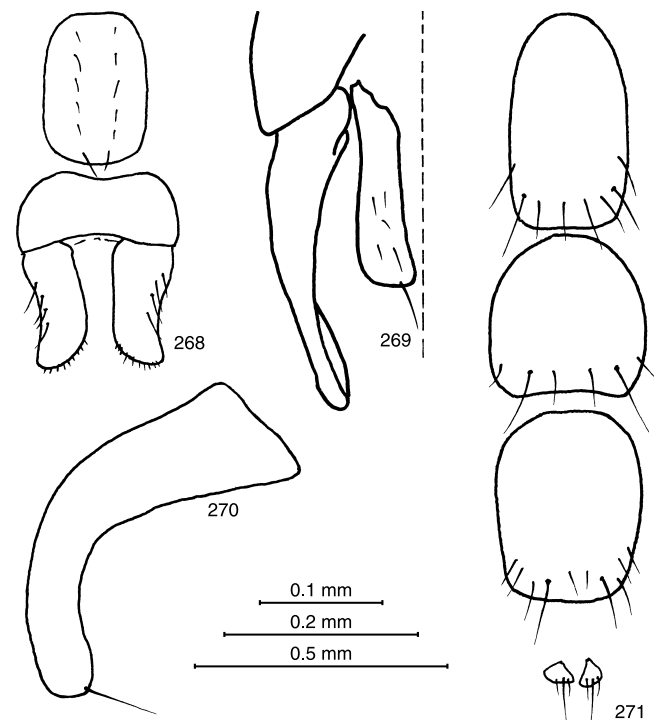
Material examined. CZ and SK 50 ♂♂ 24 ♀♀.

Body-length 5–6 mm. Head: *fvit* black, in lower third yellow-brown to brown, *ors* 3, *frs* 3, orbits dark and white

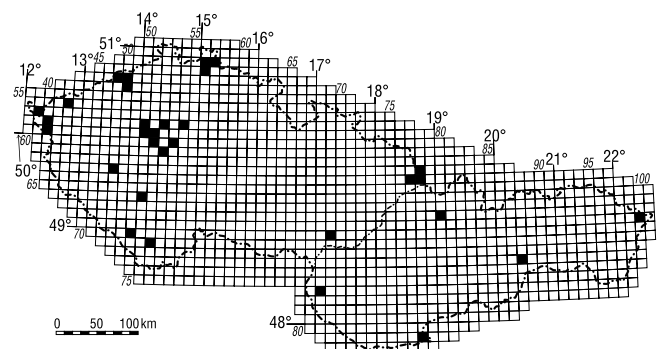
dusted, parafacials and face whitish, genae brown anteriorly and in back part dark but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened to half of its length, palpi yellow. Thorax: *ias* very weak, *prpls* and *prsts* 1, *stpls* 1–3, all femora dark, F<sub>1</sub> without short black bristles on interior side.

Abdomen: male – 4<sup>th</sup> sternite rectangular, lobes of 5<sup>th</sup> sternite arched apically outwards (Fig. 268), surstylus narrow, cercus long and narrow, with one apical bristle (Fig. 269), praegonite distinctly arched, with one apical bristle (Fig. 270); female – 5<sup>th</sup> sternite oval and distinctly bristled caudally, 6<sup>th</sup> and 7<sup>th</sup> sternites wide, with distinct bristles caudally (Fig. 271).

Distribution (Map 35): This palaeartic species is distributed in Europe and in central and northern territories



268–271. *Amaurosoma inerme* BECKER. 268 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 269 – cercus and surstylus (caudal view); 270 – praegonite; 271 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 268, 271; Scale 0.2 mm: Fig. 269; Scale 0.1 mm: Fig. 270.



Map 35. The distribution of *Amaurosoma inerme* BECKER.

of Russia (Gorodkov, 1986). In Finland it was collected on meadows of islands where *Calamagrostis* spp. grows (Hackman, 1956). In CZ and SK it is distributed on lowland meadows as well as in mountains.

**CZ:** Literary data – Silesia, without localities (Pax, 1921).

Further localities: 5156 Olivetská hora Mt., 5157 Kristiánov; 5256 Královka Mt., Bedřichov, Nová Louka, 5347 Dlouhá Louka-Fláje, 5348 Duchcov, 5448 Bílina, 5642 Horní Blatná, 5739 Aš, 5840 Františkovi Lázně, 5850 Kladno, 5852 Praha-Bohnice, 5854 Stará Boleslav-Houšfka, Toušeň, Čelákovice, Káraný; 5940 Cheb, 5950 Chyňava, Dřevíč nr. Nižbor, 5951 Praha-Liboc, 6051 Třebotov; 6053 Štířín, Kunice, 6152 Slapy, 6347 Mirošov, 6378 Nejdek, 6477 Muřinkový vrch hill, 6478 Dolní Lomná, 6650 Vraž u Písku, 7049 Spálenec, Libínské Sedlo, 7069 Strážnice, 7151 Krasetín.

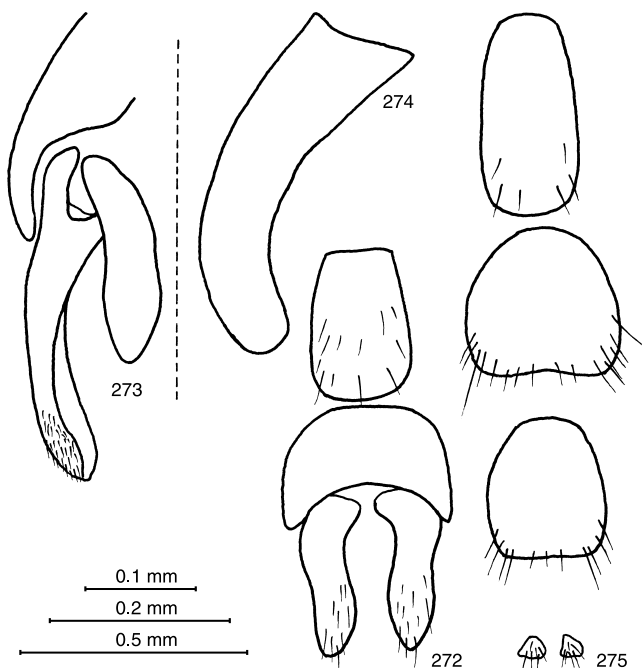
**SK:** Localities – 6880 Stoh Mt., 6900 Nová Sedlica, Ruský Potok, 7338 Turecký vrch Mt., 7668 Pernek, 8178 Modrý vrch Mt.

### *Amaurosoma leucostoma* (ZETTERSTEDT, 1846)

*Cordylura leucostoma* ZETTERSTEDT, 1846: 2063

Material examined. CZ 1 ♀, FIN 1 ♂ 1 ♀.

Body-length 5–6 mm. Head: *fvit* yellow-brown to dark brown in upper half, *ors* 3, *frs* 3, orbits dark, parafacials, face and genae yellow-brown, *scap* and *ped* dark and grey dusted, *fglm*<sub>1</sub> black, arista thickened only basally, palpi yellow. Thorax: *ias* 2 short, *prpls* 1, *prsts* 1, *stpls* 3, all femora yellow, F<sub>1</sub> with 4 short black bristles on interior side. Abdomen: male –



Figs 272–275. *Amaurosoma leucostoma* (ZETTERSTEDT). 272 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 273 – cercus and surstylus (caudal view); 274 – praegonite; 275 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 272, 275; Scale 0.2 mm: Fig. 273; Scale 0.1 mm: Fig. 274.

4<sup>th</sup> sternite rectangular, with short and sparse bristles caudally (Fig. 272), surstylus only slightly arched, with a distinct short setulae caudally, cercus without bristles and narrow caudally (Fig. 273), praegonite long, without bristles (Fig. 274); female – 5<sup>th</sup> sternite oval, long and narrow, 6<sup>th</sup> sternite wide, 7<sup>th</sup> sternite bristled caudolaterally (Fig. 275).

**Distribution:** Nearctic northern species (Vockeroth, 1965), northern species in Finland (Hackman, 1956), rare in Central Europe. Hackman (1956) considers this species arctic (high-boreal) or boreo-mountain species. In CZ it was collected in one locality.

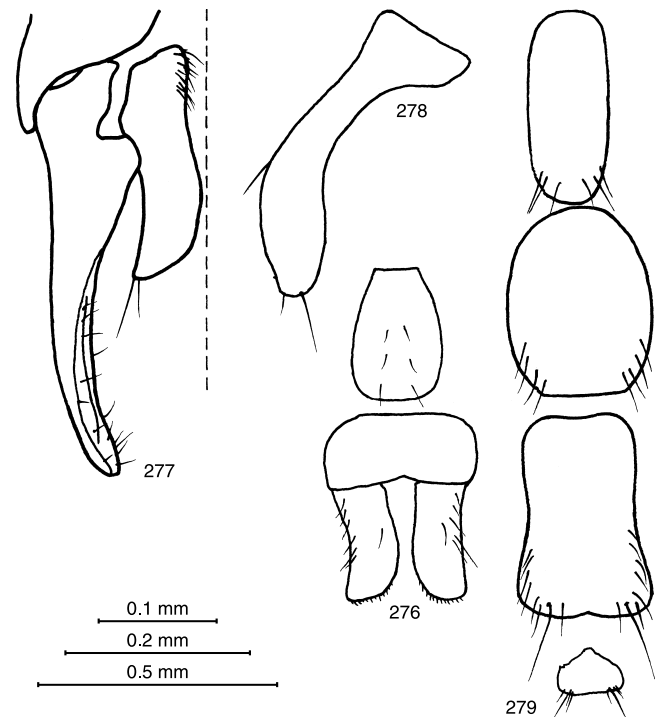
**CZ:** Literary data – Silesia, without localities (Pax, 1921). Locality – 6156 Uhlířské Janovice.

### *Amaurosoma minutum* BECKER, 1894

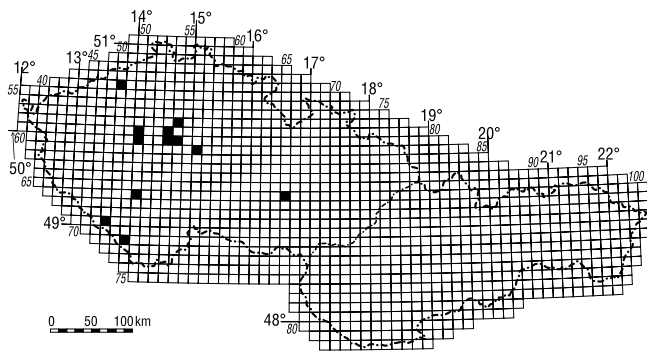
*Amaurosoma minutum* BECKER, 1894: 116

Material examined. CZ 15 ♂♂ 14 ♀♀.

Body-length 5–7 mm. Head: *fvit* brown, *ors* 3, *frs* 3, orbits in upper half dark, parafacials, face and genae yellowish to brown but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened basally, one vibrissa together with 4–5 short bristles of various length, palpi yellow. Thorax: *acs* sparse, *dcs* 5 long, *hs* 2, *phs* 3 very short, *ias* 3 short, *sas* 1 very long, *scs* very long and diverging apically, *prpls* 2 small, *prsts* 1 small, *stpls* 3 (posterodorsal very long), all femora yellow, F<sub>1</sub> with at most 6 short black bristles interiorly. Abdomen: male – 4<sup>th</sup> sternite oval and slightly broadened laterally (Fig. 276), surstylus narrow caudally and



Figs 276–279. *Amaurosoma minutum* BECKER. 276 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 277 – cercus and surstylus (caudal view); 278 – praegonite; 279 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0, 5 mm: Figs 276, 279; Scale 0.2 mm: 277; Scale 0.1 mm: Fig. 278.



Map 36. The distribution of *Amaurosoma minutum* BECKER.

sparingly bristled interiorly, cercus broadened apically and only slightly arched, with three bristles (Fig. 277), praegonite slightly broadened apically, with three bristles (Fig. 278); female – 5<sup>th</sup> sternite oval and narrow, 6<sup>th</sup> wide and oval, 7<sup>th</sup> sternite rectangular, slightly indented caudally and laterally bristled (Fig. 279).

Distribution (Map 36): This species is distributed in Fennoscandia (Hackman, 1956), in Europe and in central parts of Russia (Gorodkov, 1986). In CZ it is distributed sporadically, it has not yet been found in SK.

CZ: Localities – 5448 Bílina, 5854 Čelákovice, 5950 Chyňava, 5953 Praha-Milíčovský rybník pond, 6050 Koda, 6053 Kunice, 6054 Mirošovice, 6156 Uhlířské Janovice, 6650 Vráž u Písku, 6665 Adamov, 6947 Kvilda, 7149 Kyselovský les forest.

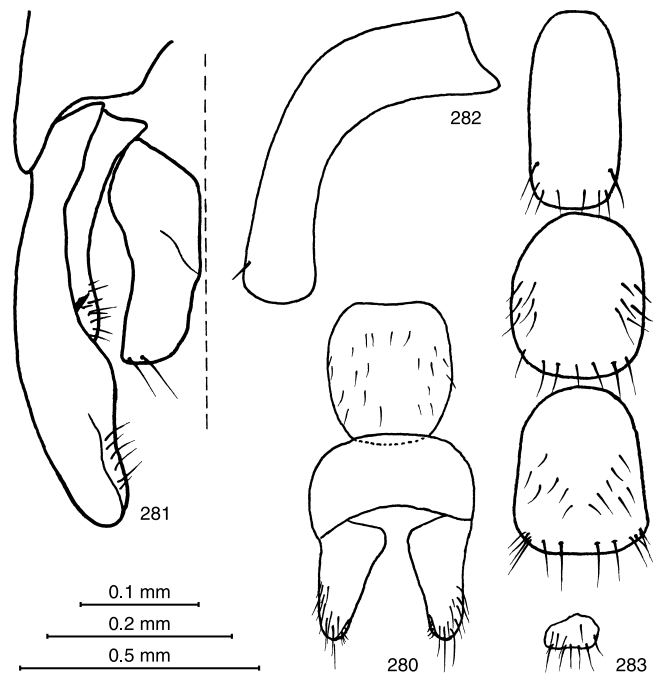
### *Amaurosoma puberulum* BECKER, 1894

*Amaurosoma puberulum* BECKER, 1894: 114

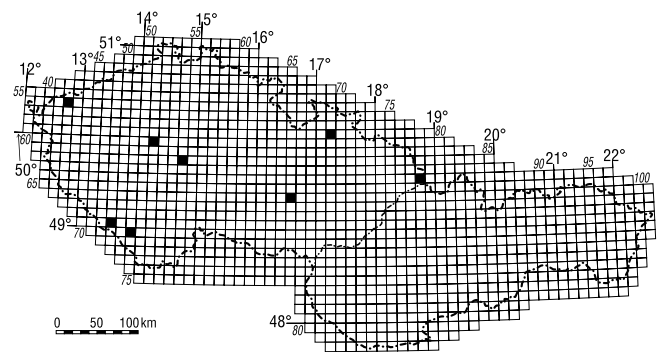
Material examined. CZ 2 ♂♂ 4 ♀♀, RUS 1 ♀.

Body-length 5–7 mm. Head: *fvit* yellow to brown, *ors* 3, *frs* 4, orbits only in upper half dark, parafacials, face and genae yellowish and white dusted, *scap* and *ped* black, *fglm*<sub>1</sub> black narrow and 2, 5 times longer than wide, arista thickened only basally, palpi yellow. Thorax: *acs* very sparse, *hs* 2, *phs* 3–5 very short in one row, *ias* 2 very short, *pas* 2 (posterior very long), *scs* very long and converging apically, *prpls* 2, *prsts* 1, *stpls* 2–3 distinct, all femora yellow, F<sub>1</sub> with 6–8 short black bristles interiorly. Abdomen: male – 4<sup>th</sup> sternite oval, with short sparse bristles, lobes of 5<sup>th</sup> sternite narrowed and distinctly bristled apically (Fig. 280), surstylus in caudal third broadened, with a sclerotized cross-protuberance in half of its length, cercus slightly arched outwards, with two distinct bristles (Fig. 281), praegonite slightly broadened apically, with short dorsolateral bristles (Fig. 282); female – 5<sup>th</sup> sternite oval and narrow, 6<sup>th</sup> sternite rounded, 7<sup>th</sup> sternite broadened caudally, all sternites distinctly bristled (Fig. 283).

Distribution (Map 37): With regard to the issue of distribution Gorodkov (1986) noted: no information. This species is distributed sporadically in CZ not only in lowlands, but also in mountains near peat-bogs or moist meadows, it has not yet been found in SK.



Figs 280–283. *Amaurosoma puberulum* BECKER. 280 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 281 – cercus and surstylus (Caudal view); 282 – praegonite; 283 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 280, 283; Scale 0.2 mm. Fig. 281; Scale 0.1 mm: Fig. 282.



Map 37. The distribution of *Amaurosoma puberulum* BECKER.

CZ: Localities – 5642 Horní Blatná, 5969 Velká Kotlina, 6051 Dobřichovice, 6254 Benešov, 6478 Dolní Lomná, 6665 Adamov, 6947 Kvilda, 7049 Spálenec.

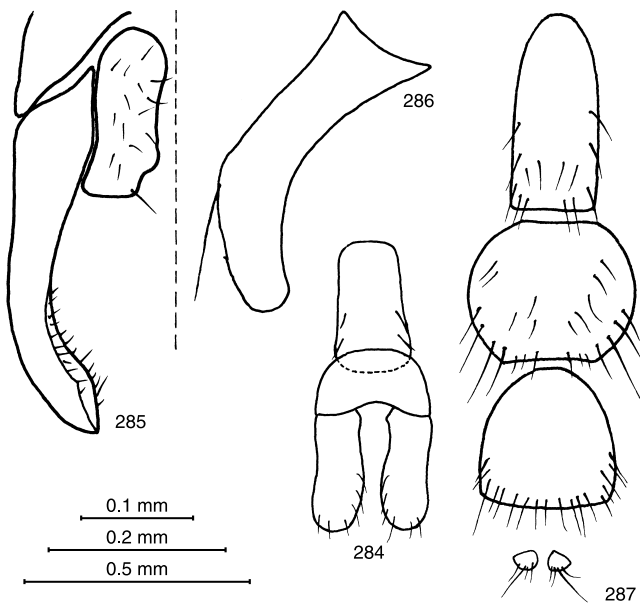
### *Amaurosoma tibiellum* (ZETTERSTEDT, 1838)

*Cordylura tibiella* ZETTERSTEDT, 1838: 731

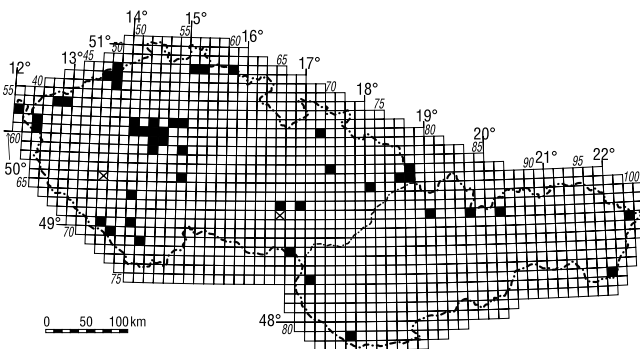
*Cordylura nigripes* ZETTERSTEDT, 1846: 2026 (synonymized by Hackman, 1956: 18)

Material examined. CZ and SK 65 ♂♂ 63 ♀♀.

Body-length 5–7 mm. Head: *fvit* distinctly black but in lower third to half yellow-brown, *ors* 3, *frs* 3, orbits black, parafacials and face brown, genae grey, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened in basal third, palpi yellow. Thorax: *ias* short, *prpls* 1, *prsts* 1, *stpls* 3, all femora dark to black,



Figs 284–287. *Amaurosoma tibiellum* (ZETTERSTEDT). 284 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 285 – cercus and surstylus (caudal view); 286 – praegonite; 287 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 284, 287; Scale 0.2 mm: Fig. 285; Scale 0.1 mm: Fig. 286.



Map 38. The distribution of *Amaurosoma tibiellum* (ZETTERSTEDT).

F<sub>1</sub> with 6–8 short black bristles interiorly. Abdomen: male – 4<sup>th</sup> sternite rectangular, slightly broadened caudally (Fig. 284), surstylus slightly arched and interiorly bristled apically, cercus short and wide, sparsely bristled, with one distinct apical bristle (Fig. 285), praegonite with one long dorsal bristle (Fig. 286); female – 5<sup>th</sup> sternite long and narrow, 6<sup>th</sup> and 7<sup>th</sup> sternites wide and distinctly bristled (Fig. 287).

