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The velvet ants (Hymenoptera: Mutillidae) of the Czech Republic and Slovakia: an identification key and annotated checklist

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BOGUSCH P. 2006: The velvet ants (Hymenoptera: Mutillidae) of the Czech Republic and Slovakia: an identification key and annotated checklist. *Acta Musei Moraviae, Scientiae biologicae* (Brno) 91: 103–148. – This study of Czech and Slovak Mutillidae consists of two parts: the identification key includes all 20 Czech and Slovak species, and also 9 other species with distribution areas reaching neighbouring Hungary, Austria, and Ukraine. Graphics of determination characters are included. The annotated checklist reviews the state of knowledge on all species of Mutillidae reported from the Czech Republic and Slovakia. Notes on the distribution, biology, hosts, lists of localities and distribution maps of all Czech and Slovak species are presented. *Physetopoda cingulata* (Costa, 1858) and *P. pusilla* (Klug, 1835) are published for Slovakia for the first time; and *Smicromyrme sicana* (De Stefani, 1887) first for Bohemia. These new records enlarge the number of Mutillidae recorded in the Czech Republic and Slovakia to 16 and 19 species, respectively.

Key words. Mutillidae, identification key, checklist, Czech Republic, Bohemia, Moravia, Slovakia, central Europe, new records, faunistics

Introduction

The velvet ants are usually represented as small and colourful insects, classified into the single family Mutillidae. In colour, most of them are contrast black, red and white. The females are apterous. All the species are parasites in the nests of solitary and social bees, wasps, ants or beetles (PSCHORN-WALCHER & HEITLAND 2005). Females search for the ground nests of hosts and deposit their eggs in the brood cells. They usually search for mature larvae (or prepupae) and their own hatched larvae feed in most cases on the host's brood. The quantity of accessible food determines the resulting size of the eventual imago (O'NEILL 2000). Males fly low over the ground and seek females to mate with them. Neither the biology nor the phenology of most species is well known: all central European species are presumed to be univoltine. Host spectra are not well characterized either; a number of species are unspecialized and feed on the prepupae of various species of sphecid wasps and/or bees.

The family Mutillidae represents a medium-large family within the large hymenopteran group known as the "Aculeata", in which the female ovipositor serves as a sting. This group is divided in four subfamilies (MICHENER 2000). There are more than 500 species of mutillids in 54 genera known in the Palaearctic region. Velvet ants reach their highest diversity in tropical regions, while only 29 species have been presented from central Europe; 19 of these species were collected in what was Czechoslovakia, i.e.

the area bounded by today's Czech Republic and Slovakia. Most of these species are Mediterranean, reaching their northern distribution border in the area of central Europe; only three species occur in the northern parts of Europe and Scandinavia (LELEJ 2002).

The taxonomy and phylogeny of velvet ants are fairly known and recent research on these groups has significantly broadened our knowledge. However, the determination keys for them are old (BOUČEK & ŠNOFLÁK 1947, INVREA 1964) and it is not possible to use them for the accurate determinations of some problematic species, e.g. species of the genera *Physetopoda* Schuster, 1949 and *Smicromyrme* Thomson, 1870, which are in some cases very difficult to identify. Much new and useful data was published by PETERSEN (1988), SCHMID-EGGER & PETERSEN (1993) and LELEJ (1985, 2002; LELEJ & NEMKOV 2004), but their work does not constitute a complete, well-organized determination key for the velvet ants of the region in question. In addition, some species, e.g. of the genus *Physetopoda*, have been incorrectly synonymized and various authors have used the same names for different taxa. This has caused confusion in the determination characters for several species otherwise quite simple to identify.

In the Czech Republic and Slovakia, the velvet ants were studied in detail by HOFFER (1936, 1937, 1938). In further years, however, they were neglected and data on several taxa of this group were presented only as parts of faunistic surveys (BALTHASAR 1941, 1952; ŠNOFLÁK 1952; LUKÁŠ 1987, 1991, 1997, 2003; PÁDR & TYRNER 1990; PÁDR 1995). They have been referred to as a "simple group", as opposed to the "difficult groups", e.g. the small, parasitic Hymenoptera such as the chalcids and braconids. Otherwise, several rare relict species and one endemite have been presented from Czech and Slovak localities and the validity of the descriptions of several new species and subspecies from the Czech Republic and Slovakia have hitherto been verified only by morphological analyses, rather than by collecting and monitoring in the field or by molecular analyses.

This study has three specific aims. Firstly, to create a determination key containing all 29 species. This has been drawn up through study of all the species material, aided by the most useful keys and taxonomic surveys in the literature, especially PETERSEN (1988), SCHMID-EGGER & PETERSEN (1993), and LELEJ (2002). The majority of the characters are illustrated, which should prove helpful with the determination. Tables with drawings of all the species are included in the figures. Secondly, to present a complete list of Czech and Slovak velvet ants with notes on their distribution and biology, containing further species that may also be found in the Czech Republic or Slovakia. A checklist in use until recently (PÁDR 1989) is not complete and contains invalid synonyms for species of the genera *Physetopoda* and *Smicromyrme*. The third and final aim is to complete a list of all known localities for these species in the Czech Republic and Slovakia with square maps of their distribution.

Material

The material examined was acquired from the following collections (country not indicated for the Czech Republic):

The Copenhagen Zoological Museum . . . (Kobenhavn, Denmark, Curator Lars Vilhelmsen)
The National Museum (Praha, Curator Jan Macek)
The Moravian Museum (Brno, Curator Igor Malenovský)
The Museum of South Bohemia (České Budějovice, Curator Zdeněk Kletečka)
The Museum of East Bohemia (Hradec Králové, Curators Miroslav Mikát and
Bohuslav Mocek)
The Krakow Institute of Zoology (Poland, Curator Waldemar Celary)
The private collections Lukáš Blažej (Děčín), Petr Bogusch (Hradec Králové),
Jan Habarta (Velká nad Veličkou), Jiří Halada (Praha and Chlum u Třeboně),
Jan Hrček (Praha), Zdeněk Karas (Zlív), Toshko Ljubomirov (Sofia, Bulgaria),
Jozef Lukáš (Bratislava, Slovakia), Michal Mañas (Olomouc),
Jakub Straka (Praha), Pavel Tyrner (Litvínov), Dušan Vepřek (Přerov),
and Vladimír Zeman (Hradec Králové)

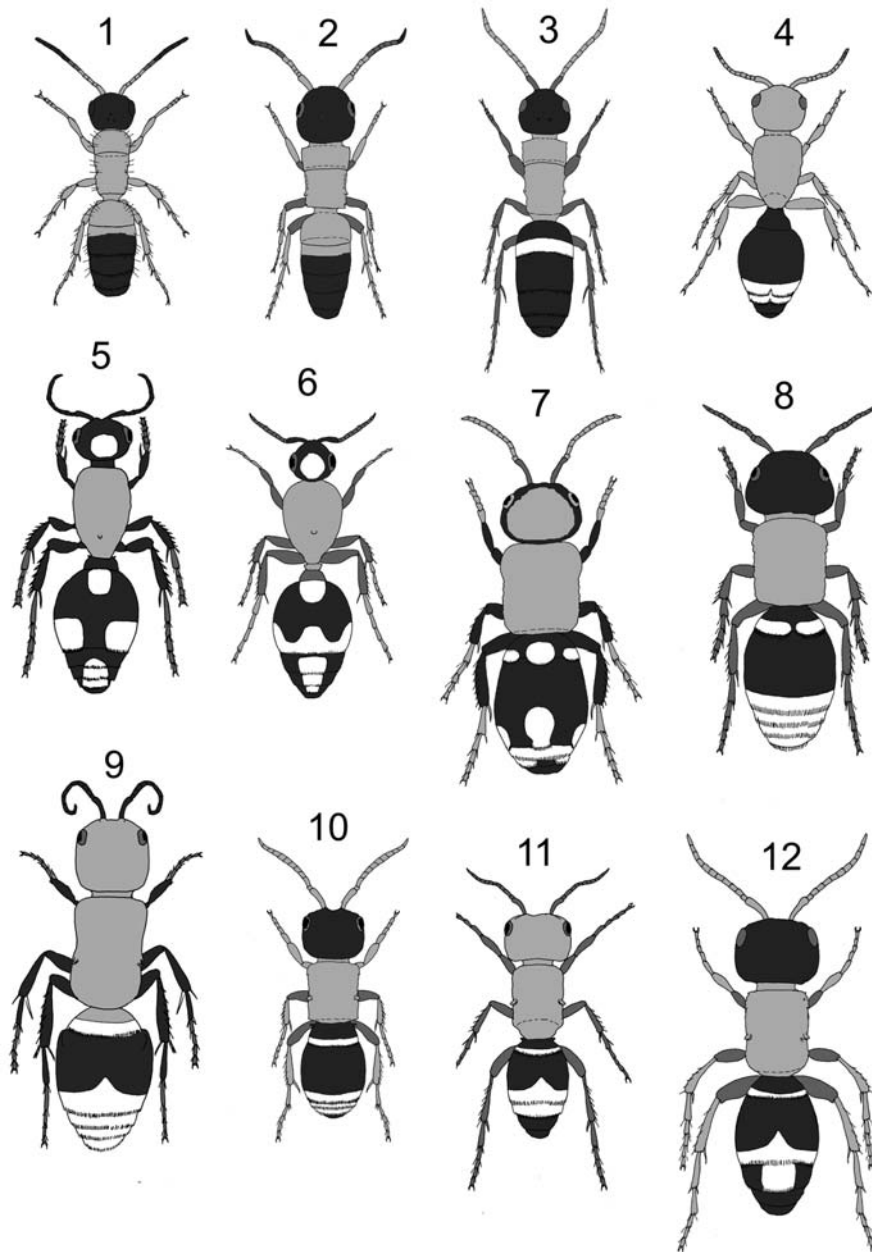
This material was employed to seek determination criteria and construct the key; drawings for the determination key were made from photographs of specimens originating in the collections. Lists of localities and distribution maps were derived from the collections, as well as after data in the literature (mentioned in citations after the localities).

Methods

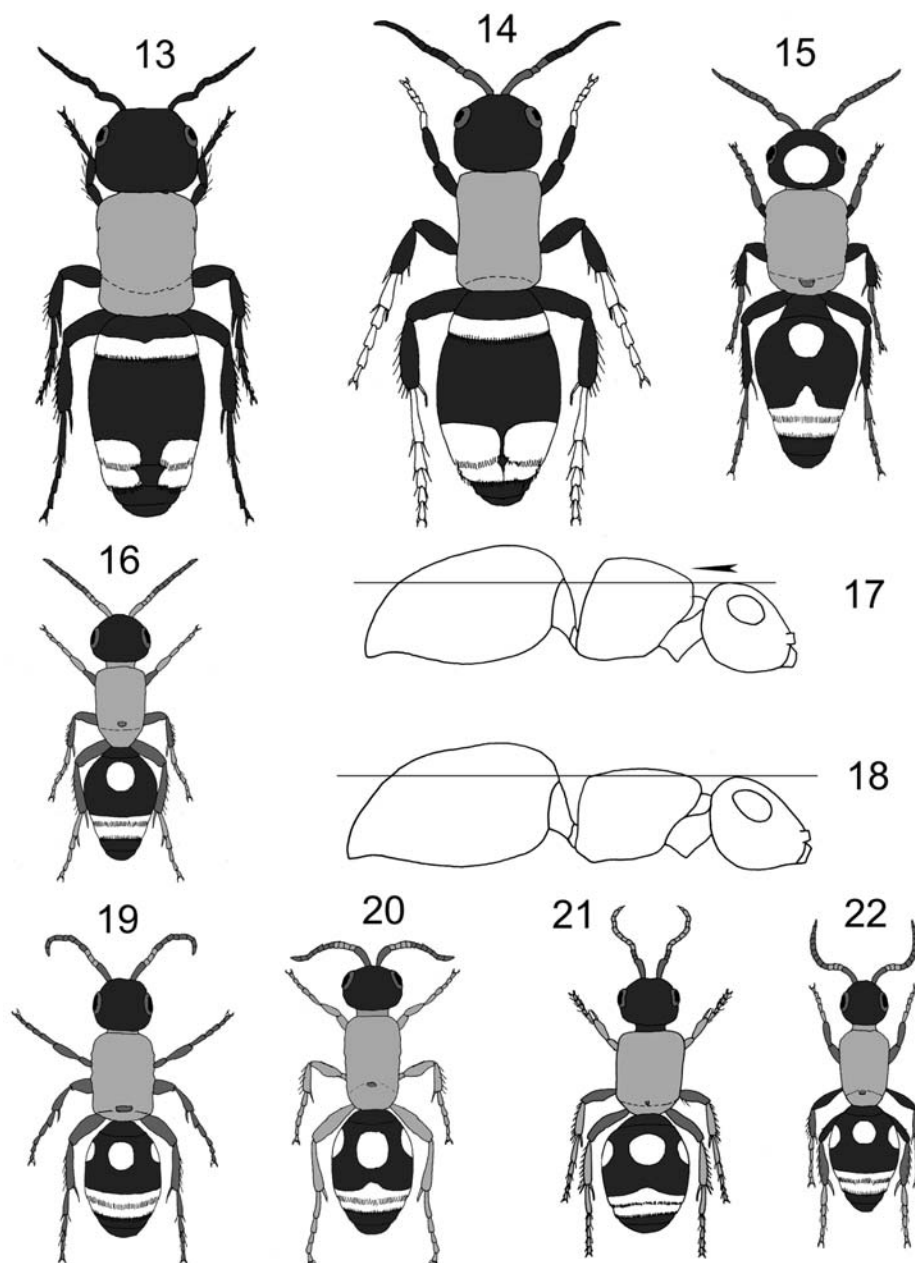
“Key to the genera” is divided into two parts: “Key to males” and “Key to females”. Descriptions of all species are not presented; these are added in “Annotated checklist”. The key does not contain any unusual abbreviations. Appropriate determination keys for species within genera that contain more than one species in Central Europe appear in “Annotated checklist”.

For every species, the number of its illustration is denoted in brackets; these run from 1 to 103. In the annotated checklist, all illustrations of the appropriate species are listed in brackets after the name of the species, the **bold** number refers to the drawing of whole female, **bold italics** indicate the number of the drawing of the whole male, or in Smicromyrmini, the head and thorax of the male. The most important determination characters are indicated by arrows in the illustrations. There are three types of illustration:

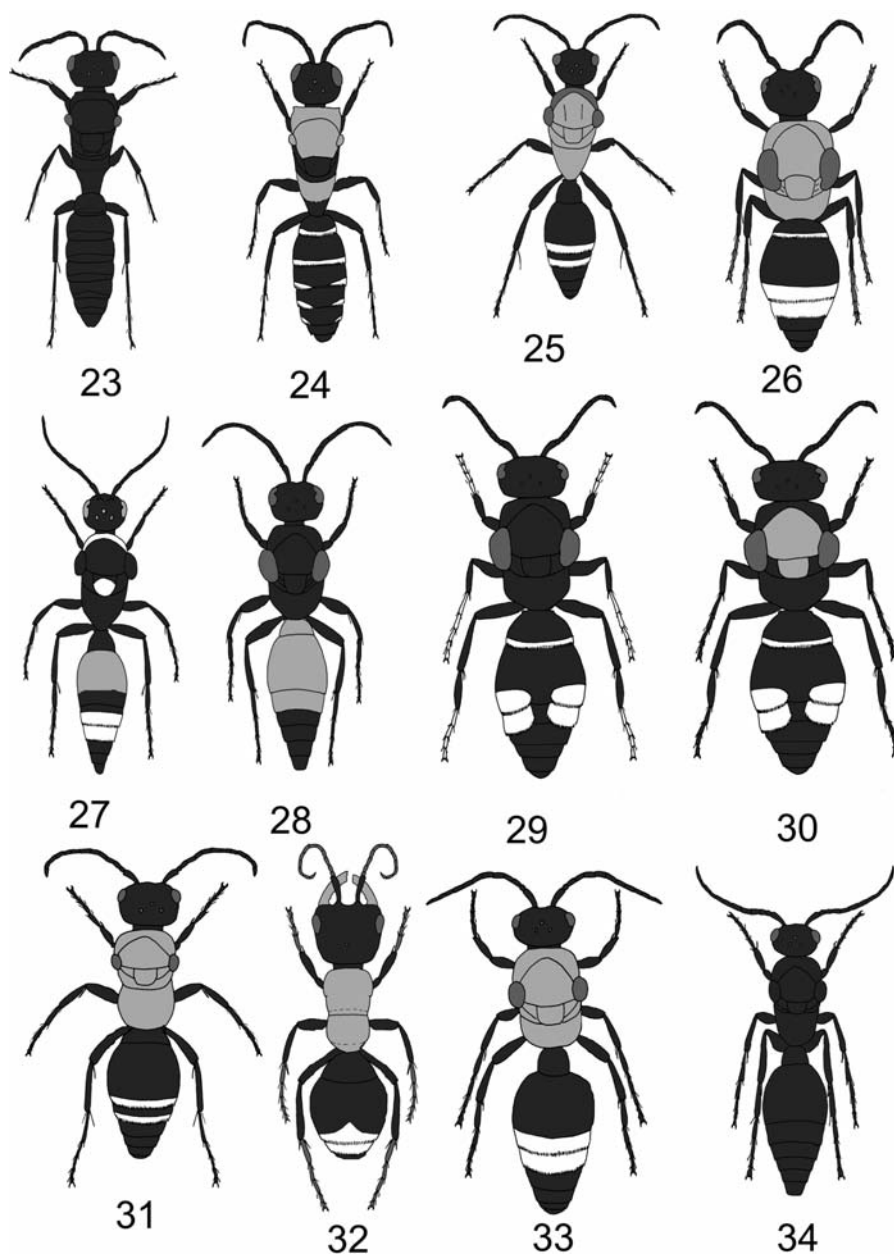
- Drawings of whole specimens in black, white and three shades of grey. The light part (25% grey) represents the parts of the body coloured red, the medium parts (50% grey) the brown, and the dark part (75% grey) the black parts of the body.
- Black and white drawings of the determination factors. Arrows indicate some of the more important points of identification.
- Distribution square maps of the former Czechoslovakia with the border strongly indicated. Localities are given as solid circles (specimens revised by the author) or as empty circles (published localities).