Distribution (Map 38): This common palaeartic species is distributed in Europe from the British Isles to northern and central territories of Russia. In CZ and SK it is distributed more or less commonly on moist meadows, including mountain meadows.

**CZ:** Literary data – 6446 Plasy (Vimmer, 1913); 6865 Brno-Černovice (Landrock, 1910a); Silesia, without localities (Pax, 1921).

Further localities: 5248 Moldava, 5256 Královka Mt., Bedřichov, Hrabětice, 5257 Janov, 5260 Obří důl valley, 5347 Fláje, Klíny u Litvínova, 5348 Duchcov, 5448 Bílina, 5642 Horní Blatná, 5643 Hřebečná, 5738 ! Aš (NMV), 5840 Františkovy Lázně, 5850 Kladno, 5852 Roztoky u Prahy, 5854 Čelákovice, Toušeň, 5855 Sadská, Milčice, 5940 Cheb, 5950 Chyňava, 5951 Praha-Liboc, 5952 Praha-Braník, Praha-Krč, 5953 Praha-Háje, 5969 ! Praděd Mt. (NMV) Velká kotlina, 6052 Komořany, 6053 Velké Popovice, Kunice, 6152 Rabyně, 6155 Sázava, 6370 Svatý Kopeček, 6378 Nejdek, 6455 Lukavec, 6477 Muřinkový vrch hill, 6478 Dolní Lomná, 6574 Bystřička, 6650 Vráž u Písku, 6765 Moravský kras, 6767 Hlubočany, 6947 Kvilda, 6950 Prachatice, Žitná, 7048 Malá niva meadow, 7151 Krasetín, 7266 Lednice.

**SK:** Localities – 6884 Barvíkovské sedlo, 6887 ! Starý Smokovec (TMB), 6880 Stoh Mt., 6900 Nová Sedlica, 7568 Jakubov, 7598 valley of Latorica river, 8172 Velký Meder (Čalovo).

### Genus *Orthacheta* BECKER, 1894

*Orthacheta* BECKER, 1894: 101 (type species: *Cordylura pilosa* ZETTERSTEDT, 1838 – by orig. des.)

General characters: Body dark but grey dusted, weakly bristled, head spherical, antennae long, arista pubescent, *fglm*<sub>1</sub> 2, 5 times longer than wide, palpi without apical or subapical bristle and with long haired bristles ventrally, two pairs scutellar bristles, three katapisternal bristles, all femora yellow-brown, abdomen of males indistinctly enlarged.

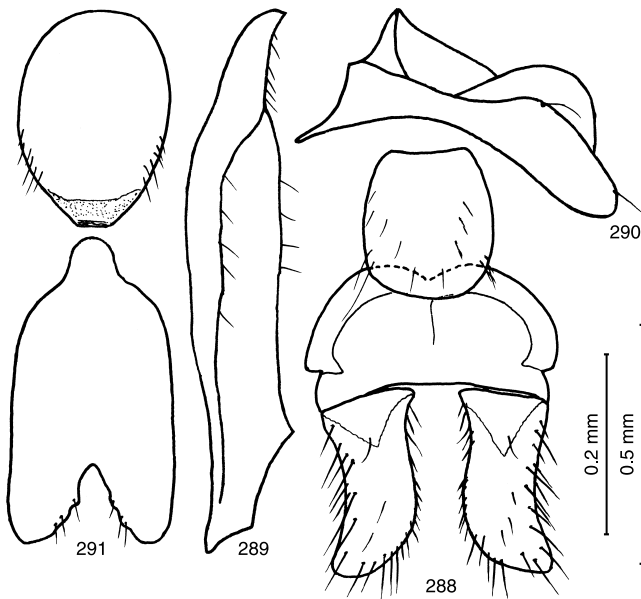
### *Orthacheta pilosa* (ZETTERSTEDT, 1838)

*Cordylura pilosa* ZETTERSTEDT, 1838: 732

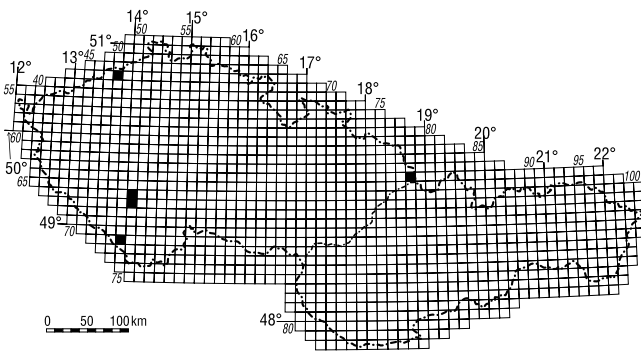
Material examined. CZ and SK 5 ♂♂ 10 ♀♀.

Body-length 6–8 mm, dark but grey dusted. Head: spherical, *ivs* 1 long, *ovs* 1 arched exteriorly, *ors* 3, *frs* 4–5 with associated 3–4 very short bristles, *fvit* partly or entirely black, orbits, parafacials, face, genae dark, one vibrissa together with 4–5 short bristles, *gns* 5, *scap* and *ped*, and *fglm*<sub>1</sub> black, in upper part acutely pointed, arista thickened basally and pubescent, palpi yellow. Thorax: dark, *acs* distinct, *dcs* 5, *hs* 2, *phs* 2, *press* 1, *pras* 1, *sas* 1, *pas* 2, *scs* 4 equal in size, *ntpls* 2, *prpls* 1–2, *prsts* 1–2, *stpls* 3, anepisternum posteriorly and katapisternum entire sparsely haired, all legs yellow-brown, wings hyaline, vein R<sub>1</sub> setose apically. Abdomen: male – 4<sup>th</sup> sternite more or less oval, 5<sup>th</sup> sternite wide, lobes arched apically outwards (Fig. 288), surstylus long, narrow, pointed apically, praegonite with two short bristles dorsally (Fig. 290); female – 6<sup>th</sup> sternite oval, slightly sclerotized caudally, 7<sup>th</sup> sternite basally with a wide projection, indented caudally, with three short bristles interiorly, 8<sup>th</sup> sternites very small (Fig. 291).

Distribution (Map 39): This palaeartic species is



Figs 288–291. *Orthacheta pilosa* (ZETTERSTEDT). 288 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 289 – surstylus; 290 – praeonite; 291 – 6<sup>th</sup> and 7<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 288, 289, 291; Scale 0.2 mm: Fig. 290.



Map 39. The distribution of *Orthacheta pilosa* (ZETTERSTEDT).

distributed in many areas but sporadically, in CZ it was collected by sweeping on vegetation of meadows with bushes. The life cycle and larvae are not known, they are probably phytophagous.

**CZ:** Literary data – Silesia, without localities (Pax, 1921).

Further localities: 5348 Duchcov, 6478 Muřínkovy vrch hill, 6650 Vřáž u Písku, 6750 Rařice; 7149 Kyselovský les forest.

**Genus *Gonatherus* RONDANI, 1856**

*Gonatherus* RONDANI, 1856: 99 (type species: *Cordylura planiceps* FALLÉN, 1826 – by orig. des.)

**General characters:** Body primarily dark and grey dusted, antennae long, palpi without a subapical bristle, scutellum with 4 bristles equal in size, two katapisternal bristles in hind position, wings darkened in anterior margin.

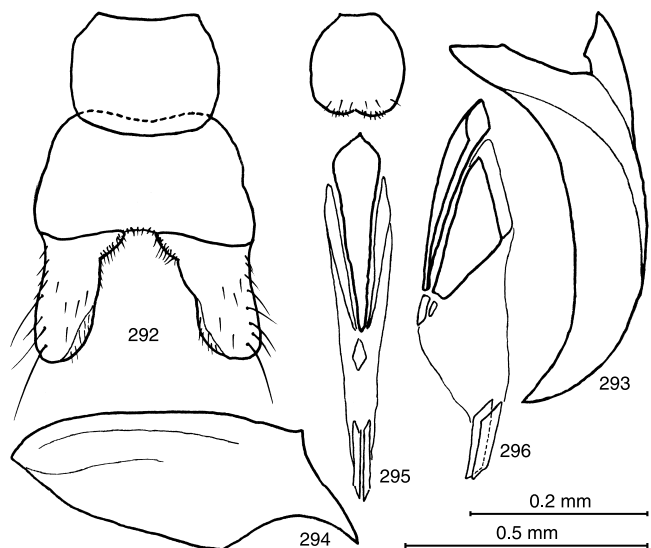
***Gonatherus planiceps* (FALLÉN, 1826)**

*Cordylura planiceps* FALLÉN, 1826: 12  
*Cordylura friesi* ZETTERSTEDT, 1838: 729 (synonymized by Becker, 1894: 102)  
*Gonatherus fumipennis* HENDEL, 1930b: 7 (synonymized by Šifner, 1977c: 398)

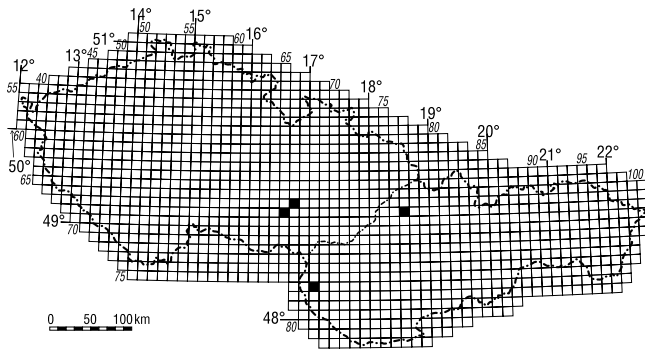
**Material examined.** CZ and SK 2 ♂♂ 2 ♀♀.

Body-length 5–7 mm, dark grey dusted. Head: trapezoid-shaped, eyes oval, *ivs* 1, *ovs* 1, *pvs* 1 short, *ors* 3, *frs* 4 distinctly laterocline, orbits dark, parafacials, *fvit* yellow, face and genae very white, *fglm*<sub>1</sub> 3 times longer than wide and slightly concave anteriorly, *fglm*<sub>2</sub> 3–4 times long than wide, arista bare, one vibrissa together with 4–5 short bristles, *gns* 4 in a vertical row, palpi yellow and slightly broadened apically. Thorax: *acs* distinct, *dcs* 5, *hs* 2, *phs* 1, *ias* 3, *sas* 2, *pas* 2, *ntpls* 2, *prpls* 1, *prsts* 1, *mspls* 4–5, *stpls* 2, anepisternum bare, katapisternum posteriorly sparsely haired, all legs yellow, 10–12 posterodorsal bristles on F<sub>3</sub>. Abdomen: male – 4<sup>th</sup> sternite more or less square, rounded caudally, lobes of 5<sup>th</sup> sternite slightly narrowed apically, with short bristles mediobasally (Fig. 292), surstylus narrow and pointed apically (Fig. 293), praeonite wide and narrowed apically (Fig. 294); female – 6<sup>th</sup> sternite oval, slightly indented caudally and shortly bristled, 7<sup>th</sup> sternite divided into two groups of sclerites; the first group with one long central sclerite and two lateral trapezoidal sclerites, the second group with one small central sclerite and two lateral sclerites, 8<sup>th</sup> sternite rhomboidal without bristles (Fig. 295–296).

**Distribution (Map 40):** This holarctic species is known in Europe, in the Far East (Kamchatka) and in Alaska (Vockeroth, 1965 and Gorodkov, 1986). It may be found throughout Germany, but not commonly (Becker, 1894), it is rare in Fennoscandia (Hackman, 1956) and Ringdahl



Figs 292–296. *Gonatherus planiceps* (FALLÉN). 292 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 293 – surstylus; 294 – praeonite; 295 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites (ventral view); 296 – 7<sup>th</sup> and 8<sup>th</sup> female abdominal sternites (lateral view); Scale 0.5 mm: Figs 292, 293, 295, 296. Scale 0.2 mm: Fig. 294.



Map 40. The distribution of *Gonatherus planiceps* (FALLÉN).

(1951) considers it an arctic and possibly boreo-alpine species, adults may be found in meadow habitats and swamps (Sack, 1937), larvae and life cycle are unknown.

**CZ:** Localities – 6766 Hádý env. Brno, 6865 Želešice-Bobrava.

**SK:** Localities – 6877 Súľov, 7668 Pernek.

### Tribe Delinini

#### Genus *Delina* ROBINEAU-DESVOIDY, 1830

*Delina* ROBINEAU-DESVOIDY, 1830: 669 (type species: *Delina dejeani* ROB.-DESV., 1830 – subsequent des. by Séguy, 1952: 56) (= *Cordylura nigrita* FALLÉN, 1819)

**General characters:** Body strongly or weakly bristled, head in profile higher than long, antennae short, palpi very short with two bristles (one apical and one sub-apical),  $R_1$  always bare, humeral callus shortly bristled.

#### Key to species of genus *Delina*

1. Scutellar apical and scutellar discal bristles equal in size,  $F_1$  and  $F_2$  with two rows of short bristles ventrally,  $T_1$  yellow to dark,  $T_2$  and  $T_3$  coloured very variably, wings often darkened apically, body-size 8–10 mm . . . . . *Delina anthrax* (SCHINER, 1864)
- Scutellar apical bristles haired and shorter than scutellar discal bristles,  $F_1$  and  $F_2$  with one row of short ventral bristles, all tibiae yellow to brown, wings not darkened apically . . . . . 2
- 2(1) Arista thickened only basally and 2, 5 to 3 times longer than  $fglm_1$ , body-size 5–7 mm black and shiny in primary colour . . . . . *Delina nigrita* (FALLÉN, 1819)
- Arista thickened in basal third and 2 times longer than  $fglm_1$ , body-size 5–7 mm primarily black but densely grey dusted . . . . . *Delina nigriceps* (BECKER, 1894)

#### *Delina anthrax* (SCHINER, 1864)

*Cleigastra anthrax* SCHINER, 1864: 11

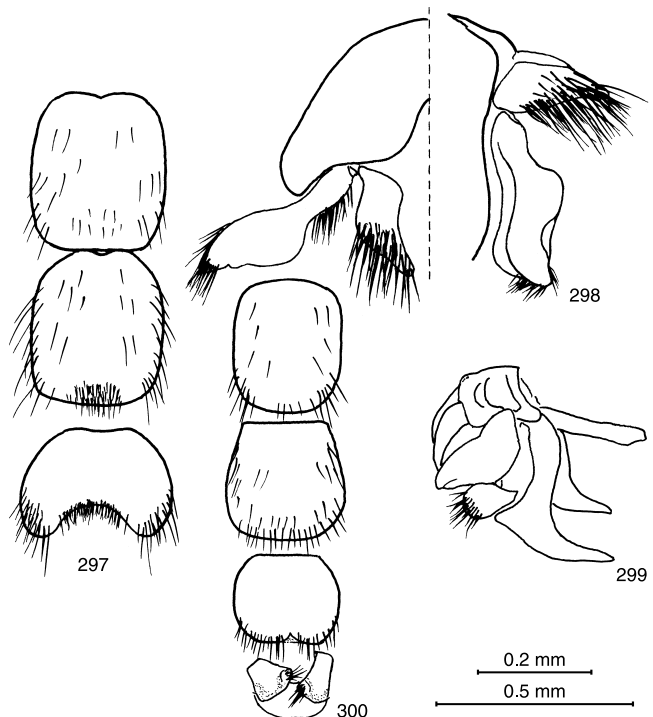
*Cleigastra carbonaria* POKORNY, 1887: 411 (synonymized by Strobl, 1898: 182 and after Šifner, 1977a: 270)

Material examinad. CZ and SK 63 ♂♂ 61 ♀♀.

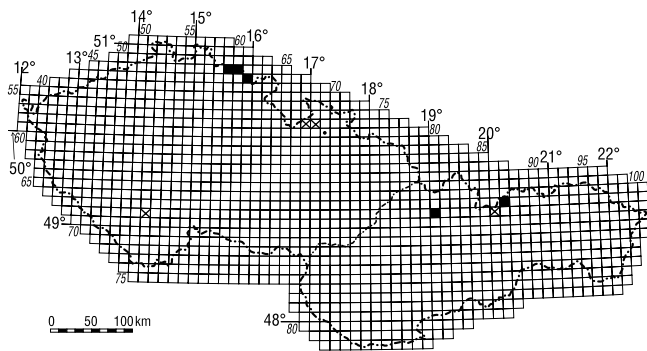
Body-length 8–10 mm, black, colour of legs very variable from yellow to dark and black. Head: *ors* 3, *fris* 3, *fvit* black, orbits, parafacials, genae and face black but white dusted, *scap*, *ped* and *fglm\_1* black, rounded apically, arista pubescent, vibrissal callus with one to two vibrissae together with 4–6 shorter bristles, palpi short, black with two apical bristles. Thorax: black, shiny, *acs* partly multinumerous, *dcs* 5, *hs* 2 and humeral callus with 6–8 short bristles anteriorly, *phs* 1, *press* 1, *ias* 3–4, *ntpls* 2, *sas* 2, *pas* 2 and 3–4 very short, *scs* 2 pairs, *prpls* 1, *prsts* 2, *mspls* 4–5, *stpls* 3,  $F_1$  and  $F_2$  with short ventral bristles arranged in two or three rows. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternites more or less rectangular, 4<sup>th</sup> sternite with short and dense bristles medio-caudally, 5<sup>th</sup> sternite laterally haired, medially shortly bristled (Fig. 297), surstylus haired basally and apically, cercus haired only apically (Fig. 298), praegonite short, wide and with long apical hairs (Fig. 299); female – 5<sup>th</sup> to 7<sup>th</sup> sternites wide and bristled, 7<sup>th</sup> slightly indented caudally, 8<sup>th</sup> sternites partly fused with tergite, densely bristled apically and sometimes weakly sclerotized (Fig. 300).

**Distribution (Map 41):** This species was described in Central Europe (cf. Gorodkov, 1986), this distribution corresponding with the geographical distribution of its food plant i. e. *Veratrum* spp., larvae mine in leaves and stems (cf. also Šifner, 1964a). In CZ and SK the species is distributed above all in mountainous habitats with vegetation of *Veratrum album* subsp. *lobelianum*.

**CZ:** Literary data – 5761 Král. Sněžník Mt., 5867 Kotel



Figs 297–300. *Delina anthrax* (SCHINER). 297 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 298 – cercus and surstylus (caudal and lateral views), 299 – genital apparatus with praegonite; 300 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 297, 298, 300; Scale 0.2 mm: Fig. 299.



Map 41. The distribution of *Delina anthrax* (SCHINER).

pod Vysokou, 5868 Branná, Keprník Mt., 5969 Petrovy kameny rocks (Starý, 1930), Protivín (Vimmer, 1906, 1913).

Further localities: 5259 Labský důl valley, 5260 Obří důl valley, Úpské rašeliniště peat-bog, Růžová hora Mt., Pančická louka meadow, Modrý důl valley, 5361 Rýchory, 5969 Velká kotlina.

**SK:** Literary data – 6886 Štrbské pleso mountain lake (Zavřel, 1965b).

Further localities: 6787 Javorová dolina valley, 6880 Stoh Mt. – Stohové polany meadows.

### *Delina nigriceps* (BECKER, 1894)

*Clidogastra nigriceps* BECKER, 1894: 181

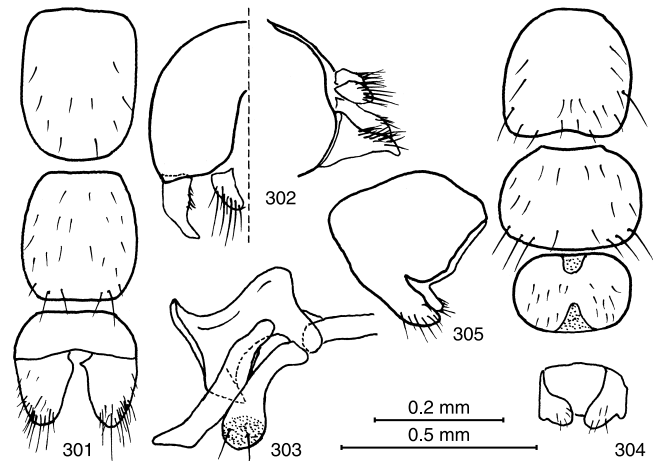
*Clidogastra veratri* HENDEL, 1925: 3 **syn. n.**

Material examined. CZ and SK 3 ♂♂ 4 ♀♀.