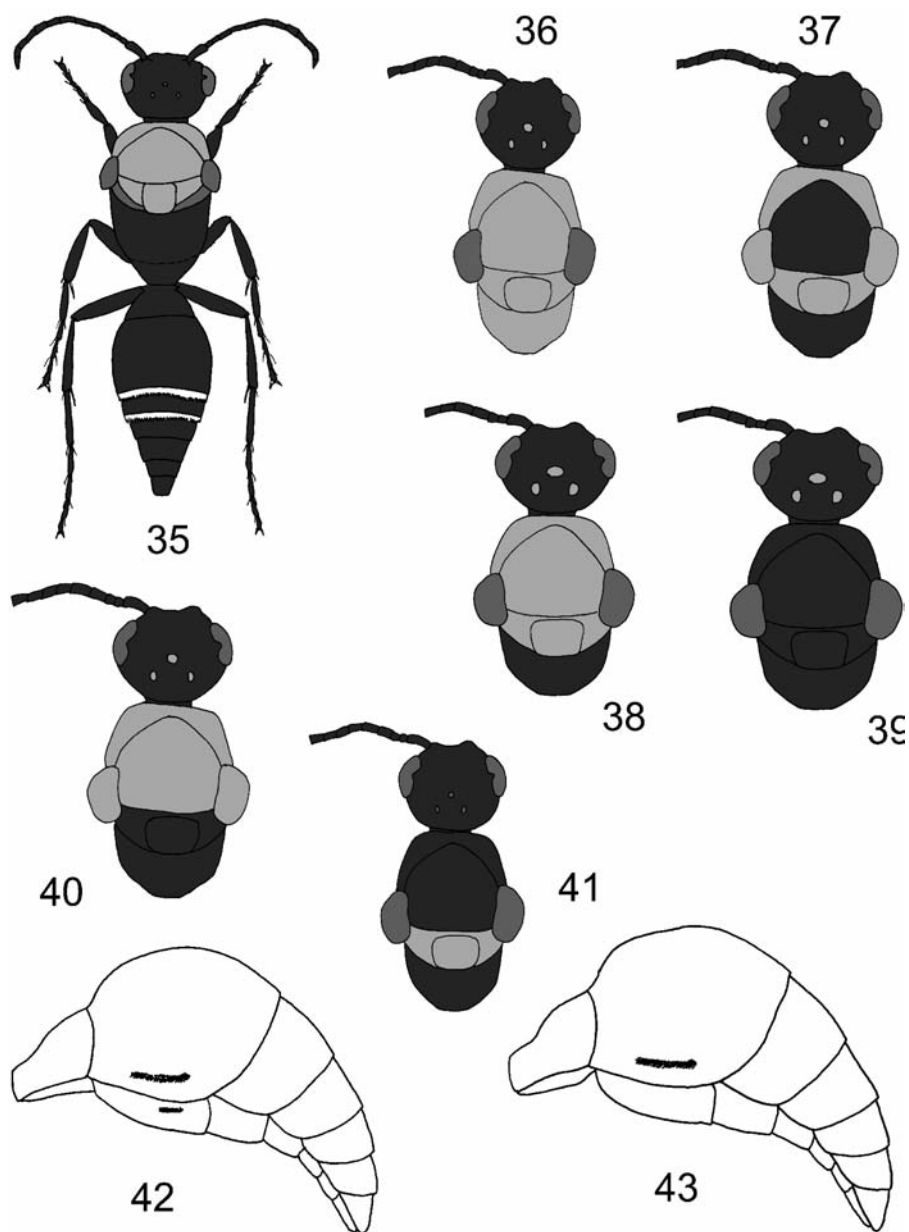
Figs 1–12. Females, whole animals: 1 – *Myrmosa atra* (5.1 mm), 2 – *Paramyrmosa brunnipes* (5.6 mm), 3 – *Krombeinella longicollis* (9.1 mm), 4 – *Cystomyrma ruficeps* (6.7 mm), 5 – *Dasylabris maura* (12.5 mm), 6 – *D. regalis* (9.2 mm), 7 – *Ronisia brutia* (13.2 mm), 8 – *Tropidotilla litoralis* (14.4 mm), 9 – *Platymyrmilla quinquefasciata* (14.1 mm), 10 – *Myrmilla calva* (7.1 mm), 11 – *M. mutica* (9.6 mm), 12 – *M. capitata* (11.4 mm). Grey levels represent body colours, light grey (25% grey) – red, medium grey (50% grey) – brown, dark grey (75% grey) – black. Original sizes in brackets.



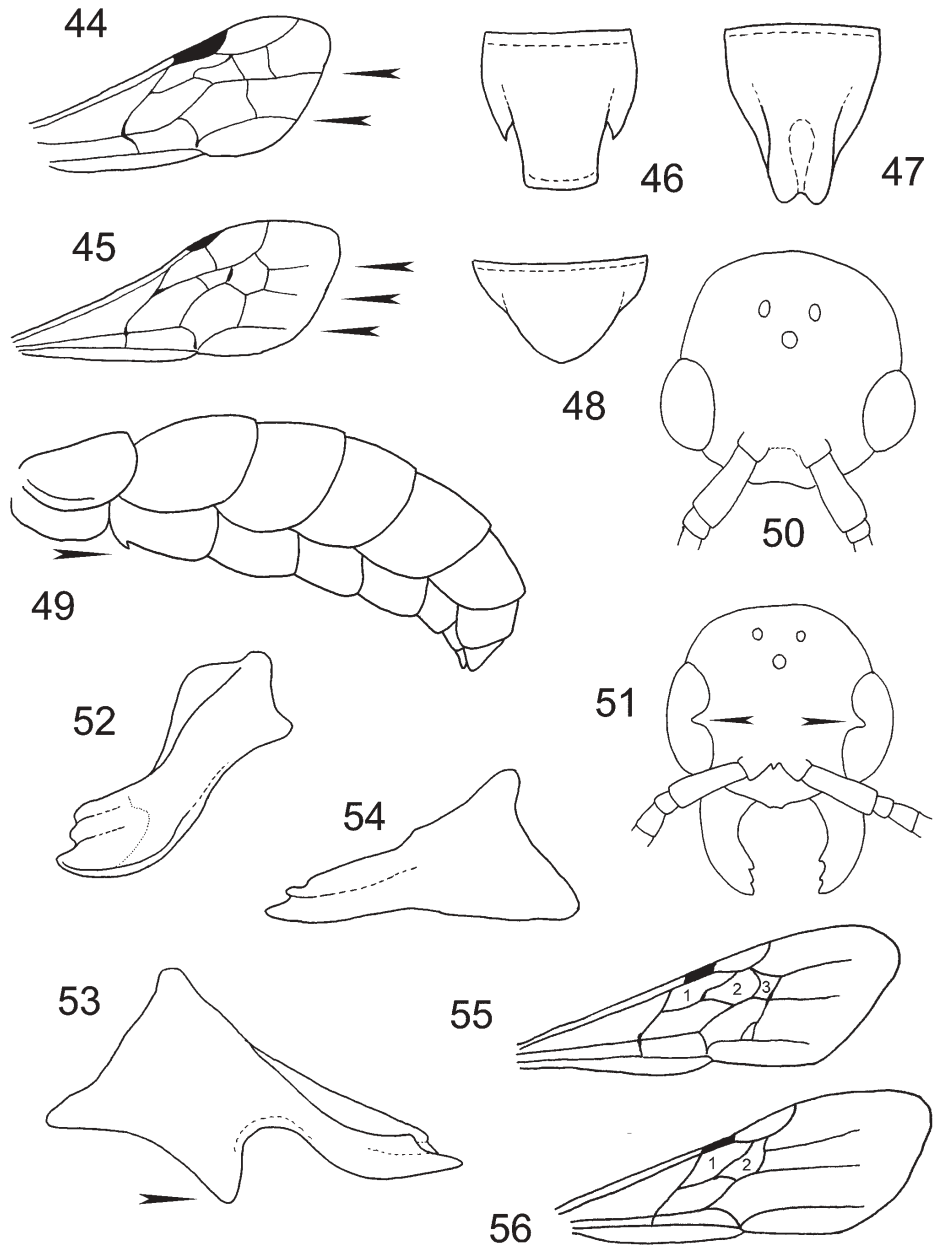
Figs 13–22. Females, whole animals: 13 – *Mutilla europaea* (15.9 mm), 14 – *M. marginata* (16.2 mm), 15 – *Nemka viduata* (9.9 mm), 16 – *Smicromyrme rufipes* (6.4 mm), 17 – *S. ruficollis*, lateral view with curved thorax, 18 – *S. rufipes*, lateral view with flat thorax, 19 – *Physetopoda halensis* (6.1 mm), 20 – *P. scutellaris* (5.9 mm), 21 – *P. pusilla* (7.0 mm), 22 – *Smicromyrme sicana* (5.9 mm). Grey levels represent body colours, light grey (25% grey) – red, medium grey (50% grey) – brown, dark grey (75% grey) – black. Original sizes in brackets.



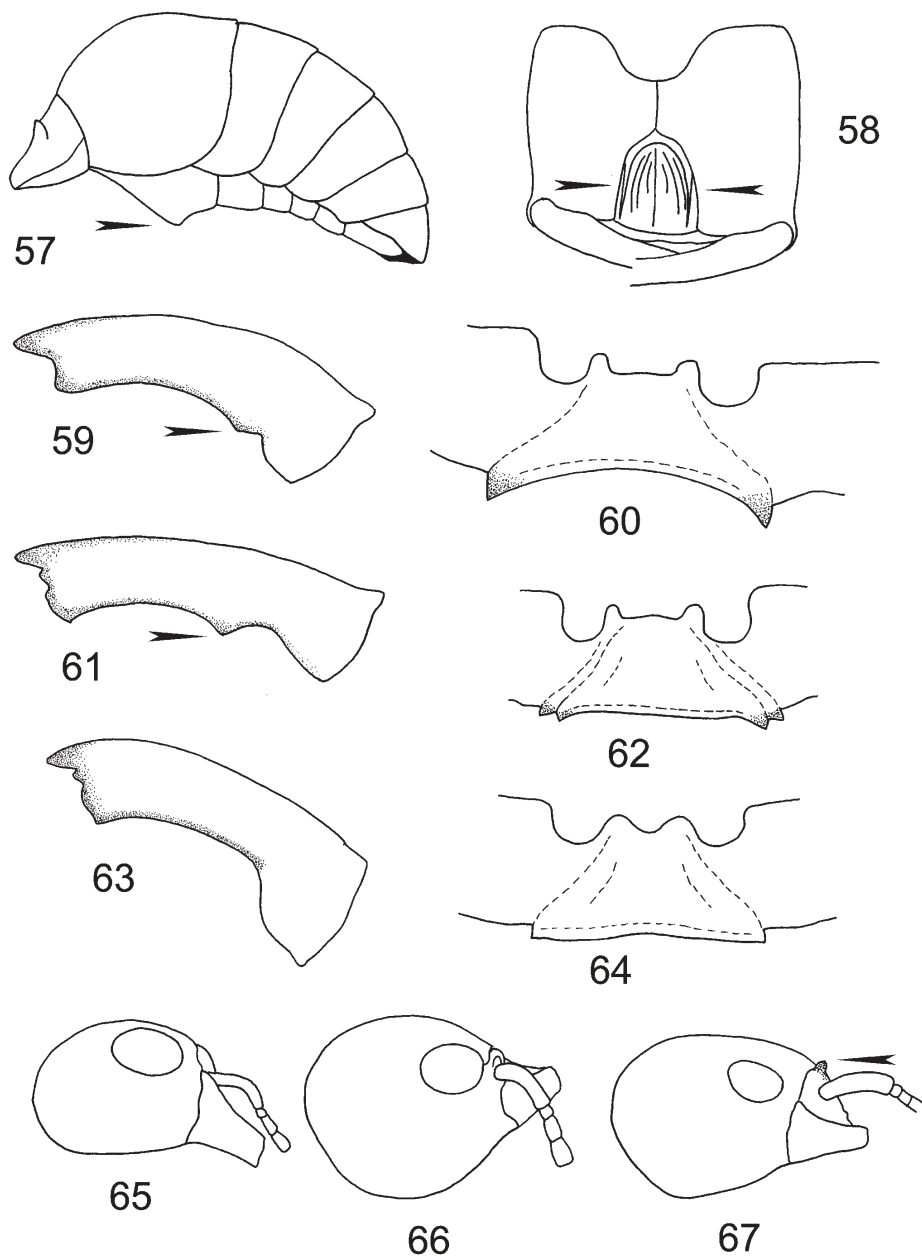
Figs 23–34. Males, whole animals (wings not included): 23 – *Myrmosa atra* (9.8 mm), 24 – *Krombeinella longicollis* (10.2 mm), 25 – *Cystomutilla ruficeps* (8.7 mm), 26 – *Ronisia brutia* (11.2 mm), 27 – *Nemka viduata* (16.3 mm), 28 – *Tropidotilla litoralis* (15.7 mm), 29 – *Mutilla marginata* (16.3 mm), 30 – *M. europaea* (16.9 mm), 31 – *Myrmilla calva* (7.9 mm), 32 – *M. capitata* (9.6 mm), originally apterous, 33 – *Dasylabris maura* (14.2 mm), 34 – *D. regalis* (9.5 mm). Grey levels represent body colours, light grey (25% grey) – red, medium grey (50% grey) – brown, dark grey (75% grey) – black. Original sizes in brackets.



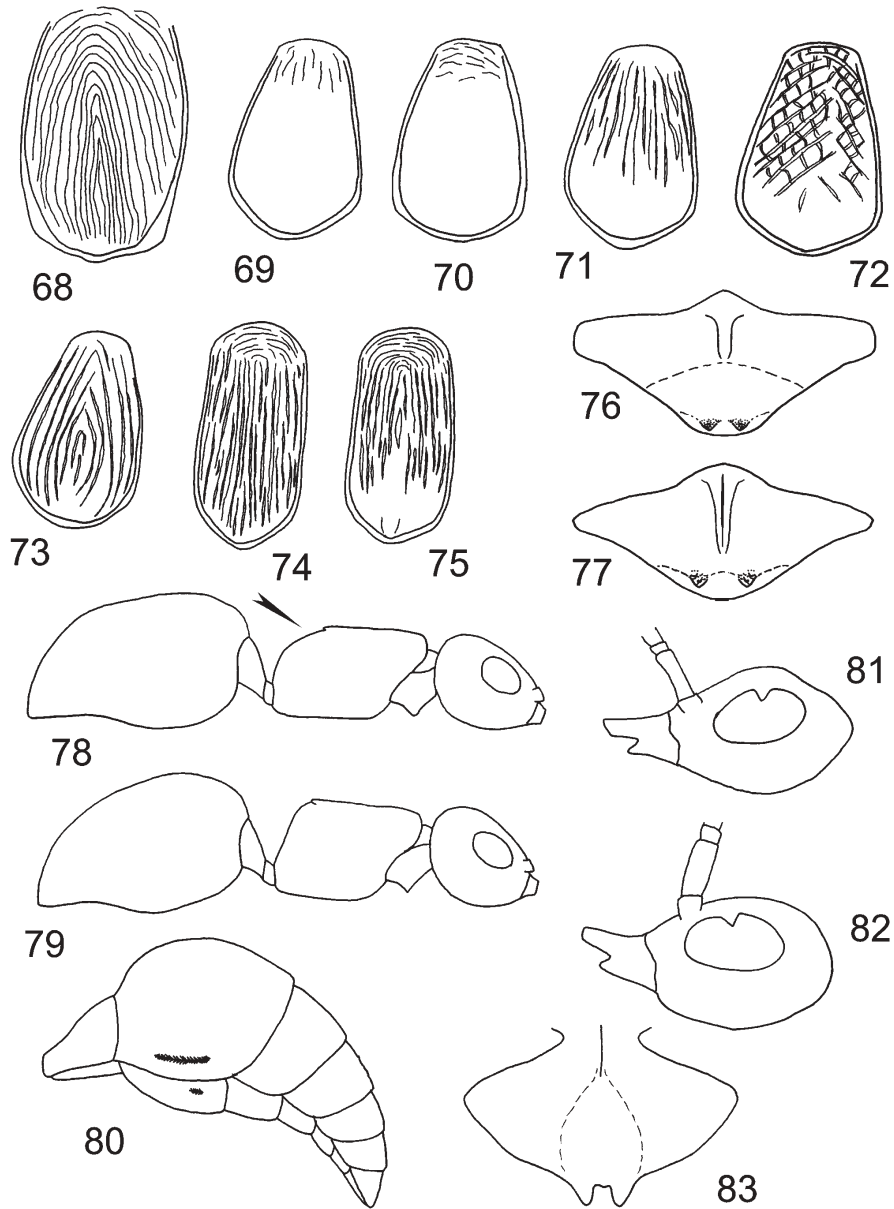
Figs 35–43. Males, description marks: 35 – *Smicromyrme rufipes*, whole male (8.8 mm), 36 – *S. ruficollis* (head and thorax), 37 – *S. sicana* (head and thorax), 38 – *Physetopoda halensis halensis* (head and thorax), 39 – *P. halensis nigrita* (head and thorax), 40 – *P. daghestanica* (head and thorax), 41 – *P. scutellaris* (head and thorax), 42 – *Smicromyrme rufipes*, abdomen lateral view with felt lines on 2S and 2T, 43 – *Physetopoda halensis*, abdomen lateral view with felt line on 2T. Grey levels represent body colours, light grey (25% grey) – red, medium grey (50% grey) – brown, dark grey (75% grey) – black. Original sizes in brackets.



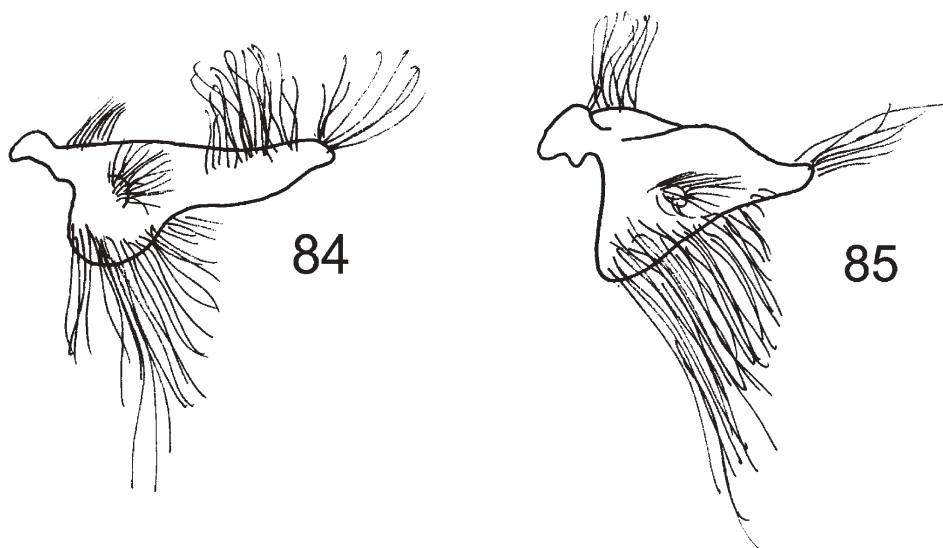
Figs 44–56. Males, description marks: 44 – *Myrmosa atra*, fore wing, 45 – *Physetopoda halensis*, fore wing, 46 – *Krombeinella longicollis*, T7, dorsal view, 47 – *Myrmosa atra*, T7, dorsal view, 48 – *Paramyrmosa brunnipes*, T7, dorsal view, 49 – *Myrmosa atra*, abdomen, lateral view with tooth on 2S, 50 – *Cystomyrmex ruficeps*, head, 51 – *Smicromyrme rufipes*, head, 52 – *Mutilla europaea*, mandible, 53 – *Physetopoda halensis*, mandible with basal tooth, 54 – *P. pusilla*, mandible, 55 – *Dasylabris maura*, front wing, 56 – *D. regalis*, front wing.



Figs 57–67. *Myrmilla*, description marks: 57 – *M. calva*, male, abdomen lateral view with callous process, 58 – *M. glabrata*, male, head ventral view with two spines, 59 – *M. capitata*, male, mandible, 60 – *M. capitata*, female, clypeus, 61 – *M. vutshetitshi*, male, mandible, 62 – *M. vutshetitshi*, female, clypeus, 63 – *M. glabrata*, male, mandible, 64 – *M. glabrata*, female, clypeus, 65 – *M. glabrata*, female, head, lateral view, 66 – *M. capitata*, female, head, lateral view, 67 – *M. caucasica*, female, head, lateral view.



Figs 68–83. Smicromyrmini, description marks: 68 – *Nemka viduata*, female, pygidial plate, 69 – *Physetopoda scutellaris*, female, pygidial plate, 70 – *P. sericeiceps*, female, pygidial plate, 71 – *P. halensis*, female, pygidial plate, 72 – *P. lucasii*, female, pygidial plate, 73 – *P. pusilla*, female, pygidial plate, 74 – *Smicromyrme rufipes*, female, pygidial plate, 75 – *S. sicana*, female, pygidial plate, 76 – *Physetopoda halensis*, male, clypeus, 77 – *P. lucasii*, male, clypeus, 78 – *P. scutellaris*, female, lateral view, 79 – *P. sericeiceps*, female, lateral view, 80 – *Smicromyrme ruficollis*, male, abdomen, lateral view with felt lines on 2S and 2T, 81 – *Physetopoda cingulata*, male, head lateral view with protruding vertex, 82 – *P. scutellaris*, male, head lateral view, 83 – *Smicromyrme sicana*, male, clypeus.



Figs 84–85. *Physetopoda*, males, volsella, lateral view. 84 – *Physetopoda cingulata*, 85 – *P. scutellaris*.

The second part, the annotated checklist, consists of notes for all species, containing the basics of world distribution, biology, and hosts, where known. The distribution of each species largely follows LELEJ (2002), while biology and hosts follow HOFFER (1938). A small amount of data was adopted from other studies, listed in the references. The second part also contains complete lists of localities for every species. The localities are divided into to three groups; Bohemia, Moravia, and Slovakia, where Bohemia and Moravia represent the historical division of the Czech Republic. The localities are cited in alphabetical order, first the material revised, and then the literary data marked as “published unrevised localities” with appropriate references. All localities include the number of the grid mapping square code used for faunistic research in the Czech Republic and Slovakia (ČEPELÁK *et al.* 1989, PRUNER & MÍKA 1996). Complete faunistic data with dates, collectors and determinators are presented only for very rare species with fewer than 15 known localities and for new finds. Faunistic data from Bohemia are presented for *Physetopoda halensis* (Fabricius, 1787), a species that has probably become extinct in this region recently, and *Smicromyrme sicana* (De Stefani, 1887), a new species for Bohemia. Faunistic data from the last 25 years are presented for *Mutilla europaea* Linnaeus, 1758 to demonstrate the disappearance of this species. Eighteen distribution maps have been compiled by employing all published data. A distribution map for *Physetopoda pusilla* (Klug, 1835), with the single locality of Štúrovo, is not presented here.

Nomenclature follows LELEJ (2002); problematical species are cited after A. S. Lelej and T. Ljubomirov. Most of the synonyms used are given below the name of the species, in medium type rather than bold.

Keys to genera

- 1. Apterous forms with one ocellus (Fig. 32) or winged forms with three ocelli on vertex (23, 35); 13 flagellomeres. **males**
- Apterous forms with no ocelli (Fig. 16) or three reduced ocelli (Fig. 1); 12 flagellomeres. **females**

Key to the males

- 1. Apterous forms with one ocellus on the vertex. **4. *Myrmilla* Wesmael, 1852** (6 species)
- Winged forms with three ocelli. 2.
- 2. Veins of the forewing touch the wing apex (Fig. 44), second abdominal segment of similar size as the others (Fig. 23). 3.
- Veins of the forewing do not touch the wing apex (Fig. 45), second abdominal segment the largest, in most cases more than twice as long and broad than the other terga (Fig. 35). 5.
- 3. Mesonotum red, tergum 7 with tooth-like processes on the sides (Figs 24, 46). **1. *Krombeinella longicollis* (Tournier, 1889)**
- Mesonotum and other parts of the body black, tergum 7 lacking processes. 4.
- 4. Anterior part of sternum 2 with tooth-like process (Fig. 49), tergum 7 with longitudinal, rounded fovea (Fig. 47), terga matt (Fig. 23). **2. *Myrmosa atra* Panzer, 1801**
- Sternum 2 lacking tooth, tergum 7 lacking longitudinal, rounded fovea (Fig. 48), terga lustrous. **3. *Paramyrmosa brunripes* (Lepelletier, 1845)**
- 5. Inner eye margin without notch (Fig. 50). 6.
- Inner eye margin usually with deep notch (Fig. 51). 9.
- 6. Tergum 1 narrower than tergum 2 by half the latter's length (Fig. 25). 7.
- Tergum 1 broader, its rear margin similar in width to tergum 2 (Fig. 31). ... 8.
- 7. Notaulices long, the whole thorax red, eyes hemispherical (Fig. 25), gonostyli strongly curved. **12. *Cystomutilla ruficeps* (Smith, 1855)**
- Notaulices absent (Figs 33, 56), gonostyli straight or slightly curved. **13. *Dasylabris Radoszkowski, 1886* (2 species)**
- 8. Tergum 2 longitudinally swollen along the sides, head longer than wide (Fig. 9). **5. *Platymyrmilla quinquefasciata* (Olivier, 1811)**

- Tergum 2 normal, head not longer than wide, quadrate.
..... **4. *Myrmilla* Wesmael, 1852** (6 species)
- 9. Tergum 2 red, large species. 10.
- Tergum 2 black. 11.
- 10. Tergum 2 red, terga 3 and 4 with white bands (Fig. 27).
..... **9. *Nemka viduata* (Pallas, 1773)**
- Terga 2 and 3 red, lacking apical bands (Fig. 28).
..... **8. *Tropidotilla litoralis* (Petagne, 1787)**
- 11. Mandible with only two or three apical teeth (Fig. 52). Large species.
..... 12.
- Mandible with three apical teeth and one prominent basal tooth (except *P. pusilla*) (Fig. 53). Small species. 13.
- 12. Thorax red, abdomen with white bands, lacking blue lustre (Fig. 26).
..... **7. *Ronisia brutia* (Petagne, 1787)**
- Thorax black or only mesonotum or scutellum red, abdomen with blue lustre (Figs 29, 30). **6. *Mutilla* Linnaeus, 1758** (2 species)
- 13. Tergum 2 and sternum 2 with felt lines on both sides (Fig. 42).
..... **11. *Smicromyrme* Thomson, 1870** (4 species)
- Tergum 2 with felt lines on both sides, sternum 2 lacking felt lines (Fig. 43).
..... **10. *Physetopoda* Schuster, 1949** (7 species)

Key to the females

- 1. Pronotum separated from mesonotum by a suture, ocelli present (Fig. 1).
..... 2.
- Pronotum and mesonotum form one body, ocelli absent (Fig. 16). 4.
- 2. Tergum 2 with a broad, yellowish apical band, thorax red, mesonotum twice as long as pronotum (Fig. 3).
..... **1. *Krombeinella longicollis* (Tournier, 1889)**
- Abdomen lacking yellow bands, body red and black. 3.
- 3. Mesothorax roughly square or only a little longer than broad, head beyond eyes elongated, propodeum separated by a carina (Fig. 2).
..... **3. *Paramyrmosa brunnipes* (Lepelletier, 1845)**
- Mesothorax at least one and a half times longer than broad, head not gibbous, propodeum not separated by a carina (Fig. 1).
..... **2. *Myrmosa atra* Panzer, 1801**

- 4. Thorax trapezoidal, narrowing posteriorly (Fig. 4). 5.
- Thorax quadrate, not narrowing posteriorly (Fig. 16). 6.
- 5. Head and thorax red, terga 2 and 3 with white apical bands (Fig. 4).
..... **12. *Cystomutilla ruficeps* (Smith, 1855)**
- Head black, tergum 2 with white spot.
..... **13. *Dasylabris Radoszkowski, 1886* (2 species)**
- 6. Tergum 2 without central white spot of hair, but with unbroken or broken
apical band. 7.
- Tergum 2 with white spot of hair at centre. 11.
- 7. Head much longer than wide, tergum 2 longitudinally swollen along the
sides (Fig. 9). **5. *Platymyrmilla quinquefasciata* (Olivier, 1811)**
- Head quadrate, rounded or triangular, not much longer than wide. 8.
- 8. Apex of tergum 1 with broken white band of hair, unbroken in tergum 2; a
part of the head red; large species (Fig. 7).
..... **7. *Ronisia brutia* (Petagne, 1787)**
- Tergum 1 with unbroken white apical band. 9.
- 9. Head large, quadrate, distinctly broader than thorax, tergum 1 with tooth-
like processes on both sides (Fig. 10).
..... **4. *Myrmilla Wesmael, 1852* (6 species)**
- Large species, 15 mm, tergum 1 lacking tooth-like processes. 10.
- 10. Terga 2 to 5 with unbroken apical bands, head triangular (Fig. 8).
..... **8. *Tropidotilla litoralis* (Petagne, 1787)**
- Terga 2 and 3 with broken apical band, terga 4 and 5 black.
..... **6. *Mutilla Linnaeus, 1758* (2 species)**
- 11. Vertex with white hair spot, tergum 1 only with one central spot of hair
(Fig. 15), pygidium sharply delineated, broad, oval and furrowed (Fig. 68).
..... **9. *Nemka viduata* (Pallas, 1773)**
- Smaller species, vertex usually without light hair, pygidium closer and
apically or basally narrowed. 11.
- 11. Pygidium with parallel sides (Fig. 74).
..... **11. *Smicromyrme Thomson, 1870* (4 species)**
- Pygidium basally narrowed, covered on both sides with long, light hair
(Fig. 71). **10. *Physetopoda Schuster, 1949* (7 species)**

Annotated checklist

1. Genus *Krombeinella* Pate, 1947

Krombeinella longicollis (Tournier, 1889) (Figs 3, 24, 46)

Syn.: *Myrmosa ephippium* (Fabricius, 1793).

Localities (Fig. 86):

BOHEMIA: no localities.

MORAVIA: no localities.

SLOVAKIA: Šahy (7979), 14.vii.1972, 1 ♂, J. Krejčírek lgt., P. Tyrner det. et coll.; published unrevised locality: Štúrovo (8177), 7.viii.1936, 1 ♂, A. Hoffer lgt. (HOFFER 1938).

Distribution. Southern Europe, southwestern Asia (Turkey, Syria, Iran) and northern Africa. The northern border of the distribution area runs through Hungary and southern Slovakia.

Biology. Southern European species, only two specimens, collected in the warmest parts of Slovakia. Common in Bulgaria and Turkey. It prefers south-facing slopes in the warmest regions. The species has often been mistaken by collectors for the south-eastern *K. thoracica* (Fabricius, 1793).

Hosts unknown.

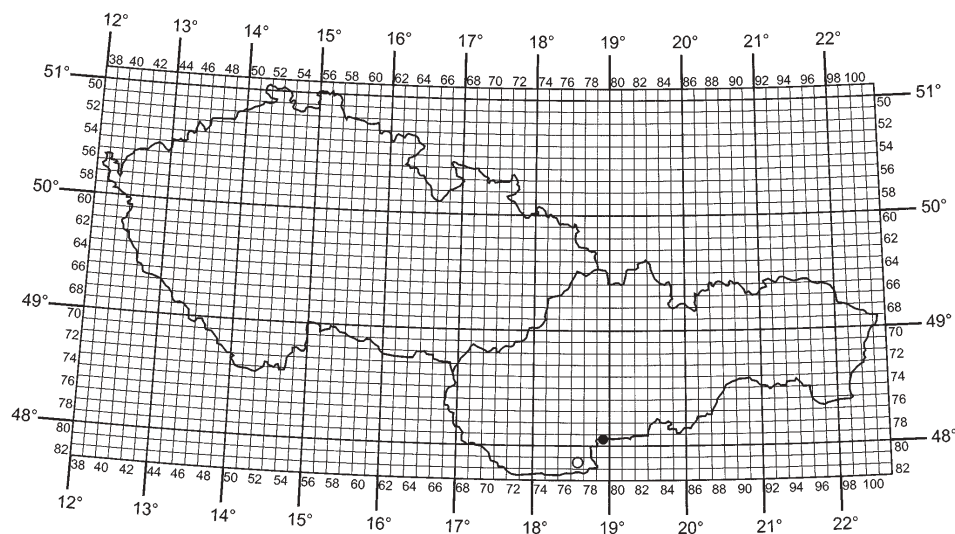


Fig. 86. Distribution map of *Krombeinella longicollis* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

2. Genus *Myrmosa* Latreille, 1796

Myrmosa atra Panzer, 1801

(Figs 1, 23, 44, 47, 49)

Syn.: *M. melanocephala* (Fabricius, 1793).

Localities (Fig. 87):

BOHEMIA: Bavorovice (6952), Brzánky (5551), Buzice (6549), Čelákovice (5854), Černiš (7052), Děčín (5251), Děčín – Loubí (5151), Děčín – Pastýřská stěna (5251), Deštná (5453), Hlušice (5759), Holovousy (5559), Houšťka (5552), Hradčany – PP Báh (5857), Hradec Králové (5761), Cheb (5940), Chodeč (5553), Chrbonín (6655), Jankov (7051), Janské Lázně (5359), Jenštejn (5953), Káraný nad Labem (5854), Karlštejn (6051), Klecany (5852), Kolín (5957), Konojedy (5352), Kozolupy (6245), Křemže (7051), Kutná Hora (6057), Kytín (6151), Libčice nad Vltavou (5852), Libochovice (5550), Litoměřice (5450), Lovoš (5450), Malá Skála (5357), Malé Kyšice (5950), Medonosy (5552), Milovice (5755), Mnichovo Hradiště (5455), Náchod (5562), Němá strouha stream (7052), Neratovice (5753), Nové Město nad Metují (5662), Peruc (5649), Počeradý (5548), Polička (6263), Praha – Divoká Šárka (5951), Praha – Horní Počernice (5853), Praha – Chuchle (5952), Praha – Klánovice (5954), Praha – Modřany (5952), Praha – Ruzyně (5852), Praha – Suchdol (5852), Praha – Trója (5852), Praha – Vidoule (5952), Rokytnice nad Jizerou (5258), Roudnice nad Labem (5551), Řevnice (6051), Sadská (5855), Sedlec u Mostu (5548), Smečno (5850), Sobotka (5557), Stěblová (5960), Stoličná hora (5251), Strančice (6054), Stráž nad Nežárkou (6955), Stroupeč (5647), Stříbrné Hutě (6554), Šejtovka (6153), Turovec (6654), Újezdce (6050), Úpice (5462), Zákupy (5353); published unrevised localities: Dobronice (6653), Chlum u Třeboně (7055), Kardašova Řečice (6855), Pelhřimov (6557), Tábor (6554), Třeboň (6954), Veselí nad Lužnicí (6854), Žehuň (5857) (HOFFER 1938); Pisečný vrch (5548) (PÁDR & TYRNER 1990).

MORAVIA: Babice (6870), Blansko (6665), Brno – Bobrava (6865), Brno – Hády (6766), Brno – Řečkovice (6765), Bystrovany (6469), Bzenec (7069), Čejč (7067), Černovír (6369), Dolní Věstonice (7165), Domanice (not identified), Dunajovské kopce (6570), Fryšták (6772), Háj u Opavy (6074), Halenkov (6675), Holešov (6671), Horní Bečva (6575), Horní Lipová (5769), Hostýn (6672), Hradec nad Moravicí (6173), Hranice na Moravě (6472), Hustopeče (7066), Chomoutov (6369), Javorník (5668), Jundrov (6765), Kelč (6473), Kobylí (7067), Kosíř (6468), Kostelany (6970), Kurdějov (7066), Kyjov (6968), Lukov (6772), Mohelno (6863), Moravany (6865), Moravský Písek (7069), Mutěnice (7068), Nebovídy (6865), Nizký Jeseník, Nový Jičín (6474), Obřany (6766), Pálava (7165), Paseky (5768), Podjavorník (6776), Popice (7162), Pouzdřany (7065), Prakšice (6971), Pustý Žleb (6665), Rejvíz (5769), Řičky (6764), Senorady (6863), Strážnice (7069), Štípa (6772), Trojačka (6575), Ubušín (6363), Valašské Meziříčí (6573), Velehrad (6870), Veverí (6765), Vyškov (6767), Zahrady pod Hájem (7171), Znojmo (7162), Žeravice (7069), Žerotín (7169), Žimrovice (6173); published unrevised localities: Jihlava (6559), Rajhrad (6965), Tišnov (6664), (HOFFER 1938); Zlín (6772) (BALTHASAR 1941); Bruntál (6070), Sobotín (5968) (ŠNOFLÁK 1952).

SLOVAKIA: Bojnice (7277), Čajkov (7777), Gabčíkovo (8171), Hrušov (7598), Kamenica nad Hronom (8178), Kečovo (7588), Kováčovské kopce (8178), Královský Chlmec (7598), Kvetná Horka (not identified), Levice (7777), Prievidza (7277), Remetské Hámre (7199), Somotor (7598), Streda nad Bodrogom (7696), Svarín (6984), Šahy (7979), Štúrovo (8177), Viničky (7696), Zádiel (7390); published unrevised localities: Devínská Kobyla (7768), Slovenské Nové Mesto (7696), Trenčín (7074) (HOFFER 1938); Trenčianská skalka (7074) (LUKÁŠ 1987); Bratislava (7868) (LUKÁŠ 2003).

Distribution. Europe and northern parts of Africa (Egypt, Libya).

Biology. Common species, distributed broadly in submontaneous regions, also collected in lower parts of some oreophytic areas (Krkonoše Mts., Velká Fatra Mts., Nízké Tatry Mts.). It prefers sandy localities. Missing from the warmest regions and more abundant in Bohemia; in warmer parts of Moravia and Slovakia it is replaced by the species that follows. Univoltine, females usually occur from May to September, males July to August.

Hosts: *Crabro peltarius* (Schreber, 1784), *Crossocerus palmipes* (Linnaeus, 1767), *C. wesmaeli* (Vander Linden, 1829), *Diodontus tristis* (Vander Linden, 1829), *Oxybelus*

The velvet ants (Hymenoptera: Mutillidae)

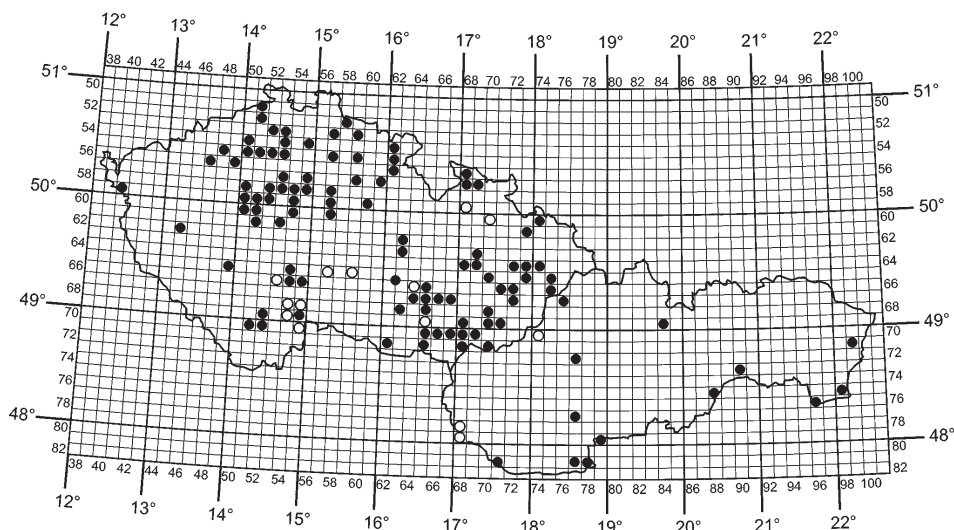


Fig. 87. Distribution map of *Myrmosa atra* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

uniglumis (Linnaeus, 1758), *Lindenius panzeri* (Vander Linden, 1829), and *L. albilabris* (Fabricius, 1793) (Apoidea: Crabronidae).

3. Genus *Paramyrmosa* Saussure, 1880

Paramyrmosa brunripes (Lepeletier, 1845)

(Figs 2, 48)

Localities (Fig. 88):

BOHEMIA: no localities.

MORAVIA: Babice (6870), Blansko (6665), Bohuňov (6463), Bořetice (7066), Brno – Bobrava (6865), Brno – Bystřice (6765), Břežany (7164), Bzenec (7069), Čejč (7067), Drysice (6668), Fryšták (6772), Hodonín (7168), Hovorany (7067), Hranice na Moravě (6472), Kelč (6473), Kobylí (7067), Kunovice (6970), Kurdějov (7066), Lanžhot (7267), Lednice (7266), Lidečko (6874), Lukov (6772), Malá Vrbka (7170), Mohelno (6863), Mutěnice (7068), Nedvědice (6564), Obrány (6766), Pánov (7168), Popice (7261), Pouzdřany (7065), Prácheň (6971), Rožnov pod Radhoštěm (6574), Říčky (6764), Senorady (6863), Svatý Kopeček (6369), Šardice (7068), Štípa (6772), Tišnov (6664), Velehrad (6870), Velká nad Veličkou (7171), Zlín (6772), Zlobice (6770), Žerotín (7169).

SLOVAKIA: Fířakovo (7785), Gemerský Jablonec (7885), Hodějov (7785), Kamenica nad Hronom (8178), Královský Chlmec (7598), Nová Vieska (8177), Plešivecká planina (7488), Remetské Hámre (7199), Seleška (7392), Slovenské Nové Mesto (7696), Somotor (7598), Streda nad Bodrogom (7696), Svatý Jur (7767), Šahy (7979), Veľký Kamenec (7696), Veľký Kevežď (7696); published unrevised localities: Bratislava (7868), Štúrovo (8177), Šamorín (7969) (HOFFER 1938); Trenčianská skalka (7074) (LUKÁŠ 1987); NPR Devinská Kobyla (7768) (LUKÁŠ 1997).