Body-length 5–7 mm, primarily black and grey dusted. Head: *ors* 2, *frs* 2–3, *fvit* and orbits black, parafacials, genae and face black and white dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista bare and in basal third thickened, vibrissal callus with two vibrissae together with 2–3 very short bristles, palpi dark. Thorax: *acs* sparse but distinct, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 2 very short, *ntpls* 2, *sas* 1, *pas* 2, *diss* 1 pair, *prpls* and *prsts* 1, *mspls* 3–4, *stpls* 3, all femora black, F<sub>1</sub> and F<sub>2</sub> with two rows of short bristles ventrally, all tibiae and tarsomeres yellow-brown. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternites wide and sparsely bristled, 5<sup>th</sup> sternite distinctly bilobate with long caudal hairs (Fig. 301), surstylus and cercus short and bristled caudally (Fig. 302), praegonite slightly sclerotized apically, wide, with two distinct bristles (Fig. 303); female – 5<sup>th</sup> to 7<sup>th</sup> sternites wide, 7<sup>th</sup> sternite slightly sclerotized caudally, 8<sup>th</sup> sternites partly distinctly fused with 8<sup>th</sup> tergite and bristled caudally (Figs 304–305).

**Distribution:** This species was described in Switzerland (St. Moritz) by Becker (1894) and recently recorded in Central Europe by Gorodkov (1986). The species *Clidogastra veratri* described by Hendel (1925) is only a lighter coloured form of species *Delina nigriceps*; this conclusion is based on a revision of all specimens designated by Hendel as *Clidogastra veratri* and deposited in NMW. The species *Clidogastra veratri* HENDEL, 1925 is a junior subjective synonym of *Delina nigriceps* (BECKER, 1894).

**CZ:** Localities – 5259 Kotel, 5260 Obří důl valley.



Figs 301–305. *Delina nigriceps* (BECKER). 301 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 302 – cercus and surstylus (caudal and lateral views); 303 – genital apparatus with praegonite; 304 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites; 305 – 8<sup>th</sup> female abdominal sternite (lateral view). Scale 0.5 mm: Figs 301, 302, 304, 305; Scale 0.2 mm: Fig. 303.

### *Delina nigrita* (FALLÉN, 1819)

*Cordylura nigrita* FALLÉN, 1819: 10

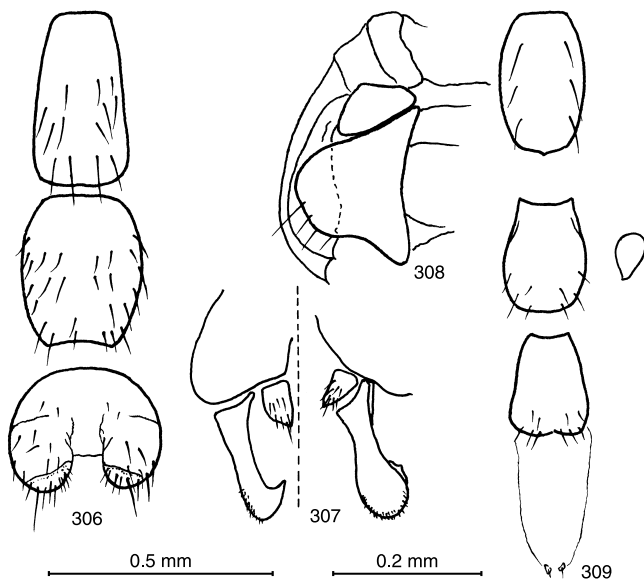
*Delina dejeani* ROBINEAU-DESVOIDY, 1830: 670 (synonymized by Vockeroth 1965: 841)

*Lissa cornuta* WALKER, 1849: 1047 (synonymized by Vockeroth 1965: 841)

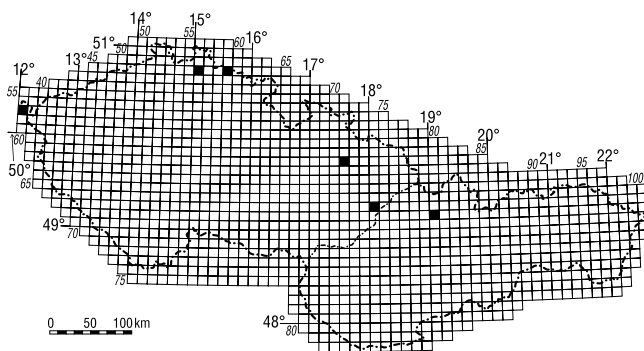
Material examined CZ and SK 3 ♂♂ 3 ♀♀.

Body-length 5–7 mm, primarily black, shiny and in males partly silver dusted. Head: *ivs* very long and straight, *ovs* arched exteriorly, *ors* 2, *frs* 3–4, *fvit* yellow to dark, orbits black, parafacials, genae and face yellowish and intensively silver dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista thickened basally, pubescent and 2–3 times longer than *fglm*<sub>1</sub>, vibrissal callus with one vibrissa together 2–3 small and short bristles, palpi dark. Thorax: *acs* sparse, *dcs* 5, *hs* 2, *phs* 1, *ias* 1, *ntpls* 2, *sas* 1, *pas* 1, *prpls* and *prsts* 1, *mspls* 4–5, *stpls* 3, *diss* 1 pair very long and 3–4 times longer than *ass*, all femora dark, all tibiae and tarsomeres of T<sub>1</sub> yellow-brown, tarsomeres of T<sub>2</sub> and T<sub>3</sub> dark. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternite approximately twice longer than wide and sparsely bristled, lobes of 5<sup>th</sup> sternite indistinct (Fig. 306), surstylus arched and pointed apically (caudal view), in lateral view broadened apically, with very short spine-like bristles (Fig. 307), praegonite wide, with four short bristles (Fig. 308); female – 5<sup>th</sup> to 7<sup>th</sup> sternites sparsely bristled, 8<sup>th</sup> sternites very small, with one bristle (Fig. 309).

**Distribution** (Map. 42): Holarctic species; in the Palearctic region it is distributed from Ireland to East Siberia and Mongolia (Gorodkov, 1986 and Chandler, 1998). The life cycle is not known, but Hackman (1956) mentioned larvae mining in *Platathera* spp. and *Orchis* spp. (Orchidaceae). In CZ and SK it was collected very rarely in lowlands and in mountains up to 1400 m a.s.l., in SK it is



Figs 306–309. *Delina nigrita* (FALLÉN). 306 – 3<sup>th</sup> to 5<sup>th</sup> male abdominal sternites; 307 – cercus and surstylus (caudal and lateral views); 308 – genital apparatus with praegonite; 309 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermatheca. Scale 0.5 mm: Figs 306, 307, 309; Scale 0.2 mm: Fig. 308.



Map 42. The distribution of *Delina nigrita* (FALLÉN).

known from one locality where *Veratrum album* subsp. *lobelianum* grows.

**CZ:** Localities – 5256 Královka Mt., 5259 Labská louka, 5738 ! Aš: 5. 1868, 1 female; *ibid.*, 1869. 1 female, det Kowarz 1872, *ibid.*, 19. 5. 1870, 1 male, Kowarz 1872, all revised by present author (NMW), 6271 Budišov nad Budišovkou, 6774 Zděchov.

### Genus *Americina* MALLOCH, 1923

*Americina* MALLOCH, 1923: 139 (type species: *Cordylura adusta* LOEW, 1863 – by orig. des.)

**General characters:** Body very weakly bristled, scutum dark in primary colour, abdomen shiny dark to black, pleura and legs yellow, body-size 3–5 mm, antennae short, arista bare or shortly pubescent, palpi short, narrow with an apical bristle, only one humeral bristle, one to two katepisternal bristles. Abdomen of male indistinctly

broadened apically, lobes of 5<sup>th</sup> sternite short. Malloch (1923) quoted the following characters: arista pubescent, prealar bristles absent, posterior notopleural bristles generally present and 6<sup>th</sup> wing vein traceable to margin of wing. Larvae develop in leaves of plant-families Liliaceae, Orchidaceae and Commelinaceae. Knowledge regarding all plant hosts including the data in related literature are summarized by Šifner (1978a) who quotes three species: *A. vittata* (MEIGEN), *A. media* (BECKER) and *A. sellata* (HACKMAN). Šifner (1978a) also established series of synonyms including the species *A. paridis* (HERING) as a junior subjective synonym of *A. vittata* (MEIGEN). Hackman (1957) and successively Gorodkov (1986) registered again *A. paridis* as a separate species. Concerning the issue of some general diagnostic characters, it should be said: almost all the species (adult specimens) of this genus are separated only by colour characters e. g. colour of pleurae, colour of third antennal joint (*fglm*<sub>1</sub>) etc., larvae were separated by the number of papillae on anterior spiracle of the third larval instar, by the mining form or by the arrangement of larval excrements in mines (cf. Hering, 1957). All of the above characters are very variable and from taxonomical viewpoint inapplicable. Characters of male and female terminalia do not allow us to make distinctions between species *A. vittata* and *A. paridis* (cf. also Šifner, 1978a).

### Key to species of genus *Americina*

- Pleura of thorax yellowish with a dark stripe extending to wing base, cerci of male very short ..... *Americina vittata* (MEIGEN, 1826)
- Pleurae of thorax entirely yellowish without a dark stripe, cerci of male long ..... *Americina media* (BECKER, 1894)

### *Americina media* (BECKER, 1894)

*Parallelomma media* BECKER, 1894: 96

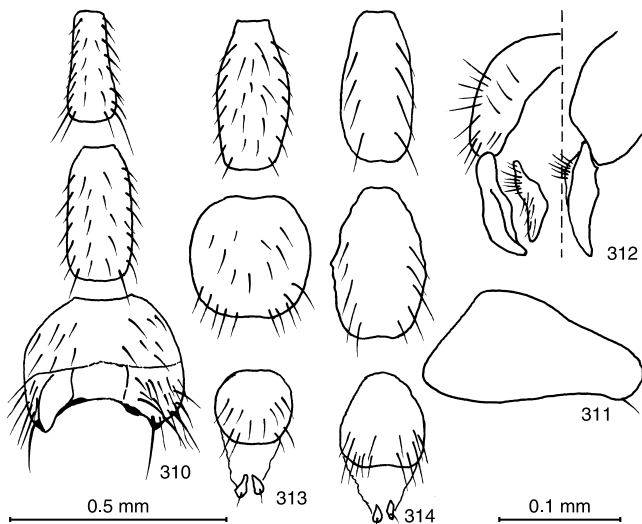
*Chylizosoma beckeri* SÉGUY, 1932: 153 (synonymized by Sack, 1937: 26)

*Chylizosoma flava* SZILÁDY, 1943: 180 (synonymized by Šifner, 1978a: 288)

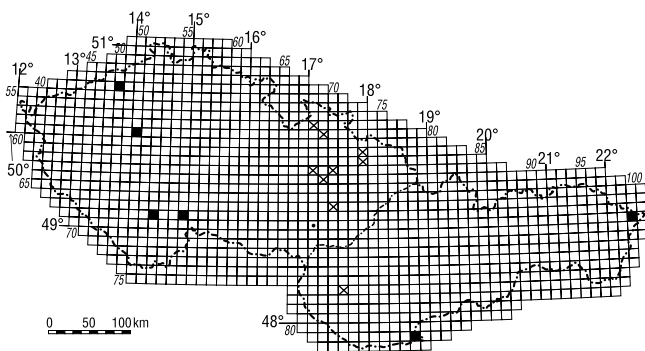
**Material examined.** CZ and SK 5 ♂♂ 13 ♀♀.

**Body-length** 3–5 mm, pleurae without black shining stripe. Head: *frs* 2, *frs* 2, *fvit* yellow to brown, orbits black, parafacials, genae and face yellow, *scap* and *ped* yellow, *fglm*<sub>1</sub> in females dark to black, in males yellow, arista dark and pubescent, vibrissal callus with one vibrissa together with 3–4 short bristles, palpi yellow. Thorax: *acs* sparse but distinct, *dcs* 5, *hs* 2 (fore shorter), *press* 1, *sas* 2, *pas* 2, *scs* 1 pair, *ntpls* 2, *prpls* and *prsts* 1, *mspls* 1–4, *stpls* 1, all legs yellow, tarsomeres of all legs darkened. Abdomen: male – 3<sup>rd</sup> sternite caudally only slightly broadened, 4<sup>th</sup> sternite more or less rectangular, both sternites with distinct bristles laterally, lobes of 5<sup>th</sup> sternite very short, basally wide, pointed and sclerotized apically, with distinct bristles laterally (Fig. 310), praego-





Figs 310–314. *Americina media* (BECKER). 310 – 3<sup>th</sup> to 5<sup>th</sup> male abdominal sternites; 311 – praegonite; 312 – cercus and surstylus (caudal and lateral views); 313 and 314 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 310, 312, 313, 314; Scale 0.1 mm: Fig. 311.



Map 43. The distribution of *Americina media* (BECKER).

nite wide, narrow apically, with very delicate and short subapical bristle (Fig. 311), surstylus wide basally, slightly arched and narrow apically, without bristles, cercus pointed caudally and only shortly bristled basally (Fig. 312); female – 5<sup>th</sup> sternite elongate, shape of 6<sup>th</sup> and 7<sup>th</sup> sternites very variable with bristles of various size, 8<sup>th</sup> sternites very small (Figs 313–314).

Distribution (Map 43): **CZ**: Literary data – 5969 Praděd Mt., Fulnek (Skala and Zavřel, 1946), 6368 Hluboký žleb (Černík, 1940a), 6370 Hrubá Voda (Černík 1942), 6469 Olomouc (Černík, 1936, 1937), 6770 Kroměříž (Skala and Zavřel, 1946), 5868 Šerák Mt., 6673 Hošťálková, 6968 Čeložnice, 7065 Pouzdřany (Starý, 1930).

Further localities: 5950 Chyňava, 5448 Bílina, 6852 Purkarec, 6855 Jindřichův Hradec, 6968 Ždánice.

**SK**: Literary data – 7671 forests nr. Tmava (Starý, 1930).

Further localities: 6999 Stakčín, 8178 Kamenica nad Hronom.

### *Americina vittata* (MEIGEN, 1826)

*Cordylura vittata* MEIGEN, 1826: 236

*Chylizosoma albamentum* SÉGUY, 1962: 153 (synonymized by Šifner, 1978a: 290)

*Chylizosoma hostae* HERING, 1955: 7 (synonymized by Šifner, 1978a: 290)

*Chylizosoma paridis* HERING, 1923: 200 (synonymized by Šifner, 1978a: 290)

*Chylizosoma paucheti* SÉGUY, 1932: 153 (synonymized by Šifner, 1978a: 291)

*Chylizosoma sasakawae* HERING, 1955: 7 (synonymized by Šifner, 1978a: 291)

*Chylizosoma paridis* SÉGUY et PAUCHET, 1929: 47 (synonymized by Séguy, 1932: 153)

*Cordylura convalaria* KATLENBACH, 1869: 273 (synonymized by Šifner, 1978a: 291)

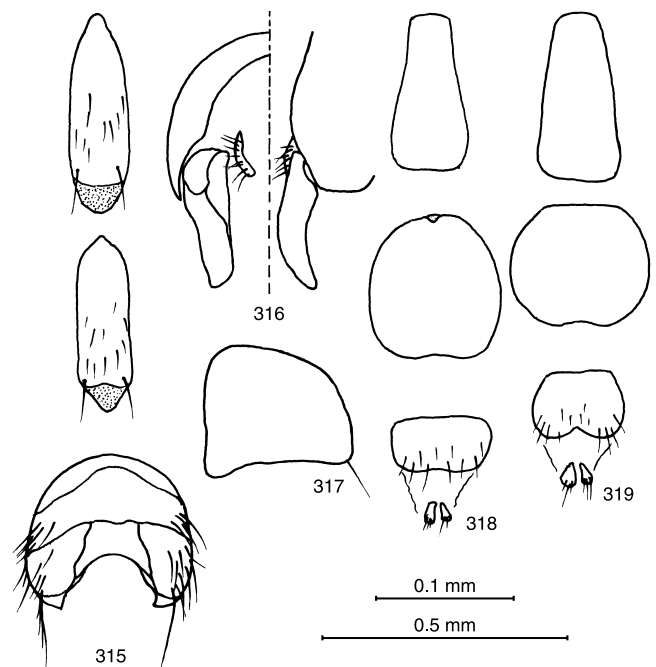
*Cordylura convalaria* KATLENBACH, 1874: 724 (synonymized by Šifner, 1978a: 291)

*Parallelomma nudicornis* CRESOON, 1918 (synonymized by Vockeroth, 1965: 840)

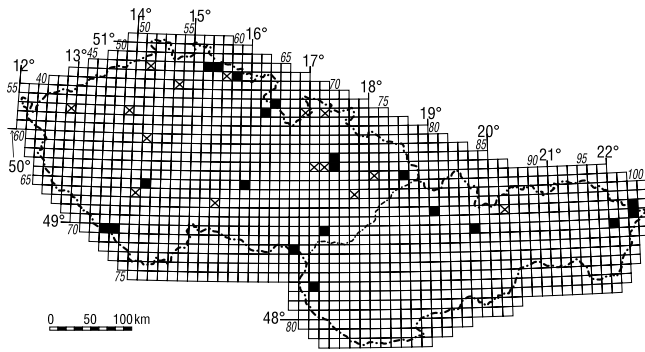
*Cordylura inermis* LOEW, 1869: 178 (synonymized by Vockeroth, 1965: 840)

Material examined. CZ and SK 17 ♂♂ 21 ♀♀.

Body-length 3–5 mm, pleura yellow with a dark to black shiny stripe extending to wing base. Head: *ors* 2, *frs* 2, *fvit* yellow to brown, orbits black, parafacials sometimes in upper half dark, genae and face yellow, *scap*, *ped* and *fglm*<sub>1</sub> yellow, arista black and pubescent, vibrissal callus with one vibrissa, palpi yellow. Thorax: *acs* sparse but distinct, *dcs* 5 and only prescutellar pair strong, *hs* 1, *sas* 1, *pas* 2, *ntpls* 2,



Figs 315–319. *Americina vittata* (MEIGEN). 315 – 3<sup>th</sup> to 5<sup>th</sup> male abdominal sternites; 316 – praegonite; 317 – cercus and surstylus (caudal and lateral views); 318 and 319 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 315, 316, 318, 319; Scale 0.1 mm: Fig. 317.



Map 44. The distribution of *Americina vittata* (MEIGEN).

*sca* 1 pair very long, *prpls* and *prsts* 1, *mspls* 1–2, *stpls* 1, all legs yellow, tarsomeres of fore legs dark, F<sub>2</sub> and F<sub>3</sub> slightly darkened apically or entirely dorsally. Abdomen: male – 3<sup>rd</sup> and 4<sup>th</sup> sternites wide and both slightly sclerotized caudally and very shortly bristled, lobes of 5<sup>th</sup> sternite short, shortly bristled medially, with one distinct long bristle laterally (Fig. 315), praegonite wide, with one short apical bristle (Fig. 316), surstylus wide (caudal view) and slightly arched (lateral view), cercus very small and distinctly bristled (Fig. 317); female – 5<sup>th</sup> to 7<sup>th</sup> sternites very variable, 5<sup>th</sup> sternite basally slightly or distinctly narrow without bristles, 6<sup>th</sup> sternite wide with bristles, 7<sup>th</sup> sternite wider than long and sparsely and shortly bristled caudally, 8<sup>th</sup> sternites very small (Figs 318–319).

Distribution (Map 44): **CZ**: Literary data – 5251 Děčín, 5359 Vrchlabí, 5454 Bezděz Mt., 5749 Málkovice (Vimmer, 1926), 5743 Karlovy Vary (Hering, 1925), 5767 Králický Sněžník Mt., 5769 Zlatý Chlum (Zavřel, 1960), 6051 Karlštejn (Vimmer, 1926), 6369 Horka nad Moravou (Černík, 1942), 6474 Kotouč Mt., Černý les forest (Zavřel, 1956a), 6650 vicinity of Písek (Vimmer, 1913), 6551 Oslov, 6672 Držková, 6758 Třešť (Starý, 1930), Šumava Mts – without localities (Vimmer, 1927).