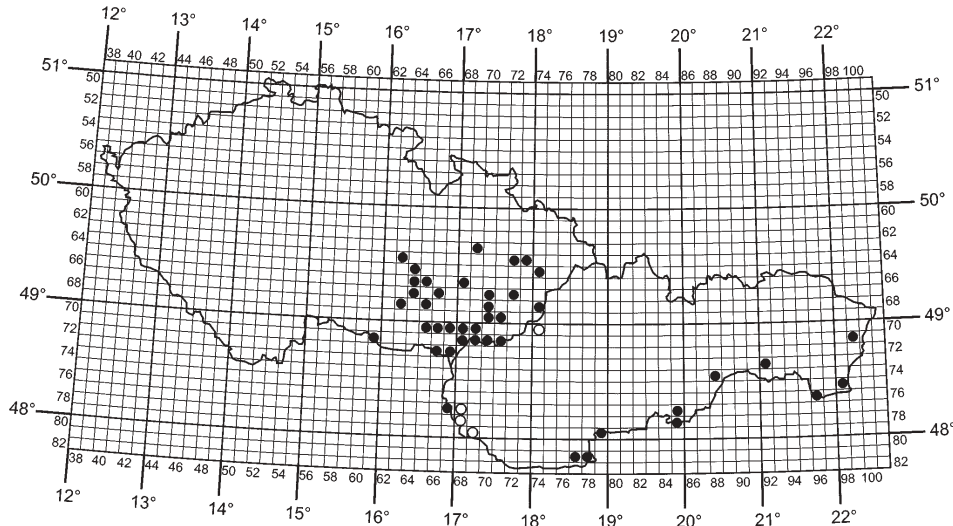


Fig. 88. Distribution map of *Paramyrmosa brunripes* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Distribution. Europe: Germany, Poland, Czech Republic, Slovakia, Hungary, Austria, Ukraine, southern Europe around Mediterranean Sea, southern Russia, Turkey, northern Africa.

Biology. Similar localities to those of *M. atra* in submontaneous regions, but also in warmer parts of Moravia and Slovakia. The species has been collected in several localities in the north of Moravia, but not in Bohemia. Where it occurs, it is usually abundant. More common in Slovakia and eastern Moravia. Phenology similar to that of *M. atra*.

Hosts: *Lasioglossum majus* Nylander, 1848, *L. pauxillum* Schenck, 1867, *L. morio* (Fabricius, 1793) (Apoidea: Halictidae) and sphecid wasp *Crabro peltarius* (Schreber, 1784), *Cerceris rybyensis* (Linnaeus, 1771) (Apoidea: Crabronidae).

4. Genus *Myrmilla* Wesmael, 1852

Two species known from the Czech Republic and Slovakia, four additional species occur in neighbouring countries.

Key to males

[Male of *M. caucasica* (Kolenati, 1846) has not been described yet.]

1. Apterous forms with one ocellus on the vertex. 2.
- Winged forms with three ocelli. 4.
2. Ventral part of the head with two long spines situated anteriorly (Fig. 58), mandibles without lateral teeth, hind coxae with tubercles.
..... *Myrmilla glabrata* (Fabricius, 1775)
- Ventral part of the head lacking spines, mandibles with lateral teeth, hind coxae without tubercles. 3.
3. Mandibles with well-developed lateral teeth (Fig. 61). Terga 4 to 6 with whitish hair. Small species (less than 7 mm).
..... *Myrmilla vutshetitschi* Skorikov, 1927
- Lateral teeth on mandibles small (Fig. 59), terga 4 to 6 with black hair. Large species (more than 8 mm) (Fig. 32).
..... *Myrmilla capitata* (Lucas, 1849)
4. Head black, sternum 2 with a prominent callous process (Fig. 57). Spines on the sides of tergum 1 sharp (Fig. 31). ... *Myrmilla calva* (Villers, 1789)
- At least part of the head red, sternum 2 normal.
..... *Myrmilla mutica* (André, 1903)

Key to females

1. Mandibles without lateral teeth. 2.
- Mandibles with lateral teeth. 3.
2. Head black, clypeus lacking tooth-like processes (Fig. 10).
..... *Myrmilla calva* (Villers, 1789)
- Head dark brown, genae not broader than the width of the eye (Fig. 65), clypeus with small lateral teeth. *Myrmilla glabrata* (Fabricius, 1775)
3. Head red, mandibles strong with lateral teeth (Fig. 11). 4.
- Head brown or black. 5.
4. Supra-antennal tubercles well-developed (Fig. 67), hind coxae lacking processes. *Myrmilla caucasica* (Kolenati, 1846)
- Supra-antennal tubercles not developed, hind coxae with tooth-like processes. *Myrmilla mutica* (André, 1903)
5. Clypeus with two teeth on sides (Fig. 62), body with pale pubescence, small species, up to 8 mm. *Myrmilla vutshetitschi* Skorikov, 1927

- Clypeus with one tooth-like process on each side (Fig. 60), body with black pubescence, genae three times broader than the eyes, larger than 8 mm (Fig. 12). *Myrmilla capitata* (Lucas, 1849)

List of species

***Myrmilla calva* (Villers, 1789)**

(Figs 10, 31, 57)

Syn.: *M. distincta* (Lepelletier, 1845), *M. seminigra* Hoffer, 1938.

Localities (Fig. 89):

BOHEMIA: Brzánky (5551), Černošice (6051), Dolánky (5746), Hradčany – PP Báh (5857), Kaňk (6057), Klecany (5852), Kosoř (5951), Kutná Hora (6057), Lovčice – PR Bludy (5857), Lužice (5449), Pardubice (5960), Praha – Divoká Šárka (5952), Praha – Hlubočepy (5952), Praha – Hostivař (5952), Praha – Libeň (5852), Praha – Podbaba (5852), Praha – Podhoří (5952), Praha – Prokopské údolí (5952), Praha – Radotín (5952), Praha – Sedlec (5852), Praha – Suchdol (5852), Praha – Trója (5852), Praha – Zlíchov (5952), Raná (5548), Sázava (6155), Stroupeč (5646), Sulava (6050), Vráž u Berouna (6050), Žatec (5647), Žiželice (5858); published unrevised localities: Čelákovice (5854), Chabry (5952), Lysá nad Labem (5755), Mělník (5652), Roudnice nad Labem (5551) (HOFFER 1938); Písečný vrch (5548) (PÁDR & TYRNER 1990).

MORAVIA: Brno – Hády (6765), Brno – Řečkovice (6765), Brumovice (7067), Bzenec (7069), Čebín (6764), Čejč (7067), Dunajovské kopce (6570), Hlohovec (7266), Hodonín (7168), Jaroslavice (7263), Kobyly (7067), Kosíř (6468), Krčmaň (6469), Kurdějov (7066), Malhostovice (6664), Mikulov (7165), Mohelno (6863), Moravany (6865), Nová Ves u Brna (6863), Pálava (7165), Pouzdřany (7065), Rohatec (7069), Senorady (6863), Šlapanice (6866), Šobes (7261), Tišnov (6664), Velehrad (6870), Velké Němčice (7066), Větrníky (6867), Znojmo (7162), Žernavá (6570); published unrevised localities: Brněnské Ivanovice (6865), Dolní Věstonice (7165), Kuřim (6765), Rajhrad (6965), Výchon u Židlichovic (6965) (HOFFER 1938).

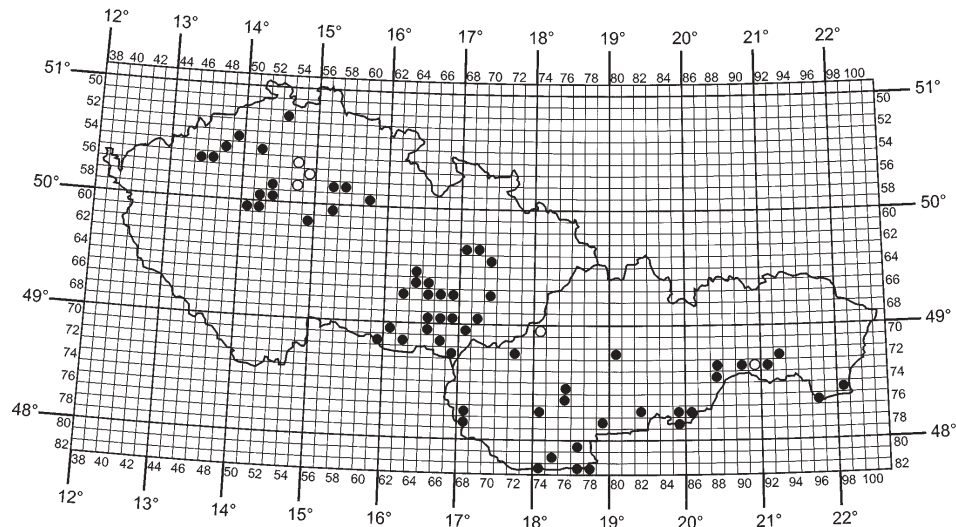


Fig. 89. Distribution map of *Myrmilla calva* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

The velvet ants (Hymenoptera: Mutillidae)

SLOVAKIA: Bajč (8075), Banská Bystrica (7280), Bratislava (7868), Čenkov (8177), Devín (7768), Devínská Kobyla (7768), Filákovo (7785), Gbelce (8177), Gemerský Jablonec (7885), Hajnáčka (7786), Hegyfárok (8177), Hodějov (7785), Hrhovské kopce (7390), Kamenica nad Hronom (8178), Kamenín (8177), Komárno (8174), Košice (7293), Kováčovské kopce (8178), Kráľovský Chlmec (7598), Nitra (7774), Nová Vieska (8177), Nové Mesto nad Váhom (7272), Plášťovce (7879), Plešivecká planina (7488), Rozložná (7388), Seleška (7392), Slovenské Nové Mesto (7696), Somotor (7598), Šahy (7979), Štúrovo (8177), Veľký Krtíš (7782), Zádiel (7390), Zlaté Moravice (7676); published unrevised localities: Borša (7696), Petržalka (7868), Sliac (7380), Trenčín (7074), Turňa nad Bodvou (7391) (HOFFER 1938); Trenčianská skalka (7074) (LUKÁŠ 1987); Zobor u Nitry (7774) (LUKÁŠ 1991).

Distribution. Southern parts of the Palaearctic region up to central Europe (Germany, Czech Republic, Poland).

Biology. Thermophilous species with the centre of its distribution in the warmer parts of Europe. In Bohemia as a relict species of warmer periods, only in the vicinity of Prague, Česká středohoří Mts. and Polabská nížina lowland, in Moravia and Slovakia in lowlands up to an altitude of 400 m. This species prefers loess walls or rocky steppes; it does not occur in sandy localities. It is quite abundant where it occurs and is one of the most common species of velvet ants in central Europe.

Hosts: Eusocial bees *Lasioglossum morio* (Fabricius, 1793), *L. calceatum* (Scopoli, 1763), *L. marginatum* (Brullé, 1832) and other related species (Apoidea: Halictidae).

***Myrmilla capitata* (Lucas, 1849)**

(Figs 12, 32, 59, 60, 66)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Southern parts of Europe, Syria and northern parts of Africa. Northern border of the distribution area runs through Hungary and Austria.

Biology. Biology and hosts unknown.

***Myrmilla caucasica* (Kolenati, 1846)**

(Fig. 67)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Warmer parts of the Palaearctic region, south-eastern Europe, nearest records from Ukraine.

Biology. Biology and hosts unknown.

***Myrmilla glabrata* (Fabricius, 1775)**

(Figs 58, 63, 64, 65)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Southern parts of Europe, Russia, central Asia. Northern border of the distribution area runs through Hungary and Austria.

Biology. Biology and hosts unknown.

Myrmilla mutica (André, 1903)

(Fig. 11)

Localities (Fig. 90):**BOHEMIA:** no localities.

MORAVIA: Čejč (7067), 23.vi.1939, 1 ♀, O. Šustera lgt., P. Bogusch det., coll. National Museum, Praha; Děvičky, Pálava PLA (7165), 28.v.2002, 2 ♀♀, P. Bogusch lgt., det. et coll.; Děvín, Pálava PLA (7165), 28.v.2002, 1 ♀, J. Straka lgt., det. et coll.; published unrevised localities: Pouzdřany (7065), 2 ♀♀, A. Hoffer lgt. (HOFFER 1937, 1938).

SLOVAKIA: Slovakia mer.: Devínská Kobyla (7768), June 1935, 1 ♀, 5.vi.1937, 1 ♀, A. Hoffer lgt.; Gbelce (8177), 21.–29.vii.1955, 1 ♀, V. Balthasar lgt.; Hegyfárok (8177), July 1957, 1 ♀, V. Balthasar lgt.; Kamenica nad Hronom (8178), 17.vi.1946, 1 ♀, 11.vii.1946, O. Šustera lgt.; Kováčovské kopce (8178), 27.v.1936, 1 ♀, B. Šticha lgt., June 1945, 1 ♀, V. Balthasar lgt., 19.vii.1947, 2 ♀♀, A. Hoffer lgt., June 1948, 2 ♀♀, L. Heyrovský lgt.; Nitra – Zobor (7774), 22.vi.1938, 1 ♀, V. Zavadil lgt., 25.v.1948, 1 ♀, O. Šustera lgt.; Plešivec (7488), July 1949, V. Balthasar lgt., 2.vi.1957, 1 ♀, Grosschaft lgt.; Seleška (7392), 12.vii.1933, 1 ♀, V. Zavadil lgt., 5.vii.1947, 1 ♀, O. Šustera lgt.; Štúrovo (8177), 11.ix.1946, 1 ♀, O. Šustera lgt., July 1947, 2 ♂♂, V. Balthasar lgt., 6.v.1949, 1 ♀, 21.vii.1954, 1 ♀, 14.viii.1955, 1 ♀, J. Palásek lgt., July 1957, 3 ♀♀, V. Balthasar lgt., all P. Bogusch det., coll. National Museum, Praha. Kamenica nad Hronom (8177), 12.viii.1946, 1 ♀, V. Zavadil lgt.; Plešivec (7488), 22.vii.1948, 1 ♀, J. Šnoflák lgt., Záliezovce (square not identified), 10.vii.1965, 1 ♀, Kovács lgt., all T. Ljubomirov det., coll. Moravian Museum Brno, Slovakia mer.: Štúrovo (8177), 1 ♀, J. Pospíšil lgt., B. Petersen det., coll. Zoologisk Museum Copenhagen, P. Bogusch revid.; published unrevised localities: Borša (7696), Komárno (8274), Slovenské Nové Mesto (7696) (HOFFER 1938); Zobor u Nitry (7774) (LUKÁŠ 1991).

Distribution. Southern parts of Europe, Cyprus, Turkey, southern parts of Russia. The northern border of the distribution area runs through the Czech Republic and Slovakia.

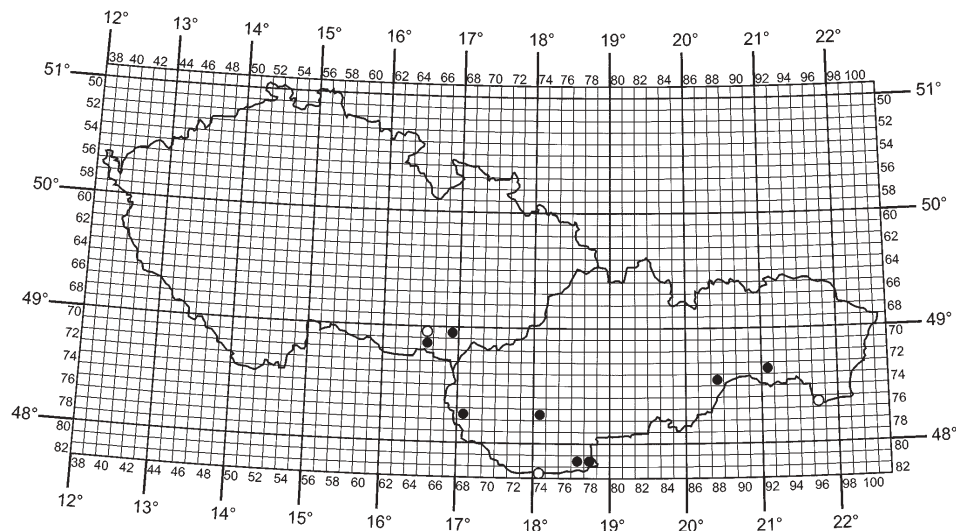


Fig. 90. Distribution map of *Myrmilla mutica* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Biology. Thermophilous, Mediterranean species living in the same kinds of localities as *M. calva*. The central European populations are geographically spanandrial – females reproduce parthenogenetically with no need of males. This species has previously been determined by specialists as the rare Mediterranean *M. erythrocephala* (Latreille, 1792).

Hosts unknown.

***Myrmilla vutshetitshi* Skorikov, 1927**

(Figs 61, 62)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. South-eastern parts of Europe, Turkey, and Syria. Northern border of the distribution area in Austria.

Biology. Biology and hosts unknown.

5. Genus *Platymyrmilla* André, 1900

***Platymyrmilla quinquefasciata* (Olivier, 1811)**

(Fig. 9)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. South-eastern parts of Europe, Turkey, and Iran. Northern border of the distribution area in Hungary.

Biology. Biology and hosts unknown.

6. Genus *Mutilla* Linnaeus, 1758

Two species in the central Europe, both in the Czech Republic and Slovakia.

Key to males

- 1. Body hair straight. Mesonotum usually red, tarsi black with black hair.
..... ***Mutilla europaea* Linnaeus, 1758**
- Body hair long, woolly. Mesonotum black, tarsi dark with white or grey hair (Fig. 29). ***Mutilla marginata* Baer, 1848**

Key to females

- 1. Body hair straight. Thorax only slightly longer than broad, approximately the same width as the head, legs with black hair (Fig. 13).
..... ***Mutilla europaea* Linnaeus, 1758**
- Body hair long, woolly. Thorax twice as long as broad, narrower than the head, legs black with white or grey hair, body very densely black-haired (Fig. 14). ***Mutilla marginata* Baer, 1848**

List of species

Mutilla europaea Linnaeus, 1758

(Figs 13, 30, 52)

Localities (Fig. 91):

BOHEMIA: Čekanice (6554), Český Krumlov (7152), Dehtář (6951), Dobrá Voda (7053), Dušníky (6051), Horažďovice (6648), Horšovský Týn (6443), Cheb (5940), Chloumek u Bečova (5548), Chrbonín (6655), Chroustkov (6057), Javorná (5744), Jesení (6745), Káraný nad Labem (5854), Kolín (5957), Kostelní vrch (5450), Košnice (5549), Kutná Hora (6057), Litvínov (5347), Milovice (5755), Ostrý (5449), Písek (6650), Plaňany (5956), Poděbrady (5856), Praha – Chuchle (5952), Praha – Košíře (5952), Praha – Radotín (5952), Praha – Vršovice (5952), Příbram (6350), Rožmitál pod Třemšínem (6349), Římov (7152), Soběslav (6754), Strýčice (6951), Špindlerův Mlýn (5259), Trávníky (5449), Třeboň (6954), Velemín (5449), Veselí nad Lužnicí (6854), Všetaty (5753), Zákolany (5751); published unrevised localities: Branišov (not identified), Bylany (6057), Chudenice (6744), Kardašova Řečice (6855), Kunětická Hora (5961), Mančice (6056), Netolice (6951), Nová Huť (5950), Olešník (6952), Prachatice (6949), Skryje (5948), Tábor (6554) (HOFFER 1938).

MORAVIA: Babice (6870), Bavory (7165), Bludovice (6474), Brno – Bosonohy (6865), Brno – Hády (6766), Brumovice (7067), Čejč (7067), Čertoryje (7170), Fryšták (6772), Šumice (6972), Hovorany (7067), Hranice na Moravě (6472), Javorník (5668), Jevíčko (6366), Jezernice (6471), Karlín u Čejče (7067), Kelč (6473), Kobylí (7067), Kyjov (6968), Lidéřovice (7070), Mohelno (6863), Mrsklesy (6369), Nemilany (6469), Pálava (7165), Polešovice (6970), Pouzdřany (7065), Přešov (6570), Senorady (6863), Slavkov u Brna (6866), Stará Ves (6671), Suchdol u Brna (6666), Šardice (7068), Valšov – Břidličná (6070), Vranová Lhota (6266); published unrevised localities: Adamov (6665), Blansko (6665), Olomouc (6469), Praděd (5969), Prostějov (6568), Tišnov (6664), Ubušín (6363), Vsetín (6673) (HOFFER 1938); Slušovice (6772), Zlín (6772) (BALTHASAR 1941).

SLOVAKIA: Belianské Tatry (6787), Borišov (not identified), Čertovica (7184), Donovaly (7181), Ďumbier (7083), Chopok (7083), Kamenín (8177), Koprová dolina (6885), Kráľovský Chlmec (7598), Liptovská Hole (6884), Liptovský Mikuláš (6983), Medvedia dolina (7379), Nizké Tatry, Podbanské (6885), Prašivá (7181), Predná Magura (6788), Salatín (6981), Slovenské Nové Mesto (7696), Somotor (7598), Spišský hrad (6990), Svarín (6984), Temnosmrečianska dolina (6886), Veľká Fatra, Vysoké Tatry, Žiarska dolina (6884); published unrevised localities: Bolešov (7074), Bratislava (7868), Demänová (6983), Trenčín (7074) (HOFFER 1938); NPR Devínska Kobyla (7768) (LUKÁŠ 1997).

Distribution. Entire Palaearctic region, southern and central Europe, Africa, Turkey, Siberia, Japan.

Biology. A remarkable species, occurring in lowlands as well as in mountains. Formerly far more abundant than recently and once a very common velvet ant in the Czech Republic. It prefers the open localities where the nests of its hosts occur. However, most such habitats have been altered or destroyed by human activity, which has led to the decline mentioned. It survives in the mountains, but not in numerous populations. It was forced out of its localities to a larger degree than the species that follows, which is still common. *Mutilla europaea* is also more thermophilous. The author has never collected this species, in contrast to *M. marginata*, which is still common, more so in mountainous regions. Most of the specimens examined are dated to the first half of 20th century; only 10 specimens have been collected in the past 25 years, and most of them in warmer, non-mountainous localities: BOHEMIA: Strýčice (6951), 9.vii.1991, 2 ♀♀, Z. Karas lgt., det. et coll.; Trávníky (5449), 14.iv.1984, 1 ♀, E. Strejčková lgt., J. Macek det., coll. National Museum, Praha, P. Bogusch revised; MORAVIA: Stará Ves (6671), 20.viii.1992, 1 ♀, D. Vepřek lgt., det. et coll.; Jezernice (6471), 28.vii.1996, 1 ♀, J. Žák lgt., D. Vepřek det. et coll.; Karlín u Čejče (7067), 5.vii.2004, 1 ♂, L. Blažej lgt. et coll., J. Straka det.; SLOVAKIA: Veľká Fatra Mts., Podbanské (6885), 19.–24.vii.1981, 2 ♂♂, 1 ♀, Z. Kraus

The velvet ants (Hymenoptera: Mutillidae)

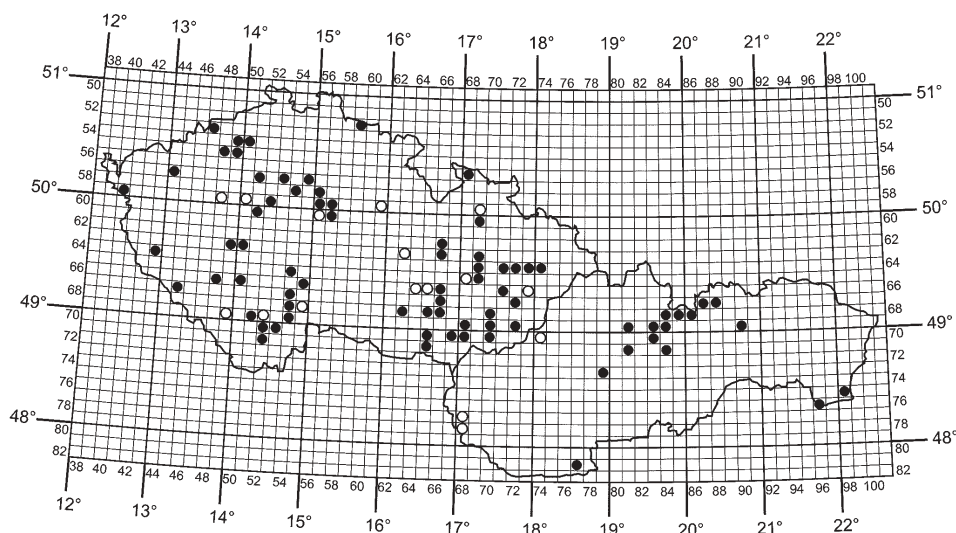


Fig. 91. Distribution map of *Mutilla europaea* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

lgt., P. Tyrner det. et coll.; Spišský hrad (6990), 4.viii.1981, 2 ♂♂, P. Tyrner lgt., det. et coll.

Hosts: Bumblebees of the genus *Bombus* Latreille, 1802 (Apoidea: Apidae). It parasitises the nests of most central European ground-nesting species.

***Mutilla marginata* Baer, 1848**

(Figs 14, 29)

Localities (Fig. 92):

BOHEMIA: Bělá pod Bezdězem (5454), Benecko (5359), Bezděz (5454), Brandýs nad Labem (5854), Česká Kamenice (5252), České Hamry (5444), Český Dub (5355), Děčín (5251), Deštné (5664), Dobruška (6345), Doksy (5453), Dubá (5360), Dubice (5450), Františkovy Lázně (5840), Harrachov (5258), Horka (6058), Houšťka (5552), Hradec Králové (5761), Chloumky (5659), Choťovice (5857), Janov nad Nisou (5257), Janské Lázně (5359), Javoří důl (5360), Ještěd (5255), Jílové u Děčína (5250), Jince (6249), Jizerka (5158), Julinčino údolí (5764), Kamenický Šenov (5252), Kolín (5957), Kořenov (5258), Kozákov (5457), Králíky (5966), Králický Sněžník (5866), Krkonoše – Labská bouda (5259), Krkonoše – Lysá hora (5360), Kunžak (6956), Kytlice (5153), Lhotka u Mělníka (5653), Litvínov (5347), Lovoš (5450), Lysečiny (5261), Malá Skála (5357), Martinice (5459), Medonosy (5552), Modrý důl (5360), Navarov (5357), Nová Huť (5950), Nové Hamry (5642), Nové Město nad Metují (5662), Nový Svět (not identified), Obří důl (5260), Oldřichov v Hájích (5156), Ostrá (5855), Paseky nad Jizerou (5258), Pec pod Sněžkou (5360), Pecka (5559), Peklo (not identified), Plasnice (5664), Radobýl (6351), Rokytnice nad Jizerou (5258), Rýchory (5360), Skalka (6151), Stupná (5459), Špičák (6845), Špindlerův Mlýn (5259), Šumný důl (5347), Tanvald (5257), Tlustec (5254), Troskovice (5457), Trutnov (5461), Úpice (5462), Valdštejn (5457), Varnsdorf (5053), Velká Úpa (5360), Závist (6153); published unrevised localities: Bedřichov (5256), Hořice (5659), Jáchymov (5643), Jilemnice (5359), Praha (5952), Prachatice (6949), Staré Buky (5461), Strašice (6248), Turnov (5456), Volanov (5461), Vrbno (5652), Zakšín (5452), Žalý (5359) (HOFFER 1938).

MORAVIA: Deštná (5466), Dolní Dunajovice (7165), Hlubočky (6369), Hodonín (7168), Horní Lipka (5866), Horní Lipová (5769), Hrubá Voda (6370), Jeseník (5769), Karlov (6970), Karlova Studánka (5870), Kouty (5968), Lukov (6772), Moravský Karlov (5966), Nové Město na Moravě (6462), Pohansko (7267), Praděd (5969), Rejvíz (5769), Švrčov (6470), Valšov – Břidličná (6070), Vidly (5969); published unrevised localities: Jihlava (6559), Opava (6073), Velké Opatovice (6366), Vranov u Brna (6766) (HOFFER 1938).

SLOVAKIA: Baba (7183), Babia Góra (6483), Baláže (7281), Banská Bystrica (7280), Belovodská dolina (6885), Čertovica (7184), Demänovské sedlo (7083), Dobročský prales (7384), Dobšiná (7588), Dolná Desná (not identified), Ďumbier (7083), Hačava (7391), Harmanec (7280), Heľpa (7185), Hodruša (7578), Inovec (7399), Jasenica (7178), Košice (7293), Kozel u Žiliny (6778), Krakovany (7472), Kremnica (7279), Kriváň (7482), Kvetnica (6987), Malinné (6981), Muráň (7286), Námestovo (6582), Nízke Tatry, Orava (6683), Plešivecká planina (7488), Podbanské (6885), Poľana (7382), Somotor (7598), Sopotnická dolina (not identified), Strečno (6879), Súľov (6877), Stratená (7188), Svarín (6984), Štrbské pleso (6886), Šútovo (6880), Tatranská kotlina (6787), Trenčín (7174), Veľická dolina (not identified), Vysoké Tatry, Zádiel (7390), Žilina (6778); published unrevised localities: Sliach (7380), Vysoké Tatry – Hrebienok (6887), Ždiar (6787), Zuberec (6783) (HOFFER 1938); NPR Devínská Kobyla (7768) (LUKÁŠ 1997).

Distribution. Entire Palaearctic region.

Biology. This species is very common and abundant in central Europe. In higher locations, such as mountains over 1500 m. a. s. l., it represents the most abundant species of Hymenoptera after its hosts – bumblebees. In the Czech Republic and Slovakia it is the most abundant species of velvet ant, together with *Smicromyrme rufipes*, very common in the highest mountain ranges (Nízke and Vysoké Tatry Mts., Krkonoše Mts., Jeseníky Mts.).

Hosts: Bumblebees of the genus *Bombus* Latreille, 1802 (Apoidea: Apidae). It parasitises the nests of most central European ground-nesting species.

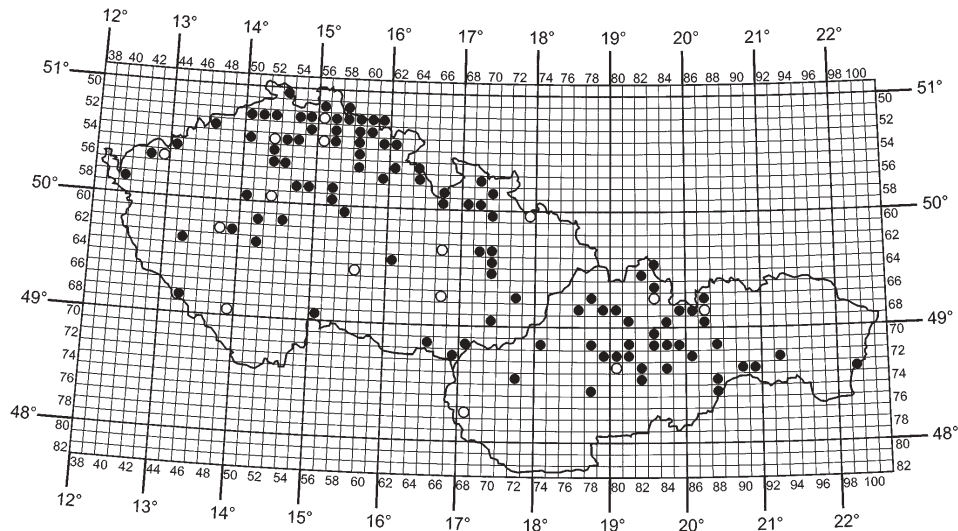


Fig. 92. Distribution map of *Mutilla marginata* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

7. Genus *Ronisia* Costa, 1858

Ronisia brutia (Petagne, 1787)

(Figs 7, 26)

Localities (Fig. 93):

BOHEMIA: no localities.

MORAVIA: Čejč (7067), 6.viii.1940, 2 ♀♀, 3.vi.1943, 1 ♀, O. Šustera lgt., 8.viii.1940, 1 ♀, V. Zavadil lgt., P. Bogusch det., coll. National Museum, Praha; Kobyly (7067), 24.vii.1938, 1 ♂, F. Gregor lgt., P. Bogusch det., coll. Moravian Museum Brno; Litovel (6368), 10.viii.1939, Kostelník lgt., P. Bogusch det., coll. National Museum, Praha; Mohelno (6863), July 1941, 2 ♀♀, A. Hoffer lgt., P. Bogusch det., coll. National Museum, Praha; 1941, 1 ♀, B. Tomšík lgt., 20.vii.1943, 1 ♂, 3.viii.1946, 1 ♂, J. Šnoflák lgt., 29.vii.1945, 1 ♂, 1946, 1 ♀, R. Obrtel lgt., all P. Bogusch det., coll. Moravian Museum Brno; Pouzdřany (7065), 6.v.1934, 1 ♀, A. Hoffer lgt., 8.vii.1937, 1 ♀, 9.vii.1937, 1 ♂, V. Zavadil lgt., P. Bogusch det., coll. National Museum, Praha; 12.ix.1936, 1 ♀, F. Gregor lgt., P. Bogusch det., coll. Moravian Museum Brno; Senorady (6863), 15.vii.1940, 1 ♀, Matoušek lgt., P. Bogusch det., coll. Moravian Museum Brno; Tišnov (6664), 5.vii.1928, 1 ♀, 9.vii.1928, 1 ♀, 11.vii.1928, 1 ♀, 12.vii.1928, 1 ♀, V. Zavadil lgt., P. Bogusch det., coll. National Museum, Praha; published unrevised localities: Dolní Věstonice (7165) (HOFFER 1938); Svatý Kopeček (7165) (PÁDR 1995).

SLOVAKIA: Domica (7588), 26.vii.1938, 1 ♂, V. Zavadil lgt.; Filákovo (7785), 19.vii.1938, 1 ♂, V. Zavadil lgt.; Štúrovo (8177), 8.vi.1948, 1 ♂, J. Palásek lgt., all P. Bogusch det., coll. National Museum, Praha.

Distribution. Southern and central Europe, northern Africa, Turkey, Syria. Many subspecies occur in various parts of the distribution area, especially in southern Europe. In central Europe, the nominotypical form *R. b. brutia* (Petagne, 1787) occurs.

Biology. Rare species, which prefers warm microhabitats in large, sandy localities. In the Czech Republic only in a few localities in Moravia, several finds in Slovakia. Recently,

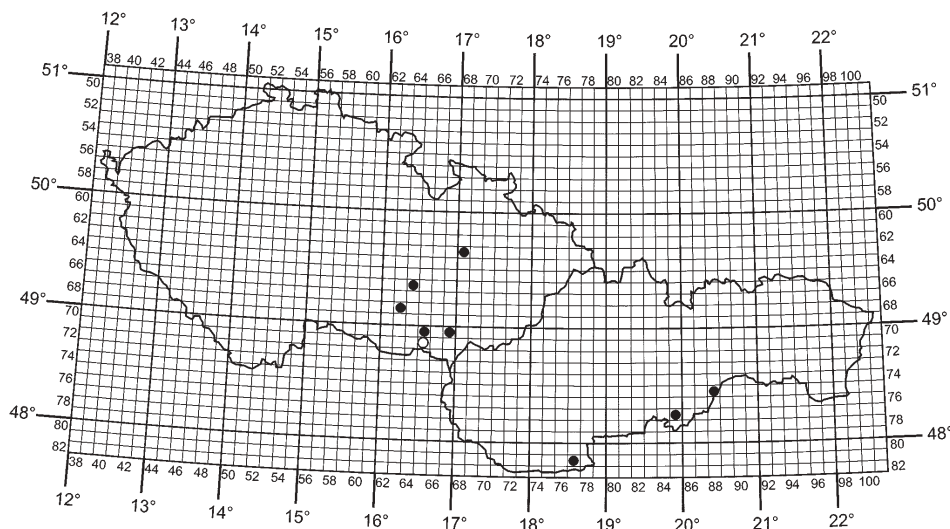


Fig. 93. Distribution map of *Ronisia brutia* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

the species has settled in new types of locality, i.e. aeolian sands and other open habitats in the warmer regions; it is assumed to have become more abundant and survived in central Europe more readily than the ecologically similar species *Cystomutilla ruficeps*, *Myrmilla mutica*, and *Physetopoda scutellaris*.

Hosts: Paper wasps of the genus *Polistes* Latreille, 1802 (Vespoidea: Vespidae), mason bees *Creightonella sericans* (Fonscolombe, 1847) and *Chalicodoma parietina* (Fourcroy, 1785) (Apoidea: Megachilidae).

8. Genus *Tropidotilla* Bischoff, 1920

Tropidotilla litoralis (Petagne, 1787) (Figs 8, 28)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Southern parts of Europe, northern parts of Africa, Turkey, Siberia, Japan, northern border of the distribution area in Hungary, Austria and Ukraine.

Biology. A remarkable species with a large distribution area, very common in warmer localities in southern Europe. It has been collected neither in the Czech Republic nor Slovakia, but in Ukraine near the border with Slovakia.

Hosts: Paper wasps of the genus *Polistes* Latreille, 1802, especially the thermophilous species *Polistes gallicus* (Linnaeus, 1767) (Vespoidea: Vespidae).

9. Genus *Nemka* Lelej, 1985

Nemka viduata (Pallas, 1773) (Figs 15, 27, 68)

Localities (Fig. 94):

BOHEMIA: no localities.

MORAVIA: Bzenec (7069), 10.vii.1931, 4 ♀♀, 12.vii.1932, 1 ♀, 15.vii.1932, 3 ♀♀, 21.vii.1933, 1 ♂, 18.vii.1934, 1 ♂, 1 ♀, V. Zavadil lgt., 9.vii.1940, 1 ♂, 14.vii.1940, 2 ♂♂, O. Šustera lgt., 26.vii.1941, 1 ♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; 15.vii.1931, 1 ♀, 21.vii.1933, 5 ♀♀, V. Zavadil lgt., 10.vii.1940, 3 ♀♀, J. Šnoflák lgt., July 1954, 2 ♂♂, 2 ♀♀, 22.vii.1954, 4 ♀♀, M. Kocourek lgt., all P. Bogusch det., coll. Moravian Museum Brno; Mohelno (6863), 1941, 1 ♀, B. Tomšík lgt., P. Bogusch det., coll. Moravian Museum Brno; Moravský Písek (7069), 10.vi.1931, 2 ♀♀, 12.vii.1932, 2 ♀♀, V. Zavadil lgt., 31.vii.1939, 2 ♀♀, 11.viii.1939, 1 ♀, O. Šustera lgt., P. Bogusch det., coll. National Museum, Praha; 12.vii.1932, 1 ♀, 17.vii.1932, 1 ♂, 2.viii.1932, 2 ♀♀, 10.viii.1933, 1 ♀, V. Zavadil lgt., 4.viii.1932, 1 ♀, M. Kocourek lgt., all P. Bogusch det., coll. Moravian Museum Brno; Mutěnice (7068), July 1941, 1 ♀, M. Kocourek lgt., P. Bogusch det., coll. Moravian Museum Brno.

SLOVAKIA: Čenkov (8177), July 1953, 10 ♂♂, July 1957, 13 ♀♀, 7.vi.1960, 1 ♀, V. Balthasar lgt., 26.vi.1957, 1 ♂, Z. Pádr lgt., 19.vii.1958, 1 ♀, J. Palásek lgt., P. Bogusch det., coll. National Museum, Praha; 17.vii.1953, 6 ♀♀, July 1957, 3 ♀♀, June 1964, 2 ♂♂, M. Kocourek lgt., all P. Bogusch det., coll. Moravian Museum Brno; July 1953, 1 ♀, 9.vii.1953, 1 ♀, all M. Kocourek lgt. et det., coll. J. Halada; Chotín (8175), 18.–27.vii.1961, 1 ♀, July 1963, 2 ♀♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; 8.viii.1964, 1 ♀, J. Niedl lgt., Z. Karas det. et coll.; Malacky (7568), 25.vii.1954, 1 ♀, J. Palásek lgt.; Štúrovo (8177), July 1957, 1 ♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; undated, 1 ♂, M. Kocourek

The velvet ants (Hymenoptera: Mutillidae)

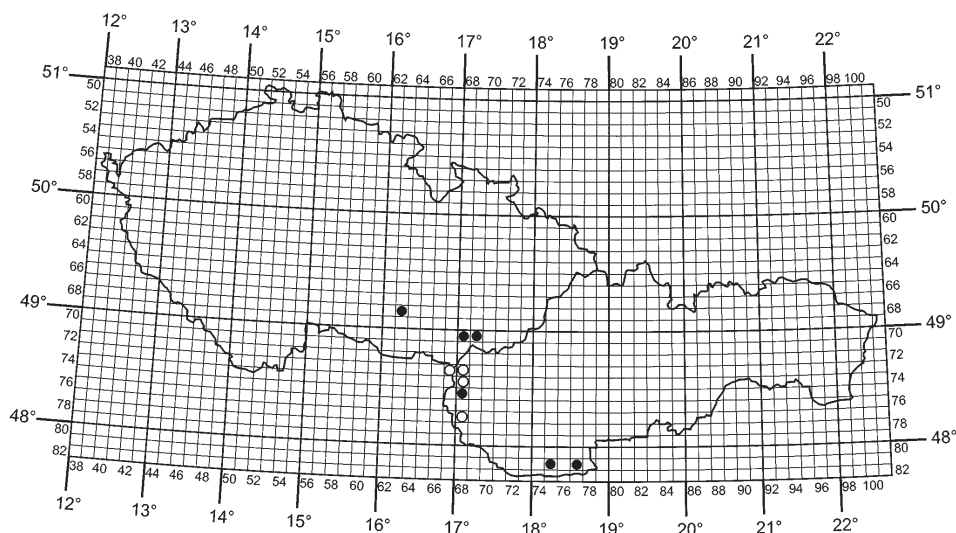


Fig. 94. Distribution map of *Nemka viduata* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Igt., all P. Bogusch det., coll. Moravian Museum Brno; published unrevised localities: Borský Svatý Jur (7368), Moravský Svatý Ján (7468), Sekule (7367), Šaštin (7367) and “the whole region of sandy localities in southwestern Slovakia” (HOFFER 1938); Devínská Kobyla (7768) (LUKÁŠ 1997).