Further localities: 5257 Karlov, 5258 Harrachov, 5360 ! Svoboda nad Úpou (NMW), 5664 Šerlišský mlýn mill, 5763 Chábory, 6270 Jívová, 6370 Hrubá Voda, 6477 Horní Lomná, 6561 Oslov, 7047 Hraniční slat swamp, 7048 Malá niva meadow, 7069 Strážnice, 7266 Lednice.

**SK**: Literary data – 6887 Studenovodská dolina (Hering 1925), Tatranská Lomnica (Zavřel 1956a).

Further localities: 6800 Ruské, 6880 Stoh Mt. – sedlo pass, 6900 Nová Sedlica, Ruský Potok, 7084 Stanišovská dolina valley, 7098 Dlhé nad Cirochou, 7668 Pernek.

### Genus *Micropselapha* BECKER, 1894

*Micropselapha* BECKER, 1894: 108 (type species: *Cordylura filiformis* ZETTERSTEDT, 1846 – by orig. des.)

General characters: Body very weakly bristled and shiny black, antennae very long, scutum and abdomen covered with fine short hairs, fore femora with one row of 8–10 fine bristles, vein A<sub>1</sub> extending to margin of wing.

### *Micropselapha filiformis* (ZETTERSTEDT, 1846)

*Cordylura filiformis* ZETTERSTEDT, 1846: 2025

Material examined. CZ and SK 1 ♂ 3 ♀♀.

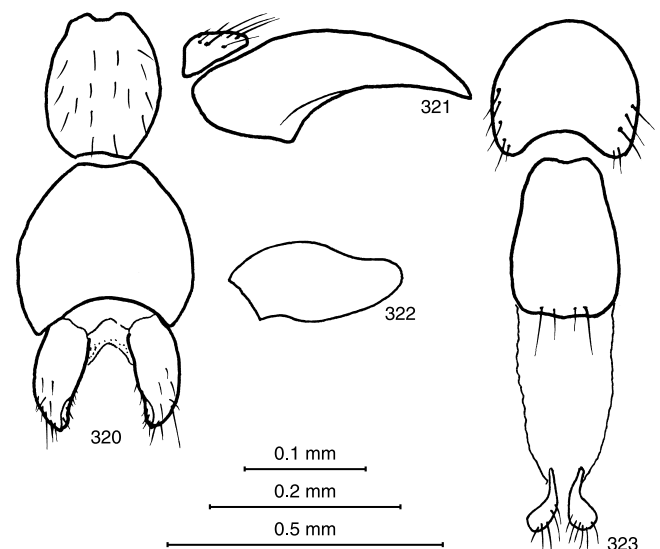
Body-length 8–10 mm, dark. Head: higher than long, *ors* 3, *frs* 4–5, *fvit* and orbits black, parafacials, genae and face dark in primary colour but white dusted, back part of head shiny black, *scap* and *ped* black, *fglm*<sub>1</sub> black and 5 times longer than wide, arista thickened basally, yellow and pubescent, one vibrissa with 3–4 haired bristles, palpi very short with short apical bristle and shortly haired. Thorax: shiny black, *acs* haired, *dcs* 4, *hs* 2 very short, without *ias*, *sas* 1 long, *pas* 2, *sca* 1 pair long, *prpls* 1, without *prsts* and *mspls*, *stpls* 1, anepisternum posteriorly haired, katepisternum bare, all legs yellow, F<sub>2</sub> and F<sub>3</sub> darkened dorsoapically, all tarsomeres dark, veins of wing distinctly dark. Abdomen: male – 4<sup>th</sup> sternite more or less oval, slightly indented proximally and caudally, sparsely bristled, 5<sup>th</sup> sternite wide with short lobes (Fig. 320), surstylus short and pointed apically, cercus with haired bristles (Fig. 321), praegonite very small and narrowed apically (Fig. 322); female – 6<sup>th</sup> sternite wide, convex caudally, 7<sup>th</sup> sternite long, 8<sup>th</sup> sternites very narrow basally, enlarged and distinctly bristled caudally (Fig. 323).

Distribution (Map 45): This species is distributed from northern and central part of Europe to northern territory of Russia (Gorodkov, 1986). It is probably mountainous (Hackman, 1956); very rare in CZ and SK. Its life cycle and larvae are unknown.

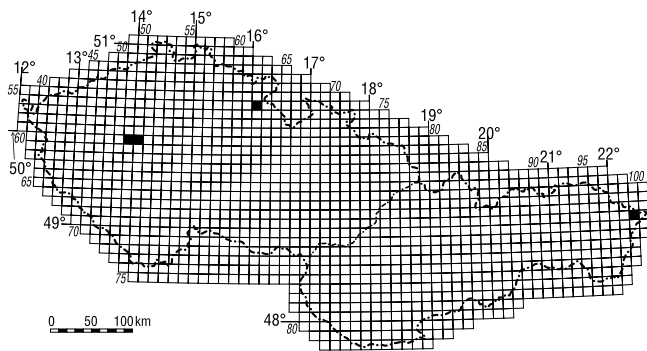
**CZ**: Literary data – Bohemia, without localities (Becker 1894).

Further localities: 5662 Dobruška, 6049 Bušehrad env. Broumy, 6050 Koda hill.

**SK**: Locality – 6900 Nová Sedlica.



Figs 320–323. *Micropselapha filiformis* (ZETTERSTEDT). 320 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 321 – cercus and surstylus (lateral view); 322 – praegonite; 323 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 320, 323; Scale 0.2 mm: Fig. 321; Scale 0.1 mm: Fig. 322.



Map 45. The distribution of *Micropselapha filiformis* (ZETTERSTEDT).

### Genus *Leptopa* ZETTERSTEDT, 1838

*Leptopa* ZETTERSTEDT, 1838: 698 (type species: *Leptopa filiformis* ZETTERSTEDT, 1838 – by mon. des.)

General characters: Body yellow in primary colour, eyes posteriorly reniformly indented, genae with a projecting lobe carrying numerous black bristles.

### *Leptopa filiformis* ZETTERSTEDT, 1838

*Leptopa filiformis* ZETTERSTEDT, 1838: 735

*Cordylura flaveola* ZETTERSTEDT, 1838: 735 (synonymized by Becker, 1905: 6)

*Cordylura flava* HALIDAY, 1836: 150 (synonymized by Becker, 1905: 6)

Material examined. CZ and SK 26 ♂♂ 27 ♀♀.

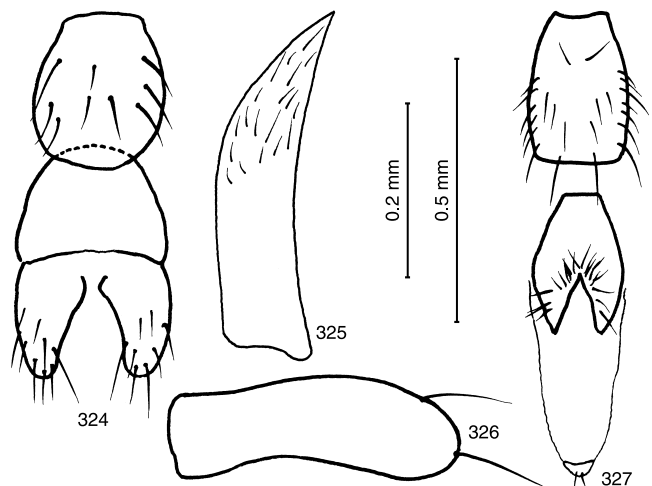
Body-length 5–7 mm, all yellow. Head: *ivs* 1 straight and long, *ovs* 1 arched distinctly exteriorly, *fvit* yellow and narrow, *ors* 2–3, *frs* 2–4, orbits, parafacials, genae and face yellow, eyes narrowed basally, posteriorly reniformly indented, *scap*, *ped*, *fglm*<sub>1</sub> yellow and short, arista pubescent, *fglm*<sub>2</sub> distinct. Thorax: *acs* very long, *dcs* 4, *hs* 2, *phs* 1, *ias* 1, *sas* 1, *pas* 2, *scs* 1 pair very long, *ntpls* 2, *prpls* and *prsts* 1, *mspls* 1 long and 3 short, *stpls* 1, anepisternum bare, katepisternum with short black setulae, all legs yellow, wings hyaline, vein R<sub>1</sub> bare. Abdomen: male – 4<sup>th</sup> sternite straight basally, lobes of 5<sup>th</sup> sternite narrow and sparsely bristled apically (Fig. 324), surstylus wide and pointed apically (Fig. 325), praegonite with two apical bristles (Fig. 326); female – 6<sup>th</sup> sternite rectangular, bristled laterally, 7<sup>th</sup> sternite deeply indented caudally and bristled, 8<sup>th</sup> sternites fused, with two setulae (Fig. 327).

Distribution (Map 46): European species, it is not commonly distributed (Gorodkov 1986). Its life cycle and larvae are not known, but larvae are probably phytophagous or mesophilous, collected in CZ and SK by sweeping in various habitats: meadows, floodplain forests, bushes etc.

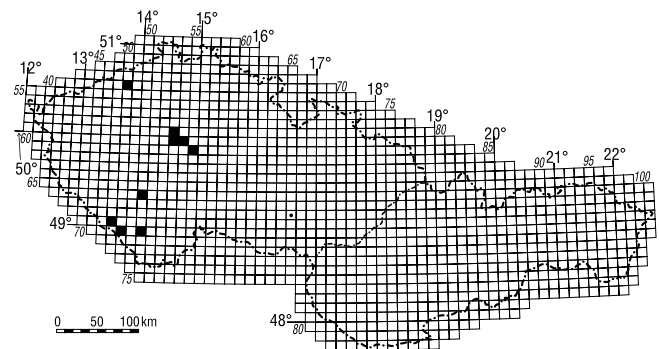
The species *Leptopa hendeli* from the Nearctic region by Šifner (1977c) is described (in coll. NMW).

CZ: Literary data– 6865 Brno-Černovice (Czižek, 1908a), Silesia, without localities (Pax, 1921).

Further localities: 5448 Bílina, 5953 Praha-



Figs 324–327. *Leptopa filiformis* ZETTERSTEDT. 324 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 325 – surstylus; 326 – praegonite; 327 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 324, 326, 327; Scale 0.2 mm: Fig. 325.



Map 46. The distribution of *Leptopa filiformis* ZETTERSTEDT.

Milíčovský rybník pond, 6053 Kunice, 6054 Mnichovice, 6155 Sázava, 6650 Vráž u Písku, 6947 Popelná, 7047–48 Chalupská slat' swamp, 6865 Brno-Černovice, 7050 Miletínky.

SK: Localities – 6900 Nová Sedlica, Ruský Potok.

## Tribe Scathophagini

### Genus *Scathophaga* MEIGEN, 1803

*Scathophaga* MEIGEN, 1803: 277 (type species: *Musca merdaria* FABRICIUS, 1794 – by mon. des.) (= *Musca stercoraria* LINNAEUS, 1758)

*Scopeuma* MEIGEN, 1800: 36 (suppressed by I. C. Z. N. in 1963, Opinion 678) (type species: *Musca merdaria* FABRICIUS, 1794 – subsequent des. by Coquillett, 1901: 604)

*Pyropa* ILLIGER, 1807: 475 (type species: *Musca stercoraria* LINNAEUS, 1758 – subsequent des. by Vockeroth, 1965: 837)

*Scatomyza* FALLÉN, 1810: 15 (type species: *Musca scybalaria* LINNAEUS, 1758 – subsequent des. by Lucas, 1848: 411)

*Amina* ROBINEAU-DESVOIDY, 1830: 629 (type species: *Amina parisiensis* ROB.-DESV., 1830 – by mon. des.)

*Scatina* ROBINEAU-DESVOIDY, 1830: 629 (type species: *Scatina claripennis* ROB.-DESV., 1830 – by mon. des.)

*Scatophagella* SZILÁDY, 1926: 597 (type species: *Scatophagella pubescens* SZILÁDY, 1926 – by orig. des.); (doubtful species, cf. Gorodkov, 1986: 40)

*Scatophaga*: unjustified emend.

**General characters:** Body yellowish, brown to dark in primary colour, entirely or partly yellow haired, sometimes very variable in size, head more or less spherical, rather higher than long, palpi narrowed with weak black bristles apically and laterally with long yellow hairs, arista bare to plumose, proepisternal bristles missing or haired. Proepisternum, anepisternum and katapisternum entire haired, always only one katapisternal bristle. Chaetotaxy of thorax: *acs* distinct and sometimes multinumerous, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 2–3 short or missing, *sas* 2, *pas* 2, *scs* 2 or 3 pairs, *mspls* 1–3, *stpls* always 1. Prostigmal and proepisternal bristles haired and are poorly differentiated from the adjacent hairs, the 5<sup>th</sup> abdominal sternite of males very rarely distinctly bilobate, the lobes are mostly developed medially in the shape of small projections, surstyli are almost always strongly sclerotized, pointed and arched, anal cerci are not fused, 8<sup>th</sup> abdominal sternites of females always developed. Currently a total of 37 species of the genus *Scatophaga* have been recorded in the Palaearctic region (Gorodkov, 1986; Ozerov, 1996; Šifner, 2000). The larvae are predaceous or carnivorous in excrements of various vertebrates and probably also coprophagous, larvae of *S. vilipes* and *S. litorea* were found in decaying wrack (Backlund, 1945; Hackman, 1956). Adults of species *S. stercoraria* and *S. cineraria* (common species in mountains) are very abundant in the environs of cattle excrements, on pastures, on vegetation of fields, meadows, forests etc. Species of *S. stercoraria* can also be found close to human settlements, but it is neither synanthropic nor hemisynanthropic species. The species *S. furcata* is common in mountains, it is collected sporadically in lowlands. Some species are more or less rare, but in time of the adult emergence it can be very frequent or common.

The genus *Scatophaga* is not monophyletic (cf. Bernasconi et al. 2000 a,b). This assumption has been confirmed not only by a DNA sequence analysis (Bernasconi et al. 2000a,b), but also by certain morphological characters e. g. by the shape and length of surstyli or praegonite of males etc. (note of the present author).

#### Key to species of genus *Scatophaga*

1. Arista of antennae plumose. . . . . 2
- Arista of antennae bare . . . . . 11
- 2(1) Vein R<sub>2+3</sub> and R<sub>3+4</sub> distinctly convergent to apex of wing . . . *Scatophaga scybalaria* (LINNAEUS, 1758)
- Vein R<sub>2+3</sub> and R<sub>4+5</sub> parallel to apex of wing . . . . . 3
- 3(2) First flagellomere entirely black . . . . . 4
- First flagellomere entirely or partly brown . . . . . 5
- 4(3) Femora yellow to grey, or brown apically, 5<sup>th</sup> abdominal sternite of male with only short projections medially

- (Fig. 360), 8<sup>th</sup> abdominal sternite of female wide (Fig. 363) . . . . *Scatophaga stercoraria* (LINNAEUS, 1758)
- Femora dark and in apical quarter brown, 5<sup>th</sup> abdominal sternite of male without short projections medially (Fig. 329), 8<sup>th</sup> abdominal sternite of female pointed (Fig. 332) . . . . . *Scatophaga cineraria* (MEIGEN, 1826)
- 5(3) All femora unicoloured yellow-brown to brown . . . 6
- Fore femora and sometimes mid femora with a dark stripe dorsally . . . . *Scatophaga taeniopa* (RONDANI, 1867)
- 6(5) All coxae with distinct long black bristles . . . . .
- . . . . . *Scatophaga bohemiae* ŠIFNER, 2000
- All coxae without distinct long black bristles . . . . . 7
- 7(6) Surstyli very short and straight, both cross-veins not darkened . . . . . 10
- Surstyli long and arched, both cross-veins in different extent darkened . . . . . 8
- 8(7) Cross-veins *r-m* and *m-cu* dark, praegonite with one apical and six dorsal bristles (Fig. 366), 7<sup>th</sup> abdominal sternite of female divided into two sclerites (Fig. 367). . . . . *Scatophaga suilla* (FABRICIUS, 1794)
- Cross-veins *r-m* and *m-cu* not dark . . . . . 9
- 9(8) First flagellomere three times longer than wide, 5<sup>th</sup> abdominal sternite of male medially with a notch (Fig. 341), 8<sup>th</sup> abdominal sternite of female caudally pointed and with short bristles (Fig. 344) . . . . .
- . . . . . *Scatophaga lutaria* (FABRICIUS, 1794)
- First flagellomere twice longer than wide, 5<sup>th</sup> abdominal sternite of male medially with short projections (Fig. 337), 8<sup>th</sup> abdominal sternite of female caudally pointed and without short bristles (Fig. 340) . . . . .
- . . . . . *Scatophaga inquinata* (MEIGEN, 1826)
- 10(7) 4<sup>th</sup> abdominal sternite of male with long hairs laterally, 5<sup>th</sup> sternite haired laterocaudally (Fig. 357), praegonite with two dorsal bristles (Fig. 359) . . . . .
- . . . . . *Scatophaga staryi* ŠIFNER, 2000
- 4<sup>th</sup> abdominal sternite of male only sparsely bristled, 5<sup>th</sup> sternite haired caudally (Fig. 372), praegonite with three dorsal bristles (Fig. 374) . . . . .
- . . . . . *Scatophaga vlastae* ŠIFNER, 2000
- 11(1) 5<sup>th</sup> abdominal sternite of male distinctly bilobate, 7<sup>th</sup> abdominal sternite of female oval or elongate . . . . . 12
- 5<sup>th</sup> abdominal sternite of male with short lobes medially (Fig. 333), 7<sup>th</sup> abdominal sternite of female divided into three sclerites (Fig. 336), both cross-veins dark, fore femora with a dark stripe dorsally . . . . .
- . . . . . *Scatophaga furcata* (SAY, 1823)
- 12(11) Lobes of 5<sup>th</sup> abdominal sternite of male distinctly narrow apically (Fig. 349), 7<sup>th</sup> abdominal sternite of female enlarged caudally (Fig. 352), both cross-veins largely dark, fore femora dorsally dark . . . . .
- . . . . . *Scatophaga pictipennis* (OLDENBERG, 1923)
- Lobes of 5<sup>th</sup> abdominal sternite of male wide, with short bristles medially on the lobes (Fig. 345), 7<sup>th</sup> abdominal sternite of female oval (Fig. 348), both cross-veins only slightly dark, fore femora entirely brown . . . . .
- . . . . . *Scatophaga obscurivervis* (BECKER, 1900)

## *Scathophaga bohemiae* ŠIFNER, 2000

*Scathophaga bohemiae* ŠIFNER, 2000: 193

Material examined. CZ 1 ♀.

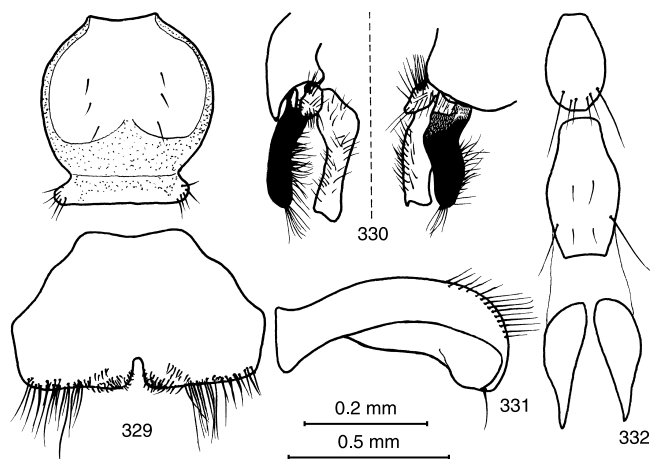
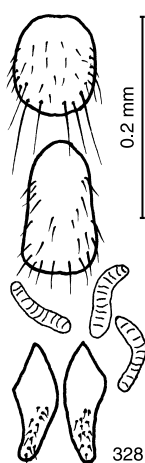
Body-length 8 mm, yellow-brown in primary colour, thorax dorsally with a distinct and narrow central light stripe. Head: *ivs* long, *ors* 3, *frs* 4, *fvit* yellow-brown, orbits yellow-brown, parafacials, face and genae yellow-brown but white dusted, *scap* and *ped* yellow, *fglm*<sub>1</sub> brown, arista plumose, vibrissal callus with 4 strong together with 5 short bristles, palpi yellow. Thorax: yellow-brown laterally but white dusted, anepisternum and katepisternum with short yellow hairs, *acs* presutural multinumerous, *ias* 3, wings hyaline, all legs yellow-brown with short irregular dark bristles, all coxae with very long black bristles. Abdomen: female 6<sup>th</sup> sternite oval, with conspicuous long black bristles, 7<sup>th</sup> sternite elongate, 8<sup>th</sup> sternite pointed distally, with very short and sporadic bristles, spermathecae elongate, slightly arched (lateral view), with perspicuous delicate ringlets (Fig. 328).

Male is unknown hitherto.

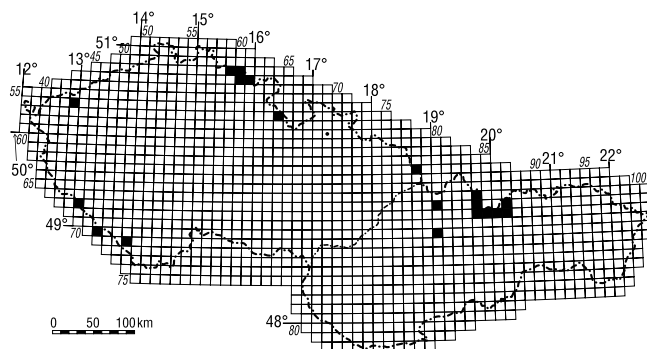
Distribution: The species was collected in central Bohemia by sweeping in deciduous forest.

CZ: Locality – 5751–52 Veltrusy.

Fig. 328. *Scathophaga bohemiae* ŠIFNER. The shape of the 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermathecae.



Figs 329–332. *Scathophaga cineraria* (MEIGEN). 329 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal stenites; 330 – cercus and surstylus (caudal and lateral views); 331 – praegonite; 332 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 329, 330, 332; Scale 0.2 mm: Fig. 331.



Map 47. The distribution of *Scathophaga cineraria* (MEIGEN).

## *Scathophaga cineraria* (MEIGEN, 1826)

*Scathophaga cineraria* MEIGEN, 1826: 251

*Cordylura lurida* SCHINER, 1864: 4 (synonymized by Šifner, 1969a: 60)

*Scathophaga mica* BECKER, 1894: 80 (synonymized by Strobl, 1898: 181)

Material examined. CZ and SK 125 ♂♂, 128 ♀♀.

Body-length 10–12 mm, primary colour varying from brown to black in both sexes within one population. Head: *ors* 3, *frs* 6–7, *fvit* reddish to brown-reddish, orbits black, parafacials, face and genae dark to black but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> black, arista plumose, vibrissal callus brown to black with 4 strong together with 2 or 3 shorter bristles, palpi yellowish. Thorax: *acs* multinumerous, all femora brown to black, sometimes brown in apical quarter or with dark stripes dorsally, all tibiae brown, wings as a rule darkened with dark to black veins. Abdomen: male 4<sup>th</sup> sternite slightly sclerotized caudally, bristled, 5<sup>th</sup> sternite wide, with a distinct notch medially and with long hairs (Fig. 329), surstylus short and wide, with long hairs on interior side (Fig. 330), praegonite with one apical bristle and 10–14 short bristles dorsally (Fig. 331); female 6<sup>th</sup> and 7<sup>th</sup>

sternites elongate, 8<sup>th</sup> sternite wide basally, pointed apically, without bristles (Fig. 332).

Distribution (Map 47): European species, common in the Alps as well as in other mountains, including the West Carpathians. Adults may be found at or above 700 m, they have not been collected in lowlands.

CZ: Literary data – 5969 Praděd Mt., (Stein, 1873; Czížek, 1907, 1909).

Further localities: 5259 Špindlerův Mlýn, Kozí hřbety, 5260 Obří důl valley, Pančická louka meadow, Růžová hora Mt., Luční hora Mt., 5360 Černá hora Mt., 5361 Rýchory Mts., Horní Albeřice, 5643 Špičák, 5764 Jelenka Mt., 5969 Praděd Mt., Velká kotlina, Vysoké hole, 6378 Nejdek, Hrádek, 6744! Hamry (NMW), 7046 Hraniční slat swamp, 7149 Mrtvý luh, nature preserve.

SK: Localities – 6684 Oravice, 6780 Stoh Mt., 6784 Jamnické pleso mountain lake, 67–6885 Tichá dolina valley, 6786–87 Javorová dolina valley, 6886 Hlinská dolina valley, Štrbské pleso mountain lake, 6787 Tatranská Kotlina, 6885 Gáborov potok brook, 6887 Smokovec, 7080 Suchý vrch hill.

***Scathophaga furcata* (SAY, 1823)**

*Scatophaga furcata* SAY, 1823: 98

*Scatophaga squalida* MEIGEN, 1826: 252 (synonymized by Séguy, 1934: 702)

*Scatomyza fuscinervis* ZETTERSTEDT, 1838: 722 (synonymized by Gorodkov, 1986: 31)

*Cordylura fuscinervis* ZETTERSTEDT, 1838: 733 (synonymized by Becker, 1894: 172)

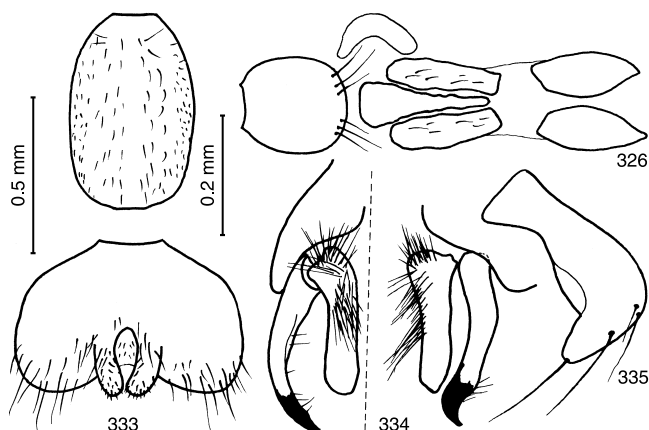
Material examined. CZ and SK 131 ♂♂ 142 ♀♀.

Body-length 6–8 mm, dark in primary colour and entirely covered with yellow hairs. Head: *ors* 3, *frs* 3–4, *fvit* yellow-brown, orbits dark, parafacials, face and genae yellow-brown, *scap* and *ped* brown, in basal half sometimes yellow-brown, arista black and bare, vibrissal callus with one vibrissa together with 2–3 short bristles, palpi yellow. Thorax: *acs* anteriorly very sparse, prescutellar pairs long, *sas* 2 very long, all legs yellow-brown, F<sub>1</sub> distinctly dark or only with a dark stripe, cross-veins *r-m* and *m-cu* darkened. Abdomen in male: 4<sup>th</sup> sternite oval, with short bristles, lobes of 5<sup>th</sup> sternite distinct and short (Fig. 333), surstylus only sclerotized apically, slightly arched (Fig. 334), praegonite arched apically, with four bristles (Fig. 335); female: 6<sup>th</sup> sternite oval, with three pairs of bristles caudally, 7<sup>th</sup> sternite divided into three sclerites, 8<sup>th</sup> sternite wide and pointed caudally, without bristles (Fig. 336).

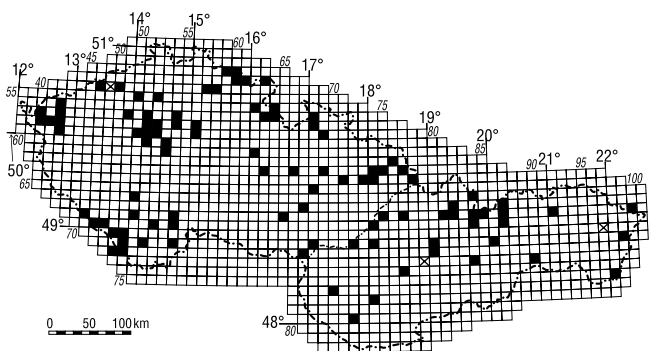
Distribution (Map 48): Holarctic species, adults vary in size and they may be found very commonly in mountains (forests, meadows and pastures), only sporadically in lowlands.

**CZ:** Literary data -5447 Horní Litvínov (Vimmer, 1913).

Further localities: 5259 Špindlerův Mlýn, 5260 Úpské rašeliniště peat bog, Obří důl valley, Modrý důl valley, 5360 Pec pod Sněžkou, 5361 Rýchory, 5363 Teplice nad Metují, 5446 Bolehošť, 5448 Bílina, 5457 Sedmihorky, 5458 Lomnice nad Popelkou, 5550 Libochovice, 5552 Račice, 5642 Horní Blatná, Nejdek, 5662 Dobruška, Nové Město nad Metují, 5664 Vrchmezí Mt., 5740 Černá, Sněžná, 5742 Karlovy Vary, 5749 Zichovec, 5751 Veltrusy, 5754 Skorkov, 5763 Chábory, 5764 Šerl. Mlýn, 5768 Ramzová, 5840 Frant. Lázně, 5841 Rudolec, Kyšperk, 5842 Čistá u Sokolova, 5851 Tuchoměřice, Praha-Šárka, 5852 Praha-Suchdol, 5854 Nový Vestec, Čelákovice, 5856 Kostelní Lhota, 5868 Zlatná nad Desnou, Ramzová, Kouty nad Desnou, 5942 Kladská-nature preserve Tajga, 5950 Loděnice, Unhošť, Horní Bezděkov, 5952 Praha-Krč; 5953 Průhonice, 5956 Pečky; 5969 Praděd Mt., Petrovy kameny rocks, Karlova Studánka, 6051 Karlštejn, 6053 Kunice, Velké Popovice, 6153 Lešany, 6162 Filipov, 6246 Sulkov u Plzně, 6276 Žermanice, 6363 Jedlová, 6366 Jevíčko, 6369 Olomouc-Černovír, 6377 Komorní Lhotka, Třinec-Jahodná, Ostrý Mt., 6475 Frenštát pod Radhoštěm, Čeladná, 6476 Lysá hora Mt., 6478 Dolní Lomná, Muřinkový vrch Mt., 6479 Kyčera Mt., 6558 Šimanov, 6568 Hrdobořice, 6572 Hostýnské vrchy-Tesák Mt., 6574 Bystřička, 6575 Radhošť Mt., 6650 Vráž u Písku, 6744 ! Hamry (NMW), 6767 Vyškov, 6845 Železná Ruda, Špičák Mt., Pancíř Mt., 6850



Figs 333–336. *Scathophaga furcata* (SAY). 333 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 334 – cercus and surstylus (caudal and lateral views); 335 – praegonite; 336 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermathecae. Scale 0.5 mm: Figs 333, 334, 336; Scale 0.2 mm: Fig. 335.



Map 48. The distribution of *Scathophaga furcata* (SAY).

Vodňany, 6854 Vlkov, 6865 Brno-Černovice, 6946 Modrava, 6947 Churáňov, Kvilda, 6952 Hluboká nad Vltavou, 6954 Třeboň, 7048 Malá niva meadow, Boubín, Horní Vltavice, 7049 Spálenec, 7149 Černý Kříž, Dobrá na Šumavě, 7151 Vyšenské kopce near Český Krumlov, 7154 Červené blato, 7168 Hodonín, 7248 Trojmezna Mt., ! Trístoličník Mt. (NMW), 7249 Plechý Mt., 7267 Pohansko.

**SK:** Literary data – 67–6885–87 Tatry Mts. (Nowicki, 1870), 6800 Ruské (Thalhammer, 1899), 7079 Brehov (Kowarz, 1883), 72–7379 Kremnica (Aczél, 1939).

Further localities: 6684 Suchá hora Mt., 6782 Dolný Kubín, 6786–87 Javorová dolina valley, 6875 Púchov, 6877 Súľov-Čierny potok brook, 6880 Stoh Mt., 6881 Likavka, 6882 Sokolče, 6884 Liptovské hole, 6885 Podbanské, Gáborov potok brook, 6887 Nová Lesná, Starý Smokovec, Veľká Studená dolina valley, Hrebienok, Tatranská Lomnica, 6892 Olejník; 6974 Vršatec; 6984 Pribilina, 6987 Poprad, Slepé pleso mountain lake, 7172 Veľká Javorina Mt., 7174 Trenčín, 7180 Krížna Mt., Smerkovica Mt., 7186 Zubrovica, 7199 Remetské Hámre, 7280 Malachov, 7384 Javorina, 7390 Bôrka, 7477 Vtáčnik Mt., 7598 Biel, 7670 Červený Kameň, 7774 Krškany, 7972 Dunajský Klátov.

### *Scathophaga inquinata* (MEIGEN, 1826)

*Scatophaga inquinata* MEIGEN, 1826: 251

*Scatophaga analis* MEIGEN, 1826: 251 (synonymized by Bernasconi, 2000: 42)

Material examined. CZ and SK 149 ♂♂ 136 ♀♀.

Body-length 8–10 mm, yellow to grey in primary colour, covered with yellow-brown hairs. Head: *ors* 3, *frs* 5, *fvit* yellow-red, orbits dark, parafacials, face and genae yellow-brown but whitish dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> brown, sometimes darkened apically and twice longer than wide, arista black and plumose, vibrissal callus with one or two strong bristles together with 5–6 short bristles, palpi yellow. Thorax: *acs* very distinct, prescutellar pairs long, *ias* 2 short, *pas* 2 (fore very long), all legs yellow-brown, wings yellowish, cross-veins *r-m* and *m-cu* not darkened. Abdomen: male 4<sup>th</sup> sternite elongate and wide, lobes of 5<sup>th</sup> sternite short and distinctly bristled (Fig. 337), surstylus slightly arched, sclerotized and pointed (Fig. 338), praegonite slightly broadened, with apical bristles (Fig. 339); the number of apical bristles varies from 3 to 5; female – 6<sup>th</sup> sternite more or less rectangular, 7<sup>th</sup> and 8<sup>th</sup> sternites pointed caudally, spermathacae croissant-like (Fig. 340).

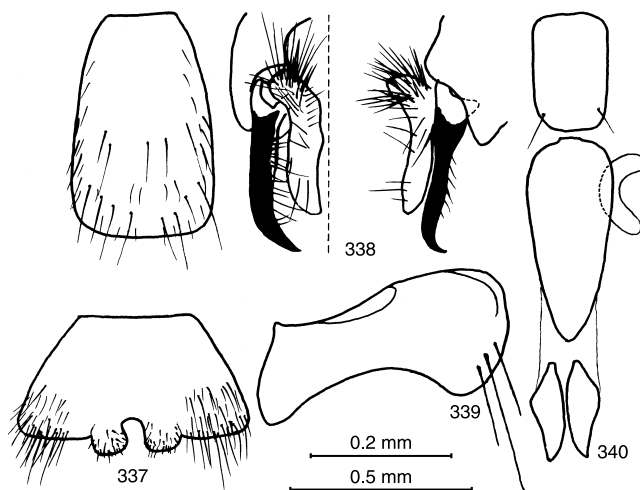
Distribution (Map 49): This palaeartic species is sporadically distributed except in arctic areas. The basic colour of wings varies from yellow to distinctly hyaline, both cross-veins are not darkened. The colour of wings was used by Meigen (1826) and by other authors e. g. Becker (1894) and Sack (1937) to differentiate between species *S. inquinata* and *S. analis*. The identity of both species was confirmed by Bernasconi (2000) and Bernasconi et al. (2000a). The incidence of this species in CZ and SK is sporadic, a number of adult specimens of both sexes has been collected at the end of September in central Bohemia (waterside of ponds near Prague) on excrements of musk-rat (*Ondatra zibetica*).

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 6865 Brno-Černovice (Czižek, 1908a,b), 6855 Jindřichův Hradec, 6954 Třeboň, 7055 Chlum u Třeboně (Vimmer, 1913).

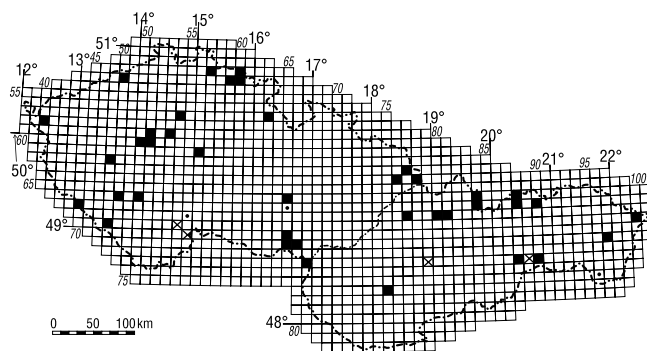
Further localities: 5257 Janov, 5260 Obří důl valley, 5348 Duchcov; 5359 Vítkovice, 5360 Černá hora Mt., 5754 Stará Boleslav, 5763 Chábory u Dobrušky, 5840 Frant. Lázně, 5868 Kouty nad Desnou, 5951 Praha-Ruzyně; 5953 Praha-Šeberovský rybník pond, 5969 Velká Kotlina, Praděd Mt., 6050 Srbsko, 6051 Zadní Třebáň, 6156 Uhlířské Janovice, 6247 Litohlavy, 6377 Komorní Lhotka, Třinec, 6476 Kyčera Mt., 6478 Muřinkový vrch Mt., 6648 Velký Bor, 6650 Vráž u Písku, 6744 ! Hamry (NMW), 65–6765–66 Moravský kras, 6855 Jindřichův Hradec, 6865 Brno, 6947 Kvilda, Jezerní slať swamp, Tetřeví slať swamp, 7065 Strachotín, 7165 Dolní Věstonice, 7166 Nové Mlýny, 7266 Lednice, 7367 Lanžhot-Soutok.

**SK:** Literary data – 7379 Kremnica (Aczél, 1939), 7389 Rožňava (Thalhammer, 1899), 7596 Slovenské Nové Mesto (Kowarz, 1883; Thalhammer, 1899).

Further localities: 6684 Oravice, 6688 Červený



Figs 337–340. *Scathophaga inquinata* (MEIGEN). 337 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 338 – cercus and surstylus (caudal and lateral views); 339 – praegonite; 340 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites with spermathacae. Scale 0.5 mm: Figs 337, 338, 340; Scale 0.2 mm: Fig. 339.



Map 49. The distribution of *Scathophaga inquinata* (MEIGEN).

Kláštor; 6784 Jamnicke pleso, 6787 Tatranská Kotlina, 6789 Podolíneč, 6877 Súľov, 6880 Stoh Mt., 6881 Likavka, 6900 Nová Sedlica, 7197 Vinné, 7388 Plešivecká planina, 7390 Bôrka, 7596 Trňa, 7675 Vieska nad Žitavou, 81–8278 Štúrovo, Kováčovské kopce hills.

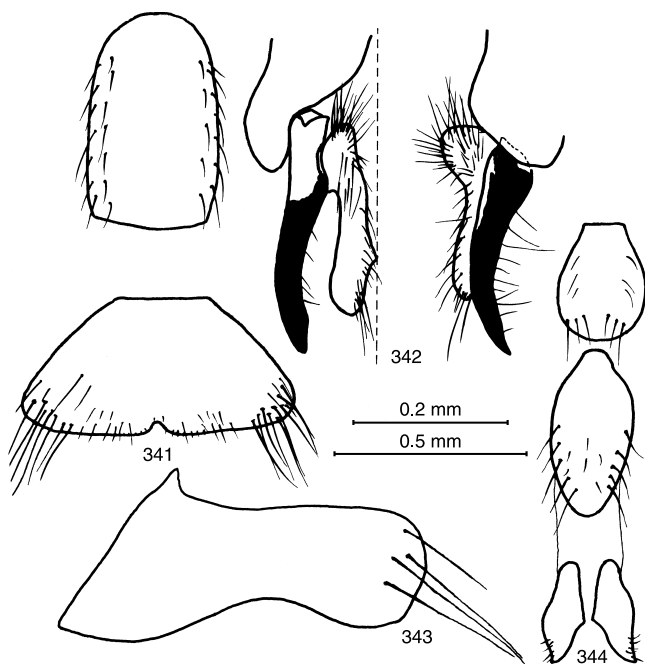
### *Scathophaga lutaria* (FABRICIUS, 1794)

*Musca lutaria* FABRICIUS, 1794: 344

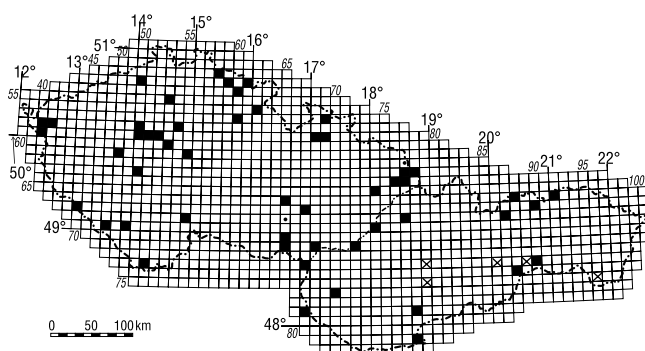
*Scatomyza maculipes* ZETTERSTEDT, 1846: 1964 (synonymized by Hackman, 1956: 18)

Material examined. CZ and SK 51 ♂♂, 54 ♀♀.