Distribution. Southern parts of Europe, central Asia, Mongolia, northern Africa, Turkey, Syria. Northern border of the distribution area in central Europe, Czech Republic and Slovakia.

Biology. Species bound to sandy localities, very common in southern Europe. It is quite abundant in places containing large areas of aeolian sand. In the Czech Republic and Slovakia it occurs most in the region known as the “Moravian Sahara” between Hodonín (Moravia) and Bratislava (Slovakia), in association with the ecologically similar species *Dasylabris regalis* (Fabricius, 1793).

Hosts: Sphecid wasps *Larra anathema* (Rossi, 1790), *Bembix* spp., and *Gorytes* spp. (Apoidea: Crabronidae), and the solitary bee *Dasygaster hirtipes* (Fabricius, 1793) (Apoidea: Melittidae).

10. Genus *Physetopoda* Schuster, 1949

Seven species are known from central Europe, three of them from the Czech Republic, five from Slovakia.

Key to males

[Male unknown for *P. sericeiceps*.]

1. Lateral tooth on the mandible absent (Fig. 54), thorax except propodeum red, ocelli small. *Physetopoda pusilla* (Klug, 1835)
- Lateral tooth on the mandible present (Fig. 53). 2.
2. Ocelli smaller than width of flagellomeres (Fig. 41). 3.
- Ocelli the same width or broader than flagellomeres. 4.
3. Thorax from entirely black to entirely red, vertex strongly protruding (Fig. 81), volsella of characteristic shape (Fig. 84).
..... *Physetopoda cingulata* (Costa, 1858)
- Thorax black, only tegulae and scutellum red (Fig. 51), vertex not as protruding as in previous (Fig. 82), volsella normal (Fig. 85).
..... *Physetopoda scutellaris* (Latreille, 1792)
4. Ocelli very large, much larger than the width of the flagellomeres (Figs 38, 39). 4.
- Ocelli smaller, usually the same width as the flagellomeres (as in *Smicromyrme sicana*). Pronotum and mesonotum red, other parts of thorax black (Fig. 40). *Physetopoda daghestanica* (Radoszkowski, 1885)
5. Notum red except for propodeum. Apical clypeal margin sharp, high and long – its length extends ventrally far beyond the middle of the clypeus (Fig. 77). *Physetopoda lucasii* (Smith, 1855)
- Notum red except propodeum (typical form) (Fig. 38) or completely black (forma nigrita) (Fig. 39). Apical clypeal margin shorter, not reaching the middle of the clypeus (Fig. 76). ... *Physetopoda halensis* (Fabricius, 1787)

Key to females

[Female unknown for *P. daghestanica*.]¹⁾

1. Scutellar tubercle very small, thorax broad and quadrate, 2T with three large, white spots (Fig. 21). Pygidium broad, distinctly furrowed in basal two-thirds or over whole surface (Fig. 73).
..... *Physetopoda pusilla* (Klug, 1835)
- Scutellar tubercle well developed, tergum 2 with large central spot and sometimes two smaller and much less distant on the sides (Fig. 19). 2.
2. Thorax longer than broad by about half (Fig. 20), pygidium lustrous, with only a few shallow furrows (Figs 69, 70). 3.

¹⁾ Female of *P. cingulata* was newly described by STANDFUSS (2006).

- Pygidium distinctly furrowed (Fig. 71), thorax quadrate, propodeum divided by a vertical line (Fig. 19). 4.
- 3. Vertex usually with whitish hair, propodeum not divided by vertical line, although not gradually blending with the mesonotum as in *P. scutellaris* (Fig. 79), scutellar tubercle small.
..... *Physetopoda sericeiceps* (André, 1901)
- Vertex without whitish hair, propodeum gradually blending with mesonotum (Fig. 78), scutellar tubercle medium-sized (Fig. 20).
..... *Physetopoda scutellaris* (Latreille, 1792)
- 4. Pygidium furrowed lengthwise, flat at the apical margin (Fig. 71).
..... *Physetopoda halensis* (Fabricius, 1787)
- Pygidium furrowed lengthwise with cross sections (Fig. 72).
..... *Physetopoda lucasii* (Smith, 1855)

List of species

Physetopoda cingulata (Costa, 1858) (Figs 81, 84)

Localities (Fig. 95):
BOHEMIA: no localities.
MORAVIA: no localities.

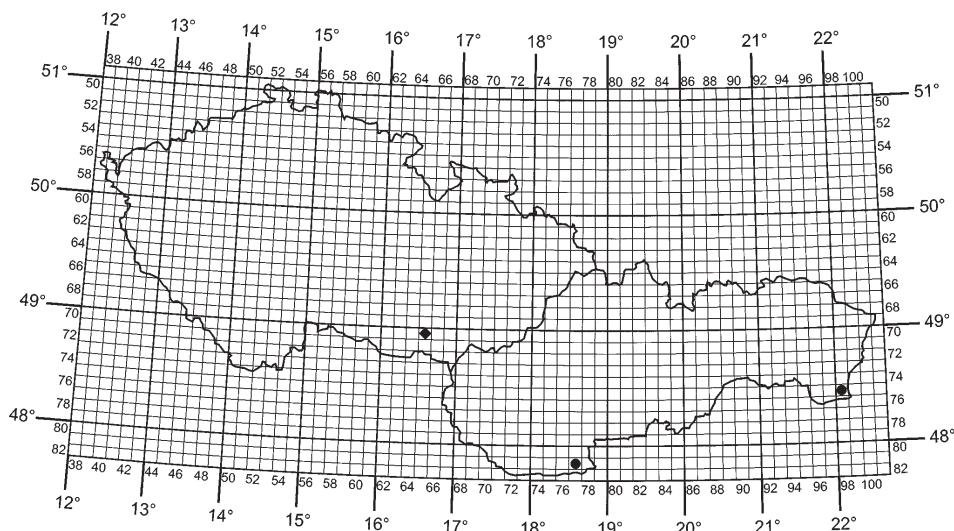


Fig. 95. Distribution map of *Physetopoda cingulata* and *Smicromyrme pouzdranensis* in the Czech Republic and Slovakia. ● – localities of *P. cingulata*, ◆ – published unrevised localities of *S. pouzdranensis*.

SLOVAKIA: Somotor (7598), July 1952, 3 ♂♂, July 1959, 1 ♂; Štúrovo (8177), 24.vii.1967, 1 ♂, all M. Kocourek lgt., B. Petersen det., coll. Zoologisk Museum, København, Denmark, both P. Bogusch revid. First records from the Slovak Republic.

Distribution. Italy, Greece, Hungary, southern parts of Russia, central Asia. Northern border of the distribution area in Hungary and Slovakia. Very rare species in all parts of the distribution area. Only males of the species are known.

Biology. Biology and hosts unknown.

Physetopoda daghestanica (Radoszkowski, 1885) (Fig. 40)

Syn.: *S. subcomata* (Wesmael, 1852), *S. moravica* Hoffer, 1936, *S. variabilis* Hoffer, 1938, *S. maculata* Hoffer, 1938, *S. lineata* Hoffer, 1938, *S. obenbergeri* Hoffer, 1938, *S. conversa* Hoffer, 1938.

Localities (Fig. 96):

BOHEMIA: no localities.

MORAVIA: Brno – Bobrava (6865), Brno – Bosonohy (6865), Brno – Bystře (6765), Brno – Hády (6766), Bystrovany (6469), Hodonín (7168), Kobyly (7067), Mikulov (7165), Modřice (6865), Mohelno (6863), Moravany (6865), Pálava (7165), Pouzdřany (7065), Slatinky (6467), Zastávka u Brna (6864), Znojmo (7162); published unrevised localities: Hranice na Moravě (6472) (HOFFER 1938).

SLOVAKIA: Borovce (7472), Čenkov (8177), Filákovo (7785), Gbelce (8177), Jablonov u Turni (7093), Kamenica nad Hronom (8178), Kamenín (8177), Levice (7777), Margecany (7192), Nitra (7774), Plešivecká planina (7488), Štúrovo (8177), Turňa nad Bodvou (7193); published unrevised localities: Slovenské Nové Mesto (7696), Seleška (7392), Somotor (7598) (HOFFER 1938).

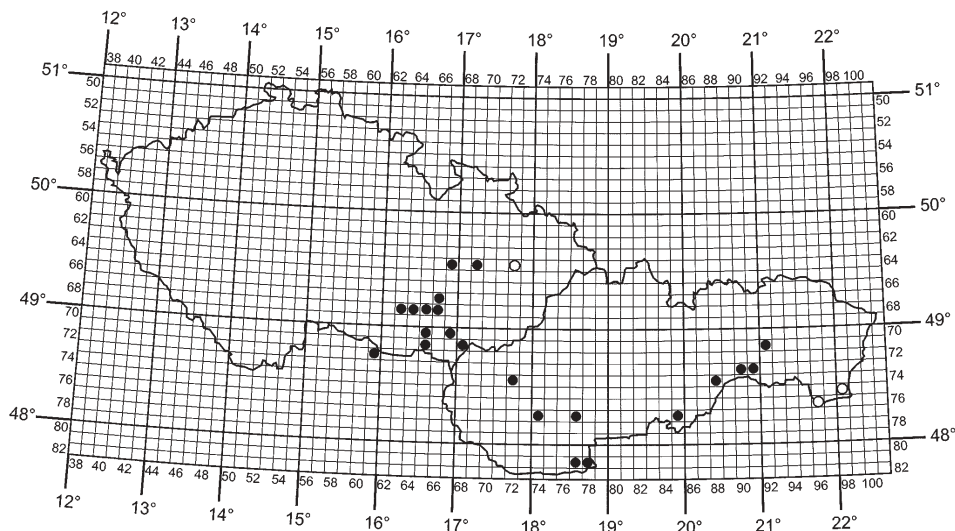


Fig. 96. Distribution map of *Physetopoda daghestanica* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Distribution. Central and southeastern Europe, Russia, Altai and Kazakhstan. Species with centre of distribution in the Near East.

Biology. Not well known, usually in warm localities, especially sunny sites, not bound to sandy localities. Appears less rare than other *Physetopoda* species and is sparsely collected in warmer localities in Moravia and Slovakia. Known only from males; females are probably not being distinguished from those of *P. halensis*.

Physetopoda halensis (Fabricius, 1787) (Figs 19, 38, 39, 43, 45, 53, 71, 76)

Syn.: *Smicromyrme montana* (Panzer, 1805), *S. pseudomontana* Hoffer, 1936, *S. susterai* Hoffer, 1936.

Localities (Fig. 97):

BOHEMIA: Čelákovice (5854), 5.vi.1914, 1 ♀, collector unknown, 1 ♂; July 1915, Kargl lgt.; Hradec Králové (5761), July 1916, 1 ♂, J. Sekera lgt.; Chabry (5952), 10.v.1908, 1 ♀, O. Šusterka lgt.; Malá Skála (5357), undated, 1 ♂, J. Obenberger lgt.; Praha – Hlubočepy (5952), 24.iv.1924, 1 ♀, collector unknown; August 1963, Z. Kočmid lgt.; Praha – Prokopské údolí (5952), 26.vii.1908, 2 ♂♂, 18.viii.1912, 2 ♂♂, O. Šusterka lgt., J. Macek det., coll. National Museum, Praha; Praha – Suchdol (5852), 1.vi.1953, 4 ♂♂, 13.vii.1953, 2 ♂♂, 27.vii.1953, 3 ♂♂, Z. Pádr lgt., all P. Bogusch det., coll. Moravian Museum Brno; Velký Vřeštov (5660), 26.vi.1963, 1 ♂, Z. Bouček lgt.; J. Macek det., coll. National Museum, Praha; published unrevised localities: Brzánky (5551), Hluboká nad Vltavou (6952), Koroseky (7052), Nová Hut' (5950), Nymburk (5856), Roudnice nad Labem (5551), Závist (6052) (HOFFER 1938).

MORAVIA: Brno – Bobrava (6865), Brno – Bystrc (6765), Brno – Hády (6766), Brno – Řečkovice (6765), Benec (7069), Čejč (7067), Filipova dolina (not identified), Františkův rybník (7267), Grygov (6469), Hnanice

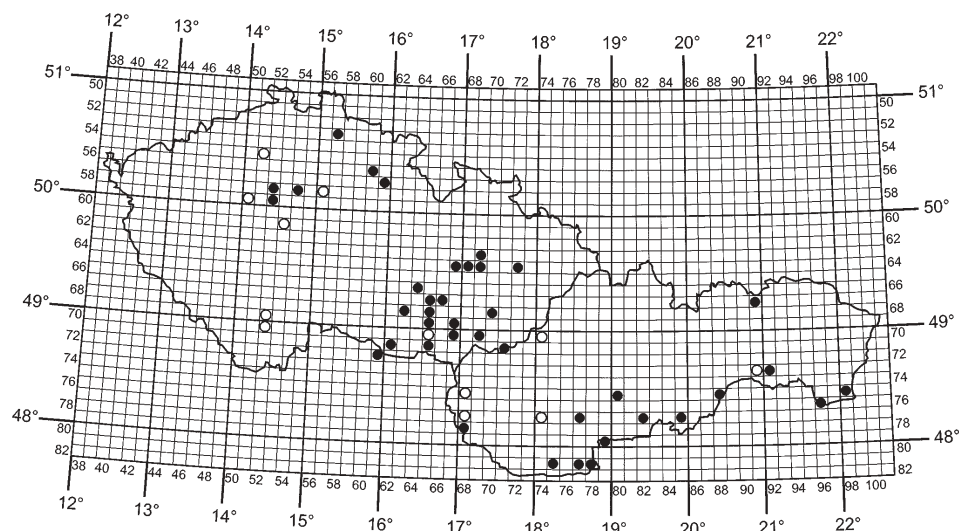


Fig. 97. Distribution map of *Physetopoda halensis* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

(7261), Hranice na Moravě (6472), Hrušovany u Brna (6965), Kobyly (7067), Mikulov (7165), Mohelno (6863), Moravský Písek (7069), Mrsklesy (6369), Nebovidy (6865), Pálava (7165), Rohatec (7069), Slatinice (6468), Slatinky (6467), Tišnov (6664), Vápenky (7171), Velehrad (6870), Vlčice (not identified), Znojmo (7162); published unrevised localities: Pouzdřany (7065) (HOFFER 1937, 1938).

SLOVAKIA: Babina (7580), Bojovo (not identified), Bratislava (7868), Čajkov (7777), Domica (7588), Fiľakovo (7785), Gbelce (8177), Hegyfárok (8177), Chotín (8175), Kamenica nad Hronom (8178), Kečovo (7588), Kováčovské kopce (8178), Kráľovský Chlmec (7598), Medovarce (7979), Minčol (6791), Modrý Kameň (7782), Nána (8177), Piliš (8178), Plešivec (7588), Seleška (7392), Slovenské Nové Mesto (7696), Somotor (7598), Streda nad Bodrogom (7696), Štúrovo (8177), Veľký Kamenec (7696), Veľký Kevežď (7696), Viničky (7696); published unrevised localities: Borša (7696), Devinská Kobyla (7768), Malacky (7568), Malé Karpaty, Turňa nad Bodvou (7391) (HOFFER 1938); Trenčianská skalka (7074) (LUKÁŠ 1987); Zobor u Nitry (7774) (LUKÁŠ 1991).

Distribution. Europe excluding the northern parts, Asia Minor, southern Urals and Altai.

Biology. Thermophilous species, its northern distribution border reaching Germany and Poland. It usually occurs on limestone and rocky steppes and loess walls, but also in lower numbers on sands. It lives in the warmer regions of the Czech Republic and Slovakia. It is probably extinct in Bohemia, and is known from only 11 specimens (see below). There are two typical forms for the males: the nominotypical form "*halensis*" with red parts on the thorax and "*nigrita*" with black males lacking red patterns. Czech specimens are typically bigger than those from the Mediterranean and Slovakia.

Hosts unknown.

***Physetopoda lucasii* (Smith, 1855)**

(Figs 72, 77)

Localities. No localities in the Czech Republic and Slovakia, but likely to be discovered. This species has not been distinguished from *P. halensis* for a long time. Its distribution area appears to be larger than previously assumed, reaching central Europe, probably including Hungary and Slovakia (T. LJUBOMIROV, pers. comm.).

Distribution. Southern Europe, Italy, France and Spain.

Biology. Biology and hosts unknown.

***Physetopoda pusilla* (Klug, 1835)**

(Figs 21, 54, 73)

Localities:

BOHEMIA: no localities.

MORAVIA: no localities.

SLOVAKIA: Štúrovo (8177), 11.v.1948, 1 ♀, J. Tichý lgt., B. Petersen det., coll. Moravian Museum, Brno, P. Bogusch revid. First record from the Slovak Republic.

Distribution. Southern parts of Europe, northern border of the distribution area in Hungary and Slovakia.

Biology. Species living in southern Europe, especially on loess localities, where it is more common than in sandy localities. Biology not well known.

Hosts unknown.

Physetopoda scutellaris (Latreille, 1792) (Figs 20, 41, 69, 78, 82, 85)

Syn.: *Smicromyrme subcomata* (Wesmael, 1852), *S. nigricollis* Hoffer, 1936.

Localities (Fig. 98):

BOHEMIA: no localities.

MORAVIA: Bitov (7060), 25.vii.1934, 1 ♀, J. Palásek lgt.; Blansko (6665), 26.viii.1910, 1 ♀, V. Zavadil lgt., both P. Bogusch det., coll. National Museum, Praha; Brno-Hády (6766), 14.vi.1943, 1 ♂, J. Šnofák lgt.; Hodonín (7168), June 1958, 1 ♀, M. Kocourek lgt.; Kienberg (7166), 29.viii.1950, 1 ♀, J. Stehlík lgt.; Kobylí (7067), 23.vii.1940, 1 ♂, F. Gregor lgt., all P. Bogusch det., coll. Moravian Museum Brno; Osvětimany (6969), 9.ix.1984, 1 ♀, D. Vepřek lgt., det. et coll.; Pouzdřany (7065), 14.vi.1936, 1 ♂, F. Gregor lgt., P. Bogusch det., coll. Moravian Museum Brno; Tišnov (6664), 14.vi.1934, 1 ♀, 22.vi.1934, 1 ♀, August 1934, 1 ♀, all A. Hoffer lgt., P. Bogusch det., coll. National Museum, Praha; published unrevised localities: Liděřovice (7070) (HOFFER 1938); Bzenec (7069) (BALTHASAR 1941); Pálava – Tabulová hora (7165) (PÁDR 1995).

SLOVAKIA: Čenkov (8177), 17.vii.1943, 1 ♀, M. Kocourek lgt., P. Bogusch det., coll. Moravian Museum Brno; Chotín (8175), July 1962, 1 ♀, V. Balthasar lgt., coll. National Museum, Praha; Malé Karpaty, Kamzík (7768), 18.vii.1937, 1 ♀, O. Kavan lgt., P. Bogusch det., coll. Moravian Museum Brno; Modrý Kameň (7782), 1.x.1988, 1 ♀, S. Bílý lgt., coll. National Museum, Praha; published unrevised locality: Štúrovo (8177) (BALTHASAR 1952).

Distribution. Southern parts of Europe, Asia Minor, northern Africa, Russia. Rare species in all parts of its distribution area.

Biology. Rare species, known from submontane rocky steppes and warm localities in submontaneous regions. It is not bound to the warm regions and does not live in warm sandy localities in association with other thermophilous Mutillidae, i.e. *Nemka viduata*, *Ronisia brutia*, and *Dasylabris regalis*.

Hosts unknown.

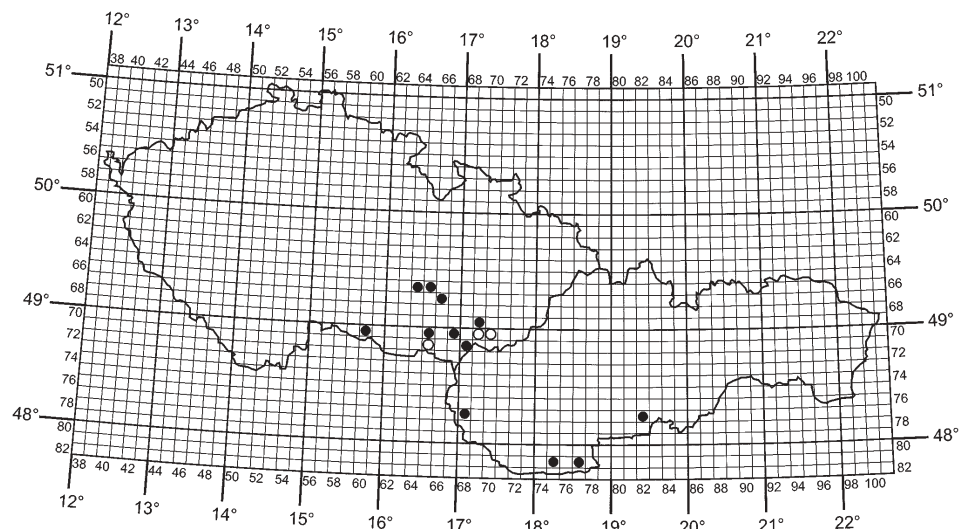


Fig. 98. Distribution map of *Physetopoda scutellaris* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Physetopoda sericeiceps (André, 1901) (Figs 70, 79)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Southern Europe, northern border of the distribution area in Hungary and Austria.

Biology. Biology and hosts unknown.

11. Genus *Smicromyrme* Thomson, 1870

Four species occurring in the central Europe, three of them in the Czech Republic and two in Slovakia. The problematic species *S. pouzdranensis* Hoffer, 1936 is not included in the key because of unavailability of the holotype.

Key to males

1. Mandible tridentate. Clypeus with deep incision in the front margin (Fig. 83), vertex flat. Usually mesonotum and propodeum black, other parts of thorax red (Fig. 37). *Smicromyrme sicana* (De Stefani, 1887)
- Mandible bidentate. 2.
2. Ocelli as large as the width of the flagellomeres (as in *Physetopoda daghestanica*). Clypeus without incisions, vertex curved. Dorsal parts of thorax red, felt line on sternum 2 very short and slight (Fig. 80).
..... *Smicromyrme ruficollis* (Fabricius, 1793)
- Ocelli smaller than the width of the flagellomeres (Fig. 35). Vertex gibbous and protruding. Usually red notum with black propodeum, but sometimes the whole notum is black. *Smicromyrme rufipes* (Fabricius, 1787)

Key to females

1. Pygidium close, not furrowed in the apical third (Fig. 75), tergum 2 with one big central spot and two smaller spots on the sides (Fig. 22).
..... *Smicromyrme sicana* (De Stefani, 1887)
- Pygidium broader, furrowed on the whole surface (Fig. 74), tergum 2 with only one central spot. 2.
2. Thorax curved (Fig. 17), suture leading from front of the scutellar tubercle not developed, scutellar tubercle narrow.
..... *Smicromyrme ruficollis* (Fabricius, 1793)
- Thorax flat (Fig. 18), suture leading from front of the scutellar tubercle to the spiracula developed. Scutellar tubercle distinctly broad (Fig. 16).
..... *Smicromyrme rufipes* (Fabricius, 1787)

List of species

Smicromyrme pouzdranensis Hoffer, 1936 ²⁾

Localities (Fig. 95):

BOHEMIA: no localities.

MORAVIA: Pouzdrany (7065), 12.v.1934, 2 ♀♀, A. Hoffer lgt. (HOFFER 1936, 1937).

SLOVAKIA: no localities.

Distribution. Known only from the type locality Pouzdrany in southern Moravia.

Biology. Biology and hosts unknown, all specimens collected in May and June.

Remarks. This species is not included in the key because of the absence of specimens to review. The holotype and syntype were once in the collections of the National Museum in Prague. They were borrowed by B. Petersen and mislaid after his death. The author has seen two *S. rufipes* females from localities in Hungary that appeared to look like *S. pouzdranensis*, but he was not able to compare the material with any type material. The species is known from only two females collected in the steppe in Pouzdrany, mentioned below. They look very similar to *S. rufipes* females, but are abnormally robust and have a quadratic mesonotum. For more detailed information, descriptions and drawings of the type specimens see HOFFER (1936).

Smicromyrme ruficollis (Fabricius, 1793) (Figs 17, 36, 80)

Localities. No localities in the Czech Republic and Slovakia.

Distribution. Southern parts of Europe up to central Europe, Altai, Turkey to central Asia. Northern border of the distribution area in Hungary and Austria.

Biology. Biology and hosts unknown.

Smicromyrme rufipes (Fabricius, 1787) (Figs 16, 18, 35, 42, 51, 74)

Syn.: *S. zavadili* Hoffer, 1938, *S. lidmilae* Hoffer, 1938.

Localities (Fig. 99):

BOHEMIA: Bavorovice (6952), Bezděz (5454), Bořeň (5448), Buzice (6549), Byšičky (5854), Čelákovice (5854), Čeperka (5857), Černošice (6051), České Vrbné (6952), Děčín (5251), Dobříš (6251), Doubí (6654), Františkovy Lázně (5840), Havlovice (5462), Hluboká nad Vltavou (6952), Hněvice (5552), Houšťka (5552), Hradec Králové (5761), Hrušov (5258), Chlum u Třeboně (7055), Chrbonín (6655), Jenštejn (5853), Jilové (6152), Jirny (5854), Káraný nad Labem (5854), Kolín (5957), Kost (5557), Košátky (5653), Kozly (5753), Kutná Hora (6057), Kytín (6151), Libčice nad Vltavou (5852), Liběšice (5448), Líšťany (6156), Loděnice (6050), Lysá nad Labem (5755), Malá Skála (5357), Mlékojedy (5450), Most (5447), Neratovice (5753), Nesuchyně (5848), Oseček (5856), Pardubice (5960), Pelhřimov (6557), Petrovice (6157), Písek (6145), Planá nad Lužnicí (6654), Počeradý (5548), Praha – Bílá Hora (5952), Praha – Braník (5952), Praha – Divoká Šárka (5852), Praha – Horní Počernice (5853), Praha – Hostivař (5952), Praha – Modřany (5952), Praha – Radotín (5952), Praha – Zbraslav (6052), Praha – Zlíchov (5952), Praha – Sedlec (5852), Přelouč (5959), Příbram

²⁾ The species was synonymized with the East-European *S. triangularis* (Radoszkowski, 1865), however, the holotype was not examined (LELEJ & SCHMID-EGGER 2005).

(6350), Rakovník (5948), Ražice (6750), Ryje (5557), Řevnice (6051), Sadská (5856), Sedlec u Mostu (5548), Slepíčí vršek (6954), Sobotka (5557), Spařence (5557), Stéblová (5960), Strančice (6054), Stráž nad Nežárkou (6955), Stroupeč (5646), Sulava (6050), Svatý Jan pod Skalou (6050), Svitavy (6264), Travčický les (5551), Trutnov (5461), Úpice (5462), Veselí nad Lužnicí (6854), Vinoř (5853), Vlkov (6854), Vráž u Berouna (6050); published unrevised localities: Budislav (6755), Dobronice (6653), Chabry (5952), Chlum u Třeboně (7055), Chýnov (6554), Jankov (7051), Kyšice (5950), Tábor (6554), Třeboň (6954), Záboří u Kolína (5958) (HOFFER 1938); Pisečný vrch (5548) (PÁDR & TYRNER 1990).

MORAVIA: Blansko (6665), Brno – Bobrava (6865), Brno – Hády (6766), Brno – Židenice (6765), Brumovice (7067), Bzenec (7069), Čejč (7067), Dolní Věstonice (7165), Fryšták (6772), Hlohovec (7266), Hodonín (7168), Hovorany (7067), Hranice na Moravě (6472), Chvalovské Vesce (not identified), Jundrov (6765), Klentnice (7165), Kobyly (7067), Kurdějov (7066), Lidéřovice (7070), Mikulov (7165), Mohelno (6863), Moravský Písek (7069), Mutěnice (7068), Nová Ves u Brna (6863), Pálava (7165), Pánov (7168), Popice (7261), Pouzdřany (7065), Prakšice (6971), Prostějov (6568), Ratíškovice (7068), Rohatec (7069), Senorady (6863), Svatý Kopeček (6369), Šaštín (7269), Šlapanice (6866), Tišnov (6664), Třebíč (6761), Uherské Hradiště (6970), Veselíčko (6470), Vojnice (6469), Zahrady pod Hájem (7171), Zavadilka (6968), Zlín (6772), Znojmo (7162), Želešice (6865), Žernavá (6570), Židlochovice (6965); published unrevised localities: Břeclav (7267), Jihlava (6559), Lanžhot (7267), Nové Město na Moravě (6462), Olomouc (6469), Ubušín (6363) (HOFFER 1938).

SLOVAKIA: Beša (7876), Čajkov (7777), Čenkov (8177), Gbelce (8177), Gemerský Jablonec (7885), Hajnáčka (7786), Hegyfárok (8177), Hrušov (7598), Chotín (8175), Kamenica nad Hronom (8178), Kováčovské kopce (8178), Kráľovský Chlmec (7598), Leles (7598), Malacky (7568), Nové Mesto nad Váhom (7272), Pernek (7668), Plavecký Štvrtok (7667), Sekule (7367), Seleška (7392), Somotor (7598), Studienka (7468), Šahy (7979), Štúrovo (8177), Trenčín (7174), Turňa nad Bodvou (7193), Veľký Kamenec (7696); published unrevised localities: Bratislava (7868), Borský Svätý Jur (7368), Devínska Kobyla (7768), Košice (7293), Korytnica (7181), Moravský Svätý Ján (7468), Nitra (7774), Slovenské Nové Mesto (7696) (HOFFER 1938).

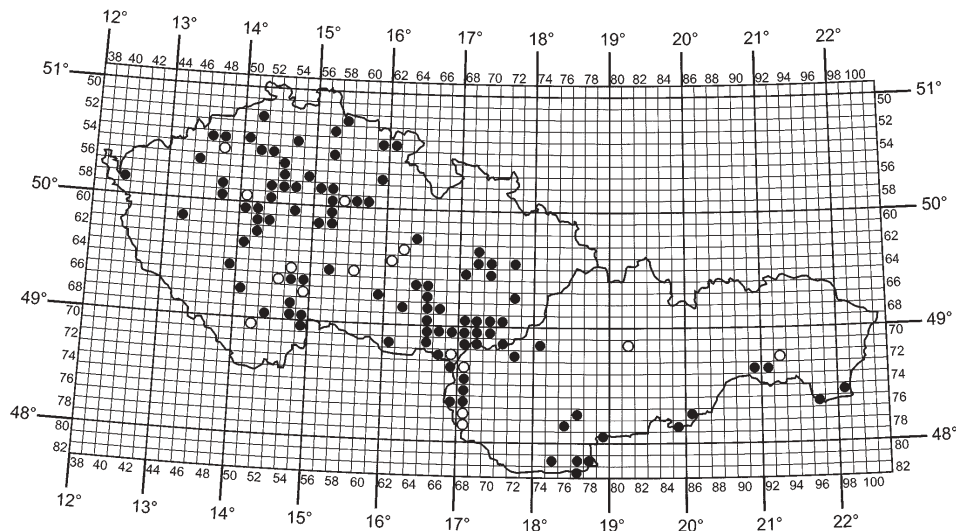


Fig. 99. Distribution map of *Smicromyrme rufipes* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Distribution. Entire Palearctic region and Africa.

Biology. Very abundant and common species, occurring in all warmer localities. It prefers localities not strictly in the warmest regions and may be found in all regions except the mountains. Males occur in several colour forms; the most common is the black form in the most northern part of the distribution area. The species is usually very numerous where it occurs.

Hosts: Sphecid wasps of the genus *Tachysphex* Kohl, 1883, *Oxybelus uniglumis* (Linnaeus, 1758), *Oxybelus bipunctatus* Olivier, 1811, *Miscophus spurius* (Dahlbom, 1832) (Apoidea: Crabronidae) and also small solitary bees of the genera *Halictus* Latreille, 1802 (Apoidea: Halictidae) and *Andrena* Fabricius, 1775 (Apoidea: Andrenidae).

***Smicromyrme sicana* (De Stefani, 1887) (Figs 22, 37, 75, 83)**

Syn.: *S. septentrionalis* Hoffer, 1936, *S. gregori* Hoffer, 1936.

Localities (Fig. 100):

BOHEMIA: České Budějovice (7052), 1937, 1 ♂, L. Bařa lgt., A. Hoffer det., coll. Moravian Museum, Brno, P. Bogusch revid. First record from Bohemia.

MORAVIA: Bavory (7165), Brno – Bobrava (6865), Brno – Bystře (6765), Brno – Řečkovice (6765), Brumovice (7067), Bzenec (7069), Čejč (7067), Hovorany (7067), Hrušovany u Brna (6965), Kobyly (7067), Mikulov (7165), Mohelno (6863), Moravský Písek (7069), Mutěnice (7068), Nebovidy (6865), Pouzdřany

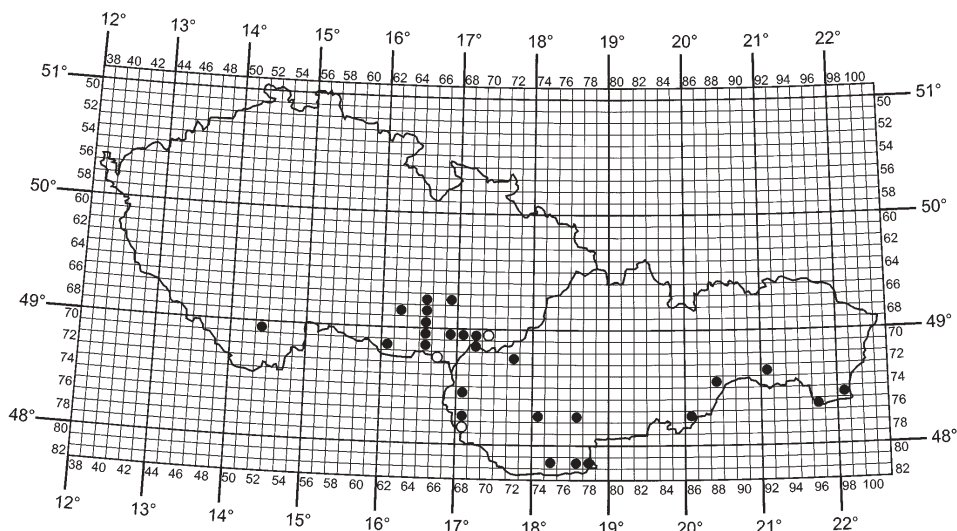


Fig. 100. Distribution map of *Smicromyrme sicana* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

(7065), Strážnice (7169), Vyškov (6767), Znojmo (7162); published unrevised localities: Liděřovice (7070), Výhon u Židlochovic (6965), Židlochovice (6965) (HOFFER 1936, 1938); Sedlec (7266) (PÁDR 1995).

SLOVAKIA: Čajkov (7777), Čenkov (8177), Devín (7768), Gbelce (8177), Hajnáčka (7786), Chotín (8175), Kamenica nad Hronom (8178), Kamenín (8177), Kováčovské kopce (8178), Kráľovský Chlmec (7598), Malacky (7568), Nitra (7774), Nová Vieska (8177), Nové Mesto nad Váhom (7272), Plešivecká planina (7488), Seleška (7392), Slovenské Nové Mesto (7696), Somotor (7598), Štúrovo (8177); published unrevised localities: Bratislava (7868), Moravský Svatý Ján (7468) (HOFFER 1936, 1938); NPR Devinská Kobyla (7768) (LUKÁŠ 1997).

Distribution. Southern and central Europe, Turkey, Syria, southern Urals, Altai, southern parts of Russia.

Biology. Thermophilous species bound to loess walls and rocky steppes. This species was not rare in the past; it has recently become endangered. Known in the Czech Republic from around Brno and several localities in southern Moravia, also from southern parts of Slovakia.

Hosts unknown.

12. Genus *Cystomutilla* André, 1896

Cystomutilla ruficeps (Smith, 1855)

(Figs 4, 25, 50)

Localities (Fig. 101):

BOHEMIA: no localities.

MORAVIA: no localities.

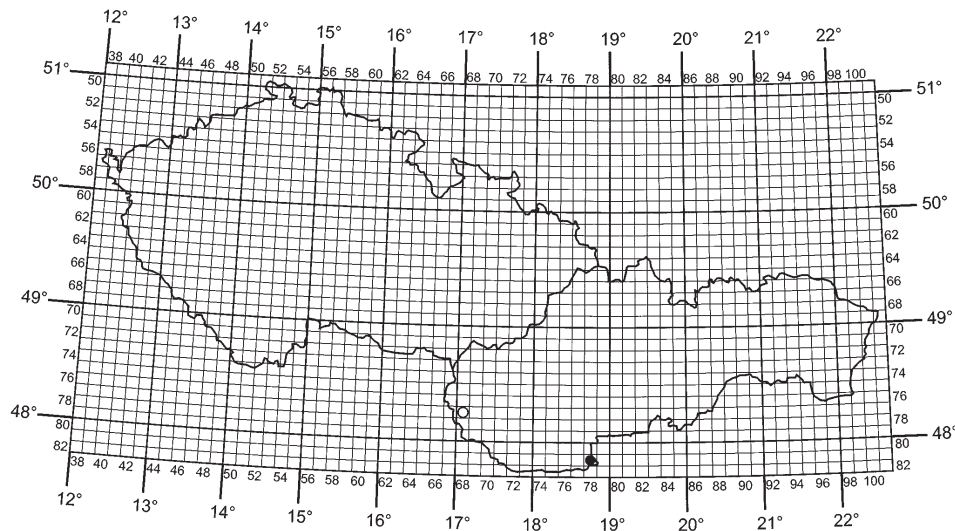


Fig. 101. Distribution map of *Cystomutilla ruficeps* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

SLOVAKIA: Kováčovské kopce (8178), 31.v.1936, 1 ♂, O. Kavan lgt., J. Macek det., coll. National Museum, Praha, P. Bogusch revid.; published unrevised locality: Devínská Kobyla (7768), 5.vi.1933, 1 ♀, A. Hoffer lgt. (HOFFER 1938), 15.vi.1993, 1 ♀, J. Lukáš lgt. (LUKÁŠ 1997).

Distribution. Western and southern parts of Europe, Britain, northern Africa. The species does not occur in the Czech Republic; it has been found only in southern parts of Slovakia.

Biology. Very rare species in all parts of the distribution area, biology unknown.

Hosts: Sphecid wasps *Ectemnius rubicola* Duffour et Perris, 1840 and *Pemphredon wesmaeli* (Morawitz, 1864) (Apoidea: Crabronidae).

13. Genus *Dasylabris* Radoszkowski, 1886

Two species occur in the central Europe, both in the Czech Republic and Slovakia.

Key to males

1. Forewing with two medial lines (Fig. 55), thorax red, terga 4 and 5 with white hair (Fig. 33). *Dasylabris maura* (Linnaeus, 1758)
- Forewing with only one medial line (Fig. 56), whole body black with black hair (Fig. 34). *Dasylabris regalis* (Fabricius, 1793)

Key to females

1. Tergum 3 with broken apical band, large species (Fig. 5).
..... *Dasylabris maura* (Linnaeus, 1758)
- Tergum 3 with unbroken, wavy apical band, small species (Fig. 6).
..... *Dasylabris regalis* (Fabricius, 1793)

List of species

Dasylabris maura (Linnaeus, 1758) (Figs 5, 33, 55)

Localities (Fig. 102):

BOHEMIA: no localities.