Body-length 8–10 mm, yellow to brown in primary colour, scutum darkened dorsally, humeral callus, pleura and sometimes scutellum yellowish. Head: *ors* 3, *frs* 5, *fvit* yellow-red, orbits, parafacials, face and genae yellowish but white dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> brown, slightly broadened apically and three times longer than wide, arista plumose and yellow-brown, vibrissal callus with 2 to 3 strong together with 4–6 short bristles, palpi yellow. Thorax: *acs* in two distinct regular rows, without *ias*, all legs



Figs 341–343. *Scathophaga lutaria* (FABRICIUS). 341 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 342 – cercus and surstylus (caudal and lateral views); 343 – praegonite; 344 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 341, 342, 344; Scale 0.2 mm: Fig. 343.



Map 50. The distribution of *Scathophaga lutaria* (FABRICIUS).

yellow, wings yellowish along veins, cross-veins *r-m* and *m-cu* only very slightly darkened. Abdomen: male 4<sup>th</sup> sternite oval proximally, caudally straight and bristled laterally, lobes of 5<sup>th</sup> sternite indistinct and only sparsely bristled medially, with long hairs laterally (Fig. 341), surstylus slightly arched, pointed and with hairs of interior side (Fig. 342), praegonite wide, with four apical bristles (Fig. 343); female 6<sup>th</sup> and 7<sup>th</sup> sternites more or less oval, bristled, 8<sup>th</sup> sternite wide, pointed, with short bristles apically (Fig. 344).

**Distribution** (Map 50): This palaeartic species is widely distributed and has also been collected in Mediterranean subregion e. g. Syria and Tunisia (Hackman, 1956

and Gorodkov, 1986). The basic colour of adults varies greatly, the dark form *S. maculipes* (ZETT.) was regarded by earlier authors as a separate species. *S. lutaria* is found sporadically in CZ and SK, though it is generally distributed.

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878), 6277 Český Těšín (Hetschko, 1916), 6865 Brno-Černovice (Czižek, 1908a,b).

**Further localities:** 5258 Vysočany; 5361 Horní Albeřice, 5350 Svádov, 5359 Jilemnice, 5461 Janovice u Trutnova, Staré Buky, 5553 Kokořín, 5662 valley of Metuje river, 5760 Hradec Králové, 5769 Černá hora Mt., 5840 Frant. Lázně, 5841 Kyšperk, 5850 Kladno, Smečno, 5854 Stará Boleslav, 5940 Cheb, 5950 Chyňava, 5951 Nučice, Praha-Ruzyně; 5952 Praha-Krč, 5968 valley of Bílá Ostravice river, 5969 Praděd Mt., 6053 Kunice, 6148 Kařez, 6155 Sázava, 6277 Český Těšín, 6350 Příbram, 6377 Komorní Lhotka, Třinec, 6378 Nejdek, 6476 Kyčera Mt., 6477 Muřinkový vrch hill, 6574 Bystřička, 6665 Adamov, 6744 ! Hamry na Šumavě (NMW), 6767 Vyškov; 6855 Jindřichův Hradec, 6865 Střelice, Brno, 6947 Churáňov, 6949 ! Prachatice (NMW), 7065 Strachotín, 7165 Nové Mlýny-Křivé jezero lake, 7168 Hodonín, 7351 Vyšší Brod, 7367 Lanžhot-Soutok.

**SK:** Literary data – 7379 Kremnica (Aczél, 1939), 7386 Revúca (Thalhammer, 1899), 7389 Rožňava (Fritsch, 1875; Thalhammer, 1899), 7579 Sitno Mt. (Thalhammer, 1899), 7596 Slovenské Nové Mesto (Kowarz, 1883).

**Further localities:** 6592 Cigelfka, 6688 Červený Kláštor, 6790 Vyšné Ružbachy, Janské pleso mountain lake 6877 Súľov, 6887 Tatranská Lomnica, Slepé pleso mountain lake, Veľká studená dolina valley, 6974 Vršatec, 7172 Veľká Javorina Mt., 73–7487 Plešivecká planina plateau, 7670 Červený Kameň, 7769 Jurský Šúr., 7867 ! Děvín (NMW), 7978 Želiezovce, 8178 Kovačovské kopce hills.

### *Scathophaga obscurinervis* (BECKER, 1900)

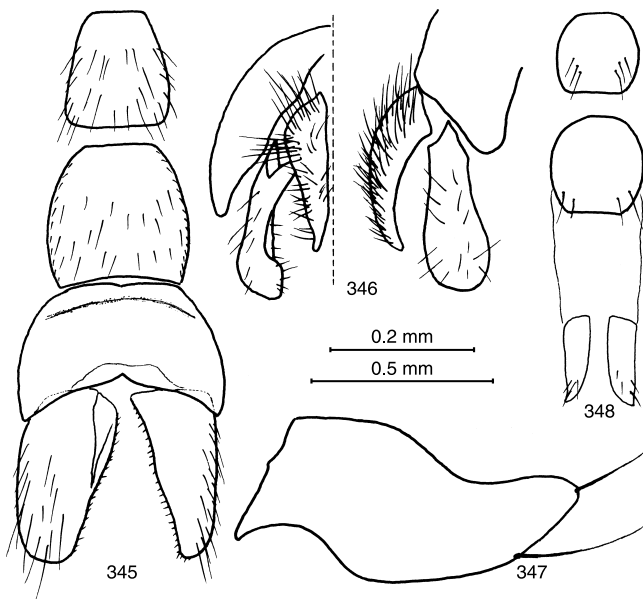
*Scathophaga obscurinervis* BECKER, 1900: 55

Material examined. FIN 1 ♂ 1 ♀, N 1 ♀.

Body-length 6–8 mm, dark in primary colour with sparse yellow hairs. Head: higher than wide, *ors* 3, *frs* 3, *fvit* yellow-brown, orbits dark but yellow dusted, parafacials, face and genae yellow but white dusted, *scap* and *ped* brown, *fglm*<sub>1</sub> dark, twice longer than wide, with a small upper horn, arista bare and in basal third distinctly thickened, vibrissal callus with one strong together with 4–5 short bristles, *gns* 5 distinct, palpi yellow and slightly lancet-like with short black bristles. Thorax: *acs* distinct, *ias* 2, *sas* 2, all legs yellow, wings slightly yellow basally, both cross-veins darkened. Abdomen: male 5<sup>th</sup> sternite distinctly bilobate (Fig. 345), surstylus wide apically (Fig. 346), praegonite narrow apically (Fig. 347); female 6<sup>th</sup> and 7<sup>th</sup> sternites more or less circular, 8<sup>th</sup> sternite pointed caudally and sparsely bristled (Fig. 348).

**Distribution:** This northern species has not been found in CZ and SK.





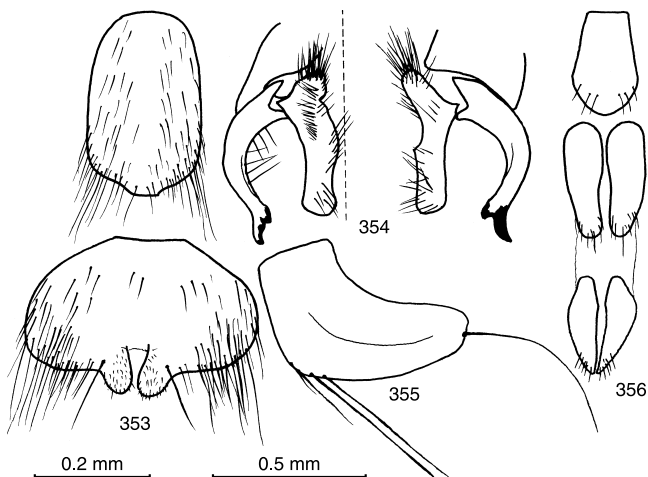
Figs 345–348. *Scathophaga obscurinervis* (BECKER). 345 – 3<sup>rd</sup> to 5<sup>th</sup> male abdominal sternites; 346 – cercus and surstylus (caudal and lateral views); 347 – praegonite; 348 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 345, 346, 348; Scale 0,2 mm: Fig. 347.

### *Scathophaga pictipennis* (OLDENBERG, 1923)

*Scatophaga* (*Scopeuma*) *pictipennis* OLDENBERG, 1923: 307

Material examined. CZ 1 ♀, D 1 ♂ 1 ♀.

Body-length 6–8 mm, dark in primary colour. Head: more or less spherical, *ors* 3, *frs* 3, *fvit* brown, orbits dark, parafacials, face and genae brown, *fglm*<sub>1</sub> dark, arista bare and in basal half thickened, vibrissal callus with one vibrissa together with 4–5 shorter bristles. Thorax: *acs* very



Figs 353–356. *Scathophaga scybalaria* (LINNAEUS). 353 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 354 – cercus and surstylus (caudal and lateral views); 355 – praegonite; 356 – 5<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 353, 354, 356; Scale 0.2 mm: Fig. 355.

sparse, *ias* one, all legs brown, F<sub>1</sub> dark dorsally, veins of wings distinctly dark, cross-veins *r-m* and *m-cu* broadly darkened. Abdomen: male 4<sup>th</sup> sternite more or less square, 5<sup>th</sup> sternite distinctly bilobate, lobes pointed apically and bristled (Fig. 349), surstylus only slightly arched (Fig. 350), praegonite enlarged apically, with two bristles (Fig. 351); female 7<sup>th</sup> sternite enlarged caudally, 8<sup>th</sup> sternite pointed apically, without short bristles (Fig. 352).

**Distribution:** This species was described from the Alps (Austria) and was also found in other countries: Finland (Hackman, 1956), Sweden (Hedström, 1991), Germany (Püchel, 1999), British Isles (Chandler, 1998). In CZ this species was collected at one Krkonoše Mts locality only (peat-bog at 1400 m).

**CZ:** Locality – 5260 Úpské rašeliniště peat-bog.

**SK:** Locality – 6886 Tatry Mts, Batizovská dolina valley.

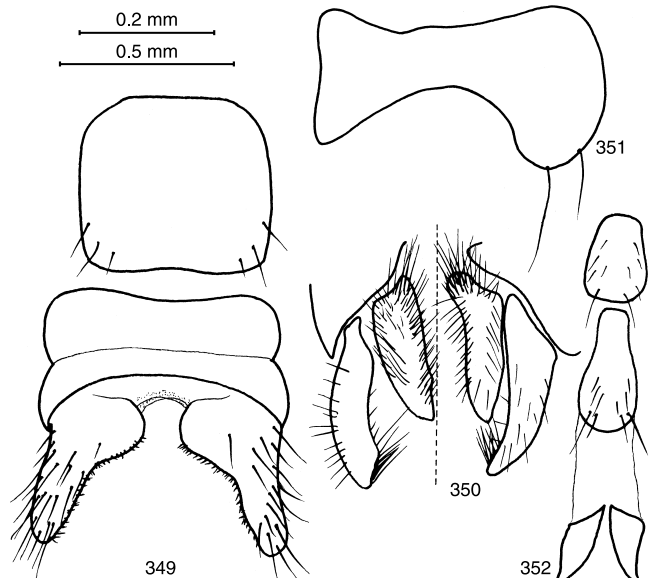
### *Scathophaga scybalaria* (LINNAEUS, 1758)

*Musca scybalaria* LINNAEUS, 1758: 599

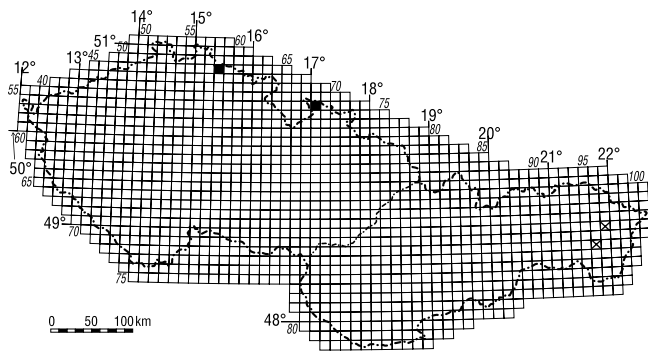
*Scatophaga bicolor* COLLART, 1942: 6 (synonymized by Šifner, 1977a: 274)

Material examined. CZ 1 ♂ 1 ♀, RUS 2 ♂♂ 1 ♀, MNG 2 ♂♂ 2 ♀♀.

Body-length 10–15 mm, yellow-brown in primary colour and very rarely partly dark on scutum. Head: slightly wider than high, *ors* 3, *frs* 6–7, *fvit* yellow-reddish, upper half of orbits dark, parafacials, face and genae yellow-brown, vibrissal callus yellow-brown with 4 strong together with 3–4 short bristles, palpi yellow. Thorax: *acs* distinctly anteriorly multinumerous, prescutellar *acs* very long, *dcs* 5



Figs 349–352. *Scathophaga pictipennis* (OLDENBERG). 349 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 350 – cercus and surstylus (caudal and lateral views); 351 – praegonite; 352 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 349, 350, 352; Scale 0,2 mm: Fig. 351.



Map 51. The distribution of *Scathophaga scybalaria* (LINNAEUS).

with supplementary short bristles, *ias* 2 with supplementary 8–10 short bristles, all legs yellow, all femora with long yellow hairs, wings very long, distinctly yellowish, veins  $R_{2+3}$  and  $R_{4+5}$  distinctly convergent forward of apex of wing. Abdomen: male 4<sup>th</sup> sternite oval and with long hairs, 5<sup>th</sup> sternite with long lateral hairs, lobes short and distinct (Fig. 353), surstylus arched and apically forked (Fig. 354), praegonite wide with one apical bristle and four bristles ventrobasally (Fig. 355); female 6<sup>th</sup> sternite slightly enlarged caudally, 7<sup>th</sup> sternite divided into two sclerites, 8<sup>th</sup> sternite pointed apically and shortly bristled (Fig. 356).

**Distribution** (Map 51): This palaeartic species is distributed sporadically from the British Isles to the Far East of Russia, in Mongolia it was recorded by Šifner (1975). In CZ it is very rare, in SK has been recorded only by literary data.

**CZ:** Literary data – Chebsko (in original text Egerland) (Dalla Torre, 1878).

Further localities: 5258 Harrachov, 5668 Černá Voda.

**SK:** Literary data – 7097 Brehov (Kowarz, 1883; Thalhammer, 1899), 7297 Michalovce (Thalhammer, 1899), 6884–87 Tatry Mts. (Nowicki, 1868).

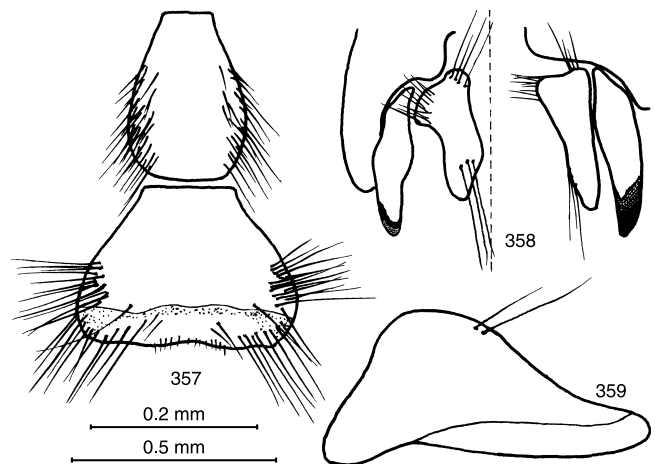
### *Scathophaga staryi* ŠIFNER, 2000

*Scathophaga staryi* ŠIFNER, 2000: 195

**Material examined.** IRQ 1 ♂.

Body-length 8 mm, brown in primary colour, scutum dorsally black. Head: *ors* 3, *frs* 4, *fvit* brown, orbits, parafacials, face and genae yellow-brown, *scap*, *ped* and *fglm*<sub>1</sub> brown, arista plumose, vibrissal callus with 3 strong together with 4 short bristles, palpi yellow. Thorax: lateral sides of thorax, humeral callus, notoptera and scutellum brown, presutural *acs* in two rows, 2 pairs of scutellar bristles, all legs brown, with yellow-brown hairs. Abdomen: male 4<sup>th</sup> sternite narrowed proximally, with long yellow hairs laterally, 5<sup>th</sup> sternite trapezoidal, slightly indented distally, with sporadic fine bristles, with long yellow haired bristles laterally (Fig. 357), surstylus very short and straight, cercus with three very long bristles distally (Fig. 358), praegonite very narrow apically, with two bristles dorsally (Fig. 359). Female hitherto unknown.

**Distribution:** The species was collected only in north Iraq.



Figs 357–359. *Scathophaga staryi* ŠIFNER. 357 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 358 – cercus and surstylus (caudal and lateral views); 359 – praegonite; Scale 0.5 mm: Figs 357, 358; Scale 0.2 mm: Fig. 356.

### *Scathophaga stercoraria* (LINNAEUS, 1758)

*Musca stercoraria* LINNAEUS, 1758: 599

*Musca merdaria* FABRICIUS, 1794: 433 (synonymized by Ringdahl, 1936: 171)

*Scatophaga soror* WIEDEMAN, 1818: 46 (synonymized by Vockeroth, 1958: 519)

*Scatophaga lutipes* WIEDEMAN, 1830: 448 (synonymized by Vockeroth, 1958: 519)

*Scatophaga capensis* ROBINEAU-DESVOIDY, 1830: 625 (synonymized by Vockeroth, 1958: 519)

*Scatophaga hottentota* MACQUART, 1843: 342 (synonymized by Vockeroth, 1958: 519)

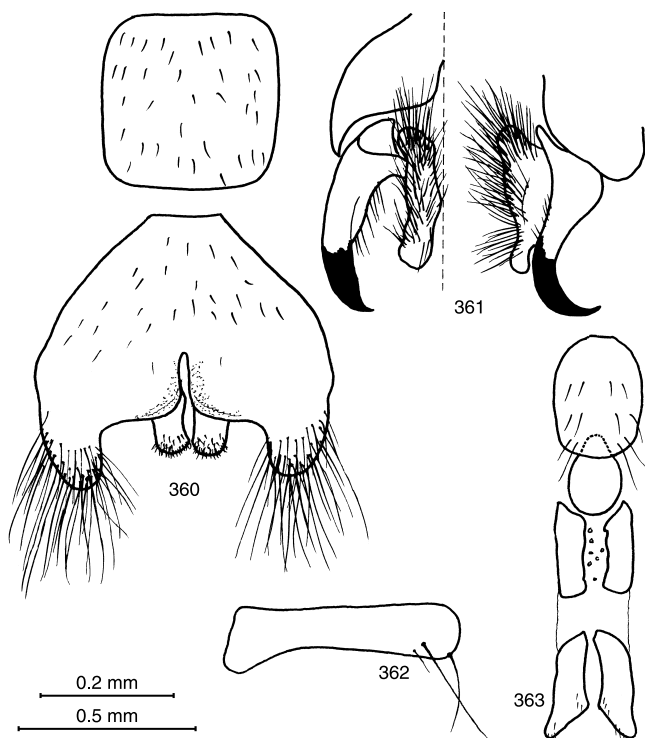
*Scatophaga helenae* THOMSON, 1868: 562 (synonymized by Vockeroth, 1958: 519)

**Material examined.** CZ and SK 267 ♂♂ 266 ♀♀.

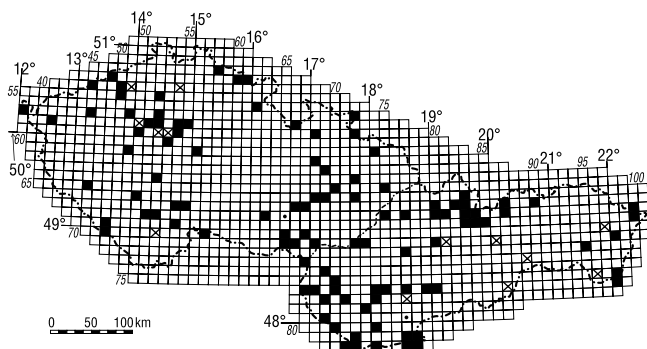
Body-length 7–15 mm, the adults of both sexes vary in basic color and size (from 6 to 13 mm), the dark form *merdaria* (FABR.) was regarded as a separate species. Head: *ors* 3–4, *frs* 3–7, *fvit* yellow to brown, orbits brown, parafacials and face yellow-brown to dark but white dusted, *scap*, *ped* and *fglm*<sub>1</sub> always black, arista black and plumose, genae and back lower part of occiput with long yellow hairs, vibrissal callus with one strong vibrissa together with 5–10 short bristles. Thorax: *acs* distinct and multinumerous, *ias* 2 short or missing, *scs* 2 to 3 pairs, all legs in males with distinct yellow hairs, all femora dark and brown apically, all tibiae brown. Abdomen – male: 4<sup>th</sup> sternite square, 5<sup>th</sup> sternite broadened and with long hairs laterally, lobes short with short bristles (Fig. 360), surstylus pointed and arched (Fig. 361), praegonite narrow, with three apical bristles, the fore one very short (Fig. 362); female: 6<sup>th</sup> sternite oval, 7<sup>th</sup> sternite divided into three separate sclerites, 8<sup>th</sup> sternite wide and narrow apically (Fig. 363).

**Distribution** (Map 52): Holarctic and cosmopolitan species, widely distributed in CZ and SK.

**CZ:** Literary data – 5449 Kostomlaty, 5454 Bělá pod



Figs 361–363. *Scathophaga stercoraria* (LINNAEUS). 360 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 361 cercus and surstylus (caudal and lateral views); 362 – preagonite; 363 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 360, 361, 363; Scale 0.2 mm: Fig. 362.



Map 52. The distribution of *Scathophaga stercoraria* (LINNAEUS).

Bezdězem, 5952 Praha-Vinohrady, 5953 Praha-Hostivař, 5850 Kladno (Vimmer, 1913), 5952 Praha (Fritsch, 1875), 6865 Brno, 7052 České Budějovice (Fritsch, 1875), Šumava Mts. (Vimmer, 1927), 5940 Chebsko (in original text Egerland) (Della Torre, 1878).

Examples of further localities: 5257 Špindlerův Mlýn, 5347 Litvínov, Fláje, Mníšek, 5360 Pec pod Sněžkou, 5361 Horní Albeřice, 5445 Kálek, 5448 Bílina, 5548 Měrunice, 5552 Račice, 5662 Chábory, valley of Metuje river; 5739 Aš, 5745 Nepomyšl, 5749 Zichovec, 5752 Libčice, 5772 Karlov, 5841 Kyšperk nad Ohří, 5851 Tu-

choměřice, 5852 Únětice, Praha-Kobylisy, Kyje, Ctěnice, Újezd nad Lesy, 5854 Stará Boleslav, 5855 Sadská, 5866 Horní Lipka, 5950 Chyňava, Unhošť, 5954 Břež u Řičan, 5968 Velké Losiny, 5972 Krnov, 6053 Kunice, 6149 Lochovice. 6156 Uhlířské Janovice, 6174 Poruba, 6268 Litovel, 6369 Olomouc, 6452 Nadějkov, 6472 Hranice, 6545 Ůhošť, 6570 Troubky, 6575 Radhošť Mt., 6650 Vraž u Písku, 6668 Brodek, 6669 Kojetín, 6672 Hostýn Mts, 6754 Soběslav, 6755 Dolní Radouň, 6767 Hlubočany, 6851 Dívčice, 6852 Purkarec, Knín, Temelín, 6863 Mohelno, 6865 Brno-Černovice, 6947 Kvilda, 6954 Třeboň, 7047 Borová Lada, 7057 Návary, 7065 Vranovice, Strachotín, 7067 Čejč, 7165 Mikulov, Břež u Mikulova, 7166 Nové Mlýny, 7168 Hodonín, 7266 Valtice, 7367 Lanžhot-Soutok.

**SK:** Literary data – 7097 Humenné (Moczary, 1877), 7181 Korytnica (Moczary, 1877), 7186 Červená Skala (Kowarz, 1883), 7389 Rožňava (Fritsch, 1875; Thalhammer, 1899), 7596 Slovenské Nové Mesto (Moczary, 1877; Kowarz, 1883), 7687 Kamenný Most (Bartal, 1906), 7777 Dolná Seč, 7977 Tekovské Lužany (Aczél, 1939).

Examples of Further localities: 6683 Trstená, Tvrdošín, 6780 Štefanová, 6782 Oravský Podzámok, 6783 Pribisko, 6787 Muráň Mts., Bujačí vrch Mt., 6790 Vyšné Ružbachy, 6875 Púchov; 6877 Súľov, 6880 Malá Fatra Mts. – nature preserve Šrámková, Stoh Mts., 6881 Likavka, 6883 Oravice, 6884 Baranec, Račkova dolina, Belianska kopa Mts, 6885 Podbanské, Gáborov potok brook, Bystrá, 6887 Tatranská Lomnica, Nový Smokovec, 6800 Ruské, 6893 Demänová, 6984 Prybilina, 6900 Ruský Potok, Nová Sedlica, 7172 Veľká Javorina Mt., Chmelová Mt., 7173 Bošaca, 7180 Zvolen, Donovaly, V. Šturec, Motyčková hoľa Mt., Staré Hory, 7198 Jovsa, 7277 Čachtice, 72–7477 Vtáčnik Mts, 7295 Dargov, 7397 Draňov, 7469 Lakšárska Nová Ves, 7570 Smolenice, Horné Orešany, 7575 Veľký Lysec Mt., 7667 Zohor u Bratislavy, Plavecký Štvrtok, 7668 Pernek, 7670 Červený Kameň, 7674 Zobor; 7675 Vieska nad Žitavou, 7677 Čajkov, 7680 Krupina, 7698 Biel, 7771 Pusté Úľany, Sládkovičovo, 7873 Šaľa, 7969 Šamorín, 7977 Želiezovce, 8070 Vajka, 8074 Nové Zámky, 8172 Čalovo, 8179 Gbelce, Belanská Kopa Mt., Kamenín, 8178 Kamenica nad Hronom, Kováčovské kopce hills, 8271 Medvedovo, Sap (Palkovičovo), 8272 Čičov, 8274 Komárno, 8277 Čenkov, 8278 Štúrovo.

### *Scathophaga suilla* (FABRICIUS, 1794)

*Musca suilla* FABRICIUS, 1794: 343

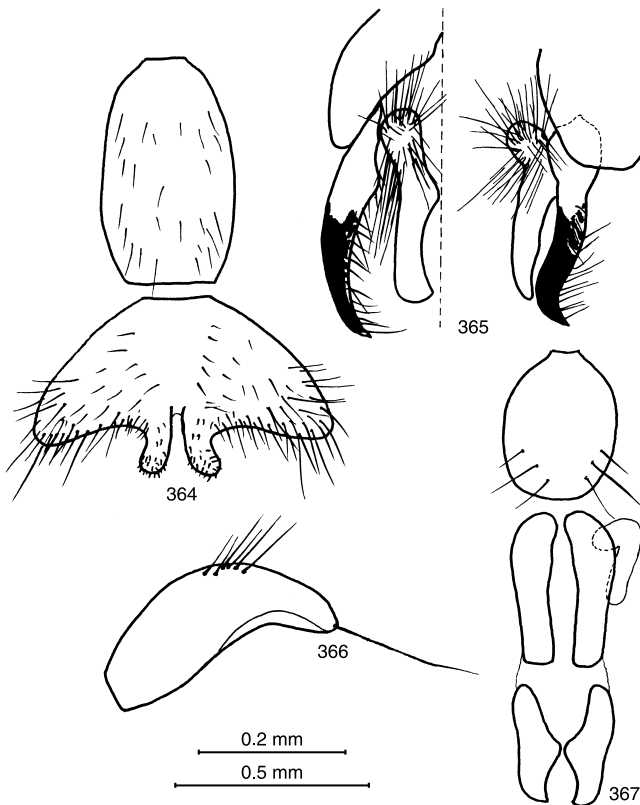
*Scatophaga spurca* MEIGEN, 1826: 250 (synonymized by Becker, 1894: 167)

*Scatomyza glabrata* ZETTERSTEDT, 1838: 721 (synonymized by Becker, 1894: 167)

*Cordylura scatomyzoides* ZETTERSTEDT, 1838: 727 (synonymized by Ringdahl, 1936: 171)

*Scatomyza serotina* PERRIS, 1839: 48 (synonymized by Séguy, 1934: 701)

Material examined. CZ and SK 134 ♂♂, 146 ♀♀.



Figs 364–367. *Scathophaga suilla* (FABRICIUS). 364 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 365 – cercus and surstylus (caudal and lateral views); 366 – praegonite; 367 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 364, 365, 367; Scale 0.2 mm: Fig. 366.



Map 53. The distribution of *Scathophaga suilla* (FABRICIUS).

Body-length 6–8 mm, brown to brown-yellow in primary colour. Head: *ors* 3, *frs* 5, *fvit* yellow-red, orbits in upper half dark, parafacials, face and genae brown but white dusted, *scap* and *ped* yellow-brown, *fglm*<sub>1</sub> brown and twice longer than wide, arista plumose and brown to black, vibrissal callus with 2–3 strong together with 2–3 short bristles, palpi yellow. Thorax: *acs* anteriorly mulinumerous, all legs yellow-brown, all femora without anteroventral bristles or weakly developed bristles, cross-veins *r-m* and *m-cu* distinctly darkened. Ab-

domen: male – 4<sup>th</sup> sternite more or less oval, sparsely bristled, lobes of 5<sup>th</sup> sternite short and with short spine-like bristles (Fig. 364), surstylus arched and pointed (Fig. 365), praegonite with one long apical bristle and six bristles dorsally (Fig. 366); female – 7<sup>th</sup> sternite divided into three sclerites, 8<sup>th</sup> sternites pointed apically (Fig. 367).

**Distribution** (Map 53): This holarctic species is commonly and widely distributed, it has been collected in various habitats e. g. lowlands, mountains, meadows etc. In CZ and SK it is widely distributed.

**CZ:** Literary data – 7065 Strachotín, meadows env. Strachotín (Czižek, 1908b).

**Further localities:** 5153 Rybniště, 5157 Jizera Mt., 5259 Labská louka meadow, Špindlerův Mlýn, 5260 Modrý důl valley, Obří důl valley, Luční louka meadow, Růžová hora Mt., 5261 Horní Albeřice, 5346 Brandov, 5346 Duchcov, 5354 Noviny pod Rálskem, 5357 Malá Skála, 5358 Poniklá, 5359 Vítkovice, 5360 Pec pod Sněžkou, Černá hora Mt., 5362 Janovice u Trutnova, 5447 Litvínov, 5448 Bílina, 5453 Doksy, 5543 Božídarský Špičák Mt., 5642 Nejdek, Horní Blatná, 5645 Unhošť, 5662 Halín, Nové Město nad Moravou, 5663 Sněžná, 5763 Chábory, 5764 Šerlich Mt., Luisino údolí valley, 5840 ! Fr. Lázně (TMB), 5841 Čistá u Sokolova, Kyšperk, 5851 Praha-Šárka, 5852 Únětice, Praha-Jenerálka, Praha-Suchdol, Praha-Holešovice, 5854 Čelákovice, 5855 Milčice, 5856 Poděbrady, Kostelní Lhota, 5870 Vrbno, 5942 Kladská, 5949 Broumy, 5950 Chyňava, Unhošť, 5952 Praha-Krč, 5953 Praha-Háje, 5956 Pečky, 5957 Velký Osek, 5969 Karlova Studánka, 6042 Horní Lazy, 6047 Dolní Benešov, 6049 Svatá, 6051 Zadní Třebáň, 6053 Kunice, Velké Popovice, 6152 Rabyně, 6155 Samopše, 6156 Janovice, 6247 Litohlavy, 6250 Dobříš, 6277 Český Těšín, 6366 Jevíčko, 6370 Hrubá Voda, 6369 Olomouc, 6377 Třinec, 6451 Milešov, 6452 Nadějov, 6461 Sázava, 6465 Loucký Dvůr, 6477 Horní Lomná, Muřinkový vrch hill, 6478 Velký Polom Mt., 6560 Rudolec, 6650 Vráž u Písku, 6661 Stránecká Zhoř, 6744 ! Hamry (NMW), 6765 Brno-Hády; 6767 Horákov, 6852 Purkarec, 6946 Modrava, 6947 Churáňov, Kvilda, Jezerní slať swamp, Tetřevská slať swamp, 6949 Prachatice, 6955 Stráž nad Nežárkou, Příbraz, 6957 Kaproun, 7047 Borová Lada, 7048 Boubín, Velká niva meadow, 7067 Čejč, 7148 Dobrá, 7149 Mrtvý luh – nature preserve, 7150 Špičák Mt., 7249 Plechý Mt., 7266 Valtice.

**SK:** Literary data – 7097 Brehov (Thalhammer, 1899).

**Further localities:** 6682 Oravská priehrada; 6781 Široká, 6784 Roháčská dolina valley, Roháčské pleso mountain lake, 6786 Javorová dolina valley, 6877 Súľov; 6886 Popradské pleso mountain lake, 6887 Tatranská Lomnica, 6888 Vyšné Ružbachy, 6800 Ruská, 6984 Pribylina, 6900 Ruský Potok, 6901 Nová Sedlica, 7172 Velká Javorina Mt., 7272 Čachtice, 7277 Prievidza, 7391 Hačava, 7469 Plavecký Mikuláš, 7667 Plavecký Štvrtok, 7670 Červ. Kameň, 7769 Šúr, 7772 Báb, 7968 Jablonové u Bratislavy, 8070 Trstená na Ostrove, 8177 Kamenín, 6278 Štúrovo.

*Scathophaga taeniopa* (RONDANI, 1867)

*Scathophaga taeniopa* RONDANI, 1867: 111

*Scathophaga ordinata* BECKER, 1894: 168 (synonymized by Gorodkov, 1986: 34)

*Scathophaga striatipes* STROBL, 1894: 79 (synonymized by Strobl, 1898: 182)

*Scathophaga horvathi* SZILÁDY, 1926: 596 *syn. n.*

Material examined CH 59 ♂♂ 47 ♀♀.

Body-length 8–10 mm, dark. Head: more or less spherical, *ors* 3, *frs* 4–5, *fvit* brown-red, orbits dark, parafacials, face and genae grey but white dusted, *scap*, *ped*, *fglm*<sub>1</sub> slightly broadened apically and dark, arista dark and plumose, palpi long and yellow. Thorax: *acs* distinct and partly multinumerous, *ias* one long, all legs yellow-brown, F<sub>1</sub> with a dark stripe dorsally, wings slightly yellow, veins distinctly dark, both cross-veins not darkened. Abdomen: male – 4<sup>th</sup> and 5<sup>th</sup> sternite with long hairs laterally, lobes of 5<sup>th</sup> sternite short, narrow and shortly bristled (Fig. 368), surstylus wide and very pointed apically (Fig. 369), praegonite wide, pointed apically, with one long apical bristle and six bristles dorsally (Fig. 370); female – 6<sup>th</sup> sternite shortly bristled, 7<sup>th</sup> sternite with a caudal notch, 8<sup>th</sup> sternites narrow caudally, without bristles, spermathecae wide and croissant-like (Fig. 371).

Distribution: This species was erroneously synony-

mized by the author (cf. Šifner, 1975 and 1995a) with species *S. suilla*. Recently this species has been confirmed as a distinct species by Bernasconi (2000). It has not yet been found in CZ or SK, but its discovery is likely.

The characters of *Scathophaga horvathi* SZILÁDY are, in my opinion, within the limits of variability of the characters of *Scathophaga taeniopa* (RONDANI).

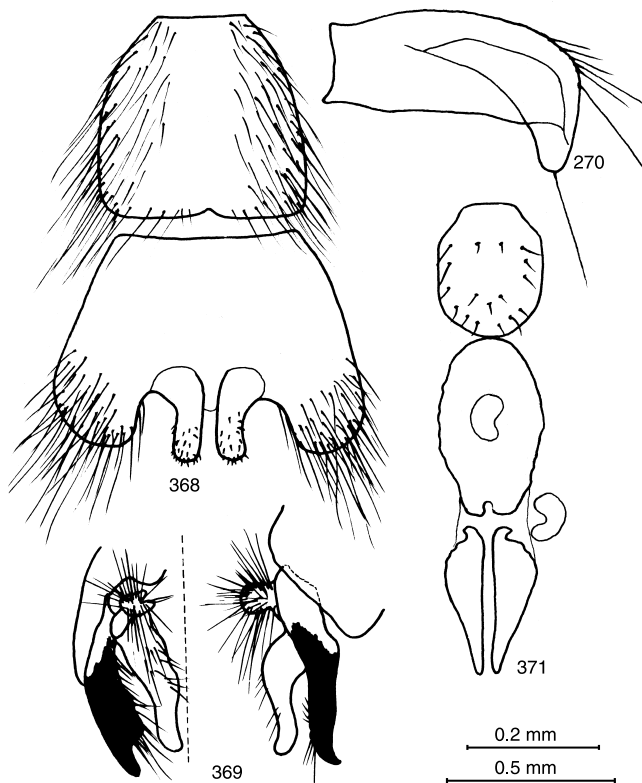
*Scathophaga vlastae* ŠIFNER, 2000

*Scathophaga vlastae* ŠIFNER, 2000: 194

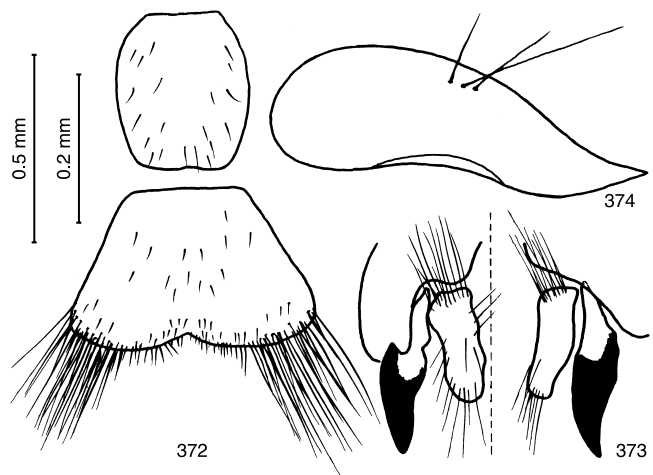
Material examined. SK 1 ♂.

Body-length 8 mm, brown, scutum dorsally conspicuously black, pleura and humeral callus distinctly brown-yellow. Head: *ors* 3, *frs* 6, *fvit* conspicuously brown, orbits, parafacials, face and genae brown-yellow, *scap*, *ped* and *fglm*<sub>1</sub> brown, arista plumose, vibrissal callus with three strong together with 8 short bristles, palpi yellow. Thorax: presutural *asc* multinumerous, *ias* 2, *sas* 2, *scs* 2 pairs equal in size with short marginal bristles, all legs brown, with yellow-brown hairs, wings yellow basally, all veins dark. Abdomen: male – 4<sup>th</sup> sternite slightly narrowed distally, 5<sup>th</sup> sternite trapezoidal, with delicate but distinct short bristles, with long hairs laterodistally (Fig. 372), surstylus very short (Fig. 373), praegonite very narrow apically, with three bristles dorsally (Fig. 374). Female unknown hitherto.

SK: Locality – 7390 Zádielska dolina valley.



Figs 368–371. *Scathophaga taeniopa* (RONDANI). 368 – 4<sup>th</sup> and 5<sup>th</sup> male abdominal sternites; 369 – cercus and surstylus (caudal and lateral views); 370 – praegonite; 371 – 6<sup>th</sup> to 8<sup>th</sup> female abdominal sternites. Scale 0.5 mm: Figs 368, 369, 371; Scale 0.2 mm: Fig. 370.



Figs 372–374. *Scathophaga vlastae* ŠIFNER. 372 – 4<sup>th</sup> and 5<sup>th</sup> mela abdominal sternites; 373 – cercus and surstylus (caudal and lateral views); 374 – praegonite. Scale 0.5 mm: Figs 372, 373; Scale 0.2 mm: Fig. 374.

Genus *Coniosternum* BECKER, 1894

*Coniosternum* BECKER, 1894: 178 (type species: *Cordylura obscura* FALLÉN, 1819 – by orig. des.)