MORAVIA: Blansko (6665), Brno – Hády (6766), Bzenec (7069), Čejč (7067), Hrušovany u Brna (6965), Kniničky (6765), Kobyly (7067), Mikulov (7165), Mohelno (6863), Moravský Písek (7069), Mutěnice (7068), Pouzdřany (7065), Senorady (6863), Šardice (7068), Znojmo (7162); published unrevised localities: Tišnov (6664), Výhon u Židlochovic (6965) (HOFFER 1938).

SLOVAKIA: Devín (7768), Devínská Kobyla (7768), Gbelce (8177), Gemerský Jablonec (7885), Hajnáčka (7786), Chotín (8175), Malacky (7568), Moravský Svätý Ján (7462), Nitra (7774), Nové Zámky (8075), Plavecký Štvrtok (7462), Somotor (7598), Štúrovo (8177), Veľký Kevežď (7696); published unrevised localities: Borský Svätý Jur (7368), Borša (7696), Kráľovský Chlmec (7696), Sekule (7367) (HOFFER 1938); Trenčianská skalka (7074) (LUKÁŠ 1987); Zobor u Nitry (7774) (LUKÁŠ 1991).

Distribution. Southern parts of Europe and Asia.

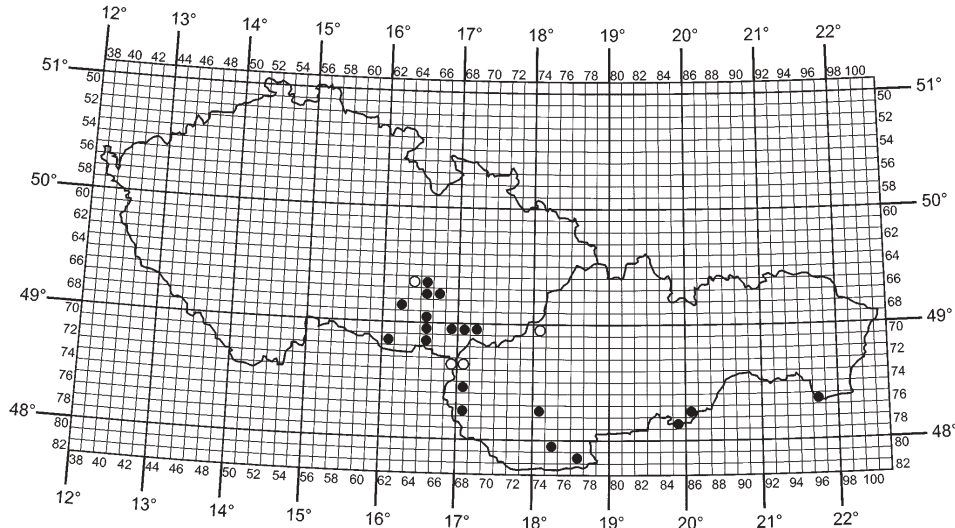


Fig. 102. Distribution map of *Dasylabris maura* in the Czech Republic and Slovakia. ● – localities of the material revised, ○ – published unrevised localities.

Biology. Thermophilous species, abundant in localities in Mediterranean and southern Europe. It lives on sand, limestone or loess. It does not occur in Bohemia, but has been reported from Germany (SCHMID-EGGER & BURGER 2005). Most of the localities involve the warm, sandy parts of Moravia and Slovakia.

Hosts: The solitary wasp *Katamenes arbustorum* (Panzer 1799) (Vespoidea: Vespidae), sphecid wasps *Sphex occitanicus* (Lepeletier and Serville, 1828) and *Ammophila heydeni* Dahlbom, 1845 (Apoidea: Sphecidae) and “some other species of eumenids and sphecid wasps” (HOFFER 1938).

***Dasylabris regalis* (Fabricius, 1793)**

(Figs 6, 34, 56)

Syn.: *D. italica* (Fabricius, 1793)

Localities (Fig. 103):

BOHEMIA: no localities.

MORAVIA: Bzenec (7069), 10.vii.1931, 1 ♀, 15.vii.1931, 2 ♀♀, 17.vii.1931, 1 ♀, 12.vii.1932, 1 ♀, 21.vii.1933, 1 ♀, V. Zavadil lgt., 11.vii.1940, 1 ♀, O. Šustera lgt., June 1940, 3 ♀♀, July 1958, 1 ♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha, 10.vii.1940, 1 ♀, J. Šnoflák lgt., 17.v.1948, 1 ♂, 1 ♀, R. Obrtel lgt., all P. Bogusch det., coll. Moravian Museum Brno; 10.vi.1980, 1 ♂, Z. Karas lgt., det. et coll.; 4.vii.1992, 1 ♀, D. Vepřek lgt., det. et coll.; 27.vi.1999, 1 ♀, J. Straka lgt., det. et coll.; Hodonín (7168), 20.vi.1940, 1 ♂, O. Šustera lgt., P. Bogusch det., coll. National Museum, Praha; Moravský Písek (7069),

The velvet ants (Hymenoptera: Mutillidae)

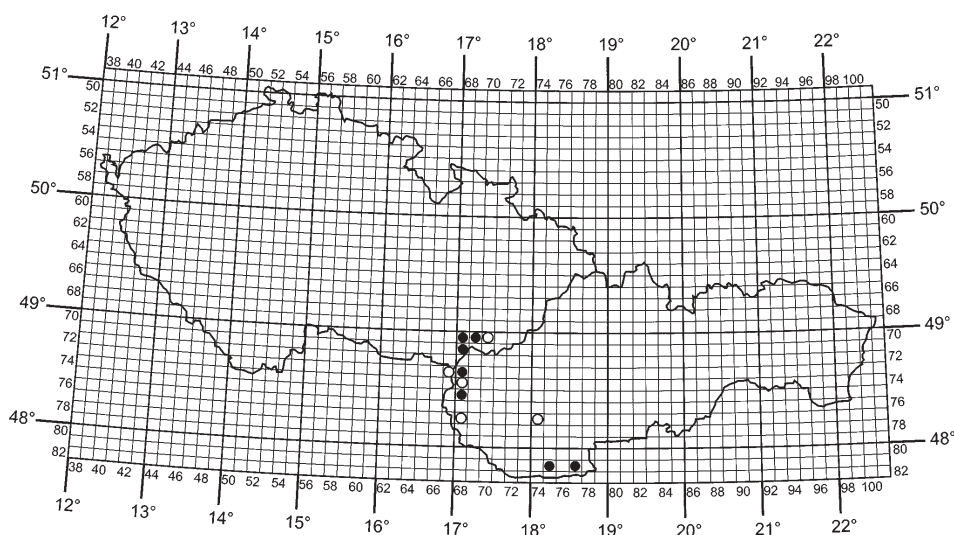


Fig. 103. Distribution map of *Dasylabris regalis* in the Czech Republic and Slovakia. ● – localities of the revised material, ○ – published unrevised localities.

17.vii.1931, 1 ♀, 12.vii.1932, 1 ♀, V. Zavadil lgt., all P. Bogusch det., coll. Moravian Museum Brno, 12.vii.1937, 1 ♀, V. Zavadil lgt., 11.viii.1939, 1 ♀, O. Šustera lgt., P. Bogusch det., coll. National Museum, Praha; Mutěnice (7068), June 1940, 1 ♀, M. Kocourek lgt., P. Bogusch det., coll. Moravian Museum Brno, 15.vi.1940, 1 ♂, V. Zavadil lgt., 4.vii.1941, 4 ♀♀, 8.viii.1941, 1 ♀, 22.vii.1943, 1 ♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; Ratíškovice (7068), 5.vi.1939, 1 ♂, O. Šustera lgt.; Rohatec (7068), 1.vii.1942, 1 ♀, 16.viii.1942, 1 ♀, V. Balthasar lgt.; Šardice (7068), 21.vi.1942, 1 ♀, 1.vii.1942, 1 ♂, V. Zavadil lgt., 21.vii.1944, 1 ♀, O. Šustera lgt., P. Bogusch det., coll. National Museum, Praha; published unrevised locality: Liděfovice (7070) (HOFFER 1938).

SLOVAKIA: Borský Svätý Jur (7368), 10.vii.1934, 1 ♀, A. Hoffer lgt., P. Bogusch det., coll. Moravian Museum Brno; Čenkov (8177), 17.vii.1953, 1 ♀, M. Kocourek lgt., P. Bogusch det., coll. Moravian Museum Brno; July 1953, 2 ♀♀, M. Kocourek lgt., J. Halada det. et coll., 25.vii.1961, 1 ♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; Chotín (8175), 31.v.1960, 1 ♂, July 1963, 2 ♀♀, V. Balthasar lgt., P. Bogusch det., coll. National Museum, Praha; Malacky (7568), 14.vi.1980, 2 ♂♂, Z. Karas lgt., det. et coll.; published unrevised localities: Moravský Svätý Jan (7468), Sekule (7367), Šaštín (7368) (HOFFER 1938); Zobor u Nitry (7774) (LUKÁŠ 1991), Devínská Kobyla (7768) (HOFFER 1938; LUKÁŠ 1997).

Distribution. Southern to central Europe, northern Africa, Turkey, Syria, the Caucasus, southern Urals, Altai. Rare species.

Biology. Species bound to sandy localities, neither abundant nor common. In the Czech Republic and Slovakia it occurs mainly in the region known as the “Moravian Sahara” between Hodonín (Moravia) and Bratislava (Slovakia) in association with the ecologically similar species *Nemka viduata* (Pallas, 1773).

Hosts unknown.

SPECIES	B	M	S	G	P	A	H	U
<i>Krombeinella longicornis</i> (Tournier, 1889)	-	-	+	-	-	-	-	+
<i>Paramyrmosa brunripes</i> (Lepelletier, 1845)	-	+	+	+	+	+	+	+
<i>Myrmosa atra</i> Panzer, 1801	+	+	+	+	+	+	+	+
<i>Myrmilla calva</i> (Villers, 1789)	+	+	+	+	-	+	+	+
<i>Myrmilla capitata</i> (Lucas, 1849)	-	-	-	-	-	+	+	-
<i>Myrmilla caucasica</i> (Kolenati, 1846)	-	-	-	-	-	-	-	+
<i>Myrmilla glabrata</i> (Fabricius, 1775)	-	-	-	-	-	+	+	+
<i>Myrmilla mutica</i> (André, 1903)	-	+	+	-	-	+	+	-
<i>Myrmilla vutshetitshi</i> Skorikov, 1927	-	-	-	-	-	+	-	+
<i>Platymyrmillia quinquefasciata</i> (Ollivier, 1811)	-	-	-	-	-	-	+	-
<i>Mutilla europaea</i> Linnaeus, 1758	+	+	+	+	+	+	+	+
<i>Mutilla marginata</i> Baer, 1848	+	+	+	+	+	+	+	+
<i>Ronisia brutia</i> (Petagne, 1787)	-	+	+	+	-	+	+	+
<i>Tropidotilla litoralis</i> (Petagne, 1787)	-	-	-	-	-	+	+	+
<i>Nemka viduata</i> (Pallas, 1773)	-	+	+	-	-	-	+	+
<i>Physetopoda cingulata</i> (Costa, 1858)	-	-	+	-	-	-	+	-
<i>Physetopoda daghestanica</i> (Radoszkowski, 1885)	-	+	+	-	-	+	-	+
<i>Physetopoda halensis</i> (Fabricius, 1787)	+	+	+	+	-	+	+	+
<i>Physetopoda lucasii</i> (Smith, 1855)	-	-	-	-	-	-	-	-
<i>Physetopoda pusilla</i> Klug, 1835	-	-	+	-	-	-	-	-
<i>Physetopoda scutellaris</i> (Latreille, 1792)	-	+	+	+	-	+	+	-
<i>Physetopoda sericeiceps</i> (André, 1901)	-	-	-	-	-	-	+	-
<i>Smicromyrme pouzdranensis</i> Hoffer, 1936	-	+	-	-	-	-	-	-
<i>Smicromyrme ruficollis</i> (Fabricius, 1793)	-	-	-	-	-	+	-	+
<i>Smicromyrme rufipes</i> (Fabricius, 1787)	+	+	+	+	+	+	+	+
<i>Smicromyrme sicana</i> (De Stefani, 1887)	+	+	+	-	-	+	+	+
<i>Cystomutilla ruficeps</i> (Smith, 1855)	-	-	+	-	-	+	+	+
<i>Dasylabris maura</i> (Linnaeus, 1758)	-	+	+	+	+	+	+	+
<i>Dasylabris regalis</i> (Fabricius, 1793)	-	+	+	-	-	+	+	+

Table. List of the central European species with notes on distribution in the Czech Republic and Slovakia. (B – Bohemia, M – Moravia, S – Slovakia, G – Germany, P – Poland, A – Austria, H – Hungary, U – Ukraine, + presence, – absence.)

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References

- BALTHASAR V. 1941: Příspěvek k poznání Hymenopter východní Moravy. [Contribution to the knowledge of Hymenoptera of eastern Moravia]. *Časopis České společnosti entomologické* **38**: 104–114 (in Czech)
- BALTHASAR V. 1952: Další příspěvek k poznání blanokřídlého hmyzu ČSR. [Another contribution to the knowledge of Czechoslovak Hymenoptera]. *Časopis Československé společnosti entomologické* **49**: 52–69 (in Czech)
- BOUČEK Z. & ŠNOFLÁK J. 1957: Čeleď Kodulkovití – Mutillidae, pp. 316–319. In: KRATOCHVÍL J. (ed.): Klíč zvířeny ČSR. Díl II. Nakladatelství Československé Akademie Věd, Praha, 748 pp (in Czech).
- ČEPELÁK J., ČEPELÁK S. & LUČIVJANSKÁ V. 1989: Diptera Slovenska III. Veda, vydavateľstvo Slovenskej Akadémie ved, Bratislava, 192 pp (in Slovak; with English, German and Russian summaries).
- HOFFER A. 1936: Nové kodulky (Mutillidae, Hymenopt.-Vespoidea.) z Československé republiky. [New mutillids from the Czechoslovakia]. *Časopis Československé společnosti entomologické* **33**: 157–163 (in Czech)
- HOFFER A. 1937: Kodulky pouzdřanské stepi. [Mutillids of the Pouzdřany steppe]. *Časopis Československé společnosti entomologické* **34**: 62–63 (in Czech).
- HOFFER A. 1938: Myrmosidae, Mutillidae, pp. 176–195. In: BAŤA L. (ed.): Prodromus hmyzu Republiky Česko-Slovenské. Pars 2 – Vespoidea, Psammocharidae. [Prodromus of the Czech and Slovak Hymenoptera. Pars 2 – Vespoidea, Psammocharidae]. *Sborník entomologického oddělení Zemského musea v Praze* **16**: 166–223 (in Czech).
- INVREA S. 1964: Mutillidae – Myrmosidae. *Fauna d'Italia* **5**: 1–312.
- LELEJ A. S. 1985: Mutillidae (Hymenoptera) of the USSR and neighboring countries. [Osy – nemki fauny SSSR i sopedel'nykh stran]. Leningrad: Nauka, 268 pp. (in Russian).
- LELEJ A. S. 2002: Catalogue of the Mutillidae (Hymenoptera) of the Palaearctic region. Vladivostok: Dalnauka, 171 pp.
- LELEJ A. S. & NEMKOV P. G. 2004: Phylogeny, Evolution and Classification of Mutillidae (Hymenoptera). *Far Eastern Entomologist* **46**: 1–24.
- LELEJ A. S. & SCHMID-EGGER C. 2005: The velvet ants (Hymenoptera: Mutillidae) of Central Europe. *Linzer Biologische Beiträge* **37**: 1005–1043.
- LUKÁŠ J. 1987: Trenčianska skalka – refúgium teplomilných žiahadlovkových blanokrídlôvcov (Hym., Aculeata). [Trenčianska skalka rock – refugium of thermophile aculeate Hymenoptera]. *Zborník Slovenského Národného múzea, Prírodné Vedy* **33**: 41–94 (in Slovak).
- LUKÁŠ J. 1991: Poznatky o rozšíření niektorých čeladi žiahadlovkovitých blanokrídlôvcov (Hymenoptera, Aculeata) okolia Zobora pri Nitre. [Distribution of selected families of aculeate Hymenoptera in the vicinity of Zobor at Nitra]. *Zobor* **2**: 83–93 (in Slovak).
- LUKÁŠ J. 1997: Blanokrídlôvce NPR Devínska Kobyla a Sandberg časť 4 (Hymenoptera: Scolioidea, Mutilloidea). [Hymenoptera of NPR Devínska Kobyla and Sandberg, part 4]. *Entomofauna carpathica* **9**: 17–21 (in Slovak).

- LUKÁŠ J. 2003: Fauna blanokřídláčů (Hymenoptera) starého ovocného sadu intravilánu Bratislavy. [Hymenoptera of an old orchard in Bratislava]. *Folia faunistica Slovaca* **8**: 71–74 (in Slovak).
- MICHENER C. D. 2000: The Bees of the World. The Johns Hopkins University Press, Baltimore and London, xiv + 914 pp.
- O'NEILL K. 2000: Solitary Wasps: Behavior and Natural History. Cornell University Press, Ithaca and New York, xiv + 406 pp.
- PÁDR Z. 1989: Scolioidea, pp. 149–151. In: ŠEDIVÝ J. (ed.): Enumeratio insectorum Bohemoslovakiae. Checklist of Czechoslovak insects III (Hymenoptera). *Acta Faunistica Entomologica Musei Naturalis Pragae* **19**: 1–194.
- PÁDR Z. 1995: Hymenoptera: Scolioidea, Vespoidea, Pompiloidea, and Sphecoidea, pp. 331–338. In: ROZKOŠNÝ R. & VAŇHARA J. (eds): Terrestrial Invertebrates of the Palava Biosphere Reserve of UNESCO, II. *Folia Facultatis Scientiarum Naturae Universitatis Masarykianae Brunnensis, Biologia* **93**: 1–408.
- PÁDR Z. & TYRNER P. 1990: Hymenoptera Aculeata a Symphyta na Písečném vrchu v Českém středohoří. [Aculeate Hymenoptera in Písečný vrch hill in CHKO České středohoří]. *Sborník Okresního Muzea v Mostě, řada přírodovědná* **11–12**: 19–47 (in Czech).
- PETERSEN B. 1988: The Palearctic Mutillidae of I. C. Fabricius and some related material (Insecta, Hymenoptera Aculeata). *Steenstrupia* **14**: 129–224.
- PRUNER L. & MÍKA P. 1996: Seznam obcí a jejich částí v České Republice s čísly mapových polí pro síťové mapování fauny. [List of settlements in the Czech Republic with associated map fields codes for faunistic grid mapping systém]. *Klapalekiana* **32 (Suppl.)**: 1–115 (in Czech, English summary).
- PSCHORN-WALCHER H. & HEITLAND W. 2005: Parasitoide online, Fam. Mutillidae, Ameisenwespen [Hymenoptera, Scolioidea]. Web sites: <http://www.faunistik.net/PONLINE/HYMENOPTERA/SCOLIOIDEA/MUTILLIDAE/mutillidae.html>
- SCHMID-EGGER C. & PETERSEN B. 1993: Taxonomie, Verbreitung, Bestandssituation und Bestimmungsschlüssel für die deutschen Arten der Gattung *Smicromyrme* Thomson, 1860. *Nachrichtenblatt der Bayerischen Entomologen* **42**: 46–57.
- SCHMID-EGGER C. & BURGER S. 2005: Kritisches Verzeichnis der deutschen Arten der Mutillidae, Sapygidae, Scoliididae und Tiphiidae (Hymenoptera). Web site: <http://www.bembix.de>.
- STANFUSS L. 2006: Beschreibung und Zuordnung eines unbekanntes Weibchens zu *Physetopoda cingulata* (Costa 1858) (Hymenoptera: Mutillidae). *Entomofauna* **27**: 77–80.
- ŠNOFLÁK J. 1952: Příspěvek k poznání Hymenopter Opavského Slezska a přilehlých částí Moravy s popisem nového lumčika *Triaspis semilissus* n. sp. [Contribution to the knowledge of Hymenoptera in Silesia and neighbouring parts of Moravia with a description of a new braconid *Triaspis semilissus* n. sp.]. *Sborník Přírodovědného Spolku Moravského (Ostrava)* **13**: 553–572 (in Czech).