*Koniosternum* BECKER, 1894: 85 (error)

General characters: Body dark or grey, weakly bristled, body-size 5–8 mm. Head: more or less spherical,

antennae short, arista bare, *prpls* and *prsts* missing, palpi in apical half slightly enlarged, with short black bristles, F<sub>1</sub> and F<sub>2</sub> without distinct bristles, F<sub>3</sub> sometimes with posterodorsal bristles, surstyli of males not sclerotized, cerci of males elongate, partly or entirely medially fused, 8<sup>th</sup> abdominal sternite of female distinct and paired.

The genus *Coniosternum* was originally described by Becker (1894) with the type species *Scatophaga obscura* (FALLÉN). The differences between the *Scatophaga* and *Coniosternum* genera are very difficult and some authors, e. g. Gorodkov (1986), recognise only the genus *Scatophaga*. Other authors, e. g. Sack (1937), Hackman (1956) and Šifner (1981), recognise two separate genera. The basic differences have been recently confirmed by molecular data (cf. Bernasconi et al., 2000a, b). They have been recorded in the Palearctic region including key differences of 8 species (cf. Šifner, 1981). The distribution of some species in the Palearctic region is vague e. g. *C. mihalyii*, which was described by the author from Mongolia (cf. Šifner, 1975) and it was collected in Iraq (loc. Baghdad, light trap, 23. 4. 1988, 1 male, leg. Olejníček, in PCS).

#### Key to species of genus *Coniosternum*

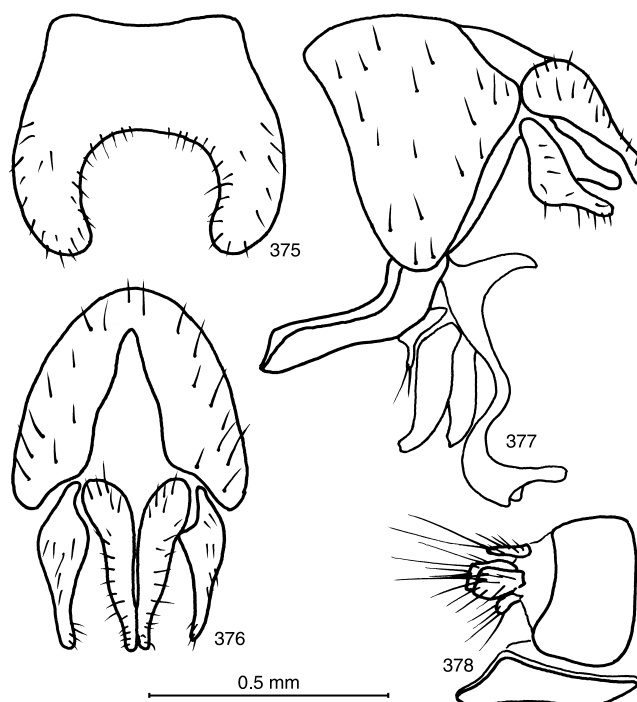
1. 5<sup>th</sup> male abdominal sternite with a distinct notch (Fig. 383), 8<sup>th</sup> female abdominal sternites in lateral view triangulate, without bristles or setulae (Fig. 386) . . . . .  
 . . . . . *Coniosternum tinctinervis* BECKER, 1894
- 5<sup>th</sup> male abdominal sternite without a notch . . . . . 2
- 2(1) Cerci fused only medioapically, same size as surstyli (Fig. 376), 8<sup>th</sup> female abdominal sternites in lateral view elongate and slightly arched apically (Fig. 378) . . . . .  
 . . . . . *Coniosternum lapponicum* RINGDAHL, 1920
- Cerci fused entirely, longer than surstyli (Fig. 380), 8<sup>th</sup> female abdominal sternites in lateral view long and pointed apically (Fig. 382) . . . . .  
 . . . . . *Coniosternum obscurum* (FALLÉN, 1819)

#### *Coniosternum lapponicum* RINGDAHL, 1920

*Coniosternum lapponicum* RINGDAHL, 1920: 39

Material examined. CZ 1 ♂ 2 ♀♀, FIN 1 ♂ 1 ♀.

Body length 5–7 mm. Head: *fvit* dark, in lower third yellow-brown, *ors* 3, *frs* 3–5, orbits dark, parafacials, face and genae brown, *scap* and *ped* dark, *fglm*<sub>1</sub> dark to black with a small anterodorsal horn, arista bare and thickened basally, one vibrissa together with 4–5 short bristles, palpi yellow, *gns* yellow and haired. Thorax: *acs* anteriorly sparse, posteriorly irregular, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 2, *pras* 1, *sas* 1, *pas* 2, *scs* 2 pairs, *ntpls* 2, *mpls* 2–3, *stpls* 1, all femora in apical quarter yellow-brown, wings hyaline, cross-vein *r-m* only slightly darkened. Abdomen: male – lobes of 5<sup>th</sup> sternite distinctly arched inwards and sparsely haired on interior side (Fig. 375), surstylus pointed apically, slightly arched inwards, cerci apically pointed and fused only medioapically, cerci and surstyli equal in size, praegonite in apical half very narrow, with two bristles (Figs 376 and 377); female –



Figs 375–378. *Coniosternum lapponicum* RINGDAHL. 375 – 5<sup>th</sup> male abdominal sternite; 376 – cerci and surstyli (caudal view); 377 – genital apparatus with praegonite; 378 – female terminalia with 8<sup>th</sup> sternites (lateral view). Scale 0.5 mm: Figs 375–378.

8<sup>th</sup> sternite in lateral view more or less triangulate, only slightly arched apically (Fig. 378).

Distribution: This species was recorded in CZ by Šifner (1997), it has not yet been found in SK. The discovery of this species represents not only the first record from the Czech Republic, but also from central Europe. Adults may be collected on meadows near water (Hackman, 1956).

CZ: Locality – 5448 Bílina.

#### *Coniosternum obscurum* (FALLÉN, 1819)

*Cordylura obscura* FALLÉN, 1819: 9

Material examined. CZ and SK 3 ♂♂ 5 ♀♀.

Body-length 5–7 mm. Head: *fvit* in upper half brown, in lower half yellow, *ors* 3, *frs* 3, orbits dark, parafacials, face and genae yellow-brown and white dusted, *scap* and *ped* yellow-brown, *fglm*<sub>1</sub> dark, arista bare and thickened basally, one vibrissa together with 4–5 short bristles, *gns* yellow and haired, palpi yellow. Thorax: *acs* irregular and very sparse, *dcs* 5, *hs* 1, *press* 1, without *ias*, *pras* 1, *pas* 2, *scs* 2 pairs, *ntpls* 2, *mspls* 1–2, *stpls* 1, all femora yellowish apically, wings hyaline, both cross-veins not darkened. Abdomen: male – lobes of 5<sup>th</sup> sternite slightly arched inwards, with short bristles interiorly (Fig. 379), surstylus straight and narrowed apically, cerci medially entirely fused and slightly enlarged apically, cerci slightly longer than surstyli, praegonite narrow and short, with two apical bristles (Figs 380

*Coniosternum tinctinervis* BECKER, 1894

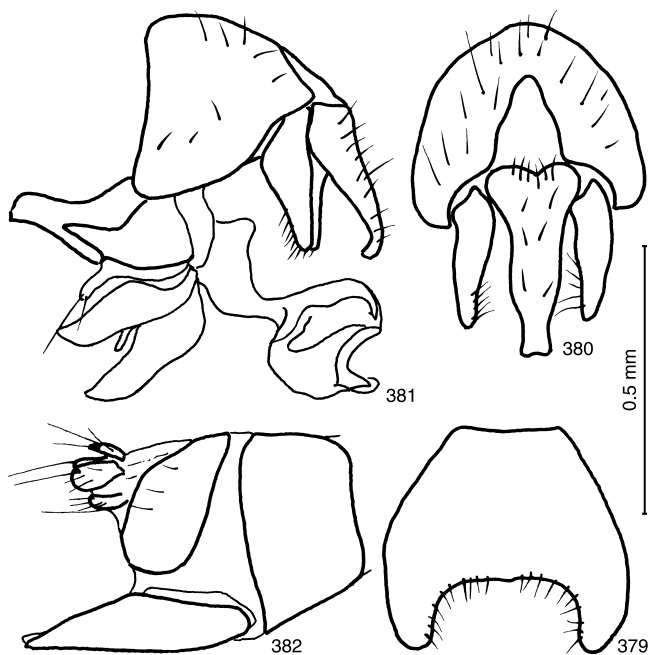
*Coniosternum tinctinervis* BECKER, 1894: 178

Material examined. CZ 4 ♂♂ 3 ♀♀.

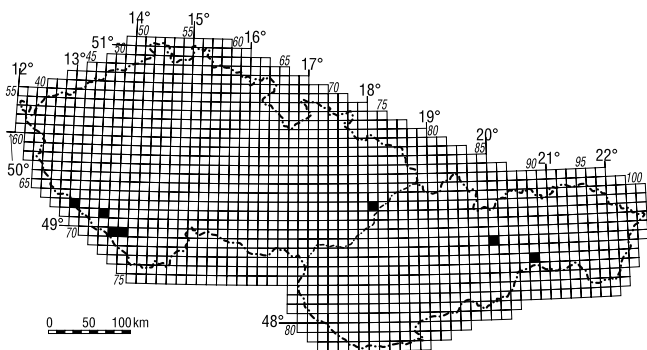
Body-length 5–7 mm. Head: *fvit* dark, in lower third brown to yellow-brown, *ors* 3, *frs* 3–5, orbits dark, parafacials, face and genae brown, *scap* and *ped* dark, *fglm*<sub>1</sub> dark to black, arista bare and basally thickened, one vibrissa together with 4–6 bristles, palpi yellow, *gns* yellow. Thorax: *acs* irregular and dense, *dcs* 5, *hs* 2, *phs* 1, *press* 1, *ias* 1, *pras* 1, *sas* 1, *pas* 2, *scs* 2 pairs, *ntpls* 2, *mspls* 2–3, *stpls* 1, all femora yellow-brown in apical quarter, wings hyaline, cross-vein *r-m* distinctly darkened, cross-vein *m-cu* conspicuous. Abdomen: male – lobes of 5<sup>th</sup> sternite short and straight, interiorly with a distinct indent and very sparsely haired (Fig. 383), surstylus narrow apically and slightly arched outwards, cerci wide, medially entirely fused and pointed apically, cerci distinctly shorter than surstyli, praegonite narrow and short, with two apical bristles (Figs 384 and 385); female – 8<sup>th</sup> sternite in lateral view more or less triangular, without bristles or setulae (Fig. 386).

Distribution: This species was collected in CZ, it was found in southern Sweden by Ringdahl (1937), in Russia by Gorodkov (1986) and in Scotland by Nelson, who described in detail its eggs and oviposition, larvae and pupae, including behavioural notes (cf. Nelson 2000).

CZ: Localities – 5348 Duchcov, 5448 Bílina, 5749 Zichovec, 6952 Hluboká nad Vltavou, 6955 Stráž nad Nežárkou, 7048 Boubín virgin forest nature preserve.



Figs 379–382. *Coniosternum obscurum* (FALLÉN). 379 – 5<sup>th</sup> male abdominal sternite; 380 – cerci and surstyli (caudal view); 381 – genital apparatus with praegonite; 382 – female terminalia with 8<sup>th</sup> sternites (lateral view). Scale 0.5 mm: Figs 379–382.



Map 54. The distribution of *Coniosternum obscurum* (FALLÉN).

and 381); female – 8<sup>th</sup> sternite in lateral view long and pointed apically (Fig. 382).

Distribution: In CZ and SK this species was collected on meadows and in damp sites. Berté and Wallace (1987) recorded larvae of *C. obscurum* (FALL.) in Ireland, attacking egg masses of caddis flies (Trichoptera): *Limnephilus flavicornis* (FABR.) and *L. marmoratus* CURTIS.

CZ: Literary data – Silesia, without localities (Pax, 1921).

Further localities: 6744 ! Hamry (NMW), 6774 Lidečko-Pulčín, 6847 Kašperské Hory, 7048 Malá niva meadow, 7049 Spálenec.

SK: Localities – 7186 Červena Skala, 7390–91 Zádielska dolina valley.



Figs 383–386. *Coniosternum tinctinervis* BECKER. 383 – 5<sup>th</sup> male abdominal sternite; 384 – cerci and surstyli (caudal view); 385 – genital apparatus with praegonite; 386 – female terminalia with 8<sup>th</sup> sternites (lateral view). Scale 0.5 mm: Figs 383–386.

## List of species from the Czech Republic

- Cordilurini:** *Cordilura aemula* (COLLIN, 1958)  
*Cordilura atrata* (ZETTERSTEDT, 1846)  
*Cordilura ciliata* (MEIGEN, 1826)  
*Cordilura picipes* (MEIGEN, 1826)  
*Cordilura pubera* (LINNAEUS, 1758)  
*Cordilura pudica* (MEIGEN, 1826)  
*Cordilura rufimana* (MEIGEN, 1826)  
*Cordilura umbrosa* (LOEW, 1873)  
*Scoliaphleps ustulata* (ZETTERSTEDT, 1838)  
*Phrosia albilabris* (FABRICIUS, 1794)  
*Parallelomma albipes* (FALLÉN, 1819)  
*Norellisoma alpestre* (SCHINER, 1864)  
*Norellisoma lituratum* (WEIDEMANN in MEIGEN, 1826)  
*Norellisoma mirusae* ŠIFNER, 1974  
*Norellisoma nervosum* (MEIGEN, 1826)  
*Norellisoma spinimanum* (FALLÉN, 1819)  
*Norellisoma striolatum* (MEIGEN, 1826)
- Gymnomerini:** *Norellia spinipes* (MEIGEN, 1826)
- Microprosopini:** *Megaphthalmoides unilineatus* (ZETTERSTEDT, 1838)  
*Acanthocnema glaucescens* (LOEW, 1864)  
*Trichopalpus fraternus* (MEIGEN, 1826)  
*Microprosopa bartaki* ŠIFNER, 1999  
*Microprosopa haemorrhoidalis* (MEIGEN, 1826)  
*Microprosopa hoberlandti* ŠIFNER, 1981  
*Microprosopa pallidicauda* (ZETTERSTEDT, 1838)
- Hydromyzini:** *Pogonota barbata* ZETTERSTEDT, 1838  
*Paracosmetopus helleni* HACKMAN, 1956  
*Chaetosa punctipes* (MEIGEN, 1826)  
*Cosmetopus dentimanus* (ZETTERSTEDT, 1838)  
*Spaziphora hydromyzina* (FALLÉN, 1819)  
*Hydromyza livens* (FABRICIUS, 1874)
- Cleigastrini:** *Acerocnema macrocera* (MEIGEN, 1826)  
*Megaphthalma pallida* (FALLÉN, 1819)  
*Spathephilus breviventris* (LOEW, 1873)  
*Cleigastra apicalis* (MEIGEN, 1826)  
*Hexamitocera martineki* **sp. n.**  
*Gonarcticus abdominalis* (ZETTERSTEDT, 1846)
- Amaurosomini:** *Amaurosoma armillatum* (ZETTERSTEDT, 1846)  
*Amaurosoma articulatum* BECKER, 1894  
*Amaurosoma brevifrons* (ZETTERSTEDT, 1838)  
*Amaurosoma fasciatum* (MEIGEN, 1826)  
*Amaurosoma flavipes* (FALLÉN, 1819)  
*Amaurosoma inerme* BECKER, 1894  
*Amaurosoma leucostoma* (ZETTERSTEDT, 1846)  
*Amaurosoma minutum* BECKER, 1894  
*Amaurosoma puberulum* BECKER, 1894  
*Amaurosoma tibiellum* (ZETTERSTEDT, 1838)  
*Orthacheta pilosa* (ZETTERSTEDT, 1838)  
*Gonatherus planiceps* (FALLÉN, 1819)
- Delinini:** *Delina anthrax* (SCHINER, 1864)  
*Delina nigriceps* (BECKER, 1894)  
*Delina nigripes* (FALLÉN, 1819)

- Americina media* (BECKER, 1894)  
*Americina vittata* (MEIGEN, 1826)  
*Micropselapha filiformis* (ZETTERSTEDT, 1846)  
*Leptopa filiformis* ZETTERSTEDT, 1838
- Scathophagini:** *Scathophaga bohemiae* ŠIFNER, 2000  
*Scathophaga cineraria* (MEIGEN, 1826)  
*Scathophaga furcata* (SAY, 1823)  
*Scathophaga inquinata* (MEIGEN, 1826)  
*Scathophaga lutaria* (FABRICIUS, 1794)  
*Scathophaga pictipennis* (OLDENBERG, 1923)  
*Scathophaga scybalaria* (LINNAEUS, 1758)  
*Scathophaga stercoraria* (LINNAEUS, 1758)  
*Scathophaga suilla* (FABRICIUS, 1794)  
*Coniosternum lapponicum* RINGDAHL, 1920  
*Coniosternum obscurum* (FALLÉN, 1819)  
*Coniosternum tinctinervis* BECKER, 1894

## List of species from the Slovak Republic

- Cordilurini:** *Cordilura atrata* (ZETTERSTEDT, 1846)  
*Cordilura ciliata* (MEIGEN, 1826)  
*Cordilura picipes* (MEIGEN, 1826)  
*Cordilura pubera* (LINNAEUS, 1758)  
*Cordilura pudica* (MEIGEN, 1826)  
*Cordilura rufimana* (MEIGEN, 1826)  
*Cordilura umbrosa* (LOEW, 1873)  
*Phrosia albilabris* (FABRICIUS, 1794)  
*Parallelomma albipes* (FALLÉN, 1819)  
*Norellisoma alpestre* (SCHINER, 1864)  
*Norellisoma femorale* (LOEW, 1864)  
*Norellisoma lituratum* (WEIDEMANN in MEIGEN, 1826)  
*Norellisoma mirusae* ŠIFNER, 1974  
*Norellisoma nervosum* (MEIGEN, 1826)  
*Norellisoma spinimanum* (FALLÉN, 1819)  
*Norellisoma striolatum* (MEIGEN, 1826)
- Gymnomerini:** *Norellia spinipes* (MEIGEN, 1826)  
*Gymnomera castanipes* (BECKER, 1894)  
*Gymnomera cuneiventris* (ZETTERSTEDT, 1846)  
*Gymnomera slovacica* **sp. n.**  
*Gymnomera tatica* **sp. n.**
- Microprosopini:** *Megaphthalmoides unilineatus* (ZETTERSTEDT, 1838)  
*Acanthocnema glaucescens* (LOEW, 1864)  
*Trichopalpus fraternus* (MEIGEN, 1826)  
*Microprosopa haemorrhoidalis* (MEIGEN, 1826)  
*Microprosopa hoberlandti* ŠIFNER, 1981  
*Micriprosopa pallidicauda* (ZETTERSTEDT, 1838)
- Hydromyzini:** *Chaetosa punctipes* (MEIGEN, 1826)
- Cleigastrini:** *Acerocnema macrocera* (MEIGEN, 1826)  
*Megaphthalma pallida* (FALLÉN, 1819)  
*Spathephilus breviventris* (LOEW, 1873)  
*Cleigastra apicalis* (MEIGEN, 1826)
- Amaurosomini:** *Amaurosoma armillatum* (ZETTERSTEDT, 1846)  
*Amaurosoma articulatum* BECKER, 1894



*Amaurosoma brevifrons* (ZETTERSTEDT, 1838)  
*Amaurosoma flavipes* (FALLÉN, 1819)  
*Amaurosoma inerme* BECKER, 1894  
*Amaurosoma tibiellum* (ZETTERSTEDT, 1838)  
*Gonatherus planiceps* (FALLÉN, 1819)

**Delinini:** *Delina anthrax* (SCHINER, 1864)

*Americina media* (BECKER, 1894)  
*Americina vittata* (MEIGEN, 1826)  
*Micropselapha filiformis* (ZETTERSTEDT, 1846)  
*Leptopa filiformis* ZETTERSTEDT, 1838

**Scathophagini:** *Scathophaga cineraria* (MEIGEN, 1826)

*Scathophaga furcata* (SAY, 1823)  
*Scathophaga iquinata* (MEIGEN, 1826)  
*Scathophaga lutaria* (FABRICIUS, 1794)  
*Scathophaga pictipennis* (OLDENBERG, 1923)  
*Scathophaga scybalaria* (LINNAEUS, 1758)  
*Scathophaga stercoraria* (LINNAEUS, 1758)  
*Scathophaga suilla* (FABRICIUS, 1794)  
*Scathophaga vlastae* ŠIFNER, 2000  
*Coniosternum obscurum* (FALLÉN, 1819)

